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INDEX TO VOLUME II., 1921.

☞ *Readers in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral, Heart and Cardiac, Liver and Hepatic, Bicycle and Cycle, Child and Infant, Bronchocele, Goitre, and Thyroid, Diabetes, Glycosuria and Sugar, Eye, Ophthalmic, and Vision, &c., &c. (Py Q) = Parliamentary Question.*

A Concordance of page numbers and dates of Issue will be found at the end of the Index

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A

Abbott, Dr. H. K., general infection by Cysticercus cellulosæ, 956
Abdomen, Upper, Surgery of (Dr. J. B. Deaver and Dr. A. P. C. Ashhurst), second edition, 1921 (review), 657; *Acute, Early Diagnosis of* (Mr. Z. Cope) (review), 808
Abdominal surgery, pathological and X ray examinations in (Mr. J. Sherren), 689; diseases, diagnosis of, 1220
Abercorn, Dowager Duchess, and others, National Children Adoption Association, 60
Aberdeen Sick Children's Hospital, fair in aid of funds, 311, 484
Aberdeen University, pass lists, 256, 1396; awards, 312; roll of service, 836
Abnormalities, developmental, 815
Abortion, criminal, labour after, 362, 1356; procured, position of the medical *practitioner in cases of*, 509; responsibility of doctors, 1296
Abscess of the breast (*Dr. S. C. Dyke*), 331
Accident, industrial, controversy on, 570
Achard, Ch., A. Ribot, and Leon Binet, *researches on adrenalin diabetes*, 139
Acids, dilute, rôle of, in infection, 1375
Acoustic exercises *for deaf-mutes*, 769, 1355
Acquisitive society, an, 30
Adams, Dr. D., early diagnosis and treatment of disseminated sclerosis, 291
Addison, Mr. O., *periosteal sarcoma of femur*, 1059
Addison's (Dr.) salary (Py Q), 52; tribute to, 89
Adenitis, cervical, and unhealthy tonsils (*Mr. W. G. Howarth and Dr. S. R. Gloyne*), 997
Adenoids and rickets (Dr. H. Merrall), *991*, 1079; ætiology of, 1079, 1188, 1216; (leading article), 1281, 1347
Adenoma, cystic, *of uterus*, 1003
Adenomyoma of the Fallopian tube, 297
Adolescence, Autoerotic Phenomena in (*Dr. K. Menzies*), second edition, 1921 (review), 757
Adoption *Association*, National Children, 60
Adoption, committee on (Py Q), 53
Advanced Suggestion (*Neuro-induction*) (Dr. H. Brown), second edition, 1921 (review), 707
Aerodrome workers, medical examination of (Py Q), 931
Aero-urethroscope, new, *511*
African native, the, and medical service, 883
Agglutination *for B. dysenteriæ* (Flexner), (*Dr. A. D. Gardner*), 1269
Air Force Medical Service (see Student's Guide), 169
Air pilots and physical defects (Py Q), 185; the peril of, 522; travel in France, 785
Airman's physique, 510
Airmen, nose, throat, and ear requirements of (Squad.-Leader D. Ranken), 1263
Alastrim, 1286
Alcohol, therapeutic value of, 1400
Alcoholic beverages, consumption of (Py Q), 52
Alcoholism, international aspects of, 817
Alexander, Dr. F. W., swimming bath and catarrhal otitis, 629
Alimentary disorders, the fæces in (Dr. R. Coope), 9, 89, 153, 362; canal, bacteriology of (leading article), 25; infections in chronic arthritis (Dr. N. Mutch), 1266
Alkaloids, Some Micro-Chemical Tests for (C. H. Stephenson and C. E. Parker) (review), 1329
Allbutt, Sir C., medicine in evolution (Greek medicine in Rome), 86; clinical units, 937, 1299; (leading article), 969
Allen, Dr. R. W., death of, 586
Allison, Dr. T. M., coughing cup in prevention of tuberculosis, 630
Almond, Dr. G. H., memorial to, 1397
Alpine and subalpine climatic treatment: (1) *the place of Alpine spas in medicine* (Dr. E. B. Leech), 574; (2) Switzerland and "nerves" (*Dr. S. A. K. Wilson*), 576; (3) Swiss health resorts for tuberculosis (Dr. A. N. Cox), 579
Alvarenga Prize, 879
Amblard, Dr. L. A., arterial hypertension, 760
Amœboid Movement (Prof. A. A. Schaeffer) (review), 293
American Public Health Association, jubilee, 769
Ammonia dermatitis in infants, 1288
Amœbiasis, 1291
Anæmia, aplastic (Dr. E. C. P. Williams), 71
Anæsthesia, Local (Mr. N. Black) (review), 294
Anæsthesia with nitrous oxide and oxygen under pressure (Dr. H. H. Dale and Dr. L. Hill), 326, 533; milestones in, 636; inhalation or insufflation, combined apparatus for, 660; local, in stomatology, 1123; *stovaine*, 1166
Anæsthetics, dental choice of 572; Trans-Atlantic methods of administering, 1059; parcels of, held up (Py Q), 1350
Analysis, Qualitative, Introduction to (T. W. Fresenius), *seventeenth edition*, 1921 (review), 966

ANALYTICAL RECORDS AND REPORTS.—"Asepso" soap, 968—Benzyl benzoate capsules, 1226—Biologicals, tests and remedies, 1225—Cinzano brut, 1226—"Lukmah" tonic tea, 1226—Lynd's "well-made" soap, 968—Nuvita dietetic biscuits, 400—Port, tawny, 400—Quinine ethyl carbonate (euquinine) and diquinine carbonate (aristochin), 400—"Valeda" *invalid food* and "Good as Gold" baby food, 968—Vermouth, Fratelli Corelli, Torino, 968—"Wellcome" brand anti-pneumococcus serum, type 1; "Wellcome" *brand agglutinating serum, pneumo*coccus, types 1, 2, or 3, 400—Whisky, Irish, 400—Wilbert's invalid port, 968

Anaphylatoxin, 339
Anaphylaxis, ocular reactions in, 571
Anatomical material supply of, 776
Anatomy, Regional (*Dr. T. B. Johnston*) (review), 513
Anatomy, surgical, neglect of, 778
Anderson, Dr. J., dysentery in the field, 998
Andrewes, *Dr. C. H., poisoning by* cantharadin, 651
Androgyne, Autobiography of an (review), 967
Aneurysm of right common carotid *artery*, 1059; *innominate*, ligation of innominate artery for, 1274
Angina pectoris, purulent pericarditis simulating (Dr. M. A. Cassidy and others), 559; syndrome, origin of (Sir *C. Briscoe*), 1257; new light on, 1291
Animals, living, experiments on, 523
Ankle-joint, *abduction fractures of* (Sir W. A. Lane), 697, 875
Anoxæmia in clinical neurology (leading article), 348
Anspach, Dr. B. M., Gynæcology (review), 1222
Antarctic bacteria, 88
Ante-natal factors *of life and death*, 151
Anthrax, human, in Buganda Kingdom (Dr. W. L. Peacock and *Dr. H. L. Duke*), 332; among animals in Roumania, 527
Anthrax-*infected brushes* (Py Q), 211
Anti-anaphylaxis, 1384
Antimony and emetine in *bilharzia* disease (Dr. F. G. Cawston), 1049
Antiques, collecting, 1256
Antivenereal prophylaxis, 1024
Anwyl-Davies, Dr. T., tumour of right petrous bone, 1323
Aortic regurgitation following lethargic encephalitis, 665; incompetence (Dr. *G. J. Langley*), 1209
Aphasia, the study of (Dr. S. A. K. Wilson), 1143
Apothecaries Society of London, pass lists, 1249
Appendicitis, method of approach in, 284
Appetite, effect of B-vitamin on (Dr. S. Wright), 1208
Appointments, weekly lists of, 56, 110, 161, 211, 261, 314, 369, 420, 484, 535, 587, 632, 683, 736, 783, 832, 881, 931, 986, 1036, 1084, 1138, 1195, 1301, 1398
Approved societies and medical benefit (Py Q), 1031
Arabian medicine, 298
Armenian Refugees (Lord Mayor's) Fund, 1306
Armstrong, Mr. E. A., disappearance of Oscar Gray, 828
Arm-training School at Roehampton, 96
Army Medical Service (see Student's Guide), 465; (Py Q), 485
Army statistics (Py Q), 108; hospitals, working expenses (Py Q), 311; Dental Corps, amended rates of pay, 360
Arrhythmia *in mitral and aortic disease* with extensive myocardial degeneration (*Dr. M. Davidson* and *Dr. H. G. Butterfield*), 12
Arsenical compounds, antisyphilitic action *in relation to their constitution*, 857
Arsenobenzol compounds, delayed poisoning by, 405; *treatment of syphilis*, 1111
Art Calendar, Medical, 1198
Art, medicine in, 1290
Arterial hypertension and chronic nephritis, 299; hypertension (Dr. L. A. *Amblard*), 760
Arterio-sclerosis, a study of, 31
Arteritis, unsolved mysteries of, 918
Arthritis, chronic, alimentary infections in (Dr. N. Mutch), 1266
Arthritis, *suppurative monarticular, in an* infant (Dr. A. Langwill), 1158; deformans of the hip, 1331
Arthrogenic contractures, 390
Arvedson, Dr J., Diseases Treated by Medical Gymnastics and Massage (review), 657
"*Asepso*" *soap*, 968
Ashhurst, Dr. A. P. C., and Dr. J. B. Deaver, Surgery of the Upper Abdomen, second edition, 1921 (review), 657
Assman, Dr. H., Die Röntgendiagnostik der Inneren Erkrankungen *(review)*, *563*
Association of Certificated Blind Masseurs, 1355
Association of Infant Welfare and Maternity Centres, meeting, 1326
Asthma and allied conditions, 280; bronchial, and protein sensitisation, 1174; *bronchial, and hay fever, tuber*culin treatment (Prof. Dr. W. S. Van Leeuwen and H. Varekamp), 1366
Astigmatism, correction of, 865
Asylum Doctor, Experiences of (Dr. M. *Lomax*) *(review)*, 292
Asylum patients, discharge of (Py Q), 486
Atmospheric pollution, *monthly record*, 188
Auden, Dr. G. A., problem of the head louse, 370
Aural suppuration, chronic, 1069, 1301
Auricular fibrillation, arrest of, by the use *of quinidine* (*Dr. A. W. M. Ellis and* Dr. A. E. Clark-Kennedy), 891

AUSTRALIA, CORRESPONDENCE FROM.—Folie Circulaire, 413—Women hospital residents; Mr. H. M. O'Hara, death of, 414—Australasian Medical Congress; *Charge of manslaughter*; *War Memorial*; Bubonic plague; Motor fatality, 1126

Ayurvedic Committee on drugs, 1127

B

Baby management, 1037
Baby Week Council, National, meeting, 979
Bacilli, non-lactose-fermenting (Dr. H. L. Duke), 1212
Bacillus, tubercle, in peripheral blood, 193; bulgaricus, in defence of, 570 influenza, in culture, 1232; dysenteriæ (Flexner), agglutination for (Dr. A. D. Gardner), 1269
Back, Dr. G. A., doubtful cyst of the left lung for diagnosis, 855
Backache, syphilitic, 241
Baemeister, Prof. A., Lehrbuch der Lungenkrankheiten, second edition, 1921 (review), 513
Bacterial infection and meteorology, 1235
Bacteriology, Clinical and Applied, Manual of (Prof. R. T. Hewlett), seventh edition, 1921 (review), 563
Bacteriology of the alimentary canal (leading article), 25
Baddeley, Sir J., Armenian Refugees (Lord Mayor's) Fund, 1306
Bainbridge, Dr. F. A., obituary, 980
Ball, Mr. V., incapacity for work within the meaning of the National Insurance Act, 1911, 905
Ball, Mr. W. W. R., String Figures, second edition, 1921 (review), 80
Ballance, Sir C., ligation of innominate artery for innominate aneurysm, 1274
Ballance, Sir H., method of approach in appendicitis, 281
Ballantyne, Dr. J. W., Encyclopædia Medica, second edition, 1921 (review), 1115
Ballard, Mr. C. W., Elements of Vegetable Histology (review), 397
Balme, Mr. H., medical missions in China, 784
Banks, Col. S. H. O'Brien, death of, 51
Barbé, Dr. A., Examen des Aliénés (review), 707
Barber, Dr. H. W., rosacea, 308; cutaneous sensitisation and focal sepsis, 340
Barcroft, Dr. J., hæmoglobin, 46
Barrett, Sir J. W., a disclaimer, 50
Barrier Charts for Health Officers (Dr. S. H. Daukes) (review), 23
Barrington-Ward, Mr. L. E., gastric operations, 382
Barwell, Mr. H., X ray treatment of otosclerosis, 728
Bassett-Smith, Sir P. W., lemon-juice in scurvy, 321; development of hygiene, pathology, and bacteriology in the Naval Medical Service, 1321
Batten, Dr. R. D., acute macular disease, 21
Bauer, Dr. J., Vorlesungen über allgemeine Konstitutions- und Vererbungslehre (review), 1376
Baur, Prof. E., Prof. E. Fischer, and Dr. F. Lenz, Erblichkeitslehre und Rassenhygiene (review), 1329
Bayley, Dr. E., City of London Medical Book Society, 780
Bayliss, Prof. W. M., electrical action of the human heart, 49
Bayly, Mr. H. W., new penile clamp, 1226
Beattie, Prof. J. M., and Dr. W. E. C. Dickson, Text-book of General Pathology, second edition, 1921 (review), 232; the streptococci, 335; Text-book of Special Pathology, second edition, 1921 (review), 961; encephalitis lethargica, 1326
Beattie, Prof. T., visceral syphilis, 279
Beauchamp, Sir S., obituary, 1192
Beaumont, Dr. E., obituary, 1028
Bedford, Sir C., appointed honorary adviser to Secretary of State for the Colonies, 531
Bedson, Dr. S. P., blood platelets in scurvy, 336
Beerbohm, Miss C., rest and help for hospital nurses, 422
Beit Memorial Fellowships for Medical Research, awards, 1337
Belfast Royal Victoria Hospital, presentation bust, 929
Belilovsky, Dr. B., appeal from the Russian Red Cross, 308
Bell, Dr. W. B., the Sex-Complex, second edition, 1920 (review), 396; interposition operation for vaginal prolapse, 1393
Belladonna poisoning from eating rabbit (Dr. D. Firth), 901, 926; (leading article), 1065
Bellahouston Hospital report (Py Q), 1031
Benefit, additional (leading article), 613
Benham, Dr. F. L., diagnosis and treatment of diphtheria, 876; the late Col. A. B. R. Myers's autophlebotomy, 1111
Benjafield, Dr. W. B., death of, 675
Bennett, Mr. R. R., Materia Medica and Pharmacy for Medical Students, fourth edition, 1921 (review), 757
Bentley, Dr. J. R., a disclaimer, 927
Benzyl benzoate capsules, 1226
Beresford-Jones, Dr. A., pyonephrosis and ureteral calculus, 900
Beri-beri in Labrador, 1391
Bevers, Dr. E. C., abdominal tumour, 607
Bigger, Dr. J. W., Wassermann tests, 1369
Biggs, Dr. G. N., a disclaimer, 1256
Bilharzia disease, antimony and emetine in (Dr. F. G. Cawston), 1049
Bilharziasis, action of tartar emetic in, 97; treatment of (Py Q), 161
Billings, Dr. F., and Dr. B. O. Raulston, General Medicine (review), 1224
Binet, Léon, and Pierre Brocq, pathogenesis of hæmorrhagic pancreatitis, 137; Ch. Achard, and A. Ribot, researches on adrenalin diabetes, 139; and E. Lesné, Physiologie normale et pathologique du Nourrisson (review), 706
Bing, Prof. R., Lehrbuch der Nervenkrankheiten für Studierende und Praktische Aerzte, second edition, 1921 (review), 707
Binnie, Mr. J. F., Manual of Operative Surgery, eighth edition, 1921 (review), 807
Biochemistry, the growth of, 723; the thread of, 1382
Biochemistry (Prof. B. Moore) (review), 655; Practical Physiological Chemistry (Drs. J. A. and T. H. Milroy), third edition, 1921 (review), 1328; Dictionnaire de Biologie Physiciste (Albert and Alexandre Mary) (review), 1328; Some Micro-Chemical Tests for Alkaloids (C. H. Stephenson and C. E. Parker) (review), 1329
Biological Chemistry (Dr. H. E. Roaf) (review), 1223; Chemistry, Practical (G. B. and P. Thomas) (review), 1224
Biological station, new, in the Austrian Alps, 1243; products, licensed, in U.S.A., 1255
Biologicals, tests and remedies, 1225
Biology and medicine, history of, course of lectures on, 780
Biophysics, Introduction to (Dr. D. Burns) (review), 1114
Birmingham General Hospital, report, 735, 1397; doctors and the panel system, 780; Women's Hospital, jubilee celebration, 831; Cripples' Union New Convalescent School, opening ceremony, 874; Nerve Hospital, report, 1356
Birth, control, 75, 179; control, constructive, 481, 510, 908; seven at, 1037; live, definition of, 1073; control and welfare centre, combined, 1198
Births and Deaths, the Law of (Mr. C. E. Pell) (review), 610
Births, marriages, and deaths, weekly lists of, 56, 111, 161, 211, 261, 315, 369, 420, 484, 536, 588, 632, 684, 737, 784, 833, 882, 932, 986, 1036, 1085, 1138, 1196, 1252, 1304, 1352, 1398
Black, Mr. N., Local Anæsthesia (review), 294
"Black peril" in U.S.A., 635
Blackhall-Morison, Dr. A., inquiry into Insurance Acts, 827
Blackman, Dr. V. H., plant diseases and their relation to diseases in man, 935
Bladder drainage and closure, new devices, 346; intraperitoneal rupture of (Dr. Dorothy Chattaway), 754; diverticulum of, 770; lamp, new, 968
Bligh, Dr. M., ketosis in children, 1220
Blind population of India (Py Q), 107; and paralysed ex-Service men (Py Q), 160; girls, college for, 214; welfare of, 306; L.C.C. and care of, 863; in Ross and Cromarty, provision for, 929; London, Central Council for, 973; and smoking, 1088; children, swimming facilities for, 1190
Blinded, re-education of (Sir A. Lawson), 514
Blindness, causes and prevention, 510
Blood, peripheral, tubercle bacillus in, 193; diseases in children, 391; diseases of, radiation treatment, 393; counts to indicate efficiency of X ray and radium protection, 393; sugar regulations, 406; mononuclear leucocytes of, action of radium and X rays upon, 962
Blood, Practical Chemical Analysis of (Prof. V. C. Myers) (review), 911; Diseases, Polycythæmia, Erythrocytosis, and Erythræmia (Vaquez-Osler Disease) (Dr. F. P. Weber) (review), 1115
Blood, reaction of, regulation of, 572; reaction of (Dr. C. A. L. Evans), 867; donors, 1123, 1247; platelets, association of typhus virus with, 1292; transfusion for burn shock, 1335
Bolk, Prof. L., part played by the endocrine glands in the evolution of man, 588
Bolton, Dr. Elizabeth, sterility, 1325
Bonar, Mr. T. G. D., gastric function before and after gastro-jejunostomy, 952
Bond, Dr. C. H., psychological medicine, 319
Bone and joint tubercle, domiciliary treatment (Dr. W. C. Rivers), 1155
Bone-grafting, 286
Bonuses, treatment, conference on, (Py Q), 161
Boobbyer, Dr. P., small-pox in Nottingham, 254
Books, early, on medicine and anatomy, 213; medical, for lay readers, 243
Books, &c., received, 60
Bookless, Mr. J. S., grey mass in vitreous, 904
Borderland cases, diagnosis and treatment, 288
Bose, Dr. G., Concept of Repression (review), 564
Botany, an Introduction to the Structure and Reproduction of Plants (F. E. Fritch and E. J. Salisbury) (review), 135; for Medical and Pharmaceutical Students, Text-book of (Dr. J. Small) (review), 184
Bottle-fed baby, 740
Bousfield, Dr. P., objective study of neurosis, 533
Bowers, Mr. E. F., and Mr. T. J. Ryan, Teeth and Health (review), 79
Boy, the, in Industry and Leisure (Rev. R. R. Hyde) (review), 809
Boycott, Prof. A. E., teaching of pathology in America, 773
Bradshaw lecture on subtropical esculents (Dr. M. C. Grabham), 1357
Brain lesion, action of pilocarpine in, 405
Bramwell, Dr. E., encephalitis lethargica, 281
Breast, abscess of (Dr. S. C. Dyke), 331
Brett, Dr. P. C., and Dr. J. C. Spence, lævulose as a test for hepatic inefficiency, 1362
Brighton water-supply, 936
Bright's Disease (Prof. L. Lichtwitz) (review), 656
Briscoe, Sir C., anginal syndrome, origin of, 1257
Bristol, hospital conditions in, 206; Medical Committee, 207; payments by hospital patients, 1033; Maternity Hospital, opening, 1100; Eye Hospital, meeting, 1294
Bristol Medico-Chirurgical Society (see Medical Societies)
Bristol University, pass-list, 156; appeal, 255, 1033; retirement of Sir I. Owen from the Vice-Chancellorship, to be succeeded by Principal Loveday, 1250
British Association at Edinburgh (leading article), 567—Aims and boundaries of physiology; Kidney deficiency tests; Vitamins in relation to public health, 623—Presentation to Sir E. S. Schafer, 624—Oxidations and oxidative mechanisms in living tissues; Physiology of heavy muscular work; Physiological cost of muscular work; Economy of human effort in industry, 670
British Columbia, Drugless Healing and Chiropractic Bills, 870
British Congress of Obstetrics and Gynæcology (see Medical Societies)
British Dentists' Hospital, report, 661
British Hospitals Association, meeting, 106
British Medical Association (leading article), 189

BRITISH MEDICAL ASSOCIATION AT NEWCASTLE-ON-TYNE (ANNUAL MEETING).—Representatives of the press; Future arrangements; State visit from the Lord Mayor; The year's finance, 196—"British Medical Journal"; Professional secrecy; Proposed Central Medical Committee, 197—Federation of overseas branches; Affiliation with medical and non-medical bodies; The postal vote, 198—Admission of non-members to sectional meetings; Subscription to the Association; Student class of membership, 245—Expenses of representatives; State reward for scientific research; Voluntary hospital principle; Municipal and State grants;

Formation of Medical Staff Fund; Staff Fund and voluntary principle, 246—Paying patients in Poor-law hospitals; Hospital provident scheme for London; Salaries of non-professorial teaching staff; Medico-Political Committee; Whole-time medical officers and private practice, 247—Fee for *notification of infectious disease*; Report on maternity and child welfare; Election of officers; *Annual general* meeting, 248

Medicine.—Visceral syphilis, 279—Asthma and allied conditions, 280—Encephalitis lethargica, 281

Surgery.—Acute pleural empyema, 282—Method of approach in appendicitis; Intussusception; Compound fracture of the thigh and leg; Fracture of the tibia and fibula, 284—Theory and *method in extension of the thigh*, 285—*Bone grafting; Diagnosis and treatment of injuries of the intestines*, 286—Treatment of injured intestine, 287—Demonstrations, 288

Neurology and Psychiatry.—Diagnosis and treatment of borderland cases, 288—*Nervous diathesis and the blood*; Some points in the management and treatment of paraplegia; Physiology of symptom production, 290—Epilepsy *from* the psychological standpoint; Early diagnosis and treatment of *disseminated sclerosis*, 291

Pathology and Bacteriology.—Hæmochromatosis, 331—*Relation of carcinoma to infection*, 335—Blood platelets in scurvy; Pathology of gastric and duodenal ulcer; Experimental tar cancer in mice; *Renal function tests*, 336; Demonstrations, 337

Pathological Museum.—Specimens and exhibits, 337

Physiology, Pharmacology, Therapeutics, and Dietetics.—Various uses of the "hot wire," 338—*Ætiology and treatment* of varicose ulcers; anaphylatoxin; Certain electrical sign of the *human body*; Poison organs and venoms of poisonous fishes; Physiology *of oral hygiene*, 339

Dermatology.—Association of skin tuberculosis with *visceral* and other tuberculous manifestations, 339—Cutaneous sensitisation and *focal sepsis*, 340—Skin diseases in pensioners, 341

Urology.—Diagnosis and treatment of cystitis; *Contusions of the kidney*, 342; Open operation for removal of the prostate, 343

Orthopædics and Diseases of Children.—Early diagnosis and treatment of anterior poliomyelitis, 389—Arthrogenic *contractures*; *Birth paralysis*, 390—Blood diseases in children; Pre-natal *treatment of syphilis*; hypertrophic pyloric stenosis; Tuberculosis of bone *in children*, 391—Milk control and tuberculosis, 392

Ambulance and Red Cross.—*Claims of* first-aid to be regarded as a special branch of practical *surgery*, 392—X ray motor ambulance wagon service, 393

Electro-Therapeutics and Radiology.—Radiation *in treatment of diseases of* the blood; Use of blood counts to indicate the efficiency of X ray and radium protection; X ray diagnosis, 393—Surgical diathermy, 394

Exhibition.—Surgical instruments, drugs, *foods*, and other products of medical interest, 394

Preventive Medicine with Industrial Diseases.—Effect of health legislation on the health of the people, 500—*Importance of* industrial medicine to the community, 501

Obstetrics and Gynæcology.—Rôle of Cæsarean section in midwifery, 502—*Treatment* of advanced malignant disease of the cervix, 504—Neurasthenic element in gynæcology, *505*—Curettage and the treatment of uterine hæmorrhage, 507—Position *of the medical* practitioner in cases of procured abortion, 509

Ophthalmology.—Causes and prevention of blindness; Early operation *in* squint; Light-sense test, 510—Treatment of corneal ulcers, 511—Auto-intoxication in ophthalmology; Nodular keratitis of Southern Arabia, 512

British Orthopædic Association, meeting, 778
British Spa Federation, 1027
Brockatt, Dr. A. A., obituary, 1027
Brocq, Pierre, and Léon Binet, pathogenesis of hæmorrhagic pancreatitis, 137
Broderick, Mr. F. W., endocrine *factor in immunity and susceptibility of the* teeth to caries, 1216
Broome, Mr. F. J. C., British Spa Federation, 1027
Brown, Dr. H., *objective study of the* neuroses, 362; Advanced Suggestion *(Neuro-induction), second edition, 1921* (review), 707
Brown, Dr. H. H., hair-balls of the stomach, 926
Brown, Dr. W., and Dr. G. H. Thomson, Essentials of Mental Measurement (review), 1168
Brown *v.* Craig and Pitcairn, 1242
Browne, Dr. F. J., pathology of syphilis of the new-born, 20
Browning, Prof. C. H., antisyphilitic *action of arsenical compounds in relation to their constitution*, 857
Brownlee, Dr. J., *course of summer* diarrhœa in London, 1856–1920, 408
Brownlie, Dr. J. L., Sachs-Georgi reaction in syphilis, 1322
Brushes, anthrax-infected (Py Q), 211
Brussels, M.D. for British graduates, 204, 1019
Bryan, Mr. C. W. G., injuries of the diaphragm, 1
Bryce, Dr. A., Intestinal Toxæmia, or, Auto-Intoxication in the Causation of *Disease (review)*, 756
Buchanan, Dr. R. J. M., diagnosis of abdominal diseases, 1220

BUDAPEST, *CORRESPONDENCE FROM.*—Children and milk-borne diseases; *Myopia in school-children*; *Simultaneous* occurrence of syphilis and tabes; Venereal prophylaxis, 251—Investigations in the planting of medicinal herbs; Quintuplets; Cantharides poisoning, 252—Relation of alcoholism *to crime*; *Pellagra in Hungary*, 411—Excessive heat in Hungary; Treatment of nervous breakdown; Suicide rate in Budapest; Campaign to abolish brothels; Emigration of pharmacists from Budapest, 412—Prevention of *summer diarrhœa*; *Heroin habit*; Morphine-scopolamine narcosis; Headache the only symptom of a case of *malaria*; Favourable health conditions in Budapest; Rabies in a horse, 727—*Grippe as an easy diagnosis*, 728—*Reform of nutrition and alcohol consumption*; *Infant welfare in Budapest*; Duties of medical men in Bulgaria, 869—A "dental" swindle; Village riot on a doctor's behalf; Prosecution of a charlatan, 870—Responsibility of doctors *in cases of abortion*; *Small-pox in* Albania; Threat of cholera from Russia, 1296

Bulbous eruption caused by May-weed (Dr. J. H. Sequeira), 560
Burckhardt, Dr. A., death of, 1297
Burdett's Hospitals and Charities, 1921 (review), 1008
Burkitt, Dr. R. W., use of rhubarb in *acute bacillary dysentery*, 254; treatment of pneumonia, 630
Burland, Dr. H., death of, 826
Burma, sanitary and medical administration in, 882
Burn shock, blood transfusion for, 1335
Burnet, Dr. J., *Materia Medica*, with Notes on Prescription Writing (review), 758
Burnford, Dr. J., streptotrichosis of lung, 1059
Burns, Dr. D., Introduction to Biophysics (review), 1114
Burroughs, Mr. W. J., tungsten rays, 901
Burrows, Dr. A., treatment of advanced malignant disease of cervix, 504
Burrows, Dr. E., death of, 207
Burton-Fanning, Dr. F. W., diabetes insipidus, 1375
Bury, Dr. J. S., early symptoms of nervous disease, 549
Business Committee and Medical Services, (Py Q), 418
Buttar, Dr. C., Dr. N. H. Mummery, and Sir M. Morris, reduction of the capitation fee, 874
Butterfield, Dr. H. G., and Dr. M. Davidson, *unusual type of arrhythmia in* mitral and aortic disease with extensive *myocardial degeneration*, 12
Buzzard, Dr. E. F., early diagnosis and treatment *of anterior poliomyelitis*, 389
B-vitamin, effect on the appetite (Dr. S. Wright), *1208*; *therapeutic possibilities* of (leading article), 1228

C

Cæsarean section, condition of sutures after, 19; *section, twenty-one years'* experience, 88; rôle of, in midwifery, 502
Calculus, renal, extrusion of, causing a sinus *in the loin (Dr. H. J. Orr-Ewing)*, 230; pyonephrosis and ureteral (Dr. A. *Beresford-Jones*), *900*
Calendars and diaries for 1922, 1305
Calf lymph, production of (Py Q), 210
Cambridge University, pass lists, 53, 167, 878, 928, 981, 1081, 1249, 1350, 1396; chair of anatomy, 919
Cameron, Dr. C., treatment of scarlet fever with human immune serum, 1348
Cameron, Dr. H. C., nature of summer diarrhœa, 963
Campbell, Dr. H., nervous diathesis and the blood, 290; man's evolution from *the anthropoid, 629; respiratory efficiency, 827; ætiology of adenoids*, 1079, 1246
Campbell, Dr. Janet M., *maternity homes*, 162
Campbell, Dr. J., position of the medical practitioner in cases of procured abortion, 509
Campbell, Dr. T., sanatorium controls, 47
Campbell-Horsfall, Dr. C. E., death of, 42

CANADA, *CORRESPONDENCE FROM.*—University of Toronto; Ontario Medical Association; Drugless Healing and Chiropractice Bills in British Columbia; *New* tuberculosis examiner; Hospital news, 870—Public health in Toronto: *University news*; *Beri-beri in Labrador*; Prescriptions for liquor, 1391

Canal boat hygiene, 528
Cancer, *Intrinsic, of the Larynx and the* Operation of Laryngo-Fissure (Mr. I. *Moore) (review)*, *231*
Cancer, tar, in mice, experimental, 336; and the public (leading article), 317; rates in Edinburgh and Manchester, 517; research in Dublin, 583; parasite, facts and fancies (leading article), 661; *breast, in relation to the cancer problem*, 857; research (leading article), 1117; tar, experimental, further work on, 1235
Cantharides poisoning, 252, 654
Cantharidin, poisoning by (Dr. C. H. Andrewes), 654
Cantlie, Sir J., first-aid as a special branch of practical surgery, 392; X ray motor *ambulance wagon service*, 393; life insurance in the tropics, 906
Capitation fee, reduction of, 874; settlement (leading article), 913
Carbon *monoxide in coal-gas*, 616
Carcinoma and fibromyoma, combined, of uterus, *19*; *relation of, to infection*, 335; primary, of the kidney and urethra, 404; of the large intestine, *diagnosis* and treatment, 1220
Cardiac Disease and the Normal Heart, Original Observations and Theories on (review), 1377; Les Nouvelles Méthodes d'Examen du Cœur en Clinique (Mr. R. Lutembacher) (review), 1377
Cardiac massage (Dr. A. G. Levy), 949
Care and Feeding of Children (Dr. L. E. Holt) (review), 757
Carelli method of perirenal inflation, 1349
Cargin, Dr. H. M., milk control and tuberculosis, 392
Caries, endocrine factor in immunity and susceptibility of the teeth to, 1216
Carslaw, Mr. R. B., acute pancreatitis, 132
Carver, Dr. A. E., epilepsy from the *psychological standpoint*, 291
Case-taking methods (Dr. J. H. P. Paton), *603*
Cassel, Sir E., death of, 721
Cassidy, *Dr. M. A., Dr. R. O. Moon, and* Dr. F. Le Q. Pelly, purulent pericarditis *simulating angina pectoris*, *559*
Catarrhal otitis and the swimming-bath *519, 585, 629, 728, 779, 828*
Catgut and surgical needles, demonstration at the *London Hospital*, 777
Cathcart, Prof. E. P., physiology of heavy muscular work, 670
Cautley, Dr. F., adenoids and rickets, 1079
Cawston, Dr. F. G., Schistosoma *mansoni* in South *Africa*, 332; *antimony and* emetine in bilharzia disease, 1049
Cemach, Dr. A. J., Diagnostik inner Krankheiten in Tabellenform, third edition, 1920 (review), 1062
Census, occupational (Py Q), 108; returns, 1921, 481; *of 1921 (leading article)*, 517; Calcutta, 1301

Central Council for London Blind, 973, 1131
Central heating in Chicago, 1142
Cerebro-spinal fluid in congenital syphilis, 1122
Cerebro-Spinal Fluid (Prof. A. da R. Pereira) (review), 965
Certificates, medical, sanctity of (leading article), 1171
Certification fees in Ireland, 1083
Cervicitis endometritis, chronic, new treatment (Dr. G. W. Rundle), 802
Cervix, malignant disease of, treatment, 504
Chadwick lecture on plant diseases and their relation to diseases in man (Dr. V. H. Blackman), 935
Chamberlain, Dr. F., para-urethral gonorrhœa, 1273
Chapman, Dr. C. W., occupational therapy in heart disease, 875, 1217
Chapman, Dr. T. A., death of, 1352
Chapple, Dr. H., full-term ovarian pregnancy, 19
Charing Cross Hospital, new ward, 981
Chartered Society of Massage and Medical Gymnastics, report, 462
Chattaway, Dr. Dorothy, intraperitoneal rupture of bladder, 754
Cheatle, Mr. A. H., stereoscopic views of the middle ear, 89; dangers of the public swimming-bath, 828
Cheatle, Sir G. L., study of breast cancer in relation to the cancer problem, 857; new operation for inguinal hernia, 1275
Chemical warfare, 720; fine, definition of, 1256
Chemicals, hospital, proposed drawback on (Py Q), 984; importation of (Py Q), 1350
Chemistry, Dairy (Mr. H. D. Richmond) (review), 184; Aids to (Mr. W. Partridge) (review), 184; Physical, System of (Dr. W. C. McC. Lewis) (review), 398; Applied (Dr. C. K. Tinkler and Helen Masters) (review), 398; of Enzyme Actions (Dr. K. G. Falk) (review), 562; of Synthetic Drugs (Dr. P. May), third edition, 1921 (review), 562; Blood and Urine, New Methods (Dr. R. B. H. Gradwohl and A. J. Blaivas (review), 563; Introduction to Qualitative Analysis (T. W. Fresenius), seventeenth edition, 1921 (review), 966; Applied, Dictionary of (Sir E. Thorpe) (review), 966
Chemistry (Von Dr. S. Fränkel), 1169; Qualitative Analysis of Medicinal Preparations (Mr. H. C. Fuller), second edition, 1920 (review), 1169; French-English Dictionary for Chemists (Mr. A. M. Patterson) (review), 1170; and Physics (Mr. C. D. Hodgman, Mr. M. F. Coolbaugh, and Mr. C. E. Senseman), eighth edition, 1921 (review), 1170; Biological (Dr. H. E. Roaf) (review), 1223; Biological, Practical (G. B. and P. Thomas) (review), 1224; Practical Physiological (Drs. J. A. and T. H. Milroy), third edition, 1921 (review), 1328
Chemists, Eminent, of our Time (Dr. B. Harrow) (review), 79; French-English Dictionary for (Mr. A. M. Patterson) review), 1170
Chemists' Exhibition, 60
Chepstow, medical staff at (Py Q), 486
Chess and prognosis, 1356
Chest and Abdomen, Physical Signs in (Dr. A. J. Jex-Blake) (review), 1330
Chick, Dr. Harriette, and Dr. Elsie J. Dalyell, hunger-osteomalacia in Vienna, 842
Child, Nervous, Problem of (Mrs. E. Evans) (review), 78
Child welfare work, international aspects, 350; in Finland, 881; the dull and backward (leading article), 1331
Child's Path to Freedom (Mr. N. MacMunn) (review), 23
Children, Care and Feeding of (Dr. L. E. Holt) (review), 757; Diseases of (Dr. H. B. Sheffield) (review), 1281
Children in village communities (Py Q), 208; physically defective, treatment and education, 305; defective, home hospitals for (Py Q), 319; mentally deficient (Py Q), 310; sickness among (Py Q), 930
Children's Country Holidays Fund, 484; orthopædic centres, 663, 669, 1188; Act, French, 1874, revision of, 869
China, medical missions in (Mr. H. Balme), 784
Chlorination of potable water, 671; safety of, 1234
Chloroform bottle, improved, 1100
Choksy Dr. N. H., retirement, 782
Cholera in Assam, 214; Asiatic, kaolin in the treatment of (Dr. R. R. Walker), 273; prophylaxis, 664; threat of, in Budapest from Russia, 1296
Choroid, melanoma of (Dr. A. E. Keown), 1056
Cigarettes, composition of, 927
Cinematography and the Selborne Society, 1141
Cinzano brut, 1226
"Circular 202," 97
Circulation, the, and capillary pressure in shock (Dr. L. Hill and Dr. J. McQueen), 65, 153; peripheral, and digitalis, 97, 203, 254
Citizen of empire, 214
City of London Medical Book Society, 780
Civil Service, medical examinations for (Py Q), 109; servants, medically unfit (Py Q), 1032
Clamp, new penile, 1226
Clark-Kennedy, Dr. A. E., and Dr. A. W. M. Ellis, arrest of auricular fibrillation by the use of quinidine, 894
Clarke, Dr. C., renal efficiency tests, 1112, 1189
Clarke, Dr. J. J., protista and disease, 495
Clarke, Mr. E., milestones in refraction work, 905
Clay, Mr. W., contusions of the kidney, 342
Clayden *v.* Wood-Hill, 1130, 1187; Wood-Hill Fund, 1299, 1398
Clemesha, Lieut-Col. W. W., plague on board ship, 1338
Clinical units, their purpose and achievement (Dr. C. M. Wilson), 33, 1299; comments on (Sir C. Allbutt), 937; (leading article), 969
Clow, Dr. A. E. S., games for girls, 902
"Club rates" for medical services, 1313
Coal-gas, carbon monoxide in, 616
Cobb, Dr. I. G., Organs of Internal Secretion, third edition, 1921 (review), 1222
Cocaine, traffic in, 677; habit, 1131; sale of, in Switzerland, 1297
Coccidiosis, human, 720
Coleman, Dr. M. A., death of, 1303
Coles, Dr. A. C., How to Get the Best out of the Microscope (review), 76
Colledge, Dr. L., and Mr. C. A. Parker, Guide to Diseases of the Nose and Throat, and their Treatment, second edition, 1921 (review), 231
Collins, Sir W. J., voluntary hospital system, 361
Collis, Prof. E. L., importance of industrial medicine to the community, 487, 501; (leading article), 515; tuberculosis, infection, immunisation, sensitisation, 1109; and Maj. Greenwood, Health of the Industrial Worker (review), 1006
Colloids (Auguste Lumière) (review), 1008
Colloids, physics and chemistry of, 28
Colne, new hospital at, 569
Colon, the, and colitis (Lord Dawson of Penn), 91
Colonial health reports, 786, 988
Colonial Medical Service (see Student's Guide), 470; and foreign medical degrees, registrable (see Student's Guide), 477
Colour equations, 740
Colporrhaphy, operation of, with remarks on the technique, 16
Complement-fixation test in pulmonary tuberculosis (Dr. A. L. Punch), 497
Compton, Mr. A. T., and Mr. F. Heber, acute hæmorrhagic pancreatitis, 130
Comrie, Dr. J. D., renal efficiency tests, 1150
Conklin, Prof. E. G., Direction of Human Evolution (review), 965
Consultant service in Wales, 528
Consultative Health Councils, work of (Py Q), 52
Consumption cure in the lay press, 592
Contraception, methods of (leading article), 914
Contract medical practice, conditions a generation ago, 775, 980
Controls, normal, in pathological investigations, 813
Convalescence, institutional, 1140
Cook, Dr. W. G. H., Insanity and Mental Deficiency in Relation to Legal Responsibility (review), 134
Cooke, Sir E. M., appointed unpaid Commissioner of Board of Control for Lunacy and Mental Deficiency, 1121
Coombs, Dr. C. P., obituary, 730
Coope, Dr. R., the fæces in alimentary disorders, 9, 89, 362
Cope, Mr. Z., Early Diagnosis of the Acute Abdomen (review), 808
Coplands, Dr. M., louse problem on the Western front, 1244
Copper in tumours and in normal tissues (Dr. C. P. White), 701
Corbin, Dr. H. E., obituary, 1192
Coriat, Dr. I. H., Repressed Emotions (review), 565
Cornea, septic ulcer of, treatment by chauffage, 1005
Coroners (Remuneration) Bill, 208, 309; inquests in Ireland, 368; juries and the L.C.C., 1234

CORRESPONDENTS, ANSWERS TO.—L.R.C.S.I., L.S.A., 114—B. Burjorjee, Professional Advertisement, 214—A. P., 318—A. D., 786—K. V. C., 988—W. R., 1088—C. B. W., 1142

Cosham Military Hospital (Py Q), 260
Coué, Mr. Emil, lectures on auto-suggestion, 1137
Coughing cup in prevention of tuberculosis, 630, 730
Council of Allied Professions, meeting, 244
County of London Panel Committee, 366
Cousins, Dr. J. W., obituary, 731
Coventry and Warwickshire Hospital, report, 696
Cow, Dr. D. V., obituary, 98
Coward, Katharine H., and Dr. J. C. Drummond, nutrition and growth on diets devoid of true fats, 698
Cowie, Dr. H. G., case for National Health Insurance, 678
Cox, Dr. A. N., Swiss health resorts for tuberculosis, 579
Cox, Dr. G. L., notification of tuberculosis, 1072
Craig, Lieut.-Col. C. F., Wassermann Test, second edition, 1921 (review), 565
Cramer, Dr. W., Dr. A. H. Drew, and Dr. J. C. Mottram, lymphocyte and lymphoid tissue in nutrition, 1202
Craniotabes of the fœtus and infant (Dr. E. Hughes), 1045
Cranstoun, Dr. G., cystic adenoma of uterus, 1003
Crawford, Dr. E., and Dr. G. B. Fleming, sulfarsenol in the treatment of congenital syphilis, 700, 877
Crime, relation of alcoholism to, 411; and mental deficiency (Dr. W. C. Sullivan), 787, 816; and delinquency, relation of, to heredity, environment, and disease (Dr. W. A. Potts), 1094
Criminal Law Amendment Bill, 210, 309, 368, 417
Cripples Hospital, Hartshill, opening of new wing, 315
Crookshanks, Dr. F. G., natural history of encephalitis lethargica, 629
Croom, Sir J. Halliday, presentation to, 877
Croonian lectures on the objective study of neurosis (Dr. F. L. Golla), 115, 215, 265, 374; (leading article), 402
Crowther, Dr. J. A., Manual of Physics, second edition, 1921 (review), 1281
Cubley, Mr. A., new tracheotomy tube and false membrane forceps, 566
Cuff, Dr. H. E., obituary, 532
Culpin, Dr. M., present position of psychotherapy, 684
Cumberbatch, Dr. E. P., surgical diathermy, 394
"Cures," fraudulent, 1038
Curettage and the treatment of uterine hæmorrhage, 507
Curves of resistance (leading article), 142
Cushny, Prof. A. R., kidney deficiency tests, 623
Cutaneous tests, influence of arsenical preparations on, 571
Cynotherapy, 1141, 1255
Cyst, doubtful, of the left lung for diagnosis, 855; implantation, probable, 904; of Krause's gland, 1108
Cysts, fimbrial, 619; epidermoid, 1231
Cysticercus celluloso in man (Dr. J. R. Hughes), 956; general infection by (Dr. H. K. Abbott), 956
Cystitis, diagnosis and treatment, 342

CZECHO-SLOVAKIA, CORRESPONDENCE FROM—The Hlava Institute; Czecho-Slovak watering-places; Infant welfare, 102—A medical strike, 103—Tuberculosis death-rate; Popular health education; Medical library and the Rockefeller Foundation, 358—A temperance measure; Tuberculosis survey; Venereal diseases course, 923

D

Dairy Bacteriology (Dr. Orla-Jensen), second edition, 1921 (review), 809
Dale, Prof. H. H., work of the National Institute for Medical Research, 112; and Dr. L. Hill, anæsthesia with nitrous oxide and oxygen under pressure, 326; anaphylatoxin, 339
Daley, Dr. W. A., notification of tuberculosis, 1131
Dally, Dr. J. F. H., value of sanatorium treatment, 203

Daly, Dr. E. O., obituary, 923
Dalyell, Dr. Elsie J., and Dr. Harriette Chick, hunger-osteomalacia in Vienna, 842
Dangerous Drugs Act and pharmacists (Py Q), 159; *regulations* (Py Q), 418, 484, 540
Dante, Essays in Commemoration, 1321-1921 (review), 561
Dartmouth, overcrowding at (Py Q), 368
Daukes, Dr. S. H., Barrier Charts for Health Officers (review), 23
David Lewis Epileptic Colony, report, 1170
Davidson, Dr. F. C., infant of abnormally small weight, 559
Davidson, Dr. M., and Dr. H. G. Butterfield, unusual type of arrhythmia in mitral and aortic disease with extensive myocardial degeneration, 12
Davies, Dr. I. J., hair-balls or hair-casts of the stomach and gastro-intestinal tract, 791; ancient Scottish hair-cast, 1141
Davis, Dr. E. P., Mother and Child, fourth edition, *1921 (review)*, 708
Davis, Mr. E. E. D., laryngo-fissure for epithelioma of a vocal cord, 1058
D'Avoine, Dr. C. L., infectious disease in Mauritius, 1394
Dawson, Dr. W. S., and Dr. W. Moodie, ætiology of bacillary dysentery in asylums, 225
Dawson of Penn, Lord, the colon and colitis, 91
Day-dreams, Psychology of (Dr. J. Varendonck) (review), 312
Deaf-mutes, acoustic exercises for, 769, 1355; teaching to hear, 873; children, residual hearing in, educational treatment, 1024; children, education of, 1129
Death certificates (Py Q), 259
Death from respiratory and not from cardiac failure, 46, 98, 201
Deaths from vaccination (Py Q), 108; two needless, 539
Deaver, *Dr. J. B., and Dr. A. P. C.* Ashhurst, Surgery of the Upper Abdomen, second edition, *1921 (review)*, 637
Decerebrate rigidity in an infant (Dr. A. P. Thomson and Dr. A. Piney), 1105
Decorations, foreign, 683, 894, 1136, 1351
Deficiency Diseases, Studies in (Col. R. McCarrison) *(review)*, 76
Delépine, Prof. S., obituary, 1080; resolution *of the Senate of* Manchester University, 1136
Delherm, Louis, and *Albert* Laquerrière, Électrologie (review), 1007
Delinquents, medical examination of, *1275*
Delirium, acute, non-febrile, and toxic, 1005
Dental Board of the United Kingdom, constitution of, *1194; first session*, 1295; *(leading article)*, 1284
Dental fillings, dangerous, 1390
Dental Surgery, *Operative* (Dr. J. B. Parfitt) (review), 1225
Dental surgery, position *of*, 483; *decay* in the young, 519; anæsthetics, choice of, 572; Surgery (*Supplement to* Student's Guide), 711; decay, causes of, 721; registration, 1337
Dentistry, Prosthetic (Mr. D. Gabell) (review), 293; Local Anæsthesia (Mr. N. Black) (review), 294
Dentistry, teaching institutions (see *Student's Guide*), 482
Dentists Bill, 51, 107, 110, 366
Dermatitis, *industrial*, 30; herpetiformis (Dr. A. R. Fraser), 801; ammonia, in infants, 1288
Dermatological progress, 192
Despatches, mentioned in, 682
Detachment of retina, cure (Mr. R. F. Moore), 171, 191
Devon and Exeter Medico-Chirurgical Society (see Medical Societies)
Devonshire Hospital and Buxton Bath Charity, appeal, 527
D'Herell, phenomenon of (leading article), 1173
Diabetes, adrenalin, researches on (Ch. Achard, A. Ribot, and Léon Binet), 139; *insipidus*, 855, 1375; modern treatment, discussion, 957
Diabetics, cure de jeûne in, 972
Diagnosis, accuracy in (Prof. D. Drummond), 165
Diagnosis (Dr. A. J. Clemach), third edition, 1920 (review), 1062
Diagnostic and Therapeutic Technic (Dr. A. S. Morrow), third edition, 1921 (review), 232
Diaphragm, injuries of (Mr. C. W. G. Bryan), 1
Diarrhœa, epidemic, prevention of, 205; infantile, precautions at Manchester, 365; summer, prevention of, 727, 777; summer, nature of, 963; in Albania, 1313; persistent, case of, 1400
Diarrhœa, summer, course of, in London, *1856-1920 (Dr. J. Brownlee)*, 408; severe, in infancy, acidosis and toxic symptoms of (*Dr.* R. A. Guy), 898
Diathermy, surgical, 391
Dickson, Dr. W. E. C., and Dr. J. M. Beattie, Text-book of General Pathology, second edition, 1921 (review), 232; Text-book of Special Pathology, second edition, 1921 (review), 964
Dictionary of British Scientific Instruments (review), 658
Diet in relation to normal nutrition, 916; defective, as a cause of sterility (leading article), 1012
Dietetics and public health (Prof. E. C. Van Leersum), 1252
Diets devoid of true fats, nutrition and growth on (Dr. J. C. Drummond and *Katharine H. Coward*), 698
Digitalis and the peripheral circulation, 97, 203, 254
Dinners: Harveian Society, 106; Medico-Psychological Association, 191; *British* Hospitals Association, 257; to Dr. J. W. Allan, 527; King's College Hospital, 781; Old Students', 830, 878, 982; Society of Medical Officers of Health, 928; Medico-Chirurgical Society of Edinburgh, 982; St. Thomas's *Hospital Old Students'*, 982; Edinburgh University, 1033; Chelsea *Clinical Society*, 1031; *London School* of Tropical Medicine, 1082; Prince of Wales's Hospital and North-East London Post-graduate College, 1193; Royal Dental Hospital, 1193; Bristol Medical School, 1250; London (R.F.H.) School of Medicine for Women, 1250; Ulster Medical Society, 1278; Epsomian Club, 1299; Cancer Hospital, 1303; *Poplar Hospital for Accidents*, 1351; London Panel Committee, 1351; *Medico-Legal Society*, 1352
Diphtheria, diagnosis and treatment (Dr. F. H. Thomson), 68, 585, 876; prevention of, 917; and scarlet fever in London, 924, 1030, 1134; in Bristol, 1033
Diphtheria prevention, old and new methods (leading article), 1227; report on, 1239
Disclaimer, 585, 927, 1256
Diseases common among the people, *present state of medical knowledge* (Dr. A. Rowand), 551; in childhood, *scheme for investigation of* (Dr. A. Rowand), 650
Diseases of the Lungs (*Prof. A. Bacmeister*), second edition, 1921 (review), 513; *of the New-Born* (Dr. A. R. von Reuss) (review), 706; (MM. Lesné and Léon Binet) (review), 706
Disinfection and sterilisation, chemical, 867
Disinfector, portable, 1016
Distemper, canine, 1038
District nursing of insured persons, 53
Ditchfield, Mr. P. H., the doctor in country *life*, 1355
Diverticulum of the bladder, 770
Dixon, Dr. Walter E., *Manual of Pharmacology*, fifth edition, 1921 (review), 967
Dixon, Dr. William E., death of, 877
Dobell, Mr. C., and Dr. F. W. O'Connor, Intestinal Protozoa of Man (review), 909
Doble, Capt. F. C., urethroscope tube for the posterior urethra, 1378
Dobrovolskaya, Prof. N. A., new method of exposing the supra- and infraclavicular regions, 129
Dobson, Mr. J. F., diagnosis and treatment of *cystitis*, 312
Dockrell, Dr. M., children's orthopædic centres, 1188
Doctor in country life, 1355
Doctors' certificates, 307; *fees in Vienna*, problem of, 1074
Dodd, Mr. H. W., obituary, 98
Dodds, Dr. E. C., new method of investigating gastro-intestinal secretion, 605
Dog, the uses of, 786, 884, 1038
Dogs in the U.S.A., experiments on, 1070
Donald, Prof. A., operation of colporrhaphy, 16; neurasthenic element *in gynæcology*, 505
Donations and bequests, 50, 107, 130, 207, 221, 313, 365, 484, 526, 531, 551, 628, 683, 728, 830, 833, 854, 879, 920, 977, 1079, 1136, 1193, 1250, 1271, 1393
Donkin, Sir H. B., "psychotherapy," 96, 203
Douching apparatus, collapsible, 1256
Downie, Mr. J. W., obituary, 314
Doyen, Prof. E., Surgical Therapeutics and Operative Technique (review), 561
Drainage, surgical, 1065
Dream fairies, 1198
Drew, Dr. A. H., Dr. J. C. Mottram, and Dr. W. Cramer, lymphocyte and lymphoid *tissue in nutrition*, 1202
Drought and the water-supply in Vienna, 526
Drugs, Dangerous, Act, and pharmacists (Py Q), 159; regulations (Py Q), 418, 484, 540
Drugs in Commerce (Mr. J. Humphrey) (review), 757
Drugs, indigenous, of India, 39; needed in Russia, 587; *safe custody of*, 740; *chemical, production of (leading article)*, 1229
Drummond, Dr. J. C., vitamins in relation to public health, 623; and Katharine H. Coward, nutrition and growth on diets devoid of true fats, 698; and Dr. S. S. Zilva, vitamin-A content of fish oils, 753
Drummond, Prof. D., accuracy in diagnosis, 165
Drunkenness statistics (Py Q), 160; and control, 111
Dublin pharmacopœias, 1292
Dublin, tuberculosis in, 1303
Dublin University, honorary *degree* for Prof. E. Taylor, 102; Trinity College School, pass lists, 265, 1350; Biological Society, meeting, 1034
Duckworth, Sir D., on death from respiratory and not from cardiac failure, 46
Dudgeon, Lieut.-Col. J. H., appointed Deputy-Lieutenant for the County of *Cumberland*, 1010
Duke, Dr. H. L., and Dr. W. L. Peacock, *human anthrax in Buganda Kingdom*, 332; non-lactose-fermenting bacilli, 1212
Dukes, *Dr. C., origin of vaccination*, 1190
Dun, Mr. R. C., undescended and misplaced testicle, 1167
Dundas-Grant, Sir J., vertigo cured by ossiculectomy, 962
Dundrum Asylum, administration of (Py Q), 108
Dunn, Mr. N., compound fracture of the thigh and leg, 284
Dunn, Prof. J. S., hæmochromatosis, 334
Duodenal diverticula, 1175
Duret, *Dr. H., Traumatismes Cranio-*Cérébraux (review), 964
Durham University, degrees *deferred, 105*; pass lists, 781
Dwarfism, renal, 855
Dyke, Dr. S. C., abscess of the breast, 331
Dysentery, bacillary, ætiology of, in asylums (Dr. W. S. Dawson and Dr. W. Moodie), 225, 416; bacillary, acute, use *of rhubarb in*, 254; in the field (Dr. J. Anderson), 998; bacillary, in a boys' *school* (Dr. W. E. Fitz-Gerald), 1051

E

Ear, middle, stereoscopic views of, 89; infection and the swimming-bath, 519, 585; middle, chronic suppuration of (Dr. A. G. Wells), 1268
Ear, Nose, and Throat, Medical Therapeutics of (G. de Parrel) (review), 22; Diseases of (Mr. I. Moore) (review), 231; Diseases of (Dr. D. Guthrie) (*review*), 231; Diseases of (Mr. C. A. Parker and Dr. L. Colledge) (review), 231
East Anglian Heart Clinic, 1296
East, *Dr. W. N., case of moral* imbecility, 1052; (leading article), 1117
East Fortune *Sanatorium, report*, 1295
East Sussex Hospital, report, 206
Eastbourne Ear, Nose, and *Throat* Hospital, meeting, 879
Eastwood, Dr. E. H., and *Dr. J. P.* Martin, primary tumour of pleura, 172
Ecker, Dr. E. E., and Dr. H. T. Karsner, Principles of Immunology (review), 1006
Eclampsia and its incidence (Mr. R. H. Paramore), 1117
Eden, Dr. T. W., mortality of premature infants, 127
Edinburgh *Royal Infirmary*, meeting, 1242
Edinburgh University, *pass lists*, 255, 928, 1351; chair of midwifery, 1242
Edington, Mr. G. H., *intussusception*, 281
Edmunds, Mr. A., irrigating sigmoidoscope, 1226
Education, medical, and the Rockefeller Foundation (leading *article*), 615; medical, status of, 1078; organisation of, 1299, 1348, 1393

Education of the children of R.A.M.C. officers, 483
Edwards, Dr. W. H., death of, 1136
Egypt and the Soudan, health and sanitation, 1196, 1254 : public health in (leading article), 1332
Electrical signs of the human body, 339
Electrocardiograph in practical medicine, rôle of, 1060
Electrologie (L. Delherm and A. Laquerrière (review), 1007
Electro-Therapeutics for Practitioners (Dr. F. H. Humphris), second edition, 1921 (review), 232
Elliot, Capt. W. C., effect of health legislation on the health of the people, 500
Elliot, Dr. R. H., Care of Eye Cases (review), 134
Elliott, Dr. J., obituary, 1394
Ellis, Dr. A. W. M., and Dr. A. E. Clark-Kennedy, arrest of auricular fibrillation by the use of quinidine, 894
Ellis, Dr. H. A., and Dr. J. C. McClure, administration of hydrochloric acid, 271
Elliston, Col. G. S., obituary, 1191
Elmslie, Mr. R. C., contracture due to a burn, 804 ; Clayden v. Wood-Hill, 1130
Embryology, proper place of (leading article), 296 ; study of, by models, 863
Emotions, Repressed (Dr. I. H. Coriat) (review), 565
Empyema, pleural, acute, 282 ; tuberculous, formaldehyde-glycerine in, 770 ; in infancy and childhood, diminishing mortality (Dr. F. J. Poynton and Dr. F. N. Reynolds), 1100
Encephalitis lethargica, 281 ; in children, after-effects (Dr. D. Paterson and Dr. J. C. Spence), 491 ; ambulatory (Mr. C. E. Williams), 499 ; treatment with Pregl's solution of iodine, 526 ; natural history of, 584, 629 ; aortic regurgitation following, 665 ; pathological conditions, 1326
Encephalitis lethargica virus, transmission of, 29
Encyclopædia Medica (Dr. J. W. Ballantyne), second edition, 1921 (review), 1115
Endocrine balance, 406 ; glands, part played in the evolution of man (Prof. L. Bolk), 588, 629
Endocrines, the (M. Lereboullet and others) (review), 396
Endometritis, polypoid decidual, 805, 876
English-Esperanto dictionary, 317
Enteric fever and shell-fish, 299
Enuresis and organotherapy, 527
Epigastric pain, 1005
Epilepsy from the psychological standpoint, 291 ; use of luminal sodium in (Dr. J. T. Fox), 558 ; loose neckwear in, 785 ; observations on (leading article), 969
Epileptic soldier's treatment (Py Q), 158 ; fits and atmospheric potential, 1305
Epileptics, sane, colony for, in Roumania, 41 ; in the United States, training of, 371
Epithelioma of vocal cord, laryngofissure for, 1058
Epsom College, meeting and report, 53 ; award of exhibitions, 586 ; Sir Walter Buchanan Scholarship, 734 ; St. Anne's Home Scholarship, 1193 ; awarding of "France" pensions, 1239
Erlangen technique in X ray therapy, 729
"Ersatz" leather, 422
Essex county tuberculosis scheme, 419
Eugenic Prospect, National and Racial (Dr. C. W. Saleeby) (review), 611
Eugenics in Sweden, 1198
Evans, Dr. C. A. L., reaction of the blood, 867
Evans, Dr. G., study of arterio-sclerosis, 31
Evans, Dr. H. M., poison organs and venoms of poisonous fishes, 339
Evans, Mrs. E., Problem of the Nervous Child (review), 78
Evatt, Sir G. J. H., obituary, 1080
Everidge, Mr. J., renal function tests, 1161
Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England, pass lists, 829
Experiences of an Asylum Doctor (Dr. M. Lomax) (review), 292
Ex-service men in mental hospitals (Py Q), 310, 418, 1135 ; tuberculous, treatment of (Py Q), 1135 ; mentally affected, 1232 ; mental disease in, work of the Ministry of Pensions, 1388
Extra-Uterine Gestation (Dr. E. Schumann) (review), 1061
Extra-uterine pregnancy, 20
Eye Cases, Care of (Dr. R. H. Elliot) (review), 134
Eyes, effects of ultra-violet rays on, 244

F

Factory Girls' Country Holiday Fund, 263 ; hygiene in 1920 (leading article), 297 ; hygiene, report of the chief inspector of factories and workshops, 355
Fæces in alimentary disorders (Dr. R. Coope), 9, 89, 153, 362
Fairbank, Mr. H. A. T., bilateral "snapping" hip, 803
Fairweather, Dr. S. D., modern footwear as a cause of fatigue, muscular rheumatism, and flat-foot, 1019
Falk, Dr. K. G., Chemistry of Enzyme Actions (review), 562
Fallopian tube, adenomyoma of, 297
Famine in Russia, an international menace (leading article), 401, 485, 520 ; Code Committee in Madras, 1127
Faradic stimulation, direct, of a nerve, anomalous response (Prof. J. S. B. Stopford), 73
Fasting, 1245
Fasting and Man's Correct Diet (Mr. R. B. Pearson) (review), 1377
Fat, human, composition of, 351
Federation of Medical and Allied Societies, 50 ; meeting, 54 ; annual report, 157
Fees, doctors', in Vienna, problem of, 1074 ; certification, in Ireland, 1083
Fehlinger, H., Sexual Life of Primitive People (review), 1222
Feiling, Dr. A., and Mr. W. A. Holyoak, renal dwarfism, 855
Fellowship of Medicine and Post-Graduate Medical Association, post-graduate course, 1397
Femur, periosteal sarcoma of, 1059
Ferenczi, Dr. S., and others, Psycho-Analysis and War Neuroses (review), 807
Fergus, Dr. F., the refractory iris, 630
Fever, typhus, prophylactic inoculation in (Prof. S. Kusama), 386 ; scarlet, prophylactic inoculation against (Dr. I. Takahashi), 615 ; typhoid, ætiology of, 817 ; paratyphoid, caused by "head-cheese," 865 ; scarlet, and diphtheria in London, 924, 1030, 1134 ; scarlet, cases, early discharge of, 1131, 1188 ; scarlet, treatment with immune human serum, 1178, 1348
Fibrillation, auricular, arrest of, by the use of quinidine (Dr. A. W. M. Ellis and Dr. A. E. Clark-Kennedy), 894
Fibroids complicating pregnancy, labour, and puerperium, 1218
Fibromyoma and carcinoma, combined, of uterus, 19
Field laboratory for feeding experiments, 929
Filter cylinders, germ-proof, adjustable joint for, 810
Fimbrial cysts, 619
Findlay, Dr. L., pre-natal treatment of syphilis, 391 ; ravages of congenital syphilis, how to combat them, 857
Finger-prints, simple method of fixing, 635
Finsen Institute, jubilee, 1177
First Aid and Rescue Work in Mining (Dr. L. G. Irvine) (review), 756
First-aid as a special branch of practical surgery, 392
Firth, Dr. D., belladonna poisoning from eating rabbit, 901 ; (leading article), 1065
Firth, R. H., and J. L. Notter, Hygiene, ninth edition, 1921 (review), 23
Fischer, Prof. J. F., incitamin, new remedy for treatment of slowly healing sores, 933
Fish, gas disease in, 635 ; oils, vitamin-A content of (Dr. S. S. Zilva and Dr. J. C. Drummond), 753
Fisher, Dr. T., some heart troubles, 1347
Fisher, Prof. A. G. T., status of medical education, 1078
Fishes, poisonous, poison organs and venoms of, 339
Fistulæ, duodenal, after right-sided nephrectomy, 864
Fitz-Gerald, Dr. W: E., bacillary dysentery in a boys' school, 1051
FitzPatrick lectures, Greek medicine in Rome (Sir C. Allbutt), 86
Fitzwilliams, Dr. D. C. L., Pocket Surgery (review), 1280
Flack, Wing-Comdr. M., respiratory efficiency in relation to health and disease, 593, 637, 693, 741 ; (leading article), 766
Fleet-street week for "Bart.'s," 980
Fleming, Dr. G. B., and Dr. E. Crawford, sulfarsenol in the treatment of congenital syphilis, 700, 877 ; post-natal treatment of congenital syphilis, 856 ; respiratory exchange in health and disease, 1165
Fleming, Mr. L., probable implantation cyst, 904
Fletcher, Dr. W. W. E., obituary, 363
Fletcher, Sir W. M., aims and boundaries of physiology, 541, 623
Flour, white, food value of, 987, 1037
Flower House, Catford, report, 1399
Flynn, Capt. R. A., obituary, 731
Folie circulaire, 413
Food Education Society, appeal, 621
Food, energy values of, 143 ; poisoning at Clitheroe, 608 ; economical storage of, 618 ; poisoning outbreaks, memorandum on the collection and transmission of samples, 719, 727 ; value of white flour, 987, 1037 : and nutrition in Australia, 1175
Foods, gastric response to, 1037
Footwear, modern, as a cause of fatigue, muscular rheumatism, and flat-foot (Dr. S. D. Fairweather), 1019
Forbes, Dr. J. G., the debt of our tropical dependencies to medicine, 49 : dangers of the public swimming-bath, 728
Forceps, tendon tunnelling, 1330
Fordyce, Dr. D., treatment of abnormalities of urine in children, 1005
Foreign bodies in the air- and food-passages, diagnosis of, 29
Foreign body in knee-joint (Dr. A. C. Sharp), 499
Formaldehyde-glycerine in tuberculous empyema, 770
Formalin blood test for syphilis (Dr. C. Suffern), 1107
Fothergill, Dr. W. E., end-results of vaginal operations for genital prolapse, 15
Fowler, Sir J. K., Pulmonary Tuberculosis (review), 1279
Fox, Dr. H., and Dr. A. Stengel, Text-book of Pathology, seventh edition, 1921 (review), 708
Fox, Dr. I., lymphadenoma and tuberculosis, 14
Fox, Dr. J. T., use of luminal sodium in epilepsy, 558
Fox, Dr. R. F., "Sunday closing" at British spas, 926
Fox, Dr. W. S., Syphilis and its Treatment, with Especial Reference to Syphilis of the Skin (review), 182
Fracture, compound, of the thigh and leg, 284
Fracture service, organisation of (Mr. H. Platt), 620
Fractures, abduction, of the ankle-joint (Sir W. A. Lane), 697, 875 ; treatment of, 1136, 1383
Fractures in General, Industrial and Military Practice (Dr. J. B. Roberts and Dr. J. A. Kelly), second edition, 1921 (review), 1061
Fränkel, Dr. S., Chemistry (review), 1169
Frankl, Dr. O., visit to Dublin, 631, 1176
Fraser, Dr. A. M., "Circular 202," 97
Fraser, Dr. A. R., dermatitis herpetiformis, 801
Fraser, Mr. J. S., educational treatment of residual hearing in deaf children, 1024
Fredericq, Prof. Léon, jubilee of, 89
Fremitus, hydatid, 1231
French spas, 140 ; Navy, health of, in the war, 207 ; Senate and temperance legislation, 241 ; sanitary law, revision of, 252 ; medical profession and inauguration of Pekin University, 624 ; Government and town sanitation, 972

French Supplement to "The Lancet."—Achard, Ch., A. Ribot, and Léon Binet, researches on adrenalin diabetes, 139—Binet, Léon, and Pierre Brocq, pathogenesis of hæmorrhagic pancreatitis, 137—Amblard, Dr. L. A., arterial hypertension, 760

Fresenius, T. W., Introduction to Qualitative Analysis, seventeenth edition, 1921 (review), 966
Freudism in medicine, 84
Freyer, Sir P., obituary, 677
Friel, Dr. A. R., zinc electrolysis for enlarged tonsils, 117
Fritch, Dr. F. E., and Dr. E. J. Salisbury, Introduction to the Structure and Reproduction of Plants (review), 135
Fröhlich, A., and R. Wasicky, Taschenbuch der Ökonomischen u. Rationellen Rezeptur (review), 1378
Fuller, Mr. H. C., Qualitative Analysis of Medicinal Preparations, second edition (review), 1169
Function, indirect determination of, 666
Fundus changes in three brothers, 21

G

Gabell, Mr. D., Prosthetic Dentistry (review), 293
Gaertner meningitis complicating Gaertner enteritis (Dr. J. Smith), 705
Galloway, Mr. T. W., Sex Factor in Human Life (review), 79
Gambier, Dr. T., *obituary*, 1248
Games for girls, 902
Gangrene following measles (Mr. E. Thorp), 754
Garden, My Lady's (*Hackleplume*) (review), 398
Gardening *Diary*, 988
Gardner, Dr. A. D., agglutination for B. *dysenteriæ (Flexner)*, 1269
Gardner, Dr. H. W., natural history of encephalitis lethargica, 581
Garrod, Sir A., modern treatment of diabetes, 957
Garvie, Dr. A., loss of reflex to light restored in sleep, 1374
Gas disease in fish, 635; motor exhaust, in confined spaces, 1017; *poison, monopoly in*, 1233; inflation of the peritoneum in radiography, *1291*
Gassing or tuberculosis, late effects of, 521, 585
Gastric operations (Mr. L. E. Barrington-Ward), 382; ulcer, *treatment*, 618; response to foods, 1037
Gastro-intestinal *secretion, new method of investigating* (Dr. E. C. Dodds), 605
Gastro-jejunostomy, gastric function before and after (*Mr. T. G. D. Bonar*), 952
"*Gateway to Health*," 785
Gauvain, Sir H., tuberculosis of bone in children, 391

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION (WINTER SESSION).—*Dental Board of the United Kingdom*; Registration figures for 1921; *Reciprocity in practice*; *Practice of midwifery in India*; Inspection of *examinations*, 1132; Diplomas and degrees in public health, 1133—Penal *cases*, 1179—Dental Education and Examination Committee; Union of South Africa and Empire of India, 1181—Revision of Standing Orders; Public Health Committee, 1182—Pharmacopœia Committee; Students' Registration Committee; Education Committee, 1236—Report of Examination Committee, 1237—Education Committee; Restoration of a name to the Register, 1239

General Infirmary at Leeds, report, 256; Nursing Council for England and Wales, report, 782
Genersich, Prof. G., death of, 527
Geneva, International Labour Conference at, 1029
Genital prolapse, end-results of vaginal operations for, 15
Genito-urinary cases illustrating some difficulties in diagnosis (Mr. J. W. G. Grant), 797, 1278
Gerhartz, Dr. H., Taschenbuch der Diagnostik und Therapie der Lungentuberkulose, third edition, 1921 (review), 608
German naval hygiene, 521
Gestation, prolonged, 805
Gibb, Dr. J. A., pyocele of frontal sinus, 1272
Gibson, Dr. A. G., pathology of gastric and duodenal ulcer, 336; chronic inflammatory diseases of the *spleen*, 885
Giltner, Dr. W., *Laboratory Manual in* General Microbiology, second edition, 1921 (review), 1376
Girdlestone, Mr. G. R., bilateral absence of radius, *804*
Given, Surg.-Comdr. D. H. C., death from *respiratory and not from cardiac failure*, 204; the coughing cup, 730
Glaister, Dr. J. N., *phantasies* of the dying, 315
Glaister, Prof. J., Text-book of Medical Jurisprudence and Toxicology, fourth edition, 1921 (review), 344
Glasgow Obstetrical and Gynæcological Society (see Medical Societies)
Glasgow Western Infirmary, report, 1269; Victoria Infirmary, report, 1302
Glasgow University, pass-lists, 313, 928, 1082
Glass-blowing, 211
Glenny, Mr. A. T., and Miss K. Allen, guinea-pig epizoötic associated with dietary "deficiency," 1109
Gloved hand, the, 987
Gloyne, Dr. S. R., and Mr. W. G. Howarth, *unhealthy tonsils and cervical adenitis*, 997
Glycosuria *and gout. Guelpa's treatment* by fasting and purging (Sir H. Lunn), 1157
Glycosuria in pregnancy, 1003
Goadby, Sir K., *importance of industrial* medicine to the community, 489, 501; *(leading article)*, 515
Gold, Dr. D. D., obituary, 1028
Golf, present-day, 740
Golfing Society, Medical, 164, 1273; *Society, Ladies' Medical, meeting*, 1034
Golla, Dr. F. L., objective study of *neurosis*, 115, 215, 265, 373; (*leading* article), 402
Gonorrhœa, para-urethral (Dr. F. Chamberlain), 1273
Goodall, Dr. E. W., early discharge of scarlet fever cases, 1188
*Goodall, Dr. S., rôle of the electrocardio*graph in practical medicine, 1060
Goodall-Copestake, Beatrice M., Theory and Practice of Massage, third edition *(review), 657*
Goodwin, Sir J., aftermath of war with *reference to the Medical Service of the* Army, 802
Gordon, Dr. A. K., lymphoidocyte and its clinical significance, 230
Gordon, Dr. W., value of English phthisis sanatoria, 47
Gout and glycosuria, Guelpa's method of treatment by fasting and purging (Sir *H. Lunn*), 1157
Gout (Dr. L. Llewellyn) (review), 395
Grabham, *Dr. M. C., subtropical esculents*, 1357
Gradwohl, Dr. R. B. H., and A. J. Blaivas, New Methods of Blood and Urine Chemistry, second edition, 1920 (review), 563
Grant, Dr. J. W. G., *four* genito-urinary cases illustrating some difficulties in *diagnosis*, 797
Grant, Dr. R. T., malignant pustule with multiple lesions, 606
Grant, Dr. W. J., digitalis and the peripheral circulation, 203
Grants, Service, to London voluntary hospitals (Py Q), 417; University, in Scotland (Py Q), 485
Grattan, Col. H. W., coöperation between the civil and military sanitary authorities during a great national emergency, 333
Gray, Dr. J. P., paralysis of the soft palate following non-diphtheritic tonsillitis, 607
Gray, Oscar, disappearance of, 828; reappearance, 936
Great Northern Central Hospital of Recovery, summer fête, 157
Greater London, government of (Py Q), 208
Green, Mr. G. H., Psychoanalysis in the Classroom (review), 78
Greenlees, Dr. J. R. C., ante-natal treatment of congenital syphilis, 857
Greenwood, Dr. Major, and Prof. E. L. Collis, Health of the Industrial Worker (review), 1066
Gribbon, Miss M. R., and Prof. N. Paton, nutrition in Vienna, 747
Griffith, Dr. F., serological types of pneumococci *in lobar pneumonia*, 226
Griffith, Prof. T. W., future of voluntary hospitals, 963
Griffiths, Mr. J., the hospital problem and a new *hospital service*, 633
Grippe as an easy diagnosis, 728
Grosvenor Telephone Exchange, medical *men's new numbers*, 586
Grove, Dr. W. R., and Dr. H. W. C. Vines, ætiology and treatment of varicose *ulcers*, 339
Guelpa's method in treatment of gout and *glycosuria* by fasting and purging (Sir H. Lunn), 1157
Guest house for mothers and babies, 164
Guillaume, A. C., Le Sympathique et les Systèmes Associés, second edition, 1921 (review), 707
Guilliermond, Dr. A., The Yeasts (review), 23
Guinea-pig epizoötic associated with dietary "deficiency," 1109
Gulland, Prof. G. L., radiation in treatment of diseases of the blood, 393
Gunther, Mr. R. T., Early Science in Oxford (review), 1224
Guthrie, Dr. D., Diseases of the Ear, Nose, and Throat *in Childhood* (review), 231
Guy, Dr. R. A., *acidosis and toxic symptoms* of severe diarrhœa in infancy, 898
Guy's Hospital, report, 206; Medical *School, awards*, 782
Gymnastics and Massage, Medical, *Diseases Treated by (Dr. J. Arvedson)* (review), 657; Theory and Practice of *Massage (Beatrice M. Goodall-Copestake)* (review), 657
Gynæcological cases, unusual (Dr. J. C. H. Leicester), 755
Gynæcology (Dr. B. M. Anspach) (review), 1222; Menstruation and its Disorders *(Dr. E. Novak) (review)*, 1223
Gynæcology, neurasthenic element in, *505*

H

Haden-Haden, Dr. W. H., obituary, 1248
Hæmatoma, large, of vulva following labour, *805*
Hæmatophagy, 1385
Hæmochromatosis, 334
Hæmoglobin, 46
Hæmorrhage, uterine, curettage and treatment of, 507; combined extra- and *intra-dural* (Mr. M. L. Treston), *755*; ovarian, apart from ectopic gestation, *770*; ante-partum, treatment, 1219
Hair-balls or hair-casts of the stomach and gastro-intestinal tract (Dr. I. J. Davies), 791, 926; cast, an ancient Scottish, 1111
Hale, Col. C. H., death of, 307
Hall, Dr. R., unusual cases of pulmonary disease, 1034
Hall, Prof. I. W., and Dr. G. E. Tilsley, agglutination of meningococci, 491; rôle of dilute acids in infection, 1375
Halliburton, Prof. W. D., knowledge and understanding, 1139
Hamburger, Prof. H. J., permeability in physiology and pathology, 1039, 1070
Hamer, Dr. W. H., ætiology of typhoid fever, 817
Hamill, Dr. P., and Dr. W. Murrell, What to do in Cases of Poisoning (review), 1378
Hampshire, Mr. C. H., Pharmacopœia of the University College Hospital (review), 1115
Hand-lamp, operating, for ophthalmic work, 1282
Handley, Prof. W. S., lupus, pathology and treatment, 1089
Hants Royal County Hospital, report, 1250
Harding, Prof. V. J., nausea and *vomiting* in pregnancy, 327
Hare-lip surgery, a suggestion, 860
Harford, Mr. C. F., new psychology in relation to *problems of vision*, 1108
Harley, Dr. J., obituary, 1346
Harman, Mr. N. B., *college for blind girls*, 214; causes and prevention of blindness, *510*
Harris, Dr. I., digitalis and the peripheral circulation, 97, 254; *physical* exercise in heart disease, 1130
Harris, *Dr. W., treatment* of persistent pain due to lesions of the central and *peripheral nervous* systems, 1057; (leading article), 1064
Harrison, Col. L. W., sulfarsenol in the treatment of congenital syphilis, 828; arsenobenzol treatment of syphilis, 1111; Diagnosis and Treatment of Venereal Diseases in General Practice (review), 1279
Harrison, Dr. G. A., postural proteinuria, 991
Harrison, Lieut.-Col. E. F., memorial to, 1027
Harrogate Infirmary, jubilee, 782
Harrogate Medical Society (see Medical Societies)
Harrow, Dr. B., Eminent Chemists of our Time (review), 79; Vitamines—Essential Food Factors (review), 758
Harveian Oration on William Harvey, obstetric physician and *gynæcologist* (Dr. H. R. Spencer), 837; correction, 927
Harwich-Zeebrugge route, new, 531
Haslar Naval Hospital (Py Q), 260
Hastings *pensioners and regional* director (Py Q), 158
Haubold, *Dr.* A. H., Principles and Practice of Surgery (review), 1328
Haward, Mr. J. W., obituary, 532
Hay, Dr. J., prognosis in rapid action of the heart, 750; spontaneous pneumothorax, 1166
Hay fever and bronchial asthma, tuberculin treatment (Prof. Dr. W. S. Van Leeuwen and H. Varekamp), 1366
Haydon, Dr. A., Brussels M.D. for British graduates, 204
Haydon, Dr. L. G., sporadic outbreaks of plague in the Union of South Africa, 1103
Hayek, Prof., sixtieth birthday, 1213
Hazen, Dr. H. H., Syphilis (review), 910

Health and disease, respiratory efficiency in relation to (Wing-Comdr. M. Flack), 593, 637, 693, 741, 1165 ; (leading article), 766 ; of school children (leading article), 1011
Health certificates, proposed, for marriage, Vienna, 42 ; reform, county, in Ireland, 419 ; legislation, effect of on the health of the people, 500 ; Committee of the League of Nations, 615, 717 ; jurisdiction, transfer of, 771 ; reports, Colonial, 786, 988 ; Week, 808 ; services in Willesden, coördinated, 974 ; examinations, periodic, value of, 1289 ; of India after the war, 1353
" Health in a Few Words," 1399
Health of London school children, report for 1920 of the school medical officer, L.C.C., 524
Health of the Industrial Worker (Prof. E. L. Collis and Dr. Major Greenwood (review), 1006
Health services in Wales (leading article), 403
Heart Disease and Pregnancy (Sir J. Mackenzie) (review), 1376 ; Normal and Cardiac Disease, Original Observations and Theories on (Dr. M. B. Shipsey) (review), 1377
Heart, disorders of, in adolescents, 40 ; human, electrical action of, 49 ; disease, occupational therapy in, 875, 1247 ; disease, physical exercise in, 974, 1131 ; block, congenital, 987 ; clinic, East Anglian, 1296
Heart, the law of (Prof. E. H. Starling), 212 ; problems (Prof. E. H. Starling), 1199, 1347 ; action of, after death, 264 ; prognosis in rapid action of (Dr. J. Hay), 750
Heat wave and rabies (Py Q), 211
Heating, central, in Chicago, 1142
Heber, Mr. F., and Mr. A. T. Compton, acute hæmorrhagic pancreatitis, 130
Helme, Dr. T. A., obituary, 630
Hemihypertrophy and mental defect, 919
Henderson, Lieut.-Gen. S. D., death of, 484
Hendry, Dr. R. A., prolonged gestation, 805
Henry, Dr. R. W., speculum to prevent pressure on globe, 21
Hepatic inefficiency, lævulose as a test for (Dr. J. C. Spence and Dr. P. C. Brett), 1362
Herbalists, proposed registration of (Py Q), 984
Herbert, Dr. A. S., the jaw-neck syndrome, 1097 ; Hot Springs of New Zealand (review), 1114
Herbert, Dr. S., psychotherapy, 151
Herbs, medicinal, investigations in the planting of, 252
Heredity, Pathological (Dr. H. W. Siemens) (review), 808 ; (Prof. E. Baur, Prof. E. Fischer, and Dr. F. Lenz) (review), 1329 ; (Dr. J. Bauer) (review), 1376
Heritage School at Chailey, financial position, 1232
Hernaman-Johnson, Dr. F., X rays in malignant disease, 153 ; Carelli method of perirenal inflation, 1319
Hernia, Inguinal, the Imperfectly Descended Testicle and Varicocele (Mr. P. Turner) (review), 396
Hernia, strangulated obturator (Dr. A. E. Sawday), 1159 ; inguinal, new operation for 1275
Heroin habit, the, 727
Hewlett, Prof. R. T., Manual of Bacteriology, Clinical and Applied, seventh edition, 1921 (review), 563
Hiccough, epidemic, 1175
Hill, Dr. L., and Dr. J. McQueen, capillary pressure and the circulation in shock, 65 ; and Dr. H. H. Gale, anæsthesia with nitrous oxide and oxygen under pressure, 326
Hill, Prof. A. V., various uses of the " hot wire," 336
Hip, bilateral " snapping," 803 ; subluxation of, 804 ; arthritis deformans of, 1331
Hirsch, Dr. C. T. W., open-ether anæsthesia during throat operations, 154
Histological illustrations (leading article), 401
Histology, physiological (leading article), 844
Hodgman, Mr. C. D., Mr. M. F. Coolbaugh, and Mr. C. E. Senseman, Handbook of Chemistry and Physics, eighth edition, 1921 (review), 1170
Hodgson, Dr. Amy, vitamin deficiency [illegible] rickets, 945
[illegible]n, Dr. V. S., action of tartar emetic [illegible] harziasis, 97
Holland, Dr. E., and Prof. J. M. M. Kerr, rôle of Cæsarean section in midwifery, 502
Holloway Prison, lady superintendent at (Py Q), 418 ; Convicted Hospital, *appointments at (Py Q), 983 ; Hospital,* staff of, 1079
Holmes, Dr. G. M., Sir M. Morris, and Dr. F. Langmead, Dictionary of Practical Medicine (review), 1221
Holmes, Dr. G. W., Roentgen Interpretation, second edition, 1921 (review), 514
Holt, Dr. L. E., Care and Feeding of Children (review), 757
Home labour and insanity, 422
Honours, civilian, 32, 43, 186, 253, 366, 420, 486 ; military, 46 ; naval, 531 ; Mesopotamia, 682 ; foreign decorations, 683, 894, 1136, 1351 ; Military Cross, 780
Hooper, Sir W. R., obituary, 825
Hopkins, Prof. F. G., oxidations and oxidative mechanisms in living tissues, 670
Horder, Sir T., medical aspects of some urinary diseases, 989
Horsley memorial, 527, 927
Horwitz, Dr. C. H. S., " twilight sleep " and the general practitioner, 1154
Hospital Commission, new (Py Q), 108, 1193 ; conditions in Bristol, 206 ; finance (Py Q), 257, 1063, 1119 ; grants and public representation (Py Q), 259 ; grants and wages of employees, 356 ; finance and National Insurance, 410 ; records, accessible (leading article), 812 ; finance outside London, 1119 ; appointments, equity in, 1190 ; staff disputes, 1356
Hospital for Tuberculous Children, Belfast, opening, 313 ; Mission, in China, 317 ; new, at Colne, 569 ; for Tropical Diseases, 818 ; a disappointed, 884 ; upkeep, taxation for, 1399
Hospital problem and a new hospital service (Mr. J. Griffiths), 633
Hospital Sunday Fund, Metropolitan, 32, 106, 157, 279 ; Saturday in Manchester, second appeal, 981 ; Saturday Fund, Birmingham, 1194
Hospitalism in infants, 767
Hospitals, Irish, report, 43 ; voluntary, in Ireland, 102 ; (Py Q), 108, 109 ; Irish, grants to, 152, 159 ; Army, working expenses (Py Q), 311 ; Queensland, for the insane, 1141 ; voluntary, and the Ministry of Health, 1250 ; and dispensaries in Bengal, 1305
Hospitals, voluntary, state of, 52 ; and the Key Industries Bill, 107 ; voluntary, position of (leading article), 141, 237 ; Voluntary Commission, list of nominations, 157 ; committees, local voluntary, 297 ; voluntary, system, 361 ; future of, 963 ; voluntary, Government grant to (Py Q), 984 ; voluntary, Commission, *emergency grants to London hospitals,* 1015, 1134 ; voluntary, Indian, 1127 ; voluntary, Scottish, 1242
Hot and cold applications to the surface of the body, effects of (Prof. J. J. R. Macleod and Dr. N. B. Taylor), 70
" Hot wire," various uses of, 336
Houghton, Dr. E. M., Research Laboratory *Papers (review), 80*
House-fly in winter, life of, 988
Housing in Yorkshire and Lancashire, 114 ; policy, Government (Py Q), 210, 260 ; conditions in Scotland, 310 ; rural, necessity for better (Py Q), 367 ; schemes (Py Q), 931
Housing notes : Building Guilds ; Standard of *home-making ; " Zoning,"* 676
Howarth, Dr. W. J., public health problems, 908
Howarth, Mr. W. G., mucocele and pyocele of nasal accessory sinuses, 744 ; and Dr. S. R. Gloyne, unhealthy tonsils and cervical adenitis, 997
Hudson, Dr. B., Aids to Medicine, third edition, 1921 *(review)*, 1329
Hugel, Delater, and Zoeller, Comment Interpréter en Clinique les Réponses du Laboratoire (review), 1327
Hughes, Dr. E., craniotabes of the fœtus and infant, 1045
Hughes, Dr. J. R., cysticercus cellulose in man, 956
Human Physiology (Prof. L. Luciani) (review), 513 ; Embryology and Morphology (Prof. A. Keith), fourth edition, 1921 (review), 563 ; Evolution, Direction of (Prof. E. G. Conklin) (review), 965 ; Life, Stages of (Mr. J. L. Taylor) (review), 1062
Human remains as historical documents, 193 ; *fat, composition of,* 351 ; coccidiosis, 720
Hume, E. Margaret, and Dr. E. Nirenstein, hunger-osteomalacia in Vienna, 849
Humphrey, Mr. J., Drugs in Commerce (review), 757
Humphris, Dr. F. H., Electro-Therapeutics for *Practitioners*, second edition, 1921 (review), 232
Hunger-osteomalacia in Vienna (Dr. E. J. Dalyell and Dr. Harriette Chick), 842 ; in Vienna (E. Margaret Hume and Dr. E. Nirenstein), 849
Hunter, Dr. W. M., death of, 1194
Hunterian lecture on injuries of the diaphragm (Mr. G. Bryan), 1 ; on mucocele and pyocele of the nasal accessory sinuses (Mr. W. G. Howarth), 744 ; oration on William Harvey, obstetric physician and gynæcologist (Dr. H. R. Spencer), 837 ; lecture on pathology and treatment of lupus (Prof. W. S. Handley), 1089
Hurry, Dr. J. B., Octocentenary of Reading Abbey, A.D. 1121–1921 (review), 184
Hurst, Dr. A. F., teaching " deaf-mutes " to hear, 875 ; psycho-therapy, 1113
Hussey, Mr. L. D. A., and Dr. A. H. Macklin, scurvy in Polar regions, 322
Hutchison, Dr. A. J., zinc ionisation in otitis media, 1301
Hydatid fremitus, 1231
Hyde, Rev. R. R., the Boy in Industry and Leisure (review), 809
Hydrochloric acid, administration of (Dr. J. C. McClure and Dr. H. A. Ellis), 271
Hydrocyanic acid and sanitation, 146, 583
Hydrology, medical, international, 1293
Hygiene, industrial, its rise, progress, and opportunities (Sir T. Oliver), 262 ; school (leading article), 295 ; factory, in 1920 (leading article), 297 ; factory, in 1920, report of chief inspector of factories and workshops, 355 ; oral, physiology of, 339
Hygiene (J. L. Notter and R. H. Firth), ninth edition, 1921 (review), 23
Hygiene, mental (leading article), 349, 1289 ; submarine, 404 ; German naval, 521 ; in Prague, State Institute, 688 ; and medicine in Scotland, 1745–1900, 836 ; mental, essentials of, 1289 ; by example, 1290
Hypernephromata, ovarian, 147
Hypnotism and Suggestion, or Psychotherapeutics, Treatment by (Dr. C. L. Tuckey), seventh edition, 1921 (review), 706
Hysteria (Dr. F. L. Golla), 377

I

Illegitimacy Bill, 260
Imbecility, moral, case of (Dr. W. N. East), 1052 ; (leading article), 1117
Immorality, professional, on the stage, 28
Immunisation, antitetanus, 1176
Immunisation, Therapeutic, in Asylum and General Practice (Dr. W. F. Robertson) (review), 1060
Immunology, Principles of (Dr. H. T. Karsner and Dr. E. E. Ecker) (rev.), 1006
" Impregnable," the old, 592
Incitamin, a new remedy for treatment of slowly healing sores (Prof. J. F. *Fischer*), 933
Income-tax, a new rule, 253 ; and hospital subscriptions (Py Q), 486

INDIA, CORRESPONDENCE FROM.—Indigenous drugs of India, 39—King Edward VII. Memorial Tuberculosis Institute, 357—Provincialisation of Madras Health Officers' Service, 412—Vaccination in Madras Presidency ; Sanitary Department in Madras, 625—Madras Medical College, prize distribution, 821—Indian voluntary hospitals ; Indian Science Congress ; Health officers in India ; Famine Code Committee ; Ayurvedic committee, 1127

India, plague in, irregular incidence of, 86 ; rat destruction and plague, 522 ; health of, after the war, 1353 ; Government of, and indigenous medicine, 1356
Indian jail occupation, 636
Indian Medical Service, 104, 151, 414, 531, 628, 682, 728, 827, 920, 985, 1131, 1316, 1395 ; (see Students' Guide), 467 ; medical officers' leave (Py Q), 108 ; and Japan, 360
Industrial dermatitis, 30 ; hygiene, its rise, progress, and opportunities (Sir T. Oliver), 262 ; medicine, importance of, to the community (Prof. E. L. Collis and Sir K. Goadby), 487, 489, 501 ; (leading article), 515 ; accidents, controversy on, 570

Industrial Fatigue and Efficiency (Dr. H. M. Vernon) (review), 858
Industry and preventive medicine, conference at Oxford, 726
Infant mortality and the practitioner (leading article), 239 ; death-rates (Py Q), 983 ; mortality in Aberdeen, 1071
Infant of abnormally small weight (Dr. F. C. Davidson), 559
Infant welfare, conference on : Maternity homes ; Provision for blind babies ; Provision for unmarried mothers ; Poor-law accommodation for mothers and infants ; Residential provision for *mothers and babies ; Supply of milk*, 149—Dried milk, 150—Influence of weather conditions on morbidity and mortality in early infancy ; Ante-natal factors of life and death, 151
Infant welfare in Czecho-Slovakia, 102 ; in Budapest, 869
Infantile mortality in *British Guiana*, 311 ; *in Bombay (leading article)*, 1119
Infants, premature, mortality of (Dr. T. W. Eden), 127 ; Bill, guardianship of (Py Q), 930
Infection, doctrine of, through the ages, 1305 ; rôle of dilute acids in, 1375
Infectious disease on active service, the American Expeditionary Force, 1197 ; diseases and statistics in Paris, notifica*tion of*, 1297 ; *disease in Mauritius*, 1394
Influenza, epidemiology of (leading article) 1171 ; bacillus in culture, 1232
Influenza, prophylaxis against, 411 ; in Mauritius, 740 ; French epidemic, bacteriology of, 1068 ; reappearance in Vienna, 1074 ; in Rossendale, 1391
Influenzal pneumonia, unknown ætiology of, 115
Inhaler, ether, a compact warm, 82 ; ether, improved, 186
Inquest without post-mortem examination, 1023
Insane, treatment of, 106 ; will-making by, 410 ; *Queensland hospitals for*, *1141*
Insanity and home labour, 422 ; pathology of, 828
Insanity and Mental Deficiency in Relation to Legal Responsibility (Dr. W. G. H. Cook) (review), 131
Insanity, Manic-Depressive, and Paranoia *(Prof. E. Kraepelin) (review)*, 397
Institute of applied pestology, 1198
Institutional convalescence, 1140
Instrument set in motion by vision or by proximity of the human body (Dr. C. Russ), 222, 362
Insulating substances, relative value of, 1400
Insurance Act, National, capitation grant (leading article), 861 ; incapacity for work within the meaning of, 905 ; medical records (Py Q), 983
Insurance Acts, inquiry into, 778, 827
Insurance, Life, Medical Examination for (Dr. T. D. Lister) (review), 858
Insurance, National Health, Bill, 110, 208, 1030 ; (Py Q), 158 ; payments and unemployment (Py Q), 260 ; and the State (leading article), 661, 719, 765, 811 ; the case for, 678 ; without medical benefit (leading article), 913 ; benefit and unemployment (Py Q), 930, 983 ; suggested repeal (Py Q), 931 ; contributions and expenses (Py Q), 931 ; and employed contributors (Py Q), 931 ; contributions, lapsed (Py Q), 984 ; Government of Ireland Act, 1013 ; approved societies and medical benefits (Py Q), 1031
Insurance, National, in the U.S.A. (leading article), 83 ; contributions of miners (Py Q), 109 ; doctors, stock allegations against, 352 ; seamen's (Py Q), 367 ; cost of, to the workman (Py Q), 367 ; and hospital finance, 410 ; and reorganisation of hospitals in France, 624 ; in Ireland, 776 ; Medical Benefit Amendment Regulations (No. 5), 1921, 927 ; in Manchester, 978
Insurance practitioners, remuneration of, 829 ; life, in the tropics, 906, 1017 ; Health for Civil servants in Prague, 1186 ; newspaper, 1255 ; Agency, Medical, report, 1385
Insured persons, district nursing of, 53
Intelligence, morphological aspect of, 1286
Interallied Neurological Congress in Paris, 31
Internal Secretion, Organs of (Dr. I. G. Cobb), *third edition, 1921 (review)*, 1222
International Association of History of Medicine, meeting, 919
International Congress of Hygiene in Paris, 624 ; Congress for the Protection of Motherhood and Infancy in Paris, 625 ; of Eugenics, 782 ; of ophthalmo*logists at Vienna*, 923 ; *of otology*, 975
International Labour Conference at Geneva, 1029 ; medical hydrology, 1293
International Health Organisation (Py Q), 159

INTERNATIONAL UNION AGAINST TUBERCULOSIS, CONFERENCE. Official welcome ; Fundamentals of pathology ; "Œuvre-Grancher" system, 301—Modes of diffusion of tuberculosis throughout the races of the world ; Bovine form of infection : Experience abroad, 302—Ætiological factors ; Rôle of the medical profession in the preven*tion of tuberculosis*, 303—*State action* in preventing the disease ; Responsibility of the practitioner ; Beginning with the baby, 304

Intestinal coils, position of, 90 ; obstruction due to Meckel's diverticulum, 1178
Intestinal Toxæmia, or, Auto-Intoxication *in the Causation of Disease (Dr. A.* Bryce) (review), 756
Intestine, large, carcinoma of, diagnosis and treatment, 1220
Intestines, injuries of, diagnosis and treatment, 286
Intussusception, analysis of cases, 284
Investments, a medical man's, 164

IRELAND, *CORRESPONDENCE FROM*.—Irish hospitals, report ; Dublin milk ; Sir S. Woodhouse, death of, 42—Sir J. W. Browne knighted, 43—Question of federation ; The voluntary hospitals ; Honorary degree for Prof. E. Taylor ; Senate of Southern Ireland, 102—*Organisation of the medical profession* in Ireland ; Grants to Irish hospitals ; Royal College of Physicians in Ireland, 152—Irish labour and the public health ; Cancer research in Dublin ; Household of the Lord Lieutenant, 583—Tuberculosis in Belfast, 1186—Queen's *University of Belfast* ; Sir J. M. Redmond, death of, 1187

Ireland, Poor-law reform in, 1033
Iris, the refractory, 573, 630
Irish births and deaths, 936
Irvine, Dr. L. G., First Aid and Rescue *Work in Mining (review)*, 756
Ivens, Miss F., use of anti-gonococcal serum, 1060

J

Jamme, Miss A. C., *Text-book of Nursing* Procedures, first edition, 1921 (review), 808
Jansen, Dr. H., sciatica, Scandinavian investigations on its pathogenesis, 737
Jansen, Dr. M., arthrogenic contractures, 390
Jauch, Dr. F. J., *lupus-epithelioma* treated with radium, 704
Jaundice, acholuric, 1136
Jaw-neck syndrome (Dr. A. S. Herbert), 1097
Jellett, Dr. H., and Dr. D. G. Madill, Manual of Midwifery, third edition, 1921 (review), 77
Jenner medal, award, 976
Jensen, Dr. E. T., trypanocide, 1025
Jex-Blake, Dr. A. J., Physical Signs in the Chest and Abdomen (review), 1330
Johnson, Dr. F. J., discharge from the umbilicus, 1159
Johnson, Dr. W., *diagnostic value of the* vibration sense, 1278
Johnson, Dr. W. B., the weanling in Upper Egypt, 416
Johnston, Dr. J., death of, 1278
Johnston, Dr. T. B., Regional Anatomy (review), 513
Joly, Mr. J. S., *new aero-urethroscope*, 514
Jones, Dr. H. D., forgetting, 1276
Jones, Dr. J. W., death of, 826
Jones, Harold, legal aspects of the case of, 1022
Jones, Sir R., and others, Clayden *v.* Wood-Hill, 1187
Jones, *Thomas* Warton, biography, 145
Jordan, Dr. G. P., obituary, 1316

JOURNALS (reviewed).—American Journal of Ophthalmology, 81, 1282—Anatomy, 135—Annales de l'Institut Pasteur, 967—Annals of Medical History, 759—967—Annals of Medical History, 759—Archivio di Patologia e Clinica Medica, 1330—Biochemical, 650, 1010, 1116—1330—Biological Chemistry, 709—Brain, 345, 758—British Journal of Children's Diseases, 82, 709—*British* Journal of Experimental Pathology, 81, 912—British Journal of Ophthalmology, 1116—British Journal of Surgery, 911—Fight Against Disease, 233—Health, Journal of the Federation of Medical and Allied Societies, 967—Health and Empire, 1170—Industrial Hygiene, 398, *1009*—Industrial Welfare, 345—Japan Medical World, 135—King's College Hospital Gazette, 233—Laryngology and Otology, 24, 860, 1062—Medicine, 1008—Military Surgeon, 859—Ophthalmology, British, 612 ; American, 810—Optician and Scientific Instrument Maker, 81—Parasitology, 566, 809—Pathology and Bacteriology, 291, 859—Physiology (review), 185, 611, 1281—Quarterly Journal of Medicine, 658—Rivista d' Ostetricia e Ginecologia Pratica, 1170—Royal Army Medical Corps, 24, 316, 565, 710, 1225—Royal Naval Medical Service, 912—St. Bartholomew's Hospital Journal, 912—School Hygiene, 233—Transactions of the American Association of Genito-Urinary Surgeons, 233—Wiener Archiv für Innere Medizin, 399

Jung, Mr. E., Le Darwinisme et Notre Santé (review), 708

K

Kaolin in the treatment of Asiatic cholera (Dr. R. R. Walker), 273, 300
Karsner, Dr. H. T., and Dr. E. E. Ecker, Principles of Immunology (review), *1006*
Keith, Prof. A., Human Embryology and Morphology, fourth edition, 1921 (review), 563
Kelly, Dr. J. A., and Dr. J. B. Roberts, Fractures in General, Industrial, and Military Practice, second edition, 1921 *(review)*, *1061*
Kensington, Bishop of, and others, Factory Girls' Country Holiday Fund, 263
Keown, Dr. A. E., melanoma of the choroid, 1056
Keratomalacia in rats, 573 ; nutritional, in infants, 814
Kerr, Prof. J. G., *Zoology for* Medical Students (review), 1061
Kerr, Prof. J. M. M., and Dr. E. Holland, rôle of Cæsarean section in midwifery, 502
Ketosis in children, 1220
Key Industries Bill and the hospitals, 107
Kidney, the, in sucklings, physiology and *pathology of*, 298 ; *contusions of*, 342 ; and urethra, carcinoma of, 404 ; deficiency tests, 623
Kinematograph lights and blindness, 158
King Edward VII. Memorial Tuberculosis Institute in India, 357
King Edward's Hospital Fund for London, *1074* ; *pound for pound* basis of hospital assistance, 1194 ; awards, 1310
King George's Sanatorium for Seamen, report, 251
King, Mr. W. W., treatment of ante-partum hæmorrhage, 1219
King's College Hospital Medical School *(London University)*, awards, 205, 904 ; hospital, needs of, 422 ; Listerian Society, inaugural address, 880
Kingsbury, Dr. A. N., formalin and Sachs-Georgi tests for *syphilis, accuracy* of, compared with the Wassermann reaction, 799
Knee-*joint*, infected, treated by incision, drainage, and movement (Mr. P. Weatherbe), 1271
Knowledge and understanding (Prof. W. D. Halliburton), 1139
Knowles, Maj. R., snake-bite in India, 177
Knox, Dr. R., X ray diagnosis, 393
Kraepelin, Prof. E., Manic-Depressive Insanity and Paranoia (review), 397
Kusama, Prof. S., prophylactic inoculation in typhus fever, 386

L

Laboratories, their Planning and *Fittings* (Mr. A. E. Munby) (review), 966
Laboratory Examination (Hugel, Delater, and *Zoeller) (review)*, 1327
Labour Conference, International, at Geneva, 1029
Labour, stomach tube for induction of, 90 ; after criminal abortion, 362
Lacey, Dr. F. H., genital prolapse treated by vaginal operation, 16
Lactose, pure, and safeguarding of Industries Act (Py Q), 983, 984 ; fermentation, importance of, 1288
Ladd, Prof. G. T., death of, 389
Lævulose as a test for *hepatic inefficiency* (Dr. J. C. Spence and Dr. P. C. Brett), 1362

"La France," 1038
Lancashire, Dr. G. H., association of skin tuberculosis with visceral and other tuberculous manifestations, 339
Landru, Henri Désiré, 1241
Lane, Mr. J. E., treatment of syphilis by intravenous injections of mercury, 796
Lane, Sir W. A., disastrous results of abduction fractures of the ankle-joint, 697; importance of thoracic respiration, 1317
Lane-Claypon, Dr. J. E., universities' library for Central Europe, 417; Hygiene of Women and Children (review), 1327
Langley, Dr. G. J., aortic incompetence, 1209
Langmead, Dr. F., Dr. G. M. Holmes, and Sir M. Morris, Dictionary of Practical Medicine (review), 1221
Langwill, Dr. A., suppurative monarticular arthritis in an infant, 1158
Lankester, Dr. A., Tuberculosis in India, its Prevalence, Causation, and Prevention (review), 608
Lapage, Dr. C. P., tuberculosis in children, 1277
Laquerrière, Albert, and Louis Delherm, Electrologie (review), 1007
Larynx, Intrinsic Cancer of, and the Operation of Laryngo-Fissure (Mr. I. Moore) (review), 231
Latrine contents, disposal of, 855
Lawson, Sir A., re-education of the blinded, 544
Lay readers, medical books for, 213
Lead paints, dangers of (Py Q), 259; Committee on (Py Q), 310

LEADING ARTICLES.

Adenoids, 1284
Anoxæmia in clinical neurology, 348
Bacteriology of the alimentary canal, 25
Benefit, additional, 613
B-vitamin, therapeutic possibilities of, 1228
B.M.A. meeting, opening, 189
British Association at Edinburgh, 567
Cancer and the public, 347; parasite, facts and fancies, 661; research, 1117
Capitation settlement, 913
Census of 1921, 517
Certificates, medical, sanctity of, 1171
Child, the dull and backward, 1331
Clinical units, 969
Contraception, methods of, 914
Curves of resistance, 143
Dental board, 1284
D'Herell, phenomenon of, 1173
Diet, defective, as a cause of sterility, 1012
Diphtheria prevention, old and new methods, 1227
Drugs, chemical, production of, 1229
Education, medical, and the Rockefeller Foundation, 615
Embryology, proper place of, 296
Epidemic situation in Soviet Russia, 970
Epilepsy, observations on, 969
Factory hygiene in 1920, 297
Famine in Russia, an international menace, 401
Freudism in medicine, 81
Health services in Wales, 403; Committee of the League of Nations, 615, 717; of school children, 1011
Histological illustrations, 401
Histology, physiological, 811
Hospital records, accessible, 812; finance, 1063
Hospitals, voluntary, position of, 141, 237
Hygiene, mental, 349
Imbecility, moral, 1117
Industrial medicine, 515
Infant mortality and the practitioner, 239; in Bombay, 1119
Influenza, epidemiology of, 1171
Insurance, Health, and the State, 661, 719 765, 811
Insurance, National, in the U.S.A., 83; Act, capitation fee, 861; without medical benefit, 913
League of Nations, Health Committee of, 615, 717
Malignant disease, X rays in, 25; combined treatment, 516
Medical certificates, sanctity of, 1171
Medical education and the Rockefeller Foundation, 615; service, rural, in U.S.A., 1011
Medicine, industrial, 515; pragmatism in, 1118
Mental hygiene, 349
Midwifery, practical, teaching of, 1228
Milk-supply, a clean, 662
O.H. reports, 85
Municipal health services, 1283
Nephritis, war, pathology of, 568
Neurosis, objective study of, 402
1921, year, 1379
Nightshade, 1065
Noise and its cure, 1172
Opening of the session, 766
Ophthalmia neonatorum, 516
Pain, persistent, treatment, 1064
Pancreatitis, acute hæmorrhagic, 142
Pearson, Sir Arthur, death of, 1285
Physiological histology, 811
Plague, spread of, 861
Practitioner, general, and public health, 1380
Pragmatism in medicine, 1118
Pregnancy, some toxæmias of, 614
Profession, the, numbers of (Students' Guide), 463
Professional secrecy, 237
Prolapse of the uterus, operative treatment, 26
Public health in Egypt, 1332
Publication and progress, 717
Regional medical officers, 349
Renal function tests, 1379
Resistance, curves of, 143
Respiratory efficiency, 766
Resurrection man, the, 190
Rural medical service in U.S.A., 1011
School hygiene, 295
Sera, international standardisation of, 1331
Silicosis, 83
Small-pox and vaccination in U.S.A., 915
Soviet Russia, epidemic situation in, 970
Spas, an apology for, 568
Staff Fund, the bearings of, 237
State medicine, existing institute of, 27
Sterility, defective diet as a cause, 1012
Stigma diseases in general hospitals, treatment, 718
Surgery, preventive, 862
Tubercle, prevention of, 295; and restricted migration, 663
Tuberculous, the, compulsory measures against, 189
Urine, composition of, during hunger, 240
Urology, scope of, 1013
Uterus, prolapse of, operative treatment, 26
Venereal clinics and their clients, 970
X rays in malignant disease, 25
Year 1921, 1379

League of Nations and typhoid in Poland (Py Q), 159; Health Committee of (leading article), 615, 717; opium traffic and, 518, 1230
Leclanché cells, 1256
Ledderhose, Prof. G., Diagnostische und Therapeutische Irrtümer und deren Verhütung (review), 1280
Lee, Mr. A. B., Microtomist's Vade-Mecum, eighth edition, 1921 (review), 808
Leech, Dr. E. B., the place of Alpine spas in medicine, 574
Leeds and West Riding Medico-Chirurgical Society, report, 407 (see also Medical Societies)
Leeds University, diploma in nursing, 205, 419; chair of bacteriology, 812; pass lists, 1396
Leeds Workpeople's Hospital Fund, 366
Leesum, Prof. E. C. Van, dietetics and public health, 1252
Leeuwen, Prof. Dr. W. S. Van, and H. Varekamp, tuberculin treatment of bronchial asthma and hay fever, 1366
Legg, Dr. J. W., obituary, 1027
Leicester, Dr. J. C. H., unusual gynæcological cases, 755
Leicester Royal Infirmary, scheme to raise £100,000, 831
Lemon-juice in scurvy (Sir P. W. Bassett-Smith), 321
Lereboullet, M., and others, Sympathetique and Glandes Endocrines (review), 396
Lesné, E., and Léon Binet, Physiologie normale et pathologique du Nourrisson (review), 706
Levy, Dr. A. G., cardiac massage, 949
Lewandowsky, Dr. F., death of, 1297
Lewis, Dr. W. C. McC., System of Physical Chemistry (review), 398
Leyton, Dr. A. S. F., obituary, 825
Library, universities', for Central Europe, 417; medical, valuable, 1100
Licensing reform (Py Q), 158; Bill, new, 260, 367, 417
Lichtwitz, Prof. L., Praxis der Nierenkrankheiten (review), 656
Life Insurance, Medical Examination for (Dr. T. D. Lister) (review), 858
Light, Artificial (M. Luckiesh) (review), 344
Light, loss of reflex to, restored in sleep (Dr. A. Garvie), 1374
Light-sense test, 510
Lighting in kinema studios, 569
Lillingston, Dr. C., international sanatorium inspection, 48
Limb, light artificial, inquiry on (Py Q), 52
Limbs, artificial, for pensioners, 157
Lister, Dr. T. D., Medical Examination for Life Insurance (review), 858
Literary intelligence, 176, 313, 531, 647, 703, 771, 796, 880, 982, 1034, 1071, 1194, 1303
Litman, Prof. S., Prices and Price Control in Great Britain and the United States during the World War (review), 809
Little, Mr. E. M., Arm-training School at Roehampton, 96
Littlewood, Col. H., obituary, 1395
Liverpool Medical Institution (see Medical Societies)
Liverpool University, pass lists, 205, 1350
Llewellyn, Dr. L. J., Gout (review), 395
Lloyd, Dr. G. W., dangers of the public swimming-bath, 779
Lloyd's Health Insurance Society, meeting, 106
Logan, Dr. V. D. O., death of, 276
Lomax, Dr. M., Experiences of an Asylum Doctor (review), 292
London and the water shortage (Py Q), 160
London Association of the Medical Women's Federation (see Medical Societies)
London County Council and care of the blind, 863
London Federation of Infant Welfare Centres, meeting, 54
London Hospital Medical College, award, 781; Medical Society, programme, 830
London Medical Exhibition, 822
London School of Tropical Medicine, pass lists, 312
London Toll Exchange, 620; Telephone Exchange, 631, 683, 735
London University, meeting, 53, 255, 1351; Dr. F. Langmead appointed professor of medicine, 244; pass lists, 255, 364, 682, 1135, 1396; College, awards, 179, 928; *appointments*, 481, 928; post-graduate lectures on mental deficiency, 1193
Long, Dr. Constance, and Dr. Sylvia Payne, physician's responsibility in respect of the sex life of the patient, 1110
Loti, Pierre, The Sahara (review), 1008
Louse, head, problem of (Dr. G. A. Auden), 370; problem on the Western front, 1076, 1244
Loxton, Dr. W. A., obituary, 731
Luciani, Prof. L., Human Physiology (review), 513
Luckiesh, M., Artificial Light (review), 344
Luker, Dr. G., extra-uterine pregnancy, 20
"Lukmah" tonic tea, 1226
Lumbago and sciatica, reflex mechanism of, 1016
Lumière, A., Rôle des Colloïdes chez les Etres Vivants (review), 1008
Luminal sodium, use of, in epilepsy (Dr. J. T. Fox), 558
Lumleian lectures on the ætiology of skin diseases (Dr. A. Whitfield), 61, 122, 168
Lunacy and divorce, 353; Law and foreigners (Py Q), 486; control, 723
Lunacy in India (Major W. Overbeck-Wright) (review), 397
Lunatic asylums, ex-service men in (Py Q), 983, 1032, 1135; women visitors of (Py Q), 983
Lung, syphilis of, 619
Lungs, Diseases of (Prof. A. Bacmeister), second edition, 1921 (review), 513
Lunn, Sir H., Guelpa's method in treatment of gout and glycosuria by fasting and purging, 1157
Lupus, pathology and treatment (Prof. W. S. Handley), 1089, 1188
Lupus-epithelioma treated with radium (Dr. F. J. Jauch), 704
Lutembacher, Mr. R., Les Nouvelles Méthodes d'Examen du Cœur en Clinique (review), 1377
Lymph, vaccine, subcutaneous injection of, 243
Lymphadenoma and tuberculosis (Dr. I Fox), 14
Lymphocyte and lymphoid tissue in nutrition (Dr. W. Cramer, Dr. A. H. Drew, and Dr. J. C. Mottram), 1202
Lymphoid tissue, irradiation of, 917
Lymphoidocyte and its clinical significance (Dr. A. K. Gordon), 230
Lynd's "well-made" soap, 968

M

Macarthur, Dr. J., Mental Hospital Manual (review), 292
MacCallum, Dr. A. J., death of, 586
McCann, Dr. F. J., treatment of puerperal infection, 1277
McCarrison, Col. R., Studies in Deficiency Diseases (review), 76
McClelland, Dr. R. S., case of scurvy, 608
McClure, Dr. J. C., and Dr. H. A. Ellis, *administration of hydrochloric acid*, 271
MacCormac, Dr. H., skin diseases in pensioners, 341
McCurrich, Dr. H. J., large hæmatoma of vulva following labour, 805
McDonagh, Mr. J. E. R., rationale of *Wassermann reaction*, 1319
Macewen, Dr. J. A. C., multiple sarcomata, 754
McIlroy, Prof. A. L., some factors in control of the birth-rate, 179
McKenzie, Dr. D., swimming-bath and ear infection, 585, 779
Mackenzie, Sir J., Heart Disease and Pregnancy *(review), 1376*
Macklin, Dr. A. H., and Mr. L. D. A. Hussey, scurvy in Polar regions, 322
Maclean, Dr. E., combined fibromyoma and carcinoma of the uterus, 19
Maclean, Prof. H., renal function tests, 336
McLeod, Dr. J. W., ultra-microscopic viruses, 361
Macleod, Prof. J. J. R., and Dr. N. B. Taylor, effects of hot and cold applications to the surface of the body, 70
McMullen, Mr. W. H., fundus changes in *three brothers*, 21
MacMunn, Mr. J., improved devices for bladder drainage and closure, 346
Mac Munn, Mr. N., Child's Path to Freedom *(review)*, 23
Macpherson, Dr. A., death of, 586
Macpherson, Maj.-Gen. Sir W. G., disposal of latrine contents, 855
McQueen, Dr. J., and Dr. L. Hill, capillary pressure and the *circulation in shock*, 65
MacQueen, Dr. T., death of, 1303
MacRae, Dr. A., nodular keratitis of Southern Arabia, 512
Macular disease, acute, 21
Madill, Dr. D. G., and Dr. H. Jellett, Manual of Midwifery, third edition, 1921 (review), 77
Madras Health Officers' Service, provincialisation of, 412; Medical College, prize distribution, 821
Magnus, Sir P., retirement, 1070
Malaria, headache the only symptom of a *case, 727*
Malarial prevalence in temperate climates, 1120
Malcolm, Mr. J. D., the circulation in shock, 153
Malignant disease, X rays in (leading article), 25, 153; disease of cervix, *treatment*, 504; disease, combined treatment (leading article), 516
Mamourian, Mr. M., *bone-grafting*, 286
Man, evolution of, part played by the endocrine glands (Prof. L. Bolk), 588, 629; origin of, 1166
Man-power, 1122
Manchester and Salford Radium Institute, report, 500; Royal Infirmary, post-graduate lectures, 746; Radium Institute, opening ceremony, 827; Ear *Hospital, report, 1218*
Manchester University, pass lists, 53, 204, 1396; graduation ceremonial, 107; appointments, 312, 928, 1073; awards, 531, 1073; report, 830, 1193; retirement of Prof. H. B. Dixon, 1302
Marriage bar, the, 779
Marsh, Prof. Howard, memoir, 1121; corrigendum, 1170
Marshall, Dr. G., artificial pneumothorax apparatus, 710
Marshall, Dr. G. B., fibroids complicating pregnancy, labour, and puerperium, 1218
Marshall, Prof. C. E., Microbiology, third edition, 1921 (review), 133
Marten, Benjamin, pioneer, 1333
Martin, Dr. J. P., and Dr. E. H. Eastwood, *primary tumour of the pleura*, 172
Martindale, Dr. Louisa, birth-control, 908
Mary, Albert and Alexandre, Dictionnaire *de Biologie Physiciste (review)*, 1328
Massage and Gymnastics, Medical. Diseases Treated by (Dr. J. Arvedson) (review), 657; Theory and Practice of (Beatrice M. Goodall-Copestake), third edition *(review)*, 657
Massage, cardiac (Dr. A. G. Levy), 948
Masseuses and masseurs, register of, 1037
Masters, Helen, and Dr. C. K. Tinkler, Applied Chemistry (review), 398
Mastoid process, structural type of, 961
Materia Medica and Pharmacy for Medical Students (Mr. R. R. Bennett), fourth edition, 1921 (review), 757; With *Notes on Prescription Writing (Dr. J.* Burnet) (review), 758
Maternity homes (Dr. Janet M. Campbell), 162
Maudsley Hospital, diploma in psychological medicine, 523, 1302
Mauritius, sanitary conditions, 1381; *infectious disease in*, 1391
Mawn, Mr. A. E., composition of cigarettes, 927
May, Dr. C. H., and Dr. E. H. Oppenheimer, Grundriss der Augenheilkunde, second edition, 1921 (review), 1008
May, Dr. O., self-disinfection, 1300
May, Dr. P., Chemistry of Synthetic Drugs, third edition, 1921 (review), 562
Mayors, medical, Dr. A. J. Rice-Oxley, 1082
Mayou, Mr. M. S., organisation of medical *education*, 1393
May-weed, bullous eruption caused by (Dr. J. H. Sequeira), 560
Measles in London, control of, 136, 182; gangrene following (Mr. E. Thorp), 754; epidemic in Bessarabia, 1313
Meckel's *diverticulum, intestinal obstruction* due to, 1178
Medical and Pharmacy Bill for South Africa, 1298
Medical Annual, 1921 (review), 231; Jurisprudence and Toxicology, Text-book of (Prof. J. Glaister), fourth *edition, 1921 (review)*, 344; Gymnastics and Massage, Diseases treated by (Dr. J. Arvedson) (review), 657; Theory and Practice of Massage (Beatrice M. Goodall-Copestake) *(review)*, 657; *History, Annals of (review)*, 759; *Dictionary*, Practical (Dr. T. L. Stedman), sixth edition, 1921 (review), 1007
Medical Benefit Amendment Regulations (No. 5), 1921, 927; referees, appointments of (Py Q), 930; certificates, the *sanctity of (leading article)*, 1171
Medical Council for the Care of Sick Children, meeting, 148; and dental treatment of school children, 253
Medical Defence Union, Ltd., report, 916; Insurance Agency, report, 1385
Medical Diary, 55, 111, 162, 211, 261, 318, 366, 420, 535, 587, 632, 688, 736, 783, 832, 881, 932, 985, 1035, 1083, 1137, 1195, 1251, 1304, 1352, 1397
Medical Directory for 1922, 1179
Medical History of the War, 1286
Medical library, valuable, 1400
Medical officers' leave (Py Q), 52
Medical officers of health, annual reports, 43, 94, 156, 187, 234, 359, 415, 528, 582, 626, 672, 776, 824, 871, 924, 978, 1075, 1184, 1294, 1344, 1392; (leading article), 85; officers, regional (leading article), 349, 983; salary, 782; of Bradford Corporation (Py Q), 1031
Medical Officers of Schools Association (see Medical Societies)
Medical physiologist, 616; research, value of apparatus and technique in (Sir A. Wright), 642; *benefactor*, 721; evidence for the defence, 722; men in Bulgaria, duties of, 869; stores for Russia, 1032, 1349; education, status of, 1078
Medical *privilege* (Py Q), 309; department and military morale, 372; degrees, colonial and foreign, registrable (see Student's Guide), 477; science in Vienna, development of *(Dr. M. Neuburger)*, 536; *congress* at Yverdon, 592; education and the Rockefeller Foundation (leading article), 615; defence, 916; Art Calendar, 1198; education, organisation of, 1299, 1348, 1393
Medical profession in Ireland, organisation of, 152; contract practice, conditions a generation ago, 775
Medical Register, untraceable practitioners, 732
Medical Research Council, Sir F. Andrewes and Sir C. Wallace appointed, 724; Sickness, Annuity, and Life Assurance Society, Ltd., meeting, 776
Medical schools, opening of the session, 771; (leading article), 766, 819; curriculum in Switzerland, reform of, 1297
Medical services in the colonies, 208; Commissioners of, and temporary grants (Py Q), 209; *Service of the Air Force* (Py Q), 311; service, rural, in U.S.A. (leading article), 1011

MEDICAL SOCIETIES.

Bristol Medico-Chirurgical Society.—*Quackery in the treatment of ophthalmic disease*, 880—Renal efficiency tests, 1112—Rôle of dilute acids in infection, 1375
British Congress of Obstetrics and Gynæcology.—End-results of vaginal operations for genital prolapse, 15—Genital *prolapse* treated by vaginal operation; Operation of colporrhaphy, 16—Condition of sutures *after Cæsarean section; combined* fibromyoma and carcinoma of the uterus; Full-term ovarian pregnancy, 19—Pathology of syphilis of the new-born; Extra-uterine pregnancy, 20
Devon and Exeter Medico-Chirurgical Society.— Delirium, 1005
Glasgow Obstetrical and Gynæcological Society.—Fibroids complicating pregnancy, labour, and puerperium, 1218
Harrogate Medical Society.—Basal metabolism; Remote effects of tonsillitis, 1034—Clinical interpretation of the Wasserman reaction, 1135
Leeds and West Riding Medico-Chirurgical Society.—Exhibition of cases and specimens, 879—Acholuric jaundice; Psychotherapy with and without specialism, 1136—Oral sepsis and systemic disease, 1326
Liverpool Medical Institution.—Treatment of septic ulcer of the cornea by chauffage; Treatment of abnormalities of urine in children, *1005—Spontaneous pneumothorax,* 1166—Undescended and misplaced testicle, 1167—Diagnostic value of the vibration sense; Genito-urinary cases, 1278—Encephalitis lethargica, 1326
London Association of the Medical Women's Federation.—Birth control, 75—Sterility, 1325
Manchester Medical Society.—Diagnosis of abdominal diseases; *Carcinoma of large intestine: Ketosis* in children, 1220
Medical Officers of Schools Association.—*Games for girls, 902*
Medical Society of London.—Modern treatment of diabetes, 957—Arsenobenzol treatment of syphilis, 1111
Medical Women's Federation.—Birth-control, 908, 1082—Physician's responsibility in respect of the sex life of the patient, 1110
Medico-Legal Society.—Some factors in control of the *birth-rate*, 179—Incapacity for work within the meaning of the National Insurance Act, 1911, 905
Medico-Psychological Association of Great Britain and Ireland.—Annual meeting: List of papers contributed, 365—Medical examination of delinquents, 1275—Forgetting, *1276*
Newcastle-on-Tyne and Northern Counties Medical Society.—Exhibition of cases, 894
North of England Obstetrical and Gynæcological Society.—*Use* of anti-gonococcal serum, 1060
Norwich Medico-Chirurgical Society.—Psycho-therapy, 1113—*Exhibition of* cases and specimens, 1375
Pathological Society of Manchester.—*Tuberculosis in children*, 1277
Royal Medico-Chirurgical Society of Glasgow.—Respiratory *exchange* in health and disease, 1165—Stovaine *anæsthesia*, 1166
Royal Society of Medicine (Sections).—The private clinic system, debate, 99—Syphilis of the stomach, 1159
Anæsthetics. — Trans-Atlantic methods of administering anæsthetics, 1059
Clinical.—Exhibition of cases and specimens, 855
Laryngology. — Laryngo-fissure for *epithelioma of a vocal cord*, 1058
Medicine.—Epigastric pain, 1005
Neurology.—Treatment of persistent pain, due to lesions of the central and peripheral nervous systems, 1057
Obstetrics and Gynæcology.—Exhibition of specimens, 801, 1003—Large hæmatoma of vulva following labour; Prolonged gestation;

Polypoid decidual endometritis, 805—Cystic adenoma of uterus : Glycosuria in pregnancy, 1003
Odontology.—Endocrine factor in immunity and susceptibility of the teeth to caries, 1216
Ophthalmology.—Exhibition of clinical cases and specimens, 21, 904, 1108.—Fourth cranial nerve ; Milestones in refraction work, 905—New psychology in relation to problems of vision; Thrombosis of retinal vein, 1108
Otology.—Structural type of the mastoid process, 961—Diagnostic exploration of posterior ethmoidal cells, 962—Exhibition of cases, 962
Pathology.—Action of radium and X rays upon the mononuclear leucocytes of the blood : Sachs-Georgi *reaction in syphilis, 962—Guinea-pig* epizoötic associated with dietary "deficiency" ; Standardisation of anti-dysentery serum, 1109
Surgery.—Ligation of innominate artery for innominate aneurysm, 1274—New operation for inguinal hernia, 1275—*Sub-section of Orthopædics.—Exhibition of cases*, 803
Urology.—Renal function tests, discussion, 1161
War.—Aftermath of war with reference to the medical service of the army, 802
Royal Society of Tropical Medicine and Hygiene.—Snake-bite in India, 177—Life insurance in the tropics, 906—Exhibition of cases and specimens, 1164
Sheffield Medico-Chirurgical Society.—Treatment of ante-partum hæmorrhage, 1219
Société de Thérapeutique de Paris.—Summary of papers, 22, 334, 1167
Society of Medical Officers of Infant Welfare Centres and Society of Medical Officers of Health (Joint Meeting).—Nature of summer diarrhœa, 963
Society of Medical Officers of Health.—Public health problems, 908—Tuberculosis, infection, immunisation, sensitisation, 1109—*Tuberculosis S.W. Sub-Group :* Meeting, 982—*Naval, Military, and Air Force Hygiene Group :* Coöperation between the civil and military sanitary authorities during a great national emergency, 331—Disposal of latrine contents, 855—Development of hygiene, pathology, and bacteriology in the Naval Medical Service, 1324—*School Medical Group :* Meeting, 1194
South-West London Medical Society.—Rôle of the electrocardiograph in practical medicine, 1060—Syphilis, 1324
South-Western Ophthalmological Society.—*Exhibition of cases, 949*
Ulster Medical Society.—Unusual cases of pulmonary disease, 1034—Origin of man, 1166—Wassermann reaction, 1278
West Kent Medico-Chirurgical Society.—Exhibition of cases and specimens, 955—Treatment of fractures, 1136
West London Medico-Chirurgical Society.—Breast cancer in relation to the cancer problem, 857—Exhibition of cases and specimens, 1059—Treatment of puerperal infection, 1277
York Medical Society.—Future of voluntary hospitals, 963

Medical Society of London, syllabus, 781 ; (see also Medical Societies)
Medical Therapeutics of the Ear, Nose, and Throat (G. de Parrel) (review), 22
Medical Women's Federation (see Medical Societies)
Medicinal Preparations, Qualitative Analysis of (Mr. H. C. Fuller) (review), 1169

Medicine and the Law.—Duration of pregnancy, 357—Will-making of the insane : Hospital finance and National Insurance ; Drugs to induce miscarriage ; Æsthetic surgery, 410—Control and drunkenness, 411—Shell-shock and perjured evidence : Rex *v.* Starkie ; Traffic in cocaine, 677—Legal aspects of the case of Harold Jones, 1022—Inquest without post-mortem examination, 1023—Definition of live birth : Action for damages against a medical man, 1073—Landru : Rex *v.* Starkie, 1241—Brown *v.* Craig and Pitcairn, 1242
Medicine, debt of our tropical dependencies to, 49 ; in evolution, 86 ; history of, second international congress in Paris, 198 ; psychological (Dr. C. H. Bond), 319 ; industrial, importance of, to the community (Prof. E. L. Collis and Sir K. Goadby), 487 and 489, 501 ; (leading article), 515 ; comparative, 663
Medicine, Guide to the Ethics of (Dr. W. G. A. Robertson) (review), 757 ; Practical, Dictionary of (Sir M. Morris, Dr. F. Langmead, and Dr. G. M. Holmes) (review), 1221 ; General (Dr. F. Billings and Dr. B. O. Raulston) (review), 1221 ; Aids to (Dr. B. Hudson), third edition, 1921 (review), 1329
Medicine, preventive, and industry, conference at Oxford, 726 ; in China, growth of, 767 ; and Whitaker's Almanack, 836 ; pragmatism in (leading *article), 1118 ; in art, 1290 ; indigenous,* and the Government of India, 1356
Medico-educational experiment, 318
Medico-Legal Society (see Medical Societies)
Medico-Psychological Association of Great Britain and Ireland (see Medical Societies)
Melanoma of the choroid (Dr. A. E. Keown), 1056
Meningeal infections, artificial pneumorachis in, 1337
Meningitis, Gaertner, complicating Gaertner enteritis (Dr. J. Smith), 705 ; serous (Dr. A. G. Yates), 1371
Meningococci, agglutination of (Prof. I. W. Hall and Dr. G. E. Tilsley), 494
Menopause, surgical, control of, 815
Menstruation and its Disorders (Dr. E. Novak) (review), 1223
Menstruation, basal metabolism in (Miss M. O. P. Wiltshire), 388
Mental disease in ex-Service men, work of the Ministry of Pensions, 1388
Mental disorder, State care of, annual report of the Board of Control (lunacy and mental deficiency) for 1920, 820 ; treatment of ex-Service men, 1030, 1135 ; expert in the magistrate's court, 1287 ; hygiene, essentials of, 1289
Mental Hospital Manual (Dr. J. Macarthur) (review), 292 ; Cases, Examination of (Dr. A. Barbé) (review), 707 ; Measurement, Essentials of (Dr. W. Brown and Dr. G. H. Thomson) (review), 1168
Mental hygiene (leading article), 349, 1289 ; defectives, female, care of, at Hull, 420 ; hospitals in Scotland, annual report of the Board of Control, 421 ; deficiency and crime (Dr. W. C. Sullivan), 787, 816 ; diseases and syphilis, 869 ; defectives and Board of Control (Py Q), 1134
Menthol, importation of (Py Q), 1349
Menzies, Dr. J. A., obituary, 155
Menzies, Dr. K., Autocratic Phenomena in Adolescence, second edition, 1921 (review), 757
Merrall, Dr. H., adenoids and their association with rickets, 994 ; ætiology of adenoids, 1347
Mesopotamia honours, 682 ; deaths from disease in (Py Q), 983
Metabolism, basal, 1034
Metchnikoff, life of, 813
Meteorology and bacterial infection, 1235
Metropolitan Asylums Board, report, 580
Metrorrhagia, synchronous combined treatment by radium and X rays, 1074
Michell, R. W., memorial, 628
Microbiology (Prof. C. E. Marshall), third edition, 1921 (review), 133 ; General, Laboratory Manual in (Dr. W. Giltner), second edition, 1921 (review), 1376
Microscope, How to Get the Best out of (Dr. A. C. Coles) (review), 76
Microtomist's Vade-Mecum (Mr. A. B. Lee), eighth edition, 1921 (review), 808
Middle-ear disease, post-scarlatinal, 667 ; chronic suppuration of (Dr. A. G. Wells), 1268
Middlesex Hospital Medical School, awards, 782
Midland Obstetrical and Gynæcological Society, meeting, 781
Midwifery, Manual of (Dr. H. Jellett and Dr. D. G. Madill), third edition, 1921 (review), 77
Midwifery, rôle of Cæsarean section in, 502 ; practical, the teaching of (leading article), 1228
Miles, Dr. A., Surgical Ward Work and Nursing, fourth edition, 1921 (review), 397
Milestones in anæsthesia, 636
Military morale and the medical department, 372 ; Cross, 780
Milk-borne diseases and children, 251
Milk, Dublin, 42, 736 ; dried, 150 ; composition of, 192 ; transit, insanitary (Py Q), 311 ; for tuberculous persons (Py Q), 367 ; control and tuberculosis, 392 ; free, in infant welfare centres, 586
Milk for mothers and infants, 619, 736, 930, 1031 ; supply, a clean (leading article), 662 ; and water, 884 ; not for analysis, 1256 ; studies in (Dr. R. S. Williams), 1386
Miller, Dr. D., presentation to Sir J. Halliday Croom, 877
Miller, Dr. S., *basal metabolism*, 1034
Milligan, Sir W., on death from respiratory and not from cardiac failure, 98
Mills, Dr. H. H., medical superannuation fund, 778
Milroy, Dr. J. A., and Dr. T. H. Milroy, Practical Physiological Chemistry, third edition, 1921 (review), 1328
Milroy lectures on respiratory efficiency in relation to health and disease (Wing-Comdr. M. Flack), 593, 637, 693, 741 ; (leading article), 766
Minchin, Dr. W. C., new stethoscope, 1010
Mine Medical Officers' Association on the Rand, 263
Mining Dangers Research Board, 191
Ministry of Health, women in (Py Q), 110 ; medical staff of (Py Q), 158 ; and sanatorium treatment (Py Q), 161 ; annual report of the chief medical officer, 192 ; Board of Control and mental defectives (Py Q), 1134
Ministry of Pensions, appointment of medical referees (Py Q), 309 ; review of pension appeals, 334 ; medical officers of (Py Q), 367 ; hospitals, staff of (Py Q), 368 ; benefits to disabled officers and others, 735 ; concurrent treatment and training, 920 ; work of, 1127
Miscarriage, drugs to induce, 410
Mission hospital in China, 317
Missions, medical, in China (Mr. H. Balme), 784
Mitchell lecture on tuberculosis (Dr. F. P. Weber), 940, 976
Mitral and aortic disease with extensive myocardial degeneration, arrhythmia in (Dr. M. Davidson and Dr. H. G. Butterfield), 12
Model village in U.S.A., 151
Moffat, Dr. C. W. P., appointed medical officer of health for Bolton, 1250
Monod, Dr. G., syphilis of the stomach, 1159
Monrad-Krohn, Dr. G. H., Clinical Examination of the Nervous System (review), 859
Moodie, Dr. W., and Dr. W. S. Dawson, ætiology of bacillary dysentery in asylums, 225
Moore, Mr. I., Intrinsic Cancer of the Larynx and the Operation of Laryngo-Fissure (review), 231
Moore, Mr. R. F., cure of detachment of retina, 174, 194
Moore, Prof. B., Biochemistry (review), 655
Morphine-scopolamine narcosis, 727
Morris, Mr. E. F., obituary, 364
Morris, Mr. E. W., anæsthesia with nitrous oxide and oxygen under pressure, 533
Morris, Sir M., Dr. C. Buttar, Dr. N. H. Mummery, reduction of the capitation fee, 874 ; Dr. F. Langmead, and Dr. G. M. Holmes, Dictionary of Practical Medicine (review), 1221
Morrow, Dr. A. S., Diagnostic and Therapeutic Technic, third edition, 1921 (review), 232
Morson, Mr. C., new bladder lamp, 968
Morton, Dr. T. H., death of, 586
Mosley, Dr. R. L., death of, 860
Mosquitoes in England, distribution of, 1037
Mother and Child (Dr. E. P. Davis), fourth edition, 1921 (review), 708 ; the Prospective (Dr. J. M. Slemons), second edition, 1921 (review), 1115
Mothers' aid centres in Vienna, 836
Mothers, unmarried, provision for, 149
Moths as pests in the pharmacy, 1336
Motor-cars, S.A. impulse starter for, 60 ; vehicles, new taxation (Py Q), 418 ; Exhibition, points for the medical user, 977 ; exhaust gas in confined spaces, 1017 ; taxation (Py Q), 1135
Mottram, Dr. J. C., use of blood counts to indicate efficiency of X ray and radium *protection, 393 ; action of radium and* X rays upon the mononuclear leucocytes of the blood, 962 ; Dr. W. Cramer, and Dr. A. H. Drew, lymphocyte and lymphoid tissue in nutrition, 1202
Mountain sickness, 617
Moxon, Dr. F. H., desk for myopes, 21
Moynihan, Sir B., the Spleen and Some of its Diseases (review), 565

Much, Prof. H., Tuberculosis of Children (review), 1168
Mucocele and pyocele of nasal accessory sinuses (Mr. W. G. Howarth), 744
Mummery, Dr. N. H., *inquiry into the* Insurance Acts, 778; Sir M. Morris, and Dr. C. Buttar, reduction of the capitation fee, 871
Munby, Mr. A. E., Laboratories, their Planning and Fittings (review), 966
Municipal health services (leading article), 1283
Munro, Dr. D. G. M., psycho-pathology of *pulmonary tuberculosis, 556*
Murder by means of bacteria, 1066
Murray, Dr. J. A., experimental tar cancer in mice, 336
Murray (Jane Hall) bed, convertible, 1088
Murrell, Dr. Christine, sterility, 1325
Murrell, Dr. W., and Dr. P. Hamill, What to do in Cases of Poisoning (review), 1378
Muscle, striped, *innervation of*, 813
Mutch, Dr. N., alimentary infections in chronic arthritis, 1266
Myer, Mr. L., reactions after salvarsan, 877
Myers, Col. A. B. R., obituary, 361, 1141
Myers, Prof. V. C., Practical Chemical *Analysis of Blood (review)*, 911
Myocardial disease (Dr. M. Davidson and *Dr. H. G. Butterfield*), 12
Myopes, a desk for, 21
Myopia in school children, 251
Myxœdema following X ray treatment, 1059

N

Nasal accessory sinuses, mucocele and pyocele of (Mr. W. G. Howarth), 744
National Association for the Prevention of Infant Mortality, lectures, 1397
National Baby Week Council, meeting, 979
National Children Adoption Association, 60
National *Council for Combating Venereal Disease, meeting, 55, 1082*
National Council of Public Morals, report, 164
National Institute for Medical Research, work of (Dr. H. H. Dale), 112
National Physical Laboratory, annual report, 115
National Provident Scheme for hospital and additional medical services, the *London scheme, 622, 681, 980, 1125*
Nausea and vomiting in pregnancy (Prof. V. J. Harding), 327
Naval and military medical appointments (Py Q), 311; Hospital, Plymouth (Py Q), 417; men, disabled, in hospital (Py Q), 418
Naval Medical Service, development of hygiene, pathology, and bacteriology *in, 1324; (see also Students' Guide)*, 464
Neame, Mr. H., cyst of Krause's gland, 1108
Neech, Dr. J. T., early discharge of scarlet fever cases, 1131
Needle, surgical, improved, 133
Neoarsphenamin, varying toxicity of, 786
Neo-salvarsan poisoning, delayed (Dr. *D. R. C. Shepherd), 1273*
Nephrectomy, right-sided, duodenal fistula after, 864
Nephritis, chronic, and arterial hypertension, *299*; war, *pathology of (leading* article), 568
Nerve, direct faradic stimulation of, *anomalous response* (Prof. J. S. B. Stopford), 73; cases, functional, clinic for, 866; *the fourth cranial*, 905
Nerve Injuries, Peripheral, of Warfare, Surgery of (Mr. H. Platt) (review), 1376
Nervous diathesis and the blood, 290; diseases, physiology of symptom production, *290*; *breakdown*, treatment, 412; system, the visceral sensory, 520; disease, early symptoms (Dr. J. S. Bury), *549*
Nervous System, Clinical Examination of (Dr. G. H. Monrad-Krohn) (review), 859; Diseases of (Dr. H. C. Thomson), third edition, 1921 (review), 859; System, Central, Form and Functions *of (Dr. F. Tilney and Dr. H. A. Riley)* (review), 910
Neuburger, Dr. M., development of medical science in Vienna, 536
Neurological Congress, Interallied, in Paris, 31
Neurology and History of Medicine in Vienna, new *Institutes of*, 923
Neurology, Text-book of (Prof. R. Bing), second edition, 1921 (review), 707; Clinical Examination of the Nervous System (*Dr. G. H.* Monrad-Krohn) (review), 859; Diseases of the Nervous System (Dr. H. C. Thomson), third *edition, 1921 (review), 859; Form and* Functions of the Central Nervous System (Dr. F. Tilney and Dr. H. A. *Riley) (review)*, 910; *Traumatismes* Cranio-Cérébraux (Dr. H. Duret) (review), 964; Leitfaden der Neurologischen Diagnostik (Dr. K. Singer), 965
Neurosis, objective study of (Dr. F. L. Golla), 115, 215, 265, 362, 373, 533; *(leading article)*, 402
Newbolt, Mr. G. P., diagnosis and treatment of carcinoma of large intestine, 1220
New-Born, Diseases of (Dr. A. R. von Reuss) (review), 706; (MM. E. Lesné and Léon Binet) (review), 706
Newcastle-on-Tyne and Northern Counties Medical Society (see Medical Societies)

NEW INVENTIONS.—Aero-urethroscope, new, 514—Anæsthesia, combined apparatus for inhalation or insufflation, *660—Bladder drainage and closure*, new devices, 346—Bladder lamp, new, 968—Filter cylinders, germ-proof, *adjustable joint for*, 810—Forceps, tendon tunnelling, 1330—Hand-lamp, operating, for ophthalmic work, 1282—Hare-lip surgery, a suggestion, 860—Inhaler, ether, a compact warm, 82; ether, improved, 186—Open-ether anæsthesia during throat operations, 21—Pneumothorax, artificial, apparatus, 710—Sigmoidoscope, irrigating, 1226—Splint, abduction, for the shoulder, adjustable, 612—Sterilisor, hot-air, for steel needles, 810—Stethoscopes, new, 1016—Surgical needle, improved, 133—Tracheotomy tube, new, and false membrane forceps, 566—Urethroscope tube for the posterior urethra, 1378

Newsholme, Sir A., vital statistics, their better use in public health administration, 833
Newspaper insurance, 1255
Newton, Alfred, Life of (Mr. A. F. R. Wollaston) (review), 656
Nightshade (leading article), 1065
1921, year (leading article), 1379
Nirenstein, Dr. E., and E. Margaret Hume, hunger-osteomalacia in Vienna, 849
Noise and its cure (leading article), 1172
Norfolk and Norwich Hospital, report, 683
North-Eastern Association for the Care of the Feeble-Minded, meeting, 783
North of *England Obstetrical* and Gynæcological Society (see Medical Societies)
North Ormesby Hospital, new X ray *department*, 985
North-Western Hospital, lectures on hospital administration, 1351
Norwich Medico-Chirurgical Society (see Medical Societies)
Nose and Throat, Guide to Diseases of, and their Treatment (Mr. C. A. Parker and Dr. L. Colledge), second edition, 1921 (review), 231
Nose, throat, and ear requirements of airmen (Squad. *Leader* D. Ranken), 1263

NOTES AND SHORT COMMENTS.—Nutrition and economic conditions of working-class families in Glasgow in April, 1921 (Annabel M. T. Tully), 57—Public health at Cape Town, 1919-20; Vital statistics for 1920 of non-native officials in West Africa, 59; National Children Adoption Association; S.A. impulse starter for motor cars; New rimless pince-nez; Chemists' Exhibition; Improved *rubber sheeting*; Thimble tooth-brush, 60—Work of the National Institute for Medical Research *(Dr. H. H. Dale), 112—Public health* in Egypt, 1919, 113—Housing in Yorkshire and Lancashire; Rubber rings round test-tubes; Women's Holiday Fund, 114—Maternity homes (Dr. Janet M. Campbell), 162—Guest house for mothers and babies; Medical Golfing Society; *National Council of* Public Morals; Medical man's *investments, 161—Law of the heart* (Prof. E. H. Starling), 212—Early books on medicine and anatomy; Rats and the film, 213—Citizen of Empire; Approved *salvarsan* substitutes; Glass-blowing; College *for blind girls*; Cholera in Assam, 214—Industrial hygiene, its rise, progress, and opportunities (Sir T. Oliver), 262—Mine Medical Officers' Association on the Rand; Factory Girls' Country Holiday Fund, *263—Trifolium stellatum at* Shoreham; Public health at Colombo, 1919; Action of the heart after death, *261—Phantasies of the dying (Dr.* J. N. Glaister), 315—"Petromortis": West Riding Medical Charitable Society; *English-Esperanto* dictionary; Mission Hospital in China, 317—Medico-educational movement; Worthing water-supply, 318—Problem of the head louse (Dr. G. A. Auden), 370—Training of epileptics in the United States, 371—Medical department and military morale; Public health in Tasmania, 372—Soviet Russia and prostitution, 421, 739—Public health in Assam: *(1) kala-Azar, (2) vaccination*; Mental hospitals in Scotland, annual report of the Board of Control, 421—*Home labour and insanity; needs* of King's College Hospital; Operation for rhinophyma; "Ersatz" leather; *Rest and help for hospital nurses*, 422—Development of medical science in Vienna (Dr. M. Neuburger), 536—*University graduates*: An insurance broker; Two needless deaths; Revenue from patent medicines; St. Thomas's Hospital Samaritan Fund, 539—Ætiology of typhus; Society for constructive birth control; War disablement pensions; Sanitation in Flanders; Dangerous Drugs Act, 1920; Winter resort for chronic rheumatism; Foreign postage rate; Orthography in Uganda; Airman's physique, *540*—Part played by the endocrine glands in the evolution of man (Prof. L. Bolk), 588—*Medical Congress at Yverdon*; An exaggerated report; *The old* "Impregnable"; Another *consumption cure in the lay press*; New procedure in obstetrics, 592—Hospital problem and a new hospital service (Mr. J. Griffiths), 633—Clinical thermometer sheath, 634—University training for welfare workers; Gas disease in fish; Use of X rays in obstetrics; *"Black peril" in U.S.A.*; *Simple* method of fixing finger-prints, 635—Milestones in anæsthesia; Sanitation in Bengal; *Indian jail occupation, 636*—Present position of psychotherapy (Dr. M. Culpin), 681—Public health in *Bihar and Orissa*, 1919, 687—Suicide-rate and national prosperity; State Institute of Hygiene in Prague, 688—*Sciatica. Scandinavian investigations* on its pathogenesis (Dr. H. Jansen), 737—Influenza in Mauritius; Safe custody of drugs; Present-day golf; Colour equations; Bottle-fed baby, 740—Medical missions in China (Mr. H. Balme), 781—Loose neckwear in epilepsy; "Gateway to *Health*": Air travel in France; Press Congress at Honolulu; Physiology and hygiene for children, 785—*Varying toxicity* of neoarsphenamin; Supply of anatomical material; Colonial health reports, 786, 988—Uses of *dog*, 786, 884, 1038—Vital statistics, their better use *in* public health administration (Sir A. Newsholme), 833—Vaccination in the North-West Frontier Province; Aberdeen University Roll of Service; Medicine and Whitaker's Almanack; Mothers and centres *in Vienna*; Hygiene and medicine in Scotland, 1715-1900, 836—Sanitary and medical *administration in Burma, 882—African* native and medical service, 883—Milk—and water; A disappointed *hospital*; Child welfare in Finland; British spas and foreign competition, 884—Incitamin, new remedy for treatment of slowly healing sores (Prof. J. F. Fischer), 933—Comparative plant pathology, 935—Smith's Physicians' and Surgeons' Visiting List; X ray apparatus; Brighton water-supply. Reappearance of Oscar Gray, 936—Rat week, 1921; Food value of white flour; *Gloved hand*; Cost of clean streets; *Congenital heart block*, 987—Life of the house-fly in winter; *Evacuation of wounded* in Lapland snow; Gardening Diary, 988—Gastric response to foods; Baby management; Register of masseuses and masseurs; Food value of white flour; Seven at a birth; Distribution of mosquitoes in England, 1037—"La France"; Canine *distemper*; *Fraudulent "cures"*; Public health in Nyasaland, 1038—Significance of the sexual instinct for anthropology *and psycho-pathology* (Dr. I. D. Suttie), 1085—Industrial microbiology;

Public health in Trinidad and Tobago, 1919, 1087—Lady Henry Somerset memorial; Jane Hall Murray bed; Blind and smoking; Patient's standpoint, 1088—Knowledge and understanding (Dr. W. D. Halliburton), 1139—Institutional convalescence. 1140—Queensland hospitals for the insane; Outline of science; Selborne Society and cinematography; Ancient Scottish hair-cast; Cynotherapy; The late Col. A. B. R. Myers's autophlebotomy; Public health in Hong-Kong, 1141—Excessive prescribing; To ventilate and deodorise; Central heating in Chicago, 1142—Egypt and the Soudan, health and sanitation, 1196, 1254—Infections diseases on active service, the American Expeditionary Force, 1197—Eugenics in Sweden; Medical Art Calendar; Dream fairies; Combined birth control and welfare centre; Venereal disease in Australia; School child's environment; Institute of Applied Pestology, 1198—Dietetics and public health (Prof. E. C. Van Leersum), 1252—Licensed biological products in U.S.A.; Cynotherapy; Newspaper insurance, 1255—Milk—not for analysis; Collapsible douching apparatus; Collecting antiques; Leclanché cells; Definition of fine chemical; Disclaimer; Successful quackery, 1256—Doctrine of infection through the ages; Calendars and diaries for 1922; Epileptic fits and atmospheric potential; Hospitals and dispensaries in Bengal, 1305—Plant response to injury; Armenian Refugees (Lord Mayor's) Fund; Year-books; Travelling public health institutes, 1306—Health of India after the war, 1353—Acousticon aids for the deaf; Doctor in country life; Association of Certificated Blind Masseurs; Future of veterinary science, 1355—Improved varnish rat-trap; Birmingham Nerve Hospital, report; Government of India and indigenous medicine; Criminal abortion; Hospital staff dispute; Chess and prognosis, 1356—Perils of the week-end—and after; Health in a few words; Swimming-bath sanitation; Safeguarding of Industries Act, exclusion of santonin; Flower House, Catford; Taxation for hospital upkeep, 1399—Case of persistent diarrhœa; Valuable medical library; Improved chloroform bottle; Relative value of insulating substances; A warning; Therapeutic value of alcohol; Increase of pensions since 1914, 1400

Notified infectious diseases in 1920, 1014
Notter, J. L., and R. H. Firth, Hygiene, ninth edition. 1921 (review), 23
Novak, Dr. E., Menstruation and its Disorders (review), 1223
Nurses, dismissal of, at Steyning Infirmary, 208; registration rules (Py Q), 418; hospital, rest and help for, 422; disabled, training for, 534; infirmary training for, 1083
Nursing Procedures, Text-book (Miss A. C. Jamme), first edition, 1921 (review). 808
Nutrition and economic conditions of working-class families in Glasgow in April, 1921 (Annabel M. T. Tully), 57; in Vienna (Miss M. R. Gribbon and Prof. N. Paton), 747; and alcohol consumption, reform of, 869; normal, diet in relation to, 916; lymphocyte and lymphoid tissue in (Dr. W. Cramer, Dr. A. H. Drew, and Dr. J. C. Mottram), 1202
Nuvita dietetic biscuits, 400
Nyulasy, Dr. F., polypoid decidual endometritis, 805, 876

O

OBITUARY.

Bainbridge, Francis Arthur, M.A. Camb., M.D., D.Sc., F.R.C.P. Lond., F.R.S., 980
Beauchamp, Sir Sydney, M.B., B.Ch. Camb., 1192
Beaumont, Edgar, M.D. Durh., 1028
Brockatt, Andrew Alexander, M.D. Brux., M.R.C.S., 1027
Coombs, Carey Pearce, M.D. Lond., 730
Corbin, H. F., B.Sc. Lond., M.R.C.S., D.P.H., 1192
Cousins, John Ward, M.D. Lond., F.R.C.S. Eng., 731
Cow, Douglas Vernon, M.D., B.C. Camb., D.P.H., 98
Cuff, Herbert Edmund, O.B.E., M.D. Lond., F.R.C.S. Eng., 532
Daly, Edward Owen, M.A., M.D. Oxon., M.R.C.P. Lond., 923
Delépine, Sheridan, B.Sc. Lausanne, M.B., C.M. Edin., M.Sc. Manch., 1080
Dodd. H. Work, F.R.C.S. Eng., 98
Downie, James Walker, M.B., C.M. Glasg., F R.F.P.S. Glasg., 314
Elliott, John, M.D., B.S., F.R.C.P. Lond., F.R.C.S. Eng., B.Sc., 1394
Elliston, George Sampson, C.B., V.D., M.R.C.S., L.S.A., 1191
Evatt, Sir George Joseph Hamilton, K.C.B., 1080
Fletcher, Wilfred W. E., M.B. Camb., D.P.H., 363
Flynn, Robert A., F.R.C.P. Irel., 731
Freyer, Sir Peter Johnston, K.C.B., M.D., M.Ch. R.U.I., 677
Gambier, Thomas, M.D. St. And., 1248
Gold, David Drybrough, M.D. Edin., 1028
Haden-Haden, William Henry, M.D. St. And., M.A., D.C.L., M.R.C.S., 1248
Harley, John, M.D., F.R.C.P. Lond., 1346
Haward, John Warrington, F.R.C.S. Eng., 532
Helme, Thomas Arthur, M.D. F.R.S. Edin., M.R.C.P. Lond., 630
Hooper, Sir William Roe, K.C.S.I., F.R.C.S. Eng., 825
Jordan, Gregory Paul, M.B., C.M. Edin., LL.D. Hong-Kong. 1346
Legg, John Wickham, F.R.C.P. Lond., M.D. Lond., F.S.A., 1027
Leyton, Albert Sidney Frankau, M.D., Sc.D. Camb., F.R.C.P. Lond., D.P.H. Vict., 825
Littlewood, Harry, C.M.G., F.R.C.S. Eng., 1395
Loxton, William Arthur, M.B., Ch.B. Birm., F.R.C.S. Edin., 731
Menzies, James Ackworth, M.D. Edin., M.A. Dunelm, 155
Morris, Edgar Freeman, M.R.C.S., L.S.A., 364
Myers, Arthur Bowen Richards, M.R.C.S., L.S.A., 364
Oldham, Arthur Charles, F.R.C.S. Edin., 255
Sanders, William Gordon Woodrow, M.D. Montpellier, F.R.C.P. Edin., 1249
Savage, Sir G. H., M.D., F.R.C.P. Lond., 155
Scott, John, M.A., M.D. Aberd., 1192
Stone, William Domett, M.D. St. And., F.R.C.S. Eng., 826
Thompson, Peter, M.D. Ch.B. Manch., 1191, 1249
Thorne, Frederic, M.D. St. And., M.R.C.P. Lond., 981
Trotter, Robert Hale, M.D. Vict., M.B., Ch.B. Leeds, M.R.C.S. Eng., L.R.C.P. Lond., 826
Viret, Benjamin Pope, M.B. Lond., 731
Wilson, George, M.D., C.M., LL.D. Edin., M.A. Aberd., D.P.H. Camb., 877

Obstetrics at Leeds, teaching of, 350; a new procedure in, 592; use of X rays in, 635
Occipitalisation, 140
Occipito-posterior presentations, 1026
O'Connor, Dr. F. W., and Mr. C. Dobell, Intestinal Protozoa of Man (review), 909
Oculo-motor nuclei and their tracts, 87
O'Donoghue, Dr. C. H., Introduction to Zoology (review). 1061
Oertel, Prof. H., General Pathology, an Introduction to the Study of Medicine (review), 964
Œsophagus, digestion of, 864
O'Farrell, Dr. T. T., Elementary Parasitology (review), 909
Ogilvie, Mr. W. H., fibrous osteitis, 803
O'Hara, Mr. H. M., death of, 414
Okell, Dr. C. C., Sachs-Georgi reaction in syphilis, 962
Oldham, Maj. A. C., obituary, 255
Oliver, Sir T., industrial hygiene: its rise, progress, and opportunities, 262
Ontario Medical Association, meeting, 870
Open-ether anæsthesia during throat operations, 21, 151
Opening of the session (leading article), 766, 819, 879
Operation, consent to, 1343
Ophthalmia neonatorum (leading article), 516
Ophthalmic disease and quackery, 880
Ophthalmology, auto-intoxication in, 512; recent, in France, 724; diplomas in, 1069
Ophthalmology (Dr. C. H. May and Dr. E. H. Oppenheimer), second edition, 1912 (review), 1008
Opie, Eugene L., and others, Epidemic Respiratory Disease (review), 343
Opium cultivation in China (Py Q), 367; for medical purposes (Py Q), 486; traffic and the League of Nations, 518, 1230; statistics, Indian (Py Q), 1349
Oppenheimer, Dr. E. H., and Dr. C. H. May, Grundriss der Augenheilkunde, second edition, 1921 (review), 1008
Optical glass and medical research, 259
Oral sepsis and systemic disease, 1326
Orbit, Human, and Accessory Organs, Anatomy of (Dr. S. E. Whitnall) (review), 657
Oriental sores (Mr. M. L. Treston), 270
Orla-Jensen, Dr., Dairy Bacteriology, second edition, 1921 (review), 809
Orphan homes of Scotland, 1112
Orr-Ewing, Dr. H. J., extrusion of a renal calculus causing a sinus in the loin, 230
Orrin, Mr. H. C., Aids to Operative Surgery (review), 563
Orthography in Uganda, 540
Orthopædic centres, children's, 663, 669, 1188
Osborne, Prof. O. T., Principles of Therapeutics (review), 755
Osteitis, fibrous, 803
Osteomyelitis, non-suppurating, sclerosing, 1014
Otitis, catarrhal, and the swimming-bath, 519. 585, 627, 728, 779, 828; media, zinc ionisation in, 1301
Otoliths, functions of, 142
Otology, International Congress of, 975
Otosclerosis, X ray treatment (Dr. J. H. D. Webster), 617, 728
"Our Day," appeal, 534
Ovarian hæmorrhage apart from ectopic gestation, 770; grafts, 973; grafting, 1068
Ovarian pregnancy, full-term, 19; hypernephromata, 147
Overbeck-Wright, Maj. W., Lunacy in India (review), 397
Overcrowded areas (Py Q), 417
Overcrowding in Middlesbrough (Py Q), 110
Oxford University, pass lists, 105, 1249; Mr. E. G. T. Liddell elected to non-official Fellowship for Research in Physiology, 830; election of Fellows, 1081; appointment of examiners, 1193

P

Packard, Dr. F. R., Life and Times of Ambroise Paré (review), 1223
Paddington Infirmary, opening of nurses' home, 1250
Pain, persistent, due to lesions of the central and peripheral nervous systems, 1057; (leading article), 1064
Palæopathology of Egypt (Sir M. A. Ruffer) (review), 1327
Pancreatitis, acute hæmorrhagic (Mr. A. T. Compton and Mr. F. Heber), 130; acute (Mr. R. B. Carslaw), 132: hæmorrhagic, pathogenesis of (Léon Binet and Pierre Brocq), 137: acute hæmorrhagic (leading article), 142
Panel conference, an independent executive; Rate of remuneration; Records; Transfer of practices; Defence Trust, Disciplinary procedure; Inflated index registers; Coöperation with unqualified practitioners; Regional medical officers; Superannuation 921, 922
Panel doctors, women (Py Q), 311; and private practitioners, 363; practitioners, travelling grants to (Py Q), 417; system and Birmingham doctors, 780
Panel, size of (Py Q), 418, 528; representation in Parliament, 776
Pannett, Mr. C. A., treatment of imperfectly descended testicle, 379
Paralysis, birth, 390; of soft palate following non-diphtheritic tonsillitis (Dr. J. P. Gray), 607; labio-glosso-laryngeal, successfully treated by vaccine (Dr. J. C. Voigt), 701; general, of old age, 918
Para-medical research, 814
Paramore, Mr. R. H., some toxæmias of pregnancy, 679; eclampsia and its incidence, 1117
Paraplegia, management and treatment of, 290
Parasitology, Intestinal Protozoa of Man (Mr. C. Dobell and Dr. F. W. O'Connor) (review), 909; Elementary (Dr. T. T. O'Farrell) (review), 909
Parathyroid therapy, 1383

Paratympanic sense-organs, 91

Paratyphoid fever caused by "head-cheese," 865

Paré, Ambroise, *Life and Times of* (Dr. F. R. Packard) (review), 1223

Parfitt, Dr. J. B., Operative Dental Surgery (review), 1225

PARIS, CORRESPONDENCE FROM.—Second *International Congress of the History* of Medicine, 198—Report of the Académie de Médecine upon protection against radiation; Action of bismuth compound on syphilis, *199*—*Revision* of French sanitary law: Removal and disposal of dry refuse 252—School instruction in venereal disease; Prophylaxis against influenza; Periodic medical examination of school children, 411—Health Insurance and reorganisa*tion of hospitals*; *French medical pro*fession and inauguration of Pekin University; International Congress of Hygiene, 621; International Congress *for the* Protection of Motherhood and Infancy, 625—Revision of Children's Act, 1874; Mental diseases and syphilis; Paris physicians and surgeons at Strasbourg, 869—*Medical inspection* of schools, 1023—Anti-venereal prophylaxis, 1024—Notification of infectious diseases and statistics, 1297—Prizes at the Académie des Sciences, 1298

Paris physicians and surgeons at Strasbourg, 869; University, post-graduate course in ophthalmology, 1350

Parker, Mr. C. A., and Dr. L. Colledge, Guide to Diseases of the Nose and Throat, and their treatment, second edition, 1921 (review), 231

Parker, Mr. F. A., successful quackery, 1256

Parkin, Dr. A., diagnosis and treatment of cystitis, 242

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics.

Clinical Thermometers Bill, 208—*Legislative programme*; *Medical privi*lege; Criminal Law Amendment Bill, 309—Poison Antidotes Bill, 417—*Parliamentary adjournment*, 485—Unemployment and *Health Insurance*, 983—Mental treatment of ex-service men, 1030—Pharmacy Acts Amendment Bill, 1133—Irish session, 1349

House of Lords.

June 22nd: Dentists Bill, 51—28th: *Public Health (Officers)* Bill; Dentists Bill, 107

July 5th: Public Health (Officers) (*No. 2) Bill*, 107—*12th*: *National* Health Insurance *Bill*, 158—*19th*: Coroners (Remuneration) Bill; National Health Insurance Bill, 208—20th: Hospital finance, 257; Administration of the Government grant, 258—26th: Coroners (Remuneration) Bill, 309

August 15th: Criminal Law Amendment Bill; Licensing (No. 2) Bill; War Pensions Bill, 417

Nov. 10th: Hindrances to scientific research, 1134

House of Commons.

June 21st: Finance Bill; Spirits in hospitals, 51—22nd: Work of Consultative Health Councils; River Lea pollution; Washington Conventions; Medical officers' leave; Consumption of alcoholic beverages, 52—23rd: Dr. Addison's salary; State of the voluntary hospitals; Inquiry on light artificial limb; Pensions administrative expenses, 52—Regional pension awards; Committee on adoption, 53—28th: Blind population of India; Health safeguards in slate quarries and mines; Report of Committee on Pensions, 107—29th: Hospitals and the Key Industries Bill, 107—Deaths from vaccination; Occupational census; Administration of Dundrum Asylum; Army statistics; New Hospital Commission; Voluntary hospitals in Ireland, 108—*30th*: *Indian medical officers'* leave, 108—Medical examinations for the Civil Service; Insurance contributions of miners; London Pension Appeal Tribunals; Voluntary hospitals in Ireland, 109

July 1st: *Washington Conventions*, 109—Dentists Bill, 110—4th: Overcrowding in Middlesbrough; Women in Ministry of Health; Pension appeal delays; Pension statistics; Small-pox and vaccination, 110—5th: National Health Insurance *Bill*, 110—6th: Medical staff of the Health Ministry; Kinematograph lights and blindness; Licensing reform; Scottish university grants; Epileptic soldier's treatment; Tuberculosis statistics, 158—7th: *Hastings pensioners and regional direc*tor; Phthisical pensioners and widows' pensions; Medical examination of pensioners, 158—Appeal tribunals; *International Health organisation*; *League of Nations and typhoid in* Poland; Financial position of Irish hospitals; Pharmacists and Dangerous Drugs Act, 159—8th: War Pensions Bill, 159—Drunkenness statistics, 160—11th: London and the water shortage; *Medical boards and disability* pensions; Blind and paralysed ex-service men, 160—Clinical thermometers, 161—12th: Treatment of bilharziasis; Conference on treatment bonuses; Ministry of Health and sanatorium treatment, 161—Deaths from vaccination; Homes for shell-shock cases, 208—13th: *Treatment of tuberculosis*; Government of Greater London; Poor-law children in sick wards; Dismissal of nurses at *Steyning Infirmary*; Merchant seamen and *venereal disease*; Children in village communities, &c., 208—14th: Medical services in the Colonies, 208—Aggravated disability cases; Commissioners of medical services and temporary grants, 209—Men disabled in former wars: Production of calf lymph; Government housing policy, 210—15th: Criminal Law Amendment Bill, 210—18th: Anthrax-infected brushes; Heat wave and rabies; Vaccination and small-pox, 211—19th: Death certificates, 259—20th: Optical glass and medical research; Public representation and hospital grants; Effect of summer time on children; Dangers of lead paints; Medical board appeals in Durham, 259; Unemployed and Health *Insurance* payments, 260—21st: Government's housing policy; Medical research awards; Unemployment and *national health*, 260—22nd: New *Licensing Bill*; *Haslar Naval Hospital*; Cosham Military Hospital, 260—25th: Whipps Cross Infirmary; Illegitimacy Bill, 260—26th: Unemployment benefit and hospital *treatment*, 260—*27th*: Appointments of medical referees, 309—Home hospitals for defective children; Ex-service men in mental hospitals; Committee on leadless paints; Mentally deficient children, 310—28th: Housing conditions in Scotland; War neurosis and shell-shock; Medical courses in psychotherapy; Price of spirits, 310—Infantile mortality in British Guiana, 311

August 1st: Officers' pensions and *medical fees*; *Insanitary* milk transport; Suicide and war neurosis; Naval and military medical appointments; Medical service of the Air Force, 311—2nd: Women panel doctors; Working expenses of army doctors, 311—*Milk for tuberculous persons*, 367—3rd: Opium cultivation in China; Necessity for better rural housing; Tuberculosis hospital at Boston; Seamen's insurance; Pen*sions surgical hospital* at Shepherd's Bush; Licensing (No. 2) *Bill*, 367—4th: Medical officers of Pensions Ministry; Cost of health insurance to *the workman*, *367*—*Staff of* Pensions Ministry hospitals, 368—5th: Criminal Law Amendment Bill, 368—9th: Poison Antidotes Bill; Overcrowding *Dartmouth*, *368*—*Travelling grants* to panel practitioners: Overcrowded areas, 417—10th: Naval Hospital, Plymouth; Service grants to London voluntary hospitals, 417—*Size of a* panel; Nurses' registration rules; Small-pox in Madras, 418—11th: Pensioners' deaths; Lady superintendent at Holloway Prison; *Dangerous* drugs regulations, 418—15th: New taxation *of motor* vehicles: Disabled naval men in hospitals, 418—16th: Ex-service men in hospital: *Business Committee* and medical services, 418—Russian famine, 485—17th: Army Medical Service; Tuberculosis statistics; University *grants in Scotland*; Medical history and statistics of the war; Air pilots and physical defects, 485—Compulsory vaccination, 486—18th: Medical staff at Chepstow; Pensioners and medical records; Tuberculosis patients in a sanatorium; Yorkshire pensions administration; Income-tax and hospital subscriptions; Opium for medical purposes; Foreigners and Lunacy Law, 486—19th: Discharge of asylum patients; St. Andrew's Hospital, Northampton, 486

Oct. 19th: Medical appointments at the Post Office, 930—20th: Guardianship of Infants Bill; Milk for infants and mothers; Sickness among children; Unemployment and sick insurance benefit; Appointments of medical referees; Construction of roadway to Wingrove Hospital, 930—24th: Testing clinical thermometers, 930—Importation of sodium salts; Housing schemes: Suggested repeal of the Insurance Act; Insurance Act contributions and expenses; Medical examination of aerodrome workers; Expenditure on public assistance; Post Office *medical appointments*, 931—25th: Venereal disease and divorce: Employed contributors and health insurance, 931—26th: *Demolition of* slum areas; Infant death-rates; Pure lactose and safeguarding of Industries Act; *Deaths from disease in Mesopo*tamia, 983—27th: *Ex-service men in* lunatic asylums; Tuberculous gland treatment by X rays; Appointments at Holloway Convicted Hospital; Insurance Act medical records; Regional medical officers; Women visitors of lunatic asylums, 983; Proposed registration of herbalists, 984—28th: Lapsed insurance contributions, 984—31st: Territorial Voluntary Aid Detachment; Taxation of lactose; Proposed drawback on hospital chemicals; Government grant to voluntary hospitals; Spahlinger treatment of tuberculosis; Ex-soldiers and tuberculosis, 984

Nov. 2nd: *National Health Insur*ance Bill, 1030—Supply of milk for mothers and children; Medical officers *of Bradford Corporation*; Summer time and school children; Approved societies and medical benefit; Testing of clinical thermometers, 1031—3rd: *Bellahouston Hospital report*; *Institu*tional treatment of tuberculous soldiers; Small-pox in Glasgow; Soldiers and venereal disease, 1031—7th: Import of pure milk sugar, *1031*—*Medically* unfit Civil servants, 1032—8th: Medical stores for Russia; Approved lunatic asylums for ex-service men, 1032—9th: *Voluntary Hospitals* Commission; Board of Control and mental *defectives*; Scarlet fever and diphtheria in London, 1134—Ex-service men in lunatic asylums; Treatment of tuberculous ex-service men; Motor taxation, 1135

Dec. 16th: Importation of menthol: Importation of santonin, &c.; Indian opium statistics; Medical stores for Russia; Treatment allowances, 1349—*19th*: *Anæsthetics held up*; Importation of chemicals, 1350

Parrel, G. de, Précis de Thérapeutique *Médicale Oto-Rhino-Laryngologique* (Medical Therapeutics of the Ear, Nose and Throat) (review), 22

Parsons, Mr. J. H., fourth cranial nerve, *905*; *organisation of* medical education, 1348

Partridge, Mr. W., Aids to Chemistry (review), 184

PASS LISTS:—Oxford University, 105, *1081*, *1249*—*Cambridge* University, 53, 105, 878, 928, 981, 1081, 1249, 1350, 1396—Manchester University, 53, 204, 1396—Sheffield University, 98—St. Andrew's University, 105, 878—Durham University, 781—Durham University, *Faculty of Medicine*, *105*—Royal Faculty of Physicians and Surgeons, Glasgow, 156, 829, 1302—Bristol University, 156—Leeds University, 1396—Liverpool University, Faculty of Medicine, 205, 1350—Royal College of Physicians and Royal College of Surgeons in Ireland Conjoint Examinations, 1396—Royal College of Surgeons in Ireland, 1396—Dublin University, Trinity College School, 205, 1350—Apothecaries Society of London, 1249—London University, *255*, *364*, 682, 1135, 1396—Edinburgh University, 255, 928, 1351—Aberdeen University, 256, 1396—Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, 256, 829, 928—Royal College of Surgeons of Edinburgh, 256, 928, 1351—Royal College of Physicians of London and Surgeons of England, 312, 361, 1032, 1081—Royal College of Physicians of London, 313—Royal College of Surgeons of England, 1081, 1302—Glasgow University, 313, 928, 1082—London School of Tropical Medicine, 312—Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England, 829—St. George's Hospital Medical School (University of London), 878—St. Thomas's Medical School, 878

Patent medicines, revenue from, 539
Paterson, Dr. D., and Dr. J. D. Spence, epidemic encephalitis in children, after-effects, 491
Paterson, Mr. J. V., treatment of corneal ulcers, 511
Pathological and Bacteriological Laboratory Assistants' Association, report, 91
Pathological Society of Manchester (see Medical Societies)
Pathology, General, Text-book of (Prof. J. M. Beattie and Dr. W. E. C. Dickson), second edition, 1921 (review), 232 ; Text-book of (Dr. A. Stengel and Dr. H. Fox), second edition, 1921 (review), 708 ; Special, Text-book of (Prof. J. M. Beattie and Dr. W. E. C. Dickson), second edition, 1921 (review), 964 ; General, and Introduction to the Study of Medicine (Prof. H. Oertel) (review), 964
Pathology, teaching of, in America (Prof. A. E. Boycott), 773
Patients', the, standpoint, 1088
Paton, Dr. J. H. P., case-taking methods, 603
Paton, Prof. N., and Miss M. R. Gribbon, nutrition in Vienna, 747
Patterson, Mr. A. M., French-English Dictionary for Chemists (review), 1170
Paul, E. and C., A Young Girl's Diary (review), 609
Pavey-Smith, Mr. A. B., remote effects of tonsillitis, 1034
Paying Poor-law patients in Manchester, 351
Payne, Dr. W. W., and Dr. E. P. Poulton, epigastric pain, 1005
Peacock, Mr. A. D., louse problem on the Western front, 1076
Peacock, Dr. W. L., and Dr. H. L. Duke, human anthrax in Buganda Kingdom, 332
Pearson, Mr. R. B., Fasting and Man's Correct Diet (review), 1377
Pearson, Sir A., the blind and smoking, 1088 ; death of (leading article), 1285
Pectoralis major, right, congenital absence of (Dr. A. G. M. Severn), 560
Pediatric Research Fellowship, 669
Pell, Mr. C. E., Law of Births and Deaths (review), 610
Pellagra in Hungary, 411
Penfold, Dr. F. W. H., death of, 826
Penile clamp, new, 1226
Pension administration, machinery of (War Pensions Bill), 201 ; appeals, review of, 334
Pension awards, regional (Py Q), 53 ; appeal tribunals, London (Py Q), 109 ; appeal delays (Py Q), 110 ; statistics (Py Q), 110 ; Issue Office for Scotland, 1128
Pensioners, medical examination of (Py Q), 158 ; deaths (Py Q), 418 ; and medical boards (Py Q), 186
Pensions administrative expenses (Py Q), 52 ; Report of Committee on (Py Q), 107 ; appeal tribunals (Py Q), 159 ; disability, and medical boards (Py Q), 160 ; Bill, War, 159, 417 ; machinery of administration, 201 ; Medical board appeals in Durham (Py Q), 259 ; pre-war disability, re-assessment of, 307
Pensions, appointments of medical referees (Py Q), 309 ; officers', and medical fees (Py Q), 311 ; surgical hospital at Shepherd's Bush (Py Q), 367 ; Ministry, medical officers of (Py Q), 367 ; Ministry hospitals, staff of (Py Q), 368 ; administration, Yorkshire (Py Q), 486 ; war disablement, 510 ; increase since 1914, 1100
People's League of Health, scholarship award, 119
Percival, Mr. A. S., light-sense test, 510
Pereira, Prof. A. da R., Liquido Céfalo-raquidiano (review), 965
Pericarditis, purulent, simulating angina pectoris (Dr. M. A. Cassidy and others), 559
Periodontal disease, spirochætes in, 723
Peripheral circulation and digitalis, 97, 203, 254
Perirenal inflation, Carelli method, 1349
Peritoneum, gas inflation of, in radiography, 1291
Peru, scientific expedition to, 1127
Pestology, applied, institute of, 1198
"Petromortis," 317
Peters, Dr. R. A., nutritive needs of protozoal parasites, 195
Petrous bone, injury to (Mr. L. Whale), 1002
Phantasies of the dying (Dr. J. N. Glaister), 315
Pharmacists and Dangerous Drugs Act (Py Q), 159
Pharmacists, emigration of, from Budapest, 412
Pharmacology, Manual of (Dr. W. E. Dixon), fifth edition, 1921 (review), 967 ; Materia Medica and Therapeutics (Dr. J. M. Bruce and Dr. W. J. Dilling) (review), 1377 ; (A. Fröhlich and R. Wasicky) (review), 1378 ; What to do in Cases of Poisoning (Dr. W. Murrell and Dr. P. Hamill) (review), 1378
Pharmacopœias, Dublin, 1292
Pharmacy, Materia Medica and Pharmacy for Medical Students (Mr. R. R. Bennett), fourth edition, 1921 (review), 757 ; Drugs in Commerce, their Source, Preparation for the Market, and Description (Mr. J. Humphrey) (review), 757 ; Pharmacopœia of the University College Hospital (Mr. C. H. Hampshire) (review), 1115
Pharmacy, professional training, 819 ; Acts Amendment Bill, 1133
Phthisical pensioners and widows' pension (Py Q), 158
Phyllis Siepmann Memorial Prize, 1033
Physic and Fiction (Sir Squire Sprigge) (review), 1168
Physical research, outlook for, 570
Physical Signs in the Chest and Abdomen (Dr. A. J. Jex-Blake) (review), 1330
Physically defective children, treatment and education, 305
Physics and chemistry of colloids, 28
Physics, Manual of (Dr. J. A. Crowther), second edition, 1921 (review), 1281
Physiological histology, 811
Physiologist, a medical, 616
Physiology, aims and boundaries of (Sir W. M. Fletcher), 541, 623 ; and hygiene for children, 785 ; and pathology, permeability of (Prof. H. J. Hamburger), 1039, 1070
Physiology, Human (Prof. L. Luciani) (review), 513
Pilocarpine, action of, in cases of brain lesion, 465
Pince-nez, rimless, new, 60
Piney, Dr. A., and Dr. A. P. Thomson, decerebrate rigidity in an infant, 1105
Pitt, Dr. G. N., War Emergency Fund of the R.M.B.F., grants for education, 416
Plague in India, irregular incidence of, 86 ; and rat destruction in India, 522 ; treatment (Dr. Wu Lien Teh) (G. L. Tuck), 853 ; spread of (leading article), 861 ; in the Union of South Africa, sporadic outbreaks (Dr. L. G. Haydon), 1103 ; bubonic, in Queensland, 1126 ; and small mammals, 1177, 1234 ; rat-fleas and spread of, 1287
Plague on board ship (Lieut.-Col. W. W. Clemesha), 1338
Plant diseases and their relation to diseases in man (Dr. V. H. Blackman), 935 ; response to injury, 1306
Plants, Structure and Reproduction of (F. E. Fritch and E. J. Salisbury) (review), 135
Plarr, Mr. V. G., Roll of Fellows of the Royal College of Surgeons of England, 925
Platt, Mr. H., birth paralysis, 390 ; organisation of a fracture service, 620 ; Surgery of Peripheral Nerve Injuries of Warfare (review), 1376
Pleura, primary tumour of (Dr. E. H. Eastwood and Dr. J. P. Martin), 172
Pleural effusion, chronic, 855
Pneumococcus, serological and morphological characteristics of (Dr. A. L. Urquhart), 1313
Pneumonia, influenzal, unknown ætiology of, 145 ; lobar, serological types of pneumococci in (Dr. F. Griffith), 227 ; treatment of, 630
Pneumothorax, artificial, apparatus, 710 ; spontaneous, 1166
Poikiloderma atrophicans vasculare, 1234
Poison Antidotes Bill, 368, 417
Poisoning, What to do in Cases of (Dr. W. Murrell and Dr. P. Hamill) (review), 1378
Poliomyelitis, anterior, early diagnosis and treatment, 389
Pollock, Mr. W. B. I., early operation in squint, 510
Polycythæmia, Erythrocytosis, and Erythræmia (Vaquez-Osler Disease) (Dr. F. P. Weber) (review), 1115
Poor-law children in sick wards (Py Q), 208 ; reform in Ireland, 1033
Porokeratosis, 866
Port, tawny, 400
Porter, Dr. C., hydrocyanic acid and sanitation, 583 ; and Dr. W. Robertson, Sanitary Law and Practice, fifth edition, 1921 (review), 806
Portsmouth Royal Hospital, unveiling of memorial stone, 923
Postage rate, foreign, 510
Post-graduate activity in London, 1071, 1123, 1250 ; round Bristol, 1178
Post Office, medical appointments at (Py Q), 930, 931
Post-war problems, 828
Postural proteinuria (Dr. G. A. Harrison), 991
Pottenger, Dr. F. M., Tuberculosis and How to Combat It (review), 1169
Potter, Prof. M. C., certain electrical signs of the human body, 339
Potts, Dr. W. A., relation of crime and delinquency to heredity, environment, and disease, 1094
Pott's disease in adults, 572
Powell, Mr. W., operative urethroscopy, 175
Poynton, Dr. F. J., and Dr. F. N. Reynolds, diminishing mortality in empyema in infancy and childhood, 1100
Practitioner, general, and public health (leading article), 1380
Practitioners, private and panel, 363
Pragmatism in medicine (leading article), 1118

PRAGUE, CORRESPONDENCE FROM.—Health budget for 1922 ; Tuberculosis sanatorium near Prague ; Masaryk Antituberculosis League ; Health insurance for Civil servants, 1186

Prain, Lieut.-Col. Sir D., professional training in pharmacy, 819
Pregnancy and Heart Disease (Sir J. Mackenzie) (review), 1376
Pregnancy, ovarian, full-term, 19 ; extra-uterine, 20 ; abdominal, with a living child, 244 ; nausea and vomiting in (Prof. V. J. Harding), 327 ; duration of, 357 ; following implantation of outer end of only remaining tube, 864
Pregnancy, some toxæmias of (leading article), 614, 679 ; glycosuria in, 1003 ; labour, and puerperium, fibroids complicating, 1218
Prescribing, excessive, 1142
Presentations and testimonials : to Dr. W. Laird, 587 ; Dr. T. G. James, 703 ; Dr. T. P. Stewart, 986 ; Dr. T. Fawsitt, 1043 ; Dr. M. W. W. Cowan, 1156
Press Congress at Honolulu, 785
Prest, Dr. E. E., results of sanatorium treatment, 48
Prices and Price Control in Great Britain and the United States during the World War (Prof. S. Litman) (review), 809
Priestley in America, 1794-1804 (Mr. E. F. Smith) (review), 233
Prison System, English (Sir E. Ruggles-Brise) (review), 1280
Private and panel practitioners, 363
Private clinic system, debate at the Royal Society of Medicine, 99
Profession, the, numbers of (leading article, Students' Guide), 463
Professional Classes Aid Council, report, 1137
Professional secrecy (leading article), 237, 350
Prolapse of the uterus, operative treatment (leading article), 26
Prostate, open operation for removal of, 343
Prostitution and Soviet Russia, 421, 739 ; and tuberculosis, 665
Protein sensitisation and bronchial asthma, 1174
Protista and disease (Dr. J. J. Clarke), 495
Protozoa, Intestinal, of Man (Mr. C. Dobell and Dr. F. W. O'Connor) (review), 909
Protozoal parasites, nutritive needs of, 195
Pseudo-rubella, 815
Pseudoxanthoma elasticum, 1122

Psycho-Analysis in the Classroom (Mr. G. H. Green) (review), 78; *Addresses on* (Dr. J. J. Putnam) (review), 564; Concept of Repression (Dr. G. Bose) (review), 564; Sleep and Dreams (Mr. A. Tridon) (review), 564; Repressed Emotions (Dr. I. H. Coriat) (review), 565; and the War Neuroses (Dr. S. Ferenczi and others) (review), 867
Psychological medicine (Dr. C. H. Bond), 319; medicine, diplomas in, 483
Psychopathic Diseases, Symptomatology, Psychognosis, and Diagnosis of (Dr. B. Sidis) (review), 1062
"Psychotherapy," *96, 151, 203*; medical courses in (Py Q), 310; present position *of (Dr. M. Culpin), 684; in relation to* medicine, 719; in relation to nervous diseases, 1113; with and without specialism, 1136

PUBLIC HEALTH SERVICES.

- London County Council and public health during the heat wave; Welfare of the blind, 306—Treatment of tuberculosis; Doctors' certificates, 307 — *Hospital collections in* London, 415—Size of panel lists; Consultant service in Wales; Canal *boat hygiene, 528—Reduction of the* capitation fee, 626—Coördination of public medical service, 672—Marriage bar; Women practitioners and a restricted panel, 725—Panel representation in Parliament; Health Insurance in Ireland, 776—Scarlet fever and *diphtheria in London, 921,* 1030—National Insurance in Manchester, 978—Willesden Municipal *Health Service, local discussion, 1124* —National Provident Scheme, discussion, 1125—Willesden Municipal Health Service, meeting of rate-*payers with local practitioners, 1293*
- Annual reports of medical officers of health, 43, 94, 156, 187, 234, 359, 415, 528, 582, 626, 672, 776, 824, 871, 924, 978, 1075, 1184, 1294, 1344, 1392; (leading article), 85
- School Medical Service, annual reports, 44, 529, 581, *627, 674*, 725, 872, 1184, 1392
- *Vital statistics of London during May,* 1921, 45; June, 235; July, 532; August, 674; September, 873; October, 1128; November, 1344

Public health at Cape Town, *1919–20, 59*; in Egypt, 1919, 113; at Colombo, 1919, 264; in Tasmania, 372; in Assam, (1) kala-azar, (2) vaccination, 421; and Irish labour, 583; in Bihar and Orissa, 1919, 687; problems, 908; in Nyasaland, 1038; in Aberdeenshire, 1083; in Trinidad and Tobago, 1919, *1087; in Hong-Kong, 1141; schools of, in the* United States, 1231; and dietetics *(Prof.* E. C. Van Leersum), 1252; institutes, travelling, 1306; in Egypt (leading article), 1332
Public Health, Manual of (Dr. W. G. A. Robertson), fourth edition, *1921* (review), 22
Public Health (Officers) (No. 2) Bill, *107*
Publication and progress (leading article), 717
Puerperal infection, treatment, 1277
Pulmonary *disease, unusual cases, 1034*
Pulse and temperature, 407
Punch, Dr. A. L., complement-fixation *test in pulmonary* tuberculosis, 197
Puncta lacrymalia, congenital atresia of, 768
Pustule, malignant, with multiple lesions (Dr. R. T. Grant), *606*
Putnam, Dr. J. J., Addresses on Psycho-Analysis (review), *564*
Pybus, Mr. F. C., spina bifida, 599
Pyelography, 146
Pyocele of frontal sinus (Dr. J. A. Gibb), 1272
Pyonephrosis and ureteral *calculus (Dr.* A. Beresford-Jones), 900

Q

Quackery, successful, 1256
Qualification and competency, *1015*
Queen's University, *Belfast, Dr. J. E.* McIlwaine appointed to the chair of *materia medica* and therapeutics, 771; report, 1187
Queensland hospitals for the insane, 1141
Quinine ethyl carbonate (euquinine) and diquinine carbonate *(aristochin), 400*
Quintuplets, 252

R

Rabies in a horse, 727
Radiation, protection against, report of *the Académie de Médecine, 199; in treatment of diseases of the blood, 393*
Radiography, a school of, 666; gas inflation of peritoneum in, 1291
Radiology and electrology, diploma in, 484; and physiotherapy, 918
Radium, large consignment, 767
Radius, bilateral absence of, 804; dislocation of, paresis of musculo-spinal nerve after, *804*
Raine, Dr. G. R., death of, 826
Ramsay, Dr. A. M., operating hand-lamp for ophthalmic work, 1282
Ranken, Squadron-Leader D., nose, throat, and ear requirements of airmen, 1263
Rat destruction and plague in India, *522*; Week, 1921, 987; plague in Vienna, 1074; fleas, relation of species to spread *of plague, 1287; trap, improved* varnished, 1356
Rats and the film, 213
Raulston, Dr. B. O., and Dr. F. Billings, General Medicine (review), 1224
Rawlinson, Mr. J. H., genito-urinary cases, 1278
Ray, Dr. R., death of, 206
*Reading Abbey, A.D. 1121–1921, Octo*centenary of (Dr. J. B. Hurry) (review), 184
Reckitt, Mr. H. J., V.R. 76; A French Military Hospital (review), 911
Recognition, grateful, 1124
Red Cross, *British*, report, *195; clinics*, future of, 352; health campaign, 972; Belgian, 205
Red Cross, Russian, appeal, 308, 363
Red Cross Societies, League of, meetings, 205
Redmond, Sir J. M., death of, 1187
Refraction work, milestones in, 905
Refractive changes in later life, 975
Regional medical officers (leading article), 349; (Py Q), 983
Renal function tests, 336, 1112, 1161, 1189; efficiency tests (Dr. J. D. Comrie), 1150; (leading article), 1379
Report, an exaggerated, *592*
Repression, Concept of (Dr. G. Bose) (review), 564
Research, medical, awards (Py Q), 260; physical, outlook for, 570; medical, value of apparatus and technique in *(Sir A. Wright), 642; pathological,* human and comparative, *1246*
Research Council, Medical, Right Hon. F. B. Mildmay, M.P., appointed a *member*, 85
Research Defence Society, meeting, 105, 1174
Research Laboratory Papers (Dr. E. M. Houghton) (review), *80*
Research places in the United Kingdom, output of (Prof. A. D. Waller), 977
Respiration, thoracic, importance of (Sir W. A. Lane), 1317
Respiratory Disease, Epidemic (Eugene L. Opie and others) (review), 343
Respiratory efficiency *in relation to health* and disease (Wing-Comdr. M. Flack), 593, 637, 693, 741; (leading article), 766, 827; affections, spasmodic (Sir J. P. Stewart), 1261
Results, measurement of, 1067
Resurrection man, the (leading article), *190*
Retina, detachment of, cure (Mr. R. F. Moore), 174, 194; spasm of central artery of, 769
Retinal vein, thrombosis of, 1108
Reuss, Dr. A. R. von, Diseases of the New-Born (review), 706
Rex *v.* Starkie, 677, *1241*
Reynolds, Dr. F. N., and Dr. F. J. Poynton, diminishing *mortality* in empyema in infancy and childhood, 1100
Rheumatism, chronic, winter resort for, 540
Rhinophyma, operation for, 422
Rhodesian man, *1179*
Rhubarb, use of, in acute bacillary dysentery, 254
Ribot, A., Léon Binet, and Ch. Achard, researches on adrenalin diabetes, *139*
Richmond, Mr. H. D., Dairy Chemistry (review), 184
Rickets, experimental, 668, 1233; and *vitamin deficiency (Dr. Amy Hodgson),* 945; and adenoids (Dr. H. Merrall), 994, 1079
Riddoch, Dr. G., management *and treatment* of paraplegia, 290
Riley, Dr. H. A., and Dr. F. Tilney, Form *and* Functions of the Central Nervous System (review), 910
Ringworm, scalp, in Bristol schools, 1083
River Lee pollution (Py Q), 52
Rivers, Dr. W. C., post-war problems, 828; domiciliary treatment of bone and joint tubercle, 1155
Roaf, Dr. H. E., Biological Chemistry (review), 1223
Roberts, Dr. J. B., and Dr. J. A. Kelly, Fractures in General, Industrial, and Military Practice, *second edition, 1921* (review), 1061
Roberts, Dr. R. E., inadequate attendance of the male syphilitic out patient, 277
Robertson, Dr. F., relation of carcinoma to infection, 335
Robertson, Dr. W. F., Therapeutic Immunisation in Asylum and General *Practice* (review), 1060
Robertson, Dr. W. G. A., Manual of Public Health, fourth edition, 1921 (review), 22; Guide to the Ethics of Medicine (review), 757
Robertson, Dr. W., and Dr. C. Porter, Sanitary Law and Practice, fifth edition, 1921 (review), 806
Robertson, Dr. W. S., case of syringomyelia, 1272
Robertson, Prof. G. M., diagnosis and treatment of borderland cases, 288
Rochampton Auxiliary Hospital, report, 32
Roentgen Interpretation (Dr. G. W. Holmes), second edition, 1921 (review), 514
Roger, G. H., La Médecine *(review), 514*
Rohleder, Dr. H., Monographien zur Sexualwissenschaft (review), 609
Rolleston, Sir H., asthma and allied conditions, 280
Romer, Mr. F., ankle-joint fractures, 875
Rosacea, 308
Roth, Mr. P. B., paresis of musculo-spinal nerve after dislocation of radius, 804; *treatment of fractures, 1136*

ROUMANIA, CORRESPONDENCE FROM.—Humanitarian warfare and bullet wounds; Disorders of the heart in adolescents, 40—Colony for sane epileptics; "single-child" system in Transylvania, 41—Anthrax among animals; Death of Prof. Genersich; Unimportance of a negative Wassermann reaction; Enuresis and organotherapy, *527*—Sterile marriages *and* examination of spermal fluid; Indica*tions for surgical sterilisation of women*; Consent to operation; Diarrhœa in Albania; Measles epidemic in Bessarabia; "Club rates" for medical services, 1313

Rowand, Dr. A., present state of medical knowledge regarding diseases common among the people, 551; scheme for the *investigation of disease in childhood,* 650
Rowbotham, Dr. S., combined apparatus for inhalation or *insufflation anæsthesia,* 660
Rowlands, Mr. R. P., partial pyloric stenosis (hypertrophic), Finney's operation, 1373
"Royal Army Medical Corps Journal," *24, 346, 565, 710, 1225*
R.A.M.C. *auxiliary funds, 414, 1034*; officers, education of the children of, 483; Roll of Honour, 682
Royal Coll. Phys. and Royal Coll. Surg. Irel. Conjoint Exam., pass lists, 1396
Royal Coll. Phys. Irel., award, 152; election of officers, 929; election of Fellows, *1082*
Royal Coll. Surg. Irel., Hon. Fellowships for American surgeons, 781; appointments, 831; awards, 1135; pass lists, 1396
Royal Coll. Phys. Edin., Royal Coll. Surg. Edin., and Royal Fac. Phys. and Surg. *Glasg.*, pass lists, 256, 829, 928
Royal Coll. Phys. Edin., election of office-bearers, 1302
Royal Coll. Surg. Edin., pass lists, 256, 313, 928, 1351
Royal Coll. Surg. Eng., election of Members, 156; meeting of Council, 202, 312, *878*, 1081; *new specimens in the* museum, 816; Roll of Fellows, 925; pass lists, 1081, 1302; annual meeting of Fellows and Members, 1135
Royal Coll. Phys. *Lond. and Surg. Eng.*, pass lists, 312, 364, 1032, 1081; meeting of comitia, 1081
Royal Coll. Phys. Lond., comitia, 312, 981; election of officers, 364
Royal Fac. *Phys. and Surg., Glasg., pass* lists, 156, 829, 1302; election of office-bearers, *1082*

Royal Free Hospital Medical Society, meeting, 831
Royal Institution, lecture arrangements, 1303
Royal Medical Benevolent Fund, meeting, 291, 535, 731, 982, 1136, 1391 ; War Emergency Fund, grants for education, 416
Royal Medico-Chirurgical Society of Glasgow (see Medical Societies)
Royal Microscopical Society, conversazione, 831
Royal Naval Medical Service, journal, 912
Royal Sanitary Institute, congress, 54
Royal Society, collection of engravings and photographs of Fellows, 981 ; scientific expedition to Peru, 1127
Royal Society of Medicine, gold medal awarded to Sir A. Wright, 32, 147 ; the private clinic system, debate, 99 ; social evenings, 920 (see Medical Societies)
Royal Society of Tropical Medicine and Hygiene (see Medical Societies)
Rubber rings round test-tubes, 114
Ruffer, Sir M. A., Palæopathology of Egypt (review), 1327
Ruggles-Brise, Sir E., English Prison System (review), 1280
Rundle, Dr. G. W., chronic cervicitis endometritis, new treatment, 802
Rupture, intraperitoneal, of bladder (Dr. Dorothy Chattaway), 754
Rural medical service in U.S.A., 1011
Rushton, Mr. W., ætiology of adenoids, 1188
Russ, Dr. C., an instrument set in motion by vision or by proximity of the human body, 222, 362
Russell, Dr. W., the Stomach and Abdomen from the Physician's Standpoint (review), 232
Russia, medical stores for, 1032 ; (Py Q), 1349
Russian Famine Relief Fund, 1333
Rutherford, Dr. W. J., uses of dog, 1038
Ryan, Mr. T. J., and Mr. E. F. Bowers, Teeth and Health (review), 79
Rye, Winchelsea, and District War Memorial Cottage Hospital, opening, 1194

S

Sachs-Georgi reaction in syphilis, 799, 962 ; (Dr. J. L. Brownlie), 1322
Safeguarding of Industries Act, exclusion of santonin, 1399
Sahara, The (Pierre Loti) (review), 1008
St. Andrew's Hospital, Northampton (Py Q), 486
St. Andrews Institute of Clinical Research, studies from, (1) present state of medical knowledge regarding the diseases common among the people (Dr. A. Rowand), 551 ; (2) case-taking methods (Dr. J. H. P. Paton), 603 ; (3) scheme for the investigation of disease in childhood (Dr. A. Rowand), 650
St. Andrews University, pass lists, 105, 878
St. George's Hospital Medical School (University of London), pass lists, 878
St. John of Jerusalem, Order of, in England, appointments, 300, 1085, 1271 ; and the British Red Cross, Joint Council, report, 419
St. Mary's Hospital Medical School, awards, 735 ; sessional programme, 781
St. Thomas's Hospital Medical School, scholarship awards, 365 ; Samaritan Fund, report, 539 ; pass lists, 878 ; Medical and Physical Society, programme, 879
Saleeby, Dr. C. W., ante-natal factors of life and death, 151 ; Eugenic Prospect, National and Racial (review), 611
Salford milk-supply, report, 535
Salisbury, E. J., and F. E. Fritch, Introduction to the Structure and Reproduction of Plants (review), 135
Salvarsan substitutes, approved, 214 ; silver, 571 ; reactions after, 877
Samuels, Dr. L., hare-lip surgery, a suggestion, 860
Sanatoria, English phthisis, value of, 47
Sanatorium controls, 47 ; treatment, value of, 47, 203 ; inspection, international, 18 ; treatment, results of, 18 ; construction, points in, 817 ; for Moray, 829 ; benefit in Manchester, 1251
Sanders, Dr. W. G. W., obituary, 1249
Saner, Dr. F. D., treatment of acute suppuration, 891
Sanitary Department in Madras, 625 ; and medical administration in Burma, 882
Sanitary Law and Practice (Dr. W. Robertson and Dr. C. Porter), fifth edition, 1921 (review), 806
Sanitation, tropical, 142 ; and hydrocyanic acid, 146, 583 ; in Flanders, 540 ; in Bengal, 636 ; town, and French Government, 972
Santonin, importation of, 1349 ; exclusion of (Safeguarding of Industries Act), 1399
Sarcoma, periosteal, of femur, 1059
Sarcomata, multiple (Dr. J. A. C. Macewen), 754
Saul, Mr. J. E., trifolium stellatum at Shoreham, 264
Saunders, Dr. A., thyroid insufficiency in children, 1059
Savage, Sir G. H., obituary, 155
Sawday, Dr. A. E., strangulated obturator hernia, 1159
Scarlet fever, prophylactic action against (Dr. I. Takahashi), 645 ; and diphtheria in London, 924, 1030, 1134 ; cases, early discharge of, 1131, 1188 ; treatment with immune human serum, 1178, 1318
Schaeffer, Prof. A. A., Ameboid Movement (review), 293
Scharlieb, Dr. Mary, the staff of Holloway Hospital, 1079
Schistosoma mansoni in South Africa (Dr. F. G. Cawston), 332
Schmiedeberg, Oswald, 722
Schmieden, Prof. V., and Dr. A. Turnbull, Operative Surgery, second edition (review), 807
School children, medical and dental treatment, 253 ; London, health of, report for 1920 of the school medical officer, L.C.C., 524 ; child's environment, 1198
School hygiene (leading article), 295
School Medical Service, annual reports, 44, 529, 581, 627, 674, 725, 872, 1184, 1392
School of Tropical Medicine and Hygiene in Calcutta, 1121
Schools, medical inspection of, in Paris, 1023
Schorstein lecture on chronic inflammatory diseases of the spleen (Dr. A. G. Gibson), 885
Schott, Dr. T., death of, 818
Schumann, Dr. E., Extra-Uterine Gestation (review), 1061
Sciatica, Scandinavian investigations on its pathogenesis (Dr. H. Jansen), 737
Science, an outline of, 1141
Science, Studies in the History and Method of (Dr. C. Singer) (review), 80 ; Early, in Oxford (Mr. R. T. Gunther) (review), 1224
Scientific research, hindrances to (Py Q), 1134
Sclerosing non-suppurating osteomyelitis, 1014
Sclerosis, disseminated, early diagnosis and treatment, 291

SCOTLAND, CORRESPONDENCE FROM.—Scientific expedition to Peru ; Work of the Ministry of Pensions, 1127—Pension Issue Office for Scotland, 1128—Edinburgh chair of midwifery ; Scottish voluntary hospitals ; Orphan homes of Scotland ; Royal Infirmary, Edinburgh, 1242

Scott, Dr. J., obituary, 1192
Scott, Mr. W. M., pathological research, human and comparative, 1246
Scottish University grants (Py Q), 158
Scurvy, lemon juice in (Sir P. W. Bassett-Smith), 321 ; in *Polar regions* (Dr. A. H. Macklin and Mr. L. D. A. Hussey), 322 ; blood platelets in, 336 ; case of (Dr. R. S. McClelland), 608
Sea-sickness, veronal against, 630, 680
Secretion, Internal, Organs of (Dr. I. G. Cobb), third edition, 1921 (review), 1222
Selborne Society and cinematography, 1141
Selby, Viscount, Sussex Provident Scheme, 1247
Self-disinfection, the question of, 1189, 1245, 1300 ; in the campaign against venereal diseases, 1235
Sepsis, focal, cutaneous sensitisation and, 340 ; oral, and systemic disease, 1326
Sequeira, Dr. J. H., bullous eruption caused by May-weed, 560
Sera, international standardisation of, 1290 ; (leading article), 1331 ; important conference, 1339
Sergent, Emile, L. Ribadeau-Dumas, L. Babonneix, Généralités et Syphilis de l'Adulte (review), 183
Serum, anti-gonococcal, use of, 1060 ; anti-dysentery, standardisation of, 1109 ; antihæmorrhage, 1177
Serum-globulin and the Wassermann test, 1334
Services, deaths in, Col. C. H. Hale, C.M.G., D.S.O., 307 ; Lieut.-Gen. Sir D. Henderson, K.C.B., K.C.V.O., D.S.O., 484 ; Col. W. H. Bull, A.M.S. (T.), 531 ; Lieut.-Col. F. P. Maynard, I.M.S., 780 ; Lieut.-Col. E. M. Wilson, C.M.G., D.S.O., R.A.M.C., 827 ; Maj.-Gen. P. S. Turnbull, K.H.S., I.M.S., 827 ; Col. Sir W. R. Hooper, K.C.S.I., I.M.S., 827 ; Surg.-Gen. Sir W. D. Wilson, K.C.M.G., R.A.M.C., 920 ; Lieut.-Col. E. A. Roberts, D.S.O., 920 ; Maj.-Gen. Sir G. J. H. Evatt, K.C.B., A.M.S., 1028
Services, naval and military medical, 46, 104, 154, 207, 253, 307, 360, 414, 531, 574, 628, 681, 728, 780, 826, 880, 920, 984, 1028, 1075, 1131, 1192, 1248, 1301, 1345, 1395 ; Indian, 104, 154, 414, 531, 628, 682, 728, 827, 920, 985 ; and Japan, 360, 1131, 1346, 1395 ; Military Cross, 780 ; R.A.M.C. roll of honour, 682 ; honours, military, 146, 682 ; civil, 253 ; health of the French Navy in the war, 207 ; Army Dental Corps, amended rates of pay, 360 ; Auxiliary Royal Army Medical Corps funds, 414 ; health *and comfort of the soldier in India*, 414 ; Women's Medical Service for India, 681 ; Mesopotamia honours, 682 ; mentioned in despatches, 682
Severn, Dr. A. G. M., congenital absence of right pectoralis major, 360
Sexual instinct for anthropology and psycho-pathology (Dr. I. D. Suttie), 1085 ; reform, 1336
Sexuology ; Sex-Complex, the (Dr. W. B. Bell), second edition, 1920 (review), 396 ; Sex Factor in Human Life (Mr. T. W. Galloway) (review), 79 ; A Young Girl's Diary (E. and C. Paul) (review), 609 ; (Von Dr. H. Rohleder) (review), 609 ; (Dr. W. Stekel) (review), 609 ; Sexual Life of Primitive People (H. Fehlinger) (review), 1222 ; Sex, for Parents and Teachers (Dr. W. L. Stowell) (review), 1222
Sharp, Dr. A. C., foreign body in knee-joint, 499
Shattock, Mr. C. E., acute tetanus treated with antitetanic serum, 957
Shaw, Dr. B., relationship of uræmia and hyperpiesia, 1307
Sheeting, rubber, improved, 60
Sheffield, Dr. H. B., *Diseases of Children* (review), 1281
Sheffield Medico-Chirurgical Society (see Medical Societies)
Sheffield University, pass lists, 98 ; union of medical school and hospital, 919 ; post-graduate demonstrations, 929 ; appointments, 1082
Shell-fish and enteric fever, 299
Shell-shock cases, homes for (Py Q), 208 ; and war neurosis (Py Q), 310 ; and perjured evidence, 677
Shepherd, Dr. D. R. C., delayed neosalvarsan poisoning, 1273
Shera, Dr. A. G., hot-air steriliser for steel needles, 810
Sherren, Mr. J., pathological and X ray examinations in abdominal surgery, 689 ; Lectures on Surgery of the Stomach and Duodenum (review), 1225
Shipsey, Dr. M. B., Original Observations and Theories on Cardiac Disease and the Normal Heart (review), 1377
Shircore, Dr. J. O., trypanosomiasis, new method of treatment, 680
Shock, capillary pressure and the circulation in (Dr. L. Hill and Dr. J. McQueen), *65, 153*
Sibley, Dr. W. K., Treatment of Diseases of the Skin, third edition, 1920 (review), 396
Sick clubs and their physicians and pharmacists, prolonged dispute, 1213
Sidis, Dr. B., Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases (review), 1062
Siemens, Dr. H. W., Pathological Heredity (review), 808
Sigmoidoscope, irrigating, 1226
Silicosis (leading article), 83 ; among stonemasons, 721
Sinclair, Mr. N., aneurysm of right common carotid artery, 1059
Singer, Dr. C., Studies in the History and Method of Science (review), 80
Singer, Dr. K., Leitfaden der Neurologischen Diagnostik (review), 965
"Single-child" system in Transylvania, 41
Sington, Dr. H., open-ether anæsthesia during throat operations, 24
Sinus, frontal, pyocele of (Dr. J. A. Gibb), 1272
Sirocco fan, the, 90

Skin diseases, ætiology of (Dr. A. Whitfield), 61, 122, 168 ; in pensioners, 341
Skin, Diseases of, Treatment (Dr. W. K. Sibley), third edition, 1920 (review), 396
Skinner, Dr. E. F., blood-donors, 1247
Slate quarries and mines, health safeguards in (Py Q), 107
Sleep, effects of prolonged deprivation, 917
Sleeping sickness, treatment of, 573
Slemons, Dr. J. M., Prospective Mother, second edition, 1921 (review), 1115
Slum areas, demolition of (Py Q), 983
Small, Dr. J., *Text-book of Botany for* Medical and Pharmaceutical Students (review), 181
Small-pox and vaccination (Py Q), 110, 211, 722 ; in Nottingham, 254 ; in Madras (Py Q), 418 ; in the U.S.A. (leading article), 915 ; epidemics in Basle and Zurich, 979 ; in Glasgow (Py Q), 1031 ; in Colne Valley, 1250 ; in Albania, 1296
Smart, Dr. J., death of, 206
Smart, Dr. T. F. M., uses of dog, 881
Smart, Dr. W. H., death of, 1190
Smith, Dr. F. B., clinical interpretation of the Wassermann reaction, 1135
Smith, Dr. J., Gaertner meningitis complicating Gaertner enteritis, 705
Smith, Dr. M. H., medical examination of delinquents, 1275
Smith, Mr. E. F., Priestley in America, 1794–1804 (review), 233
Smith, Maj.-Gen. Sir F., Manual of Veterinary Physiology, fifth edition, 1921 (review), 758
Smith's Physicians' and Surgeons' Visiting List, 936
Smithett, Mrs. C., provision for unmarried mothers, 149
Smoke abatement, 666
Smoking and the blind, 1088
Snake-bite in India, 177 ; poisons and their treatment, 212
Société de Thérapeutique de Paris (see Medical Societies)
Society of Apothecaries, Dr. W. F. R. Burgess elected Master, 880
Society of M.O.H. (see Medical Societies)
Sodium salts, importation of (Py Q), 931
Soldier's load, 917
Somerset (Lady Henry) memorial, 1088
South Africa, Medical and Pharmacy Bill for, 1298
South-West London Medical Society, syllabus, 781 (see also Medical Societies)
South-Western Ophthalmological Society (see Medical Societies)
Souttar, Mr. H. S., improved surgical needle, 133
Soviet Russia and prostitution, 421, 739 ; epidemic situation in (leading article), 970
Spahlinger treatment of tuberculosis (Py Q), 984
Spas, *friendly*, 194 ; *French*, 140 ; an apology for (leading article), 568 ; Alpine, the place of, in medicine (Dr. E. B. Leech), 574 ; British and foreign competition, 884 ; British Spa Federation, 1027
Spasm of the central artery of retina, 769
Speculum to prevent pressure on globe, 21
Spence, Dr. H. D. L., question of self-disinfection, 1245
Spence, Dr. J. E., late effects of gassing *or tuberculosis*, 585
Spence, Dr. J. C., and Dr. D. Paterson, epidemic encephalitis in children, after-effects, 491 ; and Dr. P. C. Brett, lævulose as a test for hepatic inefficiency, 1362
Spencer, Dr. H. R., William Harvey, obstetric physician and gynæcologist, 837 ; correction, 927
Spina bifida (Mr. F. C. Pybus), 599
Spirit *Duty (Voluntary Hospitals)* Grant, 314
Spirits in hospitals, 51 ; price of (Py Q), 310
Spirochætes in periodontal disease, 723 ; cultivation of (*Dr. F. W. Twort*), 798
Spleen, the, and Some of its Diseases (Sir B. Moynihan) (review), 565
Spleen, chronic inflammatory diseases of (Dr. A. G. Gibson), 885
Splint, abduction, *for the shoulder*, adjustable, 612
Sporotrichosis in children in Vienna, 1243
Sprigge, Sir Squire, Physic and Fiction (review), 1168
Springs, Hot, of *New Zealand (Dr. A. S.* Herbert) (review), 1114
Squint, early operation in, 510
Squint, its Causes, Pathology, and Treatment (Mr. C. Worth), fifth edition, 1921 (review), 133
Staff Fund, bearings of (leading article), 237
Stage, the, professional immorality on, 28
Stammerers, classes for, 1082
Starling, Prof. E. H., the law of the heart, 212 ; heart problems, 1199
State *care of mental disorder, annual* report of the Board of Control (lunacy and mental deficiency) for 1920, 820
State medicine, existing institute of (leading article), 27 ; and Tropical Medicine, diplomas in (see Students' Guide), 473 ; Institute of Hygiene in Prague, 688
Stedman, Dr. T. B., death of, 731
Stedman, Dr. T. L., Practical Medical Dictionary, sixth edition, 1921 (review), 1007
*Stekel, Dr. W., Onanie und Homo*sexualität, second edition, 1921 (review), 609 ; Die Geschlechtskälte der Frau (second edition), 609 ; The Beloved Ego (review), 609
Stengel, Dr. A., and Dr. H. Fox, Text-book of Pathology, seventh edition, 1921 (review), 708
Stenosis, pyloric, hypertrophic, 391 ; partial pyloric (hypertrophic), Finney's operation (Mr. R. P. Rowlands), 1373
Stephenson, C. H., and C. E. Parker, Some *Micro-Chemical Tests for* Alkaloids (review), 1329
Sterile marriages and examination for spermal fluid, 1343
Sterilisation, surgical, of women, indications for, 1343
Steriliser, hot-air, for steel needles, 810
Sterility *in the male* (Mr. K. M. Walker), 229 ; defective diet as a cause (leading article), 1012
Stethoscope, new, 1010
Stevenson, Mr. E., treatment of septic *ulcer of cornea by chauffage*, 1005
Stewart, Sir J. P., delirium, 1005 ; spasmodic respiratory affections, 1261
Stewart, Dr. R. M., ætiology of asylum dysentery, 416
Stigma diseases *in general hospitals* (leading article), 718
Stillbirth, its prevention, 1018
Stoker, Mr. W., death of, 1137
Stomach and Abdomen from the Physician's Standpoint (*Dr. W. Russell*) (review), 232 ; and Duodenum, Surgery *of*, Lectures on (Mr. J. Sherren) (review), 1225
Stomach tube for induction of labour, 90
Stomach, syphilis of, 1159
Stomatology, local anæsthesia in, 1123
Stone *Age, New, in Northern* Europe (Prof. J. M. Tyler) (review), 562
Stone, Dr. W. D., obituary, 826
Stopford, Prof. J. S. B., anomalous response to direct faradic stimulation of a nerve, 73
Story, Mr. A. J., educational treatment of residual hearing in deaf children, 1024
Stovaine anæsthesia, 1166
Stowell, Dr. W. L., Sex, *for Parents and* Teachers (review), 1222
Stratford, Mr. H., myxœdema following X ray treatment, 1059
Street trading in London, 1014
Streets, clean, cost of, 987
Streptococci, hæmolytic, 335
Streptotrichosis of lung, 1059
Strike, medical, in Vienna, 41 ; medical, in Czecho-Slovakia, 103
String Figures (Mr. W. W. R. Ball), second edition, 1921 (review), 80
Stuart, Mr. F. W., *tendon* tunnelling forceps, 1330
Students' Guide (session 1921–1922), 423 ; supplement, 711 ; numbers of the profession (leading article), 463 ; medical, in Vienna, *statistical data*, 1074
Sturge, Dr. Mary D., the marriage bar, 779
Subluxation of the shoulder downwards, 976
Submarine hygiene, *404*
Subtropical esculents (Dr. M. C. Grabham), 1357
Sudmersen, Dr. H. J., and Dr. A. J. Eagleton, standardisation of anti-dysentery serum, 1109
Suffern, Dr. C., formalin blood test for *syphilis*, 1107
Sugar, blood, regulations, 406 ; pure milk, import of (Py Q), 1031
Suicide and war neurosis (Py Q), 311 ; rate in Budapest, 412 ; rate and national *prosperity*, 688
Sulfarsenol in the treatment of congenital syphilis (Dr. E. Crawford and Dr. G. B. Fleming), 700, 828, 877
Sullivan, Dr. W. C., crime and mental deficiency, 787, 816
Summer time, effect on children (Py Q), 259, 1031
"Sunday closing" at British spas, 926, 980
Sunderland Royal Infirmary, new orthopædic department, 1194
Superannuation fund, medical, 778
Suppuration, acute, treatment (Dr. F. D. Saner), 891 ; aural, chronic, 1069, 1301
Supra- and intra-clavicular regions, new method of exposing (Prof. N. A. Dobrovolskaya), 129
Surgery, æsthetic, 410 ; dramatic side of, 819
Surgery, Operative, Aids to (Mr. H. C. Orrin) (review), 563 ; Lectures on, to Nurses (Mr. A. H. Todd) (review), 565 ; of the *Upper Abdomen* (Dr. J. B. Deaver and Dr. A. P. C. Ashhurst), second edition, 1921 (review), 657 ; Operative (Prof. V. Schmieden and Dr. A. Turnbull), second edition (review), *807 ; Operative, Manual of* (Mr. J. F. Binnie), eighth edition, 1921 (review), 807 ; of the Stomach and Duodenum, Lectures on (Mr. J. Sherren) (review), 1225 ; Pocket (Dr. D. C. L. Fitzwilliams) (review), *1260* ; (Prof. G. Ledderhose) (review), 1280 ; Principles and Practice of (Dr. A. H. Haubold) (review), 1328 ; of Peripheral Nerve Injuries in Warfare (Mr. H. Platt) (review), 1376
Surgery, preventive (leading article), 862
Surgical *anatomy, neglect of*, 779 ; drainage, 1065
Surgical Ward Work and Nursing (Dr. A. Miles), fourth edition, 1921 (review), 397 ; Therapeutics and Operative Technique (E. Doyen) *(review)*, 561
Sussex Royal County Hospital, Brighton, report, 1212 ; Provident Scheme, 1247
Sutherland, Dr. G. A., National Provident scheme, 980
Suttie, Dr. I. D., supposed external effects of human vision, 308, 533 ; significance of the sexual instinct for anthropology and psycho-pathology, 1085
Sutures, living, in operative surgery, 1015
Svedberg, *Prof. T., physics and chemistry* of colloids, 28
Swimming bath and catarrhal otitis, 519, 585, 629, 728, 779, 828 ; sanitation, 1399
Swinton, Mr. A. A. C., *supposed external* effects of human vision, 361
Swiss health resorts for tuberculosis (Dr. A. N. Cox), 579
Switzerland and "nerves" (Dr. S. A. K. Wilson), 576

SWITZERLAND, CORRESPONDENCE FROM.—Small-pox epidemics in Basle and Zurich, 979 ; Reform of the medical curriculum ; Cocaine ; *Felix Lewandowsky and Albrecht Burckhardt*, 1297

Synostosis, radio-ulnar, congenital, 804
Syphilis and its Treatment, with Especial Reference to Syphilis of the *Skin* (Dr. W. S. Fox) (review), 182 ; (Atlas de Syphilimétrie), (Dr. A. Vernes) (review), 183 ; (Généralités et Syphilis de l'Adulte), (Emile Sergent, L. Ribadeau-Dumas, L. Babonneix) *(review)*, 183 ; (Dr. H. H. Hazen) (review), 910
Syphilis, congenital, sulfarsenol in the treatment of (Dr. E. Crawford and Dr. G. B. Fleming), 700, 828, 877 ; congenital, Wassermann reaction in, 768 ; congenital, post-natal treatment, 856 ; *ante-natal treatment*, 857 ; congenital, ravages of, 857
Syphilis of the new-born, pathology of, 20 ; action of bismuth compound on, 199 ; and tabes, simultaneous occurrence *of*, 251 ; visceral, 279 ; pre-natal treatment, 391 ; in the negro, 523 ; of the lung, 619 ; formalin blood test for (Dr. C. Suffern), 1107 ; arsenobenzol treatment, 1111 ; of the stomach, 1159 ; *in the navy, treatment*, 1381
Syphilis, treatment by intravenous injections of mercury (Mr. J. E. Lane), 796 ; formalin and Sachs-Georgi tests for, accuracy of compared with the Wassermann *reaction (Dr. A. N. Kingsbury)*, 799, 962, 1322 ; and mental diseases, 869 ; hereditary, incidence of, 1069 ; congenital, cerebro-spinal fluid in, 1122 ; epitrochlear adenopathy in, 1385
Syphilitic *backache*, 211 ; out-patient, male, inadequate attendance of (Dr. R. E. Roberts), 277
Syringomyelia, case of (Dr. W. S Robertson), 1272

T

Takahashi, Dr. I., prophylactic inoculation against scarlet fever, 615
Tar cancer, experimental, further work on, 1235
Tartar emetic, action of in bilharziasis, 97
Taxation for hospital upkeep, 1399
Taylor, Dr. H. N., belladonna poisoning, 1066
Taylor, Dr. N. B., and Prof. J. J. R. Macleod, effects of hot and cold applications to the surface of the body, 70
Taylor, Mr. J., stovaine anæsthesia, 1166
Taylor, Mr. J. L., Stages of Human Life (review), 1062
Taylor, Mr. G., diagnosis and treatment of injuries of the intestines, 286; *dramatic side of surgery, 819*
Teale, Mr. Pridgin, ninetieth birthday, 147
Teat and Capillary Glass Tube, Technique of (Sir A. E. Wright), second edition, 1921 (review), 1329
Teeth in children, factors affecting the condition of, 1069
Teh, Dr. Wu Lien (G. L. Tuck), treatment of plague, 853
Telephone Exchange, London, 631, 683, 735; Toll Exchange, London, 620
Territorial Voluntary Aid Detachment (Py Q), 984
Testicle, imperfectly descended, treatment (Mr. C. A. Pannett), 379: undescended and misplaced, 1167
Test-tubes, rubber rings round, 114
Tests of aptitude for a trade, 242
Tetanus, acute, successfully treated with antitetanic serum (Mr. C. E. Shattock), 957
Therapeutics, Principles of (Prof. O. T. Osborne) (review), 755
Thermometer sheath, new clinical, 631
Thermometers, clinical, 161; Clinical, Bill, 208; testing of (Py Q), 930, 973, 1031
Thomas, G. B. and P., Practical Biological Chemistry (review), 1221
Thompson, Dr. E. T., adjustable joint for germ-proof filter cylinders, 810
Thompson, Dr. P., obituary, 1191, 1249
Thomson, Dr. A. P., and Dr. A. Piney, decerebrate rigidity in an infant, 1105
Thomson, Dr. F. H., diagnosis and treatment of diphtheria, 68
Thomson, Dr. G. H., and Dr. W. Brown, Essentials of Mental Measurement (review), 1168
Thomson, Dr. H. C., Diseases of the Nervous System, third edition, 1921 (review), 859
Thomson, Dr. J., hypertrophic pyloric stenosis, 391
Thomson, Prof. J. A., Outlines of Zoology (review), 1061
Thorne, Dr. F., obituary, 981
Thorne, Dr. L. T., "Sunday closing" at British spas, 980
Thorp, Mr. E., gangrene following measles, 751
Thorpe, Sir E., Dictionary of Applied Chemistry (review), 966
Thursfield, Dr. H., blood diseases in children, 391
Thyroid insufficiency in children, 1059
Ticehurst, Dr. G. A., a compact warm ether inhaler, 82
Tidy, Dr. H. L., diabetes insipidus, 855
Tilney, Dr. F., and Dr. H. A. Riley, Form and Functions of the Central Nervous System (review), 910
Tilsley, Dr. G. E., and Prof. I. W. Hall, agglutination of meningococci, 191
Times and seasons, 865
Tinkler, Dr. C. K., and Helen Masters, Applied Chemistry (review), 398
T.N.T. poisoning in America, 406
Tobacco habit, 1071
Todd, Mr. A. H., Lectures on Surgery to Nurses (review), 565; adjustable abduction splint for the shoulder, 612
Tonsillitis, non-diphtheritic, paralysis of soft palate following (Dr. J. P. Gray), 607; remote effects of, 1031
Tonsils, enlarged, X ray treatment, 300; enlarged, zinc electrolysis for, 417
Tonsils, unhealthy, and cervical adenitis (Mr. W. G. Howarth and Dr. S. R. Gloyne), 997
Tooth-brush, thimble, 60
Toronto University, 870
Toxæmia, Intestinal, or, Auto-Intoxication in the Causation of Disease (Dr. A. Bryce) (review), 756
Tracheotomy tube, new, and false membrane forceps, 566
Trade, tests of aptitude for a, 242
Treatment allowances (Py Q), 1349
Treston, Mr. M. L., oriental sores, 270; combined extra- and intra-dural hæmorrhage, 755
Tridon, Mr. A., Psycho-Analysis, Sleep and Dreams (review), 564
Trifolium stellatum at Shoreham, 264
Tropical sanitation, 144; Diseases Library, 1243
Trotter, Dr. R. H., obituary, 826
Trypanocide, 973, 1025, 1077
Trypanosomiasis, new method of treatment, 680
Tubercle, prevention of (leading article), 295; and restricted migration (leading article), 663; intravenous copper in, 1018; bacilli, avirulent, 1120; bone and joint, domiciliary treatment (Dr. W. C. Rivers), 1155
Tuberculosis and lymphadenoma (Dr. I. Fox), 14; statistics (Py Q), 158, 485; treatment of (Py Q), 208, 307; death-rate in Czecho-Slovakia, 358; patients in sanatoriums (Py Q), 486; coughing cup in prevention of, 630, 730; and prostitution, 665; Spahlinger treatment of (Py Q), 984; and ex-soldiers (Py Q), 984
Tuberculosis in India, its Prevalence, Causation, and Prevention (Dr. A. Lankester), 608; (Dr. H. Gerhartz), third edition, 1921 (review), 608; in Gloucestershire, 879; survey in Czecho-Slovakia, 923; pedunculated peritoneal, 1067; in Belfast, 1186
Tuberculosis of Children (Prof. H. Much) (review), 1168; Pulmonary, Domiciliary Treatment (Dr. F. R. Walters) (review), 1169; and How to Combat It (Dr. F. M. Pottenger) (review), 1169; Pulmonary (Sir J. K. Fowler) (review), 1279
Tuberculosis, surgical, treatment in Bristol, 313; skin, association of, with visceral and other tuberculous manifestations, 339; hospital at Boston (Py Q), 367; of bone in children, 391; and milk control, 391; pulmonary, complement-fixation test in (Dr. A. L. Punch), 497, 518; or gassing, late effects of, 521, 585; pulmonary, *psychopathology* of (Dr. D. G. M. Munro), 556; its relation to general bodily conditions (Dr. F. P. Weber), 910; notification of (Dr. G. L. Cox), 1072, 1131; infection, immunisation, sensitisation, 1109; in Dublin, 1303; in cattle, eradication of, 1334

Tuberculosis.—German views on surgical tuberculosis, 37—Treatment of *pulmonary tuberculosis by Deycke-Much* partial antigens; Costs of tuberculosis; Rôle of the tonsils in pulmonary tuberculosis, 38—Wildbolz's auto-urine reaction, 39—German Tuberculosis Congress at Bad Elster; Annual report of the Trudeau Sanatorium; Late results of pneumothorax treatment, 525—Comparative susceptibility of men to tuberculosis in New York; Re-infection in tuberculosis; Back to the pulmonary apices; Conjugal tuberculosis, 1183

Tuberculous, compulsory measures against (leading article), 189; gland treatment by X rays (Py Q), 983; ex-soldiers, institutional treatment of (Py Q), 1031, 1135; disease, genesis of, 1382
Tuckey, Dr. C. L., Hypnotism and Suggestion, or Psycho-therapeutics, Treatment by, seventh edition, 1921 (review), 706
Tully, Annabel M. T., nutrition and economic conditions of working-class families in Glasgow in April, 1921, 57
Tumour, primary, of the pleura (Dr. E. H. Eastwood and Dr. J. P. Martin), 172; abdominal (Dr. E. C. Bevers), 607; of right petrous bone (Dr. T. Anwyl-Davies), 1323
Tumours of the bony chest wall, 352; copper in, and in normal tissues (*Dr. C. P. White*), 701
Tungsten rays (Mr. W. J. Burroughs), 901
Turnbull, Dr. A., and Prof. V. Schmieden, Operative Surgery, second edition (review), 807
Turner, Dr. E. R., death of, 927
Turner, Dr. L., structural type of the mastoid process, 961
Turner, Mr. P., Inguinal Hernia, the Imperfectly Descended Testicle and Varicocele (*review*), 396
Turtle vaccine, 975
"Twilight sleep" and the general practitioner (Dr. C. H. S. Horwitz), 1151
Twort, Dr. F. W., ultra-microscope viruses, 204; cultivation of spirochætes, 798
Tyler, Prof. J. M., New Stone Age in Northern Europe (review), 562
Typhoid fever, ætiology of, 817; at Bolton-on-Dearne, 1194
Typhus fever, prophylactic inoculation in (Prof. S. Kusama), 386; ætiology of, 540; virus, association of, with blood platelets, 1292
Tyrrell, Dr. E. J., cynotherapy, 1255

U

Ulcer, gastric and duodenal, pathology of, 336; gastric, treatment, 618; septic, of cornea, treatment by chauffage, 1005
Ulcers, varicose, ætiology and treatment, 339; corneal, treatment, 511
Ulster Medical Society (see Medical Societies)
Ultra-violet rays, effects of, on the eye, 244
Umbilicus, discharge from (Dr. F. Johnson), 1159
Unemployment and Health Insurance payments (Py Q), 260; and national health (Py Q), 260; benefit and hospital treatment (Py Q), 260
United States Public Health Service, 366
Universities' library for Central Europe, 417, 815
University College Hospital Medical School, awards, 534
University graduates, 539; training for welfare workers, 635
University of Wales, Dr. A. M. Kennedy appointed professor of medicine, 255
Uræmia and hyperpiesia, relationship of (Dr. B. Shaw), 1307
Urbantschitsch, Prof. von, death of, 144
Urethroscope tube for the posterior urethra, 1378
Urethroscopy, operative (Mr. W. W. Powell), 175
Urinary diseases, some medical aspects of (Sir T. Horder), 989
Urine, composition of, during hunger (leading article), 240; abnormalities of, in children, treatment, 1005
Urology, scope of (leading article), 1013
Urquhart, Dr. A. L., serological and morphological characteristics of the pneumococcus, 1313
Uterus, combined fibromyoma and carcinoma of, 19; prolapse of, operative treatment (leading article), 26; involution of, 975; cystic adenoma of, 1003

V

Vacancies, weekly lists of, 56, 110, 161, 211, 261, 314, 369; 420, 535, 587, 632, 683, 736, 783, 832, 881. 931, 986, 1036, 1084, 1138, 1195, 1251, 1304, 1352, 1398
Vaccination, case of death after, 1016; origin of, 1190
Vaccination, deaths from (Py Q), 108, 208; and small-pox (Py Q), 110, 211, 722; compulsory (Py Q), 486; in Madras Presidency, 625; in the North-West Frontier Province, 836; and small-pox in the U.S.A. (leading article), 915
Vaccine lymph, subcutaneous injection of, 243; *turtle*, 975
Vaginal prolapse, interposition operation for, 1393
"Valeda" invalid food and "Good as Gold" baby food, 968
Varendonck, Dr. J., Psychology of Day-dreams (review), 512
Varicose ulcers, ætiology and treatment, 339
Vegetable Histology, Elements of (Mr. C. W. Ballard) (review), 397
Venereal disease and merchant seamen (Py Q), 208; prophylaxis, 251; school instruction in venereal disease, 411; and divorce (Py Q), 931; clinics and their clients (leading article), 970; and soldiers (Py Q), 1031; in Australia, 1198

Venereal Diseases, Control of.—Registration of syphilitics; Hostel for infectious cases, 103—Value of prophylaxis in venereal disease; *Limitation* of Wassermann's reaction, 200—Causes of relapses of gonorrhœa in children, 201—Continuity of treatment; Critical

report of the L.C.C. scheme, 408—Liverpool proposals for continuity of treatment, 409
Venereal Diseases in General Practice, Diagnosis and Treatment (Col. L. W. Harrison), third edition, 1921 (review), 1279
Venereal diseases notices, Portsmouth, 389; in U.S.A., 863; course at Prague University, 923; in London, treatment, 1129; self-disinfection in the *campaign against*, 1235
Ventilate and deodorise ("Win-Sum" radiator), 1142
Verminous conditions in London, new legislative proposals, 195, 1352
Vermouth, Fratelli Corelli, Torino, 968
Vernes, Dr. A., Atlas de Syphilimétrie (review), 183
Vernon, Dr. H. M., Industrial Fatigue and Efficiency (review), 858
Veronal against sea-sickness, 630, 680
Vertigo cured by ossiculectomy, 962
Vesalius, Andreas (Six Anatomical Plates of the Year 1583), edited by Moriz Holl and Karl Sudhoff (review), 134
Veterinary Health Service in France, 1335; *science, future of*, 1355
Veterinary Physiology, Manual of (Maj.-Gen. Sir F. Smith), fifth edition, 1921 (review), 758

VIENNA, CORRESPONDENCE FROM.—A medical strike, 41—Proposed health certificate for marriage, 42—Deaths of eminent physicians; New Medical Act, 305—Protection of the title of specialist; Bathing fatalities, 306—Treatment of encephalitis with Pregl's solution of iodine; Results of famine relief amongst children; *Unveiling of tablet* to Politzer; Appointment of Prof. Kermauner; Drought and the water-supply, 526—Attempts to restrict the number of matriculations; Influx of *foreign physicians*, 671—Indirect extension of the general hospital; Difficulties of the University in Innsbruck; Impending retirement of Prof. Choostek, 672—International Congress of Ophthalmologists at Vienna, 922—New Institutes of Neurology and History of Medicine, 923—Reappearance of influenza; *Rat plague*; Problem of doctors' fees; Statistical data of Vienna medical students; Synchronous combined treatment of metrorrhagia by radium and X rays, 1074—New *biological station* in the Austrian Alps; Sunshine and health; Sporotrichosis in children; Sixtieth birthday of Prof. Hayek; *Prolonged dispute between* sick clubs and their physicians and pharmacists, 1243—Anti-tuberculous work in Austria; Prohibition of yellow phosphorus; Dangerous dental fillings; *Spectacular hypnosis*, 1390

Vienna, development of medical science in (Dr. M. Neuburger), 536; nutrition in (Miss M. R. Gribbon and Prof. N. Paton), 717
Vincent's disease, 1336
Virchow, Rudolf, 1018
Viret, *Dr. B. P., obituary*, 731
Viruses, ultra-microscopic, 201, 361
Visceral sensory nervous system, 520
Visick, Mr. H. C., improved ether inhaler, 186
Vision, an instrument set in motion by, or by proximity of the human body (Dr. C. Russ), 222, 262; human, supposed external effects *of*, *308*, *361*, *533*; problems of, new psychology in relation to, 1108
Vital statistics for 1920 of non-native officials in West Africa, 59; in France, 313
Vital statistics of London during May, 1921, 45; June, 235; July, 530; August, 674; September, 873; October, 1128; November, 1344
Vital statistics, their better use in public health administration (Sir A. Newsholme), 833
Vitamin-A content of fish oils (Dr. S. S. Zilva and Dr. J. C. Drummond), 753
Vitamin deficiency and rickets (Dr. Amy Hodgson), 915
Vitamines—Essential Food Factors (Dr. B. Harrow) (review), 758
Vitamines in relation to public health, 623
Voigt, Dr. J. C., labio-glosso-laryngeal paralysis successfully treated by vaccine, 704
Voltz, Dr. F., Dosierungstafeln für die Röntgentherapie (review), 514
Voluntary Hospitals Commission, nominations, 157
V.R. 76, a French Military Hospital (Mr. H. J. Reckitt) (review), 911

W

Wade, Mr. H., acute pleural empyema, 282
Walford, Dr. W. G., loose neckwear in epilepsy, 785
Walford's (Dr.) retirement, 768
Walker, Dr. R. R. kaolin in the treatment of Asiatic cholera, 273, 300
Walker, Mr. C. H., ophthalmic disease and quackery, 880
Walker, Mr. J. W. T., open operation for removal of prostate, 343
Walker, Mr. K. M., sterility in the male, 228
Wallace, Dr. J. S., physiology of oral hygiene, 339; ætiology of adenoids, 1347
Waller, Prof. A. D., electrical action of the human heart, 49; *output of research* places in the United Kingdom, 977
Wallis, Dr. P. E., death of, 106
Wallis, Dr. R. L. M., glycosuria in pregnancy, 1003
Walmsley, Prof. T., origin of man, 1166
Walshe, *Dr. F. M. R., physiology of* symptom production, 290
Walters, Dr. F. R., value of sanatorium treatment, 17; Domiciliary Treatment of Pulmonary Tuberculosis (review), 1169
War Pensions Bill, 159, 417: machinery of administration, 201; neurosis and shell-shock (*Py Q*), 310; *and suicide* (Py Q), 311; Emergency Fund, meeting, 1295
War, the, medical history and statistics of (Py Q), 485; medical history of, 1286
War-blinded in Germany, 667
Ward, Dr. E., rickets and vitamin deficiency, 1130
Warneford Hospital, Leamington, new out-patients wing, 986
Warning, 1400
Washington Conventions (Py Q), 52, 109
Wassermann reaction, negative, unimportance of, 527; in congenital syphilis, 768; clinical interpretation of, 1135; discussion, 1278; rationale of (Mr. J. E. R. McDonagh), 1319; test and the serum-globulin, 1334; tests (Dr. J. W. Bigger), 1369
Wassermann Test (*Lieut.-Col. C. F. Craig*), second edition, 1921 (review), 565
Wason, Dr. R. L., veronal against sea-sickness, 680
Water, potable, chlorination of, 671; *safety of*, 1234
Water-supply, considerations arising out of the drought, 353; a safe, 668
Watson, Dr. F., oral sepsis and systemic disease, 1326
Watson, Dr. C., fæces in alimentary disorders, 153
Watson, Dr. R., occipito-posterior presentations, *1026*
Watson-Williams, Mr. E., and Dr. P. Watson-Williams, diagnostic exploration of posterior ethmoidal cells, 962
Way, Mr. F. W., death of, 1397
Weanling, the, in Upper Egypt, 416
Weatherbe, Mr. P., infected knee-joint treated by *incision, drainage*, and movement, 1271
Webb, Dr. J. C., Erlangen technique in X ray therapy, 729
Webb, Dr. V. G., cynotherapy, 1141
Webb, Mr. W. M., the Selborne Society and cinematography, 1141
Weber, Dr. F. P., tuberculosis, 910: *Polythæmia, Erythrocytosis*, and Erythræmia (Vaquez-Osler Disease) (review), 1115
Webster, Dr. J. H. D., X ray *treatment* of otosclerosis, 647
Week-end, perils of—and after, 1399
Welfare workers, university training for, 635
"Wellcome" *brand* anti-pneumococcus serum, type 1; "Wellcome" brand agglutinating serum, pneumococcus, types 1, 2, or 3, 400
Wells, Dr. A. G., chronic suppuration of the middle ear, 1268
Welsh, Dr. W. K., death of, 1352
Welsh National School of Medicine, report, 782; appeal, 1303
Welwyn Hospital extension, 1052
West African doctors, Government posts for, 705
West *Indian Medical Conference*, 419, 617
West Kent Medico-Chirurgical Society (see Medical Societies)
West London Medico-Chirurgical Society (*see Medical Societies*)
West Riding Medical Charitable Society, meeting, 317
West Sussex Sanatorium, opening, 1167
Westminster Hospital Students' Union (Guthrie Society), programme of meetings, 1136
Whale, Mr. L., *injury to petrous bone*, 1002
Whipps Cross Infirmary (Py Q), 260
Whisky, Irish, 400
White, Dr. C., condition of sutures after Cæsarean section, 19
White, Dr. C. P., copper in tumours and in normal tissues, 701
White lead question, 1066
Whiteford, Dr. C. H., National Provident Scheme, 681
Whitehouse, Mr. B., curettage and the treatment of uterine hæmorrhage, 507; *a disclaimer*, 585
Whitfield, Dr. A., ætiology of skin diseases, 61, 122, 168; syphilis, 1324
Whitnall, Dr. S. E., Anatomy of the Human Orbit and Accessory Organs (review), 657
Whooping-cough epidemic at St. Kilda, 534
Wigan Infirmary, appeal, 587
Wilbert's invalid port, 968
Wilkin, Dr. H. C., death of, 1133
Wilkinson, Mr. F. H., Fleet-street Week *for* "Bart's.," 980
Wilks, Dr. Elizabeth, birth control, 75
Williams, Dr. E. C. P., aplastic anæmia, 74
Williams, Dr. J. W., Cæsarean section, twenty-one years' experience, 88
Williams, Dr. L., fasting, 1245
Williams, Dr. S., studies in milk, 1386
Williams, Mr. C. E., ambulatory encephalitis lethargica, 499
Williamson, Mr. A., thrombosis of retinal vein, 1108
Willmore, Dr. J. G., belladonna poisoning, 1077
Wilson, Dr. C. M., clinical units, their purpose *and achievement*, 33; (leading article), 969
Wilson, Dr. G., obituary, 877
Wilson, Dr. J. A., auto-intoxication in ophthalmology, 512
Wilson, Dr. S. A. K., Switzerland and "nerves," 576; study of aphasia, 1143
Wiltshire, Miss M. O. P., *basal metabolism* in menstruation, 388
Wingrove Hospital, construction of roadway to (Py Q), 930
Winsley Sanatorium, report, 587
Wollaston, Mr. A. F. R., Life of Alfred Newton (review), 656
Women hospital residents, Melbourne Hospital, 411; *practitioners and a* restricted panel, 725; visitors of lunatic asylums (Py Q), 983
Women's Holiday Fund, 114; Medical Service for India (see Students' Guide), 468, 681; Medical College of Pennsylvania, the premier, 483
Wood-alcohol poisoning, 618
Wood-*Hill* Fund, *1299*, *1398*; *corrigendum*, 1352
Woodhouse, Sir S., death of, 42
Woodroofe, Dr. R. P., death of, *1034*
Worth, Dr. E. H., Federation of Medical and Allied Societies, 50; contract practice, 980
Worth, Mr. C., Squint, its Causes, Pathology, *and* Treatment, *fifth edition*, 1921 (review), 133
Worthing water-supply, 318; Children's Care Society, 949
Wounded, evacuation of, in Lapland snow, 988
Wright, Dr. S., effect of B-vitamin on the appetite, 1208
Wright, Sir A. E., awarded the gold medal of the Royal Society of Medicine, 32, 117; value of apparatus and technique in medical research, 612; *Technique* of the Teat and Capillary Glass Tube, second edition, 1921 (review), 1329
Wyness, Dr. J. D., death of, 1191

X

X Ray Diagnosis and Therapy (Roentgen Interpretation) (Dr. G. W. Holmes), second edition, 1921 (review), 514: (Dr. F. Voltz) (review), 514; Diagnosis (Dr. H. Assman) (review), 563

X ray treatment of enlarged tonsils, 300; motor ambulance wagon service, 393; and radium protection, blood counts to indicate efficiency of, 393; diagnosis, 393; treatment of otosclerosis, 647, 728; therapy, Erlangen technique in, 729; apparatus, 936; therapy, deep, study of, 1381

X rays in malignant disease (leading article), 25, 153: use of, in obstetrics, 635; tuberculous gland treatment by (Py Q), 983

Y

Yates, Dr. A. G., serous meningitis, 1371

Yates, Dr. H. B., pathology of lupus, 1188

Yawning, its physiology and psychology, 866

Year books, 1306

Year 1921 (leading article), 1379

Yearsley, Dr. M., education of deaf children, 1129

Yeasts, the (Dr. A. Guilliermond) (review), 23

Yorke, Prof. W., trypanocide, 1077

Young Girl's Diary (E. and C. Paul) (review), 609

Z

Zangger, Dr. T., veronal against sea-sickness, 630; the cocaine habit, 1131

Zavitzianos, Dr. S. C., uses of dog, 1038

Zeitline, Dr. L., appeal from the Russian Red Cross, 363

Zilva, Dr. S. S., and Dr. J. C. Drummond, vitamin-A content of fish oils, 753

Zinc electrolysis for enlarged tonsils, 417

Zoology, Outlines of (Prof. J. A. Thomson) (review), 1061: for medical students (Prof. J. R. Kerr) (review), 1061: Introduction to (Dr. C. H. O'Donoghue) (review), 1061

CONCORDANCE

To enable the reader to determine at a glance the date and serial number of the issue of THE LANCET containing the required page reference

Pages.	Date of issue.	No.	Pages.	Date of issue.	No.	Pages.	Date of issue.	No.
1– 60	July 2nd	5105	487–540	Sept. 3rd	5114	937– 988	Nov. 5th	5123
61–114	,, 9th	5106	541–592	,, 10th	5115	989–1038	,, 12th	5124
115–164	,, 16th	5107	593–636	,, 17th	5116	1039–1088	,, 19th	5125
165–214	,, 23rd	5108	637–688	,, 24th	5117	1089–1142	,, 26th	5126
215–264	,, 30th	5109	689–740	Oct 1st	5118	1143–1198	Dec. 3rd	5127
265–318	Aug. 6th	5110	741–786	,, 8th	5119	1199–1256	,, 10th	5128
319–372	,, 13th	5111	787–836	,, 15th	5120	1257–1306	,, 17th	5129
373–422	,, 20th	5112	837–884	,, 22nd	5121	1307–1356	,, 24th	5130
423–486	,, 27th	5113	885–936	,, 29th	5122	1357–1400	,, 31st	5131

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Hunterian Lecture

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ON

INJURIES OF THE DIAPHRAGM.

WITH SPECIAL REFERENCE TO ABDOMINO-THORACIC WOUNDS.*

Delivered before the Royal College of Surgeons of England

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INJURIES of the diaphragm are of consequence partly on account of the important physiological functions in which the muscle is engaged, partly because of its close anatomical relationship to important viscera of the abdomen and thorax. The effects of such injuries have been met with much more commonly in recent years, and the reasons for this are clear; street accidents, so frequent in these days of motor transport, are responsible for most of the cases seen in civil life, and the great war, and the numerous smaller wars that have succeeded it, have brought a very large number of cases under the care of military surgeons. As a weapon of revenge the popularity of the dagger has waned, but the revolver has a prominent place in methods of reprisal, and the diaphragm often suffers.

In the cases usually met with in civil surgery the muscle is ruptured as a result of crushing violence, whereas injuries of the diaphragm seen in military surgery are commonly produced by an open wound. Each of these types of injury produces consequences of surgical importance at two stages—an early stage in which serious symptoms follow immediately after the injury, and a late stage where the patient suffers from certain special complications months or years afterwards.

I propose, then, to consider the subject of this lecture in two parts, dealing first with the early effects, and afterwards with the late effects of injuries of the diaphragm.

EARLY EFFECTS OF INJURIES OF THE DIAPHRAGM.

Injuries Without an External Wound.

When the diaphragm is injured by severe external violence in the nature of a crush, it may be ruptured by a stretching and bursting mechanism, or it may be torn by the sharp end of a fractured rib; such cases are of two types, according to whether the vault or one of the crura of the muscle is implicated.

Rupture of the Vault of the Diaphragm.

This is the commoner lesion, and is usually due to a person being run over. It occurs most frequently in children and adolescents, because their thoracic skeleton is elastic and can be compressed to a considerable degree without fracture. The mechanism of simple rupture of the diaphragm is of interest, and in this connexion I have had convincing personal proof of the amount of compression and displacement that the thoracic wall and the upper abdominal viscera can withstand without harm, for at the age of 18 it was my fortune to be run over by a motor-bus, weighing about two tons and containing six people, the back wheel passing over the right hypochondrium and lower chest, across the sternum and the left shoulder; after the accident no lesion was discoverable until the right side of the chest-wall fell in three days later, as a result of the separation of the attachments of the right costal cartilages. Two years ago I saw a precisely similar condition in a girl of 3 years, run over by a car which passed obliquely across the left hypochondrium and right chest, and caused no apparent injury beyond costo-chondral dislocations.

Such escapes are to be considered fortunate, for it is by similar violence that rupture of the diaphragm is caused. A tear of the right side is very uncommon owing to its relation to the liver, which from its comparative immobility has to bear the brunt of a compression injury of this region. I have seen a case of severe reactionary hæmorrhage from the liver into the pleural cavity through an opening in this part of the muscle. On the other hand, the mobility and elasticity of the viscera on the left side enable them to act as a sort of air-cushion and transmit the force to the stretched diaphragm, and it is ruptured; the tear usually occurs in the posterior part of the muscle, and sometimes extends into its œsophageal opening. The symptoms at first are those of shock, dyspnœa, and disordered action of the heart. The breathing presents certain typical characters; its rate is little altered, but it is almost entirely thoracic in type, with a catch at the end of inspiration (sometimes definite spasm or hiccough); painful and repeated cough may occur, and the lips are blue. The pulse is rapid and irregular. After about 24 hours the patient may recover from shock, and diaphragmatic breathing be restored by the tear becoming plugged by omentum. In several instances the patients have appeared remarkably free from symptoms after the first two days. The early development of a hernia of the stomach into the left pleural cavity, usually accompanied by omentum and transverse colon, gives rise to vomiting and other signs of obstruction, but without distension. Dyspnœa and tachycardia recur, and severe pain is present, in the abdomen and often in the neck or shoulder. The chest signs resemble those of hydro-pneumothorax. The hernia may reduce itself and recur later, it may become chronic, or it may lead to early death from shock and obstruction.

The difficulties of diagnosis in these cases are well known, and X ray examination may be fallacious, for it is often quite difficult to persuade an opaque meal to enter the supra-diaphragmatic pouch of the stomach. In war surgery it was first pointed out by Lockwood that the cardiac and respiratory embarrassment of wounds of the diaphragm was very similar to that of open pneumothorax, and that the condition of patients improved as soon as the communication between thorax and abdomen was closed. It is this consideration that makes early operation of importance, also in cases of simple rupture of the muscle; the rapidity of the pulse, being due partly to mechanical causes, is no criterion of the degree of shock.

A case admitted to St. Mary's Hospital in 1917 illustrates the early effects of simple rupture of the diaphragm. The paitent, a girl of 5, was run over by a taxi-cab; she vomited at once, and on two occasions after admission; she was in a state of severe shock and lay on her left side. After 48 hours her condition was good, and she was taking ordinary food; on the sixth day, however, she began to complain of severe pain in the abdomen and in the back of the neck, and any food taken was vomited at once; next day there were signs of air and fluid in the left chest, and the heart was displaced to the right. The symptoms abated, only to recur three days later; diaphragmatic hernia of the stomach was diagnosed by the surgeon, but X rays showed that bismuth passed normally below the diaphragm, and the radiographer considered the case one of hydro-pneumothorax. Exploratory operation was precluded by the collapsed state of the child and she died on the following day. Autopsy showed a tear of the diaphragm through which the whole of the stomach, the omentum, and part of the transverse colon had passed. The alternating periods of severe illness and apparently normal health made the case one of great difficulty: the hernia evidently had reduced itself after its first appearance, only to recur with fatal result.

Rupture of the Crus of the Diaphragm.

This must be an uncommon injury, of which I have seen one example, in association with fracture of the spine. The diaphragm injury was of clinical importance, as it gave rise to great respiratory distress and intraperitoneal hæmorrhage, which simulated rupture of a viscus.

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The patient, a man of 40, fell over 30 feet on to pavement; admitted at once to St. Mary's Hospital, he suffered from severe shock, and a compression fracture of the eleventh and twelfth dorsal vertebræ and fracture of the pelvis were present; signs of intrathecal bleeding developed later. Five hours after the accident the breathing was shallow, of thoracic type, with a catch at inspiration; the right *upper rectus showed a small area of rigidity. A diagnosis* of injury in the neighbourhood of the crura of the diaphragm was made, with possible rupture of the duodenum, and the abdomen was explored by a left paramedian incision, carried outwards below through the left rectus. There was a rupture of the internal part of the left crus of the diaphragm, and from this and from the œsophageal branches of the coronary vein blood was escaping through a tear in the overlying peritoneum; the bleeding was arrested, the distended stomach was washed out, and the abdomen was closed. After suffering from hiccough for a few days, the man made a complete recovery from all the injuries.

Simple Laceration of the Diaphragm by a Fractured Rib.

Penetration of the diaphragm by a rib which has sustained a simple fracture usually results from direct violence to the ninth or tenth rib, and the bone may also lacerate the spleen or liver. It is, I think, not commonly realised that this is the mode of injury of some cases classed as rupture of the spleen, and that the severity of the symptoms is partially due to hæmorrhage, and partially also to the handicap that injury of the diaphragm places on heart and respiration. The chances of recovery are improved by closing the opening in the muscle.

In dealing with a bleeding spleen through an abdominal-wall incision, considerable manipulation may be necessary, and the difficulty of exposure makes anything short of splenectomy almost impossible. Since it is known that the old fear of opening the pleura was an unnecessary one, the advantages of approaching certain injuries of the spleen through the chest wall are definite, especially injuries due to rib fracture. In the absence of fracture the tenth rib may be resected and the unopened pleura pushed aside; if a fracture is present, the broken rib is removed, the openings in pleura and diaphragm are enlarged, and their edges are sutured together to close the pleural sac. The exposure of the spleen thus obtained allows of the damaged portion being sutured or resected, procedures of far less severity then splenectomy; even if removal of the spleen is necessary, the manipulation of the pedicle, so productive of shock, can be carried out more gently than through an abdominal-wall incision.

Dealing with injury of abdominal viscera by transthoracic laparotomy is not new, for in 1912 Sauerbruch[1] described three successful operations, carried out under differential pressure.

It appears then that simple rupture of the diaphragm causes symptoms which may be easily overlooked or attributed to shock and *hæmorrhage*; such rupture may be associated with bleeding from spleen or liver, and in operating for these conditions the diaphragm should be examined, and sutured if torn, in order to relieve the immediate embarrassment of heart and lungs and to prevent diaphragmatic hernia.

Penetrating Wounds of the Diaphragm; Abdomino-thoracic Wounds.

While I realise that the partial cessation of war makes this part of my lecture to some extent a matter of historical interest, at least it is recent history; in spite of all hopes wars have not finally ceased, and it is reasonable to expect that the opportunity will be forced on some of us to return reluctantly to military surgery: moreover, in civil war and in peace, penetrating wounds of the diaphragm do occur from time to time. Such wounds had a very high mortality in the great war: the severity of those seen at casualty ing stations made one realise how many deaths on the battlefield and in field ambulances must have resulted from wounds implicating the diaphragm.

As is well known, in 1915 it was established that the correct treatment of wounds of the abdomen, with the exception of some in its upper part, was early operation. Severe wounds, involving thorax as well as abdomen, were judged to be outside the range of active surgery. At this earlier period the treatment of wounds passing through the diaphragm was little more advanced than at the time of Waterloo; Guthrie, in his book dealing with the war surgery of that period and of the Crimea, gave details of a series of cases. He called attention to the peculiarity of the breathing—"dyspnœa with a peculiar sort of jerk or spasm," and to the important symptom of pain on the top of the shoulder with loss of power of the arm. However, the early operative treatment of chest wounds was developed, and soon extended to the more severe abdomino-thoracic cases. These wounds were very common, owing to the large target that the sloping surfaces of the diaphragm offer to missiles, from whichever direction they approach. It was soon apparent that the results of operations on the trunk, especially in tented hospitals, were more disappointing in winter than in summer; and at all times excessive cigarette-smoking, often right up to the hour of operation, increased the risks of chest surgery, while constipation made abdominal wounds in soldiers specially difficult; the coexistence of both factors made abdomino-thoracic surgery particularly dangerous. The wounds were usually due to bullets or fragments of shell or bomb; in fact during my service as a surgeon for more than four years in France and Belgium I never met with a bayonet wound of the diaphragm. Of a series of 50 cases, 16 were due to bullets, 34 to shell or bomb; the notes are unfortunately only a part of those that I made during the last two and a half years of the war, for some were lost during the rapid travelling that was forced upon us in March, 1918.

Prognosis.—In shell wounds the prognosis depended partly on the size of the fragment; a man rarely reached England with a large fragment retained in thorax or abdomen; such cases either died or had the missiles extracted in France. Except at times when the numbers of wounded necessitated the exclusion of cases of bad prognosis, I thought it right to operate on most desperate cases, not only in hope of occasional successes, but also because a policy of despair is bad for morale.

The most serious element of a wound traversing the diaphragm may be (1) the actual opening in the muscle; (2) the injury of thoracic organs; (3) the abdominal lesions; (4) severe injuries of abdominal and thoracic viscera in the same patient. The actual opening handicaps circulation and respiration, it allows prolapse of abdominal organs into the thorax, and it enables infection to escape from below to the pleura, and in the opposite direction. The thoracic injuries interfere with respiration from collapse of the lung, hæmothorax, and pneumothorax; and they may endanger life by loss of blood, sepsis, and injury of the heart. The dangers of the abdominal lesions are hæmorrhage, sepsis, intestinal obstruction, and interference with processes of metabolism, such as may result from a wound of the liver.

The *diagnosis* of injury of the diaphragm can usually be settled in through-and-through wounds of the body by estimation of the line that the missile has taken; if it is retained, its localisation by X rays and the character of the breathing are the indications of most value. The patients usually arrived at the clearing station in a state of shock and exhaustion, and in most instances resuscitation by rest and warmth was necessary; at this stage estimation of the blood pressure gave a more useful indication of the patient's condition than the pulse-rate; the slow pulse of men wounded in the liver is apt to be deceptive.

Treatment.—The primary objects of early operation in chest wounds are the prevention of sepsis and the closure of an open wound of the pleura, and the same considerations apply when the abdomen also is involved, but here the further complication of serious hæmorrhage is more often present; every hour of waiting diminishes the chances of success. Clean bullet wounds and small through-and-through shell wounds often did well without operation, hæmothorax being dealt with by repeated aspirations. In some of the lighter cases such simple operations as excision and suture of the wounds of the thoracic wall and the diaphragm were performed, but experience of sepsis of lung and pleura, extra-peritoneal cellulitis, and abscess of the liver convinced me that thorough cleansing of the whole track was the safer policy. Radical treatment is especially necessary in wounds due to large projectiles, on account of the dangers of indriven cloth, lacerated muscle, comminuted bone, and "sucking" or "leaking" condition of the thorax.

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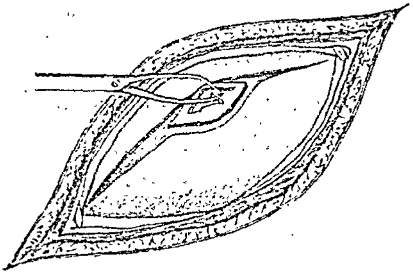
[1] Trans. German Congr. of Surg., 1912, i., 142.

The severity of the patient's general condition is no bar to active surgery, for to a man who appears very ill soon after the receipt of a wound of the diaphragm operation usually holds out the only hope of recovery, and it is impossible to estimate to what degree his symptoms are due to hæmorrhage, to mechanical interference with thoracic viscera, and to hernia of abdominal contents, all of which can be corrected by early operation.

Operative Methods.—Two general methods of operation have been employed by different surgeons:—

1. Operation through an abdominal incision, a separate incision of the thoracic wall being made, if necessary, for dealing with intra-thoracic injuries.

FIG. 1.



Excision and enlargement of wound of diaphragm.

2. An incision through the lower part of the chest wall, carried forwards and downwards into the abdominal wall in certain circumstances. It has been found possible to deal with most of the abdomino-thoracic wounds by this type of operation, and I give a general description of its stages.

(*a*) If there is a wound of the lower part of the thorax, it is excised with injured muscle, bone and pleura, in one piece.

(*b*) Any lesion of the lung is then dealt with, pieces of metal, bone, and cloth being removed, and the contaminated portion of lung is best excised and sutured.

(*c*) The pleura is then cleansed, in slight cases by swabbing, in severe ones by eusol, run in through a tube and siphoned off; swabbing has advantages but causes a great deal of shock if it is prolonged.

(*d*) The wound of the diaphragm is excised, and enlarged if necessary (Fig. 1); its edge is then securely sutured to the intercostal muscles, closing the pleural cavity. Speed in the above stages of the operation is very important.

(*e*) The abdominal viscera are examined and repaired (Fig. 2), the incision being carried downwards and forwards through abdominal wall and costal margin if necessary.

(*f*) The wound is sutured in layers, drainage of the abdomen being established in certain cases.

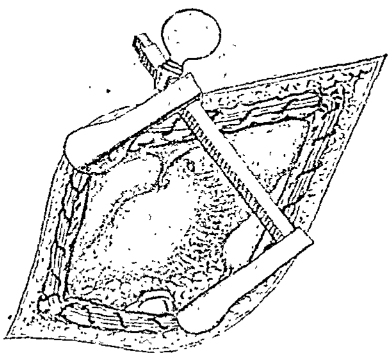
An operation of this nature, modified to suit the needs of individual cases, provides good access to every part of the lung, and in this way I have dealt with wounds of the spleen, stomach, liver, colon, kidney, and small intestine. Suturing the diaphragm to the chest wall allows the abdominal part of the operation to be done with the pleural sac closed, and it is more secure than independent suture of each opening.

In minimising the shock of so severe an operation, the method of anæsthesia is most important. Paravertebral nerve-blocking, with gas-oxygen, was employed in most of the cases; if gas was unobtainable just sufficient chloroform or ether to keep the patient in light sleep was given. Transfusion of blood was responsible for many successes. It was given towards the end of the operation; I think this is less wasteful, and perhaps more useful, than to give it as a preliminary measure; for one thing, the patient operated on before transfusion needs less anæsthetic. Oxygen was given during and for several hours after the operation, the only stimulant that is not valueless or harmful, and rectal and subcutaneous saline, up to 20 pints in 24 hours, was used as a routine.

Varieties of Wounds of the Diaphragm.

To make an elaborate classification would appear to serve no useful purpose, but the following aspects may be borne in mind: 1. The part affected, whether the central tendon, the right or left vault, or the margin. 2. The relation of the direction of the missile to the muscle; parallel to its surface, causing injury by indriven fragments of rib, or producing a gutter-wound; oblique, perforating the muscle; missiles whose direction nearly corresponds to the long axis of the trunk. 3. Complications of sepsis and hæmorrhage. 4. Associated injury of liver, spleen, pancreas, kidney, stomach, colon, jejunum, omentum, or lung. 5. Prolapse of abdominal contents into the thorax.

FIG. 2.



Diaphragm sutured to the intercostal muscles, closing pleural sac, and exposing abdominal viscera.

Most wounds of the central tendon involve the heart; such cases rarely reached the clearing stations, and I never saw one that was not moribund on arrival. Contour wounds, more or less in the line of the margin of the thorax, may cause severe injury to the edge of the diaphragm without involvement of the pleura. Wounds of this type, even when the peritoneum is uninjured, repay early excision en masse of the wound, fractured cartilages and ribs, and suture of diaphragm and chest wall; this prevents suppuration and the disability that results from a large mass of scar tissue in this situation. In wounds at a higher level the missile might remain above the diaphragm, but a perforation be caused by fractured rib driven through the muscle.

CASE 31.—Wound of diaphragm and liver by fractured rib. Wounded by shell 9.30 A.M., May 16th, 1918. Missile passed through the right arm, dividing the brachial artery, and entered the chest, fracturing the sixth and seventh ribs. Operation six hours later: brachial artery ligatured; thoracic wound, with fractured part of ribs, excised, projectile removed from pleural cavity, which was then cleaned and its upper part closed by suture of diaphragm to chest wall; hole in diaphragm, due to fractured end of seventh rib, sutured: wound closed, with rubber-tissue drain to costo-phrenic recess. Aseptic healing. Evacuated to base on ninth day with no chest symptoms.

Similar wounds fracturing several of the lower ribs were frequently responsible for severe injury of pleura, diaphragm, and under-lying viscera by indriven bone, again the missile itself not penetrating; wounds of this type were commonly seen on the right side, left-sided ones being more rapidly fatal.

CASE 26.—Contour wound causing indriven fractures of five ribs and severe laceration of diaphragm and liver with prolapse of omentum. Wounded by shell 11 A.M., March 24th, 1918; extensive open wound of right lower thorax, prolapsed omentum. Ten hours later pulse 72, poor volume: operation at once, excision of the large mass of damaged tissue, with five fractured ribs and lacerated area of diaphragm, pleura cleansed and closed; lacerated liver resected and sutured. prolapsed omentum removed; peritoneal cavity closed off by suture, with gauze pack to liver. The patient had been wounded in front of Arras on a day of the greatest anxiety to the British Army; he had to be sent to the base, in good condition, on the following day. I was unable to trace his subsequent history, but his chances were small.

On the left side wounds of this nature may cause injury of stomach or spleen, or allow the escape of abdominal viscera into the pleura.

CASE 10.—Contour wound with prolapse of stomach and omentum into pleura. Wounded by shell, and admitted same day with large "sucking" wound fracturing eighth left rib; extreme dyspnœa, pulse 130. Operation: wound and shattered rib excised, stomach and omentum prolapsed through large hole in diaphragm; stomach reduced and omentum removed; inner margin of diaphragm opening sutured to intercostals, and wound closed with subcutaneous drain. At close of operation breathing and pulse had much improved. Third day, pulse 110, condition fairly good, but signs of extensive bronchitis in both lungs; death from broncho-pneumonia on fourth day. The man was fat and 40, and this and the cold December weather were unfavourable factors.

Missiles whose line is nearly parallel to the surface of the diaphragm may cause long cuts in the muscle, sometimes not dividing the peritoneum. This type would allow the subsequent development of diaphragmatic hernia with a peritoneal sac.

CASE 1.—Gutter wound of diaphragm, missile retained in costo-phrenic recess. Wounded by shell. On admission a lacerated wound related to ninth left rib; left abdomen rigid. left thorax immobile. Operation: wound and fractured rib excised. Examination showed a wound of the diaphragm, 2 inches long, 1 inch wide, running from before backwards. Incision prolonged forwards and downwards; examination of under aspect of diaphragm showed its peritoneum intact. Returning to the pleural cavity, a piece of shell and some cloth were removed from costo-phrenic recess. Diaphragm and parietes sutured with subcutaneous drain. Wound healed by first intention, and patient was sent to the base, quite fit, ten days later.

On the right side through-and-through bullet wounds from the hypochondrium to the eighth, ninth, or tenth intercostal space usually do not need operation, in the absence of bleeding from the liver, which is unusual. If, however, by a wound of this type a rib has been fractured, there is distinctly more risk of infection; at the first possible opportunity, therefore, the wounded skin. muscle. pleura, and fractured rib are excised en masse, and primary suture without drainage is carried out.

Through-and-through shell wounds due to small fragments of shell were treated on the same lines, but infection of the pleura or liver and subphrenic abscess occurred more commonly than in bullet wounds of this region. In shell wounds primary operations for the arrest of hæmorrhage were frequently necessary, severe bleeding from the liver being usually caused by large fragments.

CASE 10.—Large bleeding wound of liver, with open pneumothorax. Wounded at 2 P.M. by bomb, causing large two inches outside right nipple, which being of the variety was sutured at the field ambulance. sile could be felt among muscles related to ninth Operation (0.30 P.M.): entrance of sixth intercostal space excised and enlarged; much blood and some fragments of liver, lying free in pleural sac, removed; large wound of diaphragm excised, and pleural cavity closed; detached pieces of liver removed from subphrenic space, large gutter wound of liver bleeding; liver wound cleansed, light gauze pack, suture of parietes. Projectile and surrounding tissues excised, opening pleura at ninth interspace; sutured without drainage. Next day, temperature 105° F. Third day, temperature 102°, pulse 100, much bile and old blood discharging. Twelfth day, patient quite fit, temperature having been normal for some days; posterior wound healed without sepsis, anterior wound clean and closed by healthy granulation; sent to base.

A common variety of wound was where a small fragment of shell had passed through the lower part of the thorax into the liver and was retained; at first I thought these cases could be best treated conservatively, but experience showed that cloth was often carried in and caused acute suppuration of the liver in some cases.

CASE 7.—Acute abscess of liver around two pieces of shell. Wounded by projectile fracturing anterior part of right eighth rib. Operation (same day): wounds of chest wall and of diaphragm excised and sutured independently without drainage. Sixth day wound healed, aseptic; fever, tenderness of liver; X rays showed two foreign bodies in left lobe of liver. On the seventh day I was asked to operate, the man being intensely toxæmic. Operation: exposure by the method of Auvray, foul-smelling subphrenic abscess opened, wound entering upper and outer aspect of liver traced through long track to abscess, containing two pieces of shell, situated in posterior part of left lobe; abscess drained, wound sutured. Death from toxæmia next day.

As well as infection of the liver, fragments of shell retained in this organ often caused infection of the pleura and the subphrenic space, while secondary hæmorrhage into the pleura and biliary fistula were less frequent complications. Experience of such complications convinced me that it was safer to remove by primary operation every fragment of shell, bone, or cloth from this viscus. The operation is quick and simple; the thoracic wound is excised, the opening in the diaphragm is identified, and a cone of the muscle is pulled well out, so as to close off the pleural sac; the edges of the diaphragm wound are then excised and the muscle is sutured to the intercostals; the track in the liver is followed up and is cleaned with Volkmann's spoon and gauze, after the missile and all cloth have been extracted; the wound of the chest wall is closed with a wick of gauze or rubber tissue in the liver track. In allowing drainage this method is safer than to close the openings in diaphragm and chest wall independently. Severe primary hæmorrhage from the liver into the pleura was not uncommon, but similar secondary hæmorrhage was less often seen.

CASE 21.—Infection of pleura by *B. perfringens*, severe secondary hæmorrhage from wound of liver, due to small fragment of shell which was retained. Wounded 2 P.M., Dec. 27th, in posterior part of tenth right interspace; severe collapse, rigidity and tenderness of hypochondrium; X rays showed small foreign body in liver, six inches deep. Operation (10.30 P.M.): wound excised, much blood removed from pleura, chest wall sutured. Jan. 6th: leaking of foul, bloody fluid from wound, *B. perfringens* identified; stitches removed, pleura drained. Jan. 10th, severe secondary hæmorrhage filling pleura and escaping externally; ninth rib excised, pleura cleared of blood and closed by diaphragm-intercostal suture; light pack of bleeding liver track; 800 c.cm. blood transfusion. The patient died of collapse and toxæmia. A thorough primary operation might have been expected to give a better result.

In all cases of wound of the liver. however slight the injury might appear, there is a risk of the development of a train of symptoms of extremely acute onset, followed by death in a few hours; a patient who is apparently doing well, with normal pulse and temperature, suddenly about the fourth day becomes intensely collapsed, and the pulse is not palpable; there may be acute delirium, and the temperature runs up to 105° or more; death takes place in a few hours. Post-mortem examination in several cases showed no suppuration or hæmorrhage; on section the whole liver was pale, except for a bile-stained zone around the wound. The clinical condition of these cases closely resembled that seen in delayed anæsthetic poisoning, and appeared due rather to toxæmia from destruction of liver tissue than to infection.

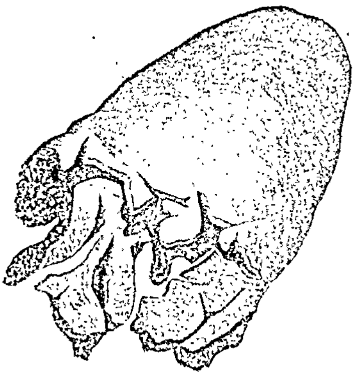
Injury of the lung by a missile which passes through the thorax before entering the abdomen is a serious complication, but needs no special consideration here; it suffices to say that any special treatment for the lung should be completed before the abdominal part of the wound is dealt with. Implication of both lungs in a wound which traverses the diaphragm usually causes death; in one case of this nature I had to operate for hæmorrhage from lung and kidney.

CASE 32.—Wounded by bullet entering sixth right interspace, exit posterior aspect left chest; severe hæmorrhage from wound and hæmoptysis. Operation within 12 hours. Exit wound and four fractured ribs excised; lung, adherent to pleura and bleeding freely, sutured; left kidney, extensively lacerated, excised; diaphragm and chest wall sutured; patient died the same day.

Wounds that traverse the diaphragm and then enter the lung are more serious as a rule than those passing from above downwards; of this class the most favourable are those that enter the lower part of the chest wall, pass through the diaphragm in two places, and then enter the lung. The passage of a projectile into the thorax, after traversing the intestine, nearly always caused death; I know of no case that recovered if the missile wounded the lung after passing through the gut. Wounds of the colon involving the pleura were specially difficult to deal with, and the danger of death from infection of pleura or retroperitoneal cellulitis was very great; to diminish the risk of the latter complication I adopted the expedient of making an oblique incision and leaving unsutured all the layers of the abdominal wall, except the peritoneum; such wounds do not gape if the patient is kept sitting up without intermission.

Thanks to excellent nursing the following case of shell wound of right kidney, hepatic flexure of colon, diaphragm, and pleura, with fracture of rib, recovered in spite of the pleura, peritoneum, and perinephric fat being severely contaminated with colon contents. (Fig. 3.)

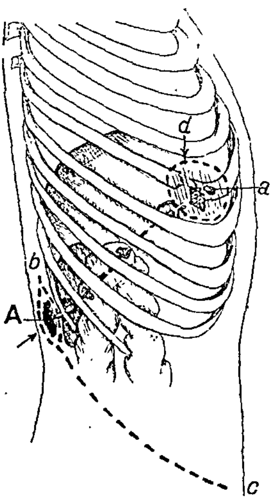
FIG. 5.



CASE 41.—Extent of injuries of spleen, treated by resection of three-fifths of the viscus.

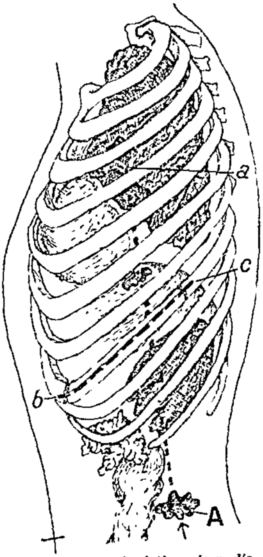
CASE 34.—Wounded 10.20 A.M., May 26th; on admission 5 P.M., lacerated wound below right twelfth rib, missile felt at front part of sixth rib under skin, which was punctured, and discoloured over wide area. Operation at once, gas-oxygen, intercostal and lumbar nerves blocked with novocaine. Excision of tissue round foreign body, with wide area of skin, fractured sixth rib, and wound of diaphragm; distinct fæcal smell on opening pleura, excised tissues stained with intestinal contents; pleura irrigated with eusol and wound sutured without drainage. Entrance wound excised and enlarged by oblique incision to linea semilunaris; right kidney, torn right across, removed; through-and-through wounds of hepatic flexure, causing considerable soiling, sutured, and peritoneum closed; wound otherwise left open except for two sutures to rectus sheath; Carrel tubes to abdominal wall and perinephric fat; 20 oz. blood transfusion; pulse at end of operation 120, blood pressure 70. June 1st to 10th, fæcal fistula; 11th, chest wound healed by first intention, abdominal wound granulated to skin, one inch wide at widest part; patient sent to base. Wrote from England a few weeks later "wound almost completely healed, awaiting a ship for repatriation to New Zealand."

FIG. 3.



CASE 34.—Shell wound of the right kidney, colon, diaphragm, and pleura. A to *a* = course of missile; *b* to *c* and *d* = positions of operation incisions.

FIG. 4.



CASE 41.—Wound of the spleen, diaphragm, omentum, and lung. A = entrance wound; *a* = missile retained in lung; *b* to *c* = site of operation incision.

When the direction of a missile nearly corresponds to the long axis of the body, it may have a long course in abdomen and thorax before being arrested; here the problem that presents itself is how to expose all the injured structures with the minimum of additional trauma to the patient. Resection of the eighth or ninth rib gives sufficient exposure of the thorax and abdomen for most injuries; if necessary the thoracic incision can be prolonged into the abdominal wall. The following case illustrates these points, and is also of interest because it was the first occasion on which I performed a partial resection of the spleen;

this appeared to me to be less severe for wounds not involving the hilum, but it would be hardly feasible by any other exposure. (Fig. 4.)

CASE 41.—Wound of spleen, diaphragm, and lung; resection of damaged part of spleen, large projectile removed from upper lobe of lung. Wounded by shell at 1 P.M. Six hours later, condition good, pulse 76; large laceration six inches to left of third lumbar spine. Severe dyspnœa, left abdomen rigid, no vomiting or hæmoptysis. X rays show missile in upper part of lung, and large hæmothorax. 8.30 P.M., pulse 84, operation: light sleep by chloroform on one layer of gauze, lower seven dorsal and upper three lumbar nerves blocked with novocaine. Anterior six inches of eighth rib and costal cartilage removed, pleura opened and cleared of blood; piece of shell embedded in upper lobe of lung, removed; lung track cleaned, irrigation with eusol; wound at highest point of diaphragm sutured and fixed to sixth interspace; pleura closed by diaphragm-intercostal suture. Incision near margin of diaphragm; spleen bleeding from severe lacerations of its lower third extending right through it in an area three inches wide (Fig. 5); resection of lower three-fifths of spleen, suture of capsule; wound closed with rubber drain to spleen. Wound of entry passing through abdominal wall to outer side of colon excised, peritoneum sutured, *rest of wound packed with 1 per cent. iodoform* paraffin gauze. Pulse at end of operation 92. Next day, pulse 92, no dyspnœa, vomited twice slightly; third day, very fit, pulse 88; fourth day, drain removed; seventh day, stitches removed, upper wound healed, loin wound appears aseptic; nineteenth day, sent to base, loin almost healed. Went to England a few days later, and returned to his home two months afterwards, without complications.

For anatomical reasons wounds which perforate the left side of the diaphragm offer more variety than those on the right, and are more often responsible for hæmorrhage from spleen, mesentery, or omentum, penetration of stomach or intestine, and escape of abdominal organs into the pleural cavity; wound of this side also causes more respiratory and cardiac embarrassment.

The common varieties of wounds of the spleen were gutter wounds of the outer surface, through-and-through perforations with radiating splits of the capsule, severe lacerations, and complete separation of a segment. Wounding of the spleen is not necessarily an indication for operation, but as a general rule it is safer to look and see than to "wait and see." *In my earlier cases I sutured the lacerations* or removed the organ; when I realised the ease with which the spleen could be exposed by an incision through the outer part of the diaphragm I was able to resect the damaged portion in some cases. In many cases wounds of the spleen are associated with injuries of other viscera; in the following one the missile was retained in the pancreas.

CASE 35.—Shell wound of diaphragm, spleen, and pancreas. Wounded by shell fragment fracturing ninth left rib: vomited at once. On admission, collapse, pulse 130, general abdominal rigidity: X rays show missile 1½ inches from midline, 6 inches deep from front. Operation seven hours after injury, wound and 5 inches of rib excised, prolapsed omentum reduced, wound of diaphragm excised, pleura closed, pulped spleen removed, track traced into pancreas, missile not removed; closed without drainage; 25 oz. blood transfusion. Recovery without incident.

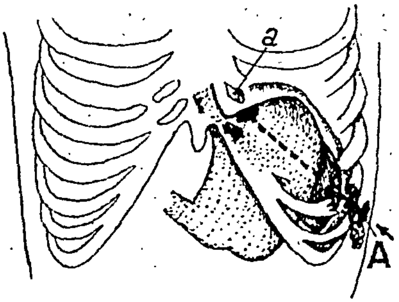
In several cases severe hæmorrhage occurred from omentum as a complication of a wound of the left side of the diaphragm, the viscera escaping injury. The stomach is often implicated in abdomino-thoracic wounds; it may be wounded, it may prolapse through the diaphragm, *and in one case a gastric fistula* discharged through a wound of the lung. In these wounds it is often the cardiac end of the stomach that is injured, and this region and the posterior surface are more accessible through a thoracic than an abdominal incision.

The following case illustrates the ease with which a lacerated wound one inch from the cardia was sutured, and the posterior surface explored by tearing through the gastro-splenic omentum. The missile had remained in the lumen of the stomach. (Fig. 6.)

7.—Abdomino-thoracic wound of spleen and stomach. by fragment of shell entering seventh left : no vomiting. Seven hours later, pulse 108, left rigidity, catch in respiration; X rays—missile related to left suprarenal body. Operation eight hours after injury, gas-oxygen, intercostal nerve-block; excision of wound and 6 inches of fractured eighth rib and cartilage, prolapsed omentum reduced, diaphragm wound excised, pleura cleansed and closed. Incision prolonged to abdominal wall, lacerated wound of greater curvature of stomach one inch from cardia sutured, through-and-through wound of spleen not bleeding; closed without drainage after careful examination of whole of posterior surface of stomach. No shock or vomiting; healed by tenth day, except for one stitch abscess of abdominal wall. Wrote from England two months later "fully recovered, no complications."

Injury of the kidneys was a common complication, its seriousness depending on hæmorrhage, and later perinephric infection; the former was usually controlled by packing, occasionally by suture; in many cases lumbar or transpleural nephrectomy was necessary. For all wounds of the kidney it is necessary to drain the perinephric tissue early; when a wound of the diaphragm is also present it is important to close it, for in many cases an opening in the muscle allowed infection to gain the pleura. The effects due to the actual opening in the diaphragm have already been indicated; that most worthy of special notice is the prolapse of abdominal contents into one or other pleural sac. On the right side this complication is unusual, but portions of liver may be found lying free in this side of the thoracic cavity, and occasionally omentum prolapses. On the left side the omentum very frequently passes through the wound of the diaphragm, and this fact forms a definite indication that all wounds of the left side of the muscle should be repaired by operation. The occurrence of gastric or intestinal fistula opening through the thorax is uncommon; a case wounded in 1917 developed a gastric fistula, opening through the left lung and chest wall.

FIG. 6.



CASE 37.—Shell wound of the diaphragm, spleen, and stomach, with prolapsed omentum. A = entrance wound; a = wound near cardia of stomach.

CASE 51.—Admitted with leaking wound of posterior part of left intercostal space, vomiting, and severe collapse; the general condition improved, but on the fifth day escape of gastric juice was apparent, and on the seventh day I made a jejunostomy under local anæsthesia. The man died on the following day, and autopsy showed the whole of the stomach in the left pleural sac, a wound of its posterior wall communicating with the exterior by a track passing through left lung, which was adherent to the stomach and parietal pleura; no sign of general infection of pleural cavity or peritoneum.

LATE EFFECTS OF INJURIES OF THE DIAPHRAGM.

Most of the late effects which follow rupture or wounding of the diaphragm fall into three groups: (1) the results of a foreign body embedded in the muscle; (2) scarring and adhesions; (3) diaphragmatic hernia.

Foreign Bodies Embedded in the Muscle.

The most prominent symptom of a projectile embedded in the muscle is fixed pain, produced especially by the effort of lifting, by coughing, and by deep inspiration; some patients complain of attacks of suffocation, others of irritating cough. The patient learns to keep the affected side of the muscle immobile.

The diagnosis depends on localisation by X rays. As to treatment, the foreign body should be removed if symptoms are sufficiently severe, and this is best done by open transpleural operation, which allows the release of pleural adhesions, often responsible for many of the patients' symptoms.

Scarring and Adhesions.

Adhesion of a scar of the diaphragm to the chest wall and to the viscera in relation to it appears to cause definite disability. These patients complain especially of pain on exertion, situated in the region of the wound, in the lower thorax and upper abdomen, and just below the clavicle; in some there is præcordial pain and palpitation. Many soldiers wounded in the chest have complained subsequently of gastric symptoms, especially loss of appetite and vomiting; these symptoms may be due to immobility of the diaphragm, adhesions, and sometimes to a communication between the pleural and peritoneal cavities. Undoubtedly diaphragmatic hernia is a more common sequela of wounds of the left side than has been realised, and many cases have been overlooked; there is a danger of diagnosing adhesions alone in patients whose symptoms are really due to hernia, and this condition should always be suspected in men complaining of pain and attacks of vomiting. The presence of adhesions involving the diaphragm can be demonstrated by X rays.

I saw recently a pensioner who was wounded in the left thigh by a rifle bullet in August, 1915. There were two scars below the left iliac crest, the lower one being circular, the other, immediately above it, was vertical and about two inches long; the wound had always been considered to be a superficial one of the through-and-through type. There was no sign of bone or muscle injury, but the man was complaining of pain in the chest, cough, and expectoration, palpitation on exertion, and shooting pain under the heart; he was thin, pale, and cachectic, with a pulse-rate when resting of 120. Rhonchi were heard in the lower part of the left lung. I suggested X ray examination, and this showed a bullet in the left chest, just above and outside the apex of the heart. The military history of this man is interesting, for he was sent back to duty overseas six weeks after being wounded, and he remained with the army abroad until April, 1919. He succeeded in gaining admission to hospital for two months in 1917 and for two and a half months in 1918, the diagnosis being made of bronchitis on the first occasion, and of pyrexia N.Y.D. on the second occasion; I saw him because he was appealing against an inadequate pension.

I have mentioned this case because the significance of wounds of this type is apt to be overlooked. As to the treatment of pleural adhesions involving the diaphragm, their separation during operations undertaken primarily for the removal of foreign bodies has seemed to play an important part in the relief given to the patients, but it is a question if thoracotomy is a justifiable operation for adhesions alone; not that the operation itself is dangerous, but it is difficult to ensure a perfectly dry pleura at the end.

Diaphragmatic Hernia Resulting from Injury.

By far the most important of the late results of wounds and other injuries of the diaphragm is the persistence of a communication between the pleural and peritoneal cavities; it was known more than a century ago that wounds of this muscle rarely healed, and it seems likely that as a result of the recent wars there are now living a larger number of men suffering with diaphragmatic hernia than at any previous time.

There has been considerable discussion on the question of how long after the injury the hernia usually occurs, and in most cases the onset of symptoms has been so insidious that it is impossible to put a date to their commencement; sometimes the first definite symptoms have followed a sudden strain or prolonged effort, as in the case recorded by Barton[2] where about five months after being wounded the man, who had been sent back to France, vomited every day after his first long march, and continued to do so for nine months.

Traumatic diaphragmatic hernia is infinitely more common on the left side, though hernia of omentum into the right pleural sac sometimes occurs; hernia through the central tendon into the pericardium is very rare. The commonest position for the hernial orifice is in front of and lateral to the œsophageal opening.

Pathology.—In the great majority of instances there is no true hernial sac, but a peritoneal sac is sometimes present and limits the size of the hernia. The edges of the hole in the diaphragm may be sharp-cut and fibrotic, or they may be unrecognisable, the muscle gradually thinning and being incorporated with the surface of the viscera prolapsed; these are most commonly the stomach, the transverse colon and hepatic flexure, the small intestine and the spleen, in order of frequency, but occasionally duodenum, pancreas, and liver have been involved. The viscera become adherent to the margin of the opening and to thoracic contents: adhesion to pericardium and parietal pleura is usual, adhesion to the lung is less common; these adhesions are often very firm and constitute the most serious difficulty in treatment. The stomach becomes dilated and hypertrophied, and in some cases the sharp edge of the diaphragm has produced an ulcer of the part of the stomach on which it pressed; the heart is displaced, the lung is compressed and collapsed. Gastric and intestinal fistula have occurred occasionally. Strangulation is a frequent complication, and in many instances the condition has not been suspected until its discovery at an operation for acute obstruction.

Symptomatology.

The cases can be divided into two main classes: (1) those presenting symptoms of chronic diaphragmatic hernia subject to exacerbations; (2) cases of acute obstruction and strangulation.

1. *Chronic type.*—It is likely that there exist a number of unrecognised cases in which a very small part of the stomach is herniated as the result of an old wound; it is evident that if we can diagnose these while the prolapse is small, the dangers of cure are much diminished. The symptoms of these small herniæ are not very definite, but the occurrence of heartburn, loss of appetite, and pain after meals, palpitation, occasional vomiting, dysphagia, dyspnœa, pain on exertion, gradual loss of weight, and constipation, in a man whose scars indicate a possible old wound of the left side of the diaphragm, should be viewed with grave suspicion. In most of the recorded cases there has been a large portion of the stomach, with or without other viscera, prolapsed into the left pleural cavity. The involvement of the stomach in nearly all cases is responsible for the most prominent symptoms; these may be almost entirely subjective, and one is struck by the number of cases recorded where the sufferers have been looked on as malingerers.

Pain is a prominent symptom; it may be situated in the epigastrium, the lower abdomen, the affected side of the chest, especially below the clavicle, or in the shoulder. Præcordial pain is sometimes present. The pain comes especially very soon after any food or drink is taken, and may be very severe; it is relieved by vomiting, and increased by exertion, especially weight-lifting. Occasionally it has been noted that the pain goes at night, when the patient lies down; sometimes it is only relieved by lying on one particular side; in the case described by Sir Charters Symonds,[3] when during exacerbations the patient sat up with his back flexed, straightening of the back caused acute pain. There may be a sense of great distension after food, referred to chest or abdomen, sometimes a feeling of suffocation.

Vomiting is an important symptom, increased by exercise; often fluids only can be retained. The vomit may contain bile or altered blood. A most valuable clinical observation in regard to the vomiting was described by Gaudier and Labbé.[4] The patient, extremely emaciated, could only retain fluids, and it was noticed that he did so much more easily when lying; by keeping him recumbent before and after meals, his general condition improved and he was able to undergo successfully a severe operation. This clinical fact has since been confirmed by many observers, and it constitutes perhaps the most typical single sign of diaphragmatic hernia.

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[2] Brit. Med. Jour., 1919, i, 767.

[3] THE LANCET, 1917, i., 18.

[4] Bull. et Mém. Soc. de Chir. de Paris, 1918, xliv., 383.

In some cases there has been dysphagia, but this is commoner in the congenital herniæ. Constipation is almost invariable, and often precedes other symptoms. The patients become emaciated, anæmic, and cachectic, and they are usually nervous; the wasting may be very gradual, for the patients learn to confine themselves to milk taken frequently. The respiratory symptoms are pain on deep breathing and dyspnœa; sometimes there are attacks of suffocation, particularly at night. The cardiac symptoms are palpitation and præcordial pain.

Objective evidence is often slight, but some of the following signs may be present: abnormal flattening of the abdomen, and on palpation a sense of emptiness of epigastrium; the abdomen is usually relaxed, but there may be local rigidity and tenderness. The movements of the left side of the thorax are diminished, and fullness may be obvious; the stomach resonance may extend above the nipple. Not uncommonly the breath sounds of the left chest are faint, and accompanied by gurglings and borborygmi, which may be perceptible to the patient at each respiration, especially towards evening; splashing sounds may be elicited.

The close relation of stomach to pericardium gives a persistent tachycardia, increased by exertion and meals; the heart is slightly displaced, and tinkling sounds are sometimes produced by its impulse striking the stomach; these may be heard by the patient.

2. *Acute type.*—Acute obstruction and strangulation produce a condition of great danger, and the recorded instances of recovery are not numerous, on account of the emaciation of the patients and the difficulties of diagnosis. The typical picture is one of acute obstruction with an empty, even hollow, abdomen.

Diagnosis.

In the chronic stage the cases have been most often mistaken for pyloric obstruction or pneumothorax. However, in recent years the technique of their examination by X rays has been carefully studied. The comparison of the position of a single scar with the localisation of a retained missile may give a clear indication of diaphragm injury; simple radiography may show an opaque area to the left of the heart shadow, irregularity of the diaphragm, and displacement of the heart. But it is from radioscopy with the swallowing of bismuth or barium emulsion that the clearest evidence is obtained; repeated examination and considerable manœuvring may be necessary to get the emulsion into the supra-diaphragmatic pouch, and the patient must be examined facing the observer and obliquely, upright and supine.

Treatment.

Little can be done, apart from operative procedures; these fall into three groups: (1) the abdominal method; (2) the thoracic method; (3) the combined abdomino-thoracic method.

1. The most commonly employed abdominal incisions are one placed close to the costal margin, which is divided sometimes, and a high left paramedian incision joining a transverse one at the level of the umbilicus.

2. In the thoracic method of approach, a portion of the sixth, seventh, or eighth rib is resected or mobilised; by removing or turning up all the rib in front of its angle a good view is obtained.

3. The first description of the employment for these cases of an incision opening abdomen and thorax together was apparently given by Bérard.[5] The incision is made over the seventh, eighth, or ninth rib and continued forwards and downwards in the abdominal wall; the rib is resected and the costal cartilage divided. I have used this incision on many occasions for dealing with the results of abdomino-thoracic wounds, and it seems the most suitable for difficult cases of diaphragmatic hernia. Probably it is best to commence by resecting or turning up the rib, the incision being prolonged to the abdominal wall later, if it proves necessary.

There has been a good deal of discussion of the relative merit of the abdominal and thoracic methods. The main objection to the thoracic route seems to be that surgeons are more practised in abdominal than thoracic surgery, and that secondary conditions, such as gastric ulcer, may necessitate intraperitoneal procedures. The abdominal incision will certainly be used for most cases dealt with in the acute stage, for these come to the surgeon as abdominal emergencies; in most of them empty intestines make access to the diaphragm from below fairly easy. But in a chronic case the thoracic method, or the abdomino-thoracic one, possesses considerable advantages, giving a clear view and allowing more adequate repair of the diaphragm.

Stages of Operation for Diaphragmatic Hernia.

After opening abdomen or thorax the prolapsed viscera and omentum must be freed by dividing the adhesions; these may be very dense, and care must be taken not to drag on the pericardium, and that if important structures must be cut they shall be those most easily repaired; naturally it is better to risk opening the stomach than the pericardium or colon. The defect in the diaphragm may be very difficult to define, and in some cases adhesions have been so dense that it has been considered unwise to attempt their separation. In a case recorded by Baumgartner and Herscher[6] the stomach was firmly adherent, and the spleen's outer surface was fixed to a scar of the thoracic wall; the surgeon freed the small intestine, omentum, splenic flexure, and the stomach from the pericardium and front part of the diaphragm, leaving the adhesions of the back of the stomach and the spleen intact; he then adopted an expedient used previously by Lecéne, closing the defect by suturing its edges to the stomach and to scar tissue at the lower part of the spleen; the result was completely satisfactory.

A dangerous step is the reduction of the stomach, for its contents may be forced into the œsophagus and flood the only sound lung; it is recommended that the thoracic pouch of stomach be emptied by aspiration before reduction, a safeguard only possible by the thoracic exposure. Careful closure of the gap in the diaphragm is important and is more easily achieved from above. The last stage of the operation is to close abdomen and thorax after specially careful attention to hæmostasis; when, on rare occasions, it is advisable to drain the pleura a valvular method should be employed.

Conclusion.

We may conclude, then, that in operations for strangulation and acute obstruction the abdominal route will be employed as a rule. In chronic cases the thoracic method of approach has certain advantages; it allows adhesions to be divided under better observation, with more safety and better control of bleeding; the stomach pouch can be emptied before reduction; accurate suture of the diaphragm and any plastic measures demanded can be carried out more satisfactorily; and the pleura can be cleansed and its dryness ensured at the end of the operation. If special difficulties arise, or a gastro-jejunostomy is indicated, the thoracic operation is converted into an abdomino-thoracic one by prolonging the incision. In all types of operation the pleural cavity is open, so that the slight risks of operative pneumothorax are equally present.

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[5] Lyon. Chir., 1918, xv., p. 509.

[6] Bull. et Mém. Soc. de Chir. de Paris, 1919, xlv., p. 185.

THE FÆCES IN ALIMENTARY DISORDERS.*

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IT is important to have in mind the fact that normally, on a digestible diet, the only food residues found in the stools are remnants of muscle fibre and the tough debris of vegetables. The fæces are made up of voluminous soap gels, residues of intestinal secretions, excretions, and innumerable bacteria, many of them dead, and only when indigestible cellulose is given are they augmented by vegetable residues, imprisoning in their cellulose and woody envelopes a certain small amount of starch. Even here art has been brought to the help of nature; and by means of cooking, many vegetable foods have been made almost wholly digestible, except for their tough cellulose skeletons. Hence, if foodstuffs occur in the fæces in any notable amount, there is something abnormal, and this abnormality may be due to one of three things, viz.: (*a*) failure of digestion somewhere; (*b*) failure of absorption; or (*c*) hurrying on of the food, so that there is not time for proper digestion or absorption—i.e., diarrhœa.

The diet, however, paradoxically enough, does influence the character of the stools, for the intestinal secretions and the bacterial flora depend a good deal upon the diet which calls them forth. If one might venture upon a description of the normal stool of an ordinary mixed diet, one might say that it is a moulded, fairly firm, more or less cylindrical body, reaction neutral or slightly alkaline to litmus, coloured brown chiefly by the pigments derived from the bile, containing little or no food residues.

However, it is easier to lay hold of the conception of an abnormal stool. Here the fæces have no health in them because either they contain things they ought not to contain—notable quantites of food residues, abnormal substances derived from the gut walls, such as blood, serum, pus, mucus, or from the lumen, such as intestinal calculi, "sand," or parasites—or they may not contain the things they ought to contain, particularly the derivatives of bile pigment. It is a very general opinion that examination of the fæces involves intricate and very specialised chemical operations, but I am convinced that though these are sometimes necessary, in the great majority of cases a comparatively simple technique is adequate for clinical purposes.

Control of Diet.

There are, however, one or two preliminary considerations which must be mentioned. In the first place, the controlling of the diet is a most essential and important matter if valid deductions are to be drawn. I find it useful to examine upon three types of diet:—

(1) It is often most valuable to see the fæces corresponding to a patient's usual diet, and to examine more than a single stool; a rough idea can then be obtained of how he responds to the diet he is in the habit of taking.

(2) Then for two days a milk diet is given, and its typical canary yellow stools make it possible to do a properly controlled test for occult blood and soluble albumin.

(3) A test diet is then given, either in the form of a single meal or a series of meals. A convenient single test-meal is the following: Bread (may be toasted), 3 oz.; lean beef, underdone (minced if preferred), 2 oz.; milk, 1½ pints; potatoes, mashed with some of the above milk, 10 oz. This can be given as a midday meal, followed by a milk diet for the rest of the day. Before, during, and after the meal a cachet of charcoal is given, in order to mark it off from the preceding and subsequent milk diets. By noting the time of the test-meal and the first subsequent stool which is coloured grey with charcoal granules one can gain a rough idea of the length of time the meal has taken to pass through the alimentary tract.

For some days previously drugs should be withheld, especially oily bodies like olive oil or liquid paraffin, which may appear as excess of fat in the stools; purgatives, too, should not be given, for they may cause a marked irritation of the gut, and the production of considerable quantities of mucus, or they may interfere with the normal digestion of the food. The stools should, of course, be examined as fresh as possible.

At the very outset not a few important deductions may be made from the form, consistency, colour, odour, and general characteristics of the stool, but we must do no more than mention their possibility. Nor can we stay to discuss the sieving or "tamissage" of the stools, valuable though it is where intestinal concretions, "intestinal sand," parasites, &c., are suspected. Let us pass on to a discussion of the macroscopical, microscopical, and chemical examinations of the fæces—the three divisions of a "simple technique."

Macroscopical Examination.

The stool is mixed into a homogeneous mass, either as a whole or in parts (if there is any obvious difference in the naked-eye characters of various parts of the stool). A piece of fæces about the size of a walnut is placed into a conical glass, and with the aid of a glass rod and some warmish water made into an emulsion. Portions of this are poured into a Petri dish, diluted with water, if necessary, and examined against a background partly white and partly black.

Various things may be seen—vegetable debris, tiny brown rods of muscle fibre, actual masses of undigested meat (which occur sometimes in the stools of hungry gourmets who bolt their food), white dots of the so-called "potato granules," parasites, possibly epithelial debris; more notably, typical white fragments of connective tissue, and flakes of mucus, intimately mixed with the fæces, transparent or cloudy, stained greenish yellow or brown with the bile pigment derivatives. Some of these may be difficult to distinguish the one from the other—vegetable debris, parasites, connective tissue, and mucus are not infrequently confused; but experience soon enables one to avoid mistakes, and if there is any doubt, the suspected fragment should be transferred to a watch glass containing a little water and examined microscopically at leisure. A simple microscopic examination is usually quite sufficient to distinguish them. Certain appropriate chemical and staining methods can be used if necessary.[1] The most important abnormal things to notice in this part of the examination are connective tissue, flakes of mucus, and parasites.

Microscopical Examination.

A small amount of the mixed fæces is taken up with a glass rod, put on to a slide and pressed out well with a cover-glass. One or two such preparations may be made from different parts of the stool, and usually it is useful to make an iodine stained preparation, leaving it to stand for about 15 minutes before covering with the cover-glass. Standing out against an amorphous background, one may see, normally: (*a*) elastic tissue fibres (rare and of no pathological significance); (*b*) muscle fibre remnants, small hyaline fragments, stained yellow or brown with bile derivatives, occurring infrequently, not more than one or two to the low power field at most: possibly these are pigmented shells of sarcolemma; (*c*) yellow amorphous masses of soaps and fatty acids occurring infrequently in the preparation; (*d*) vegetable debris, which takes many shapes and is apt sometimes to be confused with parasites and their ova.

Abnormally there may be seen certain food residues: (1) Striated muscle fibre, or muscle fibre only partially attacked by the digestive juices—present in excessive amount, several to the field, and consistently seen throughout the whole preparation. (2) Fat. There may be present globules of neutral fat, flakes of neutral fat or fatty acid, crystals of fatty acids, soap rings or needle crystals. These can be differentiated by certain chemical and staining properties, details of which may be found in the text-books. (3) Starch granules, stained blue with iodine, occurring as single granules: or as "potato granules," with the appearance of capsules enclosing several small granules. Sometimes they stain red owing to the digestion of starch into erythrodextrin.

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* A paper read before the Pathological Section of the Liverpool Medical Institution, March 17th, 1921.

[1] For further details of these examinations, a book such as Cammidge's "The Fæces of Children and Adults" should be consulted.

Mucus flakes should always be microscoped, staining is not necessary. Leucocytes, red blood corpuscles, catarrhal cells from the intestine, triple phosphate crystals, epithelial debris, &c., may be seen entangled in them. It is extremely difficult to recognise epithelial debris or leucocytes in the original preparation if the stool is at all formed. In certain fluid stools, notably the diarrhœic stools of typhoid infections, there may be actually little else save leucocytes in suspension in a very foul and putrid liquid.

Parasites or their ova may be seen, and certain crystals may be present, especially those of triple phosphate, which may be deposited in stale fæces, or may occur in large numbers in the putrid, alkaline stools of certain colites. Some workers suggest that a Gram-stained bacteriological film should be made. Personally, I have found little help from it, and in our present state of knowledge it seems to me not worth while, for clinical purposes, to take time over it. It is another matter if definite bacteria are suspected, such as the typhoid group or tubercle.

Chemical Examination.

The reaction to litmus is taken. One then examines for one normal and two abnormal constituents. The normal constituent is stercobilin or hydrobilirubin, derived from the pigment, bilirubin, of the bile by the reducing action of the intestinal bacteria.

A most convenient test for it is to rub up a little fæces with a saturated solution of mercury perchloride and leave to stand, when after a few hours a more or less intense pinkish-red colour develops. The reaction goes much more quickly at 37°C. If some of the well-mixed fæces and the $HgCl_2$ solution are put into a test-tube, one has also a very convenient method of testing for one of the abnormal constituents—coagluable protein, or so-called soluble albumin.

The difficulty in testing for soluble albumin is to obtain a clear fæcal filtrate. Prof. Ramsden and I hope to publish shortly a test which is time-saving and reliable; but for the present I will only mention the mercury perchloride method described above for stercobilin. The rationale of it is the same as that for the method of clearing coffee with a little egg albumin. A normal stool when mixed with water or a solution of mercury perchloride remains a turbid suspension; if soluble albumin is present, however, the metallic salt precipitates the protein, and the precipitated protein carries down with it the other particles in suspension in the fluid, so that the supernatant liquid, if left to stand, instead of remaining turbid becomes clear within a few hours.

Blood, the other abnormal constituent, must be looked for on a controlled diet, and I generally use Weber's guaiacum test.[2]

One other point that may be mentioned—if trouble is suspected in the large intestine, it is often useful to wash out with normal saline some short time after the passing of a stool, and examine the contents of the wash-out chemically both for blood and for soluble albumin, and (after centrifugalising) microscope the deposit.

Discussion.

The abnormal findings can be divided into two categories: (*a*) absence of normal constituents; (*b*) presence of abnormal constituents.

In the first category comes *stercobilin*. If stercobilin is absent, one may safely draw the deduction that bile is not reaching the intestine. The cause may lie in the liver cell itself, or in obstruction of or in the bile passages. There is, unfortunately, no accurate quantitative method for estimation of stercobilin; however, when it is present, by using a uniform technique, a rough idea may be obtained as to whether there is much less than normal.

In the second category are certain food residues—blood, soluble albumin, and mucus.

Food Residues.

(1) *Connective Tissue.*—If connective tissue reaches the fæces in any marked amount, one can conclude with complete confidence that there is a failure of gastric digestion. The scleroproteins of tendons and connective tissue generally, are left undigested, unless the gastric juice has prepared them for further digestion.

(2) *Undigested Muscle Fibre* (creatorrhœa).—Normally, only occasional remnants or shells of meat fibre are present in the stools. Abnormally, I would mention two important types of case:—

(*a*) In the first type there is considerable excess of muscle fibre, though most of it is more or less attacked by the digestive juices. One may term it "partially digested muscle fibre." A clinical example may illustrate this.

A patient complained of overwork during the war; recently, loss of weight, pain about two or three hours after food, flatulence, nausea, occasional attacks of diarrhœa, severe headaches; marked tenderness to pressure over epigastrium. Blood pressure 220 mm. Urine shows a marked excess of indoxyl. No evidence of gastric or duodenal ulcer. The stools of his usual diet show a markedly alkaline reaction to litmus, enormous quantities of partially digested muscle fibre, definite smell of protein putrefaction, and mucus flakes in excess. On the usual test diet the same picture held, and suggested that for some obscure reason (possibly functional trouble of the pancreas) there was an inability to deal adequately with meat fibre, and secondarily, irritation of the gut by bacterial putrefaction products of this undigested muscle fibre, with resulting colitis, mucus flakes, and probably also some intestinal toxæmia. This view was supported by finding that on a carbohydrate diet with restriction of meat the blood pressure fell within a week to 120 mm. of mercury, the mucus in the stools disappeared, and the general condition improved. He is now practically cured, though it still remains necessary—over twelve months after I first saw him—for him to forgo any carnivorous indiscretions, such as game.

(*b*) The second type shows an excess of meat fibre in the stools, and practically all of it has retained its striations—i.e., true creatorrhœa. This condition is almost invariably met with when there is inadequacy of the pancreatic juice, for the pancreatic secretion is essential for the digestion of the striations. Hence, provided that diarrhœa can be excluded, the appearance of striated muscle fibres in the fæces indicates that there is a pancreatic insufficiency, possibly due to obstruction (as in carcinoma of the head of the pancreas), or maybe to lack of production (as in extensive cirrhosis of the gland).

(3) *Starch Grains.*—These may indicate an ordinary diarrhœa or the condition of so-called carbohydrate intestinal dyspepsia, which occurs especially in children. Here the gut cannot deal properly with the carbohydrates supplied to it, either because they are excessive in amount, or because there is some infection or catarrh of the small intestine. Their presence has no necessary relation to pancreatic disease.

(4) *Fat.*—An important and much discussed matter and one into which many unnecessary complexities have been imported. There are two fundamental questions to investigate here: (*a*) Is there excess of fat (of any or all types) in the stool; (*b*) If so, is it an excess of split or unsplit fat?

(*a*) If a uniform technique is used, as a general rule conclusions quite adequate for all clinical purposes can be drawn from a microscopic examination. Adult stools contain normally 15 to 25 per cent. of their dry weight of "fat," including under this head all substances soluble in ether. On a test diet, if the fat present is above 40 per cent., it is almost invariably recognisable microscopically. Often the limit is even less than 40 per cent. Personally, I do not think that important deductions can be drawn, even if accurate quantitative fat estimations are made, from small variations in fat content. Nor do I think that an accurate determination of the relative proportions of split or unsplit fat gives information at all commensurate with the labour involved.

(*b*) Is it an excess of split or unsplit fat, microscopically? Unsplit fat, of course, means neutral fat—the glyceride of a fatty acid; split fat means fatty acids or their salts—the soaps. Whether the split fat consists of the free fatty acid or the soap depends practically entirely upon the acid or alkaline reaction of the intestinal contents, and therefore, as the important point is to learn whether the neutral fat of the food has been split into glycerine and fatty acid to the usual extent, no clinical purpose is served by distinguishing between the two types of split fat—free fatty acid and soaps. Hence for clinical purposes it is desirable to classify the fæcal fat in the two broad categories of "split" and "unsplit" fat.

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[2] For further details see paper "On Soluble Albumin and Blood in the Stools," THE LANCET, 1920, ii., 291.

The fats are split chiefly by the lipase of the pancreatic juice, aided greatly by the presence of bile; their absorption from the gut depends overwhelmingly on the presence of the bile acids of the bile. However, the intestinal juice appears sometimes to be able to take on the power of splitting fat, and certainly fat may also be split by the action of bacteria in the large intestine.

Thus, one may conclude that (*a*) the presence of excess of neutral fat in the stools probably indicates pancreatic insufficiency, but sometimes shows merely a very rapid passage of food through the gut, as in gastrocolic fistula (on the other hand, even with pancreatic insufficiency, the fat may be split in the small bowel and absorbed, or split in the large bowel and escape absorption); and (*b*) excess of fat, which is split fat, may indicate (1) marked diarrhœa; (2) pancreatic insufficiency (where means other than the pancreatic juice has split the fat); (3) lack of absorption due to absence of bile, or to disease of the gut wall (for example, amyloid disease, sprue).

It is obvious, therefore, that these various factors must be carefully weighed in interpreting an examination of the fat content of a stool, whether with positive or negative indications.

5. *Blood and Soluble Albumin.*—Of these, little must be said, important though they are. There is no need to emphasise the significance of occult blood in the stools of a controlled diet. Soluble albumin, or coagulable protein may come, rarely, from the food "albumins"—in severe diarrhœa, for example, especially in children; more usually it comes from the blood serum of a hæmorrhage, or from serous exudate into the gut. It is so rapidly digested that if present in the stools it indicates exudate or bleeding not too far from the anus, or else a very copious exudate or bleeding higher up the gut. It may occur, notably, in ulceration or carcinoma of the colon.

6. *Mucus.*—Normally the comparatively small amount of mucus secreted by the small intestine is digested before it reaches the ileocæcal valve, and in the large intestine the mucus there secreted is so intimately mixed with the fæces as to be unrecognisable either macroscopically or microscopically. When, however, there is excess of mucus produced, either by infection or irritation, it appears in the stools roughly in one of two forms: (*a*) covering the surface of the stools—maybe forming an actual membrane; or (*b*) small flakes intimately mixed with the fæces.

Broadly speaking, the large bowel is divided into two portions with separate functions. In the cæcum, ascending colon, and part of the transverse colon—the proximal part of the large intestine—churning of the fluid fæces occurs, with the absorption of water. More or less solid parts of fæces are then passed into the distal part of the bowel, whose function is mainly occupied with defæcation. A consideration of this division of function helps in the interpretation of the different appearances of mucus. Excess of mucus produced in the small intestine, or the initial part of the large bowel, will be intimately mixed with the fæces in the form of flakes; mucus produced in excess in the terminal half of the large intestine will tend to surround the formed fæces. It is thus obvious that mucus *flakes* are not directly due to a mere banal constipation. The fæces in the cæcum and ascending colon are fluid, and the mucus incorporated there is the response to irritation of the gut wall, perhaps from bacterial infection, perhaps from damaging chemical products (for example, those of protein putrefaction). On the other hand, mucus surrounding the formed stool is likely to be due directly to constipation. In putrid fluid fæces, as in typhoid, the abnormal mucus may be digested, and not appear in the stools at all.

Summaries of Illustrative Cases.

1. M. C. J., age 45, gastric pain for eight months, jaundice three months. Occasional vomiting, two months. Loewi's adrenalin reaction positive. *Urine:* Diastase index low; no sugar; bile pigments and salts present. *Stools:* No undigested muscle fibre, crystals of split fat in marked excess. No stercobilin. Laboratory report: "Complete obstruction to bile outflow. No evidence of pancreatic involvement." Diagnosis: Gall-stones. At operation a large stone removed from the common bile-duct.

2. M. J., age 51, jaundice four months, loss of weight, no vomiting. X ray showed (1) slight delay in emptying of stomach—no obvious cause; (2) no evidence of gall-stones. Provisional clinical diagnosis, malignant pancreas. *Stools:* Never any undigested muscle fibre, always crystals of split fat in excess, stercobilin present but markedly less than normal. *Urine:* No sugar, diastase normal. Report: "Some obstruction to bile outflow, but not complete. No evidence of pancreatic involvement." Operation: Stone in cystic duct just above the junction with the common bile-duct, impacted, but not completely blocking the bile-duct.

3. M. Q., six months previously insidious development of pallor and emaciation. One month later jaundice appeared, varying in intensity from time to time; liver enlarged but not nodular. No pain, appetite good. *Urine:* 0·83 per cent. sugar, diastase 30 units (normal 10 to 33). *Stools:* Large numbers of striated muscle fibres, split fat in moderate excess, stercobilin present though less than normal. Occult blood present, no soluble albumin. Report: "Pancreatic insufficiency, with some obstruction to bile outflow; occult blood is in favour of malignant disease." Operation (three months later): extensive growth found, involving the head of the pancreas and neighbouring structures. Death two weeks later.

4. Mrs. G., tumour in epigastrium, pulsating on occasion. No jaundice; pain, loss of weight. Clinician's diagnosis: Pulsatile tumour of the liver or pancreatic cyst. *Urine:* Diastase normal, trace of sugar said to have been present in one examination by a clinical clerk, but absent in all specimens sent to the laboratory. *Stools:* Nothing abnormal. Report: "No evidence of pancreatic disease." Operation: Pancreatic cyst as big as a large orange. (Thus in this case the fæcal examination gave no help.)

5. E. M., vomiting, loss of appetite, no blood in vomit. "Could only take fluids." Hard supraclavicular gland on left side. X ray showed a normal stomach. *Urine:* Indoxyl and urobilin in excess, diastase normal. *Stools:* Very alkaline, mucus flakes in great excess, containing many leucocytes and degenerated epithelial cells. No undigested muscle fibre. No blood. Soluble albumin in small amount. Report: "Inflammatory condition of large intestine with some exudate." Clinically it was decided that there was a carcinoma of the colon. Death from pneumonia. Post-mortem refused.

6. E. W., boy aged 12, with diarrhœa. Temperature 100°F. *Stool:* Very alkaline, quite fluid, no mucus; practically speaking, the stool was a suspension of leucocytes in a foul-smelling fluid. Soluble albumin in marked amount, no blood. Report: "Inflammation of gut, with exudate." Further examination showed organisms of *Paratyphoid B*, and the boy's blood gave the agglutination test.

Conclusion.

I have largely dealt with the stools of adults. Children's stools are almost a subject in themselves, and they present many problems not yet fully worked out. Nevertheless, though interpretation is often difficult, particularly in the stools of infancy, in many cases valuable assistance may be looked for from an examination of the fæces, notably in the obscure indigestions of childhood, intestinal catarrhs, and actual organic disease of the alimentary tract.

In conclusion, I would insist that examination of the fæces must be integrated with the clinical findings, usually with a thorough examination of the urine, sometimes also of the blood. All that I would claim for it is that not infrequently it provides data which the clinician finds very valuable in making his diagnosis.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—The first register of members of the Chartered Society will be published early in the autumn. Members and certificate holders of the Incorporated Society of Trained Masseuses and the Institute of Massage and Remedial Gymnastics are reminded that unless they register before July 15th at the offices of the Chartered Society, at 157, Great Portland-street, London, W. 1, their names will not appear in the first register.

AN UNUSUAL TYPE OF ARRHYTHMIA IN MITRAL AND AORTIC DISEASE

WITH EXTENSIVE MYOCARDIAL DEGENERATION.

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AND

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THE following case, which appeared to us to exhibit some features of interest, showed an extensive degree of myocardial disease in a heart so distorted owing to pathological changes that identification of the auriculo-ventricular node and bundle in serial sections was a matter of great difficulty. The fibrosis, which was visible throughout the entire musculature, appeared to have left the fibres of the bundle intact. The clinical features of the case were a little unusual.

History of the Case: Condition on Admission.

The patient, a man of 38, was under the care of Dr. James Collier; he was first admitted to St. George's Hospital on August 31st, 1918, complaining of cough, sleeplessness, and swelling of the legs, having been ill in bed about a fortnight. He gave a history of having had malaria in South Africa in 1899, and a history of rheumatic fever about the same date. He had suffered from shortness of breath and intermittent attacks of swelling of the legs for about three years previous to admission.

On admission on August 31st, 1918, the patient was thin, pale, and obviously ill, with a pulse of 44. The heart was enlarged, the rhythm being irregular; the liver was enlarged, tender, and pulsating; there were moist sounds at the bases of both lungs; the legs, scrotum, and penis were œdematous. Tincture of digitalis was given in the usual doses. On Sept. 3rd the œdema of the genitals had disappeared; on the 9th the patient was not so well, and there was general anasarca; the pulse was slow and irregular from premature beats.

After some days the œdema disappeared, and the patient was discharged on the 29th. There was a well-marked systolic bruit at apex and base, and an aortic diastolic bruit conducted downwards and to the left across the sternum. During the above period the radial pulse varied in rate between 26 and 70 per minute. For the first few days it was between 26 and 40, but on Sept. 3rd it rose to 62, and afterwards continued to average about 70. Nothing further was heard of the patient until he was readmitted on March 3rd, 1919, with considerable œdema of the legs, and complaining of pain over the region of the liver.

On admission the apex beat was in the sixth intercostal space, five and a half inches from the middle line; the force of the impulse was feeble, the area of cardiac dullness was increased considerably to the left of the nipple line. At the apex systolic and diastolic bruits were heard; a diastolic bruit was also audible over the aortic cartilage. The patient was very breathless and complained of continual cough, and there were signs of congestion at the bases of the lungs. Pulsation was marked in the vessels of the neck, and considerable distension of the veins was observed; the radial pulse-rate was between 40 and 50. The patient vomited a good deal after admission and his cough was persistent and distressing; he was too ill to be thoroughly examined. The radial pulse-rate continued to vary between 30 and 50.

Irregular Heart Rhythm.

On March 28th the vomiting had ceased and the cough was better. Examination of the heart showed an irregular rhythm, two beats and then a long pause, and so on. Polygraphic tracings showed the second of the two beats to be well marked in the cardiogram, but very feebly marked in the radial tracing, the beat hardly getting through to the wrist. The first and second heart sounds were distinctly audible, corresponding to each of the two beats, and in the long pauses between the coupled beats a third and shorter sound was occasionally heard. (Fig. 1.)

No murmurs were now heard, the first sound being very short in duration. The patient remained in bed for many weeks, the radial pulse-rate varying considerably, being always slow on account of the failure of the second of the coupled beats of the ventricle to affect the pulse at the wrist, although in some of the radial tracings it could just be detected. He suffered from several syncopal attacks, and during these there was marked slowing of the cardiac rhythm, the radial pulse-rate falling as low as 30, the ventricular rate being double this. He never became completely unconscious, and never exhibited typical Adams-Stokes syndrome. Except for one emergency dose administered hypodermically on admission digitalis was not given. Injections of atropine were without appreciable effect.

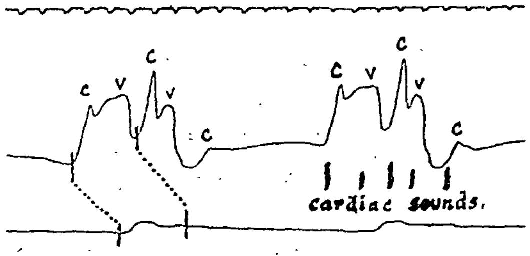

FIG. 1.—Cardiogram. J, jugular; R, radial.

During the last two weeks the œdema had been increasing, and on April 10th there was general anasarca; the swelling affecting the arms and hands and also the upper part of the chest. The pulse-rate had been increasing, and he had been passing very little urine. From this time onwards his condition became rapidly worse, the daily excretion of urine falling to a very few ounces. A few days before death the œdema markedly diminished. Figs. 2 and 3.

It was, unfortunately, not possible to obtain an electrocardiogram, the patient's condition being so grave that he could not be moved from his bed. The accompanying tracings were taken with a Mackenzie ink polygraph 18 days after admission. The arrhythmia is striking, and at first suggests the appearance seen in tracings from patients who have been for some time under the influence of digitalis, and have reached the toxic stage where the familiar coupling of the beats is observed. As has already been stated, however, digitalis was not given on the second occasion of this patient's admission, except for one emergency injection of digitalin, and there was no reason to suppose that he had been previously taking the drug outside the hospital. There is no sign of an *a* wave in any of the tracings, and the jugular pulse is of the ventricular type. It was concluded that the auricles were fibrillating, although the pulse did not at any time show the typical continuous irregularity. On both occasions of admission to hospital there was always an absence

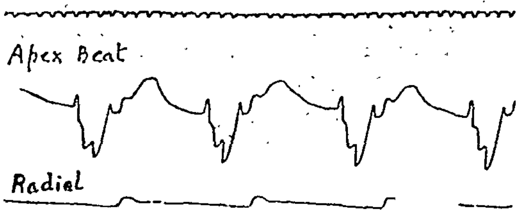

FIG. 2.—Inverted Cardiogram.

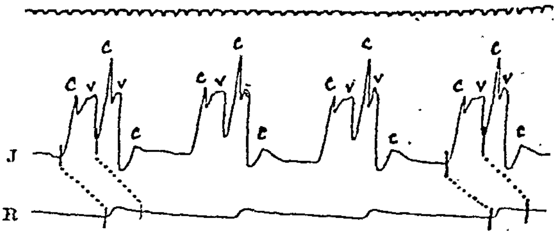

FIG. 3.—Cardiogram.
Pulse rate 32 (radial) Extra-systole not felt at wrist.

of any presystolic murmur at the apex, although the left auricle was greatly enlarged, and there was an extreme degree of mitral stenosis. The third of the *c* waves, which corresponded with the third sound already mentioned, is apparently due to a second premature contraction of the ventricle, which, although audible to the stethoscope, was never strong enough to affect the radial tracings. The first premature contraction, represented by the second of the *c* waves, can just be detected in places in the radial tracing, but could never be felt in the pulse at the wrist. From the character of the attacks of semi-unconsciousness and the extreme slowness of the pulse during some of these, the condition appeared clinically to resemble that of heart-block, but no evidence appears in the tracings of independent auricular contraction, and the *a.-v.* bundle was subsequently shown to be structurally intact.

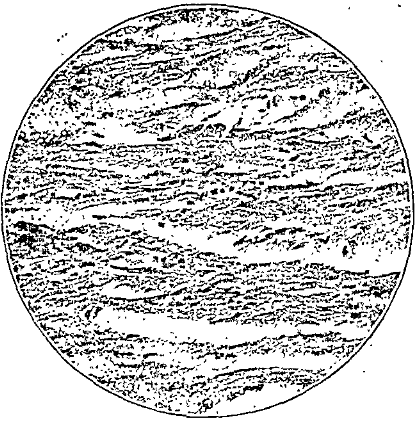

FIG. 4.—Microphotograph of a typical portion of the bundle.

Morbid Anatomy.

The heart as submitted for examination was enormously enlarged and weighed over 30 oz. The ordinary broad anatomical relationships were disturbed by a high degree both of hypertrophy and of dilatation. The area including the sino-auricular node had been destroyed in removing the specimen at the post-mortem examination, but since the pericardium was completely obliterated over the greater portion of its surface, and patches of lung tissue were adherent, its exact delimitation would have been difficult in any case.

Right Auricle.—Enormously dilated and accommodated the entire hand when closed. The tricuspid valve orifice admitted all four fingers and the thumb together. The flaps of the tricuspid valve were thickened by old inflammation and fibrosis.

Right Ventricle.—Greatly hypertrophied and dilated. Nothing was seen on naked-eye examination of the endocardium of the ventricle, pulmonary valves, or pulmonary artery, which called for comment.

Left Auricle.—Dilated, but not so much as the right. The mitral valve flaps were thickened and adherent to each other in the form of a rigid button-hole, admitting the tip of one finger. There were some patches of recent endocarditis on the edges of the valves covered with antemortem clot.

Left Ventricle.—Hypertrophied and dilated, the aortic valves were thickened, fibrosed, and incompetent. There were one or two small patches of recent endocarditis on the upper surface of the posterior cusp. The chordæ tendineæ were thickened in a degree corresponding with the state of the mitral valve.

Heart Muscle.—The heart muscle generally seemed softer than normal, and in cutting through the wall the larger branches of the coronary arteries were seen to be somewhat thickened and sclerotic. On microscopic examination a very slight degree of fatty change could be made out, and it was not easy to define cross striation in the muscle fibres in all the sections examined.

The adventitia of the vessels all over the heart was proliferated, and in the case of the moderate-sized vessels was generally the seat of collections of small round cells.

Auriculo-ventricular Node.—On cutting serial sections through the septum at the auriculo-ventricular junction, the auriculo-ventricular node was found to show an increased amount of fully-formed connective tissue, while the bundle, in order to reach the ventricular portion of the heart, had to pass through a dense mass of fully-formed connective tissue which was found in the upper portion of the interventricular septum. This had apparently been formed by a new growth of connective tissue, extending from the attachment of the septal flap of the tricuspid valve through the thickness of the septum until it coalesced with the right side of the central fibrous body. This latter structure was distorted by the general hypertrophy and dilatation; instead of being more or less triangular in section, as seen from above it was elongated into a thick band.

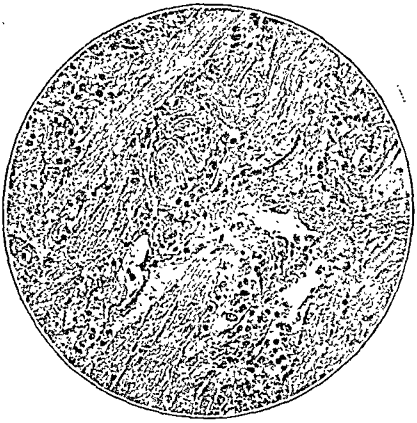

FIG. 5.—Microphotograph showing infiltration of leucocytes through the muscle.

Other Findings.

Neither in node nor bundle were any lesions seen of a definite character. The only abnormality found in these structures consisted of a few sparsely scattered small round cells, although the connective tissue in which the bundle was embedded for part of its course showed definite well-marked infiltrations of lymphocytes. A microphotograph of a typical portion of bundle is shown in Fig. 4.

One definite finding was the occurrence of infiltrations of lymphocytes all through both auricular and ventricular muscle, but better marked in the ventricle (Fig. 5). Many of these were associated with the overgrown adventitia of vessels, but in some cases they occurred apart from the vessels. The main artery of supply to the septum showed a high degree of sclerosis affecting the muscular coat.

There was slight ascites, but the peritoneum itself was normal. The liver was of the nutmeg type, showing fatty changes; the spleen was soft and showed the ordinary changes of passive congestion. The kidneys were congested and cloudy, the pancreas was normal. The stomach was considerably dilated and full of greenish fluid with particles of undigested food. The intestines were normal.

We are indebted to the courtesy of Dr. Collier for permission to publish some of the back notes of the case.

LYMPHADENOMA AND TUBERCULOSIS.

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MANY cases have been described in which tubercle bacilli have been found in the lesions of Hodgkin's disease. Generally these cases have shown locally a definite tuberculous lesion, clearly distinguishable from the lymphadenomatous process and often also from the appearance given by tuberculosis in organs not affected by lymphadenoma. Ziegler gives 20 per cent. as the proportion of cases of Hodgkin's disease which die of generalised tuberculosis. The generally accepted theory that such tuberculosis is a secondary infection is one which must remain to a certain extent on probation until the ætiology of Hodgkin's disease is established. In view of the emphasis which has been placed on the difference between the lesions of the two conditions, the following record seemed to be worth publishing, although the conclusions to be drawn from it are not very clear. In this case no gross tuberculous lesion was found post-mortem, the only macroscopic changes being those of Hodgkin's disease of abdominal type. In the affected glands and spleen tubercle bacilli were found in fairly large numbers, for the most part without other cellular reaction than one which appears to be that generally described as peculiar to Hodgkin's disease.

A Case Described.

The patient, a man aged 34, was admitted to the Swansea General Hospital under the care of Dr. F. Begg on Feb. 3rd, 1921, as a case of Hodgkin's disease. He had an indefinite history of severe anæmia and abdominal swelling for 12 months. On admission, he was obviously moribund. He was wasted; the skin was of an earthy colour; there was pyrexia, and the breathing was deep and rapid, suggesting acidosis. The spleen was greatly and the liver slightly enlarged. The inguinal glands on both sides were moderately enlarged and also one cervical gland. A blood count (Feb. 4th) showed: Hb. 15 per cent. (Sahli); r.b.c., 1,800,000; C.I., 0·38. The white count gave the very low figure of 630 per c.mm. Differential white count:—

Polymorphs ..	.. 67 per cent., or	423 per c.mm.	
Sm. lymphocytes	.. 29 ,, ,,	183 ,,	
Large ,,	.. 1 ,, ,,	6 ,,	
Large hyaline	.. 2 ,, ,,	12 ,,	
Basophile ..	.. 1 ,, ,,	6 ,,	
	100	630	

There was much poikilocytosis. One normoblast seen. Films showed numbers of Gram-positive cocci and short bacilli.

Post-mortem Examination.

The patient died on Feb. 5th, and a post-mortem examination was performed on the 7th by Dr. A. F. Sladden. The tissues were unusually dry; the amount of blood seemed reduced to a minimum, so that there was little decomposition in spite of a terminal septicæmia. No cultural examination of the organs was made. The brain and meninges appeared normal. The heart was dilated, pale, and flabby; the lungs moderately congested but showing no other abnormality. The large vessels were apparently normal and the thoracic glands were not enlarged. The liver was congested. The intestines showed no gross lesion; and, apart from pallor, no change was seen in the kidneys, pancreas, or suprarenals. The spleen was greatly enlarged, weighing 2¼ lb. It was firm, dark in colour, and somewhat uniformly and closely studded with pale yellowish-grey nodules, the largest being rounded and about ¾ cm. across. Some Malpighian corpuscles could be defined. There was no caseation and no nodule could be seen resembling a tuberculous focus. In addition to the enlarged inguinal glands large clumps were present in the external iliac, mesenteric, and lumbar groups. These glands all presented a similar appearance. Except for some ill-defined masses round the aorta, they were discrete and always pale, showing on section a greyish-yellow semi-translucent homogeneous substance, traversed gularly by fine paler lines. There was no suggestion seation or calcification in any gland. The bone ow was fatty, films showing scanty large mononuclear anular cells.

Microscopic Appearances.

Glands.—The loose periglandular tissue showed extensive recent fibrosis, with formation of a fine reticulum by budding fibroblasts. Various Gram-positive and negative bacilli and a few cocci were found. The gland vessels were greatly increased in number. Many were entirely or partially replaced by a cord of young fibrous tissue, others had their lumen reduced by the intramural formation of a fine reticulum containing numerous small channels lined by a single layer of flat endothelium. In one vessel the lumen was almost blocked by this reticulum, which here contained very large endothelioid cells, staining deeply with hæmatoxylin and greatly resembling "lymphadenoma" cells. A fungoid swelling composed of necrotic cells in a fine reticulum scantily invaded by fibroblasts invaded the lumen of another. Among the dead cells were large round pale cells, resembling the endothelioid cells of a tubercle. The adventitia at the base of the mass showed much loose reticulum formation. No tubercle bacilli were found.

Gland Substance.

The glands themselves were greatly altered, the lymphoid element having almost completely disappeared. Spread irregularly through the gland were a few areas only showing small lymphocytes in the pulp. The reticulum showed hypertrophy, the gland consisting of a meshwork of coarse and fine strands with numerous lined channels. There was slight transformation into fibrous tissue, but otherwise little fibrosis. Among the endothelial cells, the number of which varied greatly in different parts, were large phagocytes with several pale oval nuclei, often containing red blood cells, and some large deeply staining irregular cells with one or more dark nuclei. Throughout there was more necrosis than is typical of lymphadenomatous glands, but no massive death. Eosinophiles were scanty. Tubercle bacilli were found scattered irregularly in the glands. In one large colony in a lobe of the less nucleated type of reticulum there was considerable nuclear debris among the bacilli, but otherwise no more necrosis than elsewhere. Apart from the vascular conditions there was no lesion in these glands which suggested by its appearance a tuberculous process. No other bacilli or cocci were seen in the gland substance, and no polymorphs were present.

Liver.—Lymphoid tissue occurred freely along the vessels, which showed slight changes similar to those of the gland vessels. No tubercle bacilli were found.

Kidney.—Sections from two pieces showed little abnormality. No tubercle bacilli were found.

Spleen.—The main vessels showed the following changes. In the artery there was patchy hyperplasia of the intima, chiefly of the elastic element, and in other parts degeneration of the elastic fibres and fibrosis. The media showed some hypertrophy. The adventitia of artery and vein was the site of new vessel formation (many of these showing obliterative endarteritis) and round cell accumulation with fibrosis. The chief lesions of the spleen itself were essentially the same as those of the glands. The reticulum was greatly increased throughout and the Malpighian corpuscles rarely appeared normal. Almost always there was some proliferation of the endothelium of the central artery and sometimes the lumen was greatly diminished. There was often hyperplasia of all the coats of the vessel, sometimes fibrosis. The lymphoid tissue of the follicles was greatly diminished, disappearing apparently through hypertrophy of its own reticular element. There was much hypertrophy of the reticulum which was on the whole more cellular than in the glands. The pulp contained blood cells, degenerated blood, much pigment, and a great number of very large cells (12–40 μ) of two types. Many of these cells were crammed with degenerated red cells, and also contained polymorphs, eosinophiles, other endothelioid cells, and tubercle bacilli. These phagocytic cells generally had one or two oval, comparatively pale nuclei. The other type stained deeply with hæmatoxylin and showed a great variety of shapes. It had one (generally) or more large nuclei which stained intensely. Occasionally such a cell reached a diameter of 46 μ. Cell inclusions, except pigment, in these were rare. A few eosinophiles could be detected. The spleen also showed small infarcts: areas of extravasated red cells and fibrin, patched with areas of an empty fine reticulum, the whole being surrounded by congested tissue. Tubercle bacilli were found fairly uniformly distributed in the sections, usually singly, or a few together, often inside endothelial cells. In one of five blocks examined several colonies of bacilli could be picked out with the low power objective because of the amount of nuclear debris among which the bacilli lay. Apart from this appearance there was little, if any, more acute necrosis here than elsewhere in the spleen tissue and no special reaction of endothelial cells. There was also in the same block, near these colonies, a lesion which seemed to me undoubtedly of tuberculous origin, although no tubercle bacilli were found in it and there was no quite typical tubercle formation. It consisted of an irregular nodule near a fibrous trabecula. The nodule was a mass of round, greatly swollen and mainly necrotic endothelioid cells, exactly like those sometimes seen standing out from the lymphocytes in tuberculous glands. There was little fusion of these dying cells, but they, or their spaces, were well defined. A stroma of fibroblasts and fibrous strands was being formed between them. In one place a round cell accumulation, with capillary and fibroblast spread among the endothelioid cells, gave, apart from the absence of giant cells, a fairly typical picture of tuberculous granulation tissue. Large dark cells resembling those described above occurred here in small numbers. This focus was marked off to some extent from surrounding tissue by a congested and fibrous zone. Yet in spite of this localisation and the type of cell present, the lesion was not very different from the general one of the spleen and glands, and it greatly resembled that of one of the gland vessels.

Remarks.

In this case (clinically one of Hodgkin's disease) there are, then, lesions strongly resembling those of lymphadenoma and containing numerous tubercle bacilli. There is also a focus of tuberculous type, but not very characteristic, which showed some resemblance to lymphadenoma. The vascular conditions present might be due to either disease. If this case should be described as one of Hodgkin's disease, then, according to current theory, the tuberculosis is a secondary infection. Tuberculosis terminates many cachectic conditions, but does not, as a rule, select the tissue which is the chief site of the primary disease. In this case, since the abdominal glands of an adult are affected, the selection is more apparent that it would have been in a case of cervical or mediastinal lymphadenoma with tuberculosis. The obvious tuberculosis found post mortem in cases of Hodgkin's disease may have more significance than appears. For one cannot but believe that, if this man's blood destruction had not been so acute, he must have died before long from generalised tuberculosis. If he had the abdominal glands and spleen would hardly have been regarded as the original stronghold of the tubercle bacillus. With regard to the ætiology of lymphadenoma, the terminal septicæmia of this case may possibly be of significance, although the various bacteria found in sections were not specially related to the lesions.

It seems just possible that in deciding against a connexion between the tubercle bacillus and lymphadenoma too much emphasis has been placed on negative results of inoculation experiments. But even if we admit that a true lymphadenoma, not caused by the tubercle bacillus, exists it may well be that the term at present is applied to more than one disease, perhaps including a primary tuberculosis. In the case described above, on histological grounds a diagnosis of atypical tuberculosis seems possible, although it leaves the toxic factor unaccounted for. If this case is not true lymphadenoma, it is yet not without interest in relation to the problem of the ætiology of that disease and its relation to tuberculosis.

I should like to express my indebtedness to Dr. Sladden for much help in investigating the case.

A COURSE IN HELIOTHERAPY.—A clinical course of lectures and demonstrations on heliotherapy will be given at Leysin from August 16th–20th by Dr. A. Rollier and his assistants. An invitation to attend will be sent to any medical man or woman expecting to be in Switzerland, on application to the Secrétariat Médicale du Dr. Rollier, Leysin, Switzerland.

CONFERENCE ON INFANT WELFARE.—An alteration has been announced in the programme of the Second English-speaking Conference on Infant Welfare summarised in THE LANCET of June 18th last (p. 1330). The special medical session, 5.30 to 6.30 P.M., on Wednesday, July 6th, will be devoted to a discussion on "The Uses and Abuses of Dried Milk," to be introduced by Dr. Harold Scurfield, formerly M.O.H. for Sheffield. Various minor alterations of and additions to the programme are also announced.

Medical Societies.

BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY.

THE first British Congress of Obstetrics and Gynæcology was held in Birmingham on June 3rd and 4th, the following societies taking part in the meeting: Royal Society of Medicine (Obstetrical and Gynæcological Section), Edinburgh Obstetrical Society, North of England Obstetrical and Gynæcological Society, Glasgow Obstetrical and Gynæcological Society, and Midland Obstetrical and Gynæcological Society.

Mr. CHRISTOPHER MARTIN, as President of the Midland Obstetrical and Gynæcological Society, extended a hearty welcome to the visiting societies, and expressed the hope that the Congress would be so successful as to warrant it becoming an annual affair, and the most important meeting of the year for those whose chief aim was the furtherance of British obstetrics and gynæcology.

Dr. EWAN MACLEAN (Cardiff) called the attention of the meeting to the resolution which Prof. W. E. Fothergill and Dr. F. H. Lacey proposed to move—viz., "That in the opinion of this meeting, operations by the abdominal route are quite unnecessary for the treatment of genital prolapse." He thought that the best interests of the profession would not be served by placing this resolution before the meeting, and he proposed that Dr. Fothergill be asked to withdraw it.—Dr. HERBERT SPENCER seconded Dr. Maclean's motion, which was carried, and Dr. Fothergill subsequently withdrew his motion.

Dr. FOTHERGILL, in an opening paper to a discussion upon the

End-Results of Vaginal Operations for Genital Prolapse,

said that the discussion had originated at a meeting of the North of England Society held at Liverpool in December, 1918. Prof. H. Briggs had described the treatment of a case of procidentia in a patient, aged 18, by a vaginal operation combined with ventrofixation. Dr. W. Blair Bell deprecated ventrofixation but advocated a modification of Gillian's operation. Dr. Fletcher Shaw deprecated abdominal operations for prolapse, preferring the vaginal methods used in Manchester. Owing to the divergent opinions expressed, it was suggested that the end-results of these measures should be ascertained and a collective investigation by the Society was proposed. The term "genital prolapse" had a fairly definite connotation all over the world; and medical men constantly use the word "prolapse," as including both so-called vagino-uterine prolapse, and so-called utero-vaginal prolapse. In view of these considerations it was decided at a council meeting of the North of England Society in December, 1919, that the inquiry should include "cases of (1) cystocele, (2) rectocele, (3) prolapsus uteri, and (4) elongated cervix protruding from the vulva." In October, 1920, Dr. F. H. Lacey gave a preliminary report on traced cases operated on at St. Mary's Hospital, Manchester, during the years 1914–15–16. It was arranged, however, to defer further consideration of the subject until the present Congress, in order to obtain the views of British gynæcologists as a whole.

Dr. Fothergill then briefly indicated the steps by which he was led to adopt the technique which he now uses, and paid tribute to the work of the late Sir A. H. Simpson, the late Berry Hart, and especially that of Prof. A. Donald of Manchester. In 1895, owing to the initiative of Donald, the surgical treatment of genital prolapse was already highly evolved and most efficient. For the last 30 years Donald has operated in hospital four days a week and has cured an enormous number of cases of prolapse by amputation of the cervix, extensive anterior colporrhaphy and his own colpo-perineorrhaphy. The speaker's contribution to the subject was first made in 1907 before the Royal Society of Medicine, when he drew attention to the importance of the parametrium and paracolpos in supporting the uterus, vagina, and bladder. In 1908, before the Edinburgh Obstetrical Society, he pointed out the importance of suturing the parametrium in front of the cervix in the treatment of prolapse. Subsequently he had found that by carrying the incision of anterior colporrhaphy round behind the cervix instead of in front of it, this operation and amputation of the cervix could be conveniently combined in a single step. This operation was demonstrated to graduates at the Manchester Royal Infirmary in March, 1913, and in 1915 the improved technique was described and figured.[1]

The inquiry which he and Dr. Lacey had instituted as to the results of this operation had resulted in 156 replies covering a period of from 4½–7½ years from the date of operation. 150 women stated, without qualification, that they were cured, whilst 6 did not. Of the failures, 2 were subsequently found on examination to be anatomically free from prolapse, giving a total of 97 per cent. cures. As to the age of the patients, one-third had passed the menopause. The combined amputation of the cervix with anterior colporrhaphy had been done in 124 cases. Since their operations, 21 of the women under 40 and 3 of those over 40 have had children and 2 are now pregnant. Of these 26, no less than 23 had had the cervix removed, showing that the operation had failed to prevent pregnancy in nearly a quarter of the women of reproductive age. Thirty children had been born to the 24 patients, and in no case had labour been obstructed. Twenty-three of the confinements were natural, and in seven only were forceps required. Four patients had had two labours with no recurrence of the prolapse, and 17 had had one labour with no recurrence. Dr. Fothergill, in conclusion, observed that, inasmuch as vaginal operations afford for all varieties of prolapse treatment that is efficient and permanent, that does not prevent pregnancy and that stands the test of parturition, in a large proportion of cases, abdominal intervention is unnecessary and undesirable. The latter adds to the risk and discomfort of the patient and involves more trouble and loss of time to the operator.

Genital Prolapse treated by Vaginal Operation.

Dr. F. H. LACEY (Manchester) read a report upon an investigation of 750 patients admitted to St. Mary's Hospital, Manchester, during the years 1914–15–16, suffering from genital prolapse and treated by vaginal operation. The patients were women of the working class, who in many cases were compelled to return to the cotton-mill, munitions, or other heavy work at a short interval after their return home. The figures given consist of the average of all the surgeons on the hospital staff, of whom there were 10 in number, including resident surgical officers. A letter was sent to each patient asking the following questions: (1) "Does the womb keep up well now?" (2) "Have you had any confinements since the operation?" (3) "If so, how many?" (4) "Did you need instruments at any of these confinements?" (5) "Has the womb come down at all after any confinement since the operation?" 521 replies were received, and of these, 455 (87 per cent.) answered the first questions with an emphatic "Yes." Twenty-nine were "improved" but not cured. Twenty-six replied that the operation had not been successful. Of the women of reproductive age. 330 successes bore 67 children (20 per cent.). Instruments were required in 32 per cent. of these. Nineteen "improved" cases bore 6 children (31 per cent.). Thirty-three ures bore 16 children (48 per cent.). These results make it probable therefore that subsequent labour was in many cases the cause of the failure of the operation. One death had occurred during the period under investigation, the cause being pulmonary embolism. Dr. Lacey was of opinion, from a consideration of the figures obtained, that it was unnecessary and superfluous to operate for genital prolapse by the abdominal route, as well as submitting the patient to increased risk.

Prof. ARCHIBALD DONALD (Manchester), continuing the discussion, read a

Short History of the Operation of Colporrhaphy, with remarks on the Technique.

He expressed the opinion that colporrhaphy, in the proper sense of the word, has been more frequently done in Manchester than in any other town in this country. In 1884–87 as a resident surgical officer to St. Mary's Hospital, Manchester, he had been struck by the large number of women attending the out-patient department suffering from serious degrees of prolapse and treated by the insertion of pessaries, some of enormous size. He was of opinion that operative treatment on lines similar to the cure of hernia ought to be possible and successful. When he was appointed surgeon to the hospital in 1888 there was little published in this country to encourage anybody to attempt the operations advocated in America and Germany for the treatment of prolapse. His first operation was undertaken in 1888 for a large cystocele in a woman aged 48. He removed a diamond-shaped area of vaginal mucous membrane from the anterior vaginal wall and the surfaces were approximated by a spiral of continuous catgut in "étage." At his second operation in 1888 the cervix was amputated as the first stage, silver wire being used for the first and last time to approximate the cervical flaps. Anterior and posterior colporrhaphy followed. The posterior colporrhaphy was done in stages from above downwards, a large triangular area of posterior vaginal wall being removed, the apex of the triangle being close to the cervix. The results of these and later cases finally established in the speaker's mind the value of colporrhaphy, but for three or four years he turned his attention to operations for the suspension and fixation of the uterus through the abdomen. He was never satisfied with these in cases of prolapse, and he returned to the vaginal operations, which he had never entirely discarded. For a time vaginal fixation as part of the vaginal operation was practised, but this was abandoned after a few years.

Subsequently, the number of colporrhaphy operations at St. Mary's Hospital greatly increased with changes in the staff, and Walls, Fothergill, Clifford, and Fletcher Shaw have all given practical proof of their faith in the operation as a curative measure. To-day the vaginal route is entirely employed by Dr. Donald in the treatment of prolapse, and he regards buried sutures as one of the most important points in the operation, the continuous "blanket stitch" in the deep tissues being employed. With the aid of a Reverdin needle and the help of a trained assistant the whole operation (amputation of cervix, anterior colporrhaphy, and posterior colpo-perineorrhaphy) can be completed in 30 minutes. In conclusion, the speaker observed that in his opinion there is no operation in which one can guarantee with more confidence a good result than colporrhaphy for vaginal and uterine prolapse.

Dr. HERBERT SPENCER (London) observed that statistics have been described as "lies expressed in terms of figures." He was not able to put forward figures himself, but on the whole he could say that he was fairly well satisfied with vaginal operations for prolapse, and he agreed with Dr. Fothergill that abdominal operations were not necessary. The figures that Dr. Fothergill and Dr. Lacey had given included moderate cases as well as severe, and it must be remembered that any of the various methods advocated are very likely to cure these slight degrees of prolapse. Dr. Spencer showed a specimen of a uterus the seat of carcinoma and fibroids, which had been completely prolapsed and which he had removed by vaginal hysterectomy. Some cases of severe complete prolapse he thought could only be cured by vaginal hysterectomy. With regard to Dr. Donald's paper, he observed that operations of a wide plastic nature had been performed in this country in the cure of prolapse since 1883, to his knowledge, and by himself since 1887 at University College Hospital. He was sure that Dr. Donald's method was a good one, but personally he did not use catgut because of certain risks. He employed buried silk sutures as a general rule, and occasionally buried silkworm-gut in old patients. As regards Lefort's operation he had done it a few times, but was not favourably impressed with the method.

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[1] erican Journal of Surgery, May, 1915; Journal of ies and Gynæcology of the British Empire, March–May,

Dr. T. G. **STEVENS** (London) expressed his great indebtedness to Drs. Donald and Fothergill of the Manchester School for all that they had given to the gynæcological world in the matter of treatment for genital prolapse. In London he felt that they had lagged far behind Manchester in this respect. Since 1913 he had followed very closely the teaching described, and he was absolutely convinced that the methods advocated were the best up to date. If failure results it is due as a rule to the patient getting up or working too soon after the operation. Personally he always employed catgut buried sutures in the deep tissues and had found that buried silk or silkworm gut often led to delayed suppuration. Catgut nowadays was fairly reliable, especially if a mild chromacised gut was used. Dr. Stevens also drew attention to the risk of secondary hæmorrhage after Dr. Fothergill's operation. In one or two cases it had been very severe, and came from vessels just below the cervical mucosa. He thought that it was due to spreading apart of the tissues and not to suppuration. He was of opinion with regard to end-results that moderate cases of prolapse do not give quite so satisfactory a cure as severe ones, probably because the operation is not so severe. Also he found that the worse the procidentia the easier it was to cure, because of the ease of obtaining plenty of parametrial tissue. Abdominal operation, in his opinion, played no part whatever in the treatment of prolapse.

Dr. A. E. **GILES** (London) expressed his appreciation of the figures and results brought forward by Dr. Lacey and referred to the amount of labour required in furnishing such a report. A criticism that he would offer was that it was impossible to gauge the result of an operation by patients' statements. Symptomatic cures were often not anatomical cures. He had noted with interest that amongst the symptomatic failures quoted by Dr. Lacey were several anatomical cures. The converse might also be true. No operation could be curative in *every* case, and for this reason the result should not be guaranteed. In his experience 96–97 per cent. of cases were cured after operation. His practice followed mainly that of his old teacher, Prof. Donald, but he did not think it necessary to amputate the cervix in every case, as the cervix will return to its normal size. He had seen many cases where the cervix had been removed by various surgeons, and in some the results were atrocious. Amputation of the cervix was, however, justifiable in hyperplasia of the vaginal portion in nulliparæ. With regard to Dr. Fothergill's operation he thought that to say it was the *only* method was rather begging the question. There were over 150 different methods of suturing the abdominal wall and one writer had stated that every one was as good as another. In the same way he could claim equally good results in the treatment of prolapse from hysteropexy combined with a vaginal plastic operation.

Dr. J. E. **GEMMELL** (Liverpool) stated[2] that the total number of cases operated upon by him at the Hospital for Women, Liverpool, from the year 1902 to December, 1917, was 480, that of these 172 had been traced, and that the length of time since the operations varied from 3¼ to 15 years, averaging 7 years. The methods of treatment employed were anterior colporrhaphy and posterior colpo-perineorrhaphy (40), interposition operation (27), and anterior and posterior colpo-perineorrhaphies plus ventro-fixation (105). The last-named is used in young women during the fertile period, because the vaginal work may be restricted to moderate removal of tissue; an additional fibro-muscular ligament is introduced, conception and parturition are not affected, and the method of operation stands the test of subsequent parturition. Of the 105 cases so treated 30 had borne children and there had been no return of prolapse. The speaker described in detail his method of performing ventro-fixation.

Dr. **WALTER SWAYNE** (Bristol) described, with illustrations, the method of operation which he had evolved and which very closely followed that of Dr. Fothergill. He reconstructed as far as possible the original pelvic supports, paying special attention to the ligaments of Mackenrodt or Patterson. A cystocele he regarded as a hernia through the anterior part of the fascia covering the vaginal wall. Similarly a rectocele was a hernia through the posterior part of the fascia of the vaginal wall. His experience exactly coincided with that of the Manchester School, and he was averse to abdominal methods. Anatomically they are not correct procedures. The question raised by Dr. Giles as to the difference between anatomical and symptomatic cures was an interesting one, but after all it appeared to him to be a minute point. Deal with the case by all means on anatomical principles if possible, but above all relieve the patient of her symptoms. He had not had the pluck so far to perform a very severe operation upon women of child-bearing age, and he was of opinion that if it was done the patient should be warned that the result might be marred by a subsequent labour. He had had some experience of Dr. Blair Bell's procedure, but anatomically it seemed to be unsound, although it relieved symptoms.

Dr. C. D. **LOCHRANE** (Derby) observed that during the past few years he had recorded his results of 350 cases of genital prolapse, but had kept an open mind and given each operation published a fair trial. He thought that the ideal operation should conform to four principles: (1) it should restore the parts as far as possible to the normal condition; (2) it should be applicable to all types of injury and at all periods of life; (3) it should not interfere with pregnancy or cause dystocia; (4) it should be the least dangerous, and, as an addendum, the simplest and cheapest. The operation which conformed in his experience nearest to these axioms was the vaginal plastic method and not any abdominal technique, and during the last six years he had treated less and less cases by the abdominal route and more and more by the vaginal. Although he had never seen dystocia arise from ventral fixation, he had had several cases of recurrence of prolapse following the operation. With regard to the vaginal method he considered that previous preparation of the patient, especially as to sterilisation of the vagina, was most important and should be undertaken three or four days before the operation. Whenever he thought that sepsis was likely his practice was to apply bismuth-iodoform-paste to the tissues previously. When amputation of the cervix was required, he preferred Bonney's technique to the circular method. Further, he never employed buried sutures, but always used a figure of 8 stitch to the perineum.

Prof. **HENRY BRIGGS** (Liverpool) drew attention to the importance of not losing sight of general principles in an unbounded enthusiasm for any one method, and entered a protest against what he could only think were the exaggerated and incorrect statements of some of the speakers. It was incorrect to think that one method only could cure prolapse, or that one type of suture material, such as catgut, was the only material admissible. It was very difficult to get at the true facts of the case, just as it was to believe the statement of a man who says that he never gets an incisional hernia after an abdominal operation.

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[2] See also THE LANCET, June 18th, p. 1291.

Dr. **W. S. A. Griffith** (London) referred to cases of prolapse of the vaginal walls following a previous hysterectomy. He personally had had extreme difficulty in dealing satisfactorily with this type of case, and was of opinion that no operation by the vaginal route, short of obliteration of the vagina, could be successful. The abdominal route was perhaps indicated for cases such as these. With regard to the points raised by other speakers, he believed in buried sutures and a wide anterior colporrhaphy in treating ordinary cases of genital prolapse. Retroversion and retroflexion of the uterus per se did not often cause symptoms unless the ovaries were also prolapsed, when operative treatment might be required.

Dr. **R. H. Paramore** (Rugby) drew attention to the complete absence in the case of previous speakers to any reference to the levator ani musculature in the cause of genital prolapse. He was under the impression that myorrhaphy of the levatores ani was important, and was surprised that no mention had been made of this procedure. His own experience was limited to 11 cases, and of these he only could claim one success. In all the others, separation of the levatores had occurred two to three weeks after operation. The speaker referred to Hey Groves's suggestion of separation of the anterior vaginal wall from the urethra, and also to Cuthbert Lockyer's method of dissection of the levatores ani. His own conception of prolapse was that it was a hernia through the pelvic fascia, and he attempted to narrow the ring by cutting down upon the levatores ani, drilling holes through the pubic arch, and approximating the margins of the muscles joining the pelvic diaphragm by a purse-string suture.

Prof. **Gammeltoft** (Copenhagen) expressed surprise at not having heard greater reference to the levatores ani. His method of treating prolapse was first to perform a wide anterior colporrhaphy, as is done at Manchester. Then he dissects the levatores ani and approximates these muscles. He always uses catgut, and has never seen any of the bad results attributed to it. He did not use abdominal operations for prolapse, or agree with them.

Dr. **J. S. Fairbairn** (London) referred to the difficulty of knowing exactly how much tissue to remove in vaginal operations for prolapse in order to avoid an excessive amount of narrowing of the vaginal canal. On one occasion he had, as a matter of fact, completely occluded the urethra, and subsequently had to remove his sutures. He did not remove the cervix in the percentage of cases described by Dr. Fothergill, and could not quite see the necessity for it. He also drew attention to the possibility of secondary hæmorrhages referred to by other speakers, and he himself had had several instances. With regard to the question of anatomical versus symptomatic cures, he would note that there was no fixed anatomy. The cure should be physiological, and, if so, anatomy would not count.

Mr. **Furneaux Jordan** (Birmingham) stated that for many years he used ventral fixation combined with colporrhaphy, anterior and posterior, but the results from the vaginal plastic operation were infinitely better. A few years ago he had seen Dr. Fothergill operate, and he was so impressed by the method that he had always employed it since. It was a tribute to the operation that since he had used it he had had more gratitude from his patients than from all his previous cases. He was quite sure that the operation could not be done without burying sutures, and if it was proved that catgut is not safe, it should not be employed for this purpose.

Dr. **Miles H. Phillips** (Sheffield), as a pupil of Prof. Donald and Dr. Fothergill, had in large sure adopted their practice. At the same time he ld not assert that he had cured *all* his cases, and lered if any one method would cure all. The type of case where he failed was the elderly woman with complete prolapse of a small atrophied uterus. In these cases it is impossible to repair the vagina satisfactorily, and he used Mayo's operation of removing the uterus, obliterating Douglas's pouch and suturing the broad ligaments below the bladder.

Dr. **T. W. Eden** (London) was glad that Dr. Fothergill had withdrawn his resolution. He thought that perhaps he had tried to devise an operation for *every* case of prolapse. There were a few cases, however, where this was not possible, and where Mayo's operation is good and indicated for choice. It was important, therefore, that we should adhere to the principle of selecting the ideal operation for each individual case. For example, the treatment of prolapse in young nulliparous women occasionally offers extreme difficulty. He recalled such a case in which he had performed an extensive posterior colporrhaphy. The procidentia recurred, and Dr. Cuthbert Lockyer did a ventral fixation. The condition again recurred, and Dr. Eden had recently carried out the operation suggested by Blair Bell of obliterating Douglas's pouch by suturing together the utero-sacral ligaments. The anteversion of the uterus so produced he considered to be important. With regard to Dr. Fothergill's method, he was of opinion that the operation might be improved by associating it with wide separation of the bladder from the cervix, as originated by Cuthbert Lockyer.

Dr. **W. H. Newnham** (Bristol) observed that in Bristol the abdominal route had been practically abandoned entirely in favour of the vaginal operation for prolapse of vagina and uterus. Personally he always had used silk for buried sutures, and had seen no suppuration which he could attribute to its use. Nobody was infallible, and therefore no man could always guarantee a cure, whatever operation was undertaken.

Replies to the Discussion.

Prof. **Fothergill**, in reply, said that he had never seen or heard of any disastrous cases of secondary hæmorrhage following the vaginal operation. Undoubtedly it occurred, but it could always be controlled, and he attributed it to sepsis. With regard to interposition of the uterus, he thought it a bad operation. It was attended by some mortality and a large proportion of unpleasant sequelæ, to say nothing of recurrences. He had not mentioned suture of the levatores ani muscles, as he considered it a minor part of the operation. It was always done in Manchester, and was included under the term, "repair of the perineum." He quite agreed that some of the most difficult cases were those of prolapse of the vagina following hysterectomy. In young women, also, the operation could be very difficult.

Dr. **Lacey**, in reply, said that in Manchester no special preparation of the patients was undertaken. The women were admitted 24 hours before operation, and simply had a douche of cresol or perchloride of mercury. The vulva was covered by a perchloride-soaked gauze pad. He could not understand how Dr. Lochrane achieved his results without burying his sutures.

Prof. **Donald**, in reply, thanked Dr. Stevens for his very kind remarks. With regard to vaginal plastic operations for prolapse, there was no doubt that hæmorrhage did occasionally occur, and it spoilt one's operation. He employed a deep figure of 8 suture to control it, and amputated the cervix by Bonney's method. As to the operation described by Dr. Gemmell, he would like to note that it was originated by the late Sir J. Sinclair. Dr. Miles Phillips had drawn attention to the possibility of subsequent prolapse of the pouch of Douglas. In reply he would say that if colporrhaphy is carried sufficiently high it cannot occur. With regard to hysterectomy as a cure for prolapse he could not speak in favour of it, and had seen no more deplorable cases than those of prolapse of the vaginal walls containing coils of intestine occurring subsequently to vaginal hysterectomy. Again, as to the question of whether the uterus is subsequently anteverted or retroverted, he did not think that it mattered at all as long as it did not prolapse.

This concluded the business of the morning session. At 1 P.M. a lunch took place at the Queen's Hotel to members of the visiting societies, at the invitation of the members of the Midland Obstetrical and Gynæcological Society.

Condition of Sutures after Cæsarean Section.

At the afternoon session, with Dr. CARLTON OLDFIELD, President of the North of England Obstetrical and Gynæcological Society, in the chair,

Dr. CLIFFORD WHITE (London) showed two uteri removed at varying intervals after Cæsarean section, to show the condition of the linen-thread sutures. Dr. White referred to the recent discussions on rupture of the Cæsarean section scar opened by Mr. Eardley Holland and Dr. Munro Kerr, when the opinion was expressed that a non-absorbable suture gave the most firm union in the wall of the uterus after Cæsarean section, and that if a non-absorbable suture was used any weakness of the scar was the result of sepsis. The speaker brought forward the specimens to prove that, although he considered a linen-thread suture by far the best to employ in suturing the uterus, it was not ideal, one of its defects being that it may subsequently work its way towards the endometrium and cause menorrhagia, acting like a seton. The first specimen demonstrated the results of infection of stitches, and the resulting weak scar, which consisted almost entirely of peritoneum. The uterus was removed from a primigravida, aged 24, on the twelfth day after Cæsarean section for pelvic contraction, the patient having been 30 hours in labour. Intestinal obstruction developed from adhesion of three loops of gut to the edges of the abdominal incision and one coil to the uterine incision. The linen-thread sutures were lying loose on the peritoneal surface, and had cut through the whole of the wall of the uterus except its peritoneal covering. The case had run practically an afebrile course throughout. The patient made a good recovery after hysterectomy and free drainage. The second specimen was removed 17 months after Cæsarean section performed for labour obstructed by a cervical fibroid. The fibroid was not removed at the original operation, owing to the condition of the patient, who had been in labour 20 hours. Subsequent to the operation she complained of pelvic pain and menorrhagia. Hysterectomy was performed, and the uterus after removal showed a fibroid measuring 9 by 6 by 6 cm. in the cervix, just above the external os. The muscular wall of the uterus was firmly united in its whole thickness, but linen-thread sutures were appearing through the endometrium. Several could also be seen deeply embedded in the muscular tissue.

Dr. EWAN MACLEAN showed a specimen of a uterus removed four months after Cæsarean section, performed for obstructed labour, due to an intramural fibromyoma, and persistent transverse position. The uterine wall had been originally sutured with interrupted stitches of No. 4 silk, hysterectomy not being possible at the time owing to the patient's general condition. Section of the uterus after the second operation showed the uterine wall well healed. Microscopically, one of the suture sites on examination showed well-marked areas of round-celled infiltration as the result of the continual presence of the foreign irritant. Phagocytes were also seen. Section of the uterine wall, at the request of various members of the congress, was performed, and showed the silk sutures in situ without any absorption.

Dr. WALTER SWAYNE referred to a case of vesical calculus occurring in his practice after the use of silk sutures in a pelvic operation. He thought it probable that the bladder had been wounded on this occasion. His present technique always involved the use of catgut ligatures.

Dr. E. O. CROFT (Leeds) stated that he had had some experience of examining uteri after Cæsarean section had been performed, and he had found the whole of the silk absorbed. He also had had a case of vesical calculus following operation, but he still employs silk as a suture material, and gets good solid union. He believed that it was *slowly* absorbed, but its great value in Cæsarean section is that it persists until the uterine wall is healed.

Dr. HERBERT SPENCER was glad to hear this eulogy of silk for sutures. With regard to its disappearance, he had noted it on occasion completely to disappear in three months. On the other hand, he had known it persist for 17 years. Patients undoubtedly differ in this respect. He advocated silk of the "floss" type, and fairly thick sutures should be used. On only one occasion had he seen any adhesion of omentum or intestine to the scar.

Dr. EARDLEY HOLLAND (London) said that he had nothing new to add to what he had stated a year ago, when he thought that he had proved that cat-gut was not the best suture material for the uterine wall, owing to the risk of subsequent rupture. Mild sepsis could arise without any evidence of clinical value, as in one of Dr. Clifford White's cases.

Dr. MILES H. PHILLIPS did not believe that silk was ever absorbed.

Mr. FURNEAUX JORDAN thought that, theoretically, silkworm gut was the best material to use, and his views coincided with those of Dr. Eardley Holland.

Dr. EWAN MACLEAN exhibited a specimen showing

Combined Fibromyoma and Carcinoma of the Uterus,

removed from a multipara, aged 53. Pelvic pain of indefinite duration and irregular uterine bleeding of six months were the outstanding features. Total hysterectomy was performed, and the uterus showed a large cervical fibroid, 4½ inches diameter, and an advanced carcinoma of the corpus uteri. The speaker observed that in 500 cases of fibromyoma uteri which he had treated he had only noted concurrent carcinoma in two cases, 0·4 per cent. Kelly and Cullen in 1400 cases had found cancer of the uterine body in 1·78 per cent., and of the cervix in 1·28 per cent.

Dr. HERBERT SPENCER was surprised to hear that Dr. Maclean had met with so few examples of concurrent fibroids and carcinoma uteri. He had seen many cases and, in fact, many years ago read a paper advocating total hysterectomy in cases of fibroids on account of this very risk. He had noted six examples of unrecognised and early carcinoma in 200 cases of fibroids.

Dr. F. EDGE (Wolverhampton) had had six cases of carcinoma of the cervix in one year, subsequent to subtotal hysterectomy, and was of opinion that Dr. Herbert Spencer was right in his contention.

Dr. J. S. FAIRBAIRN's experience differed from the previous speakers, and he thought that the combination was very rare. He had only met with one example, and he reserved the right of performing subtotal or total hysterectomy for fibroids, as circumstances demanded.

Dr. HAROLD CHAPPLE showed a specimen which he considered to be a

Full-term Ovarian Pregnancy,

removed in March, 1921, from a patient, aged 33. The patient's last menstrual period occurred from Feb. 29th to March 3rd, 1920. Fœtal movements were felt in September, 1920, but had ceased since November, 1920, when there was a rather indefinite history of false labour. When the woman was examined on March 2nd, 1921, a tense cystic abdominal swelling was present. The fœtus was not definitely palpable, and no uterine contractions, uterine "souffle," or fœtal heart was audible. The uterus lay on the right side of the tumour and was not enlarged. At operation the tumour was densely adherent to many abdominal structures—transverse colon, omentum, for example. The left ureter passed over the antero-lateral aspect of the mass, and the corresponding round ligament lay in front. The left Fallopian tube was cut at the uterine attachment, and could be traced over the surface of the gestation sac. The uterus and right appendages appeared to be normal.

Professor GAMMELTOFT asked whether an X ray examination of the patient had been made previous to operation.—The reply was in the negative.

Dr. CUTHBERT LOCKYER (London) suggested that the specimen might be a tubo-ovarian rather than purely an ovarian pregnancy.

Dr. HERBERT WILLIAMSON (London) suggested that the specimen be referred to the Pathological Committee of the Section for detailed examination and report.

The proposition was accepted, and upon the proposal of Dr. THOMAS WILSON (Birmingham) the pathologist already at work upon the specimen will be invited to join the Committee.

Dr. GILES proposed that the report of the pathologist be received before the Committee met. This was eventually agreed to.

Dr. GILBERT I. STRACHAN (Cardiff) showed

Microscopical Preparations of an Early Ovum,

computed as being 16 to 18 days old. The specimen was obtained as the result of an abortion in a patient who had not missed a menstrual period. The ovum was discovered in a mass of blood-clot, passed per vaginam, and subsequently examined in detail. The small chorionic sac, about the size of an average index finger-nail, was hardened before section. Microscopically, the gestation sac shows amnion and well-marked chorionic villi. The section shown was taken through the cephalic flexure, and showed the early differentiation of the nervous matter into grey matter and white matter.

Dr. F. J. BROWNE (Edinburgh) read a communication upon

The Pathology of Syphilis of the New-born.

The paper was based upon the detailed macroscopic and microscopic investigation of 35 syphilitic fœtuses, and was illustrated by lantern photographs of the different viscera. The speaker drew attention to the failure of the Wassermann reaction in the diagnosis of fœtal syphilis, since on many occasions it is repeatedly negative in both mother and child when undoubted evidence of the disease exists on pathological investigation of the organs. The viscera which give most important evidence are the liver, spleen, kidney, suprarenals, and lung. The placenta may or may not show lesions, and Dr. Browne had been unable to demonstrate the presence of the *Spirochæta pallida* in any of the placentæ that he had examined. The speaker then described in detail the appearances which are diagnostic of syphilis in the various fœtal organs.

Dr. CARLTON OLDFIELD (Leeds) thought that one very important fact which had resulted from Dr. Browne's paper was that the diagnosis of syphilis as a cause of stillbirth cannot be made without a very exhaustive investigation.

Professor GAMMELTOFT agreed with Dr. Browne that neither examination of the placenta nor the Wassermann reaction can be relied upon in the diagnosis of fœtal syphilis. He considered, however, endarteritis of the vessels of the umbilical cord was a very important diagnostic point.

Dr. EARDLEY HOLLAND congratulated Dr. Browne upon his excellent paper. Personally he had been interested for some time in the stillbirth problem, but his investigations had been confined to viable and not macerated fœtuses. The problems he had set out to investigate were two—viz., the incidence of fœtal syphilis as a cause of stillbirth and how to diagnose syphilis in the absence of spirochætes. Formerly the percentage of fœtal deaths due to syphilis was thought to be as high as 50. Lately, wever, it has been proved by Whitridge Williams others that 15 per cent. is nearer the mark. own investigation in 37 cases had been con- to the following points: (1) the Wassermann reaction in the mother, (2) the presence of chondro-epiphysitis in the fœtus, (3) enlargement of the liver, (4) enlargement of the spleen, (5) examination of the placenta. In the case of the Wassermann reaction he had found it positive in the mother in 97 per cent. of the cases investigated. Chondro-epiphysitis was also present in 97 per cent. of the fœtuses. The spleen was enlarged in every case and the liver in nearly all cases. A difficulty arose with regard to the weight of organs, in that there is at present no absolute standard. It was necessary to consider, therefore, the ratio of the weight of the liver and spleen to that of the fœtus, and this is the line he is now taking. If both organs are enlarged, Dr. Holland considered it a very important diagnostic point. The largest spleens occur in cases of general œdema of the fœtus. As regards the placenta, naked-eye appearances are of no value. Typical microscopic appearances, however, were present in 67 per cent. of the cases examined. In all these, spirochætes had been demonstrated in the tissues. In the case of 263 still-born fœtuses where spirochætes could not be found, 25 were considered worthy of detailed investigation. Five of these showed certain evidence of syphilis, in spite of the apparent absence of spirochætes.

Dr. G. I. STRACHAN agreed with Dr. Browne as to the difficulty of diagnosing fœtal syphilis from an examination of the placenta. Indeed, on one occasion, when asked to obtain a syphilitic placenta, he had had the greatest difficulty in finding one. He considered, however, that examination of the umbilical cord was most important, even if the Wassermann reaction was negative. Spirochætes are demonstrable in the arterial walls, as well as endarteritis. From the examination of 100 cases of stillborn fœtuses, he believed that syphilis is a very rare cause of antenatal death.

Dr. WALTER SWAYNE, from an investigation of the Wassermann reaction in the case of new-born infants, was of opinion that syphilis is much less common as a cause of infant death than is suspected. Certainly a positive Wassermann reaction is much more difficult to obtain in new-born infants, even if obviously syphilitic, than in adults.

Extra-Uterine Pregnancy.

Dr. GORDON LUKER (London) read a Short Review of Cases of Extra-uterine Pregnancy admitted to the Gynæcological Department of the London Hospital during the Years 1913 to 1920. 253 cases of extra-uterine gestation were admitted to the hospital during the period in question. The age of the patients varied from 18 to 52, the latter being a case of secondary abdominal pregnancy with death of the fœtus some years previously. Operation was performed in 240 cases. Acute rupture of the tube was noted in 68 cases; tubal mole was found in 51 cases; tubal abortion occurred in 29 cases. Of the 240 operations, 37, or 15 per cent., were special emergency operations, in which the condition of the patient demanded immediate interference. Six deaths occurred, 3 from shock and hæmorrhage, 1 from pulmonary embolus, 1 from broncho-pneumonia, and 1 from peritonitis. Of the former, 1 death occurred in a patient who was not operated upon; 2 deaths from shock and collapse occurred within 12 hours of operation, and raised the question whether it is advisable to delay operation in some cases where shock is profound. Of rare conditions, 3 cases of pregnancy in a rudimentary horn were noted. In a more detailed examination of 42 cases admitted in the year 1920 it was found that in 30 per cent. no previous pregnancy had occurred. Some considerable period of sterility had generally elapsed since the last confinement. There were 2 cases of repeated tubal pregnancy, and inflammation in the pelvis or other tube was definitely noted in 11 cases. As to the symptomatology, Dr. Luker found that in 28 cases—i.e., 66 per cent.—the ordinary history of amenorrhœa was obtained. In 10 cases a period had not been missed—that is to say, bleeding occurred at or within a month from the last menstrual period. In 4 cases no bleeding at all occurred up to the time of operation. In one of these cases the abdomen was full of blood which had come from a ruptured Graafian follicle, and no evidence of pregnancy in the tube or ovary could be found. Where no bleeding from the uterus occurs it is probable, therefore, that either an atypical condition is present or that the ovum is still living. In nearly half the cases acute pain occurred as the first symptom. In several a dull "girdle" pain was complained of, and was found to be of some value in assisting diagnosis. The passage of a decidual cast of the uterus is pathognomonic of tubal gestation, and when carefully looked for can be found in nearly half the cases. It is shed more often after than before operation. The differential diagnosis from salpingitis, a small ovarian cyst, and appendicitis is often difficult, the pulse-rate being the most useful guide. Any considerable rise of temperature points to an inflammatory condition rather than to extra-uterine gestation.

Dr. **LAPTHORN SMITH** (London) referred to several cases where diagnosis had been difficult, and urged the importance of early operation when diagnosis was in doubt.

Dr. **C. E. PURSLOW** (Birmingham) thanked Dr. Luker for his valuable record of an unusual number of cases very concisely put. He referred to rectal tenesmus as being an important symptom, although occasionally diagnosis may be very difficult. For example, he had met with cases of typical uterine abortion associated with a tubal mole.

Dr. **EARDLEY HOLLAND** referred to the difficulty of diagnosis, inasmuch as the typical signs of amenorrhœa, hæmorrhage, and pain are not always present. With regard to the causation of tubal gestation, lately he had been examining the opposite tube for signs of inflammation, and had found it in three-quarters of the cases investigated.

Dr. **A. E. GILES** referred to the two schools of thought that exist with regard to the causation of tubal gestation. The one believes that the tube is normal, and the other that it is diseased in all cases.

Dr. **HERBERT WILLIAMSON** drew attention to the difficulty in diagnosis between ectopic gestation and theca-lutein hæmatoma. In the latter the menstrual period is often late, there is acute abdominal pain, followed by hæmorrhage, and the picture is thus typical of tubal gestation.

Dr. **CARLTON OLDFIELD** also referred to the point of diagnosis raised by Dr. Williamson, which he considered very important. Repeated attacks of pain are more suggestive of hæmatoma than tubal gestation.

Dr. **W. S. A. GRIFFITH** thought that the breast changes might prove useful in the diagnosis between these two conditions.

Dr. **HERBERT WILLIAMSON** pointed out that breast changes also occur in the case of lutein cysts due to the stimulating action of lutein.

Dr. **WALTER SWAYNE** showed a specimen of a malignant neoplasm involving the small intestine, which he had removed from a nullipara, and which had been reported to be chorion-epithelioma by the pathologist to whom the specimen had been submitted.

Dr. **T. G. STEVENS** said that if the diagnosis was accepted it was a most important specimen. Personally he believed that it was a carcinoma, and in the section that he had examined no syncytium was present. The only thing suggestive of chorion-epithelioma was the large amount of hæmorrhage into the tissues. The specimen was referred to the Pathological Committee of the Royal Society of Medicine, Obstetrical and Gynæcological Section.

Prof. **HENRY BRIGGS** exhibited specimens and illustrations showing the pathology of various uterine polypi.

This concluded the business of the Afternoon Session. A dinner was held at the Queen's Hotel at 7.30 P.M., at which over 60 members of the Congress were present.

On June 4th, at 10 A.M., gynæcological operations were performed at the General Hospital, Birmingham, by Mr. Beckwith Whitehouse, and at the Women's Hospital by Dr. F. Edge and Mr. J. T. Hewetson. At the Queen's Hospital, by invitation of Dr. Purslow, Prof. Fothergill demonstrated his operation for the cure of genital prolapse.

Golf and excursions to places of interest were arranged for the afternoon.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CLINICAL CASES AND SPECIMENS.

A CLINICAL meeting of this Section was held on June 10th, Mr. W. T. **HOLMES SPICER** occupying the chair.

Speculum to Prevent Pressure on Globe.

Dr. **R. WALLACE HENRY** showed a speculum which he had designed and used for the purpose of preventing a patient pressing his eyelids together and thus exerting pressure on the globe after an opening for any purpose had been made. He had used it with decided advantage after many cataract extractions, and since employing it he had lost no vitreous in any case. His custom was to leave the speculum in position until the extraction of the lens and the toilet was completed. The device was favourably received.

A Desk for Myopes.

Dr. **F. H. MOXON** exhibited a desk which he had designed for the use of children who were predisposed to myopia. He had found that children who at school persistently applied the eyes close to the paper being written on or the book being read, later developed myopia, even though examination showed them to have only slight hypermetropia or hypermetropic astigmatism. This apparatus keeps the eyes at a certain distance from the book by means of a glass screen. The use of it successfully broke the habit of close application of the eyes after a short time.

Acute Macular Disease.

Dr. **RAYNER D. BATTEN** read a note on two cases which he showed of acute macular disease. He said that cases frequently occurred in which changes in the macula were the only evidence of disease and failure of sight unassociated with other forms of retinitis. There was a great discrepancy between the physical signs, as shown by the ophthalmoscope, and the symptoms. When a really good light was available, fine pigment changes which now escaped observation would be visible; these were better seen by looking to one side of the macula than by looking straight at it. The two acute cases he now showed were not unlike those in the familial amaurotic idiocy in regard to the fundus changes. Causes at work in the cases he had so far seen had included pyorrhœa, suppuration of nasal sinuses, gonorrhœa, influenza and other illnesses, and pregnancy.

Fundus Changes in Three Brothers.

Mr. **W. H. McMULLEN** showed three brothers with fundus changes of differing character, but with one feature in common—viz., the development of abnormal connective tissue, either on the surface of the retina or the vitreous. There were several possibilities: (1) that the changes were of inflammatory origin; (2) that they were degenerative in nature; (3) that they resulted from intra-ocular hæmorrhage; (4) that they were due to developmental defects. He regarded them as cases of atypical retinitis proliferans. The brothers were members of a family of 13 children (9 boys, 4 girls). Three of the boys died between the ages of 2½ and 5 years, and of the six surviving boys, four had defective sight. No female in the family had bad sight. Three great grand-aunts died blind.

Mr. **G. WINFIELD ROLL** exhibited a patient showing macular changes. There could be seen plaque of what appeared to be organised fibrous tissue in each eye. There was complaint of failure of sight during seven years, which had become worse in the last two years. The field for white and red was practically normal, but the patient scarcely perceived yellow or green at all. In one eye there appeared to be a hole in the fibrous tissue.

Other cases shown included one, by Miss **MANN**, of an atrophic condition of the iris; of an unusually large cyst of Moll's gland by Mr. M. S. **MAYOU**; and by Dr. R. L. **REA**, a case of retinal disease of doubtful character.

A New Surgical Lamp.

A new lamp, called the "Scialytic" lamp was on view, and was demonstrated on behalf of the makers. It has been specially designed for surgical and laboratory work.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this Society Mr. **TIFFENEAU** read a paper on

Hyoscyamine and Atropine

in which he stated that hyoscyamine, the principal alkaloid in belladonna, was twice as active as atropine, which was a racemic alkaloid composed of equal parts of lævorotatory and dextrorotatory hyoscyamine. While the two alkaloids, atropine and hyoscyamine, presented considerable differences as regards their peripheral effects, they appeared to be equally active in their toxic action on the central nervous system, as Cushny had shown. From an economical standpoint the substitution of hyoscyamine for atropine would be of great advantage, as it would render laborious manipulations unnecessary and save twice as much of a product which had to be imported from abroad (Egypt and India).

The Use of Lysidine in Chronic Rheumatism.

MM. **BITH** and **BOURNIGAULT** stated that bitartrate of lysidine, which had been used as a remedy for gout and rheumatism in Germany from 1892–9 by Ortowski, Mendelssohn, Wolf, and Grawitz, was a white, tasteless, inodorous powder, very soluble in water and of only slight toxicity. Clinically it appeared to diminish the pain in chronic rheumatism and to improve the functional movements without having any action on the deformities. Chemically it had an action on the general nutrition characterised by a rise in the nitrogen coefficient from 82 to 85 per cent. in man and from 85 to 89 per cent. in woman. It had no effect on the elimination of phosphorus. It had considerable influence on the elimination of chlorides, which increased from 11·70 g. to 14·70 g. and 13·50 g. in man and from 8·96 g. to 12·16 g. and 12 g. in woman. It had an important effect on the elimination of purin bodies, especially uric acid, and to a less extent of the purin bases. In the blood there was a diminution of the total nitrogen, especially the residual nitrogen. The drug did not appear to have any bad effect on the kidneys, for albuminuria present before the treatment did not increase.

Decalcification and the Need of Calcium in Tuberculosis.

MM. **RENÉ LAUFER** and L. **LEMATTE**, after alluding to Mr. Laufer's recent communication on this subject,[1] stated that in practice 1·75 g. to 2 g. of calcium were sufficient for the needs of the tuberculous subject, and that the other minerals, such as magnesium, sulphur, potassium, iron, silicon, &c., were equally indispensable.

MM. **GASTON-DURAND** and S. **NEMOURS-AUGUSTE** read a paper on

The Action of Diathermy on the Post-operative Sequelæ of Appendicitis

in which they stated that bipolar application of a strong high-frequency current had a good effect on the pain and digestive disturbances caused by chronic epiploitis which fairly frequently persisted after an operation for chronic appendicitis. The method was specially suitable for cases in which clinical and radioscopic examination showed no evidence of perityphlitis or pericolitis, or as a palliative method when the patient refused another operation.

The Use of Enemata of Ox-bile for Constipation.

Mr. G. **LEMOINE**, of Lille, stated that he had obtained the best results in the treatment of constipation in adults by an enema of 200 g. of boiled water containing two or three tablespoonfuls of glycerinated ox-bile. In infants of or 3 months and upwards he had obtained equally good ts by using a ball syringe containing a teaspoonful of inated ox-bile mixed with water.

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[1] THE LANCET, 1921, i., 1244.

Reviews and Notices of Books.

MEDICAL THERAPEUTICS OF THE EAR, NOSE, AND THROAT.

Précis de Thérapeutique Médicale Oto-Rhino-Laryngologique. Par G. DE PARREL, Ancien Chef de Clinique à l'Institution Nationale des Sourds-Muets de Paris. Paris: A. Maloine et Fils. 1921. Pp. 670. Fr.28.

THIS is a colossal treatise on the medical treatment of disease of the throat, nose, and ear, wherein all descriptions of operations are omitted, except for some minor surgical procedures. Moreover, no attempt is made even at a thorough discussion of the indications for operation. This limitation of scope naturally diminishes the value of a work on the therapeutics of regions where the treatment is now so largely surgical, but we obtain a large amount of sound advice and a number of useful prescriptions.

The first part of the book, on "General Considerations and Pharmacology," is a kind of catalogue of the drugs in common use. The second, and longest, part is devoted to the treatment, respectively, of diseases of the ear, nose, pharynx and larynx, beginning in each case with an account of the various methods of applying medicaments to these regions, and of minor manipulations. The treatment is, on the whole, in accord with English practice, but, as is usual in French literature the only treatment of hypertrophied tonsils described is "morcellement" under local anæsthesia. A section on vaccine therapy by Dr. Michel Copendy contains a generous appreciation of the work of British investigators; the writer insists on the greater efficacy of sensitised vaccines and claims surprising results in the treatment of such diseases as middle-ear suppuration and nasal sinus disease. A detailed discussion of voice-training and the treatment of vocal defects is followed by an account of the teaching of lip-reading, which the author is well fitted to describe by reason of his connexion with the Deaf and Dumb Institution of Paris. But between these sections is a long chapter on re-education of the deaf which will, we fear, fail to convince the sceptical of the value of this form of treatment. The section on electrotherapy is disappointing and, after a short account of treatment by X rays and radium, is followed by a long chapter on balneotherapy, which is very popular in France. This chapter is perhaps the most interesting of all to the English reader, and should be a useful guide to those wishing to send patients with throat affections to the French spas.

The book, as a whole, suffers from being too long, and too voluminous; the more strictly surgical affections, such as tumours, might with advantage have been entirely omitted.

HYGIENE AND PUBLIC HEALTH.

Manual of Public Health. Fourth edition. By W. G. AITCHISON ROBERTSON, M.D. London: A. and C. Black, Ltd. 1921. With 25 illustrations. Pp. 260. 10s. 6d.

PREVIOUS editions of this book contained accounts of medical jurisprudence, toxicology, and public health combined in one volume. The present edition is issued in two parts, one dealing with medical jurisprudence and toxicology and the other with public health, and it is with this latter volume that we are at present concerned. Presumably, Dr. Robertson had in mind, when writing the book, the needs rather of the student of medicine than of the candidate for the diploma in public health, since the work appears to be well suited for the former purpose, but is not sufficiently comprehensive for the latter. He has presented in a readable form a brief survey of the more important features of hygiene and public health. We are, however, unable to endorse certain of his statements. In discussing the theory of aerial convection of small-pox, for example, he says :—

> "Many affirm that the infection is also carried through the air for considerable distances, basing their assertion on the fact that infection has spread in many cases for a distance of fully half a mile around small-pox hospitals. In many of these cases, however, the influence of personal intercourse has had much more to do with the spread of the disease than aerial convection, and in many hospitals laxity regarding isolation has been great."

It would be interesting to know on what data the author bases this assertion. It is true that the aerial convection theory has not received universal credence, but, in the present state of our knowledge, it is not possible to prove that it does not take place, and it is the hypothesis which best fits the facts recorded by some of our ablest epidemiologists.

The section on sanitary law is, in our view, unsatisfactory. No distinction is made between the laws regulating sanitary matters in England and Wales, Ireland, or Scotland. A subject like the law does not admit of such haphazard treatment. On the whole, however, medical students will find this manual serviceable and clear.

Hygiene. Ninth edition. By J. LANE NOTTER and R. H. FIRTH. London: Longmans, Green and Co. 1921. With numerous illustrations. Pp. 510. 10*s.* 6*d.*

IN the ninth edition of this elementary book on hygiene, by the authors of a standard text-book on the subject, little change has been made in the general plan. It has, however, been found necessary to revise or rewrite certain parts in order to bring them up to date. Thus, the sections dealing with the theory of dietaries, the treatment of sewage, and the infectious diseases have been modified, while, owing to recent legislation, that on sanitary law has had to be amplified. A short section on the sanitation of camps has been added, and a new chapter on child welfare and school hygiene introduced. These modifications and additions enhance the value of an excellent treatise. The authors have compressed a vast amount of useful and interesting information into a relatively small space, and the book can be confidently recommended to the student of hygiene and public health.

Barrier Charts for Health Officers. By S. H. DAUKES, M.B., D.P.H., &c. London: Baillière, Tindall and Cox (for the Wellcome Bureau of Scientific Research). 1921. With 4 folded Charts. 3*s.* 6*d.*

Dr. Daukes has produced in the form of four tabular cards a concise synopsis of preventive measures against communicable diseases. The different forms of barrier which a knowledge of sanitation enables us to interpose between the sick and the healthy are conveniently shown in columns printed in different coloured ink from that used for the rest of the chart. The charts, in a less complete form, have had an extensive trial at the School of Army Sanitation in Leeds, and we have no doubt that in their revised and extended form they will be distinctly useful for teaching purposes. Public health officers will find them convenient for reference purposes in emergency outbreaks. Perhaps the charts will be most appreciated by members of the Navy, Army, and Indian Medical Services, whose regular lot it is to deal with communicable diseases in tropical climates. The usefulness of the charts is increased by the introduction of information as regards incubation, period of infectivity, and quarantine.

THE CHILD'S PATH TO FREEDOM.

By NORMAN MAC MUNN, B.A. Oxon. London G. Bell and Sons. 1921. Pp. 163. 2*s.* 6*d.*

THE idea of absolute freedom for the child, in order that he may work out his own salvation, is no new doctrine in these days, but its exponents are even now few in number compared with orthodox teachers, and are possibly still more disproportionately inarticulate. Mr. MacMunn published in 1914 a volume called "A Path to Freedom in the School," and this has now been revised and largely rewritten under a slightly different title. The book is an able and luminous statement of the position taken by the educational reformers, and being written with real psychological insight and skill, backed by practical experience, carries much conviction to the mind of the unbiased reader. The book is designed to show that the present system of "class-teaching by adults" is incompatible with the modern view of the intuitively purposive nature of a child's play, but its teaching is really much more constructive than this. Mr. MacMunn points out that "there is no analogy whatever between the effects of partial and of complete freedom," and while many even of the more advanced teachers would hesitate to go the whole way with him, nothing short of this would give his system a fair trial. It is at any rate certain that schools run on the lines pictured by Mr. Mac Munn would produce boys and girls of an entirely different stamp from the product of ordinary schools.

Theories as to discipline, ways of teaching and of learning, and cognate subjects are expounded in detail, criticisms and objections being squarely faced. Mr. Mac Munn pleads for a revolutionary change in our educational policy, and since his suggestions are not unpractical, the book is one that no serious student of education can afford to ignore.

THE YEASTS.

By ALEXANDRE GUILLIERMOND, D.Sc. Translated, in collaboration with the Author, by F. W. FARMER, Ph.D. London: Chapman and Hall.; New York: John Wiley and Sons. 1920. Pp. 424. 33*s.*

IT will be generally agreed that no class of micro-organism has been more intimately associated with the progress and development of the human race than the yeasts. Microscopic examinations have revealed the presence of yeast cells in bread found with Egyptian mummies, and from the earliest times of which there is any record beverages fermented with yeast were consumed. To-day the yeasts are of increasing interest and they are assuming greater importance in medicine, especially in relation to certain deficiency diseases. From the technical standpoint the compressed yeast industry in this country and America is singularly well organised both as regards manufacture and distribution. The literature on yeast is to be found scattered in a number of scientific and technical journals and in treatises dealing with certain industries, but so far as we are aware Dr. Guilliermond is the first author to collect the various data relative to yeasts in one volume and to arrange it in a manner available to biologists, practitioners in industrial work, agriculturists, and physicians. The subject-matter of his book is dealt with under the following heads: Morphology and development of the yeasts; Cytology of yeast; Physiology, Nutrition, Respiration, and Alcoholic fermentation; Origin of the yeasts; Methods of culture isolation, characterisation, and identification of yeasts; Variation of yeasts; Classification of yeasts; Fungi related to the yeasts.

While this edition is claimed to be more than a translation of the author's original "Les Levures" published in 1912, certain of the chapters enumerated are disappointing. The information is not always up to date, and there is no critical summary of our present knowledge of some of the subjects discussed. The wording is often careless and not always lucid. and there are also a number of errors, particularly in the spelling of authors' names; moreover, the chemistry is sometimes shaky—for example, hydrocarbon is used where carbohydrates are intended. In spite of these annoying blemishes the book is a really useful one; it is well illustrated and printed, and there is a good bibliographical index.

JOURNALS.

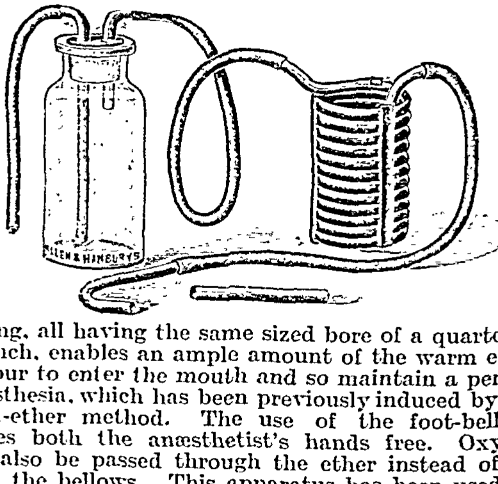
Journal of Laryngology and Otology. May and June, 1921. Vol. XXXVI., Nos. 5 and 6.—In the May number Miss Gladys Boyd reports on 188 consecutive cases of the Schwartze operation from the Edinburgh Royal Infirmary. Three further cases were found at operation to be furunculosis. Of the 188 cases, 112 were patients under 21 years of age; 6 cases arose after operations on the nose or pharynx; conservative treatment, including paracentesis, had been tried and had failed in 17 cases; in 8 cases death resulted, and was due to intracranial complication. The paper contains numerous interesting details. There is an abstruse article by Prof. R. Bárány, of Upsala, on the diagnosis of disease of the otolith apparatus; Mr. Herbert Tilley reports three cases in which diphtheria carriers were cured by enucleation of the tonsils, and Dr. Logan Turner describes two cases of successful operation on adhesion of the soft palate to the pharynx by Tilley's method of fixing temporary ligatures from the separated palate to the incisor teeth.——The June number opens with a sane but discursive article on some discarded theories and methods by Dr. P. McBride, which is followed by two papers on injuries to the ear in warfare by Mr. Jefferson Faulder and Mr. Lionel Colledge. Finally, Dr. Dan McKenzie reviews an undulatory theory of olfaction put forward by M. A. Heyninx. The reports of societies' proceedings are still more than a year behind.

In the *Journal of the Royal Army Medical Corps* for June, Lieut.-Colonel W. F. Tyndale, C.M.G., discusses medical staff work of an army in war-time, showing the great responsibilites of a Director of Medical Services and his staff, which must be small but very hard-working. "Keep the officer staff small, work the officers hard, but get them their leave regularly." The A.D.M.S. of his division worked regularly 9½ hours daily for seven days a week. His advice on choosing officers for the staff will be carefully read and remembered by all junior officers who can profit by them. He prefers officers with higher qualifications. "Of all the tests of the good and bad points in an officer give me a hasty retreat as the best," shows how different are the problems of a civil practitioner and an army medical officer.—Captain William Wallace, writing on the vision of the soldier, notes that in the pre-war British Army the standard of vision was high and invariable, and that "the amazing shooting of the original Expeditionary Force, and the endurance of that heroic first (and only) line are triumphant testimony to the soundness of the War Office policy of selection, organisation, and training." He tells how the standards of vision were altered in the war, observing that, before the war, the examiner had to take care that no man with poor vision slipped into the army, but with the coming of conscription the difficulty was to ensure that a man did not succeed in simulating defective sight, and so unfairly escape service. On the other hand, when visual standards are lowered, men may join the service with serious ocular defects and consequent unjustifiable claims to pension which will be hard to resist. This paper should be read by all members of medical pension boards and inspectors of recruits.—Miss Margaret W. Jepps reports the treatment of amœbic dysentery cases in the University War Hospital, Southampton, during 1918–19. The recommended treatment is—At night: chlorodyne, ♏10; half an hour later emetine bismuthous iodide, 3 gr. in emulsion in liquid paraffin. ʒss., repeated nightly for 12 days. Of 63 cases so treated, only 13 per cent. relapsed. When this failed, emetine hydrochloride, 1 gr. hypodermically daily for 12 days, cured three out of five patients treated.—Major N. V. Lothian and Captain A. R. l, of the Royal Army Medical School of Hygiene, kpool, give a detailed account of the "Activated " method of sewage disposal proposed by Mr. rth of Sheffield. They consider it worthy of ead adoption, being effective, and economical allation and maintenance. Sewage sludge when it has "ripened," contains rotifera and infusoria, which establish themselves at the expense of pathogenic micro-organisms; there are also nitrifying bacteria. Mixed with fresh sewage in proper proportions and kept stirred up by paddles, in eight hours the aerated sludge secures a purifying effect that is all that is wanted. The effluent is fit for discharge; total organisms are very greatly reduced; there is entire absence of nuisance; and no chance is given for flies to breed.—Major L. Avery, D.S.O., R.A.M.C., T.F., proposes changes that seem needed from the point of view of a medical officer who served with mounted troops in the nearer East throughout the war. He would like to see the regimental stretcher-bearers drawn not from the regiment but from the trained R.A.M.C. personnel of field ambulances increased in establishment accordingly; he proposes a lighter stretcher, in two parts so that it may be packed on a pack-saddle, and a better medical cart, and asks that all needles of syringes shall have standardised nozzles, whether for 10 c.cm. or 1 c.cm. syringes.—Captain J. S. K. Boyd, with others, has tried to find benefit from vaccine therapy in acute gonorrhœa, but whether he gave in four weeks 600 millions or 2450 millions of gonococci he could see no clinical advantage, and indeed the cases that got vaccine remained longer in hospital and did not suffer less from complications. Under current literature is a quotation from the Scandinavian *Arch. f. Physiol.*, in which Töttermann states that in roughly alternate weeks of teetotalism and moderate drinking he could thread more needles in 20 minutes during the teetotal periods. Fatigue seems to have come on in those weeks less quickly.

New Inventions.

OPEN-ETHER ANÆSTHESIA DURING THROAT OPERATIONS.

THIS is an apparatus for maintaining anæsthesia by the administration of open ether during operations on the throat. As will be seen by the illustration, it consists of a Woulff's bottle and a coil of malleable metal (12 circles, each 9 inches in circumference), which is placed in a vessel containing hot water, whereby ether vapour becomes heated. A foot-bellows is used for sending air through the ether contained in the apparatus. The warmed ether vapour continues through the rubber tubing to a flexible metal tube, 6 inches long, which is placed in the mouth and is easily adjusted to the required position by its flexibility. The rubber and metal tubing, all having the same sized bore of a quarter of an inch, enables an ample amount of the warm ether vapour to enter the mouth and so maintain a perfect anæsthesia, which has been previously induced by the open-ether method. The use of the foot-bellows leaves both the anæsthetist's hands free. Oxygen can also be passed through the ether instead of air from the bellows. This apparatus has been used by me for the operation of enucleation of tonsils by dissection in a vast number of cases during the last 2½ years. The makers are Messrs. Allen and Hanburys, Wigmore-street, London, W.



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THE LANCET.

LONDON: SATURDAY, JULY 2, 1921.

The X Rays in Malignant Disease.

DURING the past week there have been articles in the lay press inspired from the West London Hospital and based upon a striking demonstration of a new method of using the X rays for the treatment of malignant disease. We may remind our readers that a description of some of the most important details of this, the Erlangen, method were given in THE LANCET of Jan. 1st last, in a report of the proceedings of the Section of Electro-therapeutics of the Royal Society of Medicine. Since that time medical men have been investigating the method as far as circumstances have permitted. As in all similar methods of treatment, the basic principle involved is that radiations of the gamma type—whether from radium or an X ray tube—have at first a stimulating and, as the dose is increased, a destructive effect upon living cells; and it is found that cells of the embryonic type are more susceptible to these rays than normal tissue elements. It thus follows that a malignant cell invading normal structures may be destroyed without serious damage to the latter. It is necessary to keep these facts in mind while testing the claims put forward from Erlangen, a place very favourably situated for the elaboration of X ray technique. The method in its present form is the outcome of an enormous amount of work patiently carried on for years under skilful guidance.

Briefly stated, the position now is that a highly efficient type of radiation has been attained, one that can be standardised within narrow limits and reproduced at will for as long as is required for practical purposes. The necessary dose to destroy a malignant cell has been ascertained, and a way evolved for giving this dose to any required depth; and it has been proved beyond doubt that if every part of a localised malignant growth receives this dose, that growth will almost certainly disappear. If it does not do so the reason is most likely to be faulty technique; it may be due to extension of mischief beyond the apparent field of involvement, or because the health of the patient is without recuperative power. This last point is one that does not always receive the consideration it demands. As a matter of fact, it is useless to expect any appreciable degree of success in patients whose health is more or less seriously impaired, and whose blood count is not approximately normal. Efficient irradiation produces marked blood changes, notably a sharp fall in the red corpuscles, requiring from six to eight weeks of generous feeding to restore, and until this is accomplished it is inadvisable to give the second or third irradiations required in certain cases. All these facts have been arrived at after minute investigation based on thousands of applications, where careful records have been made of the effects produced. The records are in keeping with theoretical considerations, supporting belief in their substantial accuracy. There is another point to be remembered: it has been found that if a carcinoma cell receives a dose of X rays rather less than half the full cancer dose the effect is one of powerful stimulation, resulting in appreciable increase in size of the growth, with possibly fatal results. This is one reason why the full dose is given at one sitting.

We may now consider the routine adopted at the Frauenklinik in Erlangen for all cases of malignant disease. Immediately the nature of the case is clear the patient is sent to the X ray department for appropriate treatment, primary surgical operation being definitely abandoned, save in the single case of primary carcinoma of the ovary, where the tumour is at least as large as a hen's egg. Here the mass of the tumour makes full irradiation of the area difficult, and it has been found best to remove it and irradiate more or less immediately afterwards. Cases of uterine carcinoma treated by this method have shown over 80 per cent. "clinically cured" after 3½ years, and the results in other regions are reported as equally favourable. Among medical men in this country such statements are received with doubt, but while such caution is commendable, we would venture to remind our readers that we are here concerned with a technique which is radically different from anything usually practised in this country, and that with our less perfect methods radiologists have never had a chance to show the possibilities of the X rays in the treatment of cancer. Surgical operation is the accepted routine, and the X rays are not used until afterwards, either as a prophylactic or when recurrence and extension have made further operation inadvisable. This practice has been the correct one in the light of our knowledge and experience, and no praise could be too extravagant for the skill and patience of our surgeons in their efforts to deal with appallingly difficult problems. If many cases of malignant disease can be shown to do better under radiological than surgical methods, not a few surgeons will hand them over to the radiologist with a feeling of intense relief. In spite of all the work and skill expended the results of the treatment of malignant disease by operation are not brilliant, and it looks as if superior results are being attained by the methods elaborated by Professor WINTZ at Erlangen. If comparable results are to be aimed at in our clinics, the cases must go to the radiologist before any operation is done. After long and careful observation it is the considered opinion of the gynæcologists at Erlangen that surgical operation definitely increases the danger of metastasis.

It will be seen that the suggestions in the lay press, that cases of malignant disease should go to the radiologist immediately the diagnosis is made and before operation, are based on the practical experience of competent observers. There is little doubt that the time has come for us to reconsider our position in dealing with the situation. Assuming the claims for the irradiation of malignant cases to be substantiated, the advantages to be gained will be readily appreciated. Apart from the higher percentage of apparent cures, cases would come under observation at an earlier stage; the dread of the major operation causes many to hide their trouble until the chance of more or less permanent relief has definitely passed.

The Bacteriology of the Alimentary Canal.

IN two years' time pious microscopists will commemorate the bicentenary of the death of ANTHONY VAN LEEUWENHOEK, whose portrait has been adopted by the American bacteriologists as their sigillum. That great and good Dutchman is commonly supposed to have been the first to perceive clearly the forms and shapes of bacteria, to appreciate that they were alive, and to imagine that they were of importance. Claims of priority are always upset sooner or later by diligent students of the past, for discovery is a process and not an event, but whether Leeuwenhoek really did make the first microscopes through which bacteria could be plainly seen or not, he will always be remembered for having pointed out so clearly the abundance of microscopic life in the mouth. Like Stephen Hales and the other great pioneers, he recognised also the necessity of quantitative information, and hazarded the approximation that there were as many bacteria in one hollow tooth as there were men in Holland. The mouth, indeed, contains an embarrassing assemblage of micro-organisms, many of them in enormous numbers. Certain streptococci, for example, are so numerous that they have been used by M. H. Gordon in his ingenious researches as a test for the range of the droplets of saliva ejected by our representatives in the House of Commons during their orations. More than a hundred different varieties of bacteria have been found in the mouth, and it is still very uncertain what most of them do. Some are certainly capable of pathogenic activity; the pneumococcus is often present, and the demonstration by Pasteur and Sternberg that mice could be killed by the injection of normal saliva is one of the landmarks in the history of bacteriology. Streptococci get into decayed teeth and cause root abscesses, from which they may spread to the joints or heart valves. Whether any of the spirochætes or amœbæ or the *Bacillus fusiformis* are primarily pathogenic is not altogether clear; they are much more abundant in and about various inflammatory affections than under normal conditions, but it is at present impossible to be sure which is cause and which is effect. Perhaps pyorrhœa is like grouse disease, which, with no specific cause, is the cumulative result of an abnormal excess of a variety of parasites working in an alimentary canal depressed by bad hygienic conditions.

Such of the mouth flora as is carried on with the food disappears in the stomach. Under normal conditions the acidity of the gastric juice definitely stops multiplication, and seems actually to kill the great majority. In dilated and other diseased stomachs there is pretty free growth, but here again the flora of yeasts, Boas-Oppler bacilli, and so on, is a special one, and not a diluted replica of that in the mouth. The duodenum is normally sterile, except when food is passing along, and even then there are quite few organisms. As scrutiny goes further down the bowel the organisms progressively increase, so that in the ileum there are many streptococci and *B. coli*, the relative proportions of the two depending rather on the nature of the food; worms, too, produce a striking local increase of bacteria, which in the upper part of the small bowel are mostly or entirely streptococci. In the large intestine, with its greater lumen, relatively stagnant contents, and alkaline reaction, yet another habitat is found with its own special flora. *B. coli* in its different kinds becomes enormously abundant, and various streptococci, spirochætes, and sometimes amœbæ flourish. Here, too, is the great breeding-ground of the sporing anaerobes; the technical difficulties of their cultivation and separation shielded them from the prying curiosity of bacteriologists pretty thoroughly until it was realised that they included some which, like *welchii*, might on occasion be of the most urgent genic importance. The residue of this vast rial population constitutes about a quarter of weight of normal fæces. It is reckoned, by methods more precise than those of Leeuwenhoek, that an average motion contains many more bacteria than there are men, women, and children in the whole world. Most of them are dead; those still living are principally *B. coli.*

We have, then, in the alimentary canal a series of areas which differ in their physical and chemical circumstances, and in their inhabitants in the same sort of way as a beech wood on chalk differs from an oak wood on clay. Differences in the amount of available oxygen, in the host's food as it is digested and absorbed, in the secretions and excretions of the intestine, in the activities of the bacteria themselves, all contribute to produce a series of habitats, each with its characteristic flora; their study is evidently part of what botanists call œcology. What is of particular interest in the present case is that the different floras have all been demonstrably sorted out from the same original material coming in through the mouth; their establishment is effected in a few months. It follows, too, that the examination of the bacteria of the fæces tells us, more or less, what organisms there are in the stools, and nothing else; if we want to know what is going on in the small intestine we might as well investigate the mouth. Of the utility of these organisms we know even less. Looked at from our own point of view, it is certain that life of at least a tolerably normal sort is possible without them, though this, of course, affords very slight grounds for an opinion that we derive no benefit from them under ordinary conditions. They definitely enable ruminants to get energy out of cellulose, they may synthesise vitamins, and their products, no doubt, help a bowel to act naturally when it has grown up to be accustomed to them. Contrariwise, it is by no means certain that sterility of the intestine would abolish the many ills, from hypertension onwards, that have been all too glibly assigned to the activities of the organisms there. We have to look at the matter from the point of view of the organisms, for whom the alimentary canal provides a series of congenial homes in which they can achieve ideals which are not proved to be entirely mischievous in design.

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Operative Treatment of Prolapse of the Uterus.

Prolapse of the uterus is undoubtedly the cause of a great deal of discomfort to many women, and of profound suffering to women of the working classes, and the treatment of this condition and the performance of operations for its relief take up a large amount of the time of the practising gynæcologist. A great deal has been written upon its exact cause and there is even yet a good deal of disagreement as to the precise nature of the supports of the uterus and the particular rôle they respectively play in maintaining this organ at its normal level. It is becoming more and more common to practise some form of operative cure for the condition, and the radical cure of a prolapse is nowadays as common an operation as the radical cure of a hernia. It is natural, therefore, that a large number of operations differing but little in detail should have been devised for this condition. But their number and complexity prove that the results are not always such as might be desired. The radical cure of a case of "falling of the womb" is not a difficult attainment, no matter what operation is performed, in a woman past the child-bearing period of life; but a procedure which will stand the test of subsequent child-birth is much more difficult to devise. The problem is complicated by the ready distensibility of the vagina and pelvic floor and the extreme degree of stretching which these structures have to undergo during the passage of a fœtus. For these reasons many operators in the past attempted, as some even at the present time attempt, to reinforce the plastic procedures carried out on the vagina by some method of fixation of the uterus, so as to overcome the wedge-like action of that organ and its tendency to stretch again and to descend through the vaginal passage. Any operation, however, which fixes the uterus contravenes the normal anatomy and physiology of the part, and converts what should be a readily mobile organ into a fixed one. Further than this, whether the fixation be carried out by the vagina or by the abdomen, it complicates and increases the immediate and remote dangers of the operation. For these reasons many gynæcologists content themselves with operations performed by the vaginal route alone and do not advocate any method of fixing the uterus, whether by the vagina or the abdomen.

At the recent British Congress of Obstetrics and Gynæcology held at Birmingham this matter was very fully discussed, when papers were read by a number of gynæcologists advocating vaginal operations only, reasoning that, as these procedures gave permanent results which did not prevent pregnancy and would stand the test of parturition, abdominal interference was unnecessary and therefore undesirable. Most of the speakers who took part in the discussion endorsed this view of the matter. It has been objected to the operation of ventrofixation, when employed as a means of supporting the uterus in cases of prolapse, that it not only increases the risk of the operation by necessitating the opening of the abdomen, but that it may give rise to serious interference with the course of parturition in the event of pregnancy ensuing, and that it leads to a very considerable risk of subsequent intestinal obstruction when practised in the ordinary manner. No doubt this is true of at any rate some of the methods of carrying out this procedure. It is, however, possible, as the paper published in THE LANCET of June 18th by Dr. J. E. GEMMELL and Mr. A. L. ROBINSON shows, to carry out this operation in such a manner as to cause no undue risk, to entail no interference with subsequent pregnancy and labour and, in a large majority of the cases, permanently to cure the patients of the symptoms for which the operation is undertaken. They practise a procedure in which the utero-vesical pouch is obliterated, and so, by preventing the formation of adventitious bands or peritoneal fossæ, they eliminate the possibility of post-operative strangulation of the bowel. They further point out that such an operation lessens the extent of the plastic operations on the vagina and renders them less severe. This method no doubt largely eliminates the risk of intestinal obstruction, but the fact that an abdominal section has to be performed still remains. Some of those who took part in the discussion pointed out that no one operation could be expected to give equally good results in all cases and that a careful selection of cases and of operations specially suited to the conditions present was more likely to give good results than a blind adherence to any one particular method. This is sound sense.

The discussion served to show that a great many gynæcologists are content to practise only plastic operations on the vagina in cases of prolapse and that when properly carried out these operations give a very high percentage of cures. Any operation which is performed for the cure of this condition is the best which tends to reproduce as far as possible the original anatomical condition of the parts, and for this reason plastic operations on the vagina as a whole will always be more anatomically correct than any form of uterine fixation. It would seem that whenever possible in women still of child-bearing age plastic operations on the vagina alone should be performed, and that forms of ventrofixation should only be carried out, if at all, in women past the menopause and in cases of very severe procidentia.

THE EXISTING INSTITUTE OF STATE MEDICINE.

A COPY of a memorandum sent on behalf of the Council of the Royal Institute of Public Health by its President, Lord Leverhulme, to the Minister of Health has reached us. The memorandum is in the form of a report from the Executive and Finance Committee, signed by its chairman, Surgeon Rear-Admiral Sir P. W. Bassett-Smith, which was adopted by the Council on June 23rd. Its main feature is a protest against the omission in the recently published report of the Post-Graduate Medical Committee, abstracted in our columns last week, of any allusion to the Royal Institute of Public Health. The memorandum includes a historical summary of the activities of this body, resulting in the statutory recognition of Diplomas in Public Health in 1886, in their adoption as necessary qualifications for medical officers of health in 1888 and 1889, and in the recognition by the General Medical Council of a special curriculum of post-graduate study for these diplomas. In 1905 the Council, recognising the inadequacy for post-graduate purposes of the training in public health offered by the undergraduate schools, and the desirability of centralising post-graduate training in one institution, proceeded to found and equip laboratories and to arrange courses of instruction. These courses have since been recognised by every medical examining board in the United Kingdom as qualifying for admission to examination for the D.P.H. The Institute has been recognised by the University of London as a public educational institution and its course for the degree of M.D. in State Medicine is approved by the University. The Council adds evidence that the Institute has had under consideration for some time proposals for developments on the lines now suggested by the Post-Graduate Medical Committee, to which no representative of the Institute was summoned to give evidence. The memorandum ends with a request that the Minister of Health should consider the desirability of building up an Institute of State Medicine on the foundations already laid by the Royal Institute of Public Health rather than the creation of a new Institute.

THE adjourned discussion on "The Problem of the Private Clinic System in Great Britain," will be held at the Royal Society of Medicine, on Monday, July 4th, at 8.30 P.M., the President, Sir John Bland-Sutton, in the chair. If thought desirable the following resolution will be moved:—

> "That in the opinion of this meeting the time is ripe for the formation of Group Clinics in this country, and that sympathetic encouragement should be given to them by the profession and by its governing bodies."

Annotations.

"Ne quid nimis."

PROFESSIONAL IMMORALITY ON THE STAGE.[1]

THOUGH the presence of a medical practitioner is often invoked in comedy, a play devoted entirely to medical questions and written by a medical man is certainly a rare occurrence. The stage hardly seems the place for an essay on medical deontology, though "The Right to Strike" was in substance such an essay. Dr. Rothschild's work, however, is a live drama, and as performed on the semi-classic boards of the Gymnase last week justified its appearance at the theatre which, in French literature and histrionic art, comes next after the Théatre Français and the Odéon. Baron Henri de Rothschild left the world of finance to become first a doctor in medicine, then a philanthropist, and many model dwellings for artisans are due to his generosity and much public encouragement in works of sanitary reform. And now he has achieved a large measure of success as a dramatic author under the pseudonym of André Pascal. Some of André Pascal's plays have already been presented in London, Monte Carlo, Brussels, as well as in Paris.

"The Caduceus" has had a difficult birth. When read to the company at the Odéon the players were scared by the subject, no less than by the vivacity and frankness in the telling of ugly truths. In the middle of the controversy we had the war; and, after the war, it became necessary to alter those portions of the play satirising the frivolity of society ladies, for, during the war, they had surprised the world by their devotion. This is shown in the revised version now given at the Gymnase. The story tells how an unscrupulous medical practitioner, without means or scientific success, but with the genius of self-advertisement, raises himself to social eminence and wealth in an incredibly short time, being financially backed by usurers and dealers in furniture and bric-a-brac. This person, Dr. Revard, at the opening of the play is instructing his secretary to write to a practitioner as follows: "Answer that I want a fee of 6000 francs for myself, and that, as this is the first affair, I will give him a commission of 50 per cent.; but for other affairs which he may bring me I will, in future, give him 20—no—say 30 per cent. He is an intelligent fellow and should be encouraged." The secretary then prepares to leave the room, but is called back to make sure this answer will be sent by telephone and not committed to paper. Thereupon a discussion arises, for Dr. Durieux, an old fellow student who overhears the dictating, is shocked at the paying of commissions out of medical fees. Dr. Revard agrees; first and foremost, he answers, it is well understood that there is to be no dividing, and no commissions to intermediaries. We are only entitled to ask a fee that will enable us to pay our assistants, he allows. But, in practice? The client rarely bargains over the sum the operator requires; on the other hand, eight times out of ten he refuses to remunerate the medical attendant, though the latter has the heavy responsibility of recommending an operation and of selecting the operator. The client generally thinks he has paid quite sufficient for the operation without bothering about accessories, therefore, says the specious Dr. Revard, certain surgeons are glad to assist beginners. Such, in brief, is Dr. Revard's professed code; in fact, he thrives on commissions, and, through four acts, the dishonourable methods by which his success is obtained are exposed till they lead up to the final and dramatic catastrophe.

One of the advertising dodges is the operation performed before the kinematographer for fashionable ladies and sensation-hunting reporters. Then comes the passage which the experience of the war caused to be altered. The old and highly honourable Prof. Godfroy thus protests:—

> "Come, my friends, let us agree for once. Before the war the public wanted new performances, something more sensational, and certain practitioners did not hesitate to admit to the tragic sanctuary of surgery fashionable society women in search of some diversion."
>
> The Marchioness: "That was odious!"
>
> Prof. Godfroy: "Then the world tragedy burst upon us. Women now knock at the door of our hospitals, impelled not by morbid curiosity but by the sentiment of duty! I render homage to their admirable devotion.

Prof. Godfroy, when consulted by a wealthy, dissipated American lady, Mrs. Watson, tells her quite plainly that there is nothing really the matter with her, but she had better go to bed earlier and take a cold bath in the morning. Dr. Revard, on the other hand, delights this same lady by making love to her and prescribing pink and perfumed baths. The need of money, however, leads him to perform a bogus operation upon her, and he kills his patient. After this catastrophe Prof. Godfroy again appears, this time as the Nemesis of the play, and denounces Dr. Revard in these energetic words:—

> "Yes, there is no higher title, no title more sacred than that of Doctor of Medicine. But that title must preserve its prestige. There must not be among those who bear it any elements of corruption. We must not permit certain individuals to become, among our young men who are so wholesome and generous, elements of corruption. Thus if among us there should be a black sheep it is our duty—the older ones—to sacrifice it. That is why I have come here. Madame Watson was not your first victim, but I swear to you that she shall be your last."

Dr. Revard ends with an effort to redeem his reputation. He commits suicide, but in such a manner as to demonstrate the action of a toxin which his friend Dr. Durieux hopes may provide the means of checking septic poisoning. There is no doubt that the play is thrilling, and points a good moral. But we should be sorry to think that the medical profession requires such an obvious lesson. The play is published in a special supplement of *L'Illustration*.

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[1] Caducée, pièce en quatres actes, par André Pascal (Dr. Henri de Rothschild).

THE PHYSICS AND CHEMISTRY OF COLLOIDS.

A BOOK, written in German, on the preparation of colloids by Prof. Svedberg appeared in 1909. Recently he has published an interesting short monograph[1] dealing with the nature of the processes leading to their formation, in which a most difficult subject is made unusually clear. Colloids or disperse systems may be formed in two ways, by condensation or by dispersion. In the former method, matter is brought together within a smaller boundary surface than before; in the latter, the matter is dispersed so that the specific surface is increased. In some cases the processes of condensation and dispersion may be combined. Superficially the electric arc method of producing colloidal solutions of metals is one of dispersion, but in reality it belongs to the second group, since it consists in the vaporisation of the metal and its subsequent condensation. It is thus essential to know the state of the system immediately before the formation of the disperse phase. There are only a few cases of dispersion, such as emulsification of fats and hydrocarbons, occurring in the homogenisation of milk, and the grinding of material to minute particles. Most processes leading to the formation of colloids are those of condensation. The simplest is condensation in vacuo, as exemplified by the dark layer on old incandescent electric lamps; the metal has been vaporised and condenses as a film of particles on the glass. Similar deposits can be made in a neutral gas and the gas may be exchanged for a liquid, as in the case of the submerged arc where the liquid around the arc is converted to gas. The production of disperse systems in liquids and solids usually involves a chemical reaction such as reduction, oxidation, or double decomposition. Here again we can have as alternatives volume condensation and surface condensation. Photograph reactions are generally volume condensations; surface condensation takes place between two reacting solutions at their surface only. Prof. Svedberg deals with the various experimental details which have been used to elucidate the processes. Many of these, for instance, the formation of spray, smoke, and volcanic dust, are of great practical importance.

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[1] Monographs on the Physics and Chemistry of Colloids. The Formation of Colloids. By Theo. Svedberg, Professor of Physical Chemistry in the University of Upsala. With 22 Illustrations. London: J. and A. Churchill. 1921. Pp. 127. 7*s.* 6*d.*

THE DIAGNOSIS OF FOREIGN BODIES IN THE AIR- AND FOOD-PASSAGES.

IT is within the experience of every laryngologist that foreign bodies may pass through the larynx with the production of the most trifling symptoms which may readily be overlooked in children, and even in adults. Foreign bodies, especially if of a non-absorbent character, may remain even in the lung for a long time without producing symptoms, and Dr. C. H. Carroll's interesting case recorded in THE LANCET of June 18th shows how the practitioner must not be put off his guard by the absence of history of swallowing anything unusual. Sooner or later, however, symptoms arise, but the circumstances which might suggest the aspiration of a foreign body have by that time been forgotten by the patient, and many cases have been treated for such affections as chronic bronchitis, bronchiectasis, or pulmonary tuberculosis for prolonged periods in some of whom the correct diagnosis has only been disclosed by post-mortem examination. A correct knowledge of the symptomatology of foreign bodies in these regions is obviously, therefore, of the highest importance, but the relative rarity of the cases in the experience of any one observer has made systematic study a matter of great difficulty. Dr. Chevalier Jackson has recently published such a study based on 789 cases from the Bronchoscopic Clinic of the Jefferson Medical College of Philadelphia.[1] He lays stress on the diagnostic value of a history of initial laryngeal spasm, but states that a foreign body may pass right through the larynx into a bronchus without producing any laryngeal disturbance. If sudden death does not occur, the initial spasm passes, and a certain degree of toleration is established; but foreign bodies do not often remain latent in the larynx for any considerable time, for reactionary swelling usually produces enough dyspnœa to call for examination. In the trachea foreign bodies are usually movable, and their movements can be felt by the patient, while the vibrations may be palpated or heard with the stethoscope. Cough is apt to be paroxysmal and very severe, and a sudden shutting off of the expiratory blast and of phonation during paroxysmal cough is almost pathognomonic of a movable tracheal foreign body; there is usually dyspnœa due partly to the bulk of the foreign body and partly to traumatic subglottic œdema. Jackson describes an "asthmatoid wheeze," heard at the open mouth, not at the chest wall, in cases of tracheal and bronchial foreign body; in the former it is usually louder and lower in pitch. Pain is uncommon, but may occur and be accurately localised by the patient.

It is in the bronchi that foreign bodies are most likely to remain latent for long periods. There is often a protracted, delusive, symptomless interval, and the time of inhalation may be unknown or forgotten. Cough and purulent expectoration ultimately result; periodic attacks of fever, with chills and sweats, and followed by increased coughing and the expulsion of a large amount of purulent, more or less foul material are so nearly diagnostic of foreign body as to call for exclusion of this probability with the utmost care. All the symptoms of tuberculosis, emaciation, clubbing of the fingers and toes, night-sweats, and hæmoptysis are in most cases simulated with exactitude, even to the gain in weight by an outdoor regimen. But tubercle bacilli have never been found at the clinic in association with bronchial foreign bodies, which therefore do not cause, but only imitate, pulmonary tuberculosis. The distinctive taste of metallic or organic bodies may be noticeable to the patient, and offensive sputum should always suggest a foreign body. Sudden complete obstruction of one main bronchus does not cause noticeable dyspnœa, provided that its fellow is functioning; but complete obstruction of a bronchus is followed by rapid onset of symptoms. The physical signs usually show limitation of expansion on the affected side, impairment of percussion, and lessened transmission of breath sounds: signs which may lead to an erroneous diagnosis of empyema. In cases of non-opaque foreign body, radiographic examination is still of great value; the signs are those of an acute unilateral obstructive emphysema, and include increased transparency on the obstructed side, displacement of the heart to the uninvaded side, and downward displacement of the diaphragm with marked limitation of its movements on the obstructed side. Organic foreign bodies, such as nut-kernels, and especially pea-nuts, cause a severe general toxæmia and local reaction, which is more marked in young children and may be fatal within 24 hours; to this affection Jackson has given the name "arachidic bronchitis." He strongly advises that all cases of chronic chest disease should have the benefit of a radiographic study to exclude bronchial foreign body, that negative opinions should never be based on any but the best plates, and that even then there will occasionally be need for diagnostic bronchoscopy. In the œsophagus, foreign bodies are more easily diagnosed; lateral and antero-posterior radiographic plates should be taken, and, when the body is not "radiopaque," screen examination of the deglutition of a barium mixture, or barium capsule, is of great value.

We would recommend the study of this careful and thorough monograph, not only to laryngologists, but, and more especially, to general physicians and practitioners; for if, in obscure cases of pulmonary disease, the possibility of foreign body is regularly borne in mind, the errors of diagnosis described by Dr. Chevalier Jackson will less frequently occur.

TRANSMISSION OF THE ENCEPHALITIS LETHARGICA VIRUS.

IN a recent communication,[1] Levaditi, Harvier, and Nicolau demonstrated that the virus of encephalitis lethargica is transmissible from the mother to the fœtus, in the case of rabbits. A pregnant rabbit was inoculated with the virus and died 11 days later. The brain showed characteristic histological changes, while the brain of the fœtus examined appeared normal, but a portion of the latter injected into a healthy rabbit produced a typical encephalitic infection. The above observation confirms the view that the virus of encephalitis lethargica can be present without producing any gross histological change, as McIntosh and Turnbull found in the Derby epidemic. In addition it proves that the virus can pass through the placenta and infect the fœtus, thus lending considerable support to the idea that in a certain number of these cases of encephalitis in young infants the infection is congenital in origin. The work may thus have a bearing on the treatment of cases of pregnant women suffering from encephalitis lethargica. When the infants are born alive and subsequently develop symptoms of the disease, infection from the maternal nasal secretions or through the milk cannot always be excluded, but the experimental findings of MM. Levaditi, Harvier, and Nicolau suggest that transmission in utero is at least a possibility.

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[1] American Journal of the Medical Sciences, May, 1921, p. 625

[1] C. Levaditi, P. Harvier, and S. Nicolau: Compt. rend. Soc. de Biol., 1921, lxxxiv., 957.

INDUSTRIAL DERMATITIS.

SKIN eruptions among industrial workers are of frequent occurrence and come under the observation of busy practitioners almost daily. The extent to which they prevail may be judged from an estimate made in one industry only that approximately 25 per cent. of all machinists exposed to oils are or have been affected with dermatitis.[1] The inclusion of dermatitis and ulceration of the skin produced by dust or liquids in the schedule of diseases for which compensation must be paid under the Workmen's Compensation Act, 1906, gives a further and legal significance to this group of affections. Hence, the publication in America of three important papers based on considerable research into the causation of skin affections among workers exposed to oils cannot fail to be of interest. The conclusions arrived at by the different workers are not dissimilar.

The subject has previously received attention from our own medical inspectors of factories and one of their investigations (the importance of which seems to have escaped the attention of the American investigators) throws particular light upon the whole matter, because the peccant material—pure olive oil—was unadulterated by anything else.[2] The observer, Dr. E. L. Collis, concluded that the trouble was caused by the oil dissolving the natural fats, palmitin and stearin, from the skin which then becomes dry; cracks follow through which microbic invasion occurs, setting up dermatitis. Here is presented the first simple stage in the process. McConnell, in reporting upon an investigation among printers,[3] after placing on one side all possible influences such as health, physique, family history, or exposure to infection, remarks that "one significant fact was very prominent: all persons suffering with dermatosis were found to have dry skin—that is, skin either partially or wholly devoid of natural oiliness; whereas those persons without eruptions have oily skin. This dryness of the skin is the only differentiating factor found to exist with any degree of constancy among the men so affected."

When the oil, as in the case of cutting oil in engineering shops, is mixed with fine metal chips, these chips by causing small punctures facilitate the introduction of microbes.[4] When, as in the case of printers,[3] there is exposure to inks containing "driers" and to a fat solvent like benzol, the dyes in the ink aid in damaging the dry skin and retard healing. When dirt and oil block the small glands at the root of the hairs, folliculitis, somewhat different in causation, may complicate the case.[5] The degree of natural oiliness in the skin of different individuals varies considerably, and where it is most pronounced the tendency to dermatitis is least. Careful bacteriological investigation[6] has failed to incriminate the oil as the necessary carrier of infection, even though it may act in this way; indeed, certain paraffin oils, produced in the process of pressing paraffin wax, encourage bacteria breeding,[4] but the bacteria have no power for evil until they have secured ingress to the skin.

The position may be briefly summarised as follows: (1) Oils of all types and other fat solvent fluids are liable, if they come in contact with skin for some time, to produce dermatitis; the underlying cause is desiccation with subsequent cracking of the skin. (2) The exact form of dermatitis which results depends on the infective organism or organisms which obtain access. (3) The organisms are not usually present in the oil, but exist on the human body; therefore the dirtier the skin the more readily is it infected. (4) Prevention depends first upon cleanliness, and secondly upon restoring the dissolved fat by anointing the skin with such a mixture as equal parts of lanolin and castor oil. (5) Treatment consists in removal from exposure and entire rest to the affected skin by covering it with a flexible paint, such as is used in treating burns.

AN ACQUISITIVE SOCIETY.

STRAWS show the way wind blows; at present there is a movement in the wind of popular thought in regard to social reorganisation. Whether this movement will prove to be stimulating to the health of the body politic or not, the medical profession, which is so intimately associated in its work with the whole community, cannot afford to disregard any indications. A new book,[1] by Mr. R. H. Tawney, is perhaps part of the wind rather than a straw pointing its direction. Its author has previously published his main thesis in a pamphlet "The Sickness of an Acquisitive Society," but in his present volume he sets forth his case more completely. Briefly, the contention is that property should always carry with it responsibility, and that property which carries no responsibility is a drag on the wheels of social progress. He gives the term Acquisitive Society to a community which acquires property and, neglecting all duties, merely asks "May I not do what I like with my own?" Among such property, called Functionless Property, are grouped mining royalties, ground rents, and shares in limited companies; rewards here are divorced from services; a class of pensioners upon industry is created; and in consequence those who labour, but who do not by their labour command their full reward—that is, the great majority of mankind—are degraded. Acquisitive Society reverences the possession of wealth; a Functional Society would honour, even in the person of the humblest and most laborious craftsman, the arts of creation, and would fix the idea of function as a principle, upon which all remuneration should be based. The reader will peruse with interest the methods by which Mr. Tawney proposes to reconstruct industry and commerce. He seeks to convert industries into professions which always recognise the relation between payment and effective service; to this end he sees promise in movements like that of the Guild of Builders which eliminates dividends, provides for all men "on the strength" when work is slack, and supersedes profit-making employers. He advocates a fixed rate of interest on industrial capital, instead of unlimited profits with limited liability, as a first step towards lightening the strangle-hold of capital upon labour. Only faint praise is given to nationalisation, as that term is usually understood.

The chapter dealing with the brain-worker and the growth of an intellectual proletariat is one of great interest. Under the organisation of industry advocated, the brain-worker might be expected to come into his own. The medical sociologist cannot fail to be deeply interested in the cogent arguments put forward; but he will find no appreciation given to the tenet that every community possesses the social organisation it deserves, an organisation which represents its capacity for healthy thought. He will find himself then wondering whether a healthy nation is not the first requirement for obtaining a wholesome organisation, and whether the finest of organisations on paper would not in practice fail if applied to an unhealthy community. The crucial questions are: Would a healthy organisation convert an unhealthy community into a healthy one? Or would a healthy community convert an unhealthy organisation into a healthy one?

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[1] Annual Report of Surgeon-General of Public Health Services of the United States for the year 1920, pp. 35. Washington.

[2] Collis, E. L.: Dermatitis in Tobacco Workers, Annual Report of Chief Inspector of Factories, 1910.

[3] McConnell, W. J.: Industrial Dermatitis among Printers. Public Health Reports, vol. xxxvi., No. 18, May, 1921. Washington.

[4] Causes of Skin Sores and Boils among Metal Workers. An Investigation by the Houghton Research Staff. E. F. Houghton & Co., Philadelphia, 1920.

[5] Bridge, J. C.: Memorandum on Cutting Lubricants and Cooling Liquids, and on Skin Diseases produced by Lubricants. pt. Scient. and Indust. Research. Bull. 2, London, 1918, pp. 8

[6] Page, C. G., and Bushnell, L. D.: Oil Folliculitis, Journ. Industr. Hygiene, June, 1921.

[1] The Acquisitive Society. By R. H. Tawney. London: G. Bell and Sons, Ltd. 1921. Pp. 242. Price 4s. 6d.

A STUDY OF ARTERIO-SCLEROSIS.

Difficult and controversial as are the pathological problems involved in the study of the condition of diffuse hyperplastic sclerosis, its clinical relations and associations are even more complex and elusive. Dr. Geoffrey Evans[1] having come to the conclusion that the underlying process in this, as in other forms of arterio-sclerosis, is inflammatory, proceeds to study the clinical conditions associated with it—namely, raised blood pressure, cardiac hypertrophy, cerebral hæmorrhage, and chronic renal disease, more particularly in their bearing upon his conception of its inflammatory nature. In studying the post-mortem records of heart-weights in a 20-year period at St. Bartholomew's Hospital, he found that, where chronic heart and lung conditions could be excluded, a post-mortem weight of 15 ounces and over generally indicates the presence of diffuse hyperplastic sclerosis. On the other hand, this condition can be found without cardiac hypertrophy in exceptional cases. In regard to raised blood pressure, Dr. Evans makes the statement that a persistent systolic blood pressure of 190 mm. Hg or over is evidence of diffuse hyperplastic sclerosis; indeed, he believes that it is the only adequate clinical sign of diffuse arterial disease. In other words, he regards the clinical condition to which the term hyperpiesia has been applied as in reality the expression of diffuse hyperplastic sclerosis. He suggests that syphilis is a cause of an increased mortality in cases with hypertrophied hearts about the age of 45, and he believes that syphilis is a cause of cardiac hypertrophy and diffuse hyperplastic sclerosis, with a maximum effect at about this age. On an analysis of the records of cases of cerebral hæmorrhage, investigated by him, he finds suggestive evidence that two types of arterio-sclerosis may occur in association with it, one being diffuse hyperplastic sclerosis, the other a more patchy or local form, probably of senile type. The most important part of the clinical side of his paper is that dealing with chronic renal disease. He states that he has found evidence of inflammatory change in all the kidneys he examined which were the subject of extensive disease. He claims that this fact supports his contention that the arterial disease associated with renal disease is also inflammatory in origin, and he would solve the riddle as to whether the kidney disease is the cause of the vascular changes or vice versa, by the thesis that both are the simultaneous result of a common cause, though this may be of varying kind and intensity in different cases. He suggests that in acute conditions the epithelial reaction dominates the picture, and that when the process induced by the pathogenic cause is chronic, epithelial and vascular changes both result and therefore coexist, while in very chronic cases only the vessels suffer. In such manner the different appearances in chronic diffuse nephritis, in true chronic interstitial nephritis, and in arterio-sclerotic kidneys are to be explained. Dr. Evans's views are to some extent speculative, although based on a careful and ingenious analysis of his laborious histological, post-mortem and clinical investigations. Their chief value lies in their suggestive character, for they open up fields for fresh research. Further elucidation may be expected from the biochemical investigation of renal function in medical diseases of the kidney which is now being pursued by several workers.

THE INTERALLIED NEUROLOGICAL CONGRESS IN PARIS.

The second annual Interallied Neurological Congress, organised by the Société de Neurologie of Paris, has been held and was from first to last a complete success. Delegates attended, officially or otherwise, from Great Britain, United States, Italy, Belgium, Portugal, Spain, Denmark, Sweden, Holland, Switzerland, and China. The subject announced for discussion was "the Parkinsonian syndromes"—i.e., paralysis agitans, idiopathic and symptomatic. Four sessions of some three hours each were devoted to this topic, yet neither the supply of speakers nor of material showed any sign of running short. It is safe to say that some ten years ago a discussion of paralysis agitans of this length, and width, would have been quite impossible. But the disease is one which has come prominently to the fore within the last decade and that for two main reasons. An immense impetus was given to the study of the subject of extrapyramidal motor disease by the work of the Vogts and of Kinnier Wilson in 1911–12; from that time the syndrome of the corpus striatum and the whole conception of striatal disease passed from mere speculation to the rank of a new and properly grounded chapter in neurology. Only those who have followed the matter can have any idea of the vast literature on the subject that has since accumulated; as was generously said of British neurology at the Congress, progressive lenticular degeneration, a striatal disease par excellence, has gone right round the world, and if the contributions of British origin can still be numbered on the fingers of one hand, they have been made by the score on the continent and in the United States. Paralysis agitans has naturally benefited by this renewal of interest, for, like many other extrapyramidal conditions, it is characterised by a combination of involuntary movement with muscular hypertonus, and its resemblance in several cardinal features to progressive lenticular degeneration—an affection with a known pathology—has furnished an obvious guide for neuropathologists. Henceforth, all search for the cause of Parkinson's disease in muscles, peripheral nerves, motor nerve end-organs, and Betz cells, must be abandoned. The second factor in the development of the subject has undoubtedly been the remarkable number of post-encephalitic cases of symptomatic paralysis agitans; with the fresh appearance of epidemic encephalitis in one country after another the crop of Parkinsonian cases has been ever increasing.

At the Congress M. Souques gave a clinical demonstration of some dozen patients, mostly young people and some mere children, every one suffering from symptomatic Parkinson's disease as a sequel to encephalitis, and their appearance in a row facing the large audience was peculiarly impressive. No one can doubt that so definite and specialised a clinical picture must correspond to an equally defined pathological entity. What is this pathological basis? According to the work of Ramsay Hunt, the Vogts, Lhermitte, Foix, and others, degenerative or destructive changes in various cell- and fibre-systems of the corpus striatum and its efferent connexions to the corpus luysii, locus niger, nucleus ruber, and other mesencephalic cell-groups, are followed by the appearance of rigidity and involuntary movement and these changes are declared to be the essential pathological feature of Parkinson's disease. Lhermitte, employing the method of Casamajor, has demonstrated the existence of fibre (myelin) degeneration in paralysis agitans in the efferent (striofugal) systems to the above-mentioned nuclei, and Foix, more particularly, has found degenerative changes in the locus niger in every one of several cases of the affection. The Vogts have recently published an account of their examination of no less than seven cases of the disease; in all of them a noteworthy degree of atrophy of the putamen-caudate and to a less extent of the globus pallidus, with loss of cells and fibres, was found; there was a general rarefaction and absorption of tissue in the vicinity of the blood-vessels in these basal nuclei—a kind of état criblé. Thus, though there may be as yet no precision or exactitude in regard either to the site or the nature of the pathological alterations, no doubt can be entertained of the general localisation of the morbid changes. Further research ought to be devoted as much to the physiological mechanisms involved as to the morphology of the lesions. There is room for more intimate study of the problem both of muscular hypertonus and of involuntary movement, and the syndrome of paralysis agitans is not to be divorced from others which are equally characterised by rigidity and one or other type of hyperkinesis. Lesions of the cerebellum, for example, and mesencephalic lesions, may reveal themselves by disorders of tonus and by involuntary movement, and the same is true of the optic thalamus. Only by taking a large view of the question can we arrive at informative results. The widespread interest aroused in neurological circles at home and abroad apropos of the corpus striatum and its syndromes is calculated to prove less useful than will otherwise be the case if due attention is not paid to the occurrence of combinations of dystonia and involuntary movement that are shown to be independent of structural lesions of that part of the brain.

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[1] Quarterly Journal of Medicine, April, 1921, p. 215 (vol. xiv., No. 55).

THE GOLD MEDAL OF THE ROYAL SOCIETY OF MEDICINE.

AS we have already announced, the first award of its Gold Medal will be made by the Royal Society of Medicine to Sir Almroth Wright. The gift of the medal has been instituted as a method of recognising original discovery in medicine or other allied sciences. It will be awarded triennially, and the prize can be given for the practical application of the results of previous investigations of other scientists as well as for new and personal work. This is a thoroughly sensible admission that the finest contributions to the art and science of medicine must be founded on the work of predecessors. All such progressive work is original in the best scientific sense, and the Royal Society of Medicine has been wisely inspired in its declaration of the fact. Sir Almroth Wright will deliver a lecture before the Society on Wednesday, July 6th next, when the annual general meeting of the Society will take place and the medal will be awarded. The design for the medal is the work of Mr. E. Carter Preston. It bears on the obverse the figure of Hygieia bestowing a wreath upon Research, typified as a figure carrying a lamp. At the bottom of the obverse side of the medal is the legend " Non est vivere sed valere vita." On the reverse we have Æsculapius supported by Chiron, the wise centaur, his master. Below the centaur we see the serpent of Æsculapius and the bow of his father Apollo. On the field are the words " Finis coronat opus."

ROEHAMPTON AUXILIARY HOSPITAL.

LAST week we published an account by Dr. C. Jennings Marshall of the admirable work of the arm-training centre at Roehampton, in which he dwelt on the demoralisation and resentment of a man who suspects that he has been fitted with a badly-fitting artificial limb and the psychological effect of the provision of a comfortable and useful one. Queen Mary's Convalescent Auxiliary Hospitals at Roehampton, for sailors and soldiers who have lost their limbs in the war, are this week celebrating the sixth anniversary of their opening. Over 41,000 officers and men have suffered amputations of the leg or arm owing to the war and, though other centres for the supply, renewal, and repair of artificial limbs have been organised by the Ministry of Pensions, Roehampton has dealt with a very large proportion these service men. 1324 officers and 21,339 O.'s and men have passed through the hospital, patients, since June 28th, 1915; readmissions of all ranks for second limbs and repairs amount to 55,707, and this figure does not include the 16,518 cases dealt with by post. 8453 men have received training in instructional workshops opened in 1916. Of these the employment bureau has found work for 4987, and has made arrangements for further training for 4166.

In 1918 arm instruction classes were instituted, and many who had found artificial arms an encumbrance were taught how to get the utmost work, and indeed enjoyment, out of their use. Dr. Marshall, in his article, emphasised the keen interest taken by the men in their own manipulative progress—not confined to progress in work, but also in sport. The sight of those who in a few weeks are able to play cricket and golf must indeed be stimulating to the neurasthenic who enters the hospital despondent as to his chances of getting any fun out of life, even should he ultimately be able to work. The in-patient accommodation at Roehampton has now been reduced to 200 beds, for which it is hoped to get permanent endowment, but since between 50 and 60 men attend every day for major and minor repairs the out-patient department is still busy, and likely to remain so. An account of these hospitals will make one of the most inspiring chapters of the medical history of the war.

THE METROPOLITAN HOSPITAL SUNDAY FUND.

IT is too early to judge the results of the appeals on behalf of the metropolitan hospitals which were made from pulpits in London and elsewhere by ministers of all denomination last Sunday; but never was the need of our hospitals greater than it is at the present, and it is earnestly to be hoped that, when the totals are announced, we shall learn that an aggregate sum has been collected surpassing that of any previous year in the history of the Fund. In the past the appeal has been made on the grounds of a common humanity, but the events of recent years have added new impulses to the conscience of the people, and we may fairly look for their expression. The part which our houses of healing played in winning the war, and in ministering to the needs of its victims, will surely have its influence over the purses of many. But what is necessary is permanent effort as well as a quick and special response. Sir James Paget, wisest and best of men, nearly 70 years ago said: " If in all our improvements of our means of life, only half the trouble had been taken to prevent or remedy the future evil, that was taken to attain the present good . . . . our state might have been far different." The report of Lord Cave's Committee shows that the voluntary system of hospital support must be maintained and indicates the way in which the money can be provided. The Government has responded promptly—though to only half the amount mentioned as an early requirement—by voting £500,000 in aid of deficiencies in the funds of the voluntary hospitals during the year, and the Minister of Health has expressed the opinion that the balance should be found by voluntary effort. This should be forthcoming from a national and coördinated effort, and it would be a splendid incentive to such effort if the Metropolitan Hospital Sunday Fund collection this year proves to be an outstanding one in the annals of hospital charity.

THE honour of knighthood has been conferred upon Dr. John Walton Browne, surgeon to the Belfast Ophthalmic Hospital.

MR. A. W. Sheen, C.B.E. (Military), M.S., F.R.C.S., has been appointed Professor of Surgery, Welsh National School of Medicine from Oct. 1st, 1921.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, will shortly be published in THE LANCET.

CLINICAL UNITS:
THEIR PURPOSE AND ACHIEVEMENT.

BY C. M. WILSON, *M.C.*, M.D.LOND., F.R.C.P.LOND.,
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IT is no part of my present purpose to set forth the causes which led to the creation of the Clinical Unit System. I am rather concerned with rescuing from a brief experience extending only over a year and a half such lessons as may be helpful to those who wish to contribute to the permanence of the Unit organisation, and that may indicate the lines upon which its successful development may be best assured. The deficiencies which it was designed to meet are plainly set forth in the writings of Osler and of Sir Clifford Allbutt, in the reports of the General Education Board of America, in the report of the Royal Commission on University Education in London of 1913, and in the contributions of Sir George Newman. It was planned to provide leisure for research and for meeting the growing educational demands on the time of physicians and surgeons, to provide the future heads of English medicine with a more scientific training, to protect their waiting years from the tyranny of routine and from financial anxiety, and to other ends which will presently appear.

The Teaching of Experience.

The Johns Hopkins Hospital in America was the first to put into practice, in 1913, the Clinical Unit System. In England, owing to the war, it was not until 1919 that the Board of Education granted the same opportunities to four of the London schools: St. Bartholomew's, St. Thomas's, the London Hospital, and University College Hospital. In the spring of the present year the London (Royal Free Hospital) School of Medicine for Women applied for and received a Unit in Gynæcology and Obstetrics, and later Clinical Units in Medicine and Surgery were recognised at St. Mary's Hospital. It is only possible, therefore, to enter a provisional opinion, which may have to be modified in the light of a fuller experience of the Unit organisation. There are incidentally good reasons for caution in extending this system. The cost to the State is considerable, and to the schools it may even be prohibitive, while it cannot be said to have been proved as yet that teaching, care of patients, and additions to knowledge are all so much better under the full-time scheme that every medical school should hasten to fall into line. We are, too, far from certain that we have more than a few among the younger clinicians who are willing and capable of the direction of these Units. There are not wanting signs that the supply of these men is limited, and that if the demand be immediately increased a very different type of man will have to be called upon. And quite apart from personnel, not every school is fitted for a Unit, either in laboratory equipment or in the educational motive without which the life of the Unit can only be brief, troubled, and unproductive. We wish for assurance, before committing the State to a larger outlay, that our schools number among the more promising of the younger generation sufficient men who are willing to work for university rewards, rewards that can never hope to rival the prizes of a worldly career on the latter's own ground. There is, however, no reason to suppose that men will not be found who, in order to procure ideal conditions for clinical teaching and investigation, will be willing to renounce monetary rewards. For a full-time clinical chair appeals to the idealism that is more common than many know. But, though it is probably a libel to say that good men will never become Directors since they can make more in practice, it is a totally different proposition to expect that the man who has so ordered his life that he may engage in practice will be ready to forgo the advantages of which he has had experience for the prospective rewards of a life which has no sharp outline in his mind.

Units may be mere pretentious names. They may mean no more than an insurance taken out by an insecure school against impending dissolution, a comfortable sinecure for an indolent man who lacks the energy and vitality to conquer in the competitive world. This is the old system under another name, the same thing in a new dress. We have to ask, have we in fact got any fundamental addition, have we a man of ideas as Director? It is well for the reputation of the system that the number of schools in which it will be tried at first will be limited by financial considerations. These Units are not to be regarded as a mere addition to clinical teaching, something that will atone for the irregularity of attendance and the broken service that is given to the pursuit of knowledge under our present system, not as new facilities for tutorial instruction to be bestowed upon those schools which, by their tradition and size, wear an air of permanence. They should be granted as the spear-head of an active, restless, and progressive school, when, and only when, the university authorities are satisfied that a suitable man is forthcoming as Director.

But if we are satisfied that these conditions obtain, what are the advantages that a school may reasonably anticipate if it should adopt units? As physicians we are impressed with what we do not know, but at least the worker in the Unit enjoys the comfortable assurance that in a scientific sense he knows more about his patients, and that if he does not add his quota to knowledge it is not for lack of opportunity. He has a new freedom: he is no longer obliged to devote the better part of his days to the support of his family by some form of practice. He has leisure. That men can be too busy to stay to meditate, that they should pass their days and know nothing of "the fruitful hours of still increase" is a hard decree. In fine, Units can do no more than give the right man a fair chance to carry out good work. This is the issue. Can we, without the Unit organisation, reap the advantages of a body of physicians who engage in research, and if we cannot, is it well with education and with our ways of adding to knowledge?

We shall, then, jealously guard this new freedom which the more hopeful among our younger clinicians are likely to enjoy. We shall plan, too, so that we do not exchange the tyranny of one form of routine for another, that the time of the Unit is not eaten up with the "treadmill of the classroom." If all students pass through the Unit under the personal supervision of the Director, it is idle to expect of him original and productive work. And if we make of the Director no more than a coach we have defeated our own ends. The system, born in hope and faith, will have achieved nothing but harm. But, if we guard this precious leisure of the Unit worker, we shall foster a mood, a frame of mind, very friendly to fertility: the Director will value his office not alone for its facilities for teaching, but also for its unique opportunities of learning.

For the student Units may mean no more than expert coaching—this is the danger. He may value greatly what from the educational point of view is of little account. Wherefore we must look to the wise provision that entrusted these appointments to an outside body with university ideals to protect the system from abuse. Where it is prudently administered the system may give the better type of student a deeper insight into the intricate ways of disease. It can scarcely fail to widen his outlook over the whole field of medicine and surgery. And if the Director is a reflecting man, his constant contact with students must sharpen their curiosity, quickening the legitimate ambitions of their calling.

The patient, too, can but benefit when diagnosis is built up on the more elaborate methods which are only possible with the leisure which the Unit confers. These advantages will, however, be dearly bought if students are led by the Unit organisation to look on patients as so much clinical material. For it is the spirit of units that matters, a false step in the beginning may vitiate everything. To this point we return when we come to consider whether the Director should be allowed private practice. It is significant in passing that ward sisters like the Unit system, though it throws increased burdens on them and on their staff.

The Possibilities of the Unit System.

These are the more obvious reflections which our experience of Units suggests. But we cannot come to a decision as to the merits of the system on such a simple basis, and I am of one mind with Prof. Janeway, Director of the Medical Clinical Unit in the Johns Hopkins Medical School, who, in a brief account of his first year's stewardship rendered to the General Education Board, wrote: "The real success or failure of the plan will be best appraised from the careers of the men who now are receiving their training on the staffs of such departments." I agree with him that "if the professorships of medicine in our best schools ten years from now are being filled from the ranks of these men, and under their influence our medical clinics are becoming actively investigative university departments, then the whole-time system will have demonstrated its effectiveness." This is the crucial test, and we must await the result. But we shall wait with no misgivings, for if the right spirit inspire the Units they will be schools for teachers in the broadest acceptance of that term. The teacher must assimilate new knowledge before he can add it to the diet of the student. I would take a parallel from the ways of nature and the life of the fields. The plant needs nitrogen, but cannot use the nitrogen of the air until it is made into nitrates; only the clover family, by virtue of symbiotic bacteria, can make use of the raw material so that it is available for its own use and for the use of other plants. The teacher is the clover, taking the abundant raw material of new knowledge and changing it to the form in which it can be used by students.

Under the present system the waiting years are swallowed up in routine work by the faithful performance of which promotion is earned. I have faith that Units will break this down. There has always been a certain amount of intercourse between the leaders of the profession in different countries, but practically none between the younger generation. In the years when such intercourse counts most we do not join in discussion with the hopeful of other lands. It should be possible to effect some system of exchange by which American universities would send to us young men to work on the staff of the Units, while by reciprocal arrangement the more curious of the new generation would receive at an impressionable age the quickening impulse that comes of travel and the assimilation of new ideas. We may hope that those who have been responsible for the visits to America of certain of the Directors of Units will be able to arrange that the Assistant Directors, upon whom so much of the future of Units depends, will receive like opportunities. We shall at least require of the new generation that it is not content to live apart from all the rest in its own town or city—that if we work in London we shall remember that there are fair cities beyond Jordan, and that in modern times the provinces have perhaps contributed more than their share to English medicine.

And then there is the evil of premature publication which leads men to think in terms of opportunism and saps their intellectual integrity. We are in haste to "trumpet abroad our acquirements." Here Units which remove the motive may cure the disease. Most of us write too much and too soon, unmindful of the counsel of St. Chrysostom, beloved of Osler: "Depart from the highways and transplant thyself into some enclosed ground, for it is hard for a tree that stands by the wayside to keep its fruit till it be ripe." We may ask of the Units another spirit, the spirit in which our cathedrals were built through the centuries, our tapestries woven, and our manuscripts illuminated, in the faith of all exquisite work that is not hurried nor slipshod. In this regard it is singular to note in the regulations governing the appointment of the Directors at one school that they are required to reside within a certain distance of the hospital. If we must be for ever laying down regulations I would have them live in the depths of the country, but I would be not unmindful that if you ask for the things of the spirit you cannot by rule and regulation make sure of receiving them. The hour is scarcely kind to the art of the physician. There is something in the time and in our tastes that is not friendly to leisurely observation. We ask that these workers should pass tranquil days, a little away from the dusty paths of life, so that clinical medicine may receive a measure of the service that is freely given to other sciences. We would not have the Director hurried out of thought, but that without losing touch with the realities of the world in which he must play his part, he shall say to himself the words graven on Hazlitt's sundial, "Horas non numero nisi serenas." There is another aspect. Of the factors which count as the most influential in moulding the student, nothing is so important as the mute example of the lives of their teachers, and it is surely not without profit that we should have in our midst a body of men whose lives are given to something other than the lucrative rewards of private practice. There is held up before students an alternative to monetary prizes, and that alternative is the Unit system.

There are, too, more utilitarian services that Units can perform. They furnish an opportunity of reorganising the out-patient department of a hospital, so that it may be of greater value in studying the beginnings of disease. At the present time if assistance is rendered to the out-patient physician it too often takes the form of a sorting department, so that in the issue no case has access to the physician unless stamped by the physical signs of advanced and incurable disease. In our haste to teach signs we throw away more precious opportunities of learning. On the other hand, the criticism has been directed against the Unit organisation that the class of case admitted to the Unit wards lacks variety because many of the most interesting cases in the wards of a consulting physician are sent to him by practitioners, and if the Director does not practise, his wards are no different from those of a general hospital without a teaching school attached. The remedy lies in the development of the out-patient department of the Unit, and in sending away the patient so satisfied that he becomes a recruiting agent. There is far too much delay before a patient is seen, and in more ways than one the out-patient department from the human point of view is out of date. It profits nobody that the working woman with a large family should wait three hours to get her medicine repeated, with a perfunctory word or two on the part of an exhausted physician. Where out-patients are treated in a kindly and considerate manner they multiply. The reform of the out-patient department bristles with difficulties. We need a kind of social service in which there is a medical counterpart to the lady almoner and a follow-up department that will accompany the patient to his home, with a view to checking the out-patient turnover, the large number who draft from one hospital to another. But the Unit will never lack material in London. On the contrary, there is a real danger that it may have too much. If the Director is asked to take charge of a large number of beds he will be fortunate to escape a new form of routine. Surely the value of experience is "not in seeing much, but in seeing wisely."

In measuring the benefits which it is customary to ascribe to the Unit organisation we shall not be put off with fine phrases. Do Units, for example, bring about in fact as well as in name a closer union between clinicians and workers in the laboratories? There is a desire for a more intimate relationship. Are Units the proper means for securing that end? Are we on the clinical side more ready and more willing to make use of knowledge born in the laboratory, and are they, who have hitherto been cut off from the inspiration of clinical phenomena, finding, as we bring them into the wards, new subjects for inquiry? Do we stimulate each other? It is early days to enter judgment. It would appear, however, that the physician is becoming more conversant with what can, and what cannot, be done in the laboratory. He does not so frequently refer a problem to his scientific colleagues when he would hold his hand if he had possessed but a rudimentary knowledge of the possibilities of their technique. It is not irrelevant that at St. Mary's, since units were inaugurated, a club has sprung into being, attended by the personnel of the units and by the staff engaged in the pathological, bacteriological, and other services. At these meetings the subject is approached from every angle, and the club appears to fulfil a useful purpose. Should the Unit do its own routine pathology and bacteriology, or should the work be carried out in the pathological department of the hospital? We have no doubt the latter is the better course, and that the temptation to make the Unit self-contained is to be resisted.

In the practical working of the Unit organisation there are two problems that recur again and again and press for a solution. Should the Director give all his time to the duties of his office, and not engage in private practice, or should he be allowed a limited amount of private practice, devoting the greater part of his time to the Unit? And what should be the relation of the Units to the rest of the staff of the hospital?

Whole-Time or Part-Time.

Some will have it that a sharp break with the old system is required, that only whole-time appointments are worth considering. Others, for example the physician and surgeon nurtured in another school, who are of a mind to get the best out of both worlds, are as certain that the Director of the Unit should be allowed to practise. The man who belongs to neither camp can only envy the facility with which in either case a decision is reached. If the Director be allowed practice, if he be a man of parts and personality, he will doubtless prosper, and his thoughts and perhaps his person will fly away to the dusty traffic of the busy consultant's life. And if he be without these gifts he is no man to vitalise this new way of teaching. Moreover, research and the sober reflection in which it has its being scarcely thrive in the hurry and press of practice. So much is plain enough. On the other hand, there is a real danger, although it is less obvious, that the whole-time official debarred from practice will grow into an academic figure whose usefulness is threatened by the evils which afflict a whole-time service, that this man, deprived of the quickening impulses which contact with the outer world brings, will become isolated, and that his influence and very teaching may lose their touch with realities. He will miss the humanising influence of practice, and his mind may shrink, since it lacks the widening sympathies which contact with the outer world excites. But if he is so fortunate as to escape the creeping paralysis that to younger men is the bane of the academic life where the competitive stimulus gives place to security, his later years will be enriched with the rewards of his unusual opportunities. Frankly I am less impressed with the alleged scientific advantages of practice, though it cannot but be valuable to see a patient in his environment. In America a compromise has been effected. At the Johns Hopkins Hospital the full-time staff are allowed perfect freedom to see private patients. They have their consulting rooms at the hospital, and the fees taken are added to the funds of the Unit organisation. In 1913 such fees amounted to $10,000, while it cost $110,000 to maintain the full-time services in medicine, surgery, and pediatrics. From this it might appear that the clinical teacher freed from the necessity of earning fees finds little that is scientifically or educationally valuable in private practice. But we shall accept that conclusion with caution, bearing in mind that it is not in human nature to engage in private practice for the benefit of an institution, and that incidentally it is in direct conflict to the experience of Sir William Osler, the integrity of whose judgment is not open to question. Further, we have to remember that this was the first year of this arrangement at the Johns Hopkins Hospital, and that the Directors, though famous in their art, were in the main imported from other cities. We believe that Unit workers should be allowed to see private patients at the hospital, and to take fees. Carried out at the hospital the system protects itself from abuse, and in America, as we understand, it works happily. Further, no other system seems to bring permanent peace and contentment to the Unit personnel and to provide a proper field of recruits for vacant directorships. This provision would go far to satisfy the considerations that weigh with many men who will not at present allow their names to be put forward as candidates for Unit appointments. They are not so much reluctant to give up the emoluments of practice as to embark upon a system which is admittedly on trial. They do not care to burn their boats. If they were able to return to practice in five years' time in the event of Units at their schools being abolished, the field for these appointments would be greatly strengthened. This applies particularly to surgery and gynæcology and obstetrics. Nevertheless, though there are sound reasons for their caution, I look for another spirit in the man who will make of the Unit a vital thing. If he possess imagination and the qualities without which success must be wanting he will not dread failure. He will know that if he can make of this organisation a living addition to medical education, he has little to fear from passing phases of financial stringency. He will go forward to his task with a good faith in his mission, and with a modest belief in his own power to accomplish it.

Relation of Unit Workers to the General Staff.

It were impertinent on my part to combat the foolish sayings of those who persist in looking upon the personnel of the Units as a race apart, immune from the frailties and temptations of a consulting physician. They are simply different persons discharging different functions, and this separation of function is required by the increasing complexity of science and social life. The consultant has duties which the Unit worker cannot usurp, his practical views are a useful antidote to the idealism of the full-time worker. They are sister services, or if there must be a question of seniority, then the general consultant belongs to the senior service. Certainly there is no antagonism between the scientific and the practical physician, and the relation between them can only be solved on the basis of experience. One thing is already clear. The Unit must be an integral part of the organisation of the hospital, it should in no circumstance be allowed to become an extraneous growth. It will be responsible for the coördination of the teaching of the general staff, but of that teaching it will itself form but a small fraction.

Meanwhile Units have their own pitfalls and traps for the unwary, and it may be profitable to dwell for a moment on the particular dangers that lie in the path of the system. The peculiar merit of the older regime was in the intimacy which existed between student, teacher, and patient. There is a danger that in the attempt to raise schools to a university standard we shall have fewer and larger institutions, and that the popular and accepted teacher, who is not unlikely to gravitate to the Unit attached to such schools, will be surrounded by a horde of students following him round his wards. Now those who are seeking true educational ideals have as much reason to distrust academic eloquence and the arts of the orator as any other form of persuasive speech which appeals now, as always, rather to the emotions than to the intellect. They discriminate clearly teaching and talking. It must be the constant aim of the Unit not to substitute large classes for the intimate methods of the older system, but rather to carry this intimacy a step further. At the London Hospital the Director and his three assistants each devote one whole morning every week to not more than one or two clerks, who in this manner profit by a personal guidance in the management of their own cases, which in the past has been given only by the house physician. There are dangers, too, of the effect of routine in this new life of the worker as great as any in the past. We have but one safeguard against these and kindred perils. It rests in the knowledge of the type of man who is needed as Director, and in the determination to appoint as Director none other.

The Future of the Units.

Excessive anger against human stupidity is itself, as Lord Bryce has reminded us, one of the most provoking of all forms of stupidity, and we shall do well to remember that criticism of the Unit system may proceed not at all from prejudice and ignorance, but solely from an honest review of the character and history of English medicine. We shall profit more by listening to the strictures of the opposition, than from many of the ill-considered eulogies of Units that have been heard in debate. If they are a natural step in the development of medical education, an evolutionary step, they have nothing to fear from passing political phases, or from the opposition which all new things must face. At the worst they may disappear temporarily, to reappear later in another and better form. But if they are only an ill-digested experiment on the part of certain theorists, then their end cannot be long delayed by the zealous idealism of youth. In the main it is true that we cannot be in a position for at least ten years to appraise the advantages and disadvantages of Units. Meanwhile they may come to an untimely end for one of two reasons. Firstly, economists, and just now they are rightly in the ascendant, may ask for a justification of such expenditure at a time like the present. And this may happen either in respect to the grant by the State, when the agitation will be political, or in the councils of the school, when it will have its roots partly in the impatience of certain of the older clinicians with a system with which they dispensed in their day, without, as they think, incurring serious disadvantages: partly in a more rational if somewhat shortsighted agitation founded upon the embarrassment of the schools' finances by this new call. Secondly, the men to staff the Units may not be forthcoming. The Unit personnel will, in that event, be overshadowed in point of achievement by other members of the general staff. It will then be asked, not without reason, why so much money should be expended with so little apparent result. If, therefore, we desire to secure for the Units a fair trial, if we wish to persuade men to suspend their judgment for a decade, we have to convince the more impartial that something has been added to medical education. For if at any time they should decide without bias that the Units supply in essence nothing that is not provided by the existing staff, the days of the experiment are numbered, and a precious opportunity will have slipped through our hands. Accordingly, men who have faith in the Unit system are concerned that no verdict should be pronounced upon it until it has had a fair trial, and they are keenly alive to the fact that they can only achieve their end by the appointment of Directors who are equipped to pilot the system through these troublous years. It is, therefore, of no little moment to crystallise in our minds the essential qualifications that fit a man for this difficult task.

The Qualities Needed in a Director.

Clearly he should be capable of wise and devoted leadership, for his task is no less than to bring out his school the practical idealism which is latent in it. I shall not dwell in the first place on his capacity organisation and research, though they are all-important, since they are less likely to be overlooked when they appear than the qualifications which he must possess as a teacher. With regard to those qualifications plain words are in season. Primarily the Director should *wish* to teach. He needs a zeal that is constantly fed by the stimulus of new knowledge. Then, if he be the man we seek he will borrow from his daily contact with the more hopeful among students the elixir of teaching life and it is very necessary that he should do so. For when teaching is a mere matter of routine, it is only talking, the man is a phonograph, there is nothing vital in him. Again, it is the very essence of the Unit system that he should be given the opportunity to remain a student, and if this is necessary to vitalise his teaching it is no less fitting in his relations with students. We shall call to mind the warning of St. Thomas à Kempis that "learned men are very willing to seem wise and to be called so." No pose as of a master should mark the teacher among his disciples. He is their comrade, one of the pack. Above everything the Director must hold his students. If he fail in this nothing else matters, and if we wish for assurance that he will not in fact so fail in the future, we shall require proof that he has succeeded in the past.

With regard to research, where a candidate possesses the necessary credentials no difficulties will arise. But where the right man is not available we may be tempted to be put off with the second best. There may grow up a tendency to take from his laboratory a work-a-day fellow, without ideas, without any educational purpose whatever, with indeed nothing to offer but his own technique, and to place him in charge of wards, so persuading ourselves that the problem has been solved. No wiser plan this than to take your mediocre physician or surgeon and to put under him a laboratory, buttressing his ignorance with a junior assistant or two conversant with technical methods, and then to claim him as our scientific physician armed at all points for the great adventure. The whole art of medicine is in observation, and if the Director has not that art he is out of place in his office. How shall we teach students to observe if we have not learnt ourselves? And is a man to come by this most difficult art by the simple means of taking him from his laboratory and placing him for a few months in charge of a ward? "Clinical teaching is not easier than laboratory teaching, it is more difficult; clinical research is not easier than laboratory research, it is more complicated." It is hoped that in the Unit organisation the Director may remain during his working life in close touch and sympathy with the resources which the accessory services are constantly placing at his disposal. Certainly it may reasonably be required of him that he add to knowledge, but if he appear to have the mental outfit that holds forth a reasonable prospect that he will in fact do so, we shall do wrong to tether him to any one line of investigation. If he adopt the Hunterian motto, "Do not think, but try," we shall be content; we want no more of him.

It is fitting here that we should speak of the problems of the Director of the Surgical Unit, and their relation to research. His task is more difficult. He may be an arresting teacher; there are many such. His technique perhaps is immaculate; it is not uncommon. What can he add that his colleagues do not already give? As I think, not a little. The estrangement which gradually grows up between the practising consultant and the preliminary and intermediate sciences is perhaps deeper, at any rate more visible, in surgery than in medicine. We shall ask of the Director of the Surgical Unit that he act as an intermediary. If, for example, the office had been in existence a decade since, we might reasonably have required of him that he should work out the physics of gastro-enterostomy, the factors that determine success or failure, so that we might not have been compelled to wait for the experience derived from many after-histories and not a few failures to formulate in our minds the indications and contra-indications for that operation. He has a virgin field, and his harvest will ripen before that which his medical colleague has sowed is apparent above ground. We seek for the ideal, but if its fulfilment belongs to another time let us feel assured that we have found in him, who in the phrase of the Iliad is to be the nurse of men, those attributes of leadership which we recognise when seen and acknowledge as admirable in other walks of life. Where a Unit is seen to languish, where its very existence is the target of criticism, there assuredly is this vital man wanting. And so we come to our final and most pressing need, the capacity for leadership and for organisation, a need which has been grievously neglected. The Unit organisation is a scaffolding, and the building has yet to be raised up. We ask of the architect that however he may lean on the past he will bring to his work an individual offering. And we shall require of him not solely contributions to research, but also an addition to those larger educational conceptions and developments for which a unique opportunity is furnished by the Unit system. And quite apart from this opportunity the Director in a more modest way may be very helpful to those who are struggling with the educational problems that cluster round the reform of the curriculum; he will, too, have something to say about the more intimate correlation between preliminary, intermediate, and final subjects. And if he should possess a full and deep acquaintance with the great principles of the fundamental sciences upon which our art is based, I confess to hoping that in the atmosphere of the Unit organisation he will not neglect the study of the humanities.

In the task that he has set himself the Director will find his youth very precious to him. Harvey complained in his day that "few men above this critical age (40) seemed able to accept the doctrine of the circulation of the blood." Those among us upon whom that fate is beginning to cast its shadow may hope that the receptive age is nowadays a little longer, but put it as you will this affair of Units is a young man's task. He will get from the elders the best of counsel, but the faith and the driving force and the forward view must be his, and without them he is lost. To take a man past middle age and to ask him to inaugurate a new system that is foreign to all the ways of his life can lead nowhere, and it is idle, therefore, to demand of our candidate that he should come to his post with an assured fame, a name built upon years of research. We have rather to ask of authority that it should put the stamp of its recognition upon merit a little before and not after the public verdict. And this is the more necessary, for we shall ask of this man tasks of organisation which might be distasteful to, and even foreign to the talents of, one whose ways have long been set in a particular groove.

In our doubts the tendency to turn for a Director to a pale and ineffectual type, the scientific recluse who has fallen out of the ranks of the competitive world, is so strong, and so fatal to the system, that I wish to stress again those qualities of temperament and character that are needful to the well-being of the whole undertaking. It is trite to assert that the system cannot exist long if the Director has no hold upon students, but in actual practice the axiom often meets with only lip service. An appointment to a Unit falls vacant, and the candidates' credentials are freely canvassed. We reject straightway the pure clinician, and as rightly will have nothing to do with the man whose experience is confined to laboratories. Then we are in trouble. Our Admirable Crichton is nowhere to be found, and in our perplexity at last we hit upon one who appears to have a foot in both camps. We scrutinise his contributions to knowledge and weigh the value of his published research, and then if they are passably decent our task, we feel, is done. But we do not stop to inquire what imprints this man has left on his school and on his contemporaries, how far he is fitted to govern and direct. He has to steer his craft in its first voyage across strange seas, and by all appearances he will have heavy weather. Whatever other qualities he may possess that seem likely to do justice to his lofty ideals, he must have the force of character, the drive, the will to conquer in a school that may be only tepid in its welcome to his aim and purpose.

He will not be allowed to build altogether in peace, and he and his assistants in the Unit will find their salvation in Lord Morley's Essay on Compromise, with its just discrimination between compromise in the field of action and compromise in the field of thought. He will learn that while pliancy may be fitting in the first it may be near to treachery in the last. There is great need for toleration, not only that a new experiment may receive a fair trial, but also that we may approach the task in hand in the spirit of detachment befitting a great educational adventure. So only can we build not amid the distractions of personal controversy, but with the help and counsel of the elders of our calling. When sorely perplexed by the difficulties which beset the advocate of Units, and in doubt as to the real aim and purpose that we should set before us, I confess I turn for guidance not so much to the present as to the past. Everything that we want is to be found in the writings of the late Sir William Osler and of the Regius Professor of Physic in the University of Cambridge, happily still with us, though it is natural that we should think of him as of the past, for his voice has the detachment which we are not wont to associate with the daily strife and turmoil of the present. The justification of Units, if they have one, is indeed not based upon any new set of conditions, but has its roots in the orderly development of English medicine: they are but a step in its evolution, which at the present time may appear to us rather more important than it is. The aim of medical education is no different from that of education in general, and they who have looked long upon wide horizons are best equipped to counsel those of us who can only offer for the harvest of experience the enthusiasm of youth.

If literature is the effective agency of cherishing within us the ideal, it may be that in the passage of time this development in our schools will come to play the same part in medical education. Meanwhile those whose happy fortune it is to labour in this field shall have no fear that if the Unit system should come to an end their sowing will have no reaping. For if this happen some new and better plan must surely grow in its place, and the soil that has been lovingly tended will bear the richer harvest, of which harvest others in good time shall have the gathering.

TUBERCULOSIS.

German Views on Surgical Tuberculosis.

AT the forty-fifth session of the German Surgical Society many and conflicting views were expressed as to the treatment suitable for surgical tuberculosis. Prof. Bier[1] pushed his advocacy of conservatism in the treatment of tuberculosis of the bones and joints to a point that drew much criticism from several of his colleagues. In his opinion operative treatment was indicated only when amyloid disease threatened, sepsis supervened, or when severe disease of the joints was complicated by destructive pulmonary tuberculosis. Even when osseous foci of disease were extracapsular he no longer interfered with the knife, and he did not consider it invariably necessary to remove sequestra by operation even when they were septic. His belief in the spontaneous resorption of sequestra had the proverbial red-rag-to-a-bull effect on some of his fellow surgeons. He did not consider subluxation of the knee an indication for resection, but for gradual readjustment by extension and postural treatment. He left cold abscesses severely alone or limited interference to aspiration without the injection of any foreign substance. His objections to opening tuberculous abscesses applied also to those derived from the spine, and his attitude towards Albee's operation for immobilisation of the spine in Pott's disease was frankly hostile. The three remedies which he considered most important were sunlight, passive congestion, and the internal administration of iodine; even severe forms of surgical tuberculosis could be cured, in his opinion, by this trinity. He had some suggestive views on pigmentation of the skin—a process which he compared with the reaction of the body to protein therapy. This pigment, he thought, was derived from the colouring matter of the blood, and was the outward and visible sign of protein metabolism. The specific action of the sun on the affected joint was not due to local processes, but to a general reaction by which the defensive properties of the organism were mobilised. As for passive congestion, its effects were excellent, provided the dosage was suitable, and cold abscesses and the too luxuriant growth of granulation tissue were held in check by the internal administration of iodine. He had used tuberculin with considerable success in his out-patient practice, but he had seen no benefit from Friedmann's remedy towards which he had at first been favourably biased. Another point over which he differed profoundly from several of his colleagues was the harmfulness of dressings which immobilised the limb. He kept patients with disease of the lower limbs exposed to the sun in bed or with dressings which only relieved pressure without immobilisation; as soon as pain had vanished he advocated systematic exercises.

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[1] Deut. med. Woch., April 28th, 1921.

Other speakers were König, of Wurzburg; Garrè, of Bonn; v. Eiselsberg, of Vienna; Müller, of Rostock; Borchardt, of Berlin; and Sauerbruch, of Munich. The latter remarked that on one point all the speakers seemed to agree; of the great value of sunlight, even in the lowlands, all were emphatically convinced. König, who would not subscribe to Bier's rigid conservatism, referred to an *enquête* addressed to 22 leading surgeons whose answers showed that there were three chief schools of thought in this matter. The extreme conservative school was represented by Bier and nobody else, although many surgeons recognised the value of conservative treatment early in life. The intermediate school advocated operative treatment provided conservative treatment had failed after a fair trial. The third school had a penchant for resections and amputations. König himself was in favour of the operative removal of foci of disease in bone, particularly when they threatened to invade a joint; if this happened he advocated resection, and he operated at once for severe] mixed infection. He threw an interesting sidelight on the subject by referring to the opposition of insurance societies to conservative treatment on account of the time it took and of the psychic deterioration entailed. Garrè disclaimed any love for passive congestion and iodine medication, and was not ashamed to confess that he injected iodoform and glycerine into cold abscesses, and that he could not dispense with dressings which immobilised the limb. He considered it advisable to dig out sequestra when they were near a joint, and he did not think it possible that definite subluxation of the knee-joint could be corrected by extension only. Winding up the discussion Bier toned down some of his original expressions of opinion, and he made the concession that plaster-of-Paris dressings might be used provided they were made to be taken off easily. Within the past seven years he had performed only about 12 major operations for tuberculosis of the bones.

Treatment of Pulmonary Tuberculosis by Deycke-Much Partial Antigens.

The literature of partial antigen or partigen treatment is already prodigious, and if quantity is in any degree an index of quality there must really be something in this method. Unfortunately many writers advocating this treatment feel more inclined to indulge in speculative digressions and in recapitulations of complicated theories than to give a plain account of results seen in the flesh. In a recent paper[2] Dr. M. Landolt, Director of a sanatorium in Barmelweid, rations himself with commendable frugality in the matter of Deycke-Much theories, and devotes himself chiefly to the technique of the treatment and the results obtained thereby. With regard to technique he greatly prefers the intracutaneous to the intramuscular injection, as the latter is apt to provoke an obscure reaction which is not betrayed till the scales show loss of weight. He also makes a point of using a separate syringe for each partigen, and for each concentration of the same partigen. Reviewing his results he shows that 75·4 per cent. of his 122 partigen-treated patients were discharged as "much improved," whereas only 47·6 per cent. of the 82 patients treated by subcutaneous injections of old tuberculin could be put in this category on discharge. A comparison of the gain of weight in these two classes was also much in favour of partigen treatment. But, as Dr. Landolt admits, the comparison was hardly just to old tuberculin, for this was given subcutaneously, and it is conceivable that, had it been given by intracutaneous injection, the results might have approximated more closely to those of partigen treatment.

The Costs of Tuberculosis.

In a paper[3] by Dr. Louis I. Dublin and Dr. Jessamine Whitney a new attempt has been made to calculate the economic cost of tuberculosis to a modern community. Their studies were instituted by the Metropolitan Life Insurance Company and the National Tuberculosis Association, and were, to a certain extent, conducted on the lines already followed by Prof. Glover. They find that wage-earning white males lose 3·5 years in all or 7·6 per cent. of their entire expectancy. Coloured males and females lose about five years of life. It is also calculated that a loss of one year of life is equivalent to a loss of not less than $100 in national wealth. As tuberculosis cuts approximately two and a half years from every individual, the loss per person is at least $250. This, in a population of approximately 106 millions, represents a loss of over 26 billion dollars. Nor does this calculation include the very large additional losses entailed by long periods of ill-health due to tuberculosis. This paper is a powerful plea for combating tuberculosis for economic as well as for humanitarian reasons.

The Rôle of the Tonsils in Pulmonary Tuberculosis.

According to medical travellers returning to Europe from a tour of inspection of the leading clinics in the U.S.A., the tonsils are at present looming large on the American horizon as foci of disease. It remains to be seen whether the wholesale shedding of its tonsils by a civilised community will greatly reduce the incidence of diseases such as rheumatoid arthritis, but there is already a considerable amount of evidence to damn the tonsils as a potent source of disease. In a recent paper by Dr. James Gerret van Zwaluwenburg and Dr. G. P. Grabfield,[4] a plausible case is made out for linking up primary tuberculosis of the tonsils with that form of pulmonary tuberculosis which begins with an apical pleurisy and is later manifested by tuberculous infiltration of the apices of the upper lobes. Their evidence is mainly rontgenological. Rontgenologists are familiar with a shadow at the apex of the lung which is generally interpreted as a sign of localised thickening of the pleura, and is spoken of as a "pleural cap." The main thesis of this paper is to prove that this

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[2] Schweiz. med. Woch., May 5th, 1921.
[3] American Review of Tuberculosis, April, 1921.
[4] American Review of Tuberculosis, March, 1921.

"cap" is of tuberculous origin, the result of a downward extension of tuberculosis from the tonsils and through the cervical lymphatics. At the Department of Pathology in the University Hospital of Ann Arbor, Michigan, all the tonsils removed for various reasons were examined for tuberculosis, one section of each tonsil being taken so as to include almost all the crypts. Sixteen persons whose tonsils showed tuberculous foci were subjected to an X ray examination of the chest, and all with but one exception showed a "pleural cap." The X ray examinations of the chests of 27 persons whose extirpated tonsils were found to be free from tuberculosis revealed only three cases of a "pleural cap," and in none of these three did this "cap" amount to more than a relatively fine line without demonstrable evidence of tuberculosis in the underlying lung. To ascertain the frequency of this "pleural cap" in other conditions the 318 chest radiograms taken over a typical three months' period were scrutinised. Unfortunately the figures given in the text do not tally with the corresponding figures given in an adjoining table, but one fact seems to emerge with clearness; in at least 10 per cent. of all the radiograms there were signs of an apical pleuritis as the sole indication of tuberculosis. The authors suggest that the pleura offers a considerable barrier to the further progress of this descending infection, and that the disease is frequently arrested at this point. They have succeeded in demonstrating the quiescence of the denser type of "pleural cap" over a considerable period, and they consider that the denser and the more sharply defined this shadow the more harmless it is. On the other hand, they view with suspicion those "caps" which are lacking in density and which show irregularities on the visceral surfaces, for these features may indicate inadequate cicatrisation and the possibility of propagation of the disease along the connective-tissue elements of the lung. If these views are confirmed by other investigators a definite advance in our knowledge of the ætiology of pulmonary tuberculosis will have been made.

Wildbolz's Auto-Urine Reaction.

Wildbolz's test for active, as distinct from latent, tuberculosis has not of late had a good press. He believed that in the urine of the subjects of active tuberculosis there are specific tuberculous antigens, the existence of which can be demonstrated by the intracutaneous injection of the patient's concentrated urine. The patient himself and any other person with active tuberculosis would, he argued, give a positive reaction, as shown by a small, indurated swelling, whereas no such change would be found if the patient's tuberculosis were no longer in an active stage. But Dr. H. Trenkel,[5] who has subjected the test to a searching examination at Dr. Amrein's sanatorium at Arosa, is very sceptical as to the specificity of the test, and he suspects the so-called positive reaction as being nothing more than a "salt reaction." In six controls—persons whom he had no valid reason for regarding as tuberculous—the reaction was positive, and only in two such controls was it negative. It was also negative in some cases of active tuberculosis. The cogency of his criticism is accentuated by his claim that he has faithfully followed every detail of the test as described by Wildbolz. Dr. R. Offenbacher[6] has investigated this test at the hospital of the Jewish community in Berlin, and, like Dr. Trenkel, he adds force to his criticism by insisting on the strict orthodoxy of his technique. Only in three out of 20 cases of clinically active tuberculosis could he provoke a positive reaction, and he could establish no correlation between the outcome of the test and the condition of the patient. He is, however, less whole-heartedly sceptical than Dr. Trenkel, and he admits that there may be some connexion between the reaction and the activity of the disease. Dr. E. Liebhardt[7] is another critic who blends faint praise with discouraging figures. Working at the communal hospital at Nurnberg, he has experimented with the test in 51 cases, only a proportion of which were tuberculous. His 11 non-tuberculous controls invariably gave a negative reaction, and so far an important substantiation of Wildbolz's claims seems to have been made. But the reaction was also negative in four out of 19 cases of active pulmonary tuberculosis, and in several other cases in this class the reaction was so slight that it would have been missed and labelled "negative," but for a pin's head nodule which was palpable but not visible. Dr. Liebhardt's observations on the subtleties of the test and the interpretation thereof may possibly afford a clue to the conflicting evidence of other workers. Dr. H. Alexander,[8] who is chief medical officer of the Seehof Sanatorium at Davos-Dorf, has subjected Wildbolz's reaction to a varied series of tests. Altogether he has repeated the test 159 times, and among his 91 cases, including several non-tuberculous controls, he found much to confirm Wildbolz's claims. But in as many as 15 cases of definitely active tuberculosis the auto-urine reaction was negative. It was also negative in 12 out of 13 persons showing no clinical evidence of tuberculosis. He is inclined to regard the reaction as specific, and when it is positive he considers the evidence in favour of active tuberculosis to be quite strong. A negative reaction, on the other hand, is, at present, of comparatively little value; and it seems that he could establish no relation between the reaction of the skin to an intracutaneous injection of tuberculin and Wildbolz's reaction. He found the reaction was considerably weaker with urine concentrated by evaporation in an open water-bath than with urine concentrated by evaporation in vacuo. He also never obtained a positive reaction with unconcentrated urine. In its present stage the test can evidently not be relied on, and it seems doubtful whether so complex a substance as urine can be expected to lend itself to such a delicate and discriminating test as that which Wildbolz has devised.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

INDIGENOUS DRUGS OF INDIA.

SEVERAL debates took place in the Legislative Council of 1918 on the question of Ayurvedic and Unani drugs and the indigenous drugs of India. The speakers pressed for an investigation of these drugs, urging among other things that Ayurvedic and Unani medicines were as efficacious as those of the British Pharmacopœia; that the indigenous systems were cheaper than Western medicine; and that careful investigation would discover a large number of very valuable but hitherto unknown remedies.

Dr. Koman's Reports.

As a result the Madras Government appointed Dr. M. C. Koman, an Indian medical man attached to the Medical College, Madras, to carry out an investigation, and after more than two years work three reports have been published which throw considerable light on the various points raised in the Legislative Council. As a preliminary, visits were paid to Ayurvedic pharmacies and dispensaries, and after collecting the most important drugs and compound preparations, Dr. Koman experimented with these on suitable patients in the wards of the Madras General Hospital. It was quite impossible in the period to investigate more than the therapeutical actions of the medicines, as a well-equipped laboratory and staff would have been required in order to make a pharmacological and toxicological research successful.

Since the time of Ainslie (1826), who first created an impetus for the study of indigenous drugs of India, there has been, Dr. Koman states, a cont-increasing interest manifested by the members of the medical profession in India in the investigation of indigenous drugs. Warden and Hooper's work, the reports of the Indigenous Drugs Committee, and the work of Waring, Mohideen Sheriff, W. C. Dutt, and K. L. Dey, prove that all important indigenous medicinal plants have already been investigated, and Dr. Koman adds: "in vain have I attempted to find any drug or medicine whose reputed marvellous properties are shrouded in mystery or have not been already known." In fact, he found, with few exceptions, the practising *vaidyas* and *hakeems* generally unversed and unintelligent, though industrious and well-meaning, and nearly all evinced a firm conviction and belief in the intervention of evil spirits and offered many curious and absurd rules for averting their machinations.

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[5] Beitr. z. Klin. d. Tuberk., 1921, xlvii., 219.

[6] Ztschr. f. Tuberk., 1920, xxxii., 335.

[7] Ibid., 1921, xxxiv., 99.

[8] Ibid., 1921, xxxiii., 321.

Principles of Ayurvedic Medication.

The properties of drugs are, according to them, correlated to the hypothesis of the three humours, wind, bile, and phlegm, which forms the basis of the ætiology, diagnosis, prognosis, and treatment of disease in Hindu medicine. This, as Dr. Koman says, might have formed a working basis in the ancient days of Maharishis, and before Harvey discovered the circulation of the blood, but it cannot hold good against the rational scientific physiology and pathology of the present day. Inquiries regarding specific or general treatment for cases of cerebral apoplexy, locomotor ataxia, the different forms of Bright's disease, cirrhosis of the liver, kala-azar, &c., elicited the fact that these diseases were beyond the scope of successful treatment. There seems, indeed, little if anything for us to learn from the methods of treatment followed by the *vaidyas* and *hakeem*. At the same time Dr. Koman produces figures to prove that the cost of maintaining an Ayurvedic dispensary is much the same as that of maintaining an ordinary dispensary, whilst in addition the Ayurvedic system, with the exception of cataract couching, confines itself to the treatment of medical diseases.

A few drugs proved to be of considerable value, and Dr. Koman recommends that these might be incorporated into the Pharmacopœia of the Presidency hospitals, although a good deal of further work should be done and considerably more experience gained before they can be universally commended. It is also suggested that, as a guide to medical students, the important Indian drugs should be included in the course of lectures on materia medica at the Madras Medical College.

Included in Dr. Koman's list are: (1) *Hydnocarpus inebrians*, a potent drug in ameliorating the complications of leprosy; (2) *Kirmani* (*Artemisia maritima*), a substitute for santonin; (3) *Chempullanhi* (*Colycopterus floribunda*), an efficacious anthelmintic; (4) *Boerhavia diffusa*, a good diuretic in cases of anasarca, the result of Bright's disease. In a second appendix is given a list of 40 drugs or compounds found to be "useful," but not as effective as medicines already in the B.P. They are given as they are cheaper and more easily obtained than their B.P. equivalents.

Towards an Indian Pharmacopœia.

The Government in reviewing Dr. Koman's reports consider it worth while to continue the experiments with the drugs which have been found to be of value, with a view to their gradual incorporation in the Pharmacopœia of the Presidency Hospitals. There is little doubt, however, that the reports do not meet with the approval of those who asked for the investigation. In spite of Dr. Koman's nationality, they are convinced that his training in Western medicine prejudiced him from the beginning, but all those who are acquainted with the investigator will endorse the compliment paid him by the Government when they anked him for carrying out a difficult task with ommon tact, industry, and patience under very vourable conditions.

dras, May 12th.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Humanitarian Warfare and Bullet Wounds.

Dr. Pafucan recently read a paper at the Medical Union, Bucharest, on bullet wounds in their relation to humanitarian warfare, in which he stated that in the recent war the Serbians and Italians used old-style rifles, which were, however, excellent as regards the safety of the rifle carriers. Their bullets were of larger size and higher velocity than those of the Russians. Moreover, the Russian bullets were pointed, and penetrating wounds caused by them healed very well, whereas the Serbian, Austro-Hungarian, and Montenegrin bullets were very destructive of tissue. No tissues could withstand the impaction or in any way deviate the course of the Russian bullet; the wound is usually so cleanly incised that no pieces of clothing are carried in. The bone is rarely splintered, except in cases where shrapnel is used. The blood-vessels were very often injured, and Dr. Pafucan reported several cases of aneurysm of the popliteal as well as of other arteries. Many of the nerve trunks were attacked. Although these wounds usually healed easily and without reaction, meddlesome examinations were sure to react unfavourably on the course of healing. Pus appeared only in those cases where the tissues around the path of the bullet were invaded. Another complication arose from the frequently large cicatrices and tough adhesions. Out of 496 gunshot wounds there were 27 cranial, 21 being through the substance of the brain. Deep penetrating lesions in this region were not accompanied by any destruction of the bones of the skull; the latter was observed only in the superficial wounds. Six of the cases were accompanied by paralysis of the arm and leg; two presented the symptoms of cortical epilepsy evidently due to pressure and removed by operation. The general results of wounds of the lungs were rather favourable, all of them, with two exceptions, being penetrating. There was hæmoptysis in 22, subcutaneous emphysema in four, and extensive hæmothorax in one. Dr. Pafucan had observed 43 cases of abdominal trauma, all of which were penetrating wounds; of these only five died, chiefly owing to neglect of treatment; one death was caused by peritonitis. There were several penetrating wounds of the liver, spleen, and kidneys.

Disorders of the Heart in Adolescents.

Dr. Goldenberg, chief medical inspector of the Middle Schools, has written a small pamphlet on the above subject, in which he states that he has found comparative hypertrophy of the artery walls not uncommon in older children and at puberty, but the accompanying blood pressure is not materially increased, although there may be palpitations and a sense of oppression in the chest. The cause is a "growth hypertrophy," as a rule, although masturbation has been accused of the results. Lack of dilatation of the heart, lack of murmurs, normal size of the liver, good health otherwise, and absence of aggravation of the symptoms by physical exercise, render an organic lesion improbable. Children are particularly prone to arrhythmia, brought on by the slightest causes; the harmless arrhythmia is distinguished by the full and powerful pulse beat, the diastole alone varying in length. This form of arrhythmia also subsides if the heart action becomes accelerated, as the abnormally long diastoles are then shortened. This infantile type of harmless arrhythmia may persist beyond puberty, and give grounds for alarm if casually discovered first in a young pregnant woman. Arrhythmia due to actual organic disease is generally the result of extra-systoles: the latter may be accepted as suspicious of a genuine organic heart lesion; but they may also occur solely from some nervous affection, and may even be the first manifestation of an organic nervous disease. No one, according to Dr. Goldenberg, has yet succeeded in inducing extra-systoles by irritation of the heart nerves. The arrhythmia in tuberculous meningitis is of the infantile type—that is, it seems to be due exclusively to diastoles of various length. He maintains that heart murmurs may also be observed without organic lesions. Lüthje found systolic murmurs in 623 out of 857 children examined, but only 2 per cent. of the total number had certain signs of valvular disease. Beyer detected a systolic murmur in 352 out of 830 school children examined (more frequently in girls). In 253 cases the murmur was audible during repose; in the others, only after gymnastic exercises, and only in 14 cases were concomitant signs of a heart defect to be detected. Dr. Goldenberg explains these accidental murmurs as due merely to certain physiological and anatomical peculiarities of the circulation in children, differing possibly in various cases, such as more rapid flow of blood in the anæmic, or a slight and transient muscular mitral insufficiency.

Colony for Sane Epileptics.

The city council of Czernovitz has received the report of a deputation appointed to visit foreign, and particularly English, colonies for sane epileptics, in view of the projected colony to be started by the Bukovina province, of which Czernovitz is the capital. The deputation recommended as the most economical plan that the accommodation should be of the colony type, with villas to hold 15 to 20 patients. Central administrative buildings would also be required, as the colony would admit patients from the whole of Roumania, and the deputation recommended the erection of large workshops, so that continuous employment might be provided in bad weather when the patients could not be employed out of doors at farm and garden work. It is considered that constant work is the best thing for warding off attacks and conducing to a contented and peaceful state of mind. Though many epileptics are bad workers, the report states that proper personal supervision of their individual wants gives better working results. It is estimated that the number of epileptics for whom accommodation would be required is about 200.

The "Single-Child" System in Transylvania.

The Child Study Society of Transylvania has collected much data relating to the "single-child" system, which prevails chiefly in the Banat (the south-western part of Transylvania); their report states that until recently it had been thought that the system was thought to be purely a question of economics. People did not wish to distribute their lands and wealth between several children, but the custom had now become independent of land questions. It was quite clear that the "single-child" family did become not richer but poorer. The "single-child" generation tended to grow up idle and self-indulgent. If they were landed proprietors their farms were worked by others, necessitating payment of heavy wages. Farmers began to understand that the single-child system meant their ruin, but the custom was deeply rooted and the people were very conservative. People who had several children were actually despised. Another reason for the single-child system was feminine vanity; women thought that by avoiding childbirth they would remain young and enjoy life for a longer time. The spread of the system was aided by midwives and quacks, and, unfortunately, by doctors also; it was further promoted by unprincipled dealers in preventives, and by offensive advertisements in the press. The only child was spoilt by his parents, and too often entered early into a career of dissipation, the result being rapid physical and mental deterioration. The report points out that such a system must ultimately ruin the whole people.

Bucharest, June 9th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

A Medical Strike.

ON the last day of May occurred an incident which a short time ago would have seemed impossible. All doctors in Vienna and Lower Austria, numbering about 4800 (out of 6600 in the whole Austrian Republic), declared a strike lasting from 10 A.M. to 4 P.M. as a demonstration against the attitude of the Government, which is regarded as injurious to the interests of the profession. It was pointed out in a previous letter (THE LANCET, May 14th, p. 1043) that serious dissatisfaction prevailed in medical circles in regard to the recent acts of legislation, and that the relations between the profession as a whole and the authorities of the State were very strained. The new "Dentists Act," which gives to non-medical men the permission to do medical, or rather surgical, work on patients, finally brought the problem to a crisis. The Medical Council, together with the Economic Organisation, at once arranged for a demonstration which should indicate that the patience of the profession had been overtaxed. In spite of adverse criticism, especially amongst physicians of the older type, it was decided to stop all kind of medical work. A strike was ordered, and all private doctors, as well as the men working in the hospitals and charitable institutions in the city and district named, obeyed the order. Care was, of course, taken that pressing cases were not left without help, but on that day all other kind of medical work was brought to a standstill during the time mentioned above. At the same time a mass meeting of all the doctors on strike was convened, and the presidents of the medical representative bodies were able to point out, amidst a scene of enthusiasm, that for the first time in the history of the profession in Austria it had become possible to unite all medical men without exception against interference with their vital interests. The meeting carried unanimously resolutions, of which the following are abstracts:—

1. The medical profession protests most energetically against the present attitude of the authorities and legislative bodies in all problems of hygiene and public health. It demands that the medical corporations be acquainted with all measures of an economical or political nature affecting the interests of the profession before such measures are settled by Parliament, and expects the same treatment in this respect as that at present enjoyed by members of other callings.

2. A supreme health council shall be created, on which representatives of the profession are to hold a consulting interest, and this must be constructed in such a way that the majority of the members are practitioners and scientists holding a medical degree.

3. The present method of sickness insurance shall be replaced by a modern organisation ensuring a maximum of benefit both to the insured population and to the doctors working under the scheme; the economic interests of both parties to be cared for by a committee working under direct control of the Ministry responsible for social administration.

4. The profession demands an independent Ministry of Public Health, whose head shall be a doctor of medicine, and must be on equal footing with the other Ministers.

5. A new Health Act shall be brought at once before the legislative bodies; in order to begin with real sanitation of the country, the latest achievements of hygiene and public health must be embodied in it, and every law must, before passing the National Assembly, be referred to the Supreme Council of Health. The responsibility of all State officials for damage to individual health caused by their action or decision should be stated in this Act. Furthermore, the Act should expressly state that only duly qualified persons are permitted to practise on the human body and treat it in conditions of disease, such permission being subsequent to at least two years' service in a hospital.

6. Old age and sickness insurance shall be made compulsory for all practitioners; a reform of the medical curriculum, combined with post-graduate lectures free of charge, but compulsory after a lapse of years, are earnestly demanded.

The profession also desires convincing proof of compliance on the part of the Government with the demands framed in these six points. Medical men have often and too long been put off by promises, and they have now made up their minds to see their demands fulfilled. Unless the Government binds itself within four weeks to acknowledge the necessity of meeting these points, the entire profession will take up the fight and, if forced to do so, will stop all medical work. It is with the utmost reluctance that the leaders of the medical organisations have recommended such a step, but in this country it seems that only drastic measures can produce an effect on the mentality of members of the Government.

Proposed Health Certificate for Marriage.

The Vienna Board of Health has taken an important step in the direction of promoting control of public health by instituting three committees, each consisting of three fully qualified scientists, to draw up definite suggestions as to the issue of a health certificate to all parties intending to marry. The chief instigator of the procedure is Prof. Tandler, the former Under-Secretary of State for Health, and now head of the Office of Health in Vienna. He asserts that there are three groups of diseases which he intends to combat: sexual diseases, tuberculosis, and degenerative diseases in persons of tainted family. Every person must produce before marriage a certificate showing that he or she is not prone to one of the above-mentioned group, and the examination should be conducted in a thorough, but humane way. Professional secrecy would, of course, be guarded in a most strict manner, but the other party to the engagement would, naturally, be entitled to obtain full knowledge of the reasons for refusal of the permit to marry. Prof. Tandler believes that the setting up of committees will prompt many negligent patients to apply for treatment, and approach very nearly to the ideal condition of compulsion in respect of sexual disease. Refusal of a marriage permit could be withdrawn after appropriate treatment had been administered. The right of the community to control the health of its members is unquestionable, since it is entitled to send them to death on the battlefield. At present the number of persons suffering from tuberculosis is increasing steadily, and the morbidity from syphilis and gonorrhœa is alarmingly high, especially in the towns; indifference to the fate of the coming generation is therefore nothing less than a crime. The proposed "celibacy of the diseased" must not, of course, be restricted to poor people only, for it is just the wealthier classes of the population who could evade such a disagreeable condition of legislation, unless due precaution be taken. As is to be seen from these leading points, the main idea behind the suggestion of a health certificate for those about to marry is control of the health of children. Such a certificate would naturally only interfere with the legitimate descendants; illegitimate children could not be protected by it. But partial prophylaxis is better than none at all.

June 10th.

THE LATE DR. CHARLES E. CAMPBELL-HORSFALL.—The death is announced of Dr. Charles Campbell-Horsfall at Newquay. Dr. Campbell-Horsfall was the youngest son of the late Dr. Henry Horsfal; born at Masham, Yorkshire, in 1877, he was educated at Christ's Hospital, Trinity College, Harrogate, Yorkshire College, and Victoria University, becoming house physician at Leeds Infirmary, and house surgeon of Leeds Women's and Children's Hospital in 1899. He married, in 1901, Lilias Marianne, daughter of the late Robert Hume Campbell, of Glenclarnel. In 1901 he settled at Clevedon, Somerset, where his good work was such that when he resolved to leave the neighbourhood and seek a wider sphere a very largely signed petition was presented to him by the residents requesting him to reconsider his decision. He then entered practice at Newquay, where he secured a wide circle of friends and patients by kindness and ability. He sought recreation in field sports, with the whole-heartedness that characterised the discharge of his professional duties, and it was beside a moorland trout stream that he contracted the chill which finally proved fatal.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Hospitals.

THE report of the Board of Superintendence of the Dublin hospitals reveals their serious financial position. Only one of these institutions, the Westmorland Lock Hospital, has in the past year been able to keep its expenditure within its income. All the others, in spite of every economy in management, are weighed down by overdrafts. The report makes clear once again that the hospitals cannot continue to exist unless some new source of revenue is found. On the same day that the report of the Board was made public it was also announced that the Irish hospitals were not to share in the grant of half a million which the Government has promised to provide to meet urgent necessities. The omission with be felt in Ireland, where the hospitals owe their financial difficulties to the abnormal economic conditions of the past few years, just as much as the institutions in other parts of the kingdom do. These economic conditions have pressed especially hardly on Dublin, for business people and manufacturers in Ireland, outside Belfast did not share in the various war industries. Moreover, no part of the kingdom contributed so much to Red Cross Funds, in proportion to its wealth, as Ireland, and in none, therefore, did the hospitals suffer more from competition with claims for Red Cross purposes. On the other hand, the hospitality of the Irish hospitals to sick and wounded soldiers was given and accepted as freely as that of the hospitals elsewhere. It is not to be expected that those interested in the health of Ireland will assent calmly to the exclusion proposed by the Minister of Health.

Dublin Milk.

The Local Government Board has just issued a report on the milk of Dublin, based on investigations conducted by the bacteriologist to the Board, Dr. J. W. Bigger. He describes a serious state of affairs. Of the specimens of milk examined, taken at random from the milk sold in the city, no less than 8 per cent. contained tubercle bacilli. Dr. Bigger comments on the dirty condition of much of the milk, and states that those who supply and sell dirty milk to the children of Dublin are responsible for the deaths of hundreds each year. As a matter of fact, if the regulations in force in New York were applied in Dublin, 77 per cent. of the milk now being sold in Dublin would be condemned as being unfit for human food. Dr. Bigger urges that those who sell dirty milk should be fined, imprisoned, or prohibited from selling milk. At present, offenders who are convicted of diluting or skimming milk are usually treated with the utmost leniency, while prosecutions are not brought for selling dirty milk.

Sir Stewart Woodhouse, M.D. Dub., F.R.C.P. Irel.

To the great regret of a large circle of friends, the death has been learnt of Sir Stewart Woodhouse at the age of 75. Educated at Trinity College, Dublin, where he had a distinguished course in arts, obtaining high honours in both classics and philosophy, Stewart Woodhouse proceeded to medicine, graduating in 1872. Two years later he became a Fellow of the Royal College of Surgeons in Ireland, though he resigned this degree on becoming a Fellow of the Royal College of Physicians. In his early professional days he was lecturer in pathology in the Carmichael School of Medicine, and assistant physician to the House of Industry Hospitals, while he was engaged in practice as a physician. He resigned these appointments and abandoned his practice in 1880 to become a medical inspector of the Local Government Board. Ten years later he was appointed medical member of the General Prisons Board, and some 15 years ago he received the honour of knighthood. During his whole career as a public servant he maintained a high standard of duty, while showing kindness and consideration to his subordinates. In private life he was an unassuming and attractive companion and a man of wide reading.

Sir John Walton Browne, D.L.

At the investiture held by His Majesty the King during his recent visit to Belfast the honour of knighthood was conferred upon Dr. John Walton Browne, D.L. He is one of the oldest and most popular members of the medical profession in Ulster, and has given valuable services in many capacities. He is consulting surgeon to the Royal Victoria Hospital, and surgeon to the Belfast Ophthalmic Hospital. His new honour has given much satisfaction to his many friends both in the profession and among the general public.

Dr. S. B. Boyd Campbell has been elected assistant physician to the Royal Victoria Hospital, Belfast, in succession to Dr. J. E. MacIlwaine, who has become staff physician.

Colonel Professor Thomas Sinclair, C.B., F.R.C.S., has been elected a member of the Senate of the Parliament of Northern Ireland.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE eightieth annual meeting of this Association will be held from July 11th to 15th, under the presidency of Dr. C. Hubert Bond, in the Barnes Hall of the Royal Society of Medicine, Wimpole-street, London, W. On June 11th meetings of the Educational and Parliamentary Committees will be held. On July 12th, at 10.30 A.M., the meeting will proceed to elect officers of the Association for the year 1921–22, and reports of the council, officers, and standing committees will be read. The nominee for the Third Maudsley Lecture will be Sir Maurice Craig. At 11.30 A.M. a paper will be read by Dr. P. W. Bedford, entitled "The Goldsol Test in Mental Disease." At 3 P.M. Dr. C. H. Bond will deliver his presidential address on the Position of Psychological Medicine in the Medical and Allied Services. At 4.30 P.M. Dr. Edwin Goodall will give a demonstration of X Ray Photography of Barium Meals in cases of Dementia Præcox; and, jointly with Dr. H. A. Scholberg, a note on the Diastase-Contents of the Urine in 120 Cases of Mental Disorder. On July 13th, at 10 A.M., the following papers will be read: The Oxford Clinic, by Dr. T. S. Good; Psychological Medicine in Relation to Industry, by Dr. C. S. Myers, F.R.S.; and the Problem of Prevention in the War Psychoses, by Dr. Bernard Hart. At 2.30 P.M. the following papers will be read: Legislative Restrictions in Connexion with the Treatment of Incipient Insanity, by Dr. Wilfred Caroleu, secretary of the Royal Academy of Medicine, Barcelona; Mental Defect and the School Medical Service, by Dr. George A. Auden; Expatiation Mechanism in a Case of Schizophrenia, by Dr. Henry Devine. On July 14th, at 10 A.M., Dr. W. Ford Robertson will read a paper on Chronic Bacterial Infections in Dementia Præcox, to be followed by a communication on Change of Phase in the Psychoses, by Dr. Thomas Beaton, and one on Recurrent Phantasies of Infancy and Childhood as a Source of Delusions, by Dr. Edward Mapother. At 3 P.M. the members will assemble at the Springfield Mental Hospital, Tooting, London, S.W., where a paper will be read by Dr. Henri Colin, of Paris, entitled "Mental Hygiene and Prophylaxy." At 4 P.M. the subcommittee of the Springfield Mental Hospital kindly invite members of the Association and friends to a garden party to be held in the grounds of the hospital. On July 15th, at 10 A.M., at the Royal Society of Medicine, Dr. J. T. Dunstan will speak on the Feeble-minded Problem in South Africa and Dr. William Brown on Psychology and Psychotherapy. In the afternoon members and friends are invited by the London Asylums Mental Deficiency Committee to visit the mental hospitals on their estate at Epsom. The annual dinner of the Association will be held at the Connaught Rooms, Great Queen-street, London, W.C., on Wednesday, July 13th, at 7.30 P.M. Members desiring to attend are asked to send 30*s.* (the inclusive cost) as early as possible to the general secretary (Dr. R. Worth), Springfield Mental Hospital, near Tooting, London, S.W. 17.

THE third annual meeting of the Mental Hospitals Association will be held in the Guildhall, E.C., to-day, Friday, July 1st, at 11.30 A.M.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Brighton.

IN the annual report for 1920 of the medical officer of health for Brighton (Dr. D. Forbes) the estimated population is given as 137,685. The net births were 3087, the highest recorded number since 1884, giving a birth-rate of 22·28. The death-rate was 12·42 and the infant mortality-rate 67, both being the lowest ever recorded. There were 141 deaths from pulmonary tubercle, giving a death-rate of 1·1 per 1000. Of the 306 new cases of pulmonary tubercle notified, 69 were imported cases. The number of new houses erected during the years 1914, 1915, 1916, 1917, 1918, 1919, and 1920 were 44, 22, 9, 1, 5, 0, and 30 respectively. Of the 30 new houses erected in 1920, 14 were built by the corporation. In addition to the public abattoir there are 18 private slaughter-houses. "It would be of great benefit to the town if all the private slaughter-houses were abolished." The slaughtering for Hove is done in Brighton. Of 303 samples of wholesale milks 5 per cent. were non-genuine and of 105 samples of retail milks 10 per cent. were non-genuine. The average milk fat in the wholesale samples was 3·41 per cent. and in the retail samples 3·42 per cent. Of 19 samples of "pure cream" purchased under the Milk and Cream Regulations, five were found to contain preservatives. Dr. Forbes recommends that the State should supply vaccines and sera, in order that there may be a guarantee as to potency and reliability. The hospital records as to "return" cases of scarlet fever are given for 11 years and show that the percentage of discharges followed by return cases after one month, three months, and a year are 2·4, 3·1, and 3·7 respectively. "It is a good rule to exclude discharged patients from school for a period of four weeks." "The most important dangerous conditions are sores about the nose and nasal discharge. No notice need be taken of desquamation, red throats, enlarged tonsils, or moist noses without actual discharge." Since 1910 the removal of bedding for steam disinfection after scarlet fever and diphtheria has been given up. Bedclothes and personal clothing are washed at home. The rooms are sprayed with formalin. Mattresses, bolsters, and palliasses are not disinfected. The change has apparently done no harm, and Dr. Forbes thinks the disinfection of bedding after these diseases as usually carried out is "useless and a waste of public money." The corporation pay £300 a year to the Queen's Nurses for the home nursing of consumptives, and the nurses receive tuition from the tuberculosis officer. "One of the most pressing wants of the consumptive is the provision of light work which he can take up or drop as his condition allows. Few employers could afford to engage men on such conditions, and it would seem necessarily to fall to the local authorities to provide open-air workshops with canteens and club rooms for consumptives. The advantages are too obvious to require enumeration." Lectures have been arranged for the parents of school children on sex hygiene, afternoon lectures for mothers, and evening lectures for fathers, and were well attended. 671 new cases of venereal disease were treated at the V.D. clinic at the Royal Sussex County Hospital during the year. The 21 midwives in private practice sent for medical help in 173 cases, and £171 9s. was paid by the corporation to doctors called in in respect of 90 cases. Ante-natal work is chiefly done at the West-street Lying-in Hospital. Private midwives are invited to send patients, but very few avail themselves of the assistance offered. The work of the dental clinic for mothers and children makes slow progress. Thirty-one mothers and nine children had treatment during 1920. The number of ophthalmia as a public servant he maintained a high standard of duty, while showing kindness and consideration to his subordinates. In private life he was an unassuming and attractive companion and a man of wide reading.

Sir John Walton Browne, D.L.

At the investiture held by His Majesty the King during his recent visit to Belfast the honour of knighthood was conferred upon Dr. John Walton Browne, D.L. He is one of the oldest and most popular members of the medical profession in Ulster, and has given valuable services in many capacities. He is consulting surgeon to the Royal Victoria Hospital, and surgeon to the Belfast Ophthalmic Hospital. His new honour has given much satisfaction to his many friends both in the profession and among the general public.

Dr. S. B. Boyd Campbell has been elected assistant physician to the Royal Victoria Hospital, Belfast, in succession to Dr. J. E. MacIlwaine, who has become staff physician.

Colonel Professor Thomas Sinclair, C.B., F.R.C.S., has been elected a member of the Senate of the Parliament of Northern Ireland.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE eightieth annual meeting of this Association will be held from July 11th to 15th, under the presidency of Dr. C. Hubert Bond, in the Barnes Hall of the Royal Society of Medicine, Wimpole-street, London, W. On June 11th meetings of the Educational and Parliamentary Committees will be held. On July 12th, at 10.30 A.M., the meeting will proceed to elect officers of the Association for the year 1921–22, and reports of the council, officers, and standing committees will be read. The nominee for the Third Maudsley Lecture will be Sir Maurice Craig. At 11.30 A.M. a paper will be read by Dr. P. W. Bedford, entitled "The Goldsol Test in Mental Disease." At 3 P.M. Dr. C. H. Bond will deliver his presidential address on the Position of Psychological Medicine in the Medical and Allied Services. At 1.30 P.M. Dr. Edwin Goodall will give a demonstration of X Ray Photography of Barium Meals in cases of Dementia Præcox; and, jointly with Dr. H. A. Scholberg, a note on the Diastase-Contents of the Urine in 120 Cases of Mental Disorder. On July 13th, at 10 A.M., the following papers will be read: The Oxford Clinic, by Dr. T. S. Good; Psychological Medicine in Relation to Industry, by Dr. C. S. Myers, F.R.S.; and the Problem of Prevention in the War Psychoses, by Dr. Bernard Hart. At 2.30 P.M. the following papers will be read: Legislative Restrictions in Connexion with the Treatment of Incipient Insanity, by Dr. Wilfred Caroleu, secretary of the Royal Academy of Medicine, Barcelona; Mental Defect and the School Medical Service, by Dr. George A. Auden; Expatiation Mechanism in a Case of Schizophrenia, by Dr. Henry Devine. On July 14th, at 10 A.M., Dr. W. Ford Robertson will read a paper on Chronic Bacterial Infections in Dementia Præcox, to be followed by a communication on Change of Phase in the Psychoses, by Dr. Thomas Beaton, and one on Recurrent Phantasies of Infancy and Childhood as a Source of Delusions, by Dr. Edward Mapother. At 3 P.M. the members will assemble at the Springfield Mental Hospital, Tooting, London, S.W., where a paper will be read by Dr. Henri Colin, of Paris, entitled "Mental Hygiene and Prophylaxy." At 4 P.M. the subcommittee of the Springfield Mental Hospital kindly invite members of the Association and friends to a garden party to be held in the grounds of the hospital. On July 15th, at 10 A.M., at the Royal Society of Medicine, Dr. J. T. Dunstan will speak on the Feebleminded Problem in South Africa and Dr. William Brown on Psychology and Psychotherapy. In the afternoon members and friends are invited by the London Asylums Mental Deficiency Committee to visit the mental hospitals on their estate at Epsom. The annual dinner of the Association will be held at the Connaught Rooms, Great Queen-street, London, W.C., on Wednesday, July 13th, at 7.30 P.M. Members desiring to attend are asked to send 30*s*. (the inclusive cost) as early as possible to the general secretary (Dr. R. Worth), Springfield Mental Hospital, near Tooting, London, S.W. 17.

THE third annual meeting of the Mental Hospitals Association will be held in the Guildhall, E.C., to-day, Friday, July 1st, at 11.30 A.M.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Brighton.

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VITAL STATISTICS OF LONDON DURING MAY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 9·6 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 10·2, 9·7, and 8·7 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Fulham, Chelsea, the City of Westminster, St. Pancras, Lambeth, and Lewisham; and the highest in Hammersmith, Stoke Newington, Hackney, Shoreditch, Bethnal Green, and Stepney. The prevalence of enteric fever was somewhat greater than in the preceding month; of the 23 cases notified during the four weeks ended May 28th, 3 cases belonged to each of the boroughs of Stepney, Wandsworth, and Woolwich, and 2 each to St. Pancras, Hackney, and Poplar. There were 18 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 9, 10, and 10 at the end of the three preceding months; the weekly admissions averaged 5, against 2, 3, and 2 in the three preceding months. The prevalence of scarlet fever was 20 per cent. greater than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Stoke Newington, Hackney, the City of London, Bethnal Green, and Stepney. The Metropolitan Asylums Hospitals contained 3375 scarlet fever patients at the end of the month, against 3709, 3187, and 3217 at the end of the three preceding months; the weekly admissions averaged 507, against 401, 409, and 411 in the three preceding months. The prevalence of diphtheria was somewhat less than in April, and was lower than in any preceding month since August of last year; the greatest proportional prevalence of this disease was recorded in Hampstead, Hackney, Holborn, Finsbury, Shoreditch, and Bethnal Green. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2700, 2652, and 2129 at the end of the three preceding months, numbered 2121 at the end of May; the weekly admissions averaged 241, against 333, 290, and 261 in the three preceding months. Erysipelas was proportionally most prevalent in Kensington, St. Marylebone, Shoreditch, Southwark, Deptford, and Greenwich. Eighteen cases of encephalitis lethargica were notified during the month, against 77, 56, 24, and 14 in the four preceding months; of these, 3 belonged to Stepney, 3 to Camberwell, 2 to Hammersmith, and 2 to Wandsworth. The cases of cerebro-spinal fever numbered 11, against 17, 14, and 12 in the three preceding months; of these, 4 were notified from Wandsworth, 2 from Poplar, and 2 from Lambeth. The 32 cases of puerperal fever included 7 in Islington and 4 in Hackney. The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended May 28th the deaths of 3879 London residents were registered, equal to an annual rate of 11·2 per 1000; in the three preceding months the rates had been 14·0, 13·6, and 12·6 per 1000. The death-rates ranged from 8·2 in Lewisham, 9·2 in Holborn, 9·5 in Hampstead, 9·8 in Woolwich, 10·0 in Deptford, and 10·1 in Bermondsey, to 12·8 in St. Marylebone, 13·0 in Finsbury, 13·2 in Kensington and in Chelsea, 13·5 in the City of London, and 15·2 in Shoreditch. The 3879 deaths from all causes included 213 which were referred to the principal infectious diseases; of these one resulted from enteric fever, 16 from measles, 22 from scarlet fever, 46 from whooping-cough, 77 from diphtheria, and 51 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Chelsea or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, St. Marylebone, Stoke Newington, Holborn, Southwark, Lambeth, and Greenwich; and the highest in Paddington, Hampstead, Finsbury, Shoreditch, Stepney, and Deptford. The fatal case of enteric fever belonged to Wandsworth; the average number of deaths from this disease in the corresponding period of the five preceding years was 5. The 16 deaths from measles were less than one-eighth of the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MAY, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												*Deaths from Principal Infectious Diseases.*									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	23	—	—	2079	996	170	6	18	11	32	3335	9·6	1	—	16	22	46	77	51	213	0·6	3879	11·2
West:																								
Paddington ...	149,673	—	—	—	64	25	—	—	—	—	1	90	7·8	—	—	1	1	2	1	5	10	0·9	127	11·1
Kensington... ...	164,177	1	—	—	58	25	11	—	1	—	—	96	7·6	—	—	—	1	1	1	4	7	0·6	166	13·2
Hammersmith ...	136,200	—	—	—	89	36	2	—	2	—	—	129	12·3	—	—	—	2	1	1	3	7	0·7	118	11·3
Fulham	158,621	1	—	—	52	27	5	1	1	—	1	88	7·2	—	—	—	2	3	2	1	8	0·7	126	10·4
Chelsea	62,987	—	—	—	29	4	1	—	1	—	—	35	7·2	—	—	—	—	—	—	—	—	—	64	13·2
CityofWestmin'r	132,615	—	—	—	42	26	3	—	—	—	—	71	7·0	—	—	—	—	—	3	—	3	0·3	119	11·7
North:																								
St. Marylebone...	101,856	1	—	—	36	15	7	—	—	—	1	60	7·7	—	—	—	—	—	1	—	1	0·1	100	12·8
Hampstead ...	91,519	—	—	—	20	33	2	—	—	—	—	55	7·8	—	—	—	—	1	4	1	6	0·9	67	9·5
St. Pancras... ...	228,178	2	—	—	84	36	6	1	—	—	2	131	7·5	—	—	—	1	3	2	2	8	0·5	182	10·4
Islington	335,907	—	—	—	155	86	16	1	1	—	7	266	10·3	—	—	—	2	4	8	5	19	0·7	293	11·4
Stoke Newington	52,984	—	—	—	41	7	—	—	—	—	1	49	12·1	—	—	—	—	—	—	1	1	0·2	43	10·6
Hackney	225,372	2	—	—	160	71	8	—	—	—	4	245	14·2	—	—	—	1	2	6	1	10	0·6	189	10·9
Central:																								
Holborn	39,676	1	—	—	17	15	—	—	—	1	—	34	11·2	—	—	—	—	—	1	—	1	0·3	28	9·2
Finsbury	78,291	—	—	—	33	26	3	—	—	—	—	62	10·3	—	—	—	1	—	4	1	6	1·0	78	13·0
City of London...	14,447	—	—	—	9	—	—	—	—	—	—	9	8·1	—	—	—	—	—	—	—	—	—	15	13·5
East:																								
Shoreditch... ...	102,044	—	—	—	55	58	8	—	—	—	—	121	15·5	—	—	5	1	3	4	3	16	2·0	119	15·2
Bethnal Green...	114,471	—	—	—	71	48	6	—	—	—	—	125	14·2	—	—	1	—	—	4	—	5	0·6	98	11·2
Stepney	241,770	3	—	—	149	61	12	1	3	1	2	232	12·5	—	—	5	3	3	5	6	22	1·2	217	11·7
Poplar	159,766	2	—	—	94	42	4	—	1	2	1	146	11·9	—	—	1	—	1	1	3	6	0·5	129	10·5
South:																								
Southwark... ...	187,142	—	—	—	83	28	15	—	1	1	2	130	9·1	—	—	—	—	2	—	1	3	0·2	162	11·3
Bermondsey ...	129,189	—	—	—	79	17	3	—	—	—	1	100	10·1	—	—	—	1	—	1	2	4	0·4	100	10·1
Lambeth	293,572	1	—	—	90	30	4	—	—	2	2	129	5·7	—	—	2	—	3	—	1	6	0·3	274	12·2
Battersea	165,654	1	—	—	68	41	4	—	—	—	1	115	9·0	—	—	—	—	6	3	1	10	0·8	136	10·7
Wandsworth ..	346,990	3	—	—	129	80	12	1	2	4	—	231	8·7	1	—	—	3	5	6	—	15	0·6	285	10·7
Camberwell ..	284,712	1	—	—	127	52	9	1	3	—	1	194	8·9	—	—	—	1	—	5	7	13	0·6	218	11·4
Deptford	115,636	1	—	—	60	27	8	—	—	—	2	98	11·0	—	—	—	—	2	5	2	9	1·0	89	10·0
Greenwich	102,408	—	—	—	50	17	7	—	—	—	—	74	9·4	—	—	1	—	1	—	—	2	0·3	91	11·6
Lewisham	174,438	—	—	—	65	21	9	—	1	—	1	100	7·5	—	—	—	—	1	5	1	7	0·5	110	8·2
Woolwich	141,666	3	—	—	70	39	5	—	1	—	2	120	11·0	—	—	—	2	2	4	—	8	0·7	106	9·8

* Including membranous croup.

neonatorum cases notified was 29. Four of the most severe cases were treated in the sanatorium. "Ulceration of the cornea occurred in one case only, this cleared up completely under treatment." The following scheme of precautions has been drawn up for the use of the midwives:—

1. Directly the head of the infant is born wipe each eye with clean cotton-wool. Use a fresh piece for each eye; burn it after use.

2. As soon as the child is separated, wash the child's eyelids with a warm boracic lotion.

3. When first bathing the child use fresh water and a clean towel for the face and allow no bath water to enter the eyes. After the bath open each eye and thoroughly wash out with a warm boracic lotion—a thorough irrigation. This is most important.

4. Then open the eyes again and drop into each eye one drop of argyrol (10 per cent. strength). Drops of argyrol must on no account be continued after the first day except they are ordered by a doctor.

5. Continue ablution as stated in (3) daily during attendance.

6. At no time during the lying-in period use the mother's sponges, napkins, towels, &c., for the child.

A ward at the sanatorium is set aside for infants suffering from malnutrition, mostly for those attending the infant welfare centres who fail to improve. Dr. Forbes's report gives full particulars of the work of the school medical department. He draws attention to the increasing interest of the parents in this work, and expresses his warm appreciation of the helpful and enthusiastic assistance given by the teachers.

Huddersfield.

The annual report for 1919 of the medical officer of health for Huddersfield consists of the usual tables and a short introductory letter, in which Dr. S. G. Moore tells us that "in accordance with instructions it (the report) contains essential facts only." The Registrar-General's estimate of the population is, for birth-rate 118,036 and for death-rate 105,346. Dr. Moore is of opinion that the establishment of "British Dyes" has caused exceptional immigration and that the population was over 120,000. Even if he is correct, the error in the rates would not be a very great one. The death-rate for 1919 was 15·81 and the infant mortality rate 95. The birth-rate was only 12·66 and for the second year in succession there have been more deaths than births in Huddersfield. In 1918 the births were 1575 and the deaths 1737, and in 1919 the births numbered 1519 and the deaths 1701. No wonder Dr. Moore writes: "The least satisfactory feature of the vital statistics of the borough is presented by the birth-rate." During the influenza year (1918) half the 45 largest towns had death-rates higher than their birth-rates, but during 1919 the only towns which kept Huddersfield company in this respect were textile mill towns—namely, Blackburn, Bradford, Halifax, and Oldham. At the end of 1919 came the revival of the birth-rate, and in 1920 none of the 45 towns had a death-rate higher than the birth-rate. in Huddersfield the death-rate being about 13·0 in comparison with a birth-rate of about 18·0. Dr. Moore records that the system of voluntary notification of pregnancy, begun in 1916, "continues to confer benefits upon paido-poietics, both substantial in character and to a considerable extent. .... The work proceeds smoothly and agreeably to all concerned." During 1919 34 per cent. of the pregnancies were notified. We must enter a gentle protest against the introduction of the dreadful word "paido-poietics" to denote the expectant mother. It may be a little illogical to call a woman pregnant for the first time a "mother," even when qualified by the epithet "expectant," but the Greeks used Dr. Moore's term equally of begetting and conception.

Barnstaple.

In the health report for 1920 of the borough of rnstaple the estimated population is given as 14,270. There were 364 births in 1920 and 238 in 1919. The death-rate in 1920 was 13·7 and the infant mortality rate 43·9. Dr. H. C. Jonas submits a very complete report of the work of the health and school medical departments. The main industries of the town are lace manufacture, cabinet-making, gloving, agriculture, and (recently) shipbuilding. The tuberculosis death-rate appears high, 2·3 for 1920 and 1·6 for 1919. Among the matters reported as needing attention are the substitution of "proper covered ashbins for the filthy boxes which are still far too common," and the provision of public baths and school baths. Satisfactory arrangements have been made for the treatment of the school children. A school dentist began work in April and is "pleased with the results so far obtained," but reports some reluctance to accept treatment both in the school work and at the maternity clinic. The school nurse also acts as health visitor and thus overlapping is avoided. Of three schools reported in 1919 as unsatisfactory, two have been renovated and the worst has been closed, army huts having been put up to provide the necessary accommodation. Dr. Jonas reports that the converted army huts make good and airy class-rooms. Progress with the council's housing scheme has been slow. The sites for 200 houses have been bought and laid out. In the meantime an unhealthy area including 40 houses cannot be dealt with. There is also great difficulty in getting repairs done so as to keep existing houses fit for habitation. The owners say they cannot do the repairs, and owing to the shortage the council does not want any houses closed. This would seem to be a case where the local authority should do the repairs and recover the cost from the owners.

SCHOOL MEDICAL SERVICE.

Rutland County Council.—In his annual report for 1920 Dr. C. Rolleston complains of the want of coöperation between the public health and education authorities, and that "within no distant period there will be two sets of officials visiting each home in the county, one on account of infant welfare, the other for the well-being of the school child." Nursing assistance is needed both for the ophthalmic surgeon and the dentist. The total number of entrants, intermediates, and leavers examined during the year was 731. Parents attended 84 per cent. of the examinations. There is a good deal of parents' opposition to the treatment of teeth and of tonsil and adenoids. The percentage of clean children wa 84·9, of normally nourished children was 94, and 10 of the 731 examined were found to be in urgen need of dental treatment. During 14 months th school dentist inspected 1515 children, of whom 1303 (85 per cent.) were referred for treatment an 912 (69·9 per cent.) actually treated. Dr. Rolleston does not think the amount of dental caries is wors in Rutland than elsewhere, and instances Hull childre with 85 per cent. and Sunderland with 94·5 per cent. o caries. He also compares the 70 per cent. acceptin treatment with the 48 per cent. of Leeds and the 49 pe cent. of Stoke-on-Trent. The parent of a child with 11 carious teeth wrote to the school dentist, "He car eat and drink more than enough, and that's all I want him to do." And another parent, "I am not going to have him messed about just to please you." The arrangements for treating tousils and adenoids are not satisfactory, and Dr. Rolleston recommends his committee to come to an agreement with Oakham Cottage Hospital and Stamford Infirmary. Dr. Rolleston records the gradual extinction of ringworm in Rultand "which has been brought about by the application of X rays to all cases irrespective of the extent of the disease." Under the heading "Sanitary Conditions," Dr. Rolleston comments on dirty towels and lavatories, the unsatisfactory water-supply of the majority of the schools and the continued existence of "privy vaults," and puts in a plea for more playground classes.

VITAL STATISTICS OF LONDON DURING MAY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 9·6 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 10·2, 9·7, and 8·7 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Fulham, Chelsea, the City of Westminster, St. Pancras, Lambeth, and Lewisham; and the highest in Hammersmith, Stoke Newington, Hackney, Shoreditch, Bethnal Green, and Stepney. The prevalence of enteric fever was somewhat greater than in the preceding month; of the 23 cases notified during the four weeks ended May 28th, 3 cases belonged to each of the boroughs of Stepney, Wandsworth, and Woolwich, and 2 each to St. Pancras, Hackney, and Poplar. There were 18 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 9, 10, and 10 at the end of the three preceding months; the weekly admissions averaged 5, against 2, 3, and 2 in the three preceding months. The prevalence of scarlet fever was 20 per cent. greater than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Stoke Newington, Hackney, the City of London, Bethnal Green, and Stepney. The Metropolitan Asylums Hospitals contained 3375 scarlet fever patients at the end of the month, against 3700, 3187, and 3217 at the end of the three preceding months; the weekly admissions averaged 507, against 404, 409, and 411 in the three preceding months. The prevalence of diphtheria was somewhat less than in April, and was lower than in any preceding month since August of last year; the greatest proportional prevalence of this disease was recorded in Hampstead, Hackney, Holborn, Finsbury, Shoreditch, and Bethnal Green. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2706, 2652, and 2420 at the end of the three preceding months, numbered 2121 at the end of May: the weekly admissions averaged 241, against 333, 290, and 261 in the three preceding months. Erysipelas was proportionally most prevalent in Kensington, St. Marylebone, Shoreditch, Southwark, Deptford, and Greenwich. Eighteen cases of encephalitis lethargica were notified during the month, against 77, 56, 24, and 14 in the four preceding months: of these, 3 belonged to Stepney, 3 to Camberwell, 2 to Hammersmith, and 2 to Wandsworth. The cases of cerebro-spinal fever numbered 11, against 17, 14, and 12 in the three preceding months; of these, 4 were notified from Wandsworth, 2 from Poplar, and 2 from Lambeth. The 32 cases of puerperal fever included 7 in Islington and 4 in Hackney. The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended May 28th the deaths of 3879 London residents were registered, equal to an annual rate of 11·2 per 1000; in the three preceding months the rates had been 11·0, 13·0, and 12·6 per 1000. The death-rates ranged from 8·2 in Lewisham, 9·2 in Holborn, 9·5 in Hampstead, 9·8 in Woolwich, 10·0 in Deptford, and 10·1 in Bermondsey, to 12·8 in St. Marylebone, 13·0 in Finsbury, 13·2 in Kensington and in Chelsea, 13·5 in the City of London, and 15·2 in Shoreditch. The 3879 deaths from all causes included 213 which were referred to the principal infectious diseases; of these one resulted from enteric fever, 16 from measles, 22 from scarlet fever, 46 from whooping-cough, 77 from diphtheria, and 51 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Chelsea or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, St. Marylebone, Stoke Newington, Holborn, Southwark, Lambeth, and Greenwich; and the highest in Paddington, Hampstead, Finsbury, Shoreditch, Stepney, and Deptford. The fatal case of enteric fever belonged to Wandsworth; the average number of deaths from this disease in the corresponding period of the five preceding years was 5. The 16 deaths from measles were less than one-eighth of the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MAY, 1921.

(*Specially compiled for* THE LANCET.)

Cities and Boroughs.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												*Deaths from Principal Infectious Diseases.*									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	23	—	—	2079	996	170	6	18	11	32	3335	9·6	1	—	16	22	46	77	51	213	0·6	3879	11·2
West:																								
Paddington ...	149,673	—	—	—	64	25	—	—	—	—	1	90	7·8	—	—	1	1	2	1	5	10	0·9	127	11·1
Kensington... ...	164,177	1	—	—	58	25	11	—	1	—	—	96	7·6	—	—	—	1	1	1	4	7	0·6	166	13·2
Hammersmith...	136,200	—	—	—	89	36	2	—	2	—	—	129	12·3	—	—	—	2	1	1	3	7	0·7	118	11·3
Fulham	158,621	1	—	—	52	27	5	1	1	—	1	88	7·2	—	—	—	2	3	2	1	8	0·7	126	10·4
Chelsea	62,987	—	—	—	29	4	1	—	1	—	—	35	7·2	—	—	—	—	—	—	—	—	—	64	13·2
CityofWestmin'r	132,615	—	—	—	42	26	3	—	—	—	—	71	7·0	—	—	—	—	—	3	—	3	0·3	119	11·7
North:																								
St. Marylebone...	101,856	1	—	—	36	15	7	—	—	—	1	60	7·7	—	—	—	—	—	1	—	1	0·1	100	12·8
Hampstead ...	91,519	—	—	—	20	33	2	—	—	—	—	55	7·8	—	—	—	—	1	4	1	6	0·9	67	9·5
St. Pancras... ...	228,178	2	—	—	84	36	6	1	—	—	2	131	7·5	—	—	—	1	3	2	2	8	0·5	182	10·4
Islington	335,907	—	—	—	155	86	16	1	1	—	7	266	10·3	—	—	—	2	4	8	5	19	0·7	293	11·4
Stoke Newington	52,984	—	—	—	41	7	—	—	—	—	1	49	12·1	—	—	—	—	—	—	1	1	0·2	43	10·6
Hackney	225,372	2	—	—	160	71	8	—	—	—	4	245	14·2	—	—	—	1	2	6	1	10	0·6	189	10·9
Central:																								
Holborn	39,676	1	—	—	17	15	—	—	—	1	—	34	11·2	—	—	—	—	—	1	—	1	0·3	28	9·2
Finsbury	78,291	—	—	—	33	26	3	—	—	—	—	62	10·3	—	—	—	1	—	4	1	6	1·0	78	13·0
City of London...	14,447	—	—	—	9	—	—	—	—	—	—	9	8·1	—	—	—	—	—	—	—	—	—	15	13·5
East:																								
Shoreditch... ...	102,044	—	—	—	55	58	8	—	—	—	—	121	15·5	—	—	5	1	3	4	3	16	2·0	119	15·2
Bethnal Green...	114,471	—	—	—	71	48	6	—	—	—	—	125	14·2	—	—	1	—	—	4	—	5	0·6	98	11·2
Stepney	241,770	3	—	—	149	61	12	1	3	1	2	232	13·5	—	—	5	3	3	5	6	22	1·2	217	11·7
Poplar	159,766	2	—	—	94	42	4	—	1	2	1	146	11·9	—	—	1	—	1	1	3	6	0·5	129	10·5
South:																								
Southwark... ...	187,142	—	—	—	83	28	15	—	1	1	2	130	9·1	—	—	—	—	2	—	1	3	0·2	162	11·3
Bermondsey ...	129,189	—	—	—	79	17	3	—	—	—	1	100	10·1	—	—	—	1	—	1	2	4	0·4	100	10·1
Lambeth	293,572	1	—	—	90	30	4	—	—	2	2	129	5·7	—	—	2	—	3	—	1	6	0·3	274	12·2
Battersea	165,654	1	—	—	68	41	4	—	—	—	1	115	9·0	—	—	—	—	6	3	1	10	0·8	136	10·7
Wandsworth ...	346,990	3	—	—	129	80	12	1	2	4	—	231	8·7	1	—	—	3	5	6	—	15	0·6	285	10·7
Camberwell .	284,712	1	—	—	127	52	9	1	3	—	1	194	8·9	—	—	—	1	—	5	7	13	0·6	248	11·4
Deptford	115,636	1	—	—	60	27	8	—	—	—	2	98	11·0	—	—	—	—	2	5	2	9	1·0	89	10·0
Greenwich.. ...	102,408	—	—	—	50	17	7	—	—	—	—	74	9·4	—	—	1	—	1	—	—	2	0·3	91	11·6
Lewisham	174,438	—	—	—	65	24	9	—	1	—	1	100	7·5	—	—	—	—	1	5	1	7	0·5	110	8·2
Woolwich	141,666	3	—	—	70	39	5	—	1	—	2	120	11·0	—	—	—	2	2	4	—	8	0·7	106	9·8

* Including membranous croup.

average; of these, 5 belonged to Shoreditch, 5 to Stepney, and 2 to Lambeth. The 22 fatal cases of scarlet fever exceeded the average by 13; of these, 3 belonged to Stepney, 3 to Wandsworth, and 2 each to Hammersmith, Fulham, Islington, and Woolwich. The 46 deaths from whooping-cough were about half the average number; this disease was proportionally most fatal in Fulham, Holborn, Battersea, Wandsworth, Deptford, and Woolwich. The 77 fatal cases of diphtheria were 33 in excess of the average; the greatest proportional mortality from this disease occurred in Hampstead, Finsbury, Shoreditch, Bethnal Green, and Deptford. The 51 deaths from infantile diarrhœa were 2 below the average; this disease was proportionally most fatal in Paddington, Kensington, Shoreditch, Stepney, and Camberwell. In conclusion, it may be stated that the aggregate mortality in London during May from these principal infectious diseases was 37 per cent. below the average in the corresponding period of the five preceding years.

The Services.

ARMY MEDICAL SERVICE.

Temp. Hon. Col. C. J. Bond relinquishes his commn. and retains the hon. rank of Col.

ROYAL ARMY MEDICAL CORPS.

Lt.-Cols. H. W. H. O'Reilly and C. A. Stone are placed on ret. pay.

Temp. Capts. J. P. Bonfield and C. F. Simpson relinquish their commns. and retain the rank of Capt.

ARMY DENTAL CORPS.

Temp. Capt. O. G. E. Simpson, Dental Surg., from Spec. List, to be Capt.

Temp. Capt. J. Morrey, Dental Surg., from Gen. List, to be Lt., with the temp. rank of Capt.

TERRITORIAL FORCE.

Maj. J. A. Paterson (late R.A.M.C.), to be Lt., and relinquishes the rank of Maj.

Maj. F. W. Johnson resigns his commn. and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. C. H. Bullen resigns his commn. and retains the rank of Maj.

Capts. B. E. Potter and A. R. Muir to be Majs.

Capt. (actg. Maj.) R. Briercliffe relinquishes the actg. rank of Maj. on vacating the appt. of D.A.D.M.S.

Capt. A. U. Webster (late R.A.M.C.) to be Capt.

Capts. C. B. Johnstone and M. T. Ascough resign their commns. and are granted the rank of Maj.

Capt. J. Howard resigns his commn. and retains the rank of Capt.

Capt. C. W. T. Baldwin is secd. whilst holding a temp. commn. in the R.A.F.

Sanitary Service.—Maj. H. H. Littlejohn resigns his commn. and retains the rank of Maj.

2nd Lond. Sanitary Co.—Capt. F. Fletcher resigns his commn. and retains the rank of Capt.

TERRITORIAL FORCE RESERVE.

Lt.-Col. W. H. Stephen resigns his commn. and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

DEFENCE FORCE.

Temp. Capt. S. S. Greaves to be temp. Maj. whilst specially empld.

To be temp. Maj.: J. W. Littlejohn.

1st (W. Lancs.) Fd. Amb. (D.F.).—Temp. Maj. F. W. B, Young relinquishes his commission.

2nd (Wessex) Fd. Amb. (D.F.).—To be temp. Maj.: T. M. Jamieson.

To be temp. Capts.: W. J. Radford, W. L. Cowardin, H. G. Ludolph, E. W. Wesley, and G. H. S. Letchworth.

2nd (Lowland) Fd. Amb. (D.F.).—Temp. Maj. J. R. C. Greenlees relinquishes his commn.

ROYAL AIR FORCE.

Flight Lt. V. A. T. Spong relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

HONOURS FOR OPERATIONS IN INDIA AND THE SUDAN.

Officer of the British Empire: Capt. (actg. Lt.-Col.) R. Hance, I.M.S.; Maj. (actg. Lt.-Col.) J. B. D. Hunter, S.; Capt. W. Hunt, R.A.M.C.

Correspondence.

"Audi alteram partem."

HÆMOGLOBIN.

To the Editor of THE LANCET.

SIR,—The interesting leading article in your issue of June 25th on the subject of hæmoglobin omits any statement, except the most general, of the reasons why hæmoglobin is carried in corpuscles rather than in solution in the blood plasma, nor are these at all frequently discussed. It may not be out of place therefore to point out that a solution of hæmoglobin has properties in some respects very different from those of blood.

1. It is possible to obtain a solution of hæmoglobin which, bulk for bulk, contains as much of the pigment as does blood. Such a solution is, comparatively speaking, viscous and therefore could only be driven along a system of fine tubes such as the capillaries by the application of considerable force.

2. A concentrated solution of hæmoglobin, as compared with blood, only passes through filter paper with difficulty, yet by a curious paradox the molecules of which this solution is composed pass through a collodion membrane that would be quite impervious to corpuscles. Hence hæmoglobinuria consequent on laking of the blood.

3. Owing to the viscosity of the solution, any effort to make it pass along a tube merely achieves the displacement of the central core of fluid. The arrangement of the hæmoglobin in corpuscles, which are commensurate in size with the capillaries, ensure the forward movement of the whole contents of the capillary at approximately the same rate.

4. The properties of hæmoglobin as an oxygen carrier are extremely sensitive to properties of the solvent—e.g., its reaction, its partial pressure of CO_2, its potassium content, its temperature, &c. The segregation of the hæmoglobin in corpuscles allows its exposure to the conditions most advantageous for it without imposing such conditions on the body generally.

Without entering into any controversy as to the extent to which the red blood corpuscle may be regarded in itself a living organism, rather than a suitable casing for the sixty-millionth part of one gramme of hæmoglobin, the above facts are sufficient to illustrate the advantages which accrue to the organism by the trick of carrying large quantities of hæmoglobin which is packed inside special corpuscles.

I am, Sir, yours faithfully,

J. BARCROFT.

The Athenæum, Pall Mall, S.W., June 27th, 1921.

ON DEATH FROM RESPIRATORY AND NOT FROM CARDIAC FAILURE.

To the Editor of THE LANCET.

SIR,—A note in the public press on June 20th of a coroner's inquest on a case of sudden death in which the patient's heart continued to act for eight hours after respiration had ceased, reminds me of several instances of this nature, one of which occurred in my clinic at St. Bartholomew's, and three others under my surgical colleagues there. I published this series of cases in the *Edinburgh Medical Journal*, New Series, Vol. III., 1898, p. 145, and communicated them to the Section of Medicine at the International Congress at Moscow in 1897. In all these, and others that have been reported, the lesion in the brain has arisen from abscess, occipital injury, or tumour, and it appears to be certain that the respiratory centre is clearly more sensitive than its neighbour the cardiac centre, and is the first to yield under undue intracranial pressure.

I am, Sir, yours faithfully,

June 21st, 1921. DYCE DUCKWORTH.

SANATORIUM CONTROLS.

To the Editor of THE LANCET.

SIR,—As the various criticisms of Dr. E. Ward's original article on Controlled Sanatorium Results seem to have brought no light to him, and he reiterates his opinions in your issue of this date, further comment appears to be desirable to prevent the impression remaining in his mind that his presentation of the case against sanatorium treatment is unanswerable. Dr. Ward has correctly guessed that my comparison of other forms of treatment to sanatorium with moonlight to sunlight was picturesque and not mathematical, and was intended to arrest his attention, which it has done to the extent of leading him to look up the relative intensities of the rays from the two luminaries. It is fortunate that I did not employ the words "infinitely superior," or he would have been impelled to criticise the comparison in terms of Einstein's theory of relativity. With regard to expectation of life after sanatorium treatment, taking the Midhurst figures as a standard, if I were a patient under the views enunciated by Dr. Ward my expectation of life would be nil. It would require a complete number of your journal to fully criticise the original paper on "Sanatorium Controls," and in my former letter I merely instanced the case of a patient who remained for three years in an institution to secure a complete arrest of extensive disease, not to sum up the results of 20 years' sanatorium experience, but to endeavour to enlarge Dr. Ward's ideas of time in relation to treatment. He states in your last issue that he included in his results cases in which individuals remained only one month because "a line had to be drawn somewhere," but if so, why not draw it at one week; or, better still, why not follow the rule of some general hospitals which exclude from their statistics any deaths occurring within 48 hours of admission? What would be thought of a fire brigade which exercised its activities on a conflagration for one hour, then withdrew; and included the attempt among the published results of its efforts? The statement is made that three months is the standard period of sanatorium treatment in this country for working-class patients, and I should be interested to learn who fixed this standard, for I have never heard of it, and it certainly is not the standard in the West Riding of Yorkshire.

Twenty years ago I decided upon six months as a reasonable period to give a moderately early case an opportunity of securing arrest of the disease; but if Dr. Ward's "standard" is general, there need be little surprise if sanatorium treatment is condemned. Has it not occurred to him that a more prolonged period is the necessity and not improved methods; or is the "standard" so fixed in his mind that a method of treatment must be found which will prove effective in three months? From a careful study of a patient the experienced sanatorium physician should form his opinion of the duration of treatment likely to be necessary, and when collating his statistics could give under a separate heading the results in cases of individuals who left the institution prematurely.

Dr. Ward writes of the enormous expense of retaining patients in a sanatorium for an extended period of a year or two; but he is evidently unaware of the length of time it may be necessary to isolate patients: some may live five or six years in a hospital, and have done so to my knowledge, at an expense by no means inconsiderable. Some voices are now crying out that improved housing conditions are the desirable means for the 'cure" of tuberculosis; others that "prevention in the young" is the watchword; while the patient with declared pulmonary tuberculosis is to be ignored apparently, or left to die quietly—if he will—in an isolation hospital, as Dr. Ward implies by his words "the most hopeful means I can see of dealing with the tuberculosis problem is by adequate isolation of infective cases." He is consoled and supported in his poor opinion of sanatorium treatment "by the whole-hearted agreement of several practitioners of experience," but I have usually found that practitioners who did not speak favourably of it were those who were unable to diagnose the disease in its early stages. Recently a patient came under my care who had a severe initial attack of hæmoptysis two years before, and should have been sent to a sanatorium then; but her medical attendant shared Dr. Ward's opinion that home treatment was as good as, or better than, sanatorium; and she was naturally in an advanced condition of disease when allowed to visit a tuberculosis officer. She will be a considerable expense, unfortunately, as an inmate of a hospital for advanced cases now, whereas if Dr. Ward had no supporter for his views there might have been some likelihood of arresting the disease within 12 months at a much lower expense. Dr. Ward seems to consider the quotation of one case as though it comprised a statistical table, so I mention that I merely cite this as a pernicious example of what may be characterised as the logical outcome of his "teaching."

I am, Sir, yours faithfully,

THOMPSON CAMPBELL, M.D.,

Medical Superintendent, West Riding County Sanatorium, Ilkley.

June 25th, 1921.

THE VALUE OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—The arguments used concerning the value of sanatorium treatment are full of fallacies; and it is surprising that these have not been widely recognised. I will here refer to one only. A patient needing for recovery certain conditions of life, which he can sometimes get at home and can usually get at a sanatorium, is given these conditions at a sanatorium for three months when he needs 12, six months when he needs 24 or 36. The improvement, or the reverse, is rightly credited or debited to the institution. In the next stage of treatment, at home under more or less unfavourable conditions, he sometimes continues to improve but often relapses. Surely this part of the result should be credited or debited to the home conditions, not to the sanatorium. If not, then if a rheumatic patient after treatment at a spa or by salicylates subsequently relapses, the relapse should be debited to the previous treatment; but nobody dreams of doing so.—I am, Sir, yours faithfully,

F. R. WALTERS,

Joint Tuberculosis Officer to the Surrey County Council.

Farnham, June 22nd, 1921.

THE VALUE OF ENGLISH PHTHISIS SANATORIA.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward, tuberculosis officer for South Devon, has done useful service in calling in question the value of some at least of our working-class phthisis sanatoria. His carefully written paper, read in Exeter last January, gives the following arresting figures for first stage cases amongst the poorer classes. (A) = sent to sanatoria; (B) = not sent to sanatoria:—

	(A) per cent.	(B) per cent.
After Two Years.		
Classes 1 and 2—i.e., cures and doubtful cures	64	88
Classes 4 and 5—i.e., "too ill to work" and "very ill"	21	3
Dead	6	1
After Four Years.		
Cures and doubtful cures	67	83
Too ill to work and very ill	11	6
Dead	11	3

His statements, thoughtfully safeguarded as they are, merit the most careful attention—the more so that no evidence to the contrary seems to be forthcoming. Dr. Ward tells us that most of the cases discharged from these sanatoria with "disease arrested" relapse within a short time; that to say that 20 per cent. of early cases are cured is probably to make an overstatement; that patients commonly lose ground on returning home more quickly than if they had remained at home; that those, of his series, who were longest in a sanatorium gave worse results than those who had been only a short time in one; and that no case which seems to be improving at home should be sent to a sanatorium.

Such an indictment, coming from a competent observer, calls imperatively for a pause in our public expenditure on phthisis sanatoria until the whole subject has been thoroughly investigated. Meanwhile there are some points which need to be considered.

1. Our sanatoria appear to be furnishing considerably worse results than might reasonably have been anticipated from the Nordrach experience. But Nordrach was singularly well placed and many of our sanatoria are remarkably badly placed. Abundant proof has been given of the importance of securing, especially in this country, sites well sheltered from the impact of strong, prevalent rain-bearing winds, yet practically no attention has been paid to this proof and until recently no serious attempt has been made to verify it. This inattention may be explained partly by the general inattention with which many members of the profession read their journals, partly by the great financial inconvenience of accepting the conclusion. The serious waste of public money on bad sites, now coming into view, may presently, however, make it even more inconvenient to ignore it. For there are certainly sanatoria which, from their faulty situation, may reasonably be regarded as death traps for their phthisical inmates, and such sanatoria should be scrapped forthwith.

2. I believe there are many cases for which the climates of this country are not so suitable as certain climates abroad, notably the climates of some high altitudes where windlessness is a feature—Davos for instance. Before the sanatorium boom began these climates were well recognised and highly valued by the medical profession.

3. Dealing with our poorer patients, for whom distant resorts are not available, we shall do well to remember Walther's view that sanatoria are useless for them, and Noy Scott's recently expressed opinion "that if much of the money, which has been spent on sanatoria, had been used to enforce by-laws regarding fresh air and sunlight in cottages we should have had better results."

4. In emphasising the results of sanatorium treatment and treatment outside, we shall, I am sure, become utterly confused unless we restrict ourselves to sanatoria in places sheltered from strong rain-bearing winds.

5. Lastly, we shall do well to make certain that all the "early cases cured" have been really tubercular; that some so classed have not been tubercular, I fancy most people are convinced.

I am, Sir, yours faithfully,

Exeter, June 25th, 1921. W. GORDON.

INTERNATIONAL SANATORIUM INSPECTION.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward, in your issue of June 25th, repeats under the title "A Further Consideration of Sanatorium Controls," the valuable suggestion, made in your leading article of April 16th, that, in view of the unsatisfactory state of sanatorium treatment in this country, public sanatoriums should be inspected by a commission of experts who would investigate the conditions which at present make sanatorium treatment a byword and a reproach. With regard to the composition of such a commission I doubt whether Dr. Ward's trinity—a general practitioner, a surgeon, and an intelligent layman—would contribute more han a Gilbertian atmosphere to the proceedings; we all know the non-expert inspector as an amiable old woman of either sex, who ambles round an institution, seeking knowledge and finding "eyewash." But I agree with Dr. Ward in distrusting a body composed solely of medical superintendents in this country; the accountant who audits his own figures is apt to do so with his tongue in his cheek. It is unfortunate that, in the United Kingdom, the names of the persons familiar with the modern treatment of tuberculosis do not, as a rule, carry much weight; and the persons whose names do carry weight are, with a few exceptions, unfamiliar with the modern treatment of tuberculosis. When we compare the remarkable achievements of foreign sanatoriums, such as Vejlefjord and Loomis, with the disheartening records of our own sanatoriums, the question naturally arises: Could not the medical officers of foreign sanatoriums which have "delivered the goods" be induced to inspect and report on the public sanatoriums in this country? Of course, national pride would kick at such a notion. Last summer, when I met Prof. Saugman in London and he expressed a wish to visit a certain well-known sanatorium, national pride prompted me to divert him from his object, for I knew that this sanatorium was about 15 years behind the times in lung collapse treatment, in which Prof. Saugman is a pioneer. But we might, perhaps, circumvent our rather inconvenient national pride by making international inspection of sanatoriums reciprocal, and in sending our own medical superintendents to inspect and report on foreign sanatoriums, we should at once soothe their feelings and surreptitiously increase their knowledge and usefulness.

I am, Sir, yours faithfully,

CLAUDE LILLINGSTON.

Gorleston-on-Sea, June 25th, 1921.

RESULTS OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—At this sanatorium we have excellent opportunities for finding out what happens to our cases after discharge. We find the following to be true: (1) that no case practically makes a recovery which does not show marked improvement whilst in the sanatorium; (2) that cases early in time, that is to say, cases which have exhibited symptoms of activity for a short time before admission, usually progress to complete recovery. I have come to the conclusion that all cases which will get well outside the sanatorium will get well in the sanatorium; in addition, many cases that will get progressively worse when outside will recover in the sanatorium; that the only chance for most bad cases is to admit them to the sanatorium. I attribute the difference in results obtained here in respect of early cases mainly to the liberal amount of rest in bed these cases obtain, and to the regulation of the amount of rest required by means of a carefully registered rectal temperature. The duration of residence of these cases is usually five calendar months, though in the case of pleurisies this may be in some cases reduced to three months; if they are sent in at once, the same might apply to cases of hæmoptysis. To produce any real lasting results the patients should on discharge be able to do without after-care except in so far as they can exercise it themselves, and should as a rule be able to go on with their previous occupations.

To understand this subject properly it is necessary to take very careful histories of these cases, for by this means it becomes possible to discover the time when these patients should first have been treated. and much valuable information will be gained which may prevent mistakes being made in the future. Thus if a patient has suffered from pleurisy five years previously, and we find that he has during that time developed into a typical case of chronic pulmonary tuberculosis, we should admit if we omitted to treat him properly in a sanatorium that we have committed a gross blunder. Whether a patient should be treated in a sanatorium or not will of course depend on the presence or absence of fever, as indicated by the taking of a rectal temperature and the presence or absence of symptoms of active disease. Though the isolation of the advanced case should be encouraged where possible, it should be remembered that the treating of the early case is the proper way to eradicate the disease; for we must all surely admit that most cases which can be treated as advanced have been infectious often for long periods, and must during that time have infected a considerable number of people; furthermore, the prospect of segregation will cause many persons to hide their disabilities for as long as possible and thus cause spread of the disease.

In conclusion, I would urge that such sanatoriums as exist should be used for the purpose for which they were intended—that is, for the treatment of cases early in time and therefore for the most part curable, and that always the early case should be given the preference over the advanced; it should of course be remembered that if an early case be sent to a farm or the seaside for a few months before going to a sanatorium, at the expiration of that period it may be impossible to accomplish anything. In addition, it would be as well that when these patients do get admitted to a sanatorium they should be treated correctly. I may say that at a time when I had the admission of these cases in my own hands I had little difficulty in persuading patients to undergo treatment. Of the first 500 cases admitted to the Ayrshire Sanatorium who remained for five months 120 were in the first stage, and of these in 1921 77 per cent. were well; 182 were in the second stage, and of these 52 per cent. were alive, many at their previous occupations; and of 198 third stage cases only 17 per cent. were alive. The duration of time in these cases from their admission to when the calculation was made varying from July, 1906, to August, 1912, the calculation was made by Mr. Steven of Edinburgh in April, 1921. I am, Sir, yours faithfully,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, June 25th, 1921.

CONCERNING THE ELECTRICAL ACTION OF THE HUMAN HEART.

To the Editor of THE LANCET.

SIR,—I greatly admire Prof. Bayliss's book entitled "Principles of General Physiology," and regard it as a valuable contribution to the advancement of physiological knowledge. It is the outcome of the matured thought of one of the leaders of the premier school of physiology in London and may be expected to serve for many years to come as a standard work of reference for many future workers and writers. The book presents an elaborate digest of modern physiological fact and doctrine, and forms a very convenient and accessible store-house of information. Not the least of its merits consists in the bibliographical accessories by which a very humanising quality is imparted to the text.

Uniform perfection of treatment over so extensive a field is hardly to be expected of any writer, however learned and industrious he may be, and as the author himself states in his preface "Important points have most probably escaped notice and I shall be very grateful to readers who will inform me of these omissions and also for criticism in general."

So I shall take the liberty of calling attention to an omission in the account of the electrical action of the human heart. In the section (third edition, pp. 656 et seq.) dealing with the electrical changes of the heart Prof. Bayliss gives an account of the subject that does not contain any allusion to my own discovery of the primary facts in 1887 which formed the point of departure for a long series of investigations by many physiologists and physicians. Nor does he include in his bibliography any one of the several papers on the subject published by me during the period 1887–89. Of these papers the first was published in the *Journal of Physiology*, Vol. VIII., p. 229, and the last and most complete in the Philosophical Transactions of the Royal Society, p. 169, 1889, under the title: "On the Electromotive Changes connected with the Beat of the Mammalian Heart, and of the Human Heart in particular." The subject was taken up and extended by Einthoven, whose first paper appeared in 1895 in *Pfluger's Archiv*, Vol. LX., p. 101, under the title "Ueber die Form des menschlichen Electrocardiogrammes." and the opening sentence of this paper contains a perfectly clear and frank acknowledgment, as is customary between men of science, which runs as follows: "Vor mehr als 6 Jahren bereicherte Augustus D. Waller, die Wissenschaft mit der Kenntniss des menschlichen Electrocardiogrammes. *Er zeigte, dass die rhythmischen* Schwankungen, welche der electrische Spannungsunterschied zwischen den verschiedenen Stellen des Korpers erfahrt, aus keine andere Weise als durch die electromotorischen Wirkungen des Herzmuskels verursacht werden."

I am, Sir, yours faithfully,

A. D. WALLER.

Physiological Laboratory, University of London,
South Kensington, June 18th, 1921.

To the Editor of THE LANCET.

SIR,—I am obliged to you for letting me see in advance a communication from Prof. A. D. Waller. I regret to have omitted to refer to the fact that Prof. Waller was the first to show that an electrical change associated with the beat of the human heart can be detected by leading off appropriate points on the surface of the skin to a sufficiently delicate recording instrument, and will endeavour to correct a new edition accordingly. I think, however, that it will be obvious that in a book dealing with general principles a detailed historical account would be out of place in the case in point. My object was to give as briefly as possible such a description as would enable a reader to understand the modern use of the electrocardiogram as a means of diagnosis. Prof. Waller has no ground of complaint in my references to other work of his in which results adding to our comprehension of the phenomena described were obtained. I am, Sir, yours faithfully,

June 27th, 1921. W. M. BAYLISS.

THE DEBT OF OUR TROPICAL DEPENDENCIES TO MEDICINE.

To the Editor of THE LANCET.

SIR,—All interested in the advance of tropical medicine and hygiene will welcome the prominence lately given to the much-needed recognition of their importance as essential and potent factors in the prosperity of our colonies and dependencies. Attention has rightly been drawn to the urgency of measures for prevention and treatment, and the call for research into the numerous problems presented by the extensive range of disease in the tropics. The baffling solution of many of these problems has been left too long to very occasional special commissions, or to the unaided and often thankless efforts of individual workers. It is, indeed, becoming more and more incumbent upon the Government not only to give wider support, by special sanction and State grant, to the elucidation and treatment of disease in the schools of tropical medicine at home, but also by establishing additional research and training institutions in our Crown Colonies, to assist the work of individuals, and to spread the gospel of hygiene among the native races. The very important medical side of our colonial missions, hitherto solely dependent on voluntary aid, has justly proved its claim to Government support. That this is the case has been well shown by Dr. J. B. Christopherson in an article on the medical work of the Universities' Mission to Central Africa, contributed to the society's journal of May, 1921. He emphasises the important rôle which this branch of the Mission has filled in the advance of tropical medicine, and the alleviation of the scourge of disease among the natives of our Central African colonies, thereby materially assisting the cause of colonial progress and development. Undoubtedly the wide field, open to the medical side of our missions, for preventive work and remedial treatment in such diseases as ankylostomia, bilharzia, yaws, malaria, dysentery, and sleeping sickness cannot be covered if relying entirely, as in the past, on inadequate voluntary subscription. As colonial administration reaps the benefit of the efforts of the Mission's medical workers, it is but just that financial support should be forthcoming from the Government to supplement and extend their valuable assistance in the prevention and treatment of tropical disease.

The educational aspect, particularly of the native in matters of tropical hygiene and causation of disease, though vitally affecting successful administration and the welfare of colonial populations, has been comparatively ignored. In the interests of the colonies concerned, as Dr. Christopherson rightly urges, much would be gained by popularising a scheme of elementary education for the native in the essentials of tropical disease and hygiene, and so ensuring his coöperation with medical endeavour in the task of rendering unhealthy regions habitable. For, clearly, the economic prosperity of tropical Africa is largely dependent on the country being made fit to live in, both for European and native. In this connexion medical science points out the surest way not only of achieving this object, but also of solving the labour question, a problem as vital in the tropics as it is at home, and therefore deserving of the fullest consideration by the governing authorities.

At a recent meeting of the Royal Society of Tropical Medicine and Hygiene, when an important paper was read by Dr. Claude Marshall on a new method of treating sleeping sickness by serum therapy, a vote was unanimously carried advocating that special representation be made to the Colonial Office, urging the provision of every facility for the investigation and trial of the method described. Among those taking part in the discussion was a distinguished visitor, His Excellency Sir Hugh Clifford, governor of the United Provinces of Nigeria, who spoke in high praise of the great debt which the colonies owed to the advances in our knowledge of the prevention of tropical disease. He laid particular emphasis on the importance of education in matters of health, and of the duty, attaching to all newcomers to the tropics, of acquiring a preliminary training in the fundamentals of tropical medicine and hygiene. It is greatly to be hoped that the unanimous feeling expressed at this meeting will produce very practical results in the guarantees of means of research into so widespread a disease as sleeping sickness, affecting, as it does, the welfare of a large native population, and, by its crippling influence on industry, determining, to no small extent, the commercial success and future of our African colonies. There seems good ground for belief that the Colonial Government authorities are fully alive to the interests at stake, and to the call for forwarding scientific research in the tropics by adequate and generous financial support. Will the Government meet that call?

Mr. Winston Churchill, Secretary of State for the Colonies, in his speech at the dinner given to the representatives of the Rockefeller Foundation, drew attention to the well-known achievements of scientific bodies in the alleviation of disease in all parts of the world, chief among them being the Rockefeller Foundation. He guaranteed that the Colonial Office would do all in its power to assist them in their great work; for the need of such help in the solution of problems of general health was fully realised, and the study of tropical disease, whether malaria or sleeping sickness, or the many other evils of the tropics, was, indeed, a work of mercy and urgency. Coming as it did from the Secretary of State for the Colonies, this assurance of the recognition of the need for help is a decided step towards attainment of the means to urther research in the vast field of tropical medicine, hether by Government grant or private endowment. Though primarily in the cause of humanity, Mr. Churchill might rightly have urged the expediency of colonial success as demanding earnest attention to the part played by sound and scientific knowledge of the prevention of disease in the tropics—the keystone of the future prosperity of our colonial empire responsibilities, and the foundation of successful colonial enterprise.

Too much reliance has been placed in the past on outside financial help in the cause of humanity and science, derived from the munificent spirit of individuals such as the late Sir Alfred Jones, from foundations such as the Rockefeller, and from our missionary societies. Without question the tropical side of the science of medicine and hygiene, dependent in considerable measure on these sources of help, has not only materially assisted colonial progress, but has established an indisputable claim to much-needed and indispensable financial backing from the State. The State should contribute, in proportion to the benefit it has received from science, and pay its share of what is justly speaking—a debt.

I am, Sir, yours faithfully,

J. Graham Forbes, M.D., F.R.C.P.

Harrington-gardens, S.W., June 23rd, 1921.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of The Lancet.

Sir,—Dr. E. Rowland Fothergill's letter in your issue of June 18th clearly shows that the profession is not united. I will go further and say that, except in a very superficial manner, neither the Federation of Medical and Allied Societies nor the British Medical Association can speak for any large body of medical men. Now if the General Medical Council could be largely increased by elected representatives, say 70 in number, surely that body would be able to represent the profession. It would require an Act of Parliament to make this increase in its numbers, but if the united body of doctors demanded it, it could be done.

This idea is one of the main objects of the National Medical Union, and it would encourage us to push the matter forward if medical men who agree with the idea would join the union, if not as members, then as associates paying little or nothing in the way of subscription. I am, Sir, yours faithfully,

E. H. Worth,

Hon. Sec., National Medical Union.

2, Aldrington-road, Streatham, S.W., June 19th, 1921.

A DISCLAIMER.

To the Editor of The Lancet.

Sir,—My attention has been directed to statements appearing in Great Britain to the effect that I gave evidence on the subject of the Prevention of V.D. before a Departmental Committee in 1912. The Committee may have had some of my publications in front of them, but I was neither asked for, nor have I given, any evidence in connexion with the inquiry. It is therefore not correct to say that my evidence had been considered.

I am, Sir, yours faithfully,

J. W. Barrett.

Melbourne, Australia, May 4th, 1921.

Donations and Bequests.—By will the late Sir Rowand Anderson left £1000 each to the Royal Infirmary, Edinburgh, the Royal Edinburgh Hospital for Incurables; and the Royal Edinburgh Hospital for Sick Children.—The late Mr. Thomas Fielding Johnson, J.P., of Leicester, bequeathed £1000 each to the Leicester Royal Infirmary and the Leicester Maternity Hospital; £500 to the Children's Hospital in connexion with Leicester Infirmary; £250 each to the County Home for Incurables, at Leamington, and the Charnwood Forest Convalescent Home; £200 each to the Institution for the Blind and the District Nursing Association; £150 to Dr. Barnardo's Homes; and £100 to the Wycliffe Society for Helping the Blind.

Parliamentary Intelligence.

HOUSE OF LORDS.

WEDNESDAY, JUNE 22ND.

The Dentists Bill.

THE House went into Committee on the Dentists Bill, the Earl of DONOUGHMORE in the chair.

Lord GREVILLE moved an amendment to Clause 1 (prohibition of practice of dentistry by unregistered persons) to provide that unqualified dentists should be placed on a separate register. He did not see how by adding unqualified men to a qualified list they were really increasing the number of qualified dentists. They would not help the shortage of dentists by transferring an unskilled man to a qualified list, because they did not make him any more skilled in the profession by so doing. All they did was to give him a false title and mislead the public. The placing of unqualified men on a separate list was strongly urged by the British Dental Association, but they were told by Sir Alfred Mond that if they pressed for it he would withdraw the Bill. They then agreed to the point, but that did not mean that the majority of qualified dentists agreed. He thought that his amendment was a very reasonable demand on the part of men who had spent several years in passing their examinations and in studying in hospitals in order to qualify for their profession. The unqualified man could start with merely a sign outside his door; and once he transferred to the register he obtained a great many benefits. One of the qualifications to be transferred to this list was "good personal character." That was no doubt a most estimable thing, but if they were told that in the absence of a qualified dentist some eminent divine was going to attend their teeth, they might derive great spiritual benefit, but he did not think they would obtain much physical consolation.

The Earl of ONSLOW said he had just received from the British Dental Association, which was to dentistry very much what the British Medical Association was to medicine, the following telegram:—

> "British Dental Association in annual meeting assembled at Bath this day unanimously support Dentists Bill as submitted by Minister of Health.—(Signed) STUART CARTER, President."

The number of persons actually practising dentistry who were not registered under the Act of 1878 was at least two to one of those registered under that Act and possessing dentistry degrees. It was quite a misapprehension to suppose that the Bill if passed as it stood would admit unqualified practitioners *en bloc* as qualified dentists.

The Marquess of SALISBURY: What will protect the public?

The Earl of ONSLOW said that they would be protected by the provision that these men must have practised for five out of the last seven years in this country, and so on. As regards the question of a separate title for those who possessed dental degrees, he (Lord Onslow) was proposing to move after Clause 3 a new clause which was primarily intended to prevent fraudulent representations by people describing themselves as something which they were not, and making it an offence for anyone to describe himself as a surgeon dentist unless he was in possession of a degree recognised by the Dental Board. All those persons at present on the register (except a very few persons still practising who were admitted by the Act of 1878, although holding no degrees) were holders of degrees in dental surgery, and would therefore have the exclusive right of calling themselves surgeon dentists. The Act of 1878 was very much less stringent than the present Act and admitted to the register all those who were practising dentistry at the time of the passing of the Act. This Bill proposed much stricter qualifications. The question of the register was not a new one. It was very carefully considered by a Committee of the Privy Council under the chairmanship of Mr. ACLAND. That Committee contained members representing every shade of opinion—qualified dentists, unqualified dentists, physicians, surgeons, civil servants, hospital authorities, and Members of both Houses of Parliament, and after the most careful examination of witnesses they came to the conclusion that this was a fair and just arrangement to the qualified dentists, to the unqualified dentists, and to the public. Unless the unqualified men were granted the full status of their brethren who possessed qualifications, how could it be expected of them that they would give up the free and unfettered position which they now occupied? He very much doubted whether Parliament would be willing to force them to do so if this amendment was carried, and the benefits which the Bill conferred might thereby be lost.

Viscount KNUTSFORD asked if their lordships had ever known the medical profession agree unanimously upon anything before? Yet they were unanimously in favour of this Bill, which a few lay people said was a great shame to them, because unqualified men were to be admitted on the same register as themselves. He was on the Committee to which the Government referred this question and when he saw his fellow members he felt certain of one thing—namely, that they would never come to an agreement. He was not certain that there would not be murder done before the end of their sitting, because they had on that Committee the head of the unqualified dentists, a member of the British General Medical Council, one of the leading lights among the qualified dentists, a doctor from the Ministry of Health, a doctor from the Ministry of Education, himself, as a layman, another layman, and a Socialist. But when they heard the evidence they were absolutely unanimous in recommending that the unregistered men should be admitted to the same register as the qualified men. The main reason was to place them under control and to stop all the malpractices which were going on among those men. All titles were misleading. The old Act tried to restrict the title. It said: "You must not call yourself a dentist, but you can call yourself a dental surgeon or a dental practitioner, or a dental specialist." No one, he contended, wanted this special list, and if the amendment were passed it would wreck a very useful Bill.

The Marquess of SALISBURY said that there had been a body of technical medical opinion hurled at their heads at which the bravest might quail, but he was not sure when they came to consider the thing very closely that the case was so formidable as it appeared. He had received a telegram from Scotland which said:—

> "Scotland agreed to the second reading in the Commons on the understanding that the amendments would be left to the unbiased decision of the Committee. The Government officially opposed amendments, despite understanding. Beg you to support Lord Greville in interests of good government and good faith.—MEDICAL DENTAL DEFENCE UNION, SCOTLAND."

Lord RIDDELL: Who are they?

The Marquess of SALISBURY said perhaps the noble lord knew better than he did. At all events he had concealed nothing. He had also a telegram addressed to another noble lord from Ireland: "Will you on behalf of Committee of Irish dentists please support Lord Greville's amendment to Dentists Bill this afternoon." So they were not quite certain about this volume of technical opinion being all on one side. But he wished to put in a word for the patients. It was very easy for technical people to come to an agreement, but what about the patients—the people who had toothache? Why should the present generation be handed over to unskilled dentists, because in the future there would be a better arrangement?

Lord RIDDELL said the Bill might necessitate certain anomalies for a temporary period, but it was well worth while to endure those evils in order to secure the good which would certainly result when dentistry had been placed on a proper footing as this Bill proposed to place it.

Lord SOUTHWARK thought that it would be a great misfortune if the Bill was lost through the insertion of amendments which might be opposed in the House of Commons.

The amendment was negatived, and the clause with minor amendments was agreed to.

The Earl of ONSLOW moved a new clause providing that a person registered under the principal Act—

> (a) shall by virtue of being so registered be entitled to take and use the description of dentist or dental practitioner;
>
> (b) shall not take or use, or affix to or use in connexion with his premises, any title or description reasonably calculated to suggest that he possesses any professional status or qualification other than a professional status or qualification which he in fact possesses and which is indicated by particulars entered in the register in respect of him.

The clause was agreed to.

Several other minor amendments were agreed to, the Committee stage of the Bill was completed, and the measure was reported to the House.

HOUSE OF COMMONS.

TUESDAY, JUNE 21ST.

Finance Bill—Spirits in Hospitals.

The House went into Committee on the Finance Bill, Mr. J. HOPE in the chair.

Mr. LEONARD LYLE moved the following new clause:—

> Section 4 of the Finance Act, 1918 (which provides for the reduction and allowance of duty in respect of spirits used in medical preparations or for scientific purposes), shall apply also to spirits used in hospitals on prescription, while Section 7, Subsection (1), of the Finance Act, 1920, shall not apply to wines supplied on prescription in hospitals, and the Commissioners of Customs and Excise may make regulations for carrying this provision into effect.

He said that he moved this clause last year on behalf of the hospitals, and he was afraid that the late Financial Secretary to the Treasury was fearful of what might happen to spirits in hospital once the cork had been taken out of the bottle; but he was putting this forward this year because there was now a different Chancellor of the Exchequer, who came from across the Border. He was hopeful that he would be slightly more sympathetic and less fearful of what might happen when the cork did come out of the bottle. The hospitals had to pay the full spirit duty, which was very heavy, and they were all very sympathetic towards the hospitals. During the war the Red Cross hospitals used to get their spirits at a much reduced duty, and he wanted to see that the hospitals which were so badly off just now got this small concession.

Mr. HILTON YOUNG (Financial Secretary to the Treasury) said it had never been possible to look at this proposal favourably from the point of view of the revenue. A considerable concession had been made to hospitals in regard to exemption on spirits actually used in medical prescriptions. This went a little further, and the great objection would be that it would constitute a very serious breach of the control of the Inland Revenue over the use of spirits. He thought if Mr. Lyle were acquainted with some of the opinions of the hospital authorities which had been prominently brought before him (Mr. Young) he would find that many responsible authorities were reluctant that they should undertake such difficult responsibilities as those proposed in the amendment. It was thought by a responsible body of opinion that the danger of abuse which would exist would not compensate the hospitals for the benefit they would derive pecuniarily from this exemption. For these reasons both in the interests of the revenue and of the hospitals he found it impossible to accept the new clause.

Mr. LYLE said he did not desire to divide the Committee on this occasion, but he would like to say that the British Hospitals Association quite approved of the amendment. He would, however, withdraw it.

The amendment was by leave withdrawn.

WEDNESDAY, JUNE 22ND.

Work of Consultative Health Councils.

Mr. LAWSON asked the Minister of Health whether he would supply a statement as to the work accomplished by the Consultative Councils appointed under the Ministry of Health Act, 1919.—Sir ALFRED MOND replied: The forthcoming annual report of the department for 1920-21 will include a statement on this matter.

River Lee Pollution.

Mr. G. W. H. JONES asked the Minister of Health whether his attention had been called to the pollution of the River Lee by sewage; whether he was aware that its present state constituted a menace to public health; whether he would take steps for the purpose of remedying the present state of affairs.—Sir ALFRED MOND replied: I am not aware that the present state of the River Lee constitutes a menace to public health, but if the hon. Member has any information to support the suggestion I shall be much obliged if he will supply me with it so that I may consider what action should be taken.

Washington Conventions.

Mr. CHAMBERLAIN (Lord Privy Seal), in reply to Major HILLS and Mr. GEORGE BARNES, said that he hoped that it would be possible to provide an opportunity for the further discussion that had been promised on the Washington Labour Conventions on Friday in next week, but that must not be taken as an absolute promise.

Medical Officers' Leave.

Sir MAURICE DOCKRELL asked the Secretary for the Colonies whether he could have extended to the Royal Army Medical Corps and Indian Medical Services the recent orders, General Routine Orders No. 24, of Jan. 10th, 1921, and No. 437, of May 4th, 1921, permitting officers other than those of the Royal Army Medical Corps and Indian Medical Services who had completed their time in Mesopotamia, and are due to serve a further period in India, such leave as they might be entitled to under existing leave rules before proceeding to India.—Lieut.-Colonel Hon. G. F. STANLEY replied: The question of the grant of leave to the officers referred to is a matter for the local military authorities. Officers of the Royal Army Medical Corps whose tour of foreign service is five years, serve two years in Mesopotamia and three years in India, and this procedure could not be carried out if officers were granted leave on the expiration of their period of service in Mesopotamia before transfer to India.—Sir MAURICE DOCKRELL: Why is there any differentiation between these medical officers and the ordinary combatant officers, and if they are to be sent after two years in the frying-pan of Mesopotamia to the fire of India for three or more years does the hon. gentleman not think they want cooling down, and will he send them to the hills for three or four months?—Lieut.-Colonel STANLEY: The question of difference between medical and combatant officers has always been same, that medical officers go for a certain tour of duty ad. As to the second part of the question, I am afraid add nothing to the answer I have already given.—Sir MAURICE DOCKRELL: I am pleading with the hon. and gallant gentleman that if he is sending them for three years to India he would allow them to be posted for three or four months in the hill country to give them a chance of getting their sea legs again.—The SPEAKER: The hon. gentleman had better put that question on the paper.

Consumption of Alcoholic Beverages.

Mr. KENYON asked the Chancellor of the Exchequer the consumption of beer, spirits, and wine in the United Kingdom during the quarters ending March 31st in the years 1918, 1919, 1920, and 1921.—Sir ROBERT HORNE (Chancellor of the Exchequer) replied: The following table shows the net quantities of beer, spirits, and wine retained for home consumption in the United Kingdom during the quarters ending 31st March in each of the years 1918, 1919, 1920, and 1921:—

	1918.	1919.	1920.	1921.
Beer, standard barrel	2,525,531	3,454,607	5,439,139	5,793,733
Spirits, proof gallon	3,271,000	3,766,000	6,363,000	4,436,000
Wine, gallon	2,929,000	4,795,000	5,565,000	2,838,000

THURSDAY, JUNE 23RD.

Dr. Addison's Salary.

The House went into Committee of Supply on a vote of £42,589 (including a supplementary sum of £6050) for salaries and expenses of Cabinet offices, &c., Mr. JAMES HOPE in the Chair.

Mr. LLOYD GEORGE (Prime Minister), in moving the vote, said that when the Government came to the conclusion after some reflection that it was necessary for some time to continue the post of Minister without portfolio it was done from no profligate desire to squander the taxpayers' money. He asked the House as a question of confidence in the Government to enable them to retain the services of Dr. Addison till the end of the session.

Lieut.-Colonel GUINNESS accepted a suggestion from the Prime Minister and moved the reduction of Dr. Addison's salary by £2,500.

Viscountess ASTOR defended Dr. Addison, who, she said, had only carried out at the Ministry of Health the policy of the Government and the policy which that House had passed. She was afraid that he had been a little too progressive for some people. She did not want to waste money; she wanted to save it. But there were things that were more valuable than money in the country, and one of them was public health. Some day hon. Members would have to face a different constituency and they would be told that they tried to do away with the Ministry of Health and they tried to do away with infant welfare organisations—things about which Dr. Addison cared deeply and for which he had worked hard.

After considerable debate, Mr. A. CHAMBERLAIN (Lord Privy Seal) moved the closure which was carried by 250 votes to 40.

Colonel GUINNESS's amendment to reduce Dr. Addison's salary by £2500 was then put and agreed to.

The State of the Voluntary Hospitals.

Sir ALFRED MOND, Minister of Health, announced that in view of the serious state of the voluntary hospitals the Government have decided to ask the House to vote a supplementary estimate of £500,000 in aid of deficiencies during the present year. The recommendation of the Cave Committee as to the control of such money by a Commission would, said the Minister of Health, be followed, and he proposed to appoint, as chairman of an *ad hoc* Commission for distribution, the secretary of the Ministry of Health, Lord Onslow. In reply to questions he stated that the Irish hospitals would not share in the distribution.

Inquiry on Light Artificial Limb.

Major COHEN asked the Minister of Pensions whether it was his intention to set up a court of inquiry to consider the question of the advantages of the light artificial limb.—Major TRYON replied: Yes, sir.

Pensions Administrative Expenses.

Mr. ROBERT RICHARDSON asked the Minister of Pensions the amount of administrative expenses of local war pensions committees for the year ending Dec. 31st, 1918, and Dec. 31st, 1920.

Mr. ALFRED DAVIES asked the number of persons employed on the staff of the Pensions Ministry on Dec. 31st, 1918, and Dec. 31st, 1920; and the number of persons receiving salaries of £500 per annum or over, including bonuses, on Dec. 31st, 1918, and Dec. 31st, 1920.

Mr. MILLS asked how many officials in his department at present received a salary of £1000, including war bonus, or over; and how many received a salary of £1000 or over in June, 1914.—Major TRYON replied: There can be no just comparison between 1918 and 1920. From 1918 onwards the work of war pensions committees was, as my hon. friends know, largely increased. Further, the staff of local committees which in 1918 was mainly voluntary is now employed on a salaried basis. In 1918, before the extension of the work due to demobilisation and other causes, the approximate amount of the administrative expenses of local committees was £500,000. In 1920 it was £1,200,000. This increasing expenditure was one of the reasons which actuated my right hon. friend in appointing the Departmental Committee of Inquiry over which I preside. As regards the staff in the direct employ of the Ministry the numbers on the dates mentioned in 1918 and 1920 were 9030 and 17,604 respectively, exclusive of hospital staff. The present number of officials (including 151 medical officers employed on a temporary basis) who are in receipt of salaries of £1000 a year or more, including bonuses, is 184. The number receiving £500 a year or over, including bonuses at the rates mentioned in 1918 and 1920, were respectively 208 (including 160 medical officers) and 680 (including 642 medical officers).

Regional Pension Awards.

Mr. WALTER HALLS asked the Minister of Pensions the number of pensions awarded by each region during the six months ending Dec. 31st, 1920, and the administrative expenses of each regional headquarters during the same period.—Major TRYON replied: 574,299 applications were considered during the period mentioned, 532,659 awards were made, and 41,610 claims rejected. The total expenditure for the regions incurred in administration during that period was 689,728.

The Committee on Adoption.

Sir JOHN BUTCHER asked the Secretary for the Home Department whether he had considered the Report of the Committee on Adoption; and whether he would soon be in a position to introduce legislation on the subject.—Sir JOHN BAIRD replied: The report of the Committee referred to which was issued last month is receiving consideration, but I am not yet in a position to make any statement as to legislation.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR MEDICAL AND SURGICAL DEGREES.

Part I., Surgery, Midwifery, and Gynæcology.—G. F. Abercrombie, A. C. Ainsley, F. Allen, S. H. Barnett, C. C. Beney, E. M. Burrell, W. R. Carling, C. N. Carter, A. O. Courtis, D. Crawford, C. Dunscombe, D. D. Evans, L. E. Frazer, H. J. H. Hendley, R. C. Hewitt, B. E. Jerwood, A. V. Johnson, P. B. Kittel, R. B. P. Lansdown, S. Orchard, E. S. Orme, F. A. Phillipps, J. H. Porter, W. Shaw, G. W. Theobald, G. I. F. Tweedie, D. C. L. Vey, J. P. Wells, C. E. Whitting, C. H. Whittle, and H. L. Willey.

Part II., Medicine, Pathology, and Pharmacology.—A. C. Ainsley, A. E. Clark-Kennedy, B. K. T. Collins, H. T. Cubbon, E. Donaldson, N. D. Dunscombe, V. N. Fenton, E. A. Fiddian, C. I. C. Gill, W. S. Gross, E. A. H. Grylls, G. Habgood, A. T. Hawley, E. C. Malden, L. B. Maxwell, R. A. Olphert, W. H. Palmer, H. A. A. Pargeter, F. A. Phillipps, P. W. Putnam, W. Raffle, A. P. Saint, W. Shaw, T. H. Somervell, E. D. Spackman, H. N. Stafford, R. A. P. Starkie, S. D. Sturton, G. W. Theobald, G. D. C. Tracy, R. R. Traill, Y.-S. Wan, and C. H. Whittle.

EXAMINATION FOR DEGREE OF M.CH.

J. B. Hunter.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on June 22nd Sir Sydney Russell-Wells, M.D., was re-elected Vice-Chancellor for the year 1921–22.

Grants were made out of the Dixon Fund for the year 1921–22 as follows: Mr. F. J. F. Barrington, M.B., B.S., for research on the nervous mechanism of micturition, £50. Mr. E. J. Evans, B.Sc., for researches on the nature of the discharge in an X ray tube with a static machine as source of potential, £15. Prof. J. P. Hill, D.Sc., F.R.S., for researches on the development of Mammalia, more particularly of the Primates, £40. Miss G. Z. L. Le Bas, B.Sc., for researches into the part played by lipoids in immunity and bacteriological intoxication, £40. Mrs. M. M. Neilson-Jones, D.Sc., for researches on mycorhiza and the physiology of heterotrophic nutrition in flowering plants, £50. Prof. Karl Pearson, M.A., F.R.S., to defray the cost of the publication of drawings of the sesamoid bones of the knee-joint to be used to illustrate a memoir on the subject now in progress, £50. Mr. J. W. D. Robinson, M.Sc., for geological research on the palæozoic beds of south-east England and north France, £30. Mr. D. M. Shaw, to enable him to apply and demonstrate his special "Theory of Maximum Shear" in the functional interpretation of specific tooth-shapes and the normal physiological mechanism and interactions of teeth, especially the teeth of man, £45. Mr. H. G. Smith, B.Sc., for investigation of the Basic intrusions of Central Wales, £51. Miss D. M. Wrinch, D.Sc., for researches on the morphological significance of nodal points on the branching of trees, £50.

The following appointments were made: The Vice-Chancellor (Sir Sydney Russell-Wells), the Principal Officer (Sir Cooper Perry), Dr. H. C. H. Carpenter, F.R.S., and Prof. E. A. Gardner to be Governors of Birkbeck College. Miss E. C. Higgins to be Governor of Grey Coat Hospital. Mr. S. L. Loney to be Member of the Surrey Education Committee. Sir Sydney Russell-Wells to be representative at the Conference of the International Union against Tuberculosis to be held in London in July, 1921. The Scholarships Committee reported the appointment for 1921-22 of Mr. E. C. Warner, of Guy's Hospital Medical School, to the University Studentship in Physiology of the value of £50.

UNIVERSITY OF MANCHESTER.—Alderman Henry Plummer, a member of the Court of Governors and of the Council of the University, has contributed the sum of £1000 to the University Appeal Fund in commemoration of his golden wedding. The following have been recommended for the M.D. degree: Basil Browning, T. E. Dickinson, W. H. Kauntze, R. L. Newell, J. A. Panton (gold medallist), Harry Platt (gold medallist), and D. McK. Sutherland.

EPSOM COLLEGE.—The sixty-eighth annual general meeting of the Governors of Epsom College was held on June 24th, at 49, Bedford-square, London, W.C., Sir Henry Morris, the treasurer, presiding. The report of the scrutineers showed that the successful applicants for Pensionerships and Foundation Scholarships are: Pugh Pensionership, Mrs. Margaret Bromilaw; Christie Pensionership, Dr. Peter W. McGregor; Sir Thomas Smith Pensionership, Mrs. Celeste S. M. Orme; Foundation Scholarships, Frederick J. Brice, David Joy, John L. Newton, Philip M. Lawson, Spenser G. F. Penny, Eric R. Bent, James D. Shoolbread. In moving the adoption of the report the treasurer referred to the great loss which the College had sustained in the death of Sir Frederick Taylor, who had been for over 30 years an active member of the Council, and for many years had held the offices of chairman of the School Committee and honorary physician. He thanked friends of the College who had responded to the Council's application to take Mortgage Debenture Bonds of £100 at 5 per cent. interest, and stated that £20,200 of the Debentures had been allotted to date. As a result the Council had repaid the £14,000 owing on Mortgage, and had liquidated the greater portion of the debt to the bankers. This debt was incurred owing to the greatly increased cost of maintaining the school prior to the time when the higher school fees became payable, the provision of an annexe to the College infirmary, and the expense of entering upon new premises as a result of the expiration of the lease of the former London offices. The chairman further referred to the fact that the Epsom College scales of remuneration for assistant masters compared very favourably with the scales suggested in the Burnham report, and pointed out that the Council had instituted a non-contributory scheme of superannuation allowances for the masters which was far more generous than the contributory scale adopted 17 years ago. Schemes had also been instituted for providing pensions for other officials. The report having been adopted, formal business was transacted, after which a cordial vote of thanks to Sir Henry Morris was proposed by Sir William Church, seconded by Dr. P. W. Latham, and carried by acclamation.

DISTRICT NURSING OF INSURED PERSONS.—Considerable discussion is taking place as to the nursing of insured persons in their own homes, and as to contributions to nursing associations by approved societies. The voluntary organisations for these purposes may receive contributions from the societies, either under their statutory powers under paragraph 20 of the Act of 1911 or by way of additional benefits out of their surplus funds. The Central Council for District Nursing in London (Chairman, Sir William Collins; Chairman of the Executive Committee, Mr. E. B. Turner) in April last informed those approved societies with members resident in London that the Council was in a position to arrange for adequate nursing for all such members, and invited the societies to make contributions in aid of this work. The Ministry of Health, in a circular issued to approved societies, contemplates sanctioning schemes for bringing into operation additional benefits in the course of next month, and is prepared to furnish societies with model draft schemes to that end. Among additional benefits suggested by the Ministry is provision of a nursing service for members of the societies, for which purpose a separate fund may be set aside. Lord Cave's Committee's report on the voluntary hospitals, while recognising the complete freedom of discretion of the approved societies in granting financial aid in respect of insured persons to voluntary hospitals, appears to favour a contribution or donation in recognition of such services to their members, rather than any scheme of insurance by payment in advance (with its contractual implication), or compulsory payment afterwards in respect of service rendered. Here, again, the case of the District Nursing Associations is analogous with that of the voluntary hospitals in relation to insured persons or approved societies, and any scheme of financial aid to the one may be applied to the other.

Society of Medical Officers of Health: Proposed Midland Tuberculosis Sub-Group.—A meeting for medical officers working in tuberculosis in the Midlands will be held on Saturday, July 9th, at 3 p.m., at the tuberculosis dispensary, 44a Broad-street, Birmingham, with the object of considering the advisability of forming a Midland Tuberculosis Sub-Group. Dr. G. B. Dixon, chief T.O., of Birmingham, will attend. Those interested in the work of prevention and treatment of tuberculosis, whether members of the society or not, are desired to attend this meeting. If a sub-group is formed sub-group rules and election of officers will be considered.

Royal Sanitary Institute.—The Congress of the Royal Sanitary Institute, at Folkestone, passed off successfully last week. It evoked considerable interest, and was attended by upwards of a thousand delegates and members. Lord Radnor, the President, at the inaugural meeting on the Monday, dealt with the value of the voluntary services. Amongst the many topics discussed perhaps the milk question was one of the most prominent. The conference of veterinary inspectors made it clear that little progress has been made in the last 25 years in reducing the prevalence of bovine tuberculosis. Resolutions were passed for the encouragement of grade A milk and for the adequate control of methods of pasteurisation. Opinions were expressed that the only safe milk on the market at present for infants and little children, practically speaking, is dried milk. Grade A milk is not available, and pasteurisation may mean anything. Dr. Mellanby's popular lecture emphasised the need for a greater consumption of milk, showing that to double the national consumption of milk would be wise, and that there is room for all the "milk reformers'" efforts to get a safe milk. The deplorable state of the teeth of the nation received a good deal of attention at the Congress, and in this connexion the popular lecture aroused great interest, and most of those who attended the lecture were agreed that Prof. Mellanby and his wife have proved their case that by a change of dietary an enormous advance could be made at once in the present state of our knowledge not only in preventing rickets, but in securing good teeth.

A special section of the Congress dealt with the subject of Industrial Welfare, as essential to attaining a better spirit in the relations of capital and labour. The clarification of the air, as the result of the coal dispute, gave a stimulus to the discussion on smoke prevention, the remarks of the various speakers showing clearly how small was the effort throughout the country to tackle this problem.

Among other subjects dealt with there was an interesting discussion on the education of backward children, and another on the tests for mentally defective children.

The difficult question of housing received little attention, doubtless because at present this is regarded more as a problem for the statesman than for the sanitarian.

The late Colonel S. H. O'Brien Banks.—The death occurred at Brighton, where he had resided since 1909, on June 15th, of Colonel Samuel Henry O'Brien Banks, F.R.C.S. Irel., late I.M.S., at the age of 79. A native of Ireland, his father was Dr. Henry Banks of Co. Wicklow, a well-known Irish physician, while Sir John Banks, Queen Victoria's physician in Ireland and Regius Professor of Medicine at Trinity College, Dublin, was his uncle. Samuel Banks studied medicine at the Carmichael College of Medicine, and the Richmond, Whitworth, and Hardwicke Government Hospitals, Dublin, and was the Carmichael Prizeman for two years. He took his degrees in 1865 and 1866, and in 1880 became a Member of the King's and Queen's College of Physicians and a Fellow of the Royal College of Surgeons, Ireland. The greater part of his medical career was spent in India. In 1866 he joined the Indian Medical Service, and in the following year sailed from Bombay for Abyssinia, took part in the campaign against King Theodore, and was present at the storming and capture of Magdala on April 13th, 1868. For his services he was awarded the Abyssinian medal. He subsequently held a number of important appointments lia. For some time he was a civil surgeon at Hyderabad, Deputy Surgeon-General in Bombay, and served on mbay Government Council as chief medical member. He was also a magistrate for Bombay. He retired in 1896 on a well-earned pension with the rank of Colonel, and lost his only son in the second battle of Ypres.

Federation of Medical and Allied Societies.—The annual general meeting was held at 11, Chandos-street, London, W., on June 28th. In the unavoidable absence of the president, Sir Berkeley Moynihan, the vice-president, Sir Malcolm Morris, delivered the annual address. The annual report was read, and officers were appointed for the ensuing year. Thirty societies were elected to representation on the Executive Council, and after a ballot Dr. Ford Anderson was elected as a representative of individual members. The meeting of the Executive Council was held before the annual meeting, Sir Malcolm Morris presiding. A report was received from the Medical Council concerning the question of pressing for an inquiry into the medical provisions of the National Insurance Acts. The General Purposes Committee reported on a reference it had received regarding the publication of the news of the Federation, and it was resolved to issue a Journal, the arrangements being left in the hands of a special committee appointed for the purpose. The transfer of the offices to new premises, at 12, Stratford-place, London, W., was authorised.

London Federation of Infant Welfare Centres.—The annual meeting was held at the Mansion House on June 29th. Sir Alfred Mond was present and spoke on the work of infant welfare centres as a whole. He said that he knew of no movement which had produced more immediately valuable results for relatively so small an expenditure as these centres. Whatever economies had to be made, and unfortunately we lived in an age of economy, he expressed the hope that the last direction in which economy would be attempted would be the curtailment of that important part of preventive medicine. Sir Alfred Mond added that the only true economists in the world were women, and he looked to women for guidance as to the extent to which it was possible to achieve more in the infant welfare movement without an increase in expenditure. Sir Arthur Stanley expressed satisfaction that after combining in their work for two years the British Red Cross Society and the Infant Welfare Organisations showed no tendency to drift apart, but rather to draw closer together.

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NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.

The sixth annual meeting of the National Council for Combating Venereal Diseases was held in the Barnes Hall, at the house of the Royal Society of Medicine, 1, Wimpole-street, W., on June 28th.

In the course of his Presidential address Lord Gorell said that during the past year branches of the National Council had been very active; there had been an increasing number of attendances at treatment centres, and the public was evidently realising the importance of continuous treatment. On the home side of the work, in one county alone lectures had been delivered to more than 30,000 people; in spite of criticism of this form of propaganda it was clear that much must be done by bringing home the facts of venereal disease to such a large number of people. Medical assistance must be accompanied by this method of going to the root cause of the evil. On the imperial side a substantial beginning of similar work was evident, and on the international side, whatever opinions might be held concerning the general utility of the League of Nations, there could be no doubts on the desirability of the work of the International Health Section, at whose recent Conference, held at Genoa, the National Council had been represented. The National Council, moreover, was now the recognised agent of all venereal diseases work carried on under the auspices of the Joint Committee of the Red Cross and the Order of St. John. When in May the Council met representatives of the Crown Colonies and of the seafaring trades all those who attended saw the necessity for amendment of the Merchant Shipping Act with reference to venereal diseases; and under the auspices of the Colonial Office, with the assistance of the Ministry of Health, three Commissions were despatched to the ports of the Empire to investigate the conditions obtaining there and to rouse public opinion in the matter.

Prof. Winifred Cullis, of the Mediterranean Commission, speaking of the work done by that Commission at Gibraltar and Malta, expressed the feeling that here was an opportunity to repay a small part of the debt owing to the merchant service for its services during the war. The Commission had advocated "out-patient" facilities, whereby sailors might remain in their ships, but by carrying medical cards with them might obtain continuous treatment at successive ports of call, and "in-patient" treatment which would dispense with the hardship now attendant upon the seaman forced by illness to leave his ship. The establishment of out-patient departments was promised at both ports, and branches of the National Council formed; although prostitution is officially sanctioned at Malta there were signs that a change of policy might soon be made in that respect.

Dr. A. F. Wright, of the Western Commission, emphasised the extraordinary temptations to which sailors are exposed at many ports, and the necessity not only of means of treatment on every ocean-going ship, but of special competence on the part of every ship's doctor to deal with venereal disease. The Commission met with different receptions in various West Indian islands; in some, where the population was comparatively large, conditions of public health were good, but in the poorer and smaller islands not only venereal diseases, but all forms of public health work were disgracefully neglected; and this was not altogether the fault of the medical profession. The lack of coördination between the islands, each of which had its own government, was productive of disastrous results; the whole tone of medical arrangements needed raising before venereal disease could be properly considered and treated. Many West Indian doctors were brilliant general practitioners, but there were apparently no experts in the whole of the West Indies, and the lack of laboratory arrangements, with the consequent almost complete neglect of bacteriology, together with the very urgent need for post-graduate instruction of men sometimes twenty years behind the times in medicine, rendered the state of affairs very serious.

Mrs. Neville Rolfe, General Secretary of the Council and a member of the Eastern Commission, spoke of observing in the places visited a lack of recognition of the whole idea of public health vital from the social and economic points of view. At Hong-Kong the conditions of the port were such that it was miraculous that any seamen escaped venereal disease; even the vessels of the Navy could only with great difficulty be kept clear of women, and both there and at Singapore strong commercial interests had grown up which opposed every movement to prevent venereal disease on the score of interference with trade. At Colombo an efficient port administration protected the shipping; at Shanghai the procedure of government, consequent upon the status of the city as a Treaty Port, rendered legislation difficult to obtain, but the Chinese Chamber of Commerce had arranged to translate and print in Chinese many of the pamphlets issued by the Council; since the return of the Commission a venereal diseases specialist had been sent for, and a clinic was to be opened in the port.

The Chairman of the Executive Committee of the South African National Council for Combating Venereal Diseases, in proposing a vote of thanks to the speakers, spoke of the complications introduced into the problem in South Africa by the questions of race, language, and colour. Much propaganda work was done by pamphlets, but lecturers were hard to obtain. The Public Health Bill of 1919 had put an end to the recognition of prostitution. The meeting concluded with a vote of thanks to Lord Gorell, proposed by Mr. E. B. Turner, and carried by acclamation.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, July 4th, at 8.30 p.m.

Resumed Discussion (open) (the President, Sir John Bland-Sutton, in the chair) on

"The Problem of the Private Clinic System in Great Britain."

If thought desirable the following resolution may be moved:—

That in the opinion of this meeting the time is ripe for the formation of Group Clinics in this country, and that sympathetic encouragement should be given to them by the profession and by its governing bodies.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

Thursday, July 7th.—8.15 p.m., Annual General Meeting. Election of Officers and Council for Session 1921-1922. 8.30 p.m., Paper:—Prof. A. Louise McIlroy: Some Factors in the Control of the Birth-rate. Followed by a discussion.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, July 4th.—12.15 p.m., Dr. Burnford: Pathological Demonstration. 2 p.m., Mr. D. Armour: Operations. 2.30 p.m., Dr. A. Saunders: Demonstration of Cases (Medical Wards). 5 p.m., Lecture:—Mr. D. Armour: Diseases of the Gall-bladder and Ducts—Treatment.

Tuesday.—10 a.m., Surgical Registrar: Demonstration of Cases. (Surgical Wards.) 12 noon, Mr. T. Gray: Demonstration of Fractures. 2.30 p.m., Mr. Addison: Visit to Surgical Wards. 5 p.m., Lecture:—Mr. Baldwin: Surgery of the Rectum.

Wednesday.—12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 p.m., Mr. D. Armour: Demonstration of Cases. (Surgical Wards.) Mr. Addison: Operations. 5 p.m., Lecture:—Dr. Simson: Sterility.

Thursday.—10.30 a.m., Dr. Simson: Gynæcological Demonstration. 12 noon., Dr. S. Pinchin: Diseases of the Heart. 5 p.m., Special Lecture:—Dr. L. Williams: Vitamins and Internal Secretions. (Open to all Medical Practitioners.)

FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. 12.15 P.M., Dr. Burnford: Applied Pathology. 2.30 P.M., Mr. Baldwin: Operations. Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Mr. Addison: Inflammation and Tumours of the Breast.

SATURDAY.—10 A.M., Medical Registrar: Demonstration of Cases. (Medical Wards.)

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, July 4th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.

TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 P.M., Dr. J. Metcalfe: X Ray Department. 3 P.M., Lecture Demonstration:—Mr. C. H. Hayton: Cases illustrating Diseases of the Larynx (1) Inflammatory, (2) Destructive.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Dermatological. 3 P.M., Lecture Demonstration:—Mr. W. E. Tanner: Specimens illustrating Some Common Affections of Joints.

THURSDAY.—2 P.M., Mr. N. Fleming: Eye Department. 2.30 P.M., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

FRIDAY.—2 P.M., Dr. C. E. Sundell: Diseases of Children. 3 P.M., Lecture Demonstration:—Dr. C. E. Sundell: Breast Feeding. Weaning. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Operations. 3 P.M., Mr. H. W. Carson: Surgical In-patients.

UNIVERSITY OF LONDON.

The Semon Lecture will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W.

TUESDAY, July 5th.—5 P.M., Dr. W. Jobson Horne: The Relationship of the Larynx to Pulmonary Tuberculosis.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.

SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.

TUESDAY, July 5th, and THURSDAY.—4.15 P.M., Mr. H. S. Souttar: Injuries of the Peripheral Nerves.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

TUESDAY, July 5th.—10.30 A.M., Demonstration VII., The Management of Difficult Cases.

THURSDAY.—3 P.M., Demonstration VIII., Treatment of Minor Ailments.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, July 7th.—4 P.M., Lecture:—Dr. F. Langmead: Pulmonary Tuberculosis.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, July 8th.—5.15 P.M., Lecture X.: Herd Instinct and Herd Ideal: Mob Hysteria: Rumour.

Appointments.

DODD, H. G., M.B., B.S. Durh., has been appointed Honorary Anæsthetist, Royal Alexandra Hospital for Sick Children, Brighton.

HAIRE, N., Ch.M., M.B. Sydney, Clinical Assistant, Out-patient Department for Women and Children, London Lock Hospital.

SHEEN, A. W., M.S. Lond., F.R.C.S. Eng., to the new chair of Professor of Surgery in the Welsh National School of Medicine.

Certifying Surgeons under the Factory and Workshop Acts: THOMAS, T. P., M.R.C.S., L.R.C.P. Lond. (Brecon); ALLEN, E. H. C., M.B., B.Ch. Dub. (Clwt-y-Bont).

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Sen. H.S. £300.

Bedford County Hospital.—H.S. £200. Asst. H.S. £150.

Birkenhead Borough Hospital.—Sen. H.S. £250.

Birmingham Education Committee.—Asst. Sch. M.O. £500.

Birmingham General Dispensary.—Res. M.O. £400.

Blackburn and East Lancashire Royal Infirmary.—Second and Third H.S.'s. Each £250.

Blackpool, Victoria Hospital.—H.S. £300.

Blyth Urban District.—M.O.H. and Sch. M.O. £800.

Bolton Infirmary and Dispensary.—Female Third H.S. £170.

ol, Royal Hospital for Sick Children and Women.—Hon. S. to Out-patient Department.

de Non-Provident Dispensary.—Res. M.O. £300.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £125.

Derby, Derbyshire Royal Infirmary.—H.S., H.P. Each £200.

Devonport, Royal Albert Hospital.—H.S. £200.

East London Hospital for Children and Dispensary for Women, Shadwell.—Cas. O. £120.

Evelina Hospital for Children, Southwark, S.E.—H.S. £160.

Fulham, Parish of.—Third Asst. M.O. £300.

Great Northern Central Hospital, Holloway-road, N.—Dental S.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Halifax, Royal Halifax Infirmary.—Third H.S. £200.

Harrow-on-the-Hill Infant Welfare Centres.—Female M.O. of Baby Clinics. £1 11*s.* 6*d.* per session.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Asst. S.

Huddersfield County Borough.—Asst. M.O.H. £500.

Ilford Urban District Council.—Dental S. £500.

Leeds Public Dispensary.—Sen. Res. M.O. £200.

Leeds University (Leeds Maternity Hospital).—Tutor in Obstetrics and Res. M.O. £300.

Liverpool, City of.—Asst. Res. M.O.'s at the Corporation Sanatoria. £300. Asst. Res. M.O.'s at the Corporation Infectious Diseases Hospitals. £250.

London Temperance Hospital, Hampstead-road, N.W.—Surg. Registrar. 40 guineas.

Manchester Children's Hospital, Pendlebury.—Res. M.O. £150.

Manchester Ear Hospital.—Hon. Asst. S. Hon. Radiologist.

Manchester Royal Infirmary.—H.S. to Special Depts. £50.

Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Female Surg. £200.

Miller General Hospital for South-East London.—H.S. £150.

National Hospital for Diseases of the Heart, Westmoreland-street, W.—Pathologist. £250.

Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.

Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £350.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Nottingham General Hospital.—Res. Cas. O. £250.

Oxford, Radcliffe Infirmary and County Hospital.—H.S. £250. Res. Accoucheur. £200.

Portsmouth, Royal Portsmouth Hospital.—H.S. £150.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. £60.

Rochdale Infirmary and Dispensary.—Sen. H.S. £300. Jun. H.S. £200.

Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.

St. Bartholomew's Hospital, London, E.C.—Second Asst. in Med. Professorial Clinic.

St. Thomas's Hospital.—Clin. Asst. in V.D. Dept. £150.

Salford Royal Hospital.—H.S. Cas. H.S. Each £150.

Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.

Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.

South-Eastern Counties of Scotland Joint Sanatorium Board.—Med. Supt. £600.

Stroud General Hospital.—H.S. £200.

Union of South Africa Government.—Asst. P.'s in Mental Hospital Service. £400.

University College Hospital.—Asst. Radiologist. £300.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. H.S. Each £100.

West London Hospital, Hammersmith-road, W.—P.

THE Chief Inspector of Factories announces the following vacant appointments: Milngavie (Dumbarton); Pitlochry (Perth).

Births, Marriages, and Deaths.

BIRTHS.

COOKE.—On June 18th at Berkshire Villa, Ventnor, the wife of Reginald T. Cooke, M.R.C.S., L.R.C.P., of a daughter.

EDMONDS.—On June 25th, at Manor House, Gleneagle-road, Streatham, the wife of C. J. E. Edmonds, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

IEVERS.—On June 20th, at a nursing home, Sandgate, the wife of Brevet Lieut.-Colonel Osburne Ievers, D.S.O., R.A.M.C., of a daughter.

JAMES.—On June 3rd, at Mussoorie, India, the wife of Major J. F. James, I.M.S., of a daughter.

MARRIAGES.

BARTER—KIES.—On June 22nd, at St. Michael's Church, Stockwell, Lieut. J. A. Barter, R.N., to Pauline Kies, late L.M.S., Shanghai.

EDWARDS—JONES.—On June 25th, 1921, at Bryn Du (C.M.) Church, Llanfaelog, Anglesea, Thomas P. Edwards, M.D., B.S. Lond., D.P.H. Cantab, Ardwyn, Ruthin, N. Wales, to Eveline, daughter of the late D. H. Jones (of Carnarvon), and of Mrs. Jones, Morianfa, Rhosneigr, N. Wales.

MCEWAN—HART.—On June 22nd, at the Parish Church, Troon, George C. McEwan, M.B., D.P.H., to Ruth Margaret, younger daughter of the late Mr. Robert Hart and Mrs. Hart, Frognal, Monkton, Ayrshire.

DEATHS.

BELL.—On June 25th, at The Lindens, Torquay, William Riddall Bell, M.D., in his 86th year.

COW.—On June 23rd, at Redruth, Cornwall, Douglas Vernon Cow, M.D. Cantab., of Great Shelford and Cambridge.

WALLIS.—On June 26th, at Old Stone House, East Grinstead, Percy Evershed Wallis, M.R.C.S., L.R.C.P., aged 68

Notes, Short Comments, and Answers to Correspondents.

A STUDY OF THE NUTRITION AND ECONOMIC CONDITIONS OF WORKING-CLASS FAMILIES IN GLASGOW IN APRIL, 1921

BY ANNABEL M. T. TULLY, M.A.

(From the Department of Physiology, University of Glasgow.)

INTRODUCTION BY PROFESSOR NOËL PATON, M.D., F.R.S.

IN a paper published in THE LANCET of March 5th, 1921,[1] an account was given of an investigation of the condition of nutrition of the working classes in Vienna under post-war conditions. It was shown that the food consumed in 40 typical working-class families was far below that required by those engaged in manual work, and was insufficient to maintain normal growth in children.

It is of no little interest to compare the condition of these families with that of the poorer working classes in this country, under present conditions when unemployment is rife; and, in order to enable such a comparison to be made, Miss Tully has carried out a careful investigation upon 11 typical families in Glasgow. These families were neither better nor worse off than thousands of others round about them and the results may safely be accepted as giving a fair representation of the general condition of this part of the population. The fathers and mothers were generally steady and at least ready to face the right to work as a basis of the right to live.

The results recorded are sufficiently disconcerting. In considering them, it must be remembered that a man resting in bed expends energy at the rate of about 1700 calories per day; one leading an absolutely sedentary life expends some 2500 and, when working hard, some 4000 calories. The energy supplied in the food is not all available, some 10 per cent. is lost in digestion, so that, to supply 2500 calories net the food must contain 3000 gross.

In only two of the 11 families did the diet yield energy equivalent to 3000 calories, and this was obtained only by the expenditure of more than the whole income for the week on food—i.e., by borrowing, or selling, or pawning the family belongings. In six families only about 2500 calories were secured—i.e., about 2250 net—but again, only by over-expending the income on food or from charitable help. In three families the conditions were worse than in the majority of the Viennese families, the food yielding an energy supply of only between 1600 and 1800 calories (about 1530 net) per man per day. In seven of the families unemployment relief in some form was received.

Evidently, even when the demand for energy is reduced by the want of work, a supply of food yielding about 2500 calories must be got to maintain existence and in most of these families it is obtained by sacrificing expenditure on everything else. Some are unable to procure even this all too inadequate amount of nourishment.

THE STUDY OF DIETARIES.

During April, 1921, a study was made of the dietaries of 11 typical labouring class families in Glasgow, with the view of ascertaining the effect of the present trade depression upon their food consumption. A general strike of coal miners was in progress, and the fathers were either out of work or on short time. This is a continuance of the series of dietary studies carried by Miss Ferguson[2] upon the same class during the war, all of which form supplements to the more exhaustive study made in 1911–12 by Miss Lindsay.[3] The method of study and the source of the food analyses were those used by Miss Lindsay and Miss Ferguson. In each case the food was weighed and the waste collected for the period of a week as described in reference (2). The studies included 12 men, 11 women, 34 children under 10 years of age and 11 children over 10—68 persons in all.

To make the results of the various families comparable and to render a comparison with the previous observations possible, the food is expressed as that consumed per unit of population—i.e., per man per day, taking the requirements of women and children at the usual proportion of those of a man (Lusk's table).

Proportionate Food Requirements of Men, Women, and Children.

Males, above 13	1·0
Females, above 13	0·83
Children, 6 to 12	0·6
Children, below 6	0·5

Thus, a family of—

Father	1·0	Boy (8)	0·6
Mother	0·83	Girl (4)	0·5

would correspond to 2·93 men. Three meals are taken as one day and meals taken outside are, of course, deducted.

In Table I. families are grouped according to income, above or under 8s. per man per week.

One of the docker's families (No. IV.) consented to a second study during May when the father was on strike and consequently receiving only £1 weekly from the Dockers' Union. A comparison of results is given in Table II.

As is seen from Table II., in this family in May more than double the weekly income was spent on food, and, as none of the weekly provisions were obtained on credit, the money to pay for these goods was raised by loans from friends.

The energy values differ little in the two groups, but in the poorer families a larger proportion of energy is got from carbohydrates.

TABLE I.—THE RELATION BETWEEN DIETS AND INCOME.

Families having over 8s. per Man per Week.

No.	Diet per man per day.				Income.					Number in family.			
	Calories.	Protein.	Fat.	Carbohydrate	Total income.	Per man per week.	Amount spent on food per man per week.	Per cent. of income spent on food.	Energy value purchased per 1d.	Males above 13.	Females above 13.	Children.	
												6 to 12.	Below 6
		gms.	gms.	gms.	£ s. d.	s. d.	s. d.						
I.	2789	72·0	83·4	418·5	1 15 0	11 11¼	13 7¾	114·3	125·0	1	1	1	1
II.	2070	55·1	61·6	310·5	1 17 3	15 10½	6 5¼	*42·3	176·9	1	1	—	2
III.	1660	43·4	47·9	252·9	1 5 6	9 1¾	5 6¾	*58·8	176·3	1	1	1	1
IV.	2999	99·8	91·4	417·6	3 12 0	11 11½	8 5½	72·2	232·3	1	1	5	2
V.	2813	91·4	100·7	363·2	3 11 0	11 2	11 9½	105·8	158·6	3	1	3	1
Average	2466	72·9	77·6	352·5	2 8 1¼	12 0	9 1¾	—	173·8	—	—	—	—
	Families having 8s. or under per Man per Week.												
VI.	3114	86·8	91·8	530·7	2 6 0	8 0	8 8¼	111·1	211·1	2	2	3	1
VII.	3039	75·1	92·4	456·7	1 10 0	6 10½	7 4	119·0	185·6	1	1	1	1
VIII.	2766	76·6	60·6	469·9	2 0 0	7 4	6 9¾	94·3	232·9	2	1	4	3
IX.	2426	64·9	73·1	359·1	1 5 0	5 8¾	5 6	98·6	248·8	2	1	3	1
X.	1610	30·9	57·6	231·1	1 3 6	7 10	4 1	*53·2	218·7	1	1	2	1
XI.	1775	50·0	61·2	241·1	0 13 0	5 6¾	4 3½	20·8	221·8	1	1	—	1
Average	2505	61·1	73·3	380·4	1 9 5	6 10½	6 1¾	—	219·8	—	—	—	—

* The small percentage of the income spent on food was due to the fact that a considerable amount was being paid in liquidating outstanding debts; the proportion of *available* income spent on food was much higher.

Table II.—Re-Study of Family IV.

—	Diet per man per day.				Income.				
	Calories.	Protein.	Fat.	Carbohydrates.	Total income.	Per man per week.	Spent on food per man. per week.	Per cent. income spent on food.	Energy value purchased per 1d.
					£ s. d.	s. d.	s. d.		
April ..	2999	99·8	94·4	417·6	3 12 0	11 11½	8 5½	72·2	232·3
May ..	2810	87·6	65·5	449·1	1 0 0	3 3¼	7 5½	228·7	215·6

These tables show—what has been emphasised in previous studies of the social conditions of the very poor—that food, the supply of energy, is the first charge upon income, that this must be provided and that all other expenditure must be subordinated to it. Under present conditions an adequate supply is impossible. Comparison of the present situation with that in previous years is given in Tables III. and IV.

Table III.—*Average Energy Value of the Diets.*

Date.	No. of families.	Energy in calories per man per day.	Protein in grms. per man per day.	Fat in grms. per man per day.
1911-12 ..	60	3163	110	83
1915-16 ..	40	3298	102	90
April, 1921 ..	11	2181	68	75

Table IV.—*Energy Value Purchased per Penny.*

Date.	No. of families.	Energy value (1*d.*)	Date.	No. of families.	Energy value (1*d.*)
1911-12 ..	60	453	Nov., 1917	8	264
1915-16 ..	10	350	Dec., 1919	5	210
Feb., 1917	10	274	April, 1921	11	198

In spite of careful marketing by most of the mothers, the energy purchasable per penny shows a marked decline from previous years. Nothing could more clearly indicate the serious effect of the present economic situation.

Housing.

Most of the families are living in very poor overcrowded quarters. The conditions may be briefly stated as follows:—

Group A.

Average number of rooms	1·1
Average number of inmates	5·8
Average air space per person	337 cub. ft.
Average rent per week	6s.

Group B.

Average number of rooms	1·5
Average number of inmates	6·5
Average air space per person	309 cub. ft.
Average rent per week	6s. 6½d.

Condition of the Children.

The economic depression has not lasted for many months and has hardly had time to tell upon the physical development of the children. The accompanying table (Table V.) shows their condition. Since malnutrition tells first upon weight, this alone is dealt with.

The children of only one family (VII.) reach the anthropometric standard weight. This family has been accustomed to better circumstances, and it is one of the families which had over 3000 calories per man per day. The others have been more or less constantly in financial straits. The average deficiency in weight below the anthropometric standard for Group A (14 children) is 13·4 per cent.; for Group B (16 children) 17 per cent.; for all (30 children) 15·9 per cent. In Miss Ferguson's[4] study in 1918 the deficiency was 13 per cent.

In conclusion, I should like to thank the students of the class of physiology who so kindly helped by visiting the families, and very specially Professor Paton for the assistance which he has given me.

Appendix of Family Histories.

1. Father, a labourer; has been out of work for months, but did a little work in February; in addition to unemployment money family get 15*s.* food tickets weekly from the Lord Provost's Fund; during study father got work as a night-watchman (£2 5*s.* weekly) but would not be paid till the following week. House is very clean; rent in arrears. Children quite healthy. Father suffers from bronchitis, the effect of mustard-gas poisoning. Mother not very strong—frequent headaches.

2. Father, a carter; unemployed for several months; has a pension of 17*s.* 3*d.* weekly. House clean though very bare. Greater part of income seems to go in repaying loans. During the study two pints free milk daily was granted by the Corporation. General condition of children is fair; baby is delicate and older child suffers from pains in the head, the result of a fall. The mother is thin and ill-looking; boils on her arms. Father is very deaf, owing to a wound received in the army.

3. Father, a carter; unemployed since Christmas. Family receive 10*s.* weekly food tickets from Lord Provost's Fund. Very poor home; all the furniture in pawn; relatives occasionally give assistance. Children all in fairly good health except one child (3 years), very pale and thin.

4. Father, a docker; until week of this study has had very little work, one or two days per week at most; 4½ days during study. House is rather untidy but quite clean. Children are rather delicate; two have rickets; child (4) has eruption on face; child (8) is lame owing to an abscess on leg. Mother is thin and unhealthy-looking.

5. Father, a docker; working only one or two days weekly; during week of study, 4½ days work. House and children are well looked after. Children quite healthy.

Table V.—Weights of Children.

Families having over 8s. per Man per Week.

Family.	M.	F.	Total.	Average age.	Average % of Anthropometric Standard.†					
					Above.		Below.		Above.	Below.
					M.	F.	M.	F.	M. & F.	M. & F.
I. ..	2	—	2	3·87	—	—	32·7	—	—	32·7%
III. ..	1	1	2	5·5	3·82	—	—	20·9	—	8·5
IV. ..	2	4	6	8·5	—	—	14·61	11·95	—	12·8
V. ..	3	1	4	10·5	—	1·73	14·16	—	—	10·2

Families having 8s. or under per Man per Week.

Family.	M.	F.	Total.	Average age.	Above M.	Above F.	Below M.	Below F.	Above M. & F.	Below M. & F.
VI. ..	3	2	5	8·6	—	—	19·26	19·0	—	19·2
VII. ..	2	1	3	8·6	1·1	17·71	—	—	+6·5	—
VIII. ..	2	4	6	6·6	—	—	19·25	11·86	—	14·3
IX. ..	3	1	4	10·5	—	—	14·7	21·8	—	16·5
XI. ..	—	1	1	1·25	—	—	—	10·8	—	10·8

M., male; F., female.

† standard of the Anthropometric Committee's Report, 1883, is accepted as a convenient approximation to the normal.

Father not very strong; gastric condition. The mother suffers from rheumatism; pregnant meanwhile; four children dead.

6. Father, an engine-fitter; at present working half-time. Boy (16) unemployed since January. House is scantily furnished but clean. General condition of children is poor; two suffer from skin disease; child (3) has just recovered from pneumonia and bronchitis. The mother has sores on her face.

7. Father, a hairdresser; unemployed eleven weeks. Family get 10s. food tickets weekly from Lord Provost's Fund. House is well furnished and clean; rent in arrears. General condition of children is quite good; boy (7) has rickets; baby is rather delicate. Father has a bad cough; he was in a Mental Hospital for some time last year.

8. Father, a labourer; only worked two weeks this year and during the past year has been continually unemployed; during this study he got work but was not paid till the following week. Family get two pints free milk daily from the Corporation; five children get dinner in school. A relation lives with them—gives £1 weekly for board. Children quite healthy except baby, who is frequently ill. Mother delicate—rheumatism and anæmia.

9. Father, a steel erector; unemployed since Christmas. Family receive 5s. food tickets weekly from Lord Provost's Fund; 2½ pints free milk daily from the Corporation; five children get dinner in school. The children look healthy, although child (7) has rickets and youngest has whooping-cough. Mother is pregnant.

10. Father, a labourer; unemployed since Christmas; not receiving unemployment benefit. Family have been getting food tickets from the Lord Provost's Fund but none during the week of this study. Mother chars a model lodging-house. House is kept very clean by the father. General condition of the children is fair; child (7) just back from hospital—whooping-cough and pneumonia; baby is very delicate.

11. Father, a carter: unemployed since October; not receiving unemployment benefit. Family gets 5s. food tickets weekly from Lord Provost's Fund. House in a filthy condition; rent in arrears: ejection notice received Father ill—chest trouble. Father and child are ill-nourished.

References.—1. Miss Gribbon and Miss Ferguson: THE LANCET, 1921, vol. i, p. 474. 2. Miss Ferguson: *Proceedings of the Royal Society of Edinburgh*, vol. xxxvii., p. 117. 3. Miss Lindsay: Report upon a Study of the Diet of the Labouring Classes in the City of Glasgow, 1911–12. 4. Miss Ferguson: Journal of Hygiene, 1920, vol. xviii., p. 413.

PUBLIC HEALTH AT CAPE TOWN, 1919-20.[1]

AT the commencement of his annual report for the 12 months ending June 30th, 1920, Dr. A. Jasper Anderson, medical officer of health for the city of Cape Town, expresses a hope that a complete census of the Union of South Africa and its municipalities will be taken during the present year, 1921, and meantime estimates the population of the city at 188,000, of whom 100,000 are Europeans. On this basis the general birth-rate was 35·56 per 1000, compared with 31·86 in 1919, and 35·44 in 1918; and the death-rate 18·87, compared with 45·86 and 20·92 in the two years preceding, the large excess in 1918-19 having been due to the influenza epidemic in October, 1918. If corrected for deaths of persons whose homes were outside the city, the ratio becomes 17·24, compared with 42·38 and 18·69 in the two previous years. The general death-rate for Europeans (12·42) may be compared with that for London in 1919, which was 13·4 per 1000. The infant mortality ratio (which Dr. Anderson states to be the most reliable rate in the report, and "as to some extent a rough index of the sanitary condition of a district") was 145·40 per 1000 births; for European children it was 81·57, for non-Europeans, 183·21; the corresponding ratios (for all classes) in 1919 were 221·37 and in 1918 152·18. There was great variation in the different wards of the city, due, no doubt, to the density of population and sanitary conditions. Thus, among European children, the highest ratio was 113·63 in West Central ward, while in Kalk Bay, Sea Point, and Park wards the ratios were only 30·77, 35·71, and 36·20 respectively. Among non-Europeans in Sea Point the ratio was 85·10, in Park ward it was 113·82, and in every other ward the ratio was higher than this. In five wards the ratio was 200 or over, Salt River being the worst, with 231·21 infantile deaths per 1000 births. The chief causes of this excessive infantile mortality were pneumonia (148 deaths), diseases of the stomach (139), premature birth (123), and bronchitis (106).

The Public Health Act, of June 24th, 1919, came into operation on Jan. 1st, 1920, repealing previous Acts and extending the scope of notification, inspection, &c. There was not a single death from small-pox in the city during the year (only three cases were notified); nor was there any especial zymotic mortality, with the exception of diarrhœa and dysentery (137 deaths), and "enteric and continued fever" (68 deaths). The total zymotic death-rate was 1·55 per 1000, and for Europeans only, 0·78 per 1000. If corrected for deaths of non-residents, these ratios are respectively 1·46 and 0·69, the corresponding ratios for the previous year having been 1·41 and 0·59 per 1000. There were 501 cases of typhoid fever notified, as compared with 444 in the previous year; 283 were Europeans, giving a ratio of 2·83 per 1000 of the population; among non-Europeans this ratio was 2·36. The case-mortality was 9·93 per cent. among Europeans, and 23·7 per cent. among non-Europeans. Salt River ward (96 cases) and Woodstock ward (76 cases) were the wards most affected. Diphtheria was more prevalent than in the previous year (176 cases compared with 145), the disease being introduced from oversea; 139 cases were among Europeans. The death-rate was 0·1 per 1000 for Europeans and 0·14 for non-Europeans, the case-mortality being 9·35 and 32·43 per cent. respectively. Woodstock and East Claremont were the wards chiefly affected. There was also much more scarlet fever in the period under report (308 cases) than during the previous 12 months (179 cases): the type was mild, only four cases having been fatal. Eleven cases of leprosy were notified, of which two were Europeans; the disease was contracted outside the city in all but three cases. There was a slight decrease in tuberculosis notifications (689), as compared with those of the preceding year (709). East Central and Castle wards furnished the largest numbers (112 and 92). It is stated that the only accommodation now available for tuberculous patients consists of ten beds for each sex in the City Hospital, these cases being no longer admitted into the Old Somerset or the General Hospitals. Patients remaining at home are visited fortnightly by the female sanitary inspectors. The need for further hospital accommodation appears to be most urgent. The European death-rate for tuberculosis was 0·9, and for non-Europeans 3·76 per 1000; if corrected for non-resident fatal cases, these ratios become 0·8 and 3·46 respectively; for the population as a whole (all classes) the ratios were 2·21 and 2·01 per 1000. A very important and beneficent work is carried on by a staff of "sanitary inspectresses," under the direction of the medical officer of health. Their chief duties are to advise mothers, investigate deaths of young children, pay fortnightly visits to cases of tuberculosis; also to visit puerperal fever cases, and indigent cases of confinement. A total of 18,651 visits were made during the year under review. Dried milk is supplied for infants who cannot be breast-fed, lactogen having been found to meet requirements in most cases. Amongst other items of interest mentioned in this report, it is noted that the supply of water to the city was restricted from Oct. 29th, 1919, to May 24th, 1920, on account of the reservoirs provided not being large enough to store the quantity of water needed by the inhabitants; also, the rainfall was the lowest recorded for 26 years. A further supply is in course of being provided by the Steenbrass scheme. There are five districts where the pail system is still in force, with only a weekly collection free of charge; but a drainage scheme for these districts "is being rapidly proceeded with." Mosquito prevention and rat extermination are also systematically carried out.

VITAL STATISTICS FOR 1920 OF NON-NATIVE OFFICIALS IN WEST AFRICA.

THIS command report, recently issued by the Colonial Office, shows that a considerable advance towards normal conditions in West Africa has been made during the year under review, and that the staffs generally have been brought up to their full establishment. Over 800 appointments were made in 1920, giving a net increase during the year of 439, and bringing the staff at the end of the year to the highest figure it has ever reached. The death-rate rose from 12·5 in 1919 to 16·3 in 1920—a rise partly due to an exceptional number of deaths from accident (including one death from ptomaine poisoning), or by suicide, these causes accounting for eight out of the total deaths in the year. There remain 36 other deaths due directly to disease, giving a rate of 13·3 per 1000 as against 11·6 per 1000 in 1919. There was one death during the year from malaria, and none from yellow fever. The causes of death during the year were as follows: 11 blackwater fever (accompanied in four cases by uræmia), 2 uræmia, 2 paratyphoid fever, 1 typhoid fever, 3 pneumonia, 1 capillary bronchitis, 3 heart failure, 1 cerebral malaria, 1 dysentery, 1 Bright's disease, 1 arthritis, 1 acute mania, 1 acute meningitis, 1 phthisis, 1 paralysis, 1 purpura variola, 1 gastro-enteritis, 1 acute ulceration of intestine, 1 myocarditis and dilatation of heart, 1 hepatitis, 1 ptomaine poisoning, 3 accidents, 4 suicides. Of these deaths 31 occurred in West Africa, 9 in the United Kingdom, and 4 at sea.

The invaliding rate shows a considerable improvement, having fallen from 27·5 per 1000 in 1919 to 22·7 per 1000.

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[1] Annual Report of the Medical Officer of Health for year ended June 30th, 1920.

The rate for 1920 is little higher than that for the record years 1916 (22·1 per 1000) and 1917 (20·5 per 1000), and the general downward tendency of the invaliding rate has been well maintained. There were 21 officers pensioned during the year on completing full qualifying service against 15 in 1919, and the number of officials over 52½ years of age at the beginning of 1920 rose to 73 out of a total of 2467, against 59 out of a total of 2305 in 1919 and 48 out of a total of 2631 in 1918. Officers described as "pensioned" have been for not less than seven years in the West African service except in a very few cases of transfer from pensionable appointments elsewhere.

NATIONAL CHILDREN ADOPTION ASSOCIATION.

To the Editor of The Lancet.

Sir,—This Association has for some years carried on its work of promoting the adoption of children and providing homes for children, the circumstances of whose birth appeal to the Association for assistance. The Association's Hostels are at Tower Cressy, Campden Hill, W., Addison House, Holland Park, W., and Southampton. By a recent publication in the press on the subject of 15 children having been sent to America with a view to adoption by a society known as the National Adoption Society much hostile criticism and correspondence has been evoked and has reached our Association through the fact that the correspondents have mistaken the one institution for the other. This confusion has frequently meant unnecessary complication and correspondence.

The National Children Adoption Association has nothing to do with the National Adoption Society, nor does the Association encourage sending children out of this country before the adopting parents have actually seen the children in England and have themselves been interviewed by our Case Committee. Our Association has been criticised because of its supposed action in this matter, especially in view of the fact that the children are stated by the press to have been sent out to America with first-class accommodation, giving the impression that the Association has unlimited funds. That is not the case. The friends of our Association know only too well that, on the contrary, we find it extremely difficult to undertake all the adoption work we could if our income were not so limited.

Possibly we can help to establish the identity of the National Children Adoption Association by stating that our patrons are H.R.H. Princess Alice, Countess of Athlone, and S.A.I. La Princesse Victor Napoleon, and its founder, and now one of its hon. directors, is Miss Clara Andrew.

We are, Sir, yours faithfully,

Mary A. Abercorn,
Dowager Duchess of Abercorn, Chairman of Appeal Committee.
Helen Franklyn,
Lady Franklyn, Chairman of Case Committee.
Beaumont H. Comerford, M.D., D.P.H., M.R.C.S.,
Chairman of Nursing Committee.
Reginald Nicholson, M.P.,
Chairman of Executive Committee.
Gladys Swaythling,
Lady Swathling, President of the Southampton Hostel for Mothers and Babies.

June 21st, 1921.

THE S.A. IMPULSE STARTER FOR MOTOR CARS.

The medical man on a strenuous professional round may well be glad to forgo much of the fatiguing, if healthy, exercise of cranking the engine to start the motor. Most modern cars have a so-called "self-starter" fitted. To adapt one to a car, which is minus this fitting, is rather costly, so an inexpensive compromise, the S.A. Impulse Starter, which has been put on the market by Messrs. Brown Brothers, Ltd., of Great Eastern-street, London, will appeal to those who desire a simple contrivance which amounts almost to a "self-starter." The contrivance in question is a device which fits in the magneto coupling, and gives the armature a sharp initial movement, thereby causing a powerful spark at the exact moment required when starting the engine. By pulling a pawl into engagement with the armature plate attached to the armature spindle the magneto armature is temporarily arrested, and a spiral spring inside the starter is wound up. The energy thus stored up, when the cam on the cam casing disengages the pawl, causes a rapid impulse to the magneto armature, equivalent to revolving it at the rate of 500 revolutions per minute. Thus an intense spark at the plug in the cylinder which is on the firing stroke is provided. If the engine has been primed by squirting a little petrol or startol [illegible] cylinders previously, the engine immediately starts. [illegible] it start without the priming, but it is as well to make [illegible] applying the dope. Directly the engine revolves under its own power the pawl is thrown out of operation and the design is such that it is impossible for the Impulse Starter to come into operation after the engine is running. It can be easily fitted to any car that has magneto ignition.

A NEW RIMLESS PINCE-NEZ.

Twenty years ago Messrs. Frederick Bateman and Co. submitted to us the Usebius pince-nez frame, in which any disagreeable pinching effect upon the nose was avoided by the device of a stop nut on a screw thread arranged to take part of the tension of the spring. The same firm has now sent us a specimen of their new Winner mount, which is exceedingly light in weight and appearance, and embodies a further improvement. The nose-piece contains a hidden spring which, whenever the ordinary tension is relaxed, emerges from its cell and adds just sufficient grip to prevent the glasses falling off under unusual conditions. They are especially suitable for work where the head is in rapid movement or held out of the vertical line. We have tried the mount which is comfortable and gives a feeling of security. The head office of the maker is 55, Berners-street, London, W. 1.

THE CHEMISTS' EXHIBITION.

This exhibition, the twenty-second of its kind, was held from June 20th to 24th, at the Central Hall, Westminster. The general arrangements were highly creditable to the *British and Colonial Pharmacist*, the proprietors of which are the organisers. Primarily, the exhibition was intended for pharmacists and others associated with the retailing of pharmaceutical goods, but nevertheless it was full of interest to the general public. Most of the well-known manufacturers of fine chemicals exhibited, and it is gratifying to be able to record that many of the products displayed have only recently been successfully manufactured in England. Among these aspirin, thymol, vanillin, benzyl benzoate, citronellol, and others were noticed. Sundries such as perfumes, sponges, brushes, soaps, and surgical dressings formed an important part of the exhibition.

AN IMPROVED RUBBER SHEETING.

We have received from Messrs. Louis Minton, of Trevelyan Buildings, Manchester, specimens of their red and white rubber waterproof sheeting. This fabric, which has received the name of "Minite," is prepared by mixing the rubber with powdered mica, the same mineral being used as a surface finish. On trial we find that acids and heat have little or no effect upon the material, which, we are assured by the manufacturers, does not crack after prolonged use. The process is applicable to many rubber productions, including jaconet, and surgical appliances where surface protection is necessary.

A THIMBLE TOOTH-BRUSH.

Mr. W. S. Benson, of 53, Lord-street, Liverpool, has sent us samples of a hygienic tooth-brush which he has designed and called the Wedge-rub. It consists of an indiarubber thimble to be worn on the finger which it best fits. Tooth-paste or powder is applied on the roughened surface of the thimble, which is then rubbed up and down on the teeth and gums. A thin rubber wedge on the thimble is intended to clean the intervals between the teeth. The inventor claims the following advantages for his device: cleanliness, no bristles to become loose, suitability for tender gums, durability, and portability. Certainly a couple of these thimbles might conveniently be put in the sponge-bag for a journey.

BOOKS, ETC., RECEIVED.

Blakiston's Son, P., Philadelphia.
Introduction to General Chemistry: An Exposition of the Principles of Modern Chemistry. By Prof. H. Copaux. Translated by H. Leffmann, M.D. Pp. 195. $2.00.

Harrap, George G., and Co., London.
Trade Tests. By J. Crosby Chapman, D.Sc. With the assistance of Daisy R. Chapman, M.A. Pp. 435. 15s.

Lippincott, J. B., Company, London.
Gynecology. By B. M. Anspach, M.D. With an introduction by J. G. Clark. Pp. 752. 42s.

Maloine, A., and Fils, Paris.
Traité de Pathologie Médicale et de Thérapeutique appliquée. Publié sous la Direction de Émile Sergent, L. Ribadeau-Dumas et L. Babonneix. Tome XIX. Syphilis (Tome I: Généralités et syphilis de l'Adulte. Par MM. Clément Simon, Rostaine, Bellin, Mirande, Favre, Babonneix. Affections vénériennes non syphilitiques et non blennorrhagiques. Par M. J. Du Castel. Pp. 595. Fr. 28. Tome XXXI. Électrologie. Par Delherm et Laquerrière. Pp. 321. Fr.18.

Routledge, George, and Sons, London. Dutton, E. P. and Co., New York.
Insanity and Mental Deficiency in relation to Legal Responsibility: A Study in Psychological Jurisprudence. By William G. H. Cook, LL.D. Lond. Pp. 192. 10s. 6d.

LIBRARY

Lumleian Lectures

ON

SOME POINTS IN THE ÆTIOLOGY OF SKIN DISEASES.

Delivered before the Royal College of Physicians of London on March 10th, 15th, and 17th, 1921,

By ARTHUR WHITFIELD, M.D., F.R.C.P. Lond.,
PHYSICIAN IN CHARGE, SKIN DEPARTMENT, KING'S COLLEGE HOSPITAL.

LECTURE I.*

The study of disease as it affects the skin is by no means without interest and importance, but depending, as it often does, on minute clinical signs and intricate histological changes it is a subject which appears to me to offer great difficulty to the lecturer in his endeavour to produce an interesting discourse. I think it will be admitted by most physicians that dermatology has been in some respects the Cinderella of the special medical studies, and that while neurology, and more recently cardiology, have held honoured places as subdivisions of the great study of general medicine, dermatology has been viewed with a certain degree of contempt.

The cause of this is, perhaps, not far to seek. Whereas neurology and cardiology in their earliest infancy were connected with much patient and brilliant pathological research, dermatology was unfortunately hampered in its youth by a cumbrous and fanciful pseudo-botanical nomenclature, and the earlier research work was, perhaps, too exclusively devoted to histological details, some of which may have been, like the already mentioned nomenclature, fanciful and without good foundation.

I believe that these errors are now passing away, and that a more rational method of study is developing; that less close attention is being devoted to peculiar efflorescences and distribution, and certainly less to the invention of hybrid classical names, and that greater effort is being expended on the elucidation of the ætiology and pathology of the cutaneous abnormalities with which we have been long familiar. Since this change has been instrumental in bringing dermatology into closer relationship to general medicine as a whole, and as it is my hope to attempt to offer you a discourse not entirely without interest to the general physician, I have chosen this matter of ætiology as the subject of my lectures.

It was at first my intention to deal with the internal factors only, as being of greater general medical interest. On further consideration, however, I came to the conclusion that there existed points of interest to the physician in certain cases of almost exclusively local ætiology. I therefore decided to include some discussion of the external factors as well.

Perhaps it is necessary to state that I claim no originality for the work I intend to review; some of it has been published for some time, some of it is still in a more or less inchoate state, and much of it has been suggested to me by friends and colleagues in informal interchange of views.

When we attempt to separate the external from the internal factors in ætiology we are met at once with a good deal of difficulty. These two factors are frequently inseparable, and even in cases where the condition seems to be due very obviously to one or other alone careful observation may sometimes show that a combination is at work after all.

In support of this contention I would mention two types of skin condition.

Effect of Constitutional Condition on Diseases Due to Local Irritation.

The first is that of occupational dermatitis, where apparently we have to deal with the action of a local irritant pure and simple; yet further investigation has shown that in some forms at least of so-called professional dermatitis a strong internal ætiological factor is present. Jacquet and Jourdanet[1] found that of 29 cases of professional dermatitis they were able to cure or improve 14 cases by dieting, local treatment, and removal from work, 4 cases by dieting and removal from work without local treatment, and 9 cases by dieting without local treatment or cessation of work, while in the two failures it was found that the treatment had not been carried out. If I may be allowed to criticise this paper, I would suggest that in that group which recovered without in any way interfering with the professional occupation, it is at least open to doubt whether the disease could fairly be called professional dermatitis.

Effect of Local Stimulant on Diseases of Internal Origin.

The second condition that I would mention is the eruption produced by the ingestion of bromides. In this case we have a condition that is apparently due almost purely to the noxious influence of the ingested drug, and further it is, I think, common knowledge that where there is insufficiency of the renal function the eruption may be called forth by smaller doses. Yet even here there is or may be a local factor at work.

Some years ago I reported a case of bromide eruption on the face of a young infant occurring on the third day after birth. This was apparently due to absorption of bromide in utero, since the mother, who had taken large doses during pregnancy, never had any milk, and the baby was given no drugs at any time. Here we see what is probably the influence of light, as the eruption was not present at birth, and when it appeared did so on the face.

A second instance of the same eruption, but with a different local ætiology, may also be of interest. This was the case of an epileptic male, 38 years of age, who had taken bromide in large quantities since early youth. He suffered from time to time from small acneiform lesions, but nothing to cause any great inconvenience. A few years before he came to me he had a fall from his bicycle and grazed his left shin severely and his right one slightly. The wounds healed slowly, and as soon as he reached his usual dose of bromide the damaged areas became the seats of a typical bromide eruption of the tuberous type. He was sent to me to see if I could help him while he continued the drug, but everything I tried was quite valueless.

These two cases led me to ponder over the localisation of the bromide eruption of the tuberous type, and I suggest that this depends very largely on local irritation. The commonest sites are, I think, the face, the buttocks in children, and the tibial regions in older people. I believe the localisation on the face to be due to exposure to light, that on the buttocks and thighs of infants to irritation by the wet napkin, and possibly also to friction by scrubbing along on the floor, and that the shins of older people are attacked because they are so frequently the site of mechanical injury.

In connexion with the bromide eruptions I may describe a case[2] in which the occurrence of the bromide lesion determined the site of a syphilitic eruption. The patient was a young woman who was sent to my out-patient department with some tuberous papules on the upper lip and chin. On examination these showed the typical miliary pustules lying in dome-shaped nodes. The diagnosis of bromide eruption was offered and inquiry was made of the doctor as to whether he had given the drug. He replied that he had given bromide of potassium for a fortnight for the treatment of severe headache. The drug was discontinued and the patient kept under observation, and in a fortnight the eruption was in full retrogression. A week or so later, however, the infiltration seemed to be returning although no more of the drug had been ingested. On close examination it was observed that the character of the nodules was changing. They no longer showed the pinhead pustules: they were much darker in colour and tougher and less succulent in consistence. In fact, they now suggested the diagnosis of papular syphilis, and as no further clinical evidence was forthcoming beyond the somewhat persistent and severe headache, the blood was examined and found to give a strongly positive Wassermann reaction. The patient was accordingly treated with arsenobenzol injections and mercury, and all the symptoms cleared up rapidly.

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* Lectures II. and III. will appear in subsequent issues of The Lancet.

In this case, therefore, we have apparently an instance of the damage to the tissues by bromide determining the localisation of the syphilide. It is regrettable that we could not ascertain definitely the stage of the syphilis. I was inclined to believe from the severe headache and general toxæmia that the infection was early, but I felt it was unjustifiable to delay treatment in order to allow further secondary symptoms to develop and prove the position, as I considered it would be detrimental to the patient's future.

Such a case as the above appears to me to have an added interest for the reason that it sets a trap for the unwary. Having once established a firm diagnosis one is naturally apt to rest content, but this is not really justifiable in any case where the course of the eruption takes an unexpected turn. One should, I think, be prepared to review one's original diagnosis in the light of any fresh evidence that may develop and although I am not attempting in these lectures to present to you any of the extremely fine details upon which we rely to make our diagnosis, I may be permitted to point out that it is only by the acquisition of minute powers of observation that the all-important diagnosis can be made, and often in such a way that the ætiology may be suspected.

PROBLEMS OF INFLAMMATORY DERMATITIS.

I may now turn to some of the more puzzling forms of inflammatory dermatitis, which strain to the utmost the capacity of the dermatologist who attempts to make an ætiological diagnosis. We are met here at once by a wrangle about nomenclature to which I should like to avoid referring, as I have already expressed my disapproval of the undue importance which has been attributed to names and classification in the past. Nevertheless one must have a label for a set of clinical symptoms, and this label should be intelligible to other workers.

The dispute to which I refer is about the term "eczema." Willan and Bateman applied it to an eruption chiefly of external origin, eczema solare, &c. They did, however—and this was a great merit—define exactly the clinical lesion to which they applied the term, and they pointed out that the essential lesion was a small tense vesicle which formed aggregations. Later the French authors laid stress on the diathetic causation of the eruption, and later still Hebra returned more or less to the Willan-Bateman ideas. Up to this point the disease was considered to be a non-infective dermatitis.

After this Unna took up the subject, and in my opinion set dermatology on the wrong track by an inaccuracy of clinical observation. He described the essential lesion as to all intents and purposes a flaccid bulla or pustule, and sought to prove that it was due to an infection with a pyogenic organisation that he named the morococcus. This infective theory had a considerable vogue, and Leredde of Paris wrote a monograph on it entitled "Eczema: Maladie Parasitaire." Unna, in spite of his immense amount of work, unintentionally did, in my opinion, great disservice to dermatology by his theories, and although they have largely lost favour the echo of them still remains here and there.

From all this arose the question: "To what are we to attach the name of eczema?" Henceforward the dermatological world became divided roughly into two camps—namely, those who, relying on the type [illegible]n present, classed all eruptions of a certain [illegible] form as eczema, and those who wished to exclude from the category all those eruptions in which an external irritant could be found to be the cause. This latter group, however, required a label for the syndrome and they called it dermatitis.

I confess myself an unrepentant adherent of the older Willan-Bateman school. It appears to me that eczema is rather a type of reaction than a disease, and that the name is still a useful label for a certain clinical type of eruption. To call it dermatitis is only to transfer the difficulty to another label which does not connote in a familiar manner a certain group of symptoms. I shall therefore assume that by eczema we mean an eruption of pinhead-sized œdematous papules which may or may not go on to the formation of macroscopic vesicles, such papules not showing well-marked intrinsic enlargement but rather running together to form sheets, in some cases disappearing in the centre of the patch and spreading at the edge so that rings and polycyclical figures are formed. The papules may be follicular in site, or may occur on the glabrous portions of the skin. They may form very acutely, in which case the serous exudation and hyperæmia are the most marked features, or, if the inflammation is of lower intensity and more chronic nature, hyperkeratosis and scaling are more in evidence.

The frequency of eruptions of this type is such that if we can elucidate their ætiology and thereby arrive at an efficient method of treatment we shall be in a position to deal satisfactorily with the majority of the skin diseases met with in general and special practice.

I have been guilty of attempting to define eczema in a more or less ætiological manner in the following terms:—

Eczema is an acute or chronic eruption of pinhead-sized œdematous papules and vesicles due to an exalted susceptibility of the skin, either congenital or acquired, to the action of external irritants. In attempting to form a conception of the ætiology of these eruptions I have been greatly aided by the work of Prof. Jadassohn[3] on the external factor.

SUSCEPTIBILITY AND IDIOSYNCRASY TO EXTERNAL AGENCIES.

If we take a large number of individuals we shall find that we can divide them roughly into three groups. The first and much the largest group will show roughly the same reaction to common irritants such as chemical and physical agencies. Such a reaction may therefore be called the normal susceptibility of the skin. A second, and for our purpose less important group, will show a resistance much greater than normal, and these people need not delay us since they do not as a rule suffer from eczema at all. The third and most important group show an unusual susceptibility to one or more irritants, and these may be said to have an undue susceptibility of the skin to agencies which are irritants to most people. This last group may again be subdivided into those who show a susceptibility to one agency and those who show it to most irritants. Accordingly we may say that they show a "special" or a "general" susceptibility. Unless a certain heightening of this susceptibility has taken place from repeated action of the irritant it is largely a matter of dosage in these cases, and this is an important point, because there is another class of patient who reacts in a way which appears to be different.

There is a number of substances which are to the average person not irritants at all in any ordinary dosage. Yet there are individuals who react very violently to these bodies in doses which are so small that dosage may be said generally to be unimportant. As a good instance of this one may take iodoform. Most people can handle iodoform without evil result, yet there are people in whom contact with a small crystal will call forth the most intense inflammatory eruption, sometimes eczematous in type and sometimes so bullous that I have seen it mistaken for pemphigus. Such people may be said to have an idiosyncrasy to the agency in question.

So far I have followed the teaching of Jadassohn pretty closely, but I would now point out that although this classification into special and general susceptibility and idiosyncrasy has elements of truth in it sufficient to make it of practical use, yet too much weight must not be laid on it or it will break down. One of the points of difference laid down between susceptibility and idiosyncrasy is the fact that in idiosyncrasy the agency does not affect the average person at all, and a second is that dosage is hardly important, as I have already stated. But if we take a number of the agencies in connexion with which an idiosyncrasy is assumed we can build up a pyramid of which the base will be formed of those to which idiosyncrasy is common and the apex of those to which it is rare. Again, if we take an individual whose susceptibility has been artificially raised by frequent exposure we may find that dosage is practically as small as that in idiosyncrasy. We may therefore trace an almost continuous series between susceptibility and idiosyncrasy. It will, perhaps, be well to give instances relating to these points.

First as regards the relative frequency of idiosyncrasy to any one poison. As example I would quote the poison of *Rhus toxicodendron* (American "Poison ivy"), and that of *Primula obconica*. Both of these plants cause irritant dermatitis in so large a number of people, though in what proportion of the population I cannot say, that they are well known as general causes of eczema.

Nevertheless, where insusceptibility exists it seems to be almost absolute, and I have a clear instance of this in a distinguished horticulturist who suffered severely from eczema chiefly of internal origin. This patient told me that, though a martyr to eczema in some ways, he could handle both *Rhus toxicodendron* and *Primula obconica* with impunity.

Secondly as regards the minute dosage required with common irritants in a sensitised patient. Formic aldehyde is a good example of a common irritant, and I know of one patient who after several attacks became so sensitive that if he went into a well-ventilated room in which the chemical had been used some hours before he broke out in an eczematous rash in a few hours.

There is perhaps this point of difference between the two varieties—namely, the condition of the general health and the skin in relationship to outbreaks. I have already pointed out that Jacquet and Jourdanet have found the constitutional condition to have a very distinct influence on professional dermatitis, and I have also mentioned that the horticultural amateur, though actually a sufferer from eczema, found that the idiosyncratic poisons had no influence on the eruption.

In this matter of idiosyncrasy the efficient cause ay be sufficiently obvious, or, on the other hand, ay be extremely elusive. Even with the well-known ases the inexpert may be deceived, as patients mislead unintentionally in the narration of their owing to preconceived ideas as to the ætiology eir trouble.

following is a good instance of this type of

was sent to me suffering from severe eczema of the ace, and chest of about eight months' duration. Her was that she was greatly depressed in health partly nancial worry and partly from overwork in the of her home. Shortly before the outbreak of attack she had moved into another house. This, entailed an enormous amount of work, as she did cleaning of the new abode herself. The scrubbing tired her out and made her feel more ill than this culminated in her breaking down with an of eczema from which she had never quite was the history that she gave me when she room.

examination I came to the conclusion that with an eczema of external origin. I thereed her as to the plants in the garden, and that there was only some lilacs and ferns. ed my attention to wall-papers, carpets, but drew blank in every direction. I remembered that under the heading of plants ly mentioned climbers, so I harked back to this. I then learned that there was a "sort of virginia creeper" on the house. It was then winter and the plant was leafless, but I got the patient to send up a branch to Kew for identification, and to my satisfaction the report came back—*Rhus toxicodendron*. This plant, though very well known as a common weed in the United States, is so uncommon in England that people are ignorant of its evil properties. I have only come across two cases of poisoning by it in England, though I believe there is a fair number of plants scattered over the country under the name of *Ampelopsis Hoggii*. At all events, when the cause was once elucidated, the eruption was immediately seen to have a very obvious ætiology, the climber was destroyed, and no further attacks occurred.

Such cases seem simple enough when the ætiology is once elucidated, but much time and trouble is needed in many cases before the offending poison is identified. One point which causes difficulty is the almost incredibly small dose of the idiosyncratic poison which is necessary to produce severe symptoms. It must be remembered, also, that although there is a large number of bodies the qualities of which are well established, there are almost certainly many others which still remain undetected. It is scarcely to be wondered at, therefore, that on occasions the presence of an external intoxication cannot be established, although it may be suspected. As examples of the minute dosage required I may, perhaps, quote two cases.

The first is that of a child, reported by the late Prof. James White[4] in his book on dermatitis venenata. This child, aged 6 years, was twice poisoned one summer with *Rhus toxicodendron*. Consequently the next year a boy who was known to be insusceptible was employed to tea up all the plants growing near the house. This boy was the made to wash his hands, first in hot water with soap an subsequently with vinegar. As a precaution, in spite o his supposed insusceptibility, he was watched during th process by the mother of the susceptible child. In the afte noon this boy took the susceptible child to a pond to bath Having stripped him he took him into the water, holdi him by the armpits and afterwards rubbing his back wi his open palms. Two or three days later the child was tak ill and grew rapidly worse. Deep ulcers appeared under t armpits and the skin of his back exhibited in an aggravat form the usual marks of poisoning by "ivy." He di the end of the third week of his illness.

The second case to which I will allude is published by Dr Arthur Hall[5] some years ago.

The patient was demonstrator in a chemical labor In July, 1891, he began to suffer slightly from ecze his fingers. This disappeared on his vacation, but reapp on his return in September. He was at this time en in a research necessitating the use of phenylhydrazi benzaldehyde. He gave this up for a time, but at E 1895, he returned to it, and during one of his experi noticed that a good deal of vapour was given off. The evening he developed an attack of acute eczema on the neck, ears, and scrotum. This slowly died away. repeating his experiments he developed a fresh attack December, 1895, he upset some phenylhydrazin on his and in two hours developed widespread attack. He gave up experimenting with phenylhydrazin. He wa from December, 1895, to November, 1898, and then fresh attack and found that a student was using the ch in the laboratory.

He was again free until July, 1898, when he assistant to do some experiments with it in a roo directly connected with the laboratory. The assistan and talked with him for a few minutes and another resulted. Finally, while convalescing at home fro attack his assistant came to talk with him after a mile through the open air, and he immediately de a relapse.

I now quote a case of the elusive variety.

A lady was sent to me for recurrent attacks of e the hands and face. Her story was that she had fa but was very "gouty," and about a year previo had an attack of "gouty eczema." This had been s resistant, so she was sent to Harrogate where she rapidly. A recurrence took place, and again she at Harrogate. Since then more recurrences h place at short intervals. The type of eruption su me an eczema due to external toxin. Close q revealed the fact that while on a visit to friends the patient was free from trouble, and that on away from home she was also free. This she ex the rather relaxing climate where her country hous ated. I then inquired for plants, f niture, wall p was changing. They no longer showed the pinhead pustules; they were much darker in colour and tougher and less succulent in consistence. In fact, they now suggested the diagnosis of papular syphilis, and as no further clinical evidence was forthcoming beyond the somewhat persistent and severe headache, the blood was examined and found to give a strongly positive Wassermann reaction. The patient was accordingly treated with arsenobenzol injections and mercury, and all the symptoms cleared up rapidly.

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From all this arose the question: "To what are we to attach the name of eczema?" Henceforward the dermatological world became divided roughly into two camps—namely, those who, relying on the type of lesion present, classed all eruptions of a certain clinical form as eczema, and those who wished to exclude from the category all those eruptions in which an external irritant could be found to be the cause. This latter group, however, required a label for the syndrome and they called it dermatitis.

I confess myself an unrepentant adherent of the older Willan-Bateman school. It appears to me that eczema is rather a type of reaction than a disease, and that the name is still a useful label for a certain clinical type of eruption. To call it dermatitis is only to transfer the difficulty to another label which does not connote in a familiar manner a certain group of symptoms. I shall therefore assume that by eczema we mean an eruption of pinhead-sized œdematous papules which may or may not go on to the formation of macroscopic vesicles, such papules not showing well-marked intrinsic enlargement but rather running together to form sheets, in some cases disappearing in the centre of the patch and spreading at the edge so that rings and polycyclical figures are formed. The papules may be follicular in site, or may occur on the glabrous portions of the skin. They may form very acutely, in which case the serous exudation and hyperæmia are the most marked features, or, if the inflammation is of lower intensity and more chronic nature, hyperkeratosis and scaling are more in evidence.

The frequency of eruptions of this type is such that if we can elucidate their ætiology and thereby arrive at an efficient method of treatment we shall be in a position to deal satisfactorily with the majority of the skin diseases met with in general and special practice.

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Eczema is an acute or chronic eruption of pinhead-sized œdematous papules and vesicles due to an exalted susceptibility of the skin, either congenital or acquired, to the action of external irritants. In attempting to form a conception of the ætiology of these eruptions I have been greatly aided by the work of Prof. Jadassohn[3] on the external factor.

SUSCEPTIBILITY AND IDIOSYNCRASY TO EXTERNAL AGENCIES.

If we take a large number of individuals we shall find that we can divide them roughly into three groups. The first and much the largest group will show roughly the same reaction to common irritants such as chemical and physical agencies. Such a reaction may therefore be called the normal susceptibility of the skin. A second, and for our purpose less important group, will show a resistance much greater than normal, and these people need not delay us since they do not as a rule suffer from eczema at all. The third and most important group show an unusual susceptibility to one or more irritants, and these may be said to have an undue susceptibility of the skin to agencies which are irritants to most people. This last group may again be subdivided into those who show a susceptibility to one agency and those who show it to most irritants. Accordingly we may say that they show a "special" or a "general" susceptibility. Unless a certain heightening of this susceptibility has taken place from repeated action of the irritant it is largely a matter of dosage in these cases, and this is an important point, because there is another class of patient who reacts in a way which appears to be different.

There is a number of substances which are to the average person not irritants at all in any ordinary dosage. Yet there are individuals who react very violently to these bodies in doses which are so small that dosage may be said generally to be unimportant. As a good instance of this one may take iodoform. Most people can handle iodoform without evil result, yet there are people in whom contact with a small crystal will call forth the most intense inflammatory eruption, sometimes eczematous in type and sometimes so bullous that I have seen it mistaken for pemphigus. Such people may be said to have an idiosyncrasy to the agency in question.

So far I have followed the teaching of Jadassohn pretty closely, but I would now point out that although this classification into special and general susceptibility and idiosyncrasy has elements of truth in it sufficient to make it of practical use, yet too much weight must not be laid on it or it will break down. One of the points of difference laid down between susceptibility and idiosyncrasy is the fact that in idiosyncrasy the agency does not affect the average person at all, and a second is that dosage is hardly important, as I have already stated. But if we take a number of the agencies in connexion with which an idiosyncrasy is assumed we can build up a pyramid of which the base will be formed of those to which idiosyncrasy is common and the apex of those to which it is rare. Again, if we take an individual whose susceptibility has been artificially raised by frequent exposure we may find that dosage is practically as small as that in idiosyncrasy. We may therefore trace an almost continuous series between susceptibility and idiosyncrasy. It will, perhaps, be well to give instances relating to these points.

First as regards the relative frequency of idiosyncrasy to any one poison. As example I would quote the poison of *Rhus toxicodendron* (American "Poison ivy"), and that of *Primula obconica*. Both of these plants cause irritant dermatitis in so large a number of people, though in what proportion of the population I cannot say, that they are well known as general causes of eczema.

Nevertheless, where insusceptibility exists it seems to be almost absolute, and I have a clear instance of this in a distinguished horticulturist who suffered severely from eczema chiefly of internal origin. This patient told me that, though a martyr to eczema in some ways, he could handle both *Rhus toxicodendron* and *Primula obconica* with impunity.

Secondly as regards the minute dosage required with common irritants in a sensitised patient. Formic aldehyde is a good example of a common irritant, and I know of one patient who after several attacks became so sensitive that if he went into a well-ventilated room in which the chemical had been used some hours before he broke out in an eczematous rash in a few hours.

There is perhaps this point of difference between the two varieties—namely, the condition of the general health and the skin in relationship to outbreaks. I have already pointed out that Jacquet and Jourdanet have found the constitutional condition to have a very distinct influence on professional dermatitis, and I have also mentioned that the horticultural amateur, though actually a sufferer from eczema, found that the idiosyncratic poisons had no influence on the eruption.

In this matter of idiosyncrasy the efficient cause may be sufficiently obvious, or, on the other hand, may be extremely elusive. Even with the well-known causes the inexpert may be deceived, as patients often mislead unintentionally in the narration of their histories owing to preconceived ideas as to the ætiology of their trouble.

The following is a good instance of this type of history.

A lady was sent to me suffering from severe eczema of the arms, face, and chest of about eight months' duration. Her history was that she was greatly depressed in health partly from financial worry and partly from overwork in the management of her home. Shortly before the outbreak of her first attack she had moved into another house. This, of course, entailed an enormous amount of work, as she did much of the cleaning of the new abode herself. The scrubbing and labour tired her out and made her feel more ill than before, and this culminated in her breaking down with an acute attack of eczema from which she had never quite recovered. Such was the history that she gave me when she came into my room.

On careful examination I came to the conclusion that we had to do with an eczema of external origin. I therefore questioned her as to the plants in the garden, and was informed that there was only some lilacs and ferns. I therefore directed my attention to wall-papers, carpets, and furniture, but drew blank in every direction. I then suddenly remembered that under the heading of plants I had not specifically mentioned climbers, so I harked back to this. I then learned that there was a "sort of virginia creeper" on the house. It was then winter and the plant was leafless, but I got the patient to send up a branch to Kew for identification, and to my satisfaction the report came back—*Rhus toxicodendron*. This plant, though very well known as a common weed in the United States, is so uncommon in England that people are ignorant of its evil properties. I have only come across two cases of poisoning by it in England, though I believe there is a fair number of plants scattered over the country under the name of *Ampelopsis Hoggii*. At all events, when the cause was once elucidated, the eruption was immediately seen to have a very obvious ætiology, the climber was destroyed, and no further attacks occurred.

Such cases seem simple enough when the ætiology is once elucidated, but much time and trouble is needed in many cases before the offending poison is identified. One point which causes difficulty is the almost incredibly small dose of the idiosyncratic poison which is necessary to produce severe symptoms. It must be remembered, also, that although there is a large number of bodies the qualities of which are well established, there are almost certainly many others which still remain undetected. It is scarcely to be wondered at, therefore, that on occasions the presence of an external intoxication cannot be established, although it may be suspected. As examples of the minute dosage required I may, perhaps, quote two cases.

The first is that of a child, reported by the late Prof. James White[4] in his book on dermatitis venenata. This child, aged 6 years, was twice poisoned one summer with *Rhus toxicodendron*. Consequently the next year a boy who was known to be insusceptible was employed to tear up all the plants growing near the house. This boy was then made to wash his hands, first in hot water with soap and subsequently with vinegar. As a precaution, in spite of his supposed insusceptibility, he was watched during this process by the mother of the susceptible child. In the afternoon this boy took the susceptible child to a pond to bathe. Having stripped him he took him into the water, holding him by the armpits and afterwards rubbing his back with his open palms. Two or three days later the child was taken ill and grew rapidly worse. Deep ulcers appeared under the armpits and the skin of his back exhibited in an aggravated form the usual marks of poisoning by "ivy." He died at the end of the third week of his illness.

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The patient was demonstrator in a chemical laboratory. In July, 1891, he began to suffer slightly from eczema on his fingers. This disappeared on his vacation, but reappeared on his return in September. He was at this time engaged in a research necessitating the use of phenylhydrazin and benzaldehyde. He gave this up for a time, but at Easter, 1895, he returned to it, and during one of his experiments noticed that a good deal of vapour was given off. The same evening he developed an attack of acute eczema on the face, neck, ears, and scrotum. This slowly died away. On repeating his experiments he developed a fresh attack. In December, 1895, he upset some phenylhydrazin on his hand, and in two hours developed widespread attack. He then gave up experimenting with phenylhydrazin. He was free from December, 1895, to November, 1896, and then had a fresh attack and found that a student was using the chemical in the laboratory.

He was again free until July, 1898, when he got an assistant to do some experiments with it in a room not directly connected with the laboratory. The assistant came and talked with him for a few minutes and another attack resulted. Finally, while convalescing at home from this attack his assistant came to talk with him after walking a mile through the open air, and he immediately developed a relapse.

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was changing. They no longer showed the pinhead pustules; they were much darker in colour and tougher and less succulent in consistence. In fact, they now suggested the diagnosis of papular syphilis, and as no further clinical evidence was forthcoming beyond the somewhat persistent and severe headache, the blood was examined and found to give a strongly positive Wassermann reaction. The patient was accordingly treated with arsenobenzol injections and mercury, and all the symptoms cleared up rapidly.

In this case, therefore, we have apparently an instance of the damage to the tissues by bromide determining the localisation of the syphilide. It is regrettable that we could not ascertain definitely the stage of the syphilis. I was inclined to believe from the severe headache and general toxæmia that the infection was early, but I felt it was unjustifiable to delay treatment in order to allow further secondary symptoms to develop and prove the position, as I considered it would be detrimental to the patient's future.

Such a case as the above appears to me to have an added interest for the reason that it sets a trap for the unwary. Having once established a firm diagnosis one is naturally apt to rest content, but this is not really justifiable in any case where the course of the eruption takes an unexpected turn. One should, I think, be prepared to review one's original diagnosis in the light of any fresh evidence that may develop and although I am not attempting in these lectures to present to you any of the extremely fine details upon which we rely to make our diagnosis, I may be permitted to point out that it is only by the acquisition of minute powers of observation that the all-important diagnosis can be made, and often in such a way that the ætiology may be suspected.

PROBLEMS OF INFLAMMATORY DERMATITIS.

I may now turn to some of the more puzzling forms of inflammatory dermatitis, which strain to the utmost the capacity of the dermatologist who attempts to make an ætiological diagnosis. We are met here at once by a wrangle about nomenclature to which I should like to avoid referring, as I have already expressed my disapproval of the undue importance which has been attributed to names and classification in the past. Nevertheless one must have a label for a set of clinical symptoms, and this label should be intelligible to other workers.

The dispute to which I refer is about the term "eczema." Willan and Bateman applied it to an eruption chiefly of external origin, eczema solare, &c. They did, however—and this was a great merit—define exactly the clinical lesion to which they applied the term, and they pointed out that the essential lesion was a small tense vesicle which formed aggregations. Later the French authors laid stress on the diathetic causation of the eruption, and later still Hebra returned more or less to the Willan-Bateman ideas. Up to this point the disease was considered to be a non-infective dermatitis.

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and finding that she had a large home farm and dairy, made inquiry as to these. This accidentally put me on the track. The patient had a breed of cows that had very handsome skins, and when any were killed she had the pelts made up into drawing-room rugs. This struck me as so unusual that I turned my attention to these rugs. I then elicited the statement that one of the servants, though not suffering from eczema, remarked that her hands "tickled" after handling the pelts. I therefore suggested that they should be removed and that a part of one should be submitted for analysis to an expert chemist, to whom I made suggestions as to chromium or zinc salts or arsenic. The chemist found nothing suspicious, but the patient had no more attacks for about two years. Her later history is interesting; about two years later I had a letter from her husband saying that after a long period of freedom she had relapsed. He had at once suspected a new source of poisoning, and had found out that she had been knitting a slate-blue wool for soldiers, and that the housekeeper who also knitted this wool complained that it tickled her hands. It was therefore removed and freedom from eczema again resulted. The actual substance was never detected in either case, but the patient was cured and I think I may say with confidence has remained so since.

One further instance I may give of this chemical poisoning.

The wife of a medical man was sent to me for eczema of the face and neck. Suspecting an external cause I made the usual inquiries, but drew blank in every case. I therefore treated it locally and set to work to look for internal causes. In this search the urine and fæces were exhaustively examined, and a bacteriological examination of the fæcal flora was made. Under the local treatment considerable improvement was made, but relapse was frequent and the condition on the whole became worse. After submitting to my failures for some time the patient went to a dermatological friend of mine. He went through the same interrogation and also drew blank. He treated her very successfully with mild doses of X rays in order to subdue the sensibility. Nevertheless although improved she was not free from trouble. Then on one of her visits he noticed a slight change of colour in the hair, and on being taxed she admitted that she dyed her hair, a thing which she had previously denied doing to both of us. It was dyed so lightly that it certainly did not suggest artificial colouring, and when I saw her she had a common shade of brown turning grey here and there. On the day it was detected I suppose she had used a little more than usual, but, of course, I did not see her then. It is not, as a rule, difficult to detect dyeing of the hair when one is examining the patient at close range, but this case illustrates well how by clever artifice and stout denial one may be led away even when one begins with a confident belief in the chemical origin of the eruption.

These are examples of purely local poisoning of the skin, and it will be noticed that in one case the patient had been considered "gouty," and it was believed that the Harrogate treatment had effected a cure, while in another I was myself deceived by the statements of the patient into a tedious search for metabolic errors.

LOCAL PARASITIC DISEASES MAY SIMULATE INTERNAL DISEASE.

I now turn to some other forms of local damage which have given rise to confusion. In 1892 Djelladudin Mouktar,[6] working in Prof. Fournier's clinic in Paris, showed some cases of circinate dermatitis of the sole of the foot. In these cases he found present a ringworm fungus. Being under the influence of the Paris school he attributed these cases to a secondary invasion of an eczema of unknown cause by the ringworm fungus. These cases were reported only briefly in the Transactions of the Paris Dermatological Society and—being published before I was working seriously at dermatology—were unknown to me.

Some time later I began an exhaustive microscopic study of the scales, fluid, pus, &c., which I was able to collect in cases of eczematous dermatitis. The result of these investigations was that in 1908[7] I was able to publish a series of cases of eczematoid eruptions [illegible] the hands and feet in which I had found a ring[illegible] fungus present, but had been unable to cultivate [illegible] on account of overgrowth of contaminating organ[illegible]. However, I described as accurately as I [illegible]uld the type of lesion present, pointing out some [illegible]uliarities that I thought might enable one to suspect the presence of a fungous infection, at the same time contending that it was not justifiable to make the diagnosis of vesicular eczema of the hands or feet without microscopical examination. More than one of my early cases had been diagnosed as, and treated for, "gouty eczema."

In 1910 Sabouraud[8] observed the same set of clinical symptoms on the feet associated with the disease called eczema marginatum, and already known to be due to a fungous infection. Sabouraud succeeded in cultivating the fungus and found it to be the peculiar organism of Dhobi itch, which he had already named the "Epidermophyton inguinale." Unaware of my paper on the subject, he described the disease accurately and also, as I had done, protested against the diagnosis of vesicular eczema and dysidrosis without microscopical examination. Sabouraud in his paper stated that he was acquainted with Djelladudin Mouktar's cases, and that they were not epidermophyton infection. There is also a model in the Saint Louis Museum of one of these, and I do not think it is the same disease as that to which I drew attention.

This disease has several points of interest. In the first place it is, I think, the only case of an infective disease with which I am acquainted which is so much more common in the well-to-do that it may almost be said to be limited to them. This peculiarity has been noted by more than one observer, and is probably the reason for my being able to collect only so few cases in the earlier days of my private practice, since the hospital clinics did not provide me with the necessary material. I have given a good deal of thought to this peculiarity with a view to discovering the reason. It is of course well known that in India the disease is called dhobi or washerman's itch, on the theory that the underclothes are infected by the washerman, though I may point out in passing that the eczematoid ringworm of the feet was not apparently recognised there. This "washerman" theory has met with some antagonism among medical observers; nevertheless I believe it to be the correct explanation in some cases. The well-to-do are at least as clean as the poorer classes, but in most cases they send their underclothes to be washed at a common laundry, whereas the poorer classes generally do their washing at home. That washing will carry the infection is proved by one of my cases, since the maid who washed at home some socks worn by the patient became infected on the hands. No other explanation of the apparent immunity enjoyed by the poor has presented itself to me.

Some of my patients believe that they caught the disease at Turkish baths, and as evidence in favour of this view I may state that I have found the fungus present in the feet of a Turkish bath attendant.

In the second place, there are other phases of the disease which are of interest in connexion with general medicine. The disease may begin extremely acutely with a vesico-bullous eruption and great swelling so that the patient presents the appearance of an acute toxic dermatitis. In this stage it is usually fairly easily curable by appropriate measures, since almost the whole of the stout horny layer is shed en masse and one has only a thin layer to deal with below. If, however, it is not diagnosed but merely treated with soothing applications, the inflammation will slowly subside, and the fresh horny layer will be infected in turn. In other cases the disease may begin quite insidiously with a little scaling, vesiculation, and pustulation between the toes, and this may persist untreated and even unknown for a number of years. It is usually mistaken for a disorder of constitutional origin and labelled "gouty eczema." Slight or severe exacerbations occur in hot damp weather and on severe exercise which induces sweating.

One very important point is that the stripping up of the horny layer and the vesiculation lead to a secondary infection with the pyogenic organisms, especially the streptococcus. This results in persistent fissures between one or more pairs of toes, and from these fissures the infection spreads from time to time up the lymphatics, causing redness and swelling of the leg accompanied by fever. One of my patients developed slowly a chronic elephantoid thickening of the ankle and calf in this way. She was treated for gout on many occasions and visited many watering places, including Homburg, on this supposition, and curiously enough the infection was for some years limited to the right foot. Dr. H. G. Adamson permits me to mention a somewhat similar case under his care, who was for some time in a nursing home in London, and was treated for recurrent gout by a great authority on that disease.

Another case under my care was that of a medical man who developed the disease in its insidious form in one of the Eastern campaigns of the late war, and suffered from a severe relapsing lymphangitis like, and nearly identical with, erysipelas. He was sent on to me, and I found and demonstrated to him the fungus from between his toes, though, as far as my memory goes, he was unaware of anything wrong there. This was some time ago, and I have heard from him since that his feet have entirely cleared up, and that he has been free from all further lymphangitic trouble.

A still more striking case, but of an allied rather than of an identical nature, is that of a male of late middle age who was seriously thinking of undergoing amputation above the knee. This patient damaged his knee in early life and the affection was considered by some surgeons to be tuberculous in nature, by others merely a traumatic arthritis. It cleared up under treatment and he was well for many years. He then began to have recurrent swelling of the leg with sudden attacks of fever up to 105°F. Difference of opinion occurred again and he saw several experts. On analysis of his symptoms I came to the conclusion that the swelling, which was not present when I saw him, was rather in the soft parts round his knee and below it than in the joint itself. I measured his legs and found some slight general thickening of the whole leg below the knee. I then examined his toes, and found a solitary streptococcic fissure beneath the fourth, but could find no fungus present. I therefore treated this and had the satisfaction of hearing from him much later that no further attacks had occurred.

I have dealt with this disease at some length because it appears to me to be so very important, and it is really far from uncommon. As far as I can make out, it became really common in England soon after the Boer War, when it was probably spread by the officers of the Indian Army. It became epidemic in some of the English public schools and was at one time present in one of the large London hospitals, where apparently the baths became the source of infection. The troops in Gallipoli suffered from it almost universally, and the few cases that I have seen in hospital practice have been in soldiers. A disease of this frequency which may be mistaken for gout, neuritis, and tuberculosis by physicians and surgeons respectively must surely be of some general interest!

In concluding this lecture I may confess that I was at one time greatly under the domination of the external factor; and although with increased experience and research I have in some degree altered my position, I am still of opinion that it is only by working patiently through the evidence to be gained by a study of the external and usually more direct factors that one can attain to the degree of knowledge and technique which will enable one to begin to study satisfactorily the internal ætiological factors. For this reason I cannot deprecate too strongly the statement which I have observed in a modern text-book that it is a waste of time to hunt for the acarus in scabies. By constant practice it is quite easy to gain a degree of proficiency which will enable one to extract an acarus in considerably less than one minute. Unless one cultivates the more difficult processes of observation and manipulation one has never the right to give a certificate that such diseases as scabies and ringworm are cured.

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THE CAPILLARY PRESSURE AND THE CIRCULATION IN SHOCK.

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THERE is no evidence that the capillary wall acts as a soap film and exerts surface tension. Against such a supposition is the fact that the capillaries in the web of the frog's foot do not empty when the foot is amputated. The method, then, adopted by L. Hill[1] of measuring arteriole, capillary, and venule blood pressure is the finding of that amount of compression which, when quickly applied, momentarily arrests the flow. When the compression is gradually raised and kept raised time is allowed for the arterioles to become distended by the pressure of the blood within the artery which is feeding the compressed arteriole, and thus it comes about that the lateral pressure in this artery is measured on blocking and keeping blocked the flow in a capillary field. For example, in the case of the frog's web the pressure in the main artery of the toe is measured, not that in the normally flowing arterioles or capilleries, and in place of a pressure of some 3–5 mm. Hg, which, when quickly applied, momentarily arrests the flow, a pressure of some 25 mm. of Hg is found.

The momentary check occurs when both the kinetic energy and the potential energy of the blood stream are overpassed, for when the flow is momentarily arrested it is equivalent to the sudden damming of the blood flow by the interposition of an impermeable diaphragm across the bore of the vessel; the flow being arrested, its kinetic energy is converted instantaneously into potential energy, and the hypothetical diaphragm is pressed upon by a raised lateral pressure which results from the transformation of the kinetic energy. Similarly, when L. Hill and J. McQueen[2] used a jet of water to play upon the skin behind the finger-nail, and moving it to and fro found the blanching pressure, the blood current being arrested when the pressure of the jet was made high enough, the normal lateral pressure plus the lateral pressure due to conversion of the kinetic energy of the flow was measured. Consequently the accurate measurement of arteriole-capillary pressure measures the total energy, potential and kinetic, of the blood stream.

Now if the force and rate of the heart beat and the calibre of the arterioles, capillaries, and venules be constant, any diminished rate of capillary flow brought about by increased viscosity means a higher lateral pressure. Neglecting that fraction of energy which is dissipated as heat, the diminished rate of flow means less of the total sum of energy expressed as kinetic and more of the total sum of energy expressed as potential or lateral. Similarly, if the capillary flow be quickened through diminished viscosity, the increased rate of flow means a conversion of some of the potential energy fraction. In the first case the lateral pressure rises and the kinetic pressure falls. In the second case the lateral pressure falls while the kinetic rises. When, then, the viscosity of the blood is increased an additional supply of kinetic energy is required to be transmitted from the heart to secure the adequate flow of blood in the capillaries, for as the total lateral pressure and kinetic energy of the arteriole-capillary blood stream is measurable by a very few millimetres of Hg, the kinetic fraction is very small, and it is this very small kinetic energy fraction that is of fundamental importance.

Normally the loss of pressure of the blood in traversing a capillary area is very small. L. Hill found a very small pressure was required to propel the blood along the capillaries in the web of the amputated foot of the frog. The kinetic energy of flow in the capillaries naturally is correlated exactly to frictional resistance of the blood inside the
In normal conditions both the kinetic energy and the frictional resistance due to viscosity

small. Any increase of viscosity has, therefore, a very great slowing effect on the blood current because the kinetic pressure of blood flow is at most a very few millimetres of Hg. In normal conditions of health the body maintains the viscosity just as constant as it does the osmotic pressure or the hydrogen-ion concentration of the blood.

The fact that the total pressure in the capillary field is small is an example of the economy of the body. A uniformly high capillary pressure, such as hitherto accepted—viz., 30 mm. Hg, would mean a corresponding high output of energy from the heart, and this energy would to a large extent be wasted; the most economical way of distributing energy is the method adopted in the body. Energy is supplied where energy is required. By vaso-dilation kinetic energy of blood flow is supplied when the chemical needs of the organ or tissue require it, but be it noted in the body that extra kinetic energy is compensated by less waste of energy where it is not required in areas where compensatory vaso-constriction ensues. Thus changes in the kinetic energy of blood can be secured in certain areas of the body without the heart ever being called upon to supply energy much over its normal amount. For example, when muscular exercise is not undertaken, digestion, absorption, and excretion may make remarkable demands for increased blood flow in large capillary areas with little or no change in the general level of arterial pressure in the main trunks and with quite small changes in the rate and force of the heart. The arterial pressure in the main trunks is utilised where required without any great demand for increased cardiac action. In muscular exercise it is true the heart's rate and force are increased, but such muscular exercise, where systolic and diastolic pressures are much raised, is never maintained over long periods.

Much study has been devoted in man to the recording in health and disease of diastolic and systolic pressures in main arterial trunks. It has been maintained, and no doubt truly, that little material of great clinical value has been obtained from that study. It is true that in those in whom the arteries or kidneys are diseased high systolic and diastolic pressures are often demonstrated. But to expect that clinical information can be obtained from small variations of blood pressure (arterial) is to ignore the meaning of arterial pressure. The arterial pressure exists solely for the maintainance of an adequate capillary rate of flow. Consequently even in cases of abnormally high blood pressure it is safe to say that some essential capillary field demands that height of blood pressure to secure an adequate rate of blood flow. We have no evidence whatever that capillary blood pressure (kinetic factor) is increased in cases of high arterial blood pressure, and if that be proved true by the application of the more accurate method of capillary blood pressure measurement now available, it is safe to conjecture that, if the arteriole conditions remain constant, any great drop of pressure in a person suffering from arterial hypertension will have disastrous results. Stewart records in arterio-sclerosis a diminished rate of flow in the hands.

Similarly, in cases of low arterial blood pressure where the individuals show no symptoms it is certain that the arteriole conditions permit of a quite adequate capillary rate of flow, and to artificially raise the level of general arterial blood pressure, if that were therapeutically possible, would be a work of supererogation. Consequently clinical writers who record arterial systolic and diastolic pressures in disease present only one factor in the problem. It is safe to say that the rate of capillary blood flow in correlation to the arterial systolic and diastolic pressure should be our guide to treatment. The capillary rate of blood flow has a critical value below which it must not fall. That rate in normal individuals is the optimum rate, and it will be found that the body strives even at the expense of a higher arterial blood pressure level to maintain the optimum rate, which may have to be [illegible], for example, in renal disease. If an extra drain is made on the energy of the heart to maintain that capillary rate of flow, there is to that extent a loss of reserve power in the heart. If the arterioles are maintained highly constricted uniformly all over the body an increased force of the heart beat is necessary to maintain the optimum rate of capillary blood flow; and such general vaso-constriction prevents the mobility of the vaso-motor reflexes, and the power of opening the sluice gates in the high pressure arterial system is to that extent impaired. The data of systolic and diastolic pressures in the main arteries so laboriously compiled is then information of little or no clinical value. But it requires to be illuminated and brought into line with the law of an optimum rate of capillary flow.

In the life of the normal individual no falls of any consequence in the level of the arterial blood pressure ever occurs. In fainting, no doubt, a fall occurs, but anæmia of the medulla speedily restores the level of blood pressure, and it is aided, no doubt, by the assumption of the horizontal posture which unconsciousness generally secures. There is evidently a critical level of arterial blood pressure below which it must not go for long periods, and that critical level is determined by the rate of blood flow through the capillaries of the cardiac muscle. Thus, Starling[3] has found that the arterial blood pressure, if it falls below 80 mm. results in a diminished output of energy by the heart muscle itself. If the rate of flow in the capillaries of the heart falls below the level required for the supply of energy of the heart muscle, it is to be expected that grave results will ensue. Such is the case in shock.

The existence of a critical level of systolic pressure in the arterial trunks is the price paid for the maintenance of arterial tone. The fact that the normal capillary pressure (potential and kinetic) is expressible in a few millimetres of Hg while the arterial pressure in the brachial artery may be 130 mm. of Hg, is due to the arterial tone. Pressures are cut down enormously in the small arteries and arterioles, and if they were not so cut down by the tone of the wall keeping narrow the lumen the great alterations in the kinetic energy of the blood streams that are necessary in the periods of activity of tissue or organ would not be obtained without as great alterations in the rate and force of the heart beat. It is this banking up of pressure between the heart and the arteriole which makes of the great arterial trunks a reservoir at high pressure capable of having its sluices opened here and shut there according to the needs of the territory to be irrigated. But the price of the arterial tone has to be paid, and its payment is expressed in the law of the critical blood pressure level. If the arterial blood pressure fall for long periods much below that critical level the rate of capillary flow falls much below the normal. The reason for this is obvious. Attempt at compensation is made by increased vaso-constriction, and while by this means succour is brought by increased pressure in the coronary arteries to the heart muscle and to the brain the capillary field in the body generally outside these areas falls from its already low level of a few millimetres of blood pressure still lower. Vaso-constriction is no cure for an arteriole blood pressure below the critical value. The failure of adrenalin or pituitrin in cases of blood pressure below the critical value is exactly what one should expect.

Fraser and Corvell[4] define a group of cases with primary shock as having a systolic pressure of 40 to 90 mm. Hg; in some of the shock cases they record systolic pressures even as low as 30 mm. Hg. It is to be noted that in these cases the arterial pressure in the main arteries is maintained at these low levels by means of vaso-constriction of the arterioles. This vaso-constriction leads inevitably to a very considerable diminution of the kinetic energy of capillary blood flow. Now the accurate measurement of capillary blood pressure in normal individuals with arterial systolic pressure of 130 mm. Hg shows clearly that the total pressure (lateral and kinetic) in the capillaries is at best a fraction of 10 millimetres of Hg when the normal tone of the arterioles is present. Accordingly it will be obvious that if arterial blood pressures (systolic) fall into a group of 40-90 mm. of Hg and the diastolic pressures are proportionately lower, the total capillary pressure in the capillary areas of the body falls even below its normal exceptionally small level. Consequently the kinetic fraction of the total blood pressure falls still lower, till the blood current in the capillaries must of necessity be extremely slow. Direct observation of the pressure and flow in capillary areas made by L. Hill show that this is so in the state of shock.

In the older estimations of capillary blood pressure as varying from 30-50 mm. of Hg there might have been some possibility of loss of pressure and yet the existence of a remainder of pressure adequate to maintain a capillary flow of rapidity sufficient to supply the tissues with oxygen. In the newer view of the capillary pressure there is little margin available. Hence capillary stasis appears inevitable with its consequences.

Several years ago L. Hill[5] demonstrated the fact that the capillary channels in the body were never all filled. If an armlet be placed on the upper arm and pressure applied just below the systolic level the large veins of the arm below the armlet will rapidly rise to the systolic level of pressure pertaining in the brachial artery while the capillary pressure is still much lower than systolic pressure. Hill deduced from this experiment that (1) the capillaries that have blood in them are capable of taking up much more blood by dilatation; (2) there are numerous capillaries in the body not filled at all; (3) there are anastomotic channels whereby pressure is easily and quickly transmitted between small arteries and the veins.

All of these conclusions have been amply proved. Bayliss found that after section of the spinal cord large volumes of gum saline solutions could be injected and remain in the vessels with persistent dilution of the hæmoglobin, evidently here capillaries distend and formerly closed capillary channels open. The capillary field becomes a huge reservoir of diluted blood. L. Hill finds that direct anastomotic paths between small arteries and veins are visible on examination of capillary fields. Now, it has been repeatedly noted in cases of shock that the red blood cells in venous blood taken from the arm often numbered 2,000,000 corpuscles fewer per c.mm. than in blood taken from the capillaries. In the old view of the circulation of the blood passing by way of arterioles through capillaries into venules and veins it is obvious that the venous counts and capillary counts should agree closely. But if, as L. Hill has long maintained, and now shown by examination of capillary fields under the microscope, there are these short and direct paths between arteries and veins, we should expect that the high red-cell count pertaining in these capillary areas in which there is slow flow or stasis would not obtain in the direct paths through which arterial blood flows with its lower red-cell concentration, hence the venous counts would be uniformly lower than the capillary counts. It is noted that as shock diminishes the capillary and venous red-cell counts approximate in value. In normal individuals greater differences than 3 per cent. between capillary and venous counts did not exist. It is obvious here that in these anastomotic paths we have the factor on which depends the possibility of restoring stagnant blood in the capillary area into circulation. If no such anastomotic paths existed the slowing of the blood current in the capillary area would uniformly lead to concentration so great that little or no blood would be in circulation at all.

Surgical shock would kill with an effect and rapidity similar to anaphylaxis in the guinea-pig; or injection of histamine in the etherised cat, when the blood in the capillaries and veins ceases to flow, as can be observed under the microscope. In surgical shock blood slowly concentrates in the capillary area and the return blood to the heart is a mixture of blood of more normal concentration passing by the direct anastomotic channels and concentrated blood returned from the capillaries to the veins. The phenomena of shock supervene gradually and the removal of shock is equally gradual; viscosity of the blood in the capillaries may be overcome by dilution with other blood (donors), or gum saline mixtures and the pressure in the arterial tree raised through the injection; both factors tend to remove the stagnation. The blood diluted with donor's blood or gum-saline has the easy path of return to the heart via anastomotic channels, and is not compelled, all of it, to force its way through capillaries that are already choked with concentrated blood. The approximation of venous red-cell and capillary red-cell counts is correctly interpreted as proof of the removal of stasis. But if there were not in existence these freer anastomotic paths it is extremely doubtful if such revomal of stasis could take place. The primary cause of the capillary stasis is the fall of the arterial blood pressure below the critical level of 80 mm. of Hg or so, and the fact that the fall is not temporary as in the case of fainting. Whether in shock the products absorbed from damaged tissues or the sensory stimulation preceding it is the cause of this prolonged fall in the arterial blood pressure below the critical level we cannot judge on the available data. However, the fact that with a normal arterial systolic pressure of 130 mm. of Hg the kinetic energy of capillary blood flow is but a fraction of a few millimetres means that this fraction becomes less with a falling blood pressure, and may be still less with a general vaso-constriction in the arteriole area. The general capillary field is sacrificed to the arterial pressure in the brain and in the heart, and a sure Nemesis awaits that method of restoring blood pressure if carried too far. Deoxygenation sets in the capillary area, the osmotic pressure of the tissue cells rises and these imbibe more fluid, the capillary wall may suffer and become increasingly permeable. The viscosity of the concentrated blood increases. The kinetic pressure available in the capillary area, already a small fraction of a few millimetres of Hg is inadequate to maintain the blood flow, and the heart, so carefully shielded from oxygen want by vaso-constriction elsewhere, finds itself with progressively less and less blood to propel.

The value of gum saline solutions or of normal blood from a donor is obviously due to the fact that the heart is fed directly from the vein into which the solution is run. The pressure rising in the main arterial system is transmitted to the capillary area, but the gum saline with its viscosity equal to normal blood, or the donor's normal blood, dilutes the concentrated blood in the capillary area, restores it to a more normal viscosity, reoxygenises the tissue cells and the capillary wall and prevents the increasing loss of fluid by imbibition and permeation.

In shock when the blood pressure falls below 80 mm. Hg it is possible, as pointed out by MacLeod, that the reciprocal innervation by means of which vaso-constriction in one area is compensated by vaso-dilatation in another acts in a faulty manner. It is possible that a profound general vaso-dilatation occurs in the initial stages, but such vaso-dilatation, while it lowers the general level of arterial blood pressure, might not decrease the kinetic energy of the blood flow in the capillaries. But when arterial vaso-constriction sets in later, and blood is trapped in distended capillaries, and capillaries open that formerly were shut, then the kinetic energy of the capillary flow becomes quite insufficient to propel the blood.

The accurate measurement of capillary blood pressure then throws light on stasis. Low arterial blood pressures are dangerous because the capillary kinetic energy of blood flow is very small with normal arterial blood pressure. There is a very small margin of safety in the capillary area.

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DIAGNOSIS AND TREATMENT OF DIPHTHERIA.

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IT is quite unnecessary for me to go into the diagnosis of diphtheria in detail, but perhaps there are a few points to which I might draw attention, particularly with the view of early treatment of severe cases. Diphtheria may evince itself in a varying degree of reddening of the tonsil or tonsils and fauces without any deposit, either pultaceous or membranous; as a definite membranous or pultaceous deposit with an amount of inflammation and œdema corresponding more or less to the amount of deposit; as an ulcer or ulcers caused by mixed infection with membrane or pultaceous deposit; or as a most pronounced inflammation and œdema of the fauces with or without a membranous or pultaceous deposit. That may be taken as a very general description of what may be met with in the first day or two of the disease. The very mild attack, productive of inflammation but no deposit, does occur, as we know, by circumstantial and bacteriological evidence, but in a given case we cannot say for certain that the condition is diphtheria.

Usual Form Observed.

Diphtheria usually shows as a membranous or pultaceous deposit (in all pultaceous at first, but usually rapidly becoming an adherent membrane), which looks as if it had been stuck on the mucous membrane, and therefore showing a definitely raised margin. It is ordinarily accompanied by an amount of inflammation and œdema corresponding to the extent of the lesion or lesions, glandular swelling, &c. In some cases the deposit remains pultaceous for as long as a day or two days, and in rare instances never becomes an adherent membrane. Naturally the deposit sometimes occurs in an old ulcer of the tonsil, and may look like an ulcero-membranous condition.

Mixed diphtheria infections are usually due to the added action of septic microbes, the pneumococcus, or the organisms of Vincent's angina, and it is in this class that diagnosis is often difficult, for an apparent ulcerative tonsillitis may be followed by diphtheria; or more frequently the septic condition follows, and doubtless in some the attack may be coincident. I have seen apparent subacute ulcerative tonsillitis go on a couple of days or so, with failure to demonstrate the diphtheria bacillus, followed by the formation of membrane and the presence of the bacillus, and, indeed, one may get any variant. In mixed infections the membrane may not be wholly in the ulcerated area, and I think it is commonly partly out, when the membrane beyond the area will be on the surface and show its raised margin. The deposit may, of course, be pultaceous, just as in pure diphtheria, but the amount of inflammation and œdema is often greater, except in the combination of diphtheria and Vincent's angina.

Features of the Disease in Susceptible Persons.

In those who are peculiarly susceptible to diphtheria the progress of the attack from the time of onset is very marked, and the striking features of this class of case are the rapidly increasing faucial œdema, the rapid swelling of the neck glands, and the increasingly marked accompanying cellulitis. It is this class of case I purpose dealing with more fully later.

Hæmorrhagic diphtheria is a result of toxin circulation produced on a susceptible person, and may be the outcome of a severe attack of pure diphtheria or a severe mixed diphtheria infection, and occurs commonly in the very severe type I have just mentioned, provided, of course, that the disease has not been checked by treatment at a sufficiently early [illegible]. In the diagnosis of an ordinary case of [illegible] diphtheria I only wish to call attention to a statement in a paper on the clinical diagnosis of diphtheria by Dr. H. Drinkwater,[1] published in THE LANCET of May 29th, 1920. He says that in a given case of membranous deposit on the fauces, in the period of growth if it is raised above the level of the mucous membrane, has sharply defined edges, and is single in each affected area as described by him, "there can be no doubt that the disease is either diphtheria or Vincent's angina." If Dr. Drinkwater had not used the words "no doubt" I would be in agreement, but my experience does not permit me to go further than to say that in the great majority of cases the disease would then be either diphtheria or Vincent's angina. But Dr. Drinkwater goes further still and asserts that neither in diphtheria nor in Vincent's angina in the period of growth do we see more than one patch in any one of these six faucial areas. I do not think any experienced observer will agree with him in this, and I have certainly often seen diphtheria commence with multiple lesions on a tonsil, and some of them severe attacks.

Necessity and Difficulty of Prompt Diagnosis.

The peculiarly susceptible individual who develops rapidly increasing faucial swelling, rapid swelling of the neck glands, with accompanying cellulitis, requires prompt diagnosis and treatment. Usually there will be formation of membrane well within 24 hours and the diagnosis will be easy, but a considerable number will show no membrane at the end of 24 hours, and it may even be postponed for 36 hours, though that is uncommon. It is in these cases with late formation of membrane that difficulty in diagnosis arises. In this class there will, of course, be variation in severity, but the fauces will be full of œdema, the tonsils perhaps meeting or nearly meeting in the middle line, and all within 24 hours. The surface of the tonsils usually has a peculiar filmy and translucent appearance, which looks to me like an almost invisible sheeting composed of the thinnest and finest gossamer. The glands at the angle of the jaw will be much enlarged, the cervical glands to a lesser degree, and the neck will be puffed out by cellular infiltration. This class of case will usually die if left untreated for 36 hours, may even die if adequately treated in 24 hours, and very rarely dies if treated within 24 hours. As this severe form of diphtheria is not at all uncommon it is obvious what a saving of life would occur were early diagnosis always possible. It is sometimes diagnosed as mumps, no doubt on account of the cellulitis, but such a diagnosis means that the throat has not been examined. Also such cases are occasionally regarded as quinsy, but quinsy is not nearly of such rapid development, is not common in young children, and a double coincident quinsy is very rare indeed. In severe diphtheria the patient usually opens the mouth well, though there are exceptions, and the difficulty in opening the mouth is usually so great in quinsy that it may be very hard to get a view of the throat. In quinsy at the end of 24 or 36 hours there will be little, if any, cellulitis of the neck.

Differential Diagnosis.

It is very rare to find concurrent quinsy and diphtheria, but I have seen cases of coincident one-sided quinsy and double-sided diphtheria. The differential diagnosis between quinsy and diphtheria will rarely be difficult, but if there is doubt antitoxin should be administered. In the severest forms of septic sore-throat some difficulty may arise in diagnosis, but there will not be thus early much glandular swelling, nor will there be cellulitis, and I do not think I can do better than go back 40 years to quote a very observant clinician. Sir Morell MacKenzie says in his text-book: "In diphtheria the submaxillary and cervical glands frequently become much swollen at the outset of the disease, but in putrid sore-throat these parts in some cases remain altogether unaffected, whilst in others the tumefaction is but slight."

It may be very difficult to differentiate between very severe attacks of scarlet fever and diphtheria at this early stage. Such points as the temperature usually being higher, a sudden onset, commoner initial vomiting, &c., in scarlet fever, are best left alone, as also certain points in favour of diphtheria, such as a probable more rapid cellular infiltration or less faucial pain, &c. To differentiate, one must have a well-defined scarlet fever eruption, and it must be well defined, for an erythema is common in diphtheria; but if that is not present there must be difficulty, and since the patient will be obviously suffering from a dangerous infection, there can only be one course of action and that is to treat for diphtheria at once.

To sum up, I consider that a condition of the throat so acute as I have described must be (except very rarely) either diphtheria or scarlet fever, and must be regarded as diphtheria for purposes of treatment unless definite evidence of scarlet fever is present. That treatment must be as early as possible, and delay of treatment for bacteriological examination is to be severely condemned. As I pointed out in a recent communication[1] on the subject, if the clinical evidence favours diphtheria the patient should be treated for that disease at once.

Treatment of Acute Diphtheria.

I would like to touch upon the main points in the treatment of acute diphtheria; apart from suitable nourishment, these are adequate dosage of antitoxin and complete rest in the recumbent position. All other treatment falls into insignificance beside them, and any treatment which interferes with them is bad. We know that within a certain time antitoxin will stop the production of toxin, but we cannot say just how long that time may be; possibly it varies in different individuals and in different degrees of severity. There is evidence which goes to show that antitoxin neutralises or partly neutralises the toxin in circulation, and that larger doses may partly neutralise toxin loosely combined with the cells, but not that which has become fixed. We do not know at all exactly when the toxin commences to be circulated in quantity; we do not know how long it is in circulation or how long it is loosely combined. The deductions appear to be that the earlier one can treat the disease the better, and that if one fails to get the patient early the dosage should be greater; this is in accord with clinical experience.

At one time it was laid down, and, indeed, is still held by some, that the weight of the individual should regulate the dose. This at first sight seems reasonable, but the child is more susceptible to diphtheria than the adult, and the net result is that the child requires as large a dose as the adult. It is true that infants are often insusceptible or less susceptible to diphtheria, but that point can hardly be held to affect the general rule of dosage. The method of administering the antitoxin affects the dosage to some extent, but the main points affecting it are the severity of the attack and the stage of the disease. It is, however, very difficult to estimate the dosage in any given case, and the only safe method appears to be to err purposely on the ample side.

To arrive at the approximate dose one has to be guided by the stage of the disease, the rapidity of progress from the onset of the symptoms, the amount of membrane, the amount of inflammation and œdema, the amount of glandular swelling, the amount of cellular infiltration; whether the naso-pharynx is involved, as indicated by nasal discharge; the character and amount of the nasal discharge, and whether it is blood-stained; whether there is bleeding from the mucous membranes, and to what extent; whether there is hæmorrhage into the skin, and whether there are subcutaneous hæmorrhages; whether the larynx is affected as well, and the throat fœtor. One must not be guided by the amount of membrane alone, as I fear sometimes happens; I have already pointed out that early in the most serious cases there may often be no membrane. Having thus arrived at the probable dosage it is wise in all severe cases to add, say, 4000 units more to cover possible error.

Intramuscular Administration Preferable.

The accepted methods of administration are the subcutaneous, the intramuscular, and intravenous. The intravenous method, while having its advantages, need hardly be considered for routine purposes. J. D. Rolleston advises the intramuscular chiefly because the absorption is more rapid than by the subcutaneous method. In my opinion, also, the intramuscular method is preferable and the injection is best made deeply into the vastus externus. Some inject into the gluteal region, but as Rolleston points out, the thigh muscles are more compact and exercise greater pressure and so help the more rapid absorption of the injected fluid. Further, it is to be remembered that the patient has to lie on the gluteal region and there is no need to add to his discomfort.

Rolleston advises the following dosage: For severe faucial cases: 16,000 to 20,000 units, and a similar or sometimes smaller dose on one or two of the following days. For moderate faucial cases: 8000 to 12,000 units, occasionally repeated on the following day. For mild faucial cases: 4000 to 8000 units, repetition rarely being necessary. For nasal, laryngeal, conjunctival or aural diphtheria in which there is no faucial involvement: 4000 to 12,000 units.

C. B. Ker states that in diphtheria cases are frequently met with in which a single dose of 10,000 units is not enough, and that in not a few cases there is no improvement until the patient has received more than 20,000 units. Further, he says that in severe naso-pharyngeal cases it may be necessary to give 40,000 units or more. I believe that for some mild faucial cases 4000 units is sufficient, but there is the difficulty of gauging the class of case one is dealing with. This can be done with some accuracy by those of much experience, but is very difficult for others. Personally, I would not care to give less than 6000 units, and I would advise all those who are uncertain that the case is really a mild attack never to give less than 8000 units.

It is well to remember we do not know very much about the accurate dosage of antitoxin; but we do know the patient will recover if an adequate dose of antitoxin is given sufficiently early in the disease. I have already mentioned the wonderfully good results obtained by MacCombie amongst patients treated on the first day of the disease; I believe he never gave less than 12,000 units. It is impossible to say what the maximum necessary dosage is in the most severe cases. I have certainly seen cases in which more than 50,000 units seemed necessary. Ideally the amount of antitoxin necessary should be administered in one dose, but it is very difficult to estimate the quantity and so second doses are often required. It is desirable that the second dose should be given not later than 21 hours after the first; repeated doses extending over a few days are not to be recommended.

—	If treated on 1st day	If untreated		
		Until 2nd day	Until 3rd day	Until 4th day or later
Mild faucial ..	6,000	6,000	8,000	10,000
Moderate ,, ..	10,000	12,000	14,000	16,000
Severe ,, .. Severe faucial & laryngeal ..	20,000	21,000	30,000	30,000
Very severe faucial ..	30,000	40,000	60,000	50,000
Laryngeal only ..	18,000	18,000	18,000	18,000
Nasal only, but with membrane Conjunctival only	6,000	6,000	8,000	10,000

If one has not erred in one's estimate of the severity of the attack, as indicated by a definite increase in symptoms in 12 hours after the injection, many cases will not require more antitoxin. In mild, [illegible] cases second doses will seldom be nec- [illegible] moderate faucial cases some will require [illegible] of from 8000 to 10,000 units. In severe

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[1] THE LANCET, 1921, i., 1100.

severe faucial and laryngeal second doses of from 12,000 to 16,000 units will be required in a goodly number.

In many very severe faucial cases second doses, usually varying from 16,000 to 20,000 units, will be required, but occasionally it will be advisable to repeat the first-day dose in 24 hours or less if the faucial swelling and cellulitis have increased, and to give a second dose of 20,000 units should there be no improvement by that time. Cases suffering from laryngeal diphtheria with no faucial or nasal involvement seldom require more than the 18,000 units. Nasal diphtheria with membrane but no faucial involvement, and conjunctival diphtheria with no faucial involvement, seldom require a second dose. A discharge from the nose, whether blood-stained or not, in which is found the diphtheria bacillus but no membrane formation, seldom requires antitoxin treatment.

Importance of Recumbent Position.

It is of very great importance that the patient should be in the recumbent position in bed. He should lie flat on his back and unless the disease is mild not even a pillow should be allowed; a mild case may be allowed a soft pillow. The period for which it is necessary to maintain the recumbent position varies greatly with the severity of the attack, but it is wise, except in the mildest forms, to regard the minimum as three weeks, and in very severe cases up to six or even nine weeks. The mildest forms should be recumbent for at least 15 days.

When it is considered safe to move the patient from the flat position the process must be very gradual, the heart being watched with care, and should it be affected by the change return to the recumbent position must be resorted to. In moving the patient from the flat, give only one pillow for a few days, then a second, and so on until the patient may be allowed to lounge in an easy chair at the bedside for half an hour. Even when he is up and about the heart must be watched for some time and the patient put back in the recumbent position if necessary. If this is carried out carefully sudden death in convalescence will occur very rarely indeed.

Some may wonder how one can expect a child to lie flat in bed for weeks, but actually the child suffering from diphtheria will do so readily and almost without exception. With rare exceptions it will be the fault of the nurse, not of the child, if there is difficulty. With the adult, however, difficulty may arise, and considerable persuasion is sometimes necessary. The ordinary case may be carefully moved on his side for changing or blanket bathing, but in a case in which early heart failure is likely the blanket bathing must cease from about the seventh to the fifteenth day, and only those parts sponged which entail no movement of the patient. Every precaution must be taken to avoid unnecessary movement. This complete rest in the recumbent position is laid down as essential by all who are experienced in the disease, and it follows that local treatment of the throat should not be done. It is difficult to depart from a treatment which has been carried out almost from time immemorial, but my experience of local treatment of the throat in infectious diseases is quite unsatisfactory. Even in scarlet fever, whether septic or not, I gave it up some 12 years since, except in the adult, who likes it, and my experience is that in the ordinary case of scarlet fever no difference results, while I think the septic cases on the whole do better, and they certainly do as well. Now in scarlet fever there may be a difference of opinion, but in diphtheria I do not think there should be, for local treatment of the throat must interfere with the complete rest which is essential.

The nursing of diphtheria requires special training, and the requisite nurse is by no means always procurable; indeed, nurses whom one would call capable htheria nurses are scarce. Therefore it is neces- for the practitioner when dealing with this se to tell his nurse not only what to do but also at she must on no account do.

EFFECTS OF
HOT AND COLD APPLICATIONS TO THE SURFACE OF THE BODY

ON THE TEMPERATURE OF THE MUSCLES, LIVER, KIDNEYS AND BRAIN.[1]

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In a previous communication[2] it was shown that the application of heat to the surface of the thigh causes, in the rabbit, an immediate rise in temperature, which spreads laterally for about 20 mm. and penetrates into the muscles for about the same distance, when the application is about 10° C. hotter than the skin. On heat being applied to the surface of the abdomen, at a temperature difference of 15° C. and over a broader area (one-fourth of the abdominal surface), temperature changes were observed to a depth of 75 mm., the lateral spread being 20 mm. That the rise in temperature is mainly dependent upon actual conduction of heat through the tissues, and not due to vaso-dilatation, is evidenced by the fact that the temperature attained in the tissue is considerably above that of the blood, which was recorded in all the experiments by placing a second thermo couple in some deep situation in the body some distance from the place of application of the heat.

In the present communication we desire to report further observations of the same general nature concerning (1) the effect of cold applications on the cutaneous and deep temperatures of the thigh; (2) the effect of heat and cold on the temperature of certain abdominal viscera, viz., the kidney and the liver; (3) the effect of heat and cold on the temperature of the brain. The technique was precisely the same as in the previous experiments, the duration of the period during which the applications of heat or cold were made being about one hour in practically all the observations. The same applicator was used as for muscle. It has a diameter of 33 mm.

I. *Effect of Cold Applied to the Skin of the Thigh (Gluteal Region).*

The effect produced on the subcutaneous temperature by local cold is very marked, and is immediately evident, as shown in Table I., in the experiments of which two thermo couples were used, one immediately under the applicator and the other at some distance from its edge. With a difference in temperature of about 20° C. between the applicator and the skin, a fall of about 13°–14° C. occurred under the applicator, and with a difference of about 23·5° C. the fall was 17 and 18·3° C. In all cases the drop in temperature was very sharp at first, taking about five minutes to reach to within 1·5° C. of the temperature ultimately attained (see Fig. 1). After removal of the cold the temperature of the skin rose at about the same rate as it had fallen.

Regarding the extent of lateral spread of the cooling, it was found that with temperature differences of from 16°–23° C. this was usually evident at any distance up to 25 mm., but not so at 30 mm. This conforms well with the results obtained for lateral spread of heat, in which case, with temperature differences of about 12° C., spreading to about 20 mm. was observed.[3]

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[1] This investigation is being conducted under the auspices of the Research Committee, Medical Services, Department of Health, Ottawa.

[2] Macleod, J. J. R., Self, A. R., and Taylor, N. B., The Lancet, 1920, ii., 615.

To study the depth at which the cooling penetrates, the needles were placed one of them under the skin and the other in the muscles. In four observations (Table II.), in which the applicator was at a temperature of 21°–23·5° C. below that of the muscle, there was a fall of from 3·9° to 4·7° C. at a depth of 11–15

TABLE I.—*Lateral Spread of Cold.*

Date of expt.	Temp. applicator.	Distance of second needle from applicator.	Temp. of skin, second needle.	Difference between temp. of applicator and skin.	Temp. reached under applicator.	Amount of fall.	Temp. reached at distance.	Amount of fall.	Remarks.
	°C.	mm.	°C.	°C.	°C.	°C.	°C.	°C.	
21/6/20	12·3	30	35·5	23·3	18·5	17·0	35·5	0·0	—
23/6/20	13·0	20	34·0	20·0	20·0	14·0	33·0	1·0	—
18/6/20	13·0	18	36·8	23·8	18·5	18·3	32·0	4·8	Gradual fall at distance with no recovery.
11/6/20	14·3	25	35·0	20·7	22·0	13·0	34·0	1·0	—
10/6/20	12·3	22	29·0	16·2	25·0	4·0	27·8	1·2	—
25/6/20	12·5	22	26·0	13·5	—	—	22·4	3·6	Great difference between skin temps.

TABLE II.—*Effect of Cold on Leg.*

Date of expt.	Temperature of applicator.	Temperature of muscle.	Difference between temperatures of applicator and muscle.	Temperature reached in muscle.	Fall of temperature.	Depth of thermo-couple.
	°C.	°C.	°C.	°C.	°C.	mm.
12/7/20	14·0	37·5	23·5	32·8	4·7	12
13/7/20	15·0	37·6	22·6	33·5	4·1	15
16/8/20	16·4	37·5	21·1	33·5	4·0	12
17/8/20	15·7	37·9	22·2	34·0	3·9	11

TABLE III.—*Effect of Heat and Cold on Liver.*

Date.	Temp. of applicator.	Temp. of liver.	Difference between liver and applicator.	Temp. reached in liver.	Temp. in liver 10 minutes after removal of heat.	Extent of rise or fall.	Depth of—thermo couple.		Remarks.
							from skin.	from surface of liver.	
	°C.	°C.	°C.	°C.	°C.	°C.	mm.		
5/1/21	48·0	39·0	9·0	39·4	39·4	0·0	32	—	Gradual rise.
6/1/21	47·5	37·7	9·8	38·2	37·8	0·4	12	—	
10/1/21	48·0	36·9	11·1	38·3	38·1	0·2	19	4	
	47·0	38·9	8·7	39·3	39·1	0·2	19	4	
11/1/21	48·0	37·4	10·6	38·0	37·9	0·1	34	2	Gradual—needle 5 mm. from edge of applicator.
12/1/21	48·0	37·5	10·5	39·0	38·7	0·3	29	5	—
13/1/21	47·9	37·8	10·1	39·0	38·6	0·4	32	12·2	Rapid, then gradual.
14/1/21	47·9	37·7	10·2	37·9	37·7	0·2	26	5	Very slight rise at first.
28/2/21	11·5	36·65	−25·15	35·1	36·5	−1·55	18	—	—
18/3/21	20·4	36·21	−15·81	35·4	36·2	−0·8	19	—	—
15/3/21	16·2	36·90	−20·78	34·5	36·5	−2·0	19	—	—
15/3/21	16·35	37·4*	−21·05	33·65	37·4	−3·75	31	—	—
14/3/21	13·6	35·7	−22·1	34·25	35·8	−1·55	19	—	—

* Temperatures in liver and muscle gradually rising.

TABLE IV.—*Effect of Heat and Cold on Kidney.*

Date.	Temp. of applicator.	Temp. of kidney at start.	Difference temp. between kidney and applicator.	Temp. reached in kidney.	Temp. in kidney *10 minutes* after removing heat.	Extent of rise or fall.	Depth of thermo-couple.	Remarks.
	°C.	°C.	°C.	°C.	°C.	°C.	mm.	
25/1/21	47·8	36·6	11·2	37·9	37·6	0·3	29	Rose quickly at first, then slow muscle temp. slowly rising.
24/1/21	48·0	35·3	12·7	36·5	36·3	0·2	30	Gradual, muscle constant.
21/1/21	48·2	37·3	10·9	37·9	37·9	0·0	28	Quick at first, then gradual.
20/1/21	48·2	37·4	10·8	38·0	37·8	0·2	29	
19/1/21	48·1	37·4	10·7	37·9	37·7	0·2	21	
18/1/21	47·9	37·5	10·4	38·2	38·0	0·2	19	Gradual from start.
17/1/21	47·8	35·7	12·1	37·2	37·1	0·1	23	
16/2/21	16·4	37·4	−21·0	36·5	37·1	−0·6	29	Slow.
21/2/21	20·5–20·15	37·75	−17·0	37·75	37·75	0·0	34	—
22/2/21	12·3–10·8	37·3	−25·8	36·25	37·0	−0·75	25	Point of needle through kidney.
23/2/21	12·0–11·75	38·1	−25·3	37·85	38·05	−0·20	27	—
25/2/21	13·0	37·45	−24·45	37·0	37·10	−0·1	19	—
24/2/21	12·0	36·6	−24·6	34·9	36·6	−1·7	27	—

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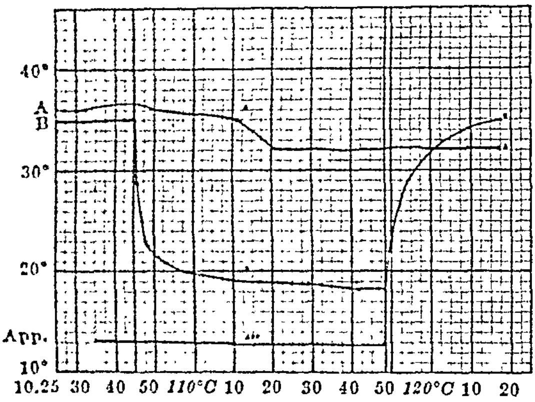
[3] Loc. cit.

Fig. 1.



App.=cold application on hip. Temperatures: A, in subcutaneous tissue 18 mm. from application; B, in subcutaneous tissue under application.

mm. from the surface. We have not as yet determined the maximal depth to which this effect, or that of heat, might penetrate.

II. *Effects of Heat and Cold on Liver and Kidney.*

Liver.—The thermo couple was inserted in the liver through a small skin incision along the lower border of the costal margin, the applicator being placed over the lower ribs. The exact position of the needle in the liver was determined by post-mortem examination. As might be expected from its great vascularity, the changes in temperature in this organ, for equal differences in temperature between the applicator and the body, are decidedly less than in muscle when heat is applied. This will be evident by comparison of the figures in Table III. of this paper with those of Table III. in the previous paper.[4] In making the comparison it should be noted that the extent of temperature change is given in the present report as the difference between the final temperature reached and the temperature ten minutes *after* removal of the applicator.

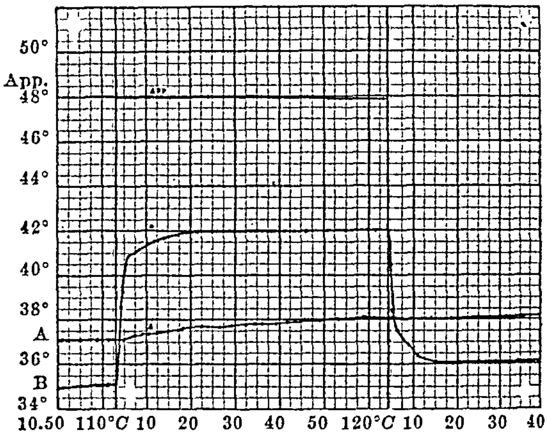
TABLE V.—*The Brain: Effect of Heat and Cold.*

No. or date.	Temp. of applicator	Initial temp. of brain.	Difference between temp. of applicator and brain.	Temp. reached in brain.	Temp. 5 minutes after removal of applicator.	Extent of change.	Depth of thermo-couple from surface.	Position of thermo-couple.	Remarks.
° C.	° C.	° C.	° C.	° C.	° C.	° C.	mm.		
101	42·3	37·6	4·7	38·2	37·5	0·7	17	Deep surface right crus.	—
102	44·2	36·75	7·45	37·8	36·3	1·5	13	Superficial to o–o chiasma.	—
2944	46·1	38·7	7·4	39·3	39·1	0·2	18	Deep surface of pons.	—
392	45·5 (abt.)	36·5	9·0	37·35	36·5	0·85	16	Between corp. quad.	—
11	48·0	38·4	9·6	39 5	39·0	0·5	14	Deep in left crus.	Temp. muscle rose.
1	47·9	37·0	10·9	38·5	37·6	0·9	15	Centre right o–o chiasma.	Temp. muscle rose.
11	48·3	37·4	10·9	40·1	37·6	2·5	13	Right frontal lobe.	—
1	48·25	37·8	10·45	38·6	38·2	0·4	16	Deep in pons.	—
27/1/21	48·0	38·5	9·5	39·25	38·5	0·75	15	Deep in right thalamus.	—
26/1/21	48·0	37·15	10·25	38·25	—	—	14	Left of o–o chiasma.	—
106	40·5	35·65	4·85	36·2	35·2	1·0	17	Deep in right optic thalamus.	Temp. muscle fell.
389	15·0	36·7	− 21·7	36·6	36·2	—	16	Base of brain ant. to pons.	Temp. muscle fell.
388	18·5	35·25	− 16·75	31·5	31·9	− 3·4	14	Deep surface of right crus.	—
390	18·7	37 5	− 18·8	35·2	37·5	− 2·3	13	Region of left optic thalamus.	—
393	25·5	36·1	− 10·6	34·7	38·6	− 3·9	14	In right optic thalamus.	Temp. muscle fell.
392	23·0	36·75	− 13·75	34·85	36·1	− 1·25	15	Upper surface of right crus.	Temp. muscle fell.
385	10·7	36·55	− 25·85	32·65	36·1	− 3·45	13	Base of brain near optic chiasma.	—
391	21·2	36·70	− 15·5	31·0	36·3	− 2·3	13	Lateral ventricle right side.	—
387	17·5	36·25	− 18·75	31·1	35·2	− 1·1	16	Near right corpus quadrigeminus.	Temp. muscle fell.
386	10·75	36·2	− 25·45	32·2	35·5	− 3·3	14	Tip of right frontal lobe.	—
18/2/21	29·2	36·6	− 7·4	35·85	36·2	− 0·75*	14	Lateral ventricle.	—

* Difference between initial temperature and temperature reached by applicator.

This procedure was necessary because the body temperature became slightly changed during the hour or so of heat or cold application, whereas this [illegible]ot observed to be the case, as a rule, with [illegible]. A typical curve of the effects of local heat on the liver is given in Fig. 2. The effects of cold are much more marked. Although this fact is mainly due to the much greater difference between the temperatures of the applicator and body, it would appear that there is some critical temperature difference below which the cold has a progressively greater influence. This may be due to vaso-constriction.

Fig. 2.



App.=hot application. Temperatures: A, in liver to depth of 4 mm.; B, in subcutaneous tissue over A.

Kidney.—Under conditions that were, in general, the same as in the case of the liver, similar results were obtained, at least for heat. Although the temperature rose more or less continuously throughout the whole period of application this was due in every case mainly to a rise in body temperature (Table IV.). Considered on this basis—i.e., comparison of final temperature reached with that ten minutes after removal of the applicator—the temperature in the kidney, at whatever depth, never rose more than 0·3° C., even when the applicator was 12° C. higher than the body temperature.

With cold, in which case greater differences in temperature were possible, the effect on the kidney was of the same order as for heat, but in one case it amounted to a fall of 1·7° C., as judged by comparison of the temperature ultimately reached and the recovery temperature. In all these observations the body temperature, recorded in a muscle, either kept constant or fell a small fraction of a degree.

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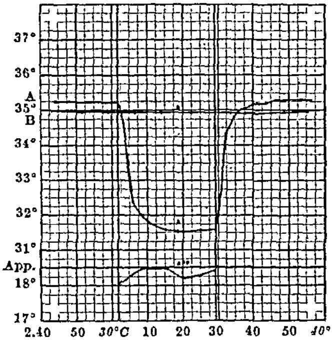
[4] Loc. cit.

The general conclusion drawn from these experiments is that it is not possible to cause any significant change in temperature in the liver or kidney by the local application to the surface of the body over either viscus of applicators that are about 10°–12° C. warmer than the viscus. When the applicator is 20°–25° C. colder than the body the fall of temperature is quite marked in the case of the liver, but usually is insignificant in the case of the kidney.

Effect of Heat and Cold Applied to the Head on the Temperature of the Brain.

In all observations on the brain the temperatures were also taken deep in the muscles of the thigh and in the majority of cases no significant change was observed to be produced on body temperature as a result of the application of heat or cold to the head. In certain cases, however, such occurred, when it was usually in the same direction as the temperature of the applicator. In practically all cases the temperature in brain and muscles bore the same relationship to each other after removal of the applicator as before. It will be observed (Table V.) that application of even moderate degrees of heat—viz., 4·7° and 4·85° C. above body temperature—caused a rise of over one-half degree at a distance of 17 mm. from the surface. With the applicator 7·4° C. warmer than the brain the temperature in the latter rose through 1·5° C. at a depth of 13 mm. and through 0·2° C. at 18 mm. The remaining observations in the table show a satisfactory correspondence between the depth of the thermo couple in the brain and the extent to which the temperature rose. It may be concluded that heat penetrates from the surface into the brain much more than it does in the case of the liver or kidney, although apparently not so much so as into muscle. The changes in temperature are also very prompt both at the beginning and end of the period of application, as is shown in the curve (Fig. 3). In this regard also the results are decidedly ferent from those obtained in the liver and dney.

FIG. 3.



d application over A. Temperatures: A, in brain 14 mm. from skull surface; B, in hip 18 mm. deep.

The result following cold applications are compare with those following heat, thus, with temperature ferences of 7·4° C. and 10·6° C. the brain cooled 5° C. and 1·4° C., respectively, at a depth of mm. Sometimes these effects were still more nounced (e.g., Exp. No. 393). When lower nperatures were used the fall in brain temperature came very marked indeed; thus it fell through ° and 3·45° C. at a depth of about 14 mm., when applicator was at a temperature of about 25° C. ow that of the body. A knowledge of this fact st be of importance therapeutically. The temperae changes were as prompt as when heat was plied.

AN ANOMALOUS RESPONSE TO DIRECT FARADIC STIMULATION OF A NERVE

AT RE-EXPLORATORY OPERATIONS.

BY JOHN S. B. STOPFORD, M.D. MANCH.,
PROFESSOR OF ANATOMY, UNIVERSITY OF MANCHESTER.

DURING the past two or three years re-exploratory operations have been performed upon a number of patients suffering from injury to peripheral nerves, because no satisfactory recovery of function has followed the primary surgical procedure of end-to-end suture or the insertion of a nerve-graft. The results of these examinations of the site of the original operation and the histological investigation of pieces of nerve excised, where re-suture is found to be necessary, are likely to furnish us with very valuable information about regeneration and the factors which may influence the normal development of new conducting channels.

At the re-exploratory procedures a number of surgeons have been surprised to find that on direct faradic stimulation of the nerve trunk a response has been obtained in muscles supplied by the nerve below the lesion, although no voluntary power had ever been detected or any faradic response elicited in the muscles at numerous clinical examinations of the patient immediately preceding the second operation. Several attempts have been made to explain the occurrence of this astonishing and somewhat misleading phenomenon, but so far as I am aware no very satisfactory evidence has been advanced to support the theories suggested for its causation.

An opportunity recently presented itself to me of studying a patient exhibiting this phenomenon, and the conditions found presented a possible explanation, for which further support was subsequently found in a second patient. Since this unusual occurrence of a response in certain muscles on direct faradic stimulation of the nerve trunk may lead to errors in treatment and prognosis, it seems wise to place my findings on record without further delay, in order to see if the experience of others in the future may support or disprove the explanation put forward in this paper.

Private J. H. received a gunshot wound of the left forearm on Sept. 9th, 1916, and this injury was followed immediately by *complete loss of conduction in the ulnar nerve.* Since no recovery occurred after the wound had healed soundly the nerve was explored on April 4th, 1917, by Mr. H. Platt, who found complete division of the nerve trunk and a gap of 1 inch on resecting the ends. As the manœuvre of displacement of the ulnar nerve in front of the internal condyle of the humerus had not then become a routine procedure in cases where an extensive defect was encountered, it was decided to insert a graft from the radial nerve.

The patient was under observation after operation for a period of nearly two years, when he was boarded out of the army and left the district; up to that time there was no clinical evidence of any conduction through the graft, and the condition of this patient up to that point was included in a recent paper in THE LANCET.[1] He reported at hospital again in December, 1920 (44 months after the insertion of the graft), when there was paralysis, accompanied by wasting and loss of faradic response, of all the intrinsic muscles of the hand supplied by the ulnar.

Being away at the time I did not get an opportunity of making a personal examination until after the performance of the second operation. In view of the above findings he was admitted to the Grangethorpe Hospital and Mr. Platt re-explored the ulnar nerve in the region of the previous operation on Dec. 18th, 1920. Mr. Platt has very kindly furnished me with the following report of the operation: "The ulnar nerve was exposed widely in the forearm through a long incision and the nerve traced up from the wrist to the site of the previous operation. The distal part of the nerve was well-developed but seen to expand slightly as the graft was approached. Faradic stimulation of the distal part caused a definite response in part of the flexor brevis pollicis, in the *adductor pollicis, and abductor minimi* digiti. On exposing the graft the fascial sheath was recognisable and the amount of scar surrounding it was very small and not dense nor causing any compression. The graft was seen as a small well-developed nerve strand extending between the proximal and distal fusiform swellings. These swellings were not at all dense or hard and faded gradually into the graft itself. Faradic stimulation of the proximal bulb, the graft itself, and the distal bulb caused a brisk response in the muscles enumerated above. In view of these findings the nerve was left undisturbed and its covering restored."

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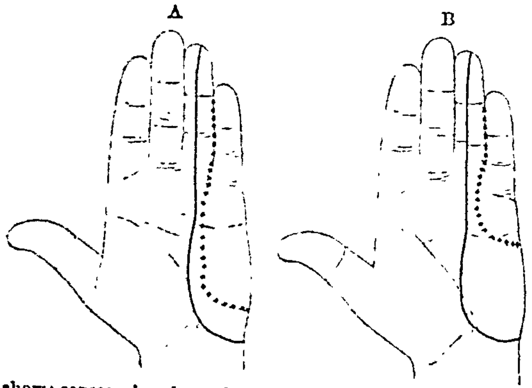
[1] Stopford, J. S. B.: The Treatment of Large Defects in Peripheral Nerve Injuries, THE LANCET, 1920, ii., 1296.

It is worth recording that the response in the intrinsic muscles was witnessed by five other members of the staff of the hospital and there is no possibility of error. The electrical reactions of the intrinsic muscles were taken several times after the patient had recovered by Dr. J. Cowan, medical officer in charge of the physio-therapeutic department at the Grangethorpe Hospital, and, although a normal faradic response was obtained in the thenar group of muscles, no contraction was ever elicited in the hypothenar group, adductor pollicis, or the interossei.



A. shows sensory loss immediately after insertion of nerve-graft. B. shows sensory loss 44 months later. Continuous line = limit of anæsthesia. Crosses = limit of analgesia to pin-prick.

I examined the patient about one month after the second operation and found an absolute loss of voluntary power, accompanied by advanced atrophy, of the adductor pollicis, hypothenar muscles, and the interossei. There was anæsthesia to the lightest applications of a fine brush over the full area of distribution of the ulnar, but a very appreciable recovery of protopathic sensibility had occurred since my last examination, made nearly two years before. This recovery of protopathic sensibility has been verified by subsequent examinations. There was a positive Tinel's sign as distal as the level of the pisiform bone. No change has occurred during the five months succeeding the re-exploration.

In the history of this patient there are associated two significant features, which seem to bear upon the phenomenon referred to in the opening paragraph of this paper: First, the definite evidence of conduction through the graft; and secondly, the occurrence of some recovery of protopathic sensibility. The history suggests that the graft has happened to be opposed to a bundle of afferent fibres in the proximal segment of the ulnar; on bridging the graft some of these afferent fibrils have grown down in the distal segment and become connected with afferent terminals and are now functioning as manifested by the recession of the protopathic loss; other fibrils may have invaded efferent channels to certain muscles and may consequently be responsible for the response on direct faradic stimulation of the nerve. The central connexions of such fibres as the latter would not permit them to function correctly and conduct impulses giving rise to voluntary movements. It would be unwise even to suggest such a possibility from the condition found in one patient, but on referring to my notes I discovered that the only other patient examined, who exhibited this anomalous faradic response, supported the contention suggested by the first patient.

In the second patient the site of an end-to-end suture was re-explored some two years after the operation, because there had been no recovery ry power or faradic response in any of the muscles supplied by the injured nerve. At the re-exploration a response was obtained on direct faradic stimulation of the nerve trunk, and on reference to the notes I found I had recorded a definite recovery of protopathic sensibility, although the possible significance of the fact had escaped my attention at the time.

The experience gained from a study of these two patients seems to suggest very strongly that the anomalous occurrence of a response in muscles on direct faradic stimulation of a nerve at operation may be explained by the regeneration of afferent fibrils down efferent pathways in the distal segment of the nerve. If future observations prove this theory to be correct it must have an important influence upon the procedure adopted by the surgeon at the second operation. Clearly, if this is the correct interpretation of the ætiology of this curious phenomenon, the surgeon must not be misled and induced by its presence to leave the nerve alone and expect a functional recovery, but must resect the affected piece of nerve and perform an end-to-end suture.

Although at last a patient has appeared showing definite evidence of regeneration through a nerve graft, the condition which this patient presented is not likely to modify the views expressed in a recent communication upon the practical utility of bridging defects by grafts.

TWO CASES OF APLASTIC ANÆMIA.

By E. C. PILLMAN WILLIAMS, M.B., B.S. Lond.,
RESEARCH STUDENT UNDER MEDICAL RESEARCH COUNCIL; LATE MEDICAL OFFICER OF NATIONAL FILLING FACTORY, NO. 7.

AT the present time, when the effect on the blood of long-continued exposure to X ray tubes and radium is being much discussed, it may be of interest to bring forward accounts of two cases of aplastic anæmia, the blood changes in which exhibit a remarkable parallelism with the case of the X ray worker reported in THE LANCET of April 16th last.

CASE A.—Mr. A. K., aged 45, after being passed medically fit, worked for five weeks in T.N.T. sheds. He was then noticed to be slightly jaundiced, and complained of loss of appetite and abdominal pain. He was at once removed from all contact with T.N.T. Five weeks later the jaundice had entirely disappeared. Ten weeks later his general condition was so much improved that he was allowed to resume out-door work. Three months later he began to suffer from shortness of breath and persistent epistaxis. On examination he was found to be very anæmic, and his heart was slightly dilated. He was advised to come into hospital, but refused. Two weeks later he was so obviously worse that he was admitted to hospital under the care of Dr. A. G. Phear. On admission he was found to have a blood count as follows: Reds, 1,528,000; whites, 7200; Hb, 35 per cent.; colour index, 1·5; P., 45 per cent.; L., 53 per cent.; E., 1·5 per cent.; B., 0·5 per cent. He had headaches, epistaxis, retinal hæmorrhages in both eyes, and slight fever in the evening. Despite treatment with arsenic, iron, &c., he got rapidly worse and died on Feb. 16th, just over four weeks from the date of admission.

At the post-mortem the liver (34 oz.) was found much scarred; spleen normal. The bone marrow of the shaft and extremities of the femora was yellow and opaque. Stained smears showed chiefly fat cells, and very few red blood cells and lymphocytes. Stained sections showed that the marrow consisted entirely of fat cells and a few minute islands of lymphocytes. Complete blood counts of this and the next case have been appended for the more easy comparison with the X ray case.

CASE B.—Mrs. P., aged 41, healthy on admission to factory, had worked in T.N.T. sheds for 12 weeks when it was noticed that her conjunctivæ were yellow, and her skin definitely tinged, and bile was present in urine. She was admitted to hospital under the care of Dr. J. W. Carr. After four weeks her condition was so much improved that she was discharged. Five weeks later she was examined and found to have symptoms of profound anæmia. She was very pale, had numerous purpuric spots on the chest, neck, and abdomen. She was again admitted to hospital, and found to have a blood count as follows: Reds, 2,800,000; whites, 4800; Hb, 50 per cent.; colour index, 0·8; P., 21 per cent.; L., 75 per cent.; E., 0·6 per cent.; B., 0·2 per cent. She had headaches, bleeding from gums, BLOOD COUNTS OF THREE CASES OF APLASTIC ANÆMIA.

—	Reds.	Whites.	Hb %	L.	P.	E.	B.	Remarks.
				Case A.				
Jan. 16th, 1917 ..	1,528,000	7200	35	53·5	44·5	1·5	0·5	Reds vary in size; no nucleated reds.
23rd ..	1,248,000	4500	34	54	45·5	0·5	—	
30th ..	920,000	3700	24	61	38	1	—	Some polychromasia.
Feb. 2nd ..	664,000	2700	18	49·5	40	0·5	—	
9th ..	693,000	2300	17	55·5	44·5	—	—	1 nucleated red in 200 count.
16th: Pt. died.								
				Case B.				
May 11th, 1917 ..	2,800,000	4800	50	74·6	24·6	0·6	0·2	Slight poikilocytosis: slight variation in size of reds.
26th ..	1,262,000	2500	30	73	26·5	—	0·5	Slight poikilocytosis. No nucleated reds.
June 4th ..	844,000	2700	20	73	27	—	—	1 nucleated red in 300 white count.
9th ..	686,000	3200	16	65	35	—	—	1 nucleated red seen.
14th ..	476,000	3600	14	64	36	—	—	No nucleated reds seen.
17th: Pt. died								
				Case of Aplastic Anæmia due to Exposure to Gamma Rays (THE LANCET, April 16th, 1921).				
October, 1920 ..	4,200,000	7200	75	38	60	1·7	—	—
January, 1921 ..	2,700,000	1600	54	76	20	3	—	No poikilocytosis; no nucleated reds.
February, ...	2,850,000	—	45	—	—	—	—	No variation in size.
March 1st	1,350,000	1030	26	72 large 5 small	20	0·5	1 (hyaline)	Poikilocytosis; macrocytes and microcytes; no nucleated reds.
19th ..	1,005,000	840	18	54 large 4 small	41	—	1 (hyaline)	

P., Polymorphs; L., Lymphocytes; E., Eosinophiles; B., Basophiles.

retinal hæmorrhages, and a temperature rising to 100° in the evenings. She went down-hill very rapidly, in spite of treatment by iron, arsenic, marrow tablets, and transfusion of blood, and died on June 17th. Post mortem the heart was in advanced fatty degeneration. Liver also showed fatty degeneration. Spleen normal. Bone marrow yellow and opaque.

It will be noted how close is the general and detailed similarity of the three blood pictures. The symptoms in the three cases are also almost identical. At first sight the "fons et origo" of these cases seem entirely unlike, but it is known that T.N.T. first stimulates and then kills the bone marrow, and long-continued exposure to gamma rays probably has the same action. Most T.N.T. anæmias are preceded by jaundice, but I am not aware that X ray workers are specially liable to this. Among the many thousands exposed to T.N.T. during the war only a very small percentage developed anæmia; probably the same is the case with X ray workers.

I am much indebted to Dr. Carr and Dr. Phear for their kind permission to publish the notes of the cases while under their care, and to Dr. Mary Schofield and Dr. K. J. Armstrong for assistance with the blood counts.

Medical Societies.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

Birth Control.

A MEETING of this Association was held at the Elizabeth Garrett Anderson Hospital on June 21st, with MRS. FLEMING, M.D., in the chair, when a discussion on Birth Control was opened by Dr. ELIZABETH WILKS, who strongly advocated State birth control as the only practical method of prevention of the renewal of the race principally from the worst stocks. She pointed out that to-day the classes superior in intelligence and capacity practise individual birth control (not always from sufficiently justifiable motives), whereas the less intelligent, criminals and prostitutes, have neither the prudence nor the initiative to take any measures for limiting their offspring. Dr. Wilks thought that with a scheme of State birth control the unfit could be segregated and prevented from reproduction, but this should be done in a manner more efficient than that attempted by the Act for the Care of the Mentally Deficient, which fails owing to the insufficient number of homes for maintaining the defectives. On the other hand, by changes in the marriage laws, taxation, &c., an increase of birth-rate among the fit should be simultaneously indirectly promoted.

MRS. SCHARLIEB said that in over 40 years' experience she had found that artificial limitation of birth damaged a woman's nervous system. The thwarting of any natural process caused injury. Limitation of the family is not necessarily, even in the poorest classes, in the interests of the wife. It removes the fear of consequences from the husband, hence encouraging over-frequent sexual intercourse. Mankind is already oversexed. Unbridled sex passions are likely to lead to degeneration and to war against self-control and self-respect.

Lady BARRETT said that the subject was now engaging much attention among the lay public, hence it was very important for medical women to think out their own views. She thought all would agree that in certain cases conception must not be allowed—for instance, in cases of existing disease, insanity, &c., and in working-class women already enfeebled by overwork. In what might be called "ideal cases," where control was practised with a view to enabling parents to look after a few children more effectually it was often assumed, quite unjustifiably, that every woman bears a child every year—it was also forgotten that privation and overwork rather than easy circumstances tended to make for overproduction. How should birth be controlled? In the first place it must be remembered that self-control was a great factor in education and anything leading to the loss of this was harmful. The question of control should be discussed privately and individually. It should not be forgotten that particularly in the working classes child-bearing might have a less harmful effect on a woman than excessive sexual demand. The teaching of what was normal in sex was thus extremely important. Lady Barrett added that she was much opposed to the present broadcast teaching among the lay public. She thought an opportunity for teaching arose at antenatal clinics, where medical women had an opportunity of getting into intimate relationship with mothers.

An animated discussion followed, in which PRESIDENT, Dr. M. STURGE, Prof. L. Mc[illegible] L. FAIRFIELD, and others took part.

Reviews and Notices of Books.

STUDIES IN DEFICIENCY DISEASES.

By ROBERT MCCARRISON, M.D., D.Sc., Hon. LL.D. London: Henry Frowde and Hodder and Stoughton (Oxford Medical Publications). 1921. Pp. xvi. + 270. 30*s*.

Colonel McCarrison's researches into the nature of deficiency diseases are too well known to need any recommendation to medical readers. This book, based on investigations extending over several years, is a most welcome and important contribution to medical literature. Many of the results have been published, it is true, in various journals and proceedings of societies, but their value is increased by being collected and in a measure reconstructed in a single volume easy of access. In his investigations Colonel McCarrison has combined experimental work with close observation of clinical and pathological results of faulty food as manifested in the animal body as a whole, thereby hoping to ascertain what forms of human illness might reasonably be attributed to like causes. He starts with a belief that the term deficiency disease will be found to have wider significance than has hitherto been attached to it. The discovery of the accessory food factors designated "vitamins" gave rise at first to an impression that single constituents in diet played an almost overwhelming part in nutrition as a whole. Against this hasty conclusion Colonel McCarrison enters a well-considered protest. He does not deny that the absence of single food factors may produce striking effects, but he concerns himself more with the complexity of circumstances which may conduce to partial or total deficiency of essential substances. Whilst we are keenly alive to the necessity of recognising the prevalence of the grosser manifestations of deficiency disease, there is a danger of neglecting the lesser signs caused by ill-balanced diets or relatively slight insufficiency of vitamins and other constituents in food. He remarks that frequently it is not the food supplied to the individual, but the food eaten and assimilated which may be dangerously deficient in one or more vitamins, in protein of good biological value, and disproportionately rich in starch or sugar or fats or in all three. Access to abundance of food does not necessarily protect from the effects of food deficiency. "Some there are" he writes "living in luxury, whom ignorance or fancy debars from choosing their food aright." This no less than poverty helps to produce a poor national standard.

Colonel McCarrison's experiments upon avitaminosis were carried out with diets not only deficient in certain factors, but also with diets faulty from excess and want of balance in their ingredients. He imitated as far as possible the ill-balanced diet which in human subjects gives rise to beri-beri—that is to say, a diet devoid of vitamin B and too rich in fats and starch. The result, in pigeons, was loss of appetite, fatty diarrhœa, anæmia, wasting, low temperature, slow respiration, general malaise, and certain nervous symptoms. In monkeys he tried the effects of deficiency in vitamins A and B. The animals developed gastro-enteritis, with unhealthy skin, and nervous symptoms—a state resembling "dry beri-beri" as seen in man. But Colonel McCarrison's observations carry us far beyond mere confirmation of clinical and pathological facts such as these. His attention was arrested by the way in which malnutrition affected various organs in differing degrees. In general, the organs least essential to the life of the individual suffer most, whilst nature does its best to protect the more important structures. An outstanding feature in all forms of food deficiency is enlargement of the adrenals, and in males enlargement of the pituitary. While certain organs enlarge others may atrophy. Colonel McCarrison suggests that the effects of food deficiencies make themselves felt, not entirely perhaps [illegible] [illegible] measure, through derangements of the [illegible] of metabolism.

His conclusions upon these points are so important as to bear quoting at length. The adrenal glands enlarge whilst the thyroid atrophies in the presence of food deficiencies. When the food is excessively rich in proteins and fats, without deficiency of vitamins, the thyroid hypertrophies and the adrenals diminish in size. Atrophy of the pancreas is common, especially in animals whose deficient food is excessively rich in fats, while the pituitary enlarges in males but not in females. The reproductive organs demonstrate both loss of bulk and loss of function. Colonel McCarrison's view is that food deficiency deranges both the normal production of hormones and the functional perfection of the sympathetic nervous control; consequently, the digestive organs are deprived of the full advantage of that efficient regulation and correlation which normally they would derive from healthy endocrine action. As an example of the importance to be attached to these secondary effects we read: "It is known that hypothyroidism may lead to hypoacidity, to impaired secretion of gastro-intestinal juices, to the production in both stomach and duodenum of such lesions as petechial hæmorrhages, superficial hæmorrhagic erosions, acute ulcer, and diffuse inflammation." To adrenal insufficiency he attributes such disturbances as imperfect secretion of gastric juice, gastric ulcer, and derangement of the glycogenetic process, as well as vomiting and dilatation of various parts of the gastro-intestinal tract from failure of the inhibitory effects of epinephrin over unstriped muscle. Similar symptoms may follow pituitary defects.

Enough has been said to show that Colonel McCarrison's work has brought us to the threshold of a new wonder chamber in medicine. As he himself has often insisted, he is only at the commencement of his investigations, and he and the other distinguished workers in this field must not be surprised if their novel ideas meet with tardy acceptance, and even certain opposition. In investigations such as these there is need of men with sufficient imagination to formulate theories, sufficient scientific knowledge to put them to experimental tests; and sufficient judgment to draw conclusions even adverse to their own theories. Colonel McCarrison's book bears evidence that he possesses these qualifications.

The printing and illustration of the work are very good.

CRITICAL MICROSCOPY.

How to Get the Best out of the Microscope. By ALFRED C. COLES, M.D., D.Sc., M.R.C.P. Lond., F.R.S. Edin. London: J. and A. Churchill. 1921. Pp. 98. 7*s*. 6*d*.

Dr. Coles has produced a valuable work on the equipment and manipulation of the microscope for bacteriological purposes, and a serviceable treatment of the subject is compressed within the narrow limits of a handy volume. In the main, the author avoids the discussion of theoretical points, but he breaks away with good judgment from his rule in a passage on a subject, strangely neglected by most writers on the microscope, which he calls the optical index of a lens. Optical index is a measure of the diameter of the beam which the instrument transmits into the observer's eye. In ordinary vision the beam of light by which an object is seen is limited by the observer's iris and may be taken, therefore, to average the eighth or tenth part of an inch in diameter. The microscope is not constructed to transmit, in any circumstances, a beam of greater width than this, and manifestly no purpose would be served even if a broader beam were transmitted, for it would be cut down in passing the pupil of the observer's eye. For low powers, the transmitted beam approximates to this limit. But by an optical necessity the equipment of the instrument for work at higher powers implies the reduction of this diameter, so that with magnification of, say, a thousand diameters it is very common for the transmitted beam to be reduced to about 1/100 inch across, and for still higher powers this narrow beam is narrowed still more, so that, speaking broadly, the diameter is inversely proportional to the magnifying power.

It is many years since Helmholtz pointed out that this law puts a final limit, in theory, to the magnifying power that can usefully be employed, for at a certain point the effects of the diffraction which accompanies this narrowing of the beam is destructive of definition in the image. Thus beyond an assignable limit the more highly magnified image would be no better resolved than one of lower magnification. However, we are far from having yet reached that limit in actual practice, and it seems improbable that we ever shall reach it, for still more serious in blemishing the picture are the entoptic obstructions, teardrops, muscæ volitantes and the like, which such narrow beams render visible in the eye and project as intrusive objects on the image. Only an exceptionally fine eye can tolerate magnification of 3000 diameters and upward in objects visually observed, and only an instrument in fine condition can produce images unspoilt by dust and other obstructions on the back of the objective and lenses of the ocular. Hence for practical purposes this condition is of great importance, although so generally ignored by writers and teachers in their discussion of the microscope. Dr. Coles points out that there are wide differences between lenses of equal magnifying power in this respect, so that one objective may give a beam having three times the optical index of another. This means not only that the lens with the greater optical index yields the brighter image; it means also (and this is certainly of no less importance) that a speck of dust in the instrument or an obstruction in the eye which, completely quenching the beam from one spot in the object, would be seen as a blot in the picture yielded by the lens of low optical index, will be imperceptible in the image yielded by the better lens. The determination of optical index, is not a matter of any difficulty, but if Dr. Coles produces a second edition of this book we hope that he will describe his method of carrying it out, for both in devising and in describing methods of manipulation he has a very pretty faculty.

Dr. Coles's self-imposed rule against theoretical discussion might, we think, have been more often infringed with impunity, even with advantage. For instance, he expresses a definite preference for the old-fashioned paraffin lamp as an illuminant, a view which stands, in our opinion, in considerable need of justification. The paraffin lamp certainly has many drawbacks. It calls for constant attention when in use and requires furbishing up after any long period of disuse. It must be kept at a distance from the microscope or its effluvium will incommode the observer and damage the adjustment of the instrument. At the same time its intrinsic brilliancy is so low that placing it far from the mirror raises serious questions of lighting. Finally, its unsymmetrical form is a distinct handicap in its use for bright field illumination, so that it is useless as an illuminant for high power work except under the condition known as critical illumination. These are drawbacks from which electric light relieves the microscopist. In the case, especially, of the new gas-filled lamps of the "half-watt" type the intrinsic brilliance of the illuminant is so great that with it the observer of to-day can accomplish things that the worker with the paraffin lamp cannot even dream of. It is true that the naked filament is an unsuitable source of light, but the simple expedient of covering it with ground glass secures a light source which, being broad and symmetrical, gives a perfect image whether focused in the same plane as the object or not, and its adaptability puts the microscopist in a position to take great liberties in other respects with his illumination.

Whatever view readers may take of the choice of illuminant they will certainly find recommendations in this book of great practical importance. For example, Dr. Coles makes use of small-sized photographs when taking notes of his work. Photomicrography in a simplified and cheapened form might be made an important aid to note-taking by bacteriologists and others. Dr. Coles illustrates the use of such notes, of which as many as sixteen can be taken on a single quarter plate. He also describes a simplified camera for use in this connexion. This camera has many good points, but they are outweighed by the fact that the microscope has to be taken to the camera every time a photograph is to be taken. We remember to have seen a handy photomicrographic camera on the market before the war, which not only produced negatives of small size (in this respect Dr. Coles's 1/16 quarter plate has a marked advantage), but possessed also the merit that it could be brought to the microscope and used in place of the observer's eye without any change of adjustment, provided the instrument was in the upright position. This is how a note-taking camera can most conveniently be used.

Dr. Coles gives useful chapters on colour screens, centreing, tube length, dark-ground illumination, staining and mounting, and other matters of practical interest. His book is a practical vade mecum, written by a skilled and experienced operator, whose opinion on all points is worthy of consideration and whose experience is placed freely at the service of his readers.

MANUAL OF MIDWIFERY.

Third edition. By HENRY JELLETT, M.D., F.R.C.P.I., late King's Professor of Midwifery, Trinity College, Dublin; ex-Master, Rotunda Hospital; and DAVID G. MADILL, M.B., B.Ch., B.A.O. Dub., Gynæcologist, Monkstown Hospital, Dublin, ex-Assistant Master, Rotunda Hospital, Dublin. London: Baillière, Tindall and Cox. 1921. With 20 plates and 540 other illustrations in the text. Pp. 1266. 42s.

As some eleven years have elapsed since the appearance of the second edition of this work a good deal of revision has been necessary. In this Dr. Jellett has had the advantage of the assistance of Dr. Madill. The book has been thoroughly revised and in large part rewritten. It still, however, maintains its characteristic features and is a most interesting record of the practice of the Dublin School of Obstetricians. The whole comprises some 1200 pages, and when we note that it is practicallythe same size as two of the most popular text-books on medicine and surgery respectively, we must conclude that it contains a very full exposition of the subject it deals with. At the same time it is a pity that authors cannot keep their text-books within a more manageable compass. It appears to us obvious that if the whole subject of medicine can be well and thoroughly discussed in a book of the same size as this, the much smaller and certainly less important subject of obstetrics might be quite adequately dealt with in a less bulky tome. We are not wishing to detract from the value of the book; we are only concerned with the unfortunate student who has to wade through these monumental text-books in the short time he has at his disposal for reading.

We notice a good many differences from the teaching given in the second edition; one would expect this to be so after an interval of so many years. In so well known a book, which has reached a third edition, it is unnecessary to do more than allude to a few of these. The description of the development of the membranes in the human ovum is still somewhat confused, as the author does not sufficiently distinguish between the facts as *known* in the lower animals and the condition which is *assumed* to occur in the human ovum. The description of the mechanism of labour in the vertex presentation has been revised and brought more up to date. The account of the management of the third stage and of the use of the Dublin method of expression is interesting, and affords a very clear guide to the proper method of conducting this stage of labour. We note, however, one curious statement—that the fundus of t uterus before the separation of the placenta lies only slightly above the pubes!

Twilight sleep is not highly approved. The various methods of dealing with a face presentation are described well and in considerable detail. In dealing with shoulder presentations the author adopts the useful classification of Winckel. It is interesting to notice the recommendation of laparotomy in the treatment of an irreducible incarcerated retroverted gravid uterus. In considering the treatment of eclampsia, the use of morphia is recommended, combined with the administration of nothing but water by the mouth; only if, in spite of medical treatment, the condition of the patient is becoming worse should the uterus be emptied, after dilatation of the cervix with a hydrostatic bag or a mechanical dilator. Accouchement forcé and Cæsarean section are not recommended. In considering the treatment of placenta prævia, version as a general rule is advised. The figures of Döderlein are quoted as showing that the contention that an improved prognosis for both mother and child is obtained by the performance of Cæsarean section is not justified. The section on contracted pelves is particularly good. The figures are excellent and there is a full index.

This edition worthily maintains the high reputation achieved by former ones; the book is a very good one. The good results obtained at the Rotunda Hospital over a long series of years render these conclusions of the highest importance.

PSYCHO-ANALYSIS.

Psychanalysis in the Classroom. By GEORGE H. GREEN, B.Sc. Lond., B.Litt. Oxon. London: University of London Press, Ltd., and Hodder and Stoughton, Ltd. 1921. Pp. 176. 7*s.* 6*d.*

THE psycho-analytical method, first developed empirically as a means of medical treatment, has been extended to the general study of human thought and behaviour, and since analysts claim to find a mass of infantile material in the adult unconscious it was to be expected that the method would be specially applied to the study of educational problems and the life of the child. "Psychanalysis in the Classroom" (which, in spite of the spelling, is by an English educationist), is an attempt to give teachers and parents sufficient of the new teachings to enable them to understand the difficulties of the child and to assist him in making adaptations that will help towards happiness and success, not only in school life but in adult years. Mr. Green has given us a book in which sex is mentioned only in the final chapter. He describes the antagonisms and fixations of family life whilst making little use of the technical terms of analytical psychology or names derived from Greek story. Yet the reader familiar with psycho-analytical literature will recognise old friends in homely garb and will admit that within the limits the author sets himself he has done justice to the subject. Only one serious criticism must be made; he uses "repression" in a popular sense to indicate conscious control of one's desires or even control imposed from outside; as when he writes (p. 91), "Repression affords . . . gratification to the person who imposes it." This is confusing, for the psycho-analyst uses the word to indicate a process by which desires are thrust into the unconscious, the person concerned being unaware of their presence; control of these desires is lost and impulses from them may rise into consciousness to produce irrational actions or psycho-neurotic symptoms. Hence repression in the psycho-analytical sense is often associated with loss of control, and control is restored by bringing the repressed material into consciousness. Mr. Green himself gives illustrations of this process of restoring control by abolishing repression, which is the aim of psycho-analysis.

With this exception the book gives a fair exposition [illegible] theory of the unconscious, which is presented [illegible] palatable and easily digested form. "A man [illegible] go through the world successfully as a mother's boy, though many thousands are trying," is a fundamental proposition of psycho-analysis which Mr. Green illustrates by his own material; that the fear dream may be a wish fulfilment is intelligible in the light of his examples, and he has paid special attention to the phantasy-life of the child. The chief aim of education, according to Mr. Green, is "to discover the nature of the deep instinctive motives of children, and to train them from egoistic levels of expression to altruistic levels." He endeavours to show that this is not a platitude but that the training depends upon sublimation—a transfer of interest without change of motive; that sublimation is more effective when there is no consciousness of what is really being done, but that the teacher or parent can understand the instinctive motive of the child only by some familiarity with psycho-analytical principles.

Of medical interest is the case of a girl who suffered from eye trouble at the approach of each school examination; on each occasion the ophthalmologist gave instructions that she was to do no work till new glasses had been made; so she is "able to sit and build airy castles whilst her fellows actively compete against each other." It is disconcerting to feel that the author regards the ophthalmologist as concerned only with the eyes and not with the patient. The last chapter is a brief survey of the growth of the sex instinct and of its relation to life as a whole, and contains a warning that our traditional methods of handling the sex curiosity of the child lead to results which are the opposite of what we desire and expect. There is surely a negative omitted on p. 252, where we read "the instinct of hunger has necessarily been repressed," and on p. 207 "auristic" should be "autistic."

The work is one of the simplest accounts of psycho-analysis that have yet appeared, and the author has surmounted the objections that are often raised to presentations of the subject to lay readers.

The Problem of the Nervous Child. By ELIDA EVANS. With an introduction by C. G. JUNG, M.D., LL.D. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1921. Pp. 299. 12*s.* 6*d.*

THIS volume, written by an American lady engaged in the psychological treatment of both children and adults, treats the problem from the standpoint of the Zurich School; an introduction by Dr. C. G. Jung describes essential principles clearly and briefly and is a help to the proper understanding of the book. Mrs. Evans, following Jung, regards the nervous child as suffering from a checking of the libido; treatment consists in directing its energies, partly by making the child's own motives conscious, but chiefly by altering the environment, so that the conflict between *what is* and *what is* (unconsciously) *desired* may be satisfactorily settled. This seems easy, but behind it lies the implication that the parent is often responsible for the neurosis, and throughout the book is the repeated plea for the protection of the child from the parent. That the tight grasp of overpowering authority must lead to effort to break away or must produce weaklings and failures is perhaps strong meat to the old-fashioned parent, though he would perhaps not fit the cap to the head; and it is stimulating to any parent to be told that "the manifestation of puberty which evokes the most perverse behaviour on the part of the parent is the child's first love affair." Extreme tenderness, according to this school, produces an equally bad effect, and the sweet and indulgent mother becomes the son's ideal of the dearest and loveliest woman; this is a rather too simple explanation of the *Œdipus complex*, but serves as an example of an infantile fixation of the libido that may lead to dependence upon childish ideals in adult life. The question of *when* a child should be told about sex matters is answered plainly (there seems general agreement nowadays that the child *should* be told); sex education must be faced as soon as questions are asked, otherwise all sorts of weird phantasies about sex may be passing through the child's mind.

The chief aspects of modern theory are dealt with; technical terms are avoided, and there is nothing that should offend the open-minded reader. Yet there are many defects: over-enthusiasm may be forgiven, but lack of coherence and accuracy is not atoned for by a picturesque style. We read the first chapter—Statement of the Problem—and find no problem stated; in fact, we are not sure what is meant by the "nervous child" except that he is an immature form of the nervous adult. On p. 166 the sentence ". . . loss of sex power, whether from castration, impotence, or sterility in the male, ovariotomy and barrenness in the female, leads to neurosis and degeneration . . ." leaves us wondering what is the difference between impotence and loss of sex power; moreover, analysts, as a rule, regard impotence as a result, or a constituent part, of a neurosis rather than a cause. The medical man, psycho-analyst or not, can only look amazed at the statement that "in the unconscious there is a secret which the aphasia victim is afraid of betraying, and he guards it by using inappropriate words," and hope that the writer does not mean what she says. Enthusiasm speaks on p. 55: ". . . the experienced psycho-analyst can clearly see during the narration of the patient's first dream the exact cause of the trouble"; then follows a warning against "telling the patient at the first interview the whole story of his neurosis." The first statement is likely to be repudiated by the experienced psycho-analyst himself, and the corollary is a warning against the impossible. Even these criticisms have their dangers, according to Mrs. Evans. On the title page of her book is the maxim "He who reads to criticise seeks only to hide his own defects, but he who reads for understanding will find the truth." To this the critic could answer that the maxim, even if true, must fail in its intent, for, as the author says elsewhere, "telling a person of a moral defect never cures him."

The Sex Factor in Human Life. By T. W. GALLOWAY, Ph.D. The American Social Hygiene Association. Pp. 142.

THIS book, written for American college students, is a plain-spoken discussion of the desire for sexual intercourse on the part of the male and of the need for its control and direction in the interests of the individual and of society. The book enables us to examine a non-analytical view of conduct, for Mr. Galloway regards the "sex factor" as being entirely on the conscious plane, and shows the influence of new ideas only by one casual reference to repressing desires into the "unconsciousness" (p. 36) and by the use of the word "sublimation" in a chapter title. Sublimation "implies that the individual has imagination enough to look ahead and to believe that it will pay in satisfaction to give up the present physical enjoyment for the later and larger social, more humane, and complete enjoyment" (p. 33). If the desire for enjoyment were the only motive for action—sexual or other—and the individual were fully aware of the motive and the results of the action, then the road to happiness would be clear. But love is blind, and even in other spheres than love neither exhortation nor reasoning suffices to control the urge of the unconscious motive. The author shows no knowledge of the view that the most effective sublimation is carried out unwittingly, and he would repudiate the explanation that his own interest in bringing happiness to youth may be a successful and desirable sublimation of one component of the sex instinct. The limitations of his views are best shown by the phrase (p. 114), "Inconsiderate coldness in sex relations on the part of the wife." This condemnation of "coldness," as if it were within the control of the sufferer and to be removed by a homily, is reminiscent of the father who threatened to chastise his family unless they were cheerful. "Coldness" (which is, perhaps, as common on the part of the husband as is "inconsiderate lust," though the author's narrow treatment of the "sex factor" does not allow this to appear) is, as he points out, destructive of home life, and his easy dismissal of its difficulties is sadly insufficient. Yet he could not do otherwise; he applies the principles of logical reasoning to the government of mental processes, and when these processes are inaccessible to reason he must surely fail. Shakespeare wrote:—

> "Affection,
> Mistress of passion, sways it to the mood
> Of what it likes or loathes"—
> *Merchant of Venice.*

and the passage from which this quotation comes presents so well the idea of the unconscious motive that we need not call upon psycho-analysis to refute the intellectualist fallacy as applied by Mr. Galloway to sex emotion.

Restraint, training, and guidance are necessary in regard to human action, whatever theories we hold; Mr. Galloway's efforts in this direction are all to the good, especially as he stresses the need that substitute outlets for sex energy should be useful socially, with satisfaction to the individual. The book is full of sound advice, and as a "straight talk to young men" on sexual indulgence should fulfil a purpose; but measured by its title it is disappointing.

TEETH AND HEALTH.

By THOMAS J. RYAN and EDWIN F. BOWERS. London and New York: G. P. Putnam's Sons. 1921. Pp. 264. 7*s.* 6*d.*

THE object of this book is to place before the lay reader the part played by the teeth in the maintenance of a normal standard of health. The authors, have, we think, been a little too ambitious and have produced a book which contains much detailed pathology and which in that way may weary the layman and defeat the object of the work. For example, there is a chapter extending to 30 pages on Focal Infection and another of 10 pages on "Why we need an X ray examination." In the latter chapter we are informed that if President Roosevelt had undergone a thorough X ray examination of his teeth by a competent dentist he might still be alive.

HISTORY OF SCIENCE.

Eminent Chemists of our Time. By BENJAMIN HARROW, Ph.D. London: T. Fisher Unwin, Ltd. 1921. Pp. 248. 9*s.*

Dr. Harrow is probably best known to British readers as the author of an illuminating little book called "From Newton to Einstein," which gives a most simple and intelligible account for non-mathematical readers of the theory of relativity. In this, his latest book, Dr. Harrow writes a series of short lives of eminent modern chemists, men whose researches have been of vast importance in pure science and also in commercial fields. Chemistry and chemical researches have a most curious way of becoming influential in regions which at first would appear to be quite outside the sphere of chemistry. No one, for instance, would have thought that the synthetic preparation of quinine would have any possible influence upon public health, bacteriology, agriculture, and explosives. Yet Perkin's researches into the synthesis of quinine led to the coal tar dyes whose use in bacteriology is known to all, while the discovery of alizarin and artificial indigo respectively nearly ruined the madder and indigo planters. Again, Madame Curie's work on radium upset all our preconceived theories of atoms, and when Ramsay found helium on this earth few would have thought of the possibility of its being used to produce the non-explosive airship. Romances such as these will be found in plenty in Dr. Harrow's pages.

Mediæval writers held that theology is the Queen of sciences, because theology is the knowledge of God, and such knowledge implies a knowledge of all His works. Much, however, still remains [illegible] known, and theology is getting assistance [illegible] sides. It is encouraging to look back an [illegible] much light has been thrown of late years [illegible] of the problems confronting us. When of the work of Ramsay on the gases of the atmosphere, of Mendeléef on the periodic law (a law which had been to some extent foreseen by Newlands in 1866), of van't Hoff in stereo-chemistry, of Arrhenius on electrolytic dissociation, of Fischer on enzymes, of Richards on atomic weights and their relations, we see how the light is shining in dark places. Dr. Harrow says that he has ready for publication a second volume which deals wholly with the work of chemists, and we look forward with pleasure to its appearance.

Studies in the History and Method of Science. Edited by CHARLES SINGER. Vol. II. Oxford: At the Clarendon Press. 1921. Pp. 559. 48*s.*

THE first volume of this series appeared in the autumn of 1917 and was reviewed in our issue of Jan. 26th, 1918. The editor, Dr. Singer, who was unable, owing to his absence on military duty, to see the volume through the press, has been able to preside at the birth of Vol. II., and contributes an illuminating introduction dealing with the work now being done in the study of the history and philosophy of science, not only in this country but throughout Europe and the United States. Besides this introduction he has provided a discussion, which forms the opening paper of Vol. II. on Greek Biology and its Relation to the Rise of Modern Biology. Greek science, he points out, sprang from Greek philosophy and never lost direct touch with that philosophic stem; modern science, on the other hand, owes but little to philosophy, but grew from slow and painful observation and experiment.

Modern observers do not, as a rule, think; they try. Aristotle, though in many ways only a careful observer, laid down a rule which led men wrong until the time of Galileo—i.e., concerning falling bodies. He said, "We see that bodies which have a greater tendency of heaviness or lightness, if they are otherwise similar in shape, pass more quickly through the same space, and in the ratio which the magnitudes have to each other." Now Galileo *tried* his experiment with the ten pound weight and the one pound weight let fall from the top of the tower of Pisa and found that they reached the ground at the same moment. It is true that modern scientific workers sometimes have made a great discovery by thinking, as in the case of the discovery of Neptune by Leverrier and Adams working independently, but most of our recent advances follow on experiment. Aristotle was, however, a great and accurate observer in the field of biology, and Dr. Singer gives many instances of his work, notably that upon the development of the chick. Aristotle gave a good description of the generative process in cephalopods, known as hectocotylisation, though in another passage he contradicted this account, but the matter was not cleared up until Kölliker's observations. The process of sexual congress in the octopus was watched in a tank specimen and figured by Racovitza, whose illustration is reproduced on p. 46 of this volume, where the appearance of the male octopus irresistibly reminds the reader of Moore's "Veiled Prophet." Dr. Singer further discusses the botanical observations of Theophrastus compared with those of early modern botanists such as Highmore and Malpighi. His article is most interesting and beautifully illustrated.

All the 15 papers contained in this volume call for comment. Perhaps the most interesting of those to which we can only call attention, at least to a medical man, are that by Dr. E. T. Withington on the Asclepiadæ and the Priests of Æsculapius, and that by Mr. H. Hopstock on Leonardo as an Anatomist.

Dr. Withington discusses the vexed question as to whether the Asclepiadæ—i.e., the physicians, were so called because Hippocratic medicine had its rise in the temples of Æsculapius. Various scholars of great authority have answered this question in the affirmative, and various others of equal authority in the . Dr. Withington is with the latter and gives asons for his belief. The anatomical and ical papers of Leonardo da Vinci are preserved at Windsor and have been published and edited in the French, Italian, English, and German languages in Paris, Turin, and Christiania. Mr. Hopstock is one of the Norwegian editors of the "Quaderni d'Anatomia," published in six volumes at Christiania 1911-1916, and his article gives a vivid picture of Leonardo's genius in one of the many fields of knowledge wherein that astonishing man worked. Other papers are those of Mr. Robert Steele on Bacon and the State of Science in the Thirteenth Century, and Mr. Fahie's account of the Scientific Work of Galileo.

Dr. Singer is to be congratulated upon a most interesting volume, one which is in every way worthy of its dedication to the Memory of William Osler.

STRING FIGURES.

Second edition. By W. W. ROUSE BALL, Fellow of Trinity College, Cambridge. W. Heffer and Sons, Ltd. 1921. Pp. 69. 2*s.* 6*d.*

THERE is a period of convalescence when the eyes are weary of reading, when visitors seem infrequent or are excluded altogether, and when games that have to be played on boards, and even jig-saw puzzles, require a forbidden change of posture. It is then that detailed instructions which can be read aloud, enabling the patient to make representations, more or less recognisable, of familiar objects with no further apparatus than a piece of string six or seven feet long and his ten fingers will be welcome. The fact that most of the designs described in Mr. Rouse Ball's engaging little book have been learnt from Eskimos, Red Indians, from natives of Central Africa, the Pacific Islands, and the Torres Straits, and many other places, brings adventure to the bedside. The illustrations show clearly what is to be aimed at and the skill required for the simple patterns is not great. Especially useful would be this pleasant occupation to those whose fingers require re-education for whatever cause, and medical men might recommend the little book to many anxious mothers.

RESEARCH LABORATORY PAPERS.

Collected Papers from the Research Laboratory—Parke, Davis and Co., Detroit, Mich. By Dr. E. M. HOUGHTON, Director. Reprints, Vol. VII. Detroit. 1920. Pp. viii. + 490.

A SERIES of 49 reprints (Nos. 145—193) of original articles dealing with a wide range of medical, pharmaceutical, veterinary, pharmacognostical, and botanical subjects makes a volume of nearly 500 pages, well printed on good paper and illustrated by photographs and drawings where necessary. The Treatment of Burns by the Application of Paraffin, by G. I. Walters, shows that while paraffin gives consistently good results, yet the final effect varies with certain factors, which are discussed. Mr. Walters, to demonstrate the value of paraffin, quotes critical experiments and makes suggestions for the further improvement of this method of treatment by incorporating antiseptics and serum derivatives. Studies in Diphtheria Toxin, by L. Davis, deals with the conditions of hydrogen-ion concentration in a bouillon broth, which are most favourable for the production of a diphtheria toxin. The Cultivation of Medicinal Plants, by O. A. Farwell, discusses the kind of knowledge required for cultivation on a successful basis of various plants. Belladonna, henbane, digitalis, and hydrastis are considered in detail. A paper by M. C. Hall gives an account of exhaustive experiments made to determine the best methods for the Control of Lice on Horses, with especial reference to Winter Conditions. The use of coal-tar dips, of volatile substances such as methyl alcohol, of fatty and oily substances, including horse-fat, of powders such as naphthalene, and of fumigation with gases such as sulphur dioxide are considered in turn. Other sections are equally useful, and the whole volume, in fact, provides much interesting and suggestive reading.

JOURNALS.

British Journal of Experimental Pathology, Vol. II., No. 3, June, 1921.—Evans, C. L.: The Reaction of the Blood in Secondary Anæmia. Although the immediate effect of hæmorrhage is a lowering of the alkali reserve of the blood, the response of the respiratory centres may partially compensate, or even over-compensate, for this change, so that the circulating blood may be either more acid, or less acid, or of the same reaction after as before the hæmorrhage. After 12 hours the reduction in alkali reserve is compensated, owing to increased excretion of acid by the kidney; subsequently the alkali reserve of the blood may become higher than the normal and remain at this level until the corpuscular regeneration is complete. The response is a protective one against acidosis.—MacNalty, A. S.: The Morbid Histology, Bacteriology, and Experimental Pathology of Encephalitis Lethargica. A critical review.—Yorke, W., and Macfie, J. W. S.: The Mechanism of Autolysis in Paroxysmal Hæmoglobinuria. When the blood of a case of paroxysmal hæmoglobinuria was cooled at 0° C. for five minutes only, before warming at 37° C for one hour, the amount of hæmolysis which resulted was about ten times as great as that which occurred when the cooling was prolonged for 30 minutes. The explanation of this depends on the facts that in hæmoglobinuric serum immune body is greatly in excess of complement, and that sensitised red cells take up the mid-piece of the complement at 0° C., whereas the persensitised erythrocytes can only absorb end-piece at higher temperatures. Many more erythrocytes are sensitised after cooling for 30 minutes than for five minutes; consequently, mid-piece is diffused amongst a correspondingly greater number of sensitised erythrocytes. On warming, the concentration of end-piece available for each persensitised erythrocyte depends directly on the number of these, and when the number is very great (e.g., after cooling 30 minutes) the concentration is insufficient to produce lysis. The immune body erythrocyte reaction is reversible, but ceases to be so as soon as the erythrocytes have become persensitised. Experiments conducted with the object of determining whether the immune body is thermostable or thermolabile were inconclusive.—Fildes, P., and McIntosh, J.: An Improved Form of McIntosh and Fildes's Anaerobic Jar. The palladium-asbestos capsule of this apparatus is electrically heated to maintain its activity indefinitely.—Jensen, Vilh: A New Immersion Fluid. This is a mixture of liquid paraffin and α-bromnaphthalene adjusted to a refractive index of 1·515.—Douglas, S. R., and Fleming, A.: On the Antigenic Properties of Acetone-extracted Bacteria. (1) Acetone-extracted bacilli form a convenient way of storing bacilli and apparently keep their antigenic properties unchanged indefinitely. (2) They are very easily dissolved by tryptic and other proteolytic ferments. (3) When employed as vaccines, acetone-extracted bacilli appear to have antigenic properties fully as great as vaccines made by other methods. (4) They also form a very suitable antigen for use in complement-fixation tests. (5) Suspensions of these extracted bacilli are agglutinated by immune sera only after a long period and by dilutions more concentrated than is the case with suspensions of living or formolised bacilli. (6) Preliminary experiments appear to show that acetone-extracted bacilli which have been digested with trypsin when injected into animals produce a marked increase (equal to or greater than undigested bacilli) of the bactericidal power, but the increase of the agglutinating power is very much less marked.

American Journal of Ophthalmology, May, 1921.—A paper by M. Uribe-Troncoso, of New York, on the Physiologic Nature of the Schlemm Canal, reviews the various investigations regarding the function of this canal and reopens the old and protracted controversy as to whether it is a venous sinus or a lymph space. In 1873 Leber first advanced the view that Schlemm's canal is a venous sinus and this is the view almost universally held to-day. In this country it has received the support, among others, of Thomson Henderson. Uribe-Troncoso, however, relying largely on the work of Maggiore, of Rome, brings forward evidence to prove that the canal has the structure of a lymphatic, not of a vein, and concludes that the results of observing the irido-corneal angle in living eyes by the contact glass method of Fick and Salzmann, when the canal is found to contain clear fluid and not blood, further supports the lymphatic theory. A description is given of a method of collecting or measuring the fluids from the plexus around the limbus in the rabbit's eye. The low blood content indicates that the fluids thus obtained are largely of lymphatic origin. The paper is a very interesting one, and more work on this problem may be looked for now that methods of adequately examining the living eye with high magnifications are available.—Harold Gifford discusses shortly various methods of fixing the eyeball for operations upon it. Great differences in this respect are found in practice owing to the site of maximum efficiency for the puncture and counter-puncture in operations for cataract not being the same as for the cut. For this operation Gifford prefers to grasp the internal rectus tendon; he also gives his preferences for various other operative procedures.—A Study of the Etiology of Periodic Ophthalmia in Horses, by Lawrence Post, gives a short account of an investigation carried out in France during an epidemic among the horses of the British Forces in 1916. He concludes that the disease, which is characterised by interstitial keratitis, iritis, and vitreous opacities, is not transmitted by ordinary contagion, as no organism found in the conjunctivæ could be associated with the disease, and aqueous, vitreous, and blood cultures were found sterile.—J. Miltom Griscom, of Philadelphia, publishes a family tree of hereditary optic atrophy. In three generations of 33 persons there are eight males and six females affected and eight males and 11 females unaffected by the disease. Nine affected members have been very carefully examined, and descriptions of the fundus, fields of vision, and X ray appearances of the sellæ turcicæ are given. The reader should consult the original for details.—Other interesting papers are Traumatic Rupture of the Internal Carotid into the Cavernous Sinus, by Isaac Hartshorne; Self-inflicted Eye Injuries, by Marc Landolt; Injuries to the Eye with Report of 1031 Cases, by D. M. Campbell and J. M. Carter; and the Intraocular Foreign Body, by G. S. Derby.

The Optician and Scientific Instrument Maker, May 27th and June 3rd.—In the number dated May 27th Prof. F. J. Cheshire describes a new foco-collimator or apparatus for determining the focal length of any lens system. The usual collimator is a telescope with a system of wires at its focus, and is so arranged that an observer through another telescope, the optical axis of which coincides, can see the cross-wires in its focal plane. In the foco-collimator the system of wires is replaced by a scale subtending a known angle at the principal point of the collimating lens, and from this angle and the size of the image of the scale projected by a lens system the focal length of that lens system can be deduced.

Instruction in geometric optics is given by Mr. W. Swaine in a series of articles of which the third appears in the issue of June 3rd. In this issue also optical problems are propounded by Mr. E. Mayer, the Inverse Problem in Transposition, and optical solutions supplied to the questions of the recent examination of the Spectaclemaker's Company by Messrs. Laurance and Wood. A description is given of a Crookes-glass demonstrator. It is well-known that light rich in ultra-violet rays, passed through a fluorescent fluid such as quinine solution or a fluorescent screen such as is used in radiology, shows through a spectroscope a lengthening at the violet end. The invisible rays are made visible. In this appliance the light produced from a nichrome arc is projected on to a screen of uranium glass and the glass to be tested is then interposed. Its chief merit lies in conveniently providing a source of light rich in ultra-violet rays.

British Journal of Children's Diseases. Vol. XVIII. April–June. Edited by J. D. Rolleston, M.D.—In a paper entitled Some Remarks on the Diagnosis and Treatment of Congenital Syphilis, Dr. C. F. Marshall discusses the ætiological importance of congenital syphilis in affections of the different organs and the chief points in differential diagnosis. In his remarks on treatment, which is considered under the headings of ante-natal and post-natal treatment, Dr. Marshall states that ante-natal treatment, although diminishing fœtal mortality, may lead to an increase in the number of cases of late congenital syphilis. In his opinion combined treatment with mercury and salvarsan given during pregnancy only yields better results than treatment with mercury alone both before and during pregnancy, as regards the number of children born alive and free from symptoms at birth. Salvarsan appears to have little or no tendency to cause abortion when properly administered. As regards post-natal treatment, Dr. Marshall prefers intramuscular injection of salvarsan combined with glucose to diminish the pain to intravenous injection. He has never seen necrosis of the buttock, which has been urged as an objection to this method, and suggests that this occurrence may be due to too bulky injections or to mixture with creocamph. He recommends that mercury should be given simultaneously, either in the form of grey powder or inunction, and continued for a year at least.—In a paper on Diurnal Somnolence and Nocturnal Wakefulness as Manifestations of Lethargic Encephalitis Dr. H. Morley Fletcher describes two illustrative cases in boys aged 9 and 11 years. In his comments on these cases Dr. J. D. Rolleston remarks that nocturnal wakefulness as a sequel of lethargic encephalitis has recently formed the subject of numerous papers emanating from pædiatric and neurological clinics in Germany, Austria, Italy, and Switzerland, the features common to all the cases being the long duration of the symptom, its association with other manifestations of epidemic encephalitis, and the inefficacy of treatment. One of Dr. Morley Fletcher's cases was an example of the ambulatory type of lethargic encephalitis, of which several cases have been reported, especially in children. The nocturnal wakefulness in this case was a symptom, whereas in the second case it was a sequela.—Dr. F. Parkes Weber records a Fatal Case of Emaciation in a Girl at about the Period of Puberty, with General Visceroptosis, Hypotonicity of the Stomach, and Achylia Gastrica. No necropsy was performed.—In a paper on the Treatment of Prolapse of the Rectum in Infancy and Childhood by the Injection of Alcohol, Dr. Leonard Findlay describes a method which he learnt in Prof. D'Espine's clinic at Geneva, consisting in injection of 1·5 c.cm. of absolute alcohol into the submucous tissue on either side of the rectum under an anæsthetic. In 22 cases in children aged from 5 months to 7 years in which Dr. Findlay employed this method practically a complete cure was obtained. In several cases the prolapse returned, requiring a second injection, and in one child a third injection was necessary before a cure was obtained.—Dr. G. Cochrane describes a case of Diphtheria of the Penis with Paralytic Sequelæ, in which a boy aged 3½ years suffered from post-diphtheritic paralysis of a severe type, although the penis had been exclusively affected by diphtheria.—Mr. E. E. Hughes reports a case of Empyema of the Maxillary Antrum in an Infant aged 3 weeks, the condition probably originating in birth injury. Pus was evacuated through an incision in the upper alveolus, and in three weeks complete recovery took place.—The abstracts from current literature are devoted to acute infectious diseases and syphilis.

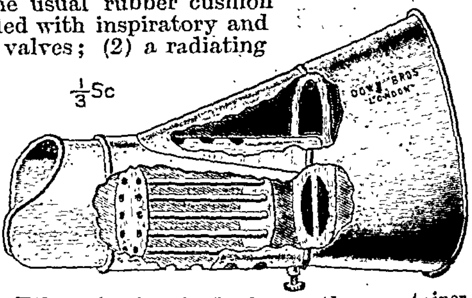
Great Northern Hospital.—The Great Northern H[illegible] Recovery, at Grovelands, Old Southgate, London, [illegible] opened by the Princess Royal, on Saturday, [illegible] at 3 P.M. A summer fête and country fair will [illegible] Grovelands Home Park, from 3 to 11 P.M.

New Inventions.

A COMPACT WARM ETHER INHALER.

The advantages of warm ether vapour for anæsthesia by the open method are generally admitted; they were described by Dr. F. E. Shipway in this country in 1916,[1] and considerable experience was afforded later by the use of his apparatus at many clearing stations and hospitals during the war. A general discussion on the subject took place in the Section of Anæsthetics of the Royal Society of Medicine on April, 14th, 1916.[2] I have, however, felt the need of an inhaler of some kind which, being independent of an extraneous source of heat and not needing continuous air pumping, would be sufficiently compact to be easily accommodated in the anæsthetist's bag, and would yet warm the inspired vapour to a sufficient extent.

This inhaler, in which I have employed the device of utilising the heat of the patient's expired breath, resembles the small Roth-Dræger instrument and consists (see illustration) of three parts: (1) a face-piece carrying the usual rubber cushion and provided with inspiratory and expiratory valves; (2) a radiating chamber containing 19 thin metal tubes; (3) a container for sponge or gauze on which the ether is dropped. Ether is inspired from the container through the warmed "radiator" tubes, while the expired breath is directed by the expiratory valve through a short passage into the radiating chamber where it passes between the tubes, to which it gives some of its heat, and escapes through holes in the opposite side. The radiator is locked to the face-piece by a small screw, and the container can be revolved into any convenient position for the dropping of ether. The inhaler is strictly of the semi-open type, but the air-way has been kept everywhere as free as possible to prevent restriction of breathing and promote interchange of heat; a slight amount of re-breathing is allowed by the volume of the face-piece, the in- and out-going streams being otherwise separate.



Without the radiating chamber in use the temperature of the inspired vapour above the face-piece is from 32° to 38° F. This is considerably lower than is shown by a thermometer under a Skinner's mask during "open" administration; but here the actual temperature is variable and uncertain owing to the fluctuation of the alternate warm and cold streams. On bringing the radiating chamber into use the temperature rises in the course of a few minutes to 65° to 70°, occasionally higher, generally rather above room temperature, and remains fairly steady. This is again not so high as can be obtained with an extraneous source of heat, but is, I think, sufficient for the purpose. There is a considerable economy of ether over the use of a mask, and a welcome diminution in the amount of ether in the air surrounding operato and anæsthetist. Anæsthetic mixtures can be use equally well if desired. The instrument is mad entirely of metal except for the rubber cushion an the valve-flaps; it can therefore be readily sterilised Its length is approximately 7 in. and its weight 13 o

It has been made for me by Messrs. Down Bros. St. Thomas's-street, London, S.E., to whom I am als indebted for the illustration.

St. Leonards. G. A. Ticehurst, M.B., B.C. Camb.

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[1] The Lancet, 1916, i., 70. [2] Ibid., 1916, i., 1001.

THE LANCET.

LONDON: SATURDAY, JULY 9, 1921.

National Insurance in the U.S.A.

THE question of National Health Insurance is awakening now the interest of the medical profession in America. That it has attracted the attention of such American bodies as would constitute what are here known as Approved Societies was proved by the visit to this country some two years ago of prominent officials of insurance and other similar bodies; but the various problems were at that time being approached rather from the standpoint of insurance than of health. The exposition of National Health Insurance in England by Dr. ALFRED COX, the medical secretary of the British Medical Association, recently published in the *Journal of the American Medical Association*, will therefore be of the greatest benefit to the medical profession in the United States, and it should be read by medical men of all nationalities where the adoption of a scheme of National Health Insurance is contemplated. Critics of the working of the medical benefit clauses of the National Insurance Act in England should also take to heart what, out of full knowledge, Dr. COX has to say on many difficult and contentious points, where comprehension is required before adjustment of difficulties can be advocated.

The National Insurance Act, 1911, was fully debated as regards principles when the legislation was introduced, but too little time was allowed for the working out of details, while defects which originated with haste, have continued, and in some directions have increased. We need only allude to the friction caused by certain of the revised regulations to show how hard has been the path of construction both for the Government and for those upon whom responsibility for working the Act devolves. The new medical record cards, which are assumed to represent each practitioner's correct panel list, fall far short of the assumption, while the information recorded on them is found by some to include too much for professional ethics, and by others too little for eugenic or statistical purposes. This is only an example of the directions in which a vast national constructive scheme may be seen to be tentative, and awaiting addition, revision, or pruning. It is hoped for their sake, and quite as much for our sake, that our American colleagues will be prompt in taking part in the discussions which will be essential if a scheme of National Health Insurance is introduced in the United States. They can learn from the mistakes of their British brethren to avoid many of the things which have been sources of annoyance with us, and which remain to breed discontent. The practitioners in America who may be called upon to work the scheme—the rank and file of the profession—ought to be organised so that their opinions may receive the consideration that will be given to views of reasonable unanimity, if they are reinforced by sound argument, and are directed to the good of the community and not confined to plans for professional security. This is the larger policy, for to obtain good medical service good conditions of work must be present. A hope may also be expressed that financial circumstances in the United States will allow of the formation of a more complete scheme than was possible in this country, with the concurrent upheavals of war. Shortage of money has resulted in our medical profession being the sufferers for many deficiencies in the British scheme. The lack of adequate facilities for institutional treatment, the failure to provide for second medical and surgical opinions, for nursing services, or for laboratory facilities have done much to keep alive the fiction that participation in panel practice is "derogatory." That the financial position has been improved in various directions no one denies, and that the health of the nation has benefited in existing circumstances is equally true; to these items on the credit side must be added the fact that the cost, in so far as sickness benefit is concerned, has been overestimated, as is proved by the recent valuation reports of the Approved Societies. All this indicates that, as time goes on and as experience ripens, our system of National Health Insurance will be found, once the need for such a service has been admitted, to contain the essentials for general success.

No doubt there are many practitioners in the United States, who, when new schemes are put forward, will be found wedded to their present routines of practice, and who will resent any interference with their lives. There will doubtless be also many of the laity who will, as many here do even now, view the services rendered under the National Health Insurance Act with suspicion. It may be assumed, however, that there will also be sufficient doctors able and willing, as here, to remove in time these suspicions —men who, however much they resent the profound changes in the practice of medicine will recognise not only the improvement in their economic position which the adoption of a scheme of health insurance must result in, but will be aware of the greater opportunities offered by such a scheme for the physical benefit of their patients. The Public Health Service of the United States is of excellent quality, the institutions, of which not the least is the Mayo Clinic, are well thought out and organised, and the universities are second to none in the world: provided, therefore, that adequate financial provision is made, there can be no reason why any sound scheme of National Health Insurance which the United States may adopt should not start at a point which we can only hope to reach after many years. We have much to offer in the way of example, while the scheme outlined in the Dawson Report might well form the basis of a complete service in any civilised country. There seems to be in the United States ample time for consideration by all concerned, so that a system may be fairly expected which by its very completeness would disarm criticism, ensure the benefit of the community, and secure the goodwill of the medical profession.

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Silicosis.

THE paths of research are tortuous and often lead away into unexpected lands from which the pioneer cannot hope soon to return with what he set forth to seek. Often he finally returns with an entirely different, although, perhaps, an even more valuable commodity. In his address to the Research Defence Society, which we publish on p. 112 of our present issue, Dr. H. H. DALE describes how certain explorers went forth into the wilderness to seek one clad in soft tissues, the tetanus bacillus—and, behold, more than the tetanus bacillus, even the *raison d'être* of tuberculous silicosis, was there. It is almost a fairy story with Pan in the background. Dr. W. E. GYE, in the course of investigations on tetanus, found that the bacilli flourished in the body and caused disease only if introduced together with soil. Next, Dr. GYE in association with Dr. W. CRAMER, discovered that the soil must contain either soluble calcium salts or hydrated soluble silica. Further, injection of either of these substances into mice rendered them sensitive to the disease when inoculated with washed tetanus bacilli which were otherwise innocuous. Here nearly certainly lies the explanation of why on the Western front the prevalence of tetanus varied so much in different parts of the line; it varied with the chemical composition of the soil. At once a vista of a connexion between geology and disease is opened up; and Dr. S. BARWISE's correlation between the prevalence of phthisis in Derbyshire and the geology of the county immediately comes to mind. Here the first chapter may be said to end.

Then suddenly Dr. GYE stumbled upon a hyper-concentrated solution of vital statistics from which only a touch from the experimental wand was needed to precipitate clear crystals of knowledge. The work of Dr. J. S. HALDANE upon dust inhalation and the statistical evidence placed by Prof. E. L. COLLIS before the Royal Commission on Metalliferous Mines and Quarries, which is summarised in his Milroy lectures, had established definitely that silica alone among dusts possessed the peculiar power of sensitising to tuberculosis those who inhaled it over long periods. Even as GYE was at work COLLIS,[1] who for years has opposed the old accepted theory that mechanical irritation following upon dust inhalation was the cause of dust-phthisis, and has pointed out that this theory was incapable of explaining why the disease only occurred among those inhaling silica dust and not among those inhaling other equally hard and irritating particles, such as emery, was writing: "Theory rather suggests that when silica is introduced into the body some definite chemical reaction should occur . . . a reaction which results in the formation of fibrous tissue, now known pathologically as silicosis. Lungs so damaged fall a ready prey to the tubercle bacillus." Dr. GYE had sensitised mice to tetanus with silicic acid. What about tubercle, to which these animals are normally immune? After experiments in association with Dr. E. H. KETTLE, he is now able to announce that silicic acid (and even silica dust) also sensitises these animals to tubercle, which spreads in the tissues injured by the silica. We have then only to conceive that silica dust when introduced into the body slowly undergoes conversion into silicic acid to understand the ætiology of tuberculous silicosis; and W. WATKINS-PITCHFORD has pointed out that inhaled particles of silica do so disintegrate in the lungs. Nor is further evidence lacking: for mice injected with silicic acid suffer from nephritis, while COLLIS has noted that in occupations, such as tin-mining, dressing sandstone, and grinding cutlery, where tuberculous silicosis is rife, the mortality from Bright's disease is high. The conclusions to be drawn are that fine particles of silica, derived from flint, sandstone, quartz, or gradually undergo conversion in the body into soluble hydrated silica; that this substance as formed acts locally on the tissues in the vicinity, giving rise to fibrous new growth, possibly even stimulated to do this by the presence of tubercle bacilli which, WATKINS-PITCHFORD has pointed out, will precipitate latent silicosis; that tuberculous infection finds in such silicotic tissue a favourable nidus for growth; and that any soluble hydrated silica which gains access to the blood stream is excreted by the kidneys which are affected by it.

These fresh conclusions come when research has hardly yet familiarised us with the ideas that in the treatment of phthisis the value of cod-liver oil and other animal fats depends upon the presence in them of the food accessory factor, fat-soluble A; and that, envisaged from this aspect, phthisis may be regarded as disease occurring among persons sensitised by dietetic deficiency. Now we learn that sensitisation may also result from an inorganic poison. Simultaneously another member of the Medical Research staff, Dr. LEONARD HILL, is attacking the problem from another side by establishing the way in which health and vigour, needed to resist disease, can be increased by increased metabolic activity brought about by stimulating atmospheric conditions. In each case the problem of tuberculosis is being removed from the bacteriological laboratory to that of the biochemist in association with the morbid histologist. Only time and further research can reveal how the flood of light, shed by new knowledge on the way in which the human body may be sensitised to the tubercle bacillus or protected against it, can be put to immediate practical use for preventing tuberculous silicosis in those industries in which it prevails. The recent inclusion of the disease under the Workmen's Compensation (Silicosis) Act, 1918, as one for which compensation must be paid (as the industries concerned are one after another brought by order of the Secretary of State under the provisions of the Act), gives immediate financial importance to such an aspect of the case in this country. In South Africa the financial side of the question has long been apparent. If, in the light of the new knowledge, means can be devised to abolish the disease, a financial burden will be lifted from industry far exceeding the whole sum devoted to-day to medical research, while a scourge will be removed from certain occupations which has clung to them through the ages since man began to make for himself instruments from flint or to dress sandstone for building purposes.

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Freudism in Medicine.

THE place of psycho-analysis in the equipment of the practitioner of medicine demands attention. Though few medical men past middle age can swallow the new psychology whole without symptoms of indigestion, culminating, it may be, in spiritual if not physical nausea, the younger generation is imbibing the newer ideas with avidity. In the past the psychologist has taken his samples for analysis from the surface of an apparently clear stream, in the belief that it was sufficiently representative of the water as a whole. The moderns scrape up mud from the bottom, if necessary displacing the filtering stones to secure it. To the onlooker this method would seem no better than the first, and, moreover, it leaves the stream very muddy. Nevertheless, in the light of the experience now being gained, future psychologists, made wiser through the errors and omissions of their predecessors, may be enabled to estimate the practical importance of traces of sediment contained in the preliminary sample, delving deeper only when circumstances demand it. At the moment it is mainly the recently qualified medical men and women, with a sprinkling of medical students, who are keenly interested in psycho-analytical methods. The epidemic form of psycho-analysis to which certain sections of medical students have fallen victim owes its existence partly to the feeling—possibly an illusion—that by submitting to analysis the student is preparing himself on the broadest lines for a medical career; it may partly, and unknown to him, have a different origin. But, manifestly, the gap between medicine and the later developments of psycho-analysis is so wide that at present only the more elementary presentations of psycho-analytical ideas are intelligible on the surface. We must not for this reason allow a whole method of therapeutics to slip out of our grasp.

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[1] Effect of Dust Inhalation upon the Incidence of
ublic Health, March, 1921.

There are two main difficulties in accepting FREUD's theories. The theory of the unconscious explains conduct as arising from motives, and even trains of thought, which are not apparent to consciousness or under its control. Psychologists had prepared the way by showing how we are ruled by instinct and emotion; yet the personal application of this theory of the unconscious, with its seeming dethronement of reason, is repudiated by our common sense, which tells us that we know, or ought to know, the reasons for all our actions, and that conduct is based upon rational motives derived from the principles of conscious pleasure and pain. The second difficulty lies in FREUD's view that infantile psycho-sexual development has influence not only upon the psycho-neuroses but upon ordinary inclinations and desires. To this difficulty many factors contribute, one of the chief being the confusion between sexual activity and action urged by the sex instinct; the first is unusual in an infant, the second may be usual in all infants. The difference between the views of FREUD and JUNG are well known. FREUD, whilst admitting the existence of other instincts, finds the sex instinct predominant in influencing life and character, and regards the unconscious working of that instinct, with its many ramifications, as the foundation of the psycho-neuroses. JUNG regards the driving force of mental life, the libido, as the mainspring of good and evil; a wrong mental attitude, traceable to difficulties in childhood and often first appearing at that time, hinders adjustment, and the libido, checked in its natural outlet but still demanding satisfaction, turns to the production of the neurotic symptom as a means of finding it. To JUNG sex is only one manifestation of the libido, but is so all-pervading that the libido makes great use of it as a means of expression. JUNG claims to find, behind the sex mechanisms described by FREUD, a misdirection of libido expressed in the neurotic symptom. He also finds in the symptom, as in the dream, indications of the striving of the libido and of the direction in which it should seek an outlet. Hence he claims to be more constructive than FREUD. The time has come when the practitioner must take a serious interest in these considerations, unless he is to lose touch with the more thoughtful section of his patients, for their influence on the lay public is widespread.

A letter appears in another column from that wise physician and experienced man of affairs, Sir BRYAN DONKIN, which we hope will be read carefully. It is not in agreement with the views expressed above, but it proves how necessary it is that those who are working along the lines of FREUD should temper their zeal with discretion, should appreciate at what point they desire to leave the old course, and should be able to show their reasons for so doing, in order to give proper attribution to any successes with which they may meet. The methods of experimental psychology will never be deserted, but assistance to our therapeutics must not be refused because it does not arise directly out of such methods. On the other hand, we have a right to ask that the theories, precepts, and claims of psycho-analysis should continue to undergo rigorous scrutiny; for psycho-analysis is a new acquaintance, not an old and well-tried friend.

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M.O.H. REPORTS.

MOST of the annual reports of medical officers of health commented on in THE LANCET hold strong resemblances in certain particulars. The general death-rates and infant mortality-rates for 1920 are low, frequently the lowest ever recorded. There was a widespread increase of mortality from tuberculosis of the lungs during the war, but it is surprising to find that not only has this war increase disappeared, but that the death-rates are now lower than ever before, at a time when overcrowding is general. It is doubtful if the war increase and the subsequent decline have been properly explained. The usual explanation is that the increase was largely industrial; men and women who were not inured to factory life broke down under the strain, their age or state of health perhaps unfitting them for the work they attempted. On the other hand, it is notorious that many women who worked in factories apparently improved in health owing to provision by canteen of much more sensible dietary than they were previously accustomed to. On the whole it may be said that during the war the working man, woman, and child had a more plentiful dietary than usual. Children among the poorer sections of the community were better clothed and apparently better fed; they had less sugar, but made up for it with more starch. The question arises as to whether the greater tendency to consumption resulted from the quality of the food—i.e., the scarcity of the right kind of fat. Research on vitamins emphasises the importance of butter, suet, dripping, egg yolk, and cod-liver oil in preventing rickets and securing good teeth. The past reputation of cod-liver oil as a remedy for tuberculosis and its extraordinary richness in the fat-soluble A vitamin naturally suggest that its value in this direction may be due to its vitamin content, and that scarcity of the other fats which are plentifully endowed with this vitamin may have played a part in the war increase of tuberculosis; a better supply of these fats has been available since the end of the war. It has also been suggested that a large number of tuberculous persons died in the influenza epidemic, and that the present low death-rate is only temporary. A rise is perhaps unavoidable if overcrowding continues to increase in the present geometrical progression resultant upon our inability to build houses to accommodate the natural increase of the population. The effect of education of the public by means of tuberculosis dispensaries and other health agencies must not be ignored; moreover, the recorded experience of many, if not most, tuberculosis dispensaries, is that consumptives escaped influenza in a remarkable manner, perhaps because they led a more or less open-air life, and avoided crowded rooms. The incidence of tuberculosis during and since the war has not been satisfactorily explained, and offers a field of investigation to statisticians with a knowledge of public health.

THE Right Hon. F. B. Mildmay, M.P., has been appointed a member of the Medical Research Council, in succession to the Hon. Edward Wood, M.P. Mr. Mildmay will act as Treasurer to the Council.

Annotations.

"Ne quid nimis."

MEDICINE IN EVOLUTION.

THE learned Professor of Physic in the University of Cambridge, Sir Clifford Allbutt, in a volume of essays and addresses,[1] which has appeared this week, illustrates in a remarkable way, though the book has no such design, that the story of medicine is one of evolutionary progress, the progress having been held-up by world events in this or that direction, to re-take or re-shape its course, quickly or slowly, but always advancing. The first half of the book consists of the FitzPatrick lectures, delivered before the Royal College of Physicians of London in 1909–1910. The lectures, however, have been considerably enlarged, as anyone will see who refers to their original publication in our columns, and they have appreciated in interest and value in proportion to the enlargement, which is an unusual circumstance in work of a scholarly and serious nature. Time after time the learned address, as delivered, is greatly improved in force and directness by abridgment, but in the case of Sir Clifford Allbutt's FitzPatrick lectures it is good to possess not only the original words, but also a great deal of the documentary background. Sir Clifford Allbutt once likened medical history to a geological record, but he now prefers to compare its noble fragments to a basilica compiled of more ancient relics—of pillars, of capitals, wrought stones, and mosaic, gathered and built into a new edifice. "We have thrust ancient myth and symbol too much aside as wholly fanciful: we are discovering now that they are apparitions, luminous mists of truth—the edges and bordering lights growing in form from one incarnation to another."

The subject of the FitzPatrick lectures was primitive Roman medicine in relation to the medicine of Greece, and over the whole of this field Sir Clifford Allbutt displays a wide range of erudition and an intimate acquaintance with the writings of other historians, while his position at Cambridge has enabled him to obtain assistance on particular points from such authorities as Prof. Henry Jackson, Prof. J. S. Reid, Mr. Bernard Cook, and Sir John Sandys. While the Roman Empire held the political supremacy, Athens, in almost all the higher ranges of the human mind, was still supreme, says Sir Clifford Allbutt. He refers to the address of the late Dr. Warde Fowler, president of the Classical Association for last year, in which that charming and polished scholar and naturalist—now, alas, passed from us—deprecated the common idea that the Romans lacked imagination as compared with the Greeks. Sir Clifford Allbutt fears in his pages that "Mr. Fowler will see but evidence the more of that conventional depreciation of the Roman in comparison with the Greek"; but he appeals for extenuation inasmuch as he has had to deal with a side of the Roman mind in which that great people was deficient. Medicine at Rome was, of course, Greek, and consequently such superior persons as Cato and Pliny, who looked down upon everything Greek, looked down also upon medicine and medical men, a very similar view being taken in Italy some thousand years later by Petrarch. The remainder of the book is a series of essays and addresses upon such varying subjects as Byzantine medicine; mediæval medical learning, illustrated by the position of the ancient University of Salerno; the growth of hospitals and the development of public medical service; medicine in the fifteenth century and at the beginning of the nineteenth century; and Palissy, the savant and potter.

The book is frankly an assembling of scattered essays and addresses, but every word is written in support of the thesis that medicine steadily evolves towards scientific wisdom and truth.

THE IRREGULAR INCIDENCE OF PLAGUE IN INDIA.

PLAGUE, as our readers are aware, has been annually epidemic in India since 1896, but the incidence of the disease during that period has been very unequal, some provinces, like the Punjab, having had devastating epidemics year after year, while others, like the Presidency of Madras, have experienced comparatively light local manifestations of the malady, while yet others, like Assam, may be said to have escaped almost entirely, notwithstanding repeated importations of the disease from other heavily infected provinces. Various explanations of this unequal distribution have been advanced from time to time. Up to the present the explanation which found most acceptance was that the small incidence of plague in some provinces was due partly to the manners and customs of the people, and partly to the fact that the nature of the construction of their dwellings did not favour infestation by rats. Meanwhile the subject for some time has been undergoing investigation, particularly in the Presidency of Madras, in which the various conditions have been carefully studied and compared with those in other provinces, but so far without any convincing results.

A new hypothesis, however, has been put forward recently by Major F. W. Cragg, I.M.S., Assistant Director, Central Research Institute, Kasauli, in a contribution published in the lately issued Special Indian Science Congress number of the *Indian Journal of Medical Research*, in which is discussed the distribution of the Indian rat-fleas of the genus Xenopsylla, with reference to the immunity of certain areas from plague epidemics. It appears that the Plague Commission during the whole period of their inquiry recognised only one species of the genus Xenopsylla—viz., *X. cheopis* on Indian rats, and until recently this flea was universally regarded as the predominant species infesting rats in tropical and sub-tropical climates. At least two other species of Xenopsylla, however, are found in India—viz., *X. astia* and *X. brasiliensis*. The differentiation of the species is not easy, requiring the use of a compound miscroscope and a fairly high power. It is by no means the case that all species of fleas, even those of the same genus, are necessarily equally efficient as transmitters of the plague infection. One important factor which may vary with species is the degree of readiness by which the species adopts man as a host in the absence of its normal one. It has been shown experimentally that all fleas are not alike in this respect. A species of rat-flea which is reluctant to bite man, and which perhaps prefers some other animal when its normal host is unavailable, is not likely to be a serious factor in the spread of plague. The length of life, rapidity of reproduction, and the duration of the early stages are all closely dependent on conditions of temperature and humidity; but, according to Major Cragg, the optimum conditions are not the same for all fleas. The powers of resistance to unfavourable conditions, such as extremes of heat and cold, lack of food, and so on, all affect, to some extent, the importance of a species as an agent in the diffusion of plague, and this capacity may be expected to vary in different species. The probability of there being several species of the genus Xenopsylla, each with its own optimum conditions, and each, perhaps, having from various causes a different degree of effectiveness as a transmitter of plague, has not hitherto, it seems, received due consideration. In the *Journal of Hygiene* (Vol. XV.) W. M. Philip and L. F. Hirst, in a report on plague during 1916 in Ceylon, stated that the predominant rat-flea in Colombo was *X. astia*, which they point out bites man with reluctance at temperatures above 80° F., and it rarely attacks the guinea-pig, which animal, it may be remembered, was used by the Plague Commission as a trap for rat-fleas at Bombay. It is said that in Ceylon actual transmission of plague from rat to man by *X. astia* was carried out with the greatest difficulty. The infecting organism at Colombo was highly virulent, the human and the rat population were susceptible, and both rats and their fleas were sufficiently numerous; but yet notwithstanding the presence of all these factors the incidence of plague in man was comparatively little, the relative inefficiency of *X. astia* as a carrier of plague being regarded as one of the possible causes of the failure of the malady to spread in Ceylon. It may be mentioned that W. M. Philip and L. F. Hirst made a collection of rat-fleas from various areas, and those obtained from Madras city (where plague has practically never spread though often imported into it), all proved to be *X. astia*. Major Cragg, therefore, concludes that if the predominance of this species of flea on the Ceylon rats is associated with a low plague incidence there in man, it is probable that the plague-free districts of India may owe their immunity to the predominance in them of this same species of rat-flea. Accordingly, with a view to decide the point, Major Cragg has obtained the coöperation of the Sanitary Commissioner with the Government of India in the carrying out of an investigation into the identity and distribution of the species of rat-fleas predominant in the various districts of India, and for this purpose he has secured the assistance of a number of civil surgeons, health officers, plague officials, and others in different parts of India. The inquiry, we understand, has only been in progress for about two months, and it is therefore too soon as yet to expect any definite conclusions. It has, however, been found so far that *X. cheopis* is the predominant species in the cooler parts of India and *X. astia* in the warm and damp regions. On the other hand, *X. brasiliensis* is not common; it has only been found at Poona, Mangalore, Bombay city, and Ootacamund. Major Cragg intends to find out the distribution of each of the species of Xenopsylla and their seasonal prevalence. Should *X. astia* prove in fact to be the rat-flea of the immune areas in India, he will test experimentally its effectiveness as a carrier of plague as compared with *X. cheopis* and under varying climatic conditions. If it should be shown experimentally that *X. astia* can act as a carrier of plague to any degree, it will become necessary to investigate its life-history and bionomics in order to explain why it does not act as such in nature.

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[1] [illegible] in Rome: the FitzPatrick Lectures for [illegible] Historical Essays. By the Right Honourable [illegible] Allbutt, K.C.B., M.D., F.R.C.P., Regius Professor [illegible] University of Cambridge. London: Macmillan [illegible]

These systematic investigations may, in one way or another, throw light on some of the problems of plague which still baffle the epidemiologist.

THE OCULO-MOTOR NUCLEI AND THEIR TRACTS.

BRITISH ophthalmic surgeons recently have directed a good deal of attention to problems connected with the oculo-motor nuclei and their tracts. At the Oxford Ophthalmological Congress last year Mr. Richardson Cross took as the subject of the Doyne Memorial Lecture the Nerve Paths and Centres Concerned with Sight," and gave a very full and clear account of the human and comparative anatomy of the parts. Last March the Neurological and Ophthalmological sections of the Royal Society of Medicine held a joint debate[1] covering much the same ground on the neurological aspect of which we commented at the time. The introductory papers to this debate by Dr. Gordon Holmes and Mr. Leslie Paton, which appear in full in the June number of the *British Journal of Ophthalmology*, deserve careful study from the ophthalmological point of view. Mr. Paton divides his paper on ocular palsies into two parts, (1) anatomical; (2) clinical. In the anatomical section he gives a clear digest of the facts known regarding the position, inter-relations, and functions of the nuclei of the third, fourth, and sixth nerves, and discusses the views that have been advanced as to the distribution within the nuclei of the various muscle groups. Very diverse views are held, for example, as to the position in the third nerve nuclei of the cells concerned in the innervation of the sphincter pupillæ. The text-book description, based on Bernheimer, places them in the small-celled mesial group at the anterior end of the nucleus, but much of the recent work done has failed to confirm this, and Magitot actually suggests, in support of Gaskell's theory, that sphincter control is not a function of the oculo-motor nucleus at all, but, through the continuation upwards of the intermedio-lateral tract of the cord, of the sympathetic system. A good account, illustrated with diagrams, is given of the posterior longitudinal bundle, that puzzling but important tract wherein lies the mechanism of association of the whole ocular system. The vascular supply is also discussed in detail and the significance of the supply of these nuclei by end-arteries is emphasised. In the clinical part a full classification of ophthalmoplegias is attempted, and certain typical examples, illustrative of particular groups, are described in some detail. Encephalitis lethargica is taken as an example of infective ophthalmoplegia, and Mr. Paton draws attention to the correspondence between the eye muscles affected in this disease and those which get out of control, as it were, on falling into ordinary sleep. Failing accommodation, dilating pupils, difficulty in convergence, and ptosis, as well as unconsciousness, are common to both states. The three types of lesion revealed microscopically in this disease congregated, as a rule, in the region of the aqueduct of Sylvius, are well described, and this section furnishes ophthalmologists with a good summary of this new disease.

Dr. Holmes's paper is entitled "Palsies of the Conjugate Ocular Movements." He gives a good description of the cortical centres and of the stream of peripheral stimuli that maintains their tonic activity. The evidence for the centre in the second frontal gyrus in man and animals is detailed. It is well known that irritative lesions in this area cause clonic conjugate movements of the eyes to the opposite side, and paresis of the mechanism of voluntary lateral deviation has also been described after war wounds. Dr. Holmes concludes there is no evidence of an oculo-motor centre in the parietal lobe (angular gyrus) in man, but he has observed ocular apraxia without associated disturbances of spatial orientation to follow gunshot wounds in this neighbourhood. He considers the conjugate eye movements obtained by Schäfer through stimulation of the visual area in the occipital lobe, to be reflexes arising from a desire to fix the eyes on the point in space to which the cortical sensations induced by the stimulation are projected. He regards the visual cortex as a higher ocular reflex centre as well as a perceptive area, and believes that movements other than willed and purposive ones, such as those by which the eyes follow a moving body or those by which objects perceived in the periphery of the field of vision are brought into central vision, are effected through it. The paretic deviation towards the seeing side in hemianopia can thus be explained as due to loss of visual impressions that normally excite reflex activity. The question of paralysis of the conjugate lateral movements of the eyes is very ably discussed. This symptom is associated with disease in the lower and dorsal part of the pons, especially near to the abducens nucleus of the same side. Both abducens and oculo-motor nuclei are involved, and the origin of the fibres in the posterior longitudinal bundle, conveying the impulses that excite conjugate lateral movements, has been investigated. Dr. Holmes inclines to the view that a supranuclear centre exists, and gives the evidence in its favour. The last section of the paper discusses paralysis of the vertical conjugate movements and the conclusion is reached that supranuclear mechanisms are present here also. Dr. Holmes supposes the existence in the upper end of the midbrain, at a higher physiological level than the oculomotor nuclei, of "a more complex associational or coordinating mechanism which receives all the impulses that can effect vertical or convergent conjugate movements of the eyes, combines and correlates them into an appropriate resultant, and distributes this to the nuclei of those muscles that should contract or relax." This view is undoubtedly the simplest explanation of all the facts and the mechanism postulated would correspond to the intercalated neurone in the cord between the afferent reflex fibres and the motor cells of the ventral horns.

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[1] THE LANCET, 1921, i., 748.

ANTARCTIC BACTERIA.

Sir Ernest Shackleton's prospective visit to the Antarctic has revived interest in the conditions of any form of life in these fascinating regions. It might well be supposed that active manifestations of bacterial life would be impossible under the inhospitable conditions of Antarctic glaciation and at temperatures which rarely rise to freezing point. The researches of more than one observer, however, show that such a supposition is erroneous. Dr. A. L. McLean, who accompanied Sir Douglas Mawson's Australasian Antarctic expedition, is the latest to publish[1] the results of his bacteriological observations, carried on during the three years preceding the war, and they serve to confirm those of previous workers in this field. It is astonishing to find that the snow and solid ice covering the Southern Continent are by no means destitute of bacterial life. Portions of ice collected, with strict precautions, not only on the surface but at a depth of many feet, were found to contain living bacteria of various kinds; motility was observed on thawing and successful cultures were obtained. It is conjectured that the strong current of air which is known to flow at great altitudes from the Equator to the Pole, carries with it from warmer regions not only dust particles, but living bacteria, which ultimately become precipitated upon the polar ice-cap. Dr. McLean collected falling snow in a sterilised vessel, and proved it to contain living organisms. It has long been known from laboratory experiments that no degree of cold yet attained will kill bacteria, but it might well be thought that they must remain dormant when embedded in glacier ice. At very low temperatures this is doubtless the case, but the structure of such ice, first elucidated in the Alps and confirmed by Antarctic observation, indicates conditions under which bacterial growth seems possible at temperatures some degrees below freezing point. For when water freezes crystals of pure water are formed, and any salts in solution remain in the residual fluid, which thus comes to have a lower freezing point, and when this is reached the process is repeated. Thus glacier ice comes to consist of a mosaic of pure water crystals, separated and permeated by channels containing saline and organic impurities. At a sufficiently low temperature the whole is a solid block, but as the melting point is approached the channels reopen and the ice takes on a granular structure. It is in these channels that bacteria appear able to grow even when the temperature is below freezing point. If they can thus maintain their existence in ice, it is not surprising to find that bacteria are present, in the Antarctic, in sea water, in the mud of moraines, and in the ooze from the sea bottom: Dr. McLean found them in ooze from a depth of 300 fathoms. The nature and properties of these organisms could not be worked out in detail, but when we remember that the bacteria of air, water, and soil have received little attention even in temperate climates in comparison with those of the animal body, we shall not think it any discredit that the descriptions do not often allow us to place the organisms with any certainty in our schemes of classification. Nothing indeed was possible, under the arduous conditions in which the work was carried on, beyond noting morphology, Gram-staining, and rough cultural characters.

When we turn to the bacteriology of the animals inhabiting the Antarctic, we are on more familiar ground. Dr. McLean made large numbers of cultures from the intestines of mammals, birds, and fish. In some cases negative results were noted, and it appears that the intestine, in these regions, is definitely poorer in bacteria than is the case in warmer climates, though intestinal worms and external parasites were numerous. Nevertheless bacteria were commonly present, and it is interesting to note that a Gram-negative, sporing bacillus was grown from the intestine of a fish trawled from a depth of 1700 fathoms. Seals furnished consistently positive results, yielding coliform and other organisms. It is noteworthy that pus from the wounds which these animals receive in fighting amongst themselves was found to contain staphylococci and streptococci of familiar types. Dr. McLean's report leaves us with an increased respect for the pertinacity and versatility of bacterial life under the most unfavourable conditions, and with no less admiration for the perseverance with which, under conditions hardly less unfavourable, he contrived to make so many interesting observations.

CÆSAREAN SECTION: TWENTY-ONE YEARS' EXPERIENCE.

IN the Jerome Cochran lecture read before the Medical Association of the State of Alabama, Dr. J. Whitridge Williams[1] gives the following analysis of 183 Cæsarean sections performed upon 145 women in the Obstetrical Department of the Johns Hopkins Hospital from Feb. 1st, 1899, to the end of December, 1920. The operations were done on a series of approximately 20,000 deliveries, so that their incidence was somewhat under 1 per cent.; 104 were single and 79 repeated sections. Although the number of white and black women in the service was practically the same, many more Cæsarean sections were done upon the latter. The following types of operations were done: 121 typical conservative sections; 4 extra-peritoneal sections; 1 post-mortem section; 57 Porro sections. The gross mortality was 5·46 per cent., which was reduced to 3·45 per cent. after deducting the cases in which death was not due to the operation. All the deaths except one from hæmorrhage were due to infection. The mortality was 13 times greater in the first 50 than in the last 133 cases—10 to 0·77 per cent., the diminution being due to the avoidance of ascending infection by operating before the onset or during the first hours of labour. Contracted pelvis was the indication for interference in nine-tenths of the black women and in six-tenths of the white patients. The several varieties of rachitic pelvis afforded the principal indication for operation in the blacks, as compared with the simple flat pelvis in the whites. The most frequent non-pelvic indications were eclampsia and severe cardiac decompensation. On the other hand, Dr. Williams does not regard Cæsarean section as the ideal treatment for eclampsia, and considers that it is indicated only in the rare instances in which the cervix is rigid and undilated and no improvement has followed venesection. In only one case, which proved fatal, was the operation performed for placenta prævia, although 66 examples of this complication of pregnancy occurred in this series. Dr. Williams is of opinion that the frequency of rupture of the uterine cicatrix is probably exaggerated, as this occurrence took place only once in 48 women who had undergone repeated sections, as well as in 12 deliveries through the natural passages subsequent to sections. Although it is generally stated that the child delivered by Cæsarean section is born in an apnœic condition and is sometimes deeply asphyxiated, over half the children in the present series cried immediately after delivery, and only 7 per cent. were deeply asphyxiated. Dr. Williams concludes by saying that though Cæsarean section is frequently the easiest manner of delivering the patient, in the presence of various abnormalities it is not always the safest, and that ideal results are obtained in only a few clinics.

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[1] n Antarctic Expedition (1911–1914). Scientific C, Zoology and Botany, vol. vii., part 4. Bac- d Other Researches. By A. L. McLean, B.A., M.D. 1919. Sydney. Price 16s.

[1] Bulletin of the Johns Hopkins Hospital, June, 1921.

JUBILEE OF PROFESSOR LÉON FREDERICQ.

At the end of the present academic year Léon Fredericq, Professor of Physiology in the University of Liége, will become Emeritus Professor on resigning a chair which he has held with high distinction for 42 years, for he was the immediate successor of Th. Schwann. The occasion will also mark the fiftieth year of his academic activities as well as the fiftieth anniversary of his promotion to the degree of "Docteur en Sciences Naturelles." Prof. Fredericq's scientific activities have ranged over a wide field of physiological investigation and discovery, and his name and the results of his life-long work find a place in every text-book of physiology and every physiological laboratory. His wide knowledge of zoology and on occasion its practical pursuit enabled him to take a comprehensive view of physiology. His work ranges over such diverse fields as coagulation of blood and fibrinogen, hæmoglobin and hæmocyanin; physiology of the squid, echinus, and crustacea, autotomy, cardiography, venous pulses, the physiology of the heart and respiration and the cardiac nerves, tension of blood gases, apnœa, variations of the volume of the brain, &c.; while he has added considerably to physiological technique, as in the description of the œsophageal sound, crossed circulation, atriotome, oxygenograph. Moreover, he has trained and helped a large number of pupils to carry out original work in his laboratory, the later results being published from 1888 in the *Archives Internationales de Physiologie*, edited by Fredericq and Heger (of Brussels). His "Éléments des Physiologie Humaine," edited jointly with M. Nuel, is in its seventh edition. It is proposed to publish a "Volume Jubilaire," to consist of contributions by his Belgian colleagues, and those of allied and neutral countries. The volume will be dedicated to Prof. Fredericq and will be published in the *Archives Internationales de Physiologie*.

STEREOSCOPIC VIEWS OF THE MIDDLE EAR.

In the course of an investigation extending over many years Mr. Arthur H. Cheatle assembled the most complete collection of specimens ever made to illustrate the surgical anatomy of the middle ear and of its accessory air sinuses. Every specimen was obtained from a subject of known age and sex, and hence the collection is of the utmost value for the study of the age changes undergone by the middle ear, and of the prevalence in adults of variational types. Ten years ago Mr. Cheatle presented his entire collection to the Royal College of Surgeons of England, where it has been placed in the upper gallery of Room 11 of the Museum, side by side with the famous Toynbee collection. A descriptive catalogue, prepared by Mr. Cheatle, has been published by the College for the use of visitors, who come to study from all parts of the world. There are, however, many aural surgeons and others who cannot afford the time or means to visit London and share in the fruits of Mr. Cheatle's toil, and hence have suggested that stereoscopic views of the more typical and important specimens should be made and placed on the market. This has now been done under Mr. Cheatle's supervision.[1] About 200 specimens have been photographed and a series of lantern slides prepared to meet the needs of those who have to teach the surgical anatomy of the temporal bone. The photographs and slides are of excellent workmanship, and should prove of the utmost utility for teachers of anatomy and aural surgery.

A TRIBUTE TO DR. ADDISON.

Lord Carson presided at the recent complimentary dinner to Dr. Christopher Addison, the late Minister of Health. The gathering was an eminently appropriate one, for political circumstances appear to have dictated Dr. Addison's withdrawal from office at the very time when the value of his pioneer work was becoming evident to all except impassioned critics. It had no political complexion, and was a spontaneous expression of friendship towards Dr. Addison, arising out of his strenuous work in high official capacities throughout the war. Lord Carson said, "Dr. Addison is one of the few who has lasted from the beginning of the war until to-day," adding that he, Lord Carson, had tried to do so, but had failed. Tributes of appreciation to Dr. Addison were paid by Sir Henry Birchenough, Sir Thomas Neil, chairman of the Consultative Council on Health Insurance Societies, Professor R. A. Bolam, chairman of the Council of the British Medical Association, and Sir Ernest Moir, lately Controller of the Inventions Department of the Ministry of Munitions. The dinner was attended by members of both Houses of Parliament and by the staffs of the Ministry of Munitions and of other Departments over which Dr. Addison had presided, and the guest of the evening had a right to be deeply gratified with such multifarious recognition of his patriotism, industry, and zeal.

THE FÆCES IN ALIMENTARY DISORDERS.

The examination of the fæces has not yet become established as an essential part of the clinical investigation of a patient suffering from disease or disturbance of function in the digestive system in the routine way that the urine is observed in morbid conditions of the kidney and in diseases of metabolism. This is the more surprising when it is recognised what valuable indications, both in regard to diagnosis and treatment, examination of the fæces can afford, and, further, how comparatively simple the essential processes in this investigation are. The subject is dealt with in a practical, interesting, and suggestive paper, published in The Lancet of July 2nd, by Dr. Robert Coope. He commences his paper with the statement that it is important to bear in mind that normally on a digestible diet the only food residues found in the fæces are remnants of muscle fibre and the tough débris of vegetables. This fact is often forgotten or not appreciated. It should, moreover, be recognised that test diets may be given, especially where it is desired to examine for occult blood or soluble albumin. Dr. Coope suggests that a simple technique should involve the macroscopical, microscopical, and chemical examination of the fæces, each of which may give valuable information. Such investigation may afford indications of crucial importance, as Dr. Coope's records show. He points out that the abnormal findings can be divided into two catagories: the absence of normal constituents, and the presence of abnormal ones. In the first stercobilin is the chief constituent studied. If it is absent, it may be inferred that no bile is reaching the intestine. In the second category he mentions the presence of various food residues, especially undigested muscle fibre, connective tissue, starch grains, and fat, and the addition of blood, soluble albumin, and mucus. Dr. Coope maintains that if connective tissue reaches the fæces in any marked amount, the conclusion that there is a failure of gastric digestion may be drawn with complete confidence—a practical point. The whole paper is a valuable contribution to the study of diseases of the digestive system. Until recently there was a tendency to treat these diseases in this country in a less scientific fashion than is the custom on the Continent and in America, but the routine application of test-meals, X ray examinations, and fæcal investigations seems likely to become established. The alimentary system admits of more direct investigation than some other of the important systems of the organism, and accurate diagnosis, with effective treatment, should be possible in a large majority of cases.

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[1] Catalogue and Guide to Collection of Lantern Slides of the Anatomy of the Temporal Bone. Set of 200 slides in five boxes, with Album of Photographs and Catalogue. H. K. Lewis & Co., Ltd. 1921. Price £30.

THE POSITION OF INTESTINAL COILS.

Dr. A. C. Guillaume in *La Presse Médicale* of June 15th has tried to answer the old query as to whether there is or is not any definite arrangement of the coils of small intestine within the abdomen. Nobody would deny that great importance might be attached to a definite answer in the affirmative, but no anatomist will be tempted to give this. Dr. Guillaume's views are in strong support of those usually taught in this country, that the first portion of the mesenteric gut generally lies to the left of the middle line, the succeeding coils being in front and in the pelvis. He points out that the arbitrary junction of jejunum with ileum is fairly constantly placed at the left pelvic brim. English anatomists will agree with these findings and will correlate them not only with the line of mesenteric attachment, but with the greater depth of the mesentery in the region of the ileum; but they will hardly feel inclined to agree with the suggestion that it might be possible to go, with any practical advantage, into more particular details of topography. It may be admitted at once that the material on which the anatomist works is not typical of young and healthy bodies, but in spite of that, and perhaps even on account of that, it represents a class likely to come under clinical observation and to call for clinical diagnosis. Yet even the anatomist who is accustomed to open these bodies hesitates to predict what he will find in the abdomens. Treves, Henke, Sernoff, Weinberg, and other investigators have reached divergent conclusions regarding the arrangement of the coils of the small intestine. Mall's primary loops are of developmental interest, and are recognisable to a great extent in the adult, but hardly bear on the present question. The situation of coils en masse, and also their disposition and direction, would seem to be related in some way to the arrangement of the large gut, but no definite laws on this matter have yet been laid down; the point is not dealt with by Dr. Guillaume. His work is of some interest to the clinician, but more observations will be necessary to establish the proportionate occurrence of the varieties he gives and to indicate the conditions concomitant with these varieties, so that the chance of an error in topographical intestinal diagnosis may be reduced to an absolute minimum—and this, we fear, will remain an ideal for many years to come.

THE SIROCCO FAN.

Sir Samuel C. Davidson who received the K.B.E. on the occasion of the visit of the King and Queen to Belfast is not indeed a medical man, but he has done a great deal for hygiene, particularly at sea. He is the inventor and manufacturer of the "Sirocco" fan which, first invented to dry tea, is now used so extensively, particularly in the ventilation of ships. There are at least 68 in the *Aquitania* and 74 in the *Olympic*, more likely 100 in each, but we may say, without fear of serious inaccuracy, that every large steamer uses them for forcing draught in the stokeholds; they are employed in the Royal Navy, while one of the tube railways and one well-known theatre are ventilated with their help. The Sirocco fan, which is made in Belfast, has not been materially improved by any foreigner though often pirated. It is of quite original design. The ordinary flat propeller fan has blades which, at different points ir length, move at very different velocities: fore drive the air along the air trunk at velocities at different distances from the nd so much energy is lost by friction and Sir Samuel Davidson had an inspiration, and devised a fan which uses a ring, an annulus, of blades only 1/20th of the distal end of the radii, all parts of which ring are sensibly moving at the same velocity. The moving part of the fan is shaped like a tall hat, but instead of the impermeable side, there is a sort of venetian blind arrangement of slats running the length of the hat from the brim to the crown, some 48 of them, and each with a slight uniform twist. The runner rotates in a trunk. Air enters in the centre and the appropriately curved slats, as they rotate, shave off the air near them, slip it through between them at great speed and take more continuously. They pass it through and send it on at a pressure three or four times what any other fan can get, and that is achieved with great economy of energy. Hence it is they are used in men-of-war where the deck openings must be kept as small as possible and yet stokehold pressures must be as high as possible. The Royal Victoria Hospital at Belfast is ventilated with the Sirocco fan, this prophet having some honour in his own country. With reference to Sir Samuel Davidson's honour, a regular correspondent writes to us: "I have two personal recollections of the Davidson fan. When the Royal Sanitary Institute met at Belfast Davidson told me that he had persuaded a man there who managed a tea-shop to have his shop properly ventilated, and that the man afterwards declared that he was very well satisfied, for since he had installed good ventilation his customers ate more cakes. But what is more important, I remember a ward of 40 beds in a ship with bad ventilation, stuffy and hot, and the men could not sleep at night. Two Sirocco fans, three feet each in diameter, were turned loose on it, ventilated and cooled it, and thereafter the men slept. It is a fine hygienic instrument, and has done great good at sea, and it was fitting that the Sailor King should have honoured one who has brought great benefit to seamen."

A STOMACH TUBE FOR INDUCTION OF LABOUR.

None of the various methods of inducing premature labour are free from disadvantages of one or another kind. The use of bougies is safe and certain, but may be very tedious, and the introduction of a hydrostatic bag, such as that of Champetier de Ribes, has the great objection that it displaces the presenting part and often produces a malpresentation, a serious complication when the child is premature. In some clinics rupture of the membranes is practised, and this has the merit of being simple and certain, but renders the labour a dry one, with its attendant risks to the child.

In the June number of the *Dublin Journal of Medical Science* Dr. Gibbon Fitzgibbon describes a method of inducing labour which is perhaps more simple and at the same time more free from danger than any hitherto suggested. On one occasion he found the bougies selected for an induction were spoiled in preparation, and in the emergency he made use of a 30-inch No. 22 stomach tube. He has since used this method in all private cases, and more recently in several hospital cases, and has never found it to fail. The tube must be of soft rubber (No. 20 to 24). The lips of the cervix having been exposed with a speculum and forceps, the end of the tube is passed into the cervix. If after about four inches are introduced the tube sticks, a slight twist on its long axis or a change in the direction of pressure enables it to be pushed right inside the uterus. It coils itself in front of the presenting part in rings about 3 inches in diameter, and when the os is half dilated can easily be removed. Dr. Fitzgibbon states that the tube has the following advantages over bougies: (1) greater ease and certainty of sterilisation; (2) practically complete absence of risk of rupturing the membranes; (3) in the uterus it is confined to the lower uterine segment and so avoids the possibility of disturbing the placenta and also of carrying infection up to the region of the placenta; (4) it is as stimulating as the bougies—in all probability it is more so, as it is all in the lower segment, and exerts a slight elastic pressure from its coiled position. Against these advantages two possible objections occur to us: one is that the tube may not be easy to insert into an undilated cervix, whereas bougies slip in readily; the other is that the coiled tube might displace the presenting part. *However, the method would appear well worth trial.*

At the same time we think that the method of introducing solid bougies, coupled with the digital separation of the membranes round the internal os as far as the finger can reach, if necessary under an anæsthetic, is the safest procedure to adopt.

THE PATHOLOGICAL AND BACTERIOLOGICAL LABORATORY ASSISTANTS' ASSOCIATION.

The organisation of assistants in pathological and bacteriological laboratories, known as the P.B.L.A.A., was founded some years before the war, but the evolution of its activities was practically at a standstill for five years, and it is only this year that it has been able to bring to a head the educational programme which is the chief object of the Association. During the past week the first examinations for certificates of proficiency in laboratory work have been held, and some 40 candidates have presented themselves in Edinburgh, Liverpool, Manchester, Bristol, and London. Before admission to the examination assistants must have been occupied in laboratory work under specified conditions for a period which varies with the age at which the candidate joined the Association; the examination, which is mostly of a practical character, is conducted by an examining council and examiners who are appointed by the council of the association in coöperation with the committee of the Pathological Society of Great Britain and Ireland. It may be taken, therefore, that the examination will be directed to testing the candidates' proficiency in the lines of work which those in charge of pathological laboratories desire their assistants to pursue. Every laboratory worker knows the value of good assistants in promoting medical education and the advancement of knowledge, and this scheme for raising their standard, for encouraging the boys when they first come to the job by giving them a definite status to aim at, and for arming those who are competent with evidence to that effect, will, we believe, be generally recognised as a substantial piece of progress. The secretary of the Association is Mr. A. Norman, New Haw, Weybridge, Surrey.

THE PARATYMPANIC SENSE-ORGANS.

In the *Arch. ital. di otol., rinol., e laringol.*, Vol. XXXI., 1920, Angelo Ruffini refers to the anatomical investigations of G. Vitali, some of which were published in the *Anatomischer Anzeiger* before the war. One of these discoveries Ruffini regards as of great importance, the existence of a small sense-organ or vesicle situated on the median wall of the tympanic cavity of birds and bats, innervated from the facial nerve. In the pigeon the vesicle has a diameter of 1 mm.; in other birds, for example, sparrows, its diameter is 0·5 mm. Vitali found that after its removal in pigeons the same results obtained as after complete removal of the semicircular canals. He set aside the contention that these results might have been due to injury of the canals when the tympanic membrane was perforated, for histological investigation showed, after removal of the paratympanic organ, degeneration of the vestibulo-cerebellar paths, of the cells of Deiter's nucleus and of the facial nucleus. From the position of this organ under the mucous membrane of the tympanic cavity Vitali concluded that it is an organ which reacts to variations of pressure within the middle ear, the pressure varying with the density of the medium in which the bird finds itself. The bird is thus enabled to determine the density of the medium in which it is flying, and to regulate the innervation of its muscular movements accordingly.

THE COLON AND COLITIS.[1]

[ABRIDGED]

By Lord Dawson of Penn, G.C.V.O., C.B., F.R.C.P. Lond.,
PHYSICIAN-IN-ORDINARY TO H.M. THE KING; PHYSICIAN, LONDON HOSPITAL.

Lord Dawson began the Annual Oration before the Medical Society of London by pointing out that the subject on which he was about to discourse was one that eminently lent itself to debate, so that he regretted that no debate would follow the oration. In an introductory passage he showed how the importance of the colon is manifested by the recurring experiences of daily life, being an organ with highly developed functional activity closely linked up not only with the alimentary tract but with the higher nervous centres. Before drawing the following clinical picture of colitis he pointed out that he was talking only of so-called mucous colitis and not of any condition associated with organic disease of the colon.

The Clinical Picture of Colitis.

The colonic manifestations are abdominal discomfort or pain, disturbance of the function of the colon as shown by irregularity in its evacuation and alteration of its contents, including the expulsion of mucus, and sometimes of blood or sand. By variation in their severity, by the ease with which they are provoked and the frequency of their occurrence, the foregoing features produce varying clinical pictures. Thus pain may be acute or paroxysmal, or dull and aching, or, again, there may be a constant sense of abdominal discomfort and misery. Tenderness may be local, general, or absent. Mucus may be passed in casts, as lumps or in stringy form. In some cases the disease comes on in attacks and at long intervals, and the patient is quite well between whiles; in other instances the intervals of immunity are short and even incomplete, and, it may be, to such an extent that the patient is chronically ill and liable to exacerbations of symptoms on the slightest provocation.

The descending colon will be felt to be tightly contracted, and sometimes in addition the cæcum toneless and distended. Examination by the sigmoidoscope will not usually at this stage disclose signs of inflammation, which shows that inflammation is not a necessary part of the condition; and in some cases where the mucous membrane is red and swollen such appearances may be evanescent and give place to normal appearances after a short interval. Infection does, in some instances, contribute to the picture, just as it is liable to follow disturbances of function in the urinary and biliary tracts. Such infection may be related to tonsils, gums, stomach, or appendix.

The appendix is seldom the focus of infection; more often it shares an infective process on equal terms with the colon; hence the results of its removal for colitis are commonly disappointing. Radiography shows the distal colon to be tonically contracted and irregularly segmented. Side by side with this may be disclosed varying degrees of delay—it may be in the cæcum, colon, in the lower ileum, in the second part of the duodenum. Further there may be displacements of the hollow viscera, such as a prolapsed cæcum and the familiar festooned transverse colon, or again, a movable ascending colon, hairpin bends, and kinks.

With our greater familiarity with X ray appearances in all varieties of cases we know how commonly anatomical irregularities can exist with bowels that function normally. When we recall how coils of intestine kinked and tethered by old adhesions can exist, and acute bends of the bowel be produced experimentally without causing stasis, we are led to conclude that, provided the musculature of the bowel is efficient, these anatomical irregularities need not count for much, especially in those portions of the bowel where the contents are fluid. In specimens examined by Sir Arthur Keith the lumen of the bowel was not encroached upon. and the coils above kinks were not hypertrophied. On the other hand. delay can exist without the presence of any anatomical abnormality. The holding up of the contents of the lower ileum by the ileocolic sphincter is a part of normal digestion. and hypertonicity of that sphincter will produce ileal stasis. In the same way tonic contractions of the descending colon will produce delay in the proximal colon. In short, the immediate cause of stasis lies in the intestinal wall. It is the musculature and its nerve innervation which count, and it is only seldom that anatomical irregularities play an important part.

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[1] The Annual Oration delivered to the Medical Society of London on May 23rd, 1921.

The orator then pointed out that it was of small benefit to perform ingenious operations to replace or fix viscera unless the anatomical variations produced symptoms calling for relief. He then demonstrated that the colon was not the only part affected, but that cardiospasm, gastric distension, flatulence, symptoms of duodenal ulcer, and affection of the upper alimentary tract may any of them be present, the colitis being one phase of a disturbed digestion in which stomach, duodenum, intestine, and pancreas may all play a part. The well-known features of alimentary toxæmia went far, in the orator's opinion, to give character to any given case of colitis. After commenting on the variability of the extent of this toxæmia and of its association with fibrositis and arthritis he proceeded to discuss the different types of abdominal response.

The Over-responsive Abdomen.

Consider now the patients themselves—observe the difference as to the sex-incidence. Some find females to preponderate largely (Hale-White 85 per cent., Hurst 83 per cent.); others do not (Douglas Wilson 57 per cent.). I rather think the number of males has been increasing in recent years, and, judging by the notes of my cases. I should conclude the percentage of women to be about 70 to 75. The feature which is noticeable with a large number of patients is the over-responsiveness of the abdomen to nerve impressions. They have "barometric abdomens." Fatigue, fear, anxiety, mental stress and strain manifest themselves in their hollow viscera. So do reflex disturbances. Women suffering from the disease often have pelvic disorders which aggravate the intestinal symptoms, and especially during menstruation. Or let these patients have cold extremities (and they often have poor peripheral circulation), especially when they are fatigued. or, again, let them eat when they are cold. and an attack of colitis may easily follow. So much is this the tendency that in dealing with these patients it is part of my routine directions to them never to eat with cold hands and feet, and when they are tired to keep their extremities warm. The effect will sometimes follow the cause with amazing quickness—such quickness as would not give time for any inflammation to develop. I suggest it is rather that reflex nerve disturbance or central nerve disturbance, acting on over-responsive hollow viscera, puts function out of action—certainly motor function, and probably secretory and excretory function also. The rhythm of the intestine becomes disturbed. It is the difference between the regular and the irregular heart, between perhaps normal muscular contraction and auricular fibrillation. Since each zone of the alimentary tract influences the efficiency of the zone below and perhaps above it, if one zone be disturbed the other zones suffer, and thus the orderly sequence of digestion is deranged. Given failure in the function of movement, in the function of secretion (internal and external) and the consequent irregularities of putrefaction and deranged absorption, and "colitis" receives a large measure of explanation.

This over-responsiveness of the abdomen varies in degree. With precautions learned of experience it may, ordinarily, cause little trouble, but should untoward circumstances like over-fatigue, anxiety, bad feeling, occur, the colitis symptom complex may result. But there are some people whose nervous system is cut so fine that the ordinary rough-and-[illegible] life is too much for them, and thus are [illegible]me of those examples of intestinal invalids [illegible]ver well, and in whom chronic ailing is [illegible]d by recurrent phases of acute symptoms. Such patients are not "neurotic." To call them so is a misuse of the term; they may, on the contrary, be heroic, working and even smiling in spite of the load they have to carry. Whether they become neurotic will depend largely on the considerations set forth in the following paragraph.

The Conscious Abdomen.

If a gastro-intestinal tract is constantly causing aches, pains and discomforts, it gets raised in consciousness, with the result that slighter and slighter disturbances and even its very doings produce impressions and discomforts instead of remaining unperceived. We thus get built on the basis of physical disease a superstructure of symptoms and distresses which flourish on themselves and tend to grow apace. There is thus a liability of a *conscious* abdomen being added to a *responsive* abdomen, or in other words, of a *state of mind* being added to a *state of body*.

The degree to which this happens in large measure explains the many varieties and intensities of symptoms occurring in patients who suffer from colitis; and here come in the temperament and character and training of the patient. The buoyant, cheerful temperament with a sense of humour will come off better than the inelastic and sombre temperament. A subject who is introspective and self-centred may be enslaved by the disease, whereas if the subject has the power of sympathetic interest in people and things, can control the mind, and has courage to work, he can, in spite of a colon which is a constant trial, live a tolerably useful life by keeping clear of the worst evils which accrue from the conscious abdomen.

The so-called "neurotic" group consists of those who have developed from their colitis the "conscious abdomen" and have introspective minds. To be neurotic is no essential part of colitis, though it is small wonder that many of the patients become so. It remains, however, a secondary incident, not an essential feature of the disease. How damaging the "conscious abdomen" can become is illustrated by that well-known type of patient who becomes so analytical of the feelings, doings, and contents of his colon as gradually to abandon aught else and live for his lower bowel.

The orator then in a brief digression suggested that the medical profession ought to take up in a large-minded spirit the question of psychical treatment, for the patient with colitis who is in danger of being crushed by his illness is not helped by being dubbed a neurotic. He then referred to the suggestive researches of Sir Arthur Keith into the nervous mechanism of the alimentary tract, and recalled the apt comparison made by the latter between the nervous mechanism of the alimentary tract and that of the heart. He continued:—

We are well acquainted with tachycardia, irregularity of rhythm, fibrillation—heart-block and the responsiveness of heart action to extrinsic impulses. Why should not corresponding irregularities occur in the alimentary tract? And if to disturbed motor function we add the supposition of disturbed secretion and the effect of both of these on the intestinal contents, I suggest the clinical phenomena of colitis receive a considerable measure of explanation.

Stasis, though not a necessary, is quite a common feature of colitis. The two conditions often present one and the same clinical picture, and in their pathological findings there is a close resemblance. They are variants of the same morbid state and the same case may be styled colitis by one observer and intestinal stasis by another.

Alimentary Toxæmia.

Although the term alimentary toxæmia presents to our minds a definite clinical picture the mode of production of the condition is obscure. We may reasonably suppose that a high content of waste products and a damaged intestinal wall are the conditions which favour the passage of toxic products. And these are the conditions which exist in the large intestine in colitis, and sometimes also in the lower ileum. Stasis is not a necessary factor, for in ulcerative conditions of the colon associated with diarrhœa alimentary toxæmia may be a marked feature. Again, strong purgatives, by irritating the intestinal wall, may aggravate rather than allay an existing toxæmia. In colitis there is a retention of contents in the recesses of the colon even when the bowels are open; the latter, in short, do not sweep clean. The degree of toxæmia would depend on the nature of the contents which the colon receives from the ileum, the length of stay of such contents in the colon, and the measure of weakness of the colon defences.[2]

But in cases of colitis and stasis the colon and ileum are not solely responsible for alimentary toxæmia; for the latter will sometimes persist after ileo-sigmoidostomy and colectomy.

The orator here described in detail two cases showing colitis, stasis, and toxæmia in illustration of his statements. He went on to point out that even when the damaged colon has been put out of harm's way and prompt evacuation secured toxæmia may persist. This means that there is a second line of defence, the liver, and that this line may also fail. The colon and liver would thus seem to have a joint responsibility. In some cases the colon defences may have failed so badly that the flood of toxic products is more than even a normal liver can cope with. Given such circumstances, colectomy should succeed. In other instances the liver has a substantial share of responsibility, and then the results of colectomy will be clinically disappointing, even if technically successful.

He referred briefly to the similarity of the symptoms of a "chill on the liver" to those shown after a second injection of a horse serum, and suggest the possibility of an anaphylactic origin of certain attacks of colitis; Dr. A. F. Hurst had pointed out certain suggestive parallels between asthma and colitis. The orator proceeded in conclusion, to discuss the question of treatment.

Treatment.

Owing to the complexity of its origin and the variety of its manifestations, mucous colitis is difficult to treat. The coarse food rich in cellulose advocated by Van Noorden is not a success. It irritates the intestine, and is prone to produce gas. The food should consist of light solids—for example, white fish, first cooked meats, dishes made with eggs, light puddings, &c. Soups should be taken sparingly or avoided. Only a little fluid should be taken with the meals, but sufficient between meals. Fruit and vegetables are a problem; they are often difficult to digest, yet from the point of view of nutrition desirable; mashed potato, cauliflower, and cooked celery and lettuce agree, and of fruits apple is the safest.

In intractable cases the limitation of vegetables and fruit has often to be strict and by some authorities a paste (macaroni) diet is prescribed for a period. The disadvantage of a too-restricted diet is twofold—it discourages the patient, and is apt to result in an insufficiency of essential foodstuffs and vitamins. The latter may be given separately where foods containing them cannot be tolerated in adequate quantity. Sometimes fruit and even raw vegetable like lettuce can be tolerated if taken alone, whereas they remain undigested if mixed with other food. And, generally, colitis patients do better by taking only two main articles of food (courses) at a meal.

It is important for the extremities to be warm, and especially before eating. If the body or mind has been engaged in effort a few moments of repose and relaxation should precede the taking of food. It will often be found that these patients cannot take vigorous exercise of both body and mind on the same day. A business man is often better with only gentle exercise during the week, reserving his physical exertion for the week-end. Where the patient's abdomen is over-responsive the treatment advised should have regard to that fact. Fatigue, stress, and anxiety must be guarded against where possible. Periodic rests, such as a weekly or fortnightly day in bed, helps to secure this end.

A great deal can be done by educating the mind not only to concentrate, but to detach and relax quickly. This is an important aspect of treatment. Physical culture holds an established position. Surely psychical culture is of like importance. The power to rest quickly and relax deliberately is essential to those who feel acutely and work strenuously. Drugs that aid digestion, like taka-diastase and pancreatin, do good. Sleep is apt to be disturbed by distensions of the hollow viscera. Bismuth and sodium bicarbonate with carminative, and if necessary a few minims of nepenthe, given at bedtime, will help this condition. Aperients should be gentle, and for clearing the bowel castor oil is the best. Very often little aperient is needed if paraffin is taken regularly, though there are patients in whom paraffin is ejected alone and even incontinently. Special care in the use of aperients is needed when bacilluria exists. An essential indication is to secure the emptying and cleanness of the colon. This is secured by intestinal lavage. Bismuth in bulk (℥ ij.) administered in bread and milk or jelly taken every week or ten days is often of benefit. It seems to act by scouring the colon. Where there is much fermentation an ounce of wood charcoal may be mixed with the bismuth. Intestinal antiseptics are disappointing.

Where the above measures fail to secure evacuation and cleansing of the intestine appendicostomy is a sound and safe procedure, and is often productive of considerable benefit.

Colectomy.

Sufficient experience has now been gained to pass the operation of colectomy under review. The results as a whole have not been encouraging. Apart from its magnitude and therefore risk, the operation seldom restores to a patient anything approaching a normal life. Patients will express doubts as to whether they have gained enough to have made the operation worth while.

As the cases quoted above show, technical and clinical success do not always go together. Further, there are not a few instances where the operation completely fails in its objects and leaves the patient as wrecked if not more wrecked in health than before. Now and again the results are excellent and succeed where previous measures have failed. I have under observation a case in which a transformation was effected by colectomy, and now, after ten years, the patient continues in good health.

The indications for colectomy would seem to be: 1. Where the motility of the colon is so spent that all other measures fail to prevent stasis within it. 2. Where the colon is so damaged in its defences that, in spite of every effort to keep it cleansed, toxic products get through in such abundance as to ruin the health of the patient. But here, too, there is risk that the second line of defence in the liver may be damaged also.

Hemicolectomy.

Hemicolectomy is on a different footing. The operative risk is small, and if it fails in its object there is little risk of the patient's condition being worsened. If the failure of function is in the proximal colon the prospect of success should be good, especially if the ileo-colic valve is preserved in the implanted portion, as has recently been done. Unfortunately, however, there is sometimes too much mischief in the distal colon for the operation to be adequate. When such is the case and a complete colectomy appears to be inevitable, I suggest that it is worth while considering in each case whether colotomy would not be efficient and preferable. The thought of colotomy is, no doubt, in discord with a fine surgical sense, and its performance carries a feeling of disappointment to the surgeon that circumstances do not permit him to do something better. But in relation to this particular problem it has advantages. It is a simple operation, patients achieve a considerable accommodation to its inconveniences, and, if it fails, further surgical procedures are not precluded.

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[2] Graham Brown has described an amine (p-hydroxy-phenylethylamine) which is formed in the intestine under conditions of stasis by the putrefactive destruction of proteins through the action of anaerobic bacteria. This toxin is converted in the liver into p-hydroxy-phenylacetic acid, and as such can be found in the urine in cases of alimentary toxæmia. It acts on the sympathetic producing hypertonus.

On the other hand, complete colectomy is the last and irretrievable word; it offers but a modest prospect of success, and its failures, not a few in number, are sometimes apt to be such dire failures as to mean for the patients misery and suffering little capable of alleviation.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Staffordshire County Council.

IN his annual report for 1919 Dr. George Reid has omitted the summary of the district reports which he was in the habit of making before the war because of the high cost of printing and because the County Council could hardly take action, involving expenditure, at the present time. He states, however, that the reports give considerable prominence to the question of housing. The county health visiting scheme makes good progress. Previous to 1919 two centres for infant welfare and school medical work had been established under the joint scheme of the County Council and County Education Committee. Since that date ten new centres have been established. During the year an Infant Welfare Travelling Exhibition has been purchased and has toured through the county with good results. Twenty-one women have been sent for training as midwives, five subsidies have been granted to practising midwives, and six new local nursing associations have been formed; an income scale has been fixed governing the recovery of fees paid to doctors called in by midwives. It has been necessary to be content with a lower standard for sewage effluents, owing to the deterioration of some of the sewage disposal works during the war. Of the two venereal disease centres already established, the centre at the Wolverhampton General Hospital has been a great success, but the North Staffordshire Infirmary Centre may have to be discontinued owing to the small attendance. Two subsidiary centres have been begun at Tamworth and Lichfield, and there have been negotiations for others at Leek and Walsall, and in connexion with the hospitals at Stafford and Stourbridge. The medical practitioners have coöperated in the scheme and about 20 of them have qualified themselves for the administration of salvarsan or its substitutes. The number of Staffordshire cases of venereal disease treated during the year is given as 666, and the estimated population of the administrative county (for death-rate) as 674,671. The number of midwives practising in the county was 284, of whom 57 were over the age of 65. The mean number of cases attended per midwife in the three divisions of the county was as follows: North, 27·4; Central, 23·3; South, 65·2. Midwives attended 70 per cent. of the births in 1919 and 66 per cent. in 1918. Medical help was sent for by midwives in 1809 cases, as compared with 1165 in the previous year, and Dr. Reid attributes the extraordinary increase to the fact that the County Council now pay the fees of the doctors called in. The figures show that the midwives sent for medical help in more than 17 per cent. of their cases.

The number of cases of ophthalmia neonatorum reported was 85, 60 slight and 25 severe. Of the 25 severe cases 18 recovered without injury to sight, 5 died from other causes, and 2 suffered slight damage to sight. A clear history of venereal disease was established in 38 cases. The loss of sight among the survivors of the severe cases reported during the last three years (who numbered 72) amounted to one eye in one case and both eyes in another. Of the 284 ising midwives, 275 are able to read a thermo- 261 are able to read and write, and 189 are pass a catheter.

The birth-rate was 21·5, to be compared with 24 for the previous quinquennium; the death-rate was 14·0 compared with 15·0. The infant mortality rate in the urban districts was 96 and in the rural districts 72, compared with 103 and 83 respectively during the previous year. There was a great reduction, as elsewhere in the country, in the number of notifications of tuberculosis. Dr. Reid explains this by the swelling of the numbers in the early years of notification by the inclusion of old-standing cases. There was, however, a great reduction throughout the country, both in deaths and notifications from tuberculosis of the lungs in 1919, compared with the war years, and it is possible that this reduction was largely due to the cessation of war industrial work, taken up or continued from patriotic reasons by persons of both sexes who were unfit to stand the strain.

County of Dumfries.

The annual report for 1919 shows that the population of the county for 1919 was 46,458. The birth-rate was 21·7. Of the 1009 births, 120 were illegitimate. The death-rate for the county was 13·06 and the infant mortality rate 89·2. Dr. J. M. Ross records an outbreak of mild scarlet fever in the parish of Sanquhar and thinks its spread may have been helped by the picture house, which was extremely popular and crowded at every performance during the outbreak. There was no special prevalence of diphtheria compared with previous years, 75 cases being notified with three deaths. As in other districts, a decrease is recorded in the notifications of tuberculosis. Dr. J. Ritchie, the tuberculosis officer, says: "The sharp rise in the number of notifications of tuberculosis in 1916 and its subsequent decline is of interest. It may probably be connected with the influx of war-workers from other parts of the country, which took place about that time." The county sent 11 patients to the Westmorland Sanatorium, 4 to the Bridge of Weir Sanatorium, and 12 and 19 respectively to Lochmaben Hospital and Dumfries and Galloway Royal Infirmary. It would seem from the report that a sparsely populated county like Dumfries is an ideal district for the extensive use of shelters, and the following remarks by Dr. Ritchie on this subject are of interest (p. 27):—

> "I am inclined to believe that of all measures at present available throughout the county for anti-tuberculosis work the provision of shelters is, perhaps, the most important. Provided that the patients are not too far advanced when commencing shelter treatment, and that they are sufficiently intelligent and conscientious to carry it out properly, excellent results may be obtained. Many patients, conscious of the benefit they have experienced, become enthusiastic devotees of shelter life, and one is not infrequently faced by the dilemma of having either to take away a shelter from a patient who is anxious to continue 'shelter life,' or to leave unprovided one who is anxious to begin it. There are at present four patients in the county who were provided with shelters during 1914 and have used them constantly since. All had well-marked pulmonary tuberculosis and were excreting tubercle bacilli when they were introduced to 'shelter life'; and although one might hesitate to say definitely that they have been cured, in three cases the disease has been arrested and the patients are fit for full work, while in the fourth there has been great and progressive improvement and the patient has been doing light work for several years. That equally good results could have been obtained by treating those patients without shelters is very questionable; and to compel them against their strongly expressed wish to return to the relatively unhygienic conditions of cottage life—with the possibility of causing a recrudescence of the disease—in order that their shelters may be used by other patients, is a responsibility that one is rather chary of assuming."

The report includes a housing survey of the five districts into which the county is divided, and also schemes and estimates for the extension of the Rockhall waterworks. As elsewhere, the sewage disposal works have deteriorated owing to the war from lack of attention. Under the heading "Dairies," Dr. Ross says:—

> "Efforts are being made to improve the quality by the institution of a system of 'graded' milk, under which a higher price may be charged if a certain percentage of marks for condition of premises, cows, milkers, &c., is obtained.

The idea is good so far, but behind it lurks the danger that the less wealthy consumers may have to be content with milk of a poorer quality."

The report concludes with particulars of sanitary conditions in the five small boroughs in the county: Annan, Sanquhar, Lockerbie, Moffat, and Langholm. The burgh of Annan has had an extraordinary experience in overcrowding. The population in 1914 was 3851 and in 1917–18 rose to 5517. Since the Armistice the population has gone down to 4205 in 1919.

Stafford.

The annual report for 1920 shows that the estimated population is 27,762, and the birth-rate was 22·4, as compared with 17·9 in the previous year. The death-rate was 10·66 and the infant mortality rate, 65·9, was the lowest ever recorded. The death-rate from pulmonary tuberculosis is rather high, 1·08 for 1918 and 1·26 for the decennium 1910–1919, and Dr. C. Banks points out that this disease is "somewhat prevalent" among the boot and shoe operatives. Dr. Banks condemns the use of wooden tubs as receptacles for house refuse. He also thinks that "more might be attempted in the way of preventing the access of impurities to the milk during the course of milking and distribution," and that "there is much unnecessary exposure of food-stuffs such as bread, pastry, sweets, and other articles, permitting pollution by dust and flies." There is an active infant welfare centre, and it is mentioned that "in Stafford very many girls are employed in the factories up to marriage, so that they have little opportunity of getting to know anything about the management of children." Six cases of ophthalmia neonatorum were notified during the year and all were cured without permanent blemish. Stafford has its housing question: under the council's scheme for erecting 440 houses on two estates, 32 houses were completed and occupied by Dec. 31st, 1920. There are at the present time 91 houses in the borough which are unfit for habitation, but they cannot be demolished until facilities exist for rehousing the occupants.

Leicester.

The annual health report for 1920 states that the estimated population for 1920 was 245,465. The general death-rate was 11·7 per 1000, the lowest ever recorded. The infant mortality rate was 89·4 per 1000 births, again the lowest on record. Only once before has the infant mortality been under 100—viz., in 1919, when it was 98. The mortality rate among illegitimate infants was 145. The tuberculosis death-rate is also lower than ever. The rise in the death-rate from pulmonary tuberculosis which occurred during the war has now disappeared, in spite of the over-crowding, and acute shortage of houses. The birth-rate showed a remarkable increase—viz., to 21·0 from 15·3 in the previous year, and the marriage-rate was also very high. To quote from the report:—

> "The two principal industries of Leicester are hosiery and footwear, but there are many other important trades—e.g., engineering, tailoring, cardboard-box making, elastic-web manufacture, printing, &c. With the exception of the boot and shoe trade, which is recognised as being a bad trade for tuberculosis, none of these industries can be regarded as being inimical to health."

A large amount of female labour is employed.

> "At the last Census, in 1911, 47 per cent. of women were returned as being engaged in occupations other than in the home."

One of the events of the year was the opening of the new municipal maternity home with accommodation for 26 patients. The number of confinements in
[illegible] new home during the first quarter of 1921 was 99.
[illegible]ter is well provided with the amenities of a
[illegible] city, and the amount of ground used for allot-
[illegible] said to be much above the average, a fact to
[illegible] C. K. Millard attaches great importance. In
[illegible] on the high marriage-rate, Dr. Millard
[illegible] the impossibility of getting houses may
[illegible] seeing that young
[illegible] he parents, and are thereby
[illegible] utlay of starting housekeeping. He considers that the increase in the birth-rate adds to the seriousness of the housing shortage, the increase of the population in 1920 being 3060.

The soft water from the Derwent was found to act on hot water pipes and lime has now been added to prevent this. The pail-closets have been converted into water-closets, but there are many houses which only have a share in a water-closet. Much difficulty arises over defective dustbins, and Dr. Millard suggests that the corporation should replace them when necessary. "As almost every ratepayer uses a dustbin, nearly all would stand to benefit by the arrangement." Although there is a municipal abattoir, there are still 55 registered slaughter-houses which "should be got rid of as soon as possible."

Dr. Millard estimates that 90 per cent. of the native-born population of Leicester under the age of 36 are unvaccinated. There were three deaths from enteric fever during the year. Of 101 notified cases of ophthalmia neonatorum, in only one case did permanent blindness or serious injury to sight result. The notified cases of pulmonary tuberculosis as well as the deaths showed a marked decrease. There has been a slight decrease in the number of new cases presenting themselves for treatment at the special (V.D.) clinic at the Royal Infirmary. At St. Mary's Home 12 beds are reserved for unmarried girls suffering from V.D. who are without proper lodging or accommodation. These cases remain under treatment at the expense of the corporation so long as they are considered in an infectious condition. Such provision is undoubtedly of great value. Some difficulty is experienced in getting pregnant women suffering from syphilis to accept treatment. The babies of ten such women treated in 1919 were all born healthy, and the nine still surviving are believed to be still healthy.

Very successful lectures on sex hygiene have been given to the boys and girls leaving the secondary schools. The lecture to boys was given by Dr. Vincent Shaw, and that to girls by Prof. Winifred Cullis, D.Sc. Dr. Millard has much to say about the housing shortage and the "exasperatingly slow" provision of new houses. The scheme of the sanitary committee for bringing the older houses up to date was stopped by the war, and it has not been possible to resume it owing to the financial position of the owners. According to Dr. Millard great difficulty is experienced in getting even ordinary and necessary repairs carried out. Some of the defects in the older houses mentioned by Dr. Millard are: The want of a separate water-closet; a common tap in the yard for the supply of water; the absence of a sink with waste-pipe; the absence of a copper, or facilities for washing clothes; kitchen ranges with no boiler or an inefficient oven; no provision for food storage, &c. There is a very active maternity and child welfare campaign in Leicester, supported by voluntary workers. The antenatal clinic is now well patronised. Hospital treatment is provided for sick infants at the isolation hospital (15 cots). There are now two maternity homes to meet the need aggravated by the house shortage.

As regards tuberculosis, the report states that the medical men of the city, as well as the general public, now fully realise the value of the dispensary as a centre for diagnosis. Twelve shelters are available for loan to patients for use on their own ground, free of charge. More time has been available for the examination of contacts during the past 12 months, though not nearly so much as was desired.

HEALTH OF THE BELGIAN CONGO: A CONFERENCE.—Dr. A. J. Orenstein, chief of the Rand Mines Department of Sanitation and formerly chief assistant to the late Surgeon-General Gorgas during his sanitary work in the Panama Canal, has left Johannesburg, South Africa, on a visit to the Belgian Congo, in order to confer with the Belgian authorities on schemes to improve the health of the Congo. It is hoped that with the drainage of certain tracts the incidence of malaria will be greatly diminished, and that in other ways the general health conditions of the district may be improved.

Correspondence.

"Audi alteram partem."

THE ARM-TRAINING SCHOOL AT ROEHAMPTON.

To the Editor of THE LANCET.

SIR,—The account of the Arm-Training School at Roehampton which Dr. C. Jennings Marshall contributed to your issue of June 25th cannot but be gratifying to the surgeons who have been working at Queen Mary's Convalescent Auxiliary Hospitals for the last six years and to Captain Rowlatt Maxwell, late C.F. Chief Arm Instructor to the Ministry of Pensions.

But while congratulating Dr. Marshall on the accuracy with which he has reproduced the result of the experiences which Captain Maxwell communicated to him, I cannot but regret very deeply that he has omitted to acknowledge the source of his information. First at Charterhouse Military Hospital and since at Roehampton and all over the United Kingdom Captain Maxwell has done invaluable work in educating amputees to make a good use of their arms, and he should receive every credit for his efforts and achievements.

I am, Sir, yours faithfully,

E. MUIRHEAD LITTLE,

Visiting Surgeon to Roehampton Hospital under the Ministry of Pensions.

Seymour-street, Marble Arch, W., June 29th, 1921.

*** We regret that in the same issue of THE LANCET as Dr. Marshall's account of the Arm-Training School at Roehampton we did not remind our readers of the circumstances in which the hospital came into being. They were noted at the time, but might well have been repeated. The hospital was first started in 1915, with Mr. E. Muirhead Little, Mr. T. H. Openshaw, Mr. A. S. B. Bankart, Mr. R. C. Elmslie, and Mr. E. M. Corner as the honorary surgeons in charge of the actual work of the hospital. Early in 1916 the committee of the hospital decided to appoint one orthopædic surgeon in supreme charge, and Mr. Little was asked by his colleagues to accept the post. He held this post with results which must be extremely gratifying to himself and to his orthopædic colleagues until the control of the surgical work of the hospital was taken over by the Ministry of Pensions in April, 1920. Since this time Mr. Little, Mr. Openshaw, and Mr. R. H. Campbell have been visiting surgeons until the present moment, when Mr. Little remains in single responsibility. There are three resident surgeons, and if this seems a large staff, it must be remembered that there are not only 200 in-patients whose needs have to be met, but a very large number of out-patients, while as many as 600 artificial limbs are turned out every month, and a vast mass of repair work is discharged. Captain Rowlatt Maxwell, the officer who is depicted using the artificial arms in the illustrations to Dr. Marshall's paper, initiated arm-training in this country. His practical work, first at the Charterhouse Military Hospital and since at Roehampton and many other centres in the United Kingdom, has been of the first importance to orthopædics. We regret that we did not append to Dr. Marshall's article a résumé of the history of the hospital.—ED. L.

"PSYCHOTHERAPY."

To the Editor of THE LANCET.

SIR,—The practical meaning of the title at the head of the following remarks may fairly be taken as "treatment of mental disorder." "Therapy" implies disorder, and the qualifying word "psycho." on the analogy of the old-established term "psychology," does not imply any preconceived theory as to the genesis of what we call mind, or even suggest any particular definition of the term "mind." But in recent years and with rapidly increasing frequency, both in medical and daily-journalistic literature, we find the term "psychotherapy" applied to the treatment now known as "psycho-analysis," of which the basis is Freud's doctrine of the "Unconscious Mind." The article by Dr. S. Herbert in your issue of June 11th gives me the impression that the author greatly underrates the importance that is attributed by English alienists and neurologists to the sex-factor in the genesis of mental and nervous disorders. He says, for instance, that "there still exists among English psychotherapists" (here duly using the word in its proper meaning) "a good deal of reluctance to recognise to the full the importance of the sex-factor as a cause of psychoneuroses"; and, further, that "those who *try to minimise* the sex-factor should not *forget* that man is polyerotic"! The only other quotation I need make from Dr. Herbert's letter is as follows, "It is the recognition of the sex-factor which enables *us* to deal with such neuroses in a *satisfactory* manner, and effect a *proper* cure by means of *psycho-analysis*" (italics mine).

I think that it may be fairly inferred from the passages quoted that Dr. Herbert, who, in writing thus to THE LANCET, is addressing psychotherapeutists who do not accept the larger part of Freud's teaching, is both identifying "psycho-analysis" with "proper treatment," and is ignoring the fact that at least the majority of English medico-psychologists, in studying any case of mental disorder, are not only well aware of the importance of the sex-element, but also make practical use of that knowledge both in diagnosis and treatment. Nor is this knowledge and practice by any means confined to specialists in medico-psychology; it is widespread among the general body of practitioners. Again, the undoubted fact of the "polyeroticism" of the human being is not denied by anyone who would not deny that humans are animals. Any student of even the earliest psychological works of the great philosopher and alienist, Henry Maudsley, so recently lost to us, must recognise that the importance of the sex-factor in the genesis of mental disturbances, at the least, was emphasised by accredited teachers long before this doctrine was exaggerated, transformed, and linked up by Prof. Freud and others with what most scientific thinkers deem to be a false psychology.

I have no intention to enter here into fuller criticism of the Freudian teaching or of the growing tendency, which is affecting the public at large, to identify not only "psychotherapy" but "psychology" itself with "psycho-analysis"; nor can I dilate on what I know to be the evil and dangerous effects of the practice of "psycho-analysis" in some hands and in certain cases. Such cases are, of course, not published. Nor could they be published in any detail, even for the patient's sake alone, who might readily be identified in even anonymous reports.

But this much may be said about polyeroticism, its relation to psychotherapy, the causal part it plays in mental disorder, and the increasing attribution (now made by many) of the psychoneuroses to repressed eroticism, whether "poly" or "mono." There is no doubt that in certain periods and certain circumstances the prevailing repression of the sex-impulses leads to the establishment of some form of neuropathy or psychopathy. But a great measure of this "repression" is the rule of custom in nearly all civilised countries. It is, indeed, one of the essential and first elements of human civilisation. Yet neuropaths and psychopaths are still far from dominating any civilisation by their numbers. What *may* happen, at least for a while, if the practice of psycho-analysis should spread still further among us, is a question of grave import.

One last reflection, aroused afresh by the deeply interesting and weighty Croonian lectures on the "Objective Study of the Neuroses," delivered in June last by Dr. F. L. Golla at the Royal College of Physicians of London. The whole trend of the popular hypothesis underlying the Freudian doctrine and treatment tends to distract attention from the methods of experimental psychology in studying the normal and morbid workings of the brain and the rest of the nervous system. By such methods alone—not by assumptions and guessing—can an approximately true science and practice of medico-psychology be attained.

I am, Sir, yours faithfully,

July 2nd, 1921. H. BRYAN DONKIN.

THE ACTION OF TARTAR EMETIC IN BILHARZIASIS.

To the Editor of THE LANCET.

SIR,—In papers and annotations dealing with the cure of bilharzia with tartar emetic the point has been mentioned as to whether the worms or the eggs are first affected by this drug. For several years before the discovery of the tartar emetic cure I had been experimenting with various methods, and I had found one which in my hands gave very encouraging results. The starting point of this treatment was that I had observed that the urine of bilharzial patients, who from any cause had to be in bed on a fluid diet, improved considerably, but that soon after they received full diet again the previous condition was restored. I regarded this diminution of the external evidence of the bilharzial infection as due to the fact that, owing to the reduction in the quality of the portal blood, the worms were producing eggs in greatly reduced quantity. There can have been no question of any direct effect on the eggs from such treatment. The decrease was noticeable after about a week of treatment. I received confirmation, or what I looked on as confirmation, of this view from the fairly numerous cases of Egyptian fellaheens, who, being accustomed to live very frugally at home, complained, shortly after their arrival in the Sudan, where they were comparatively richly fed, that their urinary trouble, which before had been slight or unnoticed, had become tiresome and severe. In the course of my experiments I was able to reduce or increase the number of eggs passed practically at will.

My view which developed from these observations was that the usual time for a crop of eggs to take from the worm to the urine was five to seven days by the normal routes, but, of course, many eggs missed their way and took much longer to arrive. As the improvement in cases of bilharziasis takes place in much about the same time, I have always considered that the first effect of tartar emetic was to limit the production of eggs. In the article by Archibald and Innes in the *Journal of Tropical Medicine*, April 1st, 1919, on a so-called fatal result from tartar emetic treatment of bilharziasis in an Egyptian soldier who died of influenza, bilharzial eggs were found in the tissues but no worms could be discovered. Further, I find that the eggs in cases of *Bilharzia Mansoni* take a longer time than in vesical bilharziasis to become brown and granular, and this points again to the worms and not the eggs being primarily affected.

I am, Sir, yours faithfully,
V. S. HODSON,
Director, Khartoum Civil Hospital.
Khartoum, June 16th, 1921.

“CIRCULAR 202.”

To the Editor of THE LANCET.

SIR,—Circular 202 on the Prevention and Treatment of Venereal Diseases, recently issued by the Ministry of Health, must, on the whole, be welcomed by those who believe that instruction in the methods of self-disinfection is a necessary health measure for the prevention of venereal disease. True, the circular states that the Government, because of the moral and social considerations involved, cannot give its “official support” to self-disinfection, yet, although self-disinfection in exact terms is disavowed, the principle of self-disinfection is strongly supported. This is seen in a later paragraph, where the Minister advises the issue of leaflets warning the public that it is the *duty* of all individuals who have incurred the risk of contracting disease *to cleanse themselves immediately and thoroughly, and thereby diminish the risk.* “Cleansing immediately and thoroughly,” presumably with soap and water, is nothing else but a form of self-disinfection; the use of soap and water is neither so effective nor in many cases so readily available as is the employment of a portable disinfectant such as permanganate of potash, but the principle in the two cases is identical. The circular is therefore a distinct advance on past pronouncements of the Ministry on the subject.

But there is an even greater concession. Later on in the circular it is stated that the Minister considers it desirable to state that he is advised that a chemist does not commit an offence against any Act of Parliament by selling substances “capable of being used as disinfectants against venereal diseases.” The clear inference to be drawn from this statement is that although the Government can give no official support to self-disinfection, yet the Minister is so alive to its value that he goes out of his way to add a paragraph directly encouraging the practice.

Although some of us may regret that the support given to self-disinfection is not so whole-hearted as we could have wished, yet allowance must be made for a Government which is attempting to deal with a subject upon which many people hold strong convictions. Experience has taught me to recognise that the advocacy of a policy of self-disinfection, on first consideration, always arouses strong opposition in certain quarters because of the conviction that it may prove an incentive to immorality, but I believe that if only the whole facts of the case are clearly and calmly discussed the opposition is to a great extent disarmed. I have formed this opinion as a result of the course of events in Portsmouth, and I am further strengthened in this opinion by the fact that the Special Committee of the National Birth-rate Commission, a body composed under the chairmanship of the Bishop of Birmingham of individuals whose names alone are a sufficient guarantee that no practice which tended to encourage vice would ever receive the slightest recognition, have reported strongly in favour of a policy of instructing the public in the methods of self-disinfection.

I regard Circular 202 as a step in the right direction, and I feel confident that it will not be long before a still further advance is made towards the policy so strongly advocated by the medical profession as being the best practical means for controlling the most serious menace at the present time to the health of the nation.

I am, Sir, yours faithfully,
A. MEARNS FRASER,
June 28th, 1921. Medical Officer of Health, Portsmouth.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—Dr. W. J. Grant, in THE LANCET of June 25th, still entertains misgivings in regard to many errors in physics which I am supposed to have committed. Let us define the issue. One of the facts I attempted to establish in my paper is that under the influence of digitalis we often get a decline in the systolic and diastolic pressure at the very moment when the output of the heart per single contraction is increased. I maintain that it is a physical possibility to obtain an increased volume of flow per unit of time through the circulation *under these conditions.* My reasons for such an assumption are as follows:—

1. During the systole the velocity of the blood in any part of the arterial circulation is about three to four times greater than during the diastole. It follows from this that if the systolic output is increased a greater amount of fluid in the arterial system circulates at a greater speed than under normal conditions. In these circumstances the total volume of blood leaving the arterial system in a given time might be greater than normal. On this supposition the arteries would contain less blood during the diastole than normally. But as the systolic pressure is made up, (other conditions remaining the same), of the volume of blood contained in the arteries during the diastole plus systolic output, it follows that this pressure might become lower than normal, although the single

systolic output is greater than before. I say, therefore, that provided the force of the heart is increased at each systole, one might get an increased flow of volume through the arterial circulation without a rise in the systolic pressure.

2. It is a fact that the lower (owing to increased cardiac output) the pressure in the veins near the heart, everything being equal, the greater the difference in pressure between the capillaries and the veins near the heart. I say that under these conditions it is possible to get an accelerated flow of blood through the veins per unit of time without a rise in the pressure of these vessels. (Dr. Grant says it is impossible to get an increase of flow through the veins without an increase of pressure on the venous side of circulation. He will be surprised to learn that, as a matter of fact, in cases where there is an increase of pressure in the veins, as in heart failure, the velocity of blood in these vessels is diminished.)

Dr. Grant may consider these facts an infringement of the elementary laws of physics, but they happen to be elementary principles of physiology. The issue is simple. Dr. Grant asks in his first letter "How it is possible to obtain an increased flow of volume per unit of time through the arterial system without either dilatation of the capillaries or rise of the blood pressure," and being quite sure that such a thing is a physical impossibility, he thinks that the conclusions arrived at in my paper are "improbable." I on the other hand say that if he had been acquainted with the elements of physiology he would have been unable to discover any of the numerous errors in physics which he thinks I am guilty of. It is for readers of THE LANCET to judge between us, and I am sure they will not be misled by empty phrases such as "physical laws."

I will not discuss the question raised by Dr. Grant in his second letter in regard to systolic pressure and output. He accepted my proposition in his first letter, and the discussion cannot be diverted from the original issue. All I will say is that his arguments in his second letter are as powerful as those in his first.

I am, Sir, yours faithfully,

Liverpool, June 25th, 1921. I. HARRIS.

ON DEATH FROM RESPIRATORY AND NOT FROM CARDIAC FAILURE.

To the Editor of THE LANCET.

SIR,—It has fallen to my lot on four occasions when operating for cerebellar abscess to have witnessed sudden and complete cessation of respiration, apparently from paralysis of the respiratory centre. In each of the four cases there was no interference with the cardiac centre, the pulse-rate being quite unaffected. In each case artificial respiration was kept up while the abscess was opened and drained with all possible speed. So soon as the undue intracranial pressure was relieved by the evacuation of the contents of the abscess cavity normal respiration was restored, thus confirming Sir Dyce Duckworth's dictum, "That the respiratory centre is clearly more sensitive than its neighbour the cardiac centre, and is the first to yield under undue intracranial pressure." These four cases are referred to in "Diseases of the Ear" (Milligan and Wingrave).

I believe that excessive intracranial pressure so constricts the lumen of the smaller blood-vessels of the brain that such a state of anæmia supervenes as to prevent the working of the various higher nerve centres, the most sensitive—viz., the respiratory—giving out first of all.

I am, Sir, yours faithfully,

Manchester, July 4th, 1921. WILLIAM MILLIGAN.

UNIVERSITY OF SHEFFIELD.—The following candidates have been successful in the Final Examination for the degree of M.B., Ch.B.:—May T. Bassett, Edgar S. Clayton, Ronald D. S. Baron, Richard T. Lee, Elsa F. Page, and Robert Platt.

Obituary.

H. WORK DODD, F.R.C.S. ENG.,

OPHTHALMIC SURGEON TO THE ROYAL FREE HOSPITAL.

MR. H. Work Dodd, who died at his residence in Harley-street on June 28th in his sixty-second year, was born at Victoria, Vancouver Island, and was the son of the late Mr. Charles Dodd, of the Hudson Bay Company. He was educated at Norwich Grammar School, and entered at St. Bartholomew's Hospital, where his kindly disposition and genial personality made him many friends. Qualifying with the membership of the Royal College of Surgeons of England in 1881 he obtained the L.S.A. in the following year, and shortly afterwards became a licentiate of the Royal College of Physicians of London. He became a Fellow of the Royal College of Surgeons in 1888. As a young man he was for some time surgeon to a cable-laying telegraph ship, which gave him the opportunity of visiting many parts of the world and gathering useful experience. He thus acquired a taste for travel, and on many subsequent occasions spent his holidays in Norway and other parts of Europe.

He became a resident medical officer at the Royal Free Hospital, and in 1890 he was appointed ophthalmic surgeon and clinical lecturer on ophthalmic medicine and surgery in that institution, succeeding the late Mr. Grosvenor Mackinlay. This post he held until a few years ago, when he was appointed consulting surgeon. He was also consulting surgeon to the Royal Westminster Ophthalmic Hospital, and consulting ophthalmic surgeon to the West London Hospital for Nervous Diseases. He was a good operator and took a keen interest in his work. He was, perhaps, especially interested in the more uncommon diseases of the eye, and among the papers he wrote were those on Green Vision and Orientalism. He was a fairly regular attendant at the meetings of the Ophthalmological Society. At the Royal Free Hospital he was much liked both by his colleagues and by the students.

He leaves a widow, a daughter, and two sons, both of whom are doing well in the Indian Civil Service and in the Diplomatic Service respectively, and have evidently inherited much of their father's ability. His loss will be deeply regretted by a wide circle of personal friends. J. B.

DOUGLAS VERNON COW, M.D., B.C. CAMB., D.P.H.

Dr. Douglas Vernon Cow, of the Pharmacological Laboratory at Cambridge, who died on June 23rd, at Redruth, Cornwall, where he had gone for his health, was born in London in 1880 and was therefore only 41 years of age. He was educated at Harrow, and Trinity College, Cambridge, taking honours in the Natural Science Tripos in 1902.

After studying medicine at St. Thomas's Hospital he proceeded in 1905 to the M.B., B.C. degrees, and for the following two or three years took up general practice at Warwick, but in consequence of ill-health resigned and went for a voyage round the world. He returned to Cambridge in 1910 in which year he proceeded to the M.D. degree, and after working in the Pharmacological Laboratory obtained a Beit Research Fellowship. As a result of work in Vienna he published in the following year a paper on Diuresis. Later he became Assistant to the Downing Professor of Medicine and Examiner in Pharmacology at Cambridge.

Dr. Cow, who had been lecturer on pharmacology both at King's College, London, and at the Middlesex Hospital, wrote much on that and collateral subjects for scientific journals and for the proceedings of medical societies, and in 1920 published in the Students' Synopsis Series a volume on pharmacology. He leaves a widow, daughter of the late Mr. John Douglas Browne, of Belfast, but no children.

THE PRIVATE CLINIC SYSTEM.

ADJOURNED DEBATE.[1]

AT a general meeting of Fellows of the Royal Society of Medicine, held on July 4th, with the President, Sir JOHN BLAND-SUTTON in the chair, the adjourned debate on private clinic systems in this country took place.

Dr. A. LAPTHORN SMITH said he had often felt the truth of Sir William Osler's remark that it was a pity that the poor rich could not get as good hospital treatment as the very poor. Years ago, during a stay in Vienna, he had visited a large private hospital there, entirely occupied by paying patients who were graded in four classes, from noblemen to poor tradesmen. In the early morning more than 50 doctors attended, and as each one entered he registered his name on the notice board and marked it off as he left. A busy doctor sometimes made from 10 to 20 visits in that one building, for every one of which he was paid; consultation was speedily secured by a note to another doctor. Best of all, as he went out each doctor handed his list of patients to one of the bookkeepers, who at once charged up the visit on each patient's bill, so that before the patient left the hospital a cheque was handed to the doctor without the mention of money to the patient.

There is no reason, continued Dr. Lapthorn Smith, why such an institution could not be built in the neighbourhood of Regent's Park, or a little further out, provided the cost of a highly ornamental building, and the supposition that a large amount of capital was necessary, could be avoided. The building at Rochester, U.S.A., was plain wood, with a passage way up the centre, about 12 rooms on each side, and a large waiting-room opposite the front door, through which came several million dollars per year. At the Mayo Clinic the doctors had never to speak of money; the cashier finds out the amount of the patient's monthly income, and charges approximately that amount for professional services. He had just had a letter from a friend on the Mayo staff, saying: "Since you were here the Clinic has extended to such an enormous institution you would not recognise it at all. About 350 beds in each hospital." It had been doubted whether patients paid the heavy fees willingly; he had himself spoken to many who had paid large sums at the three private clinics, and they had had nothing but praise for the splendid examination.

The second private hospital of the group, at Battle Creek, Michigan, began with one doctor; in a few years he had a hundred-bed brick building, and employed assistants at fixed salaries; then he trained his own assistants, and now has a new hospital in addition to the old one. The patient picks a doctor, who states his case and the opinions which other doctors have given at different times; the youngest man gives his views first, and so on until it is the turn of the chief. The consultation may be adjourned for a special examination; the different reports are read next day and the best treatment decided on. At Baltimore the patients see the chief first at his consulting room, and are then sent to a nursing home. During the week five or ten specialists call on them there and make thorough reports to the chief.

Dr. C. O. HAWTHORNE pointed out that the terms private clinic, group medicine, and team-work had during the previous discussion received from different speakers widely different and even inconsistent definitions. When they are asked to vote for the group clinic, they were entitled to know which group clinic it was—the expensive institution suggested by Mr. Dickie, and endorsed by Dr. Lapthorn Smith, or the scheme now in operation under the control of Dr. Hurst, or the group of practitioners sketched by Sir Thomas Horder. His own attitude, continued Dr. Hawthorne, could be defined by submitting two propositions: first, that the spirit and aim of medical practice were entirely different from the spirit and aim of medical research, and that to argue that methods applicable and necessary in the one are prudent and necessary in the other, is obviously misleading; and second, that there was no objection to combination in medical practice, provided only that security was maintained for the welfare of the patient and for the authority and responsibility of the individual medical practitioner.

He proposed to examine briefly the schemes which were put before them at their last meeting. Mr. Dickie's proposition was the erection of a well-designed and well-equipped nursing home and hospital for paying patients, the whole scheme being justified on the ground that it could be made a paying proposition. Mr. Dickie, he said, thinks that medical practitioners ought to be financially interested in such an enterprise, but whether they agreed or differed, the answer did not involve any opinion relative to the issue between group practice on the one hand and personal practice on the other. Medical men might admire Mr. Dickie's schemes, feeling how desirable it would be to have institutions of this kind for their own use, and might sympathise with Mr. Dickie. Next, in the scheme explained as already in practice, Dr. Hurst had been able, by a happy conjunction of events, to organise, free from financial cares, a private hospital, where he could receive and treat patients sent to him for advice and care. In certain directions Dr. Hurst relied upon the coöperation of colleagues for the collection of particular groups of facts, and his enterprise was admirable. None the less, it remained true that the patients were committed to his care, and he was responsible for any advice or treatment given. If this was group medicine, group medicine was already in practice by every practitioner who sent a patient to a neighbouring laboratory for examination for T.B. But was Dr. Hurst's scheme a group? His scheme, if examined by Sir Thomas Horder's elaborate classification, must be marked good, but it was not a group. The third development advocated by various people had been the establishment of an organisation or institution where there would always be on hand an abundant supply of practitioners representing all the talents.

Dr. Hawthorne believed that such an ambition would prove both inefficient and unsound. The proposal was the outcome of an incontestable position—namely, that medical knowledge was so extensive, its details so various, that no single practitioner could pretend to compass it. The tendency of this proposition was to handicap the profession in the pursuit of an ideal, for the ideal medical adviser would be one who is able to deal with his patient as a whole. A sound policy should surely aim at getting as near this ideal as possible, by directing that the training of a medical practitioner, who desires to accept the responsibility of giving advice to patients, should be along the broadest possible lines. But the group system had a tendency in exactly the opposite direction, urging men to be competent, not as advisers of patients, but as examiners of organs. It was said that this group system was the application to private practice of the methods universally adopted in hospital practice, but the hospital patient was not a patient of an institution; he was the patient of an individual, personal, responsible medical practitioner; this medical practitioner was a free man who could request the opinion of a colleague or colleagues on any patient under his care, and, equally, he could refrain from doing so, and in any event he would act upon his own judgment and decision. Again, the hospital officer might request the assistance of an expert in the X ray department or the laboratory, in the observation or collection of a certain group of facts, but the adjustment of these facts to others rested entirely with himself, and the final verdict on the patient remained in the hands of the medical practitioner to whose care he was committed. Still more, the hospital officer was free to develop his own knowledge and skill in any direction and to any extent he thought good, and thus he might, to a steadily increasing extent, free himself from dependence upon the so-called specialist.

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[1] The opening of the debate was reported in THE LANCET of June 25th (p. 1358).

And with reference to his own development, under the pressure of the rights of colleagues he would be compelled strictly to confine himself to his own rigidly defined department; and where would the limit of this division of department end? The more muddled the department, the greater the restriction upon the scope of each individual member of the group; it would follow that no medical practitioner in the group will be able to act as the medical adviser of the patient. The group system was bad for the practitioner of medicine, or at least for those practitioners of medicine who desired to qualify as advisers of patients. He would not vote for the motion to be presented, but would himself propose a motion to be handed up directly.

Mr. A. W. SHEEN disagreed with Dr. Hawthorne's contention that medical practice is a different thing from medical research. In his opinion every piece of medical practice was a piece of medical research. Patients differed from one another, no two being alike, and it must be remembered that the best kind of research was research on the patient. As to another point made by Dr. Hawthorne, it was obvious that any specialist should be a good general practitioner first, and Mr. Sheen expressed his belief that no specialist ever shut himself in a water-tight compartment. Mr. Sheen disagreed with those speakers at the previous meeting who said that it was not desirable that group treatment should take place in association with hospitals. This statement was perhaps too broad. At the present moment outside interference and State control was dormant in relation to the medical profession, but Mr. Sheen fancied it was only dormant, and that we should hear later of primary health centres and secondary health centres, and that the treatment of private patients at these centres would have to be considered. He reminded his audience that Great Britain includes also outlying parts such as the Outer Hebrides; the problem of the application of group systems to all parts of the country would have to be considered. Vested interests would demand also consideration. An endeavour to disturb nursing homes would lead to difficulties, complications, and troubles. Mr. Sheen said that he personally would like to see the country cut up by counties, big towns, districts, and what not, and be the seat of a series of experiments. He did not like to see any sort of cast-iron system suggested for the whole country, for the circumstances differed so much; the best of these experiments would survive. It might be that in some cases group clinics would arise. In a good many parts of the country there were small hospitals with private wards, where the services of consultants were available, and these in many respects satisfied the requirements of a clinic. In some places the British Red Cross Society had established hospitals, and had put them at the service of the public under certain conditions. In other places hospitals had been started by private generosity. The private wards in St. Thomas's and Guy's were a form of clinic. All these activities were going on, and Mr. Sheen thought we ought to develop them, to enlarge them, and to make clinics of them. He considered that the profession ought to do something more than give the idea of clinics mere lip service. The public had got hold of it; the State had got hold of it, and reform from within was better than reform from without. If we did not try to do something for ourselves, somebody else would try to do something for us. As a result of the old days of the clubs came the National Insurance Acts and the panel practice which, in Mr. Sheen's opinion, was a very unsatisfactory thing. It was obvious that the individual practitioner would never die; he would always be wanted. Mr. Sheen looked forward to the time when the individual practitioner would become far more than he is at present the instrument of preventive medicine. He would go into patients' houses, not to cure them when they were ill, but to prevent them from being ill, and Mr. Sheen imagined it would be a very lucrative business. He would like to see these clinics arising, either as private clinics, or in association with hospitals, large or small. In time these clinics might form part of the student's curriculum, and we should then have a reversion to a better type of apprenticeship. Mr. Sheen would support the resolution because he thought, at all events, it would do no harm, and it would give an impetus to action which, in the end, could be only for the public and professional good.

Mr. C. F. HARFORD said that it was not to discuss the details of schemes but the real principles that the meeting was held; he desired most strongly to support the motion that some sort of group system should be created. Our experiences in connexion with the war had greatly emphasised the need for some sort of group work, and the abolition of the individualism which had been the curse of the profession. It was better to make mistakes than to do nothing. Mr. Harford believed in every kind of reform, but it was a mistake to have cut-and-dried schemes. He believed in the principle of experiment and in attempting to profit from experience gained. Since the war there had been a revision of our hospital system.

A good deal had been heard of municipal clinics; something better in the way of constructive work was wanted. The hospital system, pensions work, clinics for the sick—all these various departments of health activities arose in a very haphazard way. As to private consulting practice, were we to regard Harley-street and Wimpole-street as ideals? The consultants had to treat private patients in a room which was really a gentleman's study, and patients with horrible diseases waited in many cases in the room where the family of the consultant was going to dine, unless he was happy enough to rent a room in somebody else's house. This state of things should not continue.

Mr. Harford recommended a careful study of the Report of the Consultative Council of the Ministry of Health. Lord Dawson's minute was, in his opinion, the most statesmanlike proposal that had been put on paper. The only thing the profession had been able to do was to attempt to pick holes in it. Why should the pathological work and the examination of specimens and testing of urine be done separately for every place and for every centre? The two fundamental difficulties were the ethical question and the economic question. If we could get a group of men who would trust one another a start could be made. Mr. Harford's own department of ophthalmology was practically in the hands of the opticians. A certain number of cases were being seen by the specialist, but the ophthalmic work of the country was being done by the opticians, though it was most important a competent ophthalmologist should make an early diagnosis. Patients all over the country were trusting themselves to the opticians. It was said that there were not enough ophthalmologists to do the work. If this were so it was because of the difficulty experienced by a young man in keeping himself while waiting for a practice. Mr. Harford suggested that the medical schools might register the names of men who would be ready to work together, and thus groups might be started among the younger men.

Dr. STANLEY GEORGE spoke as one engaged in general practice, and did not intend that any of his remarks should be taken as an apologia for the medical practitioners. He pointed out that it was important to the individual patient that as little disturbance as possible should take place in his normal surroundings. A patient slightly ill was treated and restored to health more comfortably and with less disturbance in his private home, but in the graver forms of disease he was better looked after in a well-equipped institution. It was not sufficient merely to improve facilities for dealing with the accidents of life. The ultimate goal was prevention rather than cure. To achieve this goal the energies of all workers must be combined with all possible instrumental aid.

Any scheme of advancement must be such as would assist the practitioner to fulfil his rôle with the greatest advantage. He would not be content to send his patient away, because in this case he had to rely entirely on someone else, but would wish to be in a position to help to make the diagnosis. If private clinics were to be adopted the building should be suitably situated in the districts where they are intended to serve, and should contain ample accommodation. They need not necessarily have elaborate instruments, which were only suitable for very skilled work in university laboratories, but the staff of the clinics should include members of all branches of the profession, and should undertake investigation as to the best methods of prevention and control.

Dr. CHARLES GRAY said that after many years' experience of private practice he would like to say that though we are out first and last for the good of our patients, we are not giving them what we ought to give. The problem remained as to how this was to be remedied. Medicine had extended so enormously that it was quite impossible for any single man to give the patient what he ought to have in any case requiring thorough investigation. Team work was now essential, and also places where patients could be sent for any elaborate investigation which might be required, where also the services of 10 or 20 specialists would be at their disposal if needed. The patient would never do without a personal medical adviser in this country; a single person would have to gather the threads together and advise the individual. But places for residential observation courses were required, and if the profession did not supply these they would be started from outside, without the same benefit to medical men in their relations to patients.

Dr. CARNEGIE DICKSON said that as a consulting pathologist he refused to see any patient who came direct to him, and he was thus already a member of an enormous number of little teams. He also practically, though not absolutely, refused to examine specimens sent to him by doctors unless they also gave some clinical information about the case. The pathologist was not a qualified laboratory assistant, though many apparently considered him such. The consulting pathologist desired to be put into touch with patients, and thus to be enabled to apply his previous experience to every new case. Some medical men had not the least idea how bacteriological specimens should be collected, and about 50 per cent. of the specimens received might be discarded without examination, as far as the good of the patient was concerned. Dr. Dickson held that after various examinations have been made there should be a round-table consultation. He had talked over the idea of group clinics for several years with various groups of men. One little group got to the length of having plans of such a hospital made up; builders' estimates were gone into, and a very powerful group was got together. Much discussion ensued, but the difficulties appeared almost insuperable. In Dr. Dickson's opinion, the difficulties had not all been tackled at the present discussion. He thought most of them were agreed that group work was good and would have to be adopted soon, but the difficulties had not all been faced. The question of remuneration and fees, of course, was always a complicated one. The ordinary fee of the surgeon was a distinct difficulty, because the surgeon often makes a considerably larger fee than the physician upon whose judgment the operation depends. As an independent speaker, Dr. Dickson expressed his opinion that the physician should have a larger share. Another difficulty, was whether there should be financial control over nursing homes. Most of those who had discussed the matter with him were of the opinion that doctors should have no finger in that pie. Those who advocated group clinics did so for the sake of their patients as well as for their own sakes. Dr. Dickson gave examples in support of his contention that the pathologist's life would be rendered much more easy, and that he would be able to render services to the patient which would be much more valuable, under the group system.

Sir THOMAS HORDER said that summarising the debate would almost come to re-reading some of his introductory notes. He thought he need say nothing in regard to those speakers who had laboured the main principles enunciated in the first meeting. He thought that the meetings had been justified. All that those fellows of the Society who had been for some time trying to arrange a debate of this kind had in view was to ventilate the whole question of private clinic systems, and that had been done, even to the extent of some healthy criticism on the part of Dr. Hawthorne. Referring to Dr. Hawthorne's amendment Sir Thomas Horder spoke of Dr. Hawthorne's complaint as to the lack of preciseness in the details of any scheme laid before the meeting. It was not intended to be precise in respect of detail: how could they be precise in matters that had never been discussed? Was it not more likely that the more detailed the scheme had been, the more severely would it have suffered criticism? It had already been pointed out that Dr. Hawthorne's criticism in regard to the distinction between practice and research was an utter fallacy. Was not one modern tendency—which we all believed to be a good one—to combine rather than to divorce practice and research? Was not the recent magnificent work of the Medical Research Committee due entirely to the practice afforded by the war? Could we have had that great contribution to medical research had there been no war. Dr. Flexner, of New York, had told the speaker that more and more did it become obvious that if research was to be helpful it must be combined with and conducted in the same building as practice. Sir Thomas Horder said he had referred to the enormous advantage that group medicine would confer upon the progress of medicine by the facilities of research and additions to medical knowledge which it afforded. Reference had been made to the Mayo Clinic at Rochester. What Sir Thomas Horder had seen in the United States in regard to group practice had damped rather than warmed his ardour. The clinics in the States were so enormous; moreover, they were not run with that philanthropic spirit and freedom from financial interest which we regarded as so important. In his opening remarks Sir Thomas Horder had said that a personal clinic was a clinic in which one man was paramount; he determined what investigations should be added to his initial survey of the case, and he was responsible, therefore, for the diagnosis and treatment. That personal clinic had come; there were two large and successful personal clinics of that kind in this country.

As to a group clinic, each member of the group should be interested in the whole work of the team; it should, for preference, work under the same roof; it should have all the conditions that Dr. Hawthorne referred to. Group clinics of that kind had not yet arrived, and, therefore, it might seem premature that a resolution should be moved which does little more than express a pious opinion. The resolution before the meeting was—

> "That in the opinion of the meeting the time is ripe for the formation of group clinics in this country, and that sympathetic encouragement should be given to them by the profession and by the governing bodies."

Dr. HAWTHORNE, in moving an amendment, wished to dissipate the suggestion that he was opposed to medical research. In scientific research, medical or otherwise, there was only one aim, the discovery of truth. The picture of the group clinic as it was presented at the first meeting had now taken on a somewhat different aspect, and its meaning was still doubtful. It certainly did not mean the scheme which Dr. Hawthorne himself cordially endorsed and favoured—namely, the scheme which was carried into practice by Dr. Hurst. Sir Thomas Horder had said that this was not a true group. The only scheme on which the vote would apparently be taken was the particular scheme which Sir Thomas Horder

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defined—that is to say, a group in which no one individual had full responsibility and authority in the case except this vague person called an assessor; instead of the personal relation of an individual practitioner in charge of a sick man it was proposed to offer him the cold and carefully calculated effort of an assessor's summing up. The amendment was a non-committal one, and Dr. Hawthorne knew of no obstacle to the formation of nursing homes, where practitioners might take charge of patients and might secure the assistance of experts, except the financial one. If someone were able to provide two men who were ready and willing to find the necessary money, without any sort of financial gain, then, indeed, we might look forward happily to the development of a suitable institution. Dr. Hawthorne moved the amendment:—

> "That until a precise definition and details are submitted, this meeting prefers to abstain from pronouncing an opinion on any suggested modification of the methods of medical practice."

Dr. M. I. FINUCANE, in seconding the amendment, said that he thought the whole discussion was more or less academic and theoretical, and did not practically apply itself to the general practitioner and his wants. All agreed that team-work was the best, but as Dr. Hawthorne had said, the finance of this matter had not been considered at all. Lord Dawson's scheme was, he thought, a sound one, and he had no doubt that this group system would come about, but no details had been discussed, and if the general practitioner was to be asked for his encouragement some practical scheme must be submitted.

Dr. CHARLES GRAY pointed out that Dr. Hawthorne said there was no objection to starting this clinic system. The great objection was that the present position of the general practitioner, and also the view of the profession at large on this important subject had not been taken, and the object of the meeting was to get the view of a proportion, at any rate, of all the medical practitioners. There seemed to be no alternative between the two schemes. The only alternative was a State system of medicine in which all became paid units.

Dr. FINUCANE asked whether the object of the meeting was to strengthen the Government in promoting a system of clinics. If Sir Thomas Horder's resolution was passed it would be interpreted as the voice of the Royal Society of Medicine.

The PRESIDENT then put the amendment to the resolution to the meeting, and it was lost.

Sir THOMAS HORDER'S resolution was carried.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Question of Federation.

A MEETING of the Irish Medical Committee was [illegible]d in the Royal College of Surgeons, Dublin, on [illegible]ursday, June 30th, Dr. J. M. Day in the chair, when Mr. R. J. Johnstone was re-elected chairman. At the conference which began its sittings in the offices of the British Medical Association on Tuesday last, Mr. R. J. Johnstone and Dr. W. O'Sullivan have been appointed to attend. For two years negotiations have been proceeding with a view to organising the medical profession of Ireland into one association, possibly in affiliation with the British Medical Association; and it is hoped that at a meeting where the overseas branches of the Association and its Federal Committees, the Irish Committee of the British Medical Association, the Joint Organisation Committee (Ireland), and the Irish Medical Association will all be represented, some plan of policy may be arrived at.

The Voluntary Hospitals.

At a meeting of the President and Fellows of the Royal College of Physicians of Ireland, held on July 1st, the following resolution was carried unanimously:—

> "The President and Fellows of the Royal College of Physicians of Ireland can find no justification for the refusal of the Government to give any financial relief to the voluntary hospitals of Ireland, while making a grant of £500,000 to the voluntary hospitals of Great Britain; the grant is intended, not as a provision for the future, but to relieve the hospitals from the position of difficulty to which they have been brought by the abnormal economic conditions of the past few years, conditions which pressed as heavily on hospitals in Ireland as on those in Great Britain. The President and Fellows, therefore, urge upon the Government the justice of making a grant to the Irish voluntary hospitals similar to that promised to the British voluntary hospitals."

A resolution to the same effect has been passed by the Irish Medical Committee.

An Honorary Degree for Prof. Edward Taylor.

The University of Dublin has paid a well-deserved compliment to the Regius Professor of Surgery in conferring on him the honorary degree of Master in Surgery. Prof. Taylor has been connected officially with the School of Physic in Ireland for nearly 30 years, first as examiner in anatomy, then as professor of surgery, and for the past five years as Regius Professor. His treatises on Applied Anatomy and on Operative Surgery are well known to all.

The Senate of Southern Ireland.

Sir William Taylor, K.B.E., a past-President of the Royal College of Surgeons in Ireland, has been nominated by the Lord-Lieutenant a Senator of the Parliament of Southern Ireland, under the provision of the Government of Ireland Act directing that 17 representatives of commerce, labour, and the scientific and learned professions should be nominated. As far as we know, no other medical man has been similarly distinguished.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

The Hlava Institute.

THE Medical School of Prague has recently opened a new and first-class modern building containing the institutes of pathological anatomy, bacteriology, and legal medicine, with all facilities for teaching and research. It is popularly named Hlava's Institute, after Prof. Jaroslav Hlava, its founder. The building was begun before the war, during which it had to be discontinued. The Ministry of Public Instruction in the new Republic has spared no effort to make the equipment and opening of the institution possible. On the day of opening a very warm ovation was accorded to Prof. Hlava, who is the senior member of the staff of the Medical School in Prague, and has been recently honoured by the French Academy of Medicine, having been nominated a corresponding member.

Czecho-Slovak Watering-Places.

The Czecho-Slovak watering-places are reviving their pre-war reputations. It is not widely realised that Carlsbad, Marienbad, &c., are within the boundaries of the new Republic; direct sleeping-car service has been established from Vienna and Paris, and the Czecho-Slovak authorities have made every effort to facilitate the visits of foreigners to the famous watering-places. Former visitors are now resuming patronage discontinued because of the war.

Infant Welfare.

In the autumn of 1920 Lady Muriel Paget's Mission began to organise infant welfare in Slovakia. Some 11 infant welfare stations have been opened in one of the poorest sections of the province; in coöperation with the League of Red Cross Societies a model children's hospital has been established which will serve as centre for the scheme. The English personnel of the Mission are training local workers to continue its administration when the Mission leaves the country on Jan. 1st, 1922. The work has been very successful so far, and the interest which the Slovak peasants have shown in it has been most encouraging. Dr. Roger P. Stewart, of London, is in charge of the work under the direction of a committee on which Lady Muriel Paget's Mission, the League of Red Cross Societies, and the Czecho-Slovak Red Cross and Ministry of Public Health are represented.

A Medical Strike.

The Czecho-Slovak physicians who serve as medical officers to insurance associations went on strike on May 1st because the associations refused to double the fees paid by an insured person for attendance. The Czech physicians claim that German physicians are receiving such fees from the German associations, and consider themselves entitled to the same. On the other hand, the associations claim that a contract has been made with the physicians up to the end of the year 1921. The strike has already lasted for more than a month, but a speedy settlement is not probable, as the medical profession is well organised and follows very closely the direction of its central organisation. On the other hand, the insurance associations claim that increasing the fees to the physicians would mean financial ruin to the associations, involving a breakdown of the whole insurance system, in which 90 per cent. of the population are included.

Prague, June 15th.

CONTROL OF VENEREAL DISEASES.

Registration of Syphilitics.

A census of the syphilitic fraction of a community may seem an impossible feat, owing to the subterranean character of the disease and the natural disinclination of the persons concerned to figure in such a census. But it is obvious that if such a census were feasible, and kept up-to-date year by year, our knowledge of this disease and our ability to treat it successfully would ultimately be much increased. In a recent paper, Dr. O. Jersild[7] has shown that such a system of registration of the syphilitic is not simply a counsel of perfection, but can be put into effect in a small country such as Denmark, without disconcerting intrusion into the patient's privacy. But it must from the outset be made clear that a system which is perfectly feasible in a country like Denmark may be quite unworkable in a larger and less compact community. In Denmark, where a system of registration of the syphilitic has existed for about half a year, Wassermann's reaction is carried out only in one institute, and under State control. This centralisation of the Wassermann reaction is probably unique, and it would be difficult to overrate the importance of this point. It means that in Denmark, at any rate, the prestige of this reaction has not been undermined by uncontrolled, semi-professional work, and the fact that 41,093 Wassermann tests were made in 1920 at the State Serum Institute, shows that hospital authorities and practitioners make extensive use of the Institute for this purpose.

The machinery for the Wassermann reaction being centralised, it was comparatively easy to evolve a system of registration centring about this reaction. The Wassermann forms have been worded so as to serve the double purpose of a serological report and registration, and the two following principles have been conscientiously followed: (1) Notification should be so organised that it would work almost automatically without compulsion or discomfort to anyone whenever a syphilitic changes his doctor or address; (2) owing to the confidential character of the matter there should be absolutely no chance of personal identification at the central office, where, however, it must be possible to classify the available data accurately and without overlapping. The function of the central office is, in short, that of a telephone centre, enabling one doctor to get into touch with another through a practically automatic and impersonal medium. In time it will be possible for a doctor to learn the subsequent fate of a patient whose disease he treated in its early stage, and neurologists, oculists, surgeons, and physicians will have a guide enabling them to learn not only whether a patient under their care has or has not contracted syphilis earlier in his career, but also the nature of the specific treatment he has received, and other instructive information contained in his registration dossier. As Dr. Jersild points out, registration of syphilitics, if it is to fulfil its functions adequately, should not merely yield statistical information as to the increase or decrease of new cases in a community, but it should also enable the physician to trace the patient's career from the first appearance of a chancre to his death. It should also ensure continuity of treatment, however much the patient may flit between hospitals and from one physician to another.

The five following identification data are entered on the registration form: (1) Sex; (2) birthday and year of birth; (3) the first letter of the patient's surname, a hyphened surname being indicated by the first letter after the hyphen; (4) the date on which the disease was first diagnosed or treated; (5) the name of the physician or institution beginning treatment. By the inclusion of the year of birth of the patient, it will be possible in a few decades automatically to omit from the register a certain number of patients, and thus the register will not be unnecessarily overcrowded. In practice, one shortcoming has already been detected in this system of registration. Syphilologists are apt not to make use of Wassermann's test during the first years after infection, for at this stage a negative Wassermann may prove mischievous, as it may lead to the patient neglecting treatment. The syphilologist also is less dependent than his colleagues on a serological diagnosis. But, unfortunately, his distaste for Wassermann's test early in the patient's career means that many syphilitics evade registration just at the period in their lives when it would be most useful, to themselves in particular. To overcome this difficulty, syphilologists—i.e., heads of V.D. clinics—have been supplied with special registration forms. Although registration has existed only half a year, about 10,000 persons have already been entered on the Serum Institute's register, and its efficiency has been tested in several instances. As an instructive example of the workings of this system, Dr. Jersild refers to a patient whose dossier showed that, though he masqueraded as a new case at Dr. Jersild's hospital, he had been treated there at an earlier date.

A Hostel for Infectious Cases.

The second annual report of the Royal Free Hostel for Women and Girls has just been issued. The hostel was opened in June, 1919, at 24, Gloucester-road, Regent's Park, London, N.W., for the care of girls and women suffering from venereal diseases in an infectious stage. Ten beds are available in rooms of one or three beds. The patients are drawn chiefly from those attending the Royal Free Hospital V.D. Clinic, and are selected by the medical officer to the clinic; but cases from any part of London or the country can be received under certain conditions.

Sir Thomas Barlow is the chairman of the committee of the hostel and the medical members include Miss Aldrich Blake, Lady Barrett, Sir Francis Champneys, Dr. Dorothy C. Hare, Dr. T. S. Higgins, Dr. A. G. Phear, Dr. Ethel Vaughan Sawyer, and Dr. Margaret Rorke. The aims of the committee include not only care with treatment and isolation during the infectious period, but the after-care of those discharged from the hostel. The great importance of after-care is recognised. Even in the most promising cases physical and mental recovery often takes several months, and much help must be given if the individual is to become a useful citizen. The hostel is closely associated with the Royal Free Hospital, but financially it is an entirely independent undertaking. Between April 1st, 1920, and March 31st, 1921, 65 girls passed through the hostel, the average length of stay being 39·19 days.

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[7] Ugeskrift for Laeger, June 2nd, 1921.

The occupations and disposal of these girls were as follows: the average age of patients was 22·5 years, and their previous occupations were domestic servants, 21; factory or business, 10; clerks, 7; women's services, 7; shop-hands, 6; no occupation, 5; waitresses, 3; prostitutes, 3; married, living at home, 2; companion, 1. Of these 19 returned to former employment, 12 are out of work, 8 have gone to fresh work or training, 4 have been sent to various homes, 3 have returned to prostitution, 3 have been lost sight of, 3 have married, 3 are at home with no occupation. 1 mentally deficient, has been taken under M.D. Act, 1 mentally deficient is with her sister, and 8 are still in the hostel. Patients attend the out-patient department at the Royal Free Hospital twice weekly. In addition, individual medical treatment such as douching is carried out by the sister-in-charge, as instructed by the doctor. Much improvement in general health is noticed while the girls are in the hostel, and their increase in weight is often astonishing. The attendance records at hospital for hostel patients are satisfactory. A few cases admitted from hospitals other than the Royal Free continue to attend their own clinics. Every girl is in the hostel by her own choice, and is free to leave if she will. Most settle down quickly, but some are unhappy and depressed at first, or are physically too ill to take an active part in the life of the home. The fundamental idea in the ethical teaching given is to develop such principles as the girls already possess, and to lead their often distorted views of life and morals into right channels. Open discussion on questions of religion and social conduct is encouraged. The lighter work of the house is done by the girls, under the supervision of the house matron. In the afternoons they rest or go out, and in the evenings they make their own clothes, or learn handicrafts, such as basket-making or raffia work. The staff consists of the sister-in-charge, who is a fully trained nurse, and two assistants, a house matron and a kitchen matron. Of the 95 patients who have left the hostel since it was opened, definite news has been received of 92. The cases may be grouped as follows: doing well at present, 57; doubtful at present, 18; no good at present 10; lost sight of, 3; in homes needing permanent supervision, 5; certified under Mental Deficiency Act, 2. Of those classed as "doubtful" or "no good," several were only in the hostel a few days, and owing to their harmful influence on the other inmates, were returned to the senders or removed to the infirmary. It is regarded as impossible to furnish a report which shall be permanently accurate. On the whole, however, those considered as satisfactory have remained so, and of [illegible] rest some have become satisfactory, and some [illegible] the most unpromising have changed their mode [illegible]fe, at least temporarily.

The expenses for the year have amounted to [illegible]026. The receipts (which include the balance in hand at the beginning of the year of £201) amount to £1302. The estimated outlay for the coming year is £1120. The London County Council have recommended that the Ministry of Health should make a grant of £100, an increase of £100 on the previous year's grant. Patients' payments may be expected to bring in £100. This leaves a sum of £620 to be obtained in subscriptions and donations. The committee express their conviction that if a wider public could realise the great importance of the work done, sufficient financial help would be forthcoming. Medical practitioners who are desirous of securing the admission of a patient to the hostel are invited to refer the case with a note to the medical officer of the Royal Free Hospital V.D. Clinic. Patients from other hospital clinics in the district are admitted and arrangements made for them to continue under the care of their own medical officer. Applications for vacancies should be made to the Almoner, Royal Free Hospital, Gray's Inn-road, London, W.C.1. The most suitable cases for admission to the hostel are young girls. Married women, professional prostitutes, or remand cases are not usually suitable. Cases of pregnancy are not admitted after the early months. Patients are kept in the hostel, if possible, until their condition becomes non-infectious, and suitable arrangements have been made for their return to work, or to their families. The circumstances of patients are inquired into and they are required to contribute towards the cost of their maintenance if in a position to do so, but no patient is refused on grounds of inability to pay. A maximum charge of 35*s.* per week is made; the average charge is 15*s.* Further information regarding the hostel may be obtained on application to the Almoner, Royal Free Hospital, Gray's Inn-road, London, W.C.1, or the Hon. Secretary, 6, Drayton-gardens, London, S.W.10.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieuts. (ret.) to be Surg. Lieut.-Comdrs. (ret.): A. L. Robinson, G. A. Jackson, and W. L. Cowardin.

Actg. Lieuts. to be Lieuts.: H. G. Marsh, P. R. Enright, and F. W. Langford.

ROYAL ARMY MEDICAL CORPS.

Capt. and Bt. Maj. W. F. Christie retires, receiving a gratuity, and is granted the rank of Maj.

Capt. W. Walker and Capt. P. J. Ryan relinquish the actg. rank of Maj.

Capt. H. A. Hill, from R.A.M.C. Spec. Res., to be Lt., with the temp. rank of Capt.

Officers relinquishing their commns.:—Temp. Capts. retaining the rank of Capt.: W. M. Muirhead, F. Whitby, H. Abernethy, and B. N. Sinclair.

SPECIAL RESERVE OF OFFICERS.

Capt. R. Magill to be Maj.

TERRITORIAL FORCE.

Maj. W. Bowater to be Lt.-Col. and commd. 1st S. Mid. Fd. Amb.

Capt. A. P. Thomson resigns his commn. and is granted the rank of Maj.

Capt. W. J. Lacy-Hickey and Capt. J. G. Hayes resign their commns. and retain the rank of Capt.

Lt. J. P. Kitson (late R.A.M.C.) to be Capt.

The King has conferred the Territorial Decoration upon the undermentioned officers: Lt.-Col. D. L. Hamilton, 2nd H. Counties Field Amb.; Lt.-Col. C. L. Isaac, 3rd Welsh Field Amb.; Maj. G. R. Wilson, attd. 8th Bn. Manch. R.; Maj. D. H. Weir, attd. 4th Bn. North'd. Fus.; Maj. W. F. McAllister-Hewlings, attd. N. Mid. A.S.C. (ret.); and Maj. E. L. Rowse, 1st Lond. Fd. Amb.

TERRITORIAL FORCE RESERVE.

Lt.-Col. (Bt.-Col.) C. J. Jacomb-Hood, having attained the age limit, is retired, and retains his rank with permission to wear the prescribed uniform.

The King has conferred the Territorial Force Decoration upon Col. Sir R. H. Luce, K.C.M.G., V.D.

DEFENCE FORCE.

Temp. Capts. relinquishing their commns.: G. M. Campbell and W. T. Briscoe.

ROYAL AIR FORCE.

Flight Lts. to be Squadron Leaders: D'Arcy Power, J. Rothwell, K. Biggs, and A. J. O. Wigmore.

Flight Lts. to be Hon. Squadron Leaders: A. E. F. F. Huntsman and G. D. Kerr.

INDIAN MEDICAL SERVICE.

Maj. J. J. Robb to be Lt.-Col.

Temp.-Lt. H. R. Rishworth (since relinqd. his commn.) to be temp. Capt.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At examinations held recently the following candidates were successful:—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part I., Physics and Electrotechnics.—Frank M. Allchin, Stanley Colyer, Geoffrey Fildes, Alexander Flett, Harry Gardner, Wilfrid Garton, Arthur H. Laird, Traian Leucutia, Dalziel B. McGrigor, David M. Muir, Henry E. Oakeley, Pieter Johann Olivier, Bertram Shires, Hendrik Willem Johannes van Dijken, John D. White, George D. Whyte, William P. G. Williams, and John R. Wylie.

Part II., Radiology and Electrology.—Frank M. Allchin, Stanley Colyer, James P. S. Dunn, Geoffrey Fildes, Harry Gardner, Wilfrid Garton, Arthur H. Laird, Traian Leucutia, Dalziel B. McGrigor, David M. Muir, Henry E. H. Oakeley, Pieter Johann Olivier, Bertram Shires, Hendrik Willem Johannes van Dijken, John D. White, George D. Whyte, W. P. G. Williams, and John R. Wylie.

UNIVERSITY OF OXFORD.—At recent examinations the following candidates were successful:—

EXAMINATION FOR DEGREE OF M.CH.

George Perkins, Hertford.

SECOND EXAMINATION FOR DEGREE OF B.M.

Materia Medica and Pharmacology.—Murray McCheyne Baird, New; *Owen D. Ballinger, University; Weldon* Champneys, Oriel; Edward F. Chapman, Magdalen; Harry N. K. Elphick, New; Robert Van Buren Emmons, New; Reginald V. Facey, Brasenose; Humphrey A. Gilkes, Christ Church; John R. B. Hern, New; Robert F. Johnstone, St. John's; *Cyril R. Lane, Pembroke; Walter J. E. Lupton,* New; Peter H. Martin, New; James D. Mills, Lincoln; Eric H. Watkins, Hertford; Norah E. Bodkin, Society of Oxford Home Students; Katharine M. Hodgkinson, Somerville; and Constance M. Ottley, Society of Oxford Home Students.

Pathology.—John W. Alden, non-collegiate; Owen D. Ballinger, *University; Walter H. Butcher, St. John's; Weldon Champneys,* Oriel; David S. Davies, Magdalen; John H. Fletcher, Trinity; Duncan G. Leys, Balliol; Horace D. Pavière, Christ Church; Maurice E. Shaw, New; Eric H. Watkins, Hertford; Bernard W. Williams, Exeter; and Norah E. Bodkin, *Society of Oxford Home Students.*

Forensic Medicine and Public Health.—Thomas H. Cathrall, *Trinity; Malcolm H. Mackeith, Magdalen; Henry A.* Osborn, New; Maurice E. Shaw, New; Cecil H. Terry, Balliol; Clement J. L. Wells, St. John's; and Dorothy J. Collier, Society of Oxford Home Students.

Medicine, Surgery, and Midwifery.—Walter H. Butcher, St. John's; David G. T. Cross, St. John's; Charles F. T. East, New; William E. Hayes, New; Edward G. T. Liddell, *Trinity; Malcolm H. Mackeith, Magdalen; and Howard L.* Rayner, Balliol.

Mr. P. H. Martin, New College, has been elected to the Theodore Williams Scholarship in Anatomy. The scholarship is tenable for two years, and is of the annual value of £50.

UNIVERSITY OF ST. ANDREWS.—The following candidates have been successful in examinations recently held:—

THIRD PROFESSIONAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Medical Jurisprudence and Public Health.—Frank E. Anderson, Colin R. Baxter, Archibald J. Campbell, Cora C. Campbell, Gurbaksh Chawla, David C. Clark, James Craigie, William M. Cumming, Jean M. Davidson, Violet C. Dobbie, Ruby N. Foggie, Donald S. Greig, Charles R. Henderson, Norah M. Lindberg, Norman McLeod, Jean H. Morton, Janet Muirhead, Robert Norrie, Sydney S. Ogilvie, Alan Pride, Alexander B. Richardson, Agnes H. T. Shepherd, Lucy C. Simpson, Bhagwant Singh, Edith M. D. Smith, Blanche D. S. Spence, Janet O. Stephen, Arthur Tateson, William Thomson, Frances H. Watson, and Thomas Wilson.

Materia Medica and Therapeutics.—Monawar K. Afridi, George F. G. Batchelor, Colin R. Baxter, *Norman T. Brown,* David R. Cameron, James Dallas, Ellen Douglas, Howard H. A. Elder, Andrew A. Finnigan, Jessie H. Fitchet, John R. Graham, Donald S. Greig, George S. Halley, Leigh H. Henderson, Robert A. Henry, James A. G. Keddie, Lena E. Low, *James R. Miller, John R. Murray,* James W. Napier, Margaret C. K. Patterson, James A. Robb, Peter C. Robertson, David Rushton, Blanche D. S. Spence, Jessie R. Watson, James M. Webster, and Margaret P. M. Wilkie.

Pathology.—Monawar *Khan Afridi, David S. Anderson,* George F. G. Batchelor, Colin R. Baxter, Thomas F. Black, Norman T. Brown, David R. Cameron, Gurbaksh S. Chawla, James Dallas, William F. Dorward, Ellen Douglas, Howard S. Edwards, Howard H. A. Elder, Andrew A. Finnigan, *Jessie H. Fitchet, John R. Graham, Donald S* Greig, George S. Halley, Jean T. Harris, Alexander Henderson, Leigh H. Henderson, Robert A. Henry, Lilian A. M. Johnston, James A. G. Keddie, Gordon D. Laing, Jeannie P. Laird, Lena E. Low, Francis McLagan, Robert S. Melville, James R. Miller, Hermina M. Morrison, James W. Napier, John E. Overstead, Margaret C. K. Patterson, Peter C. Robertson, David Rushton, Isabella Sim, David B. *Soutar, Gertrude J. Sturrock, Ian C. Thomson, Jessie R.* Watson, James M. Webster, and Margaret P. M. Wilkie.

FOURTH PROFESSIONAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Medicine.—George G. Buchanan, Katharine M. Campbell, Georgina S. Craig, David W. Dawson, Vyvyan S. Ewing, Phyllis Fleming, Annie A. Fulton, Alexander H. Harkens, L. Jacobs, Isabella D. Kilgour, Nona S. Lesslie, Elizabeth W. MacVicar, Isobel M. Mansie, Ronald S. Paton, John D. Stewart, Christina J. Thomson, Margaret L. Tod, and Margaret H. R. Young.

Surgery.—Georgina S. Craig, David W. Dawson, Vyvyan S. Ewing, Phyllis Fleming, Annie A. Fulton, Alexander H. Harkens, Isabella D. Kilgour, Katharine D. Macfarlane, Elizabeth W. MacVicar, George J. Murray, Ronald S. Paton, John D. Stewart, Christina J. Thomson, and Margaret L. Tod.

Midwifery.—Georgina S. Craig, David W. Dawson, Vyvyan S. Ewing, Annie A. Fulton, Alexander H. Harkens, L. Jacobs, Isabella D. Kilgour, Nona S. Lesslie, Katherine D. Macfarlane, Elizabeth W. MacVicar, Isobel M. Mansi, George J. Murray, Ronald S. Paton, James N. D. Smith, John D. Stewart, Christina J. Thomson, Margaret L. Tod, *and Margaret H. R. Young.*

UNIVERSITY OF DURHAM: *Faculty of Medicine.*—At the Convocation held on June 28th, the following degrees were conferred:—

Doctor of Medicine.—Joseph W. Craven, M.B., B.S.; Roger Errington, M.B., B.S.; Harold M. Leete, M.B., B.S., B.Hy.; William K. Russell, M.B., B.S.; James C. Spence, M.B., B.S.; and Hans W. Walther, M.B., B.S.

Doctor of Medicine for Practitioners of 15 Years' Standing.—Stanley Bott, M.R.C.S., L.R.C.P.; Harold Chaffer, L.R.C.P. & S., L.F.P.S. Glasg.; and Frederick A. L. Hammond, M.R.C.S., M.R.C.P., D.P.H.

Master of Surgery.—Henry Evers, M.B., B.S., F.R.C.S.; and William Reynolds, M.B., B.S. (in absentia).

Bachelor of Medicine and Bachelor of Surgery.—Samuel E. H. *Anderson, Thomas H. Bates, John S. Brodgon,* Edward T. Colville, Oliver Colville, John J. N. Daniels, Dorothy A. Dixon, Dorothy F. Elliott, Eskander Girgis, Geoffrey A. Haydock, Roland Hewitson, Reginald A. Hickley, Donald F. Hocken, William E. D. Hodgson, Eustace V. Howard, M.A., *Hilda Lodge, Morris Mickler, Lionel Myers, Joan W. Nicoll,* Robert J. Perring, Sydney T. Pybus, Mary F. Richardson, and William C. Wardle.

Bachelor of Surgery.—John E. Basham, M.B.

Bachelor of Hygiene.—Charles N. Armstrong, M.B., B.S. Durh.; Edith C. M. Jones, M.B., B.S. Durh.; Melville D. Mackenzie, M.D. Lond.; and Thomas N. V. Potts, M.B., B.S. Durh.

The following received the Diploma in Public Health (D.P.H.):—

Charles N. Armstrong, M.B., B.S. Durh.; Edith C. M. Jones, M.B., B.Sc. Durh.; Francis J. Lidderdale, M.B., B.S. Durh.; Melville D. Mackenzie, M.D. Lond.; Thomas N. V. Potts, M.B., B.S. Durh.; and William O. F. Sinclair, M.B., B.S. Durh.

RESEARCH DEFENCE SOCIETY.—The annual general meeting was held on June 29th, Lord Lamington, the President, in the chair. The President spoke briefly on the work of the Society, after which Lord Knutsford, chairman of committee, moved the adoption of the annual report in which a satisfactory account is given of the work of the past year. The number of articles and letters in the newspapers, and of pamphlets or leaflets distributed, has been large. The quarterly reports of the Society are now sent not only to members, but to the public libraries, and may be bought by anybody for 6d. from Messrs. Macmillan and Co. A number of addresses and lantern lectures have been given. The falling off in the number of debates is not regretted as these are not considered of much educational value. Sir Walter Fletcher, Dr. D. T. Harris, and Miss Burgiss-Brown have become members of committee, of which Mr. Stephen Paget has been appointed vice-chairman on his resignation of the hon. secretaryship. Lady Horsley acted as hon. secretary for some months, and in May Dr. D. T. Harris was appointed hon. secretary. During the past year some new members have been gained, but the total membership is, of course, less than it was in 1914, when it was about 5000. Some have died, some have been unable to keep up their subscriptions, and some have felt that the Society has won all down the line, and that nothing is left to fight for. But the activity of the opponents of medical research still continues, and the Society is the only one organised for the special purpose of meeting it. The chief need of the Society is a larger membership and more money for publishing, for distribution of literature, and for lectures. The subscription is 10*s*.

After the report had been received and adopted Dr. H. H. Dale, F.R.S. read a paper on the Work of the National *Institute for* Medical Research, which appears on p. 112 of our present issue. The meeting concluded with a vote of thanks to Dr. Dale, proposed by Sir Leonard Rogers, F.R.S., and seconded by Prof. W. Bayliss, F.R.S. Further information on the work of the Research Defence Society can be obtained on application to the Secretary, 11, Chandos-street, Cavendish-square, London, W. 1.

Society for the Study of Inebriety.—The next meeting of the Society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Tuesday, July 12th, at 4 P.M., when Dr. W. A. Potts will open a discussion on Alcohol and Alcoholism in Relation to Mental Deficiency. The subscription for the Session 1921-22 was due on April 1st, 1921, and this subscription, together with any yet unpaid for the past session of 1920-21, should be forwarded at once to the Hon. Treasurer. Members and associates, and other friends of the Society, are invited to make a special contribution to the Reserve Fund in order to meet the heavy expenditure now entailed in publishing the official journal, and carrying on the work of the Society. All subscriptions and donations should be forwarded to the Hon. Trasurer, Mr. Arthur Evans, M.S., F.R.C.S., 28, Devonshire-place, London, W.1.

Harveian Society.—The annual dinner of this Society was held on June 22nd at the Café Royal, Dr. G. de Bec Turtle, the President, in the chair. Sir D'Arcy Power proposed the toast of the Harveian Society and congratulated the members on the fact that throughout the 90 years of its existence it had never been in a more flourishing state than it was to-day. The President responded to this toast, recalling the foundation of the Society by ten medical men in September 1831. The period of its foundation was pregnant with advances in medical science. The practical uses of auscultation were being discovered, and the connexion between dropsy and albuminuria and kidney disease had only recently been established by Richard Bright. Dr. Marshall Hall, who demonstrated reflex action of the spinal cord in 1833, was one of the founders of the Harveian Society. The President spoke of his predecessor Dr. Leonard Guthrie, who had taken the chair in 1913 at the last dinner of the Society, and of the loss sustained by the Society and his medical colleagues in his death. Sir James Dundas-Grant then proposed the toast of kindred societies and guests, to which Sir John Bland-Sutton and Mr. H. Curtis Bennett, K.C., responded.

The late Dr. P. E. Wallis.—Percy Evershed Wallis, who died at East Grinstead on June 26th, had been medical officer of health for the urban district since the year 1889, and in addition held a number of other public appointments in the town and district. Born at Hartfield in 1852, he was educated at Epsom College and King's College, London, and received his medical training at Guy's Hospital. Here he was vice-captain of both the cricket and football teams, and all his life took a deep interest in the summer and winter games. He took the L.R.C.P. Edinburgh and L.M. diplomas in 1877 and became M.R.C.S. England in the same year. At East Grinstead, where the bulk of his professional life was spent, he was regarded as a careful practitioner, and was admired and respected by all for his professional skill, his sound judgment, and his intellectual honesty. He suffered a great blow by the death of his only son, an officer in the Royal Sussex Regiment, in the war, and again by the death of his wife two years ago. He leaves two daughters.

Metropolitan Hospital Sunday Fund.—The following are among the amounts received at the Mansion House. The total to date is about £50,000:—

	£	s.
Strathcona and Mount Royal	5000	0
. Tetley, £1,000; Mrs. H. G. Tetley, £500; n of Mr. and Mrs. H. G. Tetley, £1,000 ..	2500	0
.. ..	1000	0
th American Bank	525	0
Bank, Ltd.; London County Westminster Parrs' Bank; National Provincial and Union k of England .. .. .. each	500	0
Watts and Co., Ltd.	315	0
A. Hargreaves Brown, Bt.	300	0
John Latta, Bt.	262	10
ank of Australasia; Chartered Bank of India each	250	0
Anonymous; Lt.-Col. Moir-Nisbet; Mr. Alexander Miller .. .. each	200	0
St. Anne's, Wandsworth	183	0
St. Peter's, Cranley Gardens	165	0
St. Giles, Cripplegate	163	0
Union Church, Mill Hill	139	0
Westminster Chapel	114	0
Temple Church	148	0
All Saints, Knightsbridge	128	0
St. Andrew's, Lambeth	121	0
Chapels Royal	117	0
Wanstead Churches	115	0
St. Alphage and St. Mary, Aldermanbury; Hornchurch Parish Church .. .. .. each	110	0
Whitechapel Primitive Methodist Mission; Moxey Savon and Co.; Mr. H. W. Cullen; Grace Bros. and Co., Ltd.; W. Gardner and Co., Ltd.; United National Collieries, Ltd.; M. Isaacs and Sons, Ltd.; London and Brazilian Bank; Wilson Sons and Co., Ltd. .. .. .. each	105	0
Anonymous, Ditto; Balfour Williamson and Co.; W. Weddel and Co., Ltd.; Mr. W. B. Graham-Menzies; H.J.S. .. .. .. each	100	0

Lloyd's Health Insurance Society.—The ninth annual general meeting of this Approved Society was held in the Committee Room at Lloyd's on June 24th. Sir John Luscombe (President) in reviewing the Society's position, said that in looking backward over the ten years' operation of the National Insurance Act it must be admitted that on the whole national health insurance had been a great success. Since the inception of the Act no less than £65,000,000 had been paid in cash benefits; the recent valuation of Approved Societies had shown its financial basis to be sound, and it had been loyally accepted by both employers and employed. There must be an inherent rightness in the principle of this Act, which had stood the strain of nine of the most troubled years of British history. The administration of their own Society continued to be carried on in a very efficient manner; the result disclosed in the valuation report stating the position on Dec. 31st, 1918, was surprisingly good; a surplus of £7451 on the first five years' working was shown.

British Hospitals Association.—At the annual meeting of this Association, held at the Royal Infirmary, Manchester, on July 1st, Sir Arthur Stanley presiding, the principal subject of discussion was the finance of British Voluntary Hospitals, more especially concerning the help which it is hoped to secure out of the surpluses of approved societies. It is difficult to say what proportion of the population are treated in the hospitals every year; the figure was originally put at 2 per cent. but the Association puts it at 5 per cent. If, said the president, the 95 per cent. who do not require hospital treatment were insured, as it were, against it, the hospitals should get a good income. It has been suggested that the approved societies should contribute a guinea a week for each member treated in the hospital, which, however, is far below the cost. It is not likely that the hospitals will get any of the surplus accumulated by the approved societies in the past, which the hospitals had helped to accumulate, but the President suggested that there was no reason why they should not try to get some of the surplus which the societies would amass in the future. Mr. F. J. Hazell, Superintendent of the Royal Infirmary, said that they were willing to take patients at that institution at a guinea a week, which is twice as much as they ordinarily get. Finally, the meeting authorised the Council of the Association to continue its negotiations with the approved societies and to endeavour to induce the societies to contribute a central fund from which grants would be made to the hospitals. The President, who was re-elected, said the Government departments and everyone concerned had put it definitely on record that every effort ought to be made to preserve the voluntary system for hospitals and not to put them on the rates or into the hands of the State.

Treatment of the Insane.—Professor George M. Robertson, physician-superintendent of the Royal Edinburgh Asylum at Morningside, at the weekly luncheon of the Edinburgh Rotary Club on June 23rd, said that there were three great impediments to progress in the care of those affected in mind. Desired improvements were limited by financial means; there was a want of initiative and a dearth of ideas. The General Board of Control, which supervised the administration of mental hospitals, had, however, been so successful that it was truly described as having a European reputation. The third impediment was that of the out-of-date and archaic laws under which they were required to work. The strict laws against abuses were, no doubt, necessary when they were introduced, but such precautions were now not only quite unnecessary, but were an actual source of injury to patients. The mental patient suffered from an illness like any other illness, and this required medical treatment, not legal commitment. Owing to legal formality it often happened that a patient could not receive treatment in a mental hospital in the early stages of his illness, and time was lost at a point when there was most hope of effecting a recovery. These antiquated laws operated most harshly on the poor, who could not in practice avail themselves of voluntary treatment, because the Government grant in aid, which in part helped to pay for the maintenance of poor patients in mental hospitals, was not given by the Treasury to the parish unless the patient had actually been certified insane and committed by a Sheriff. Another legal enactment, illogical and absurd as well as hurtful, was that the Lunacy Law of Scotland permitted a patient with mental symptoms to be treated temporarily, without being certified insane, in any place except a mental hospital. The patient might be placed in most unsuitable surroundings, ill-attended by untrained persons, and the fact of his treatment concealed from the knowledge of the officials of the Board of Control—all according to law. It was, however, illegal for the same patient to be placed in a hospital specially designed for the treatment of mental diseases unless he was branded as a lunatic. Two simple alterations would be (1) the enactment of a law giving permission for treatment in a mental hospital of any patient suffering from a recent attack of mental disorder, for a period not exceeding six months, on simply notifying the Board of the fact; and (2) a clause giving the Government grant in aid to poor patients chargeable on the rates, without the formality of certifying them as lunatics.

INFANT WELFARE CONFERENCE.—The second English-speaking conference on infant welfare promoted by the National Association for the Prevention of Infant Mortality and the National Baby Week Council was opened at the Central Hall, Westminster, on July 5th. Lord Astor presided, and in his opening address emphasised the need for economy in child life as well as in money. Dr. Janet Campbell read a paper on Maternity Homes, in which she explained that the science of midwifery had lagged behind other branches of medicine in recent years and that better conditions were needed for the conduct of cases in labour. At the afternoon session Mrs. Cyril Smithett read a paper on Residential Provision for Mothers and Babies. The Child Welfare Exhibition was opened by Sir Alfred Mond, who dwelt on the advantages to be gained by bringing home to people visually, as in that exhibition, the proper methods of rearing infants.

CHILD WELFARE FÊTE.—An effort is being made to raise money for the promotion of infant and child welfare by a fête to be held on July 16th in the Royal Hospital Gardens, Chelsea. The promoting body is the Central Council for Infant and Child Welfare, which was brought into existence through the efforts of the Joint Council of the Order of St. John and the British Red Cross Society for the purpose of promoting the well-being of children from the ante-natal period up to the age of 16. The Central Council is formed from 13 bodies, which have more or less identical aims, being concerned with mothercraft, the welfare of healthy and sick babies, the care of invalid and crippled children, the provision of day nurseries and convalescent and holiday homes, and the training of volunteers in all branches of the work, and Sir Arthur Stanley is its chairman. Offers of gifts of saleable articles for the fête are solicited and should be sent to Miss Wilson, Secretary of the Central Council for Infant and Child Welfare at 20, Berkeley-street, London, W.

DONATIONS AND BEQUESTS.—During the last six months contributions have been made to the Christie Hospital, Manchester, from the executors of the late Miss Margaret Gerard (£1280) and of the late Miss Margaret Cunliffe (£500) and of the late Mrs. Mount (£30). The late Mr. W. Sutcliffe left a legacy of £200 to this hospital and Dr. J. Howie Smith of Stockport of £100.—The Chelsea Hospital for Women has received from an anonymous friend the sum of £100 to the General Fund and £100 to the Convalescent Home Fund.—The late Captain Roger Grenville Peek bequethed £1000 to the London Hospital.—The late Mr. Charles Wills, J.P., of Bristol, left by will £100 each to the Bristol General Hospital, and the Bristol Royal Infirmary; £50 each to the Medical Mission in Red Cross-street, the Bristol Royal Hospital, and the Blind Asylum, and the Orthopædic Hospital and Home for Crippled Children.

MANCHESTER UNIVERSITY GRADUATION CEREMONIAL.—The Vice-Chancellor on July 2nd conferred nine honorary degrees on distinguished persons. Amongst them were Mr. R. Kidston, distinguished for his investigations on palæobotany, Prof. C. S. Sherrington, F.R.S. and Waynflete Professor of Physiology at Oxford, who received the degree of Doctor of Science, and Prof. Elliot Smith, F.R.S., formerly Professor of Anatomy in the University, the degree of Litt.D. The Vice-Chancellor stated that there were nearly 2900 students on the books (500 in the Faculty of Technology), of whom 600 were women. The appeal fund has now reached £220,000; the efforts to increase it were suspended during the industrial crisis. It was most desirable that monetary local support should be given to the University, as the amount of money assigned to each University from the Government grant by the University Grants Committee will in future be proportioned to the amount of local support which it receives. Thus, if the University appeal for £500,000 had been met by a response of £400,000 by the local community instead of £200,000, the University would have received twice as large an additional grant from the Committee. If, said the Vice-Chancellor, the half million were raised, this plus the increased Government grant would "enable us to pay our staff adequately, to house our students, and meet all the needs for which we sought help. Instead we are being faced with an annual deficit of not less than £5000 in carrying on our present curtailed activities."

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, JUNE 28TH.

Public Health (Officers) Bill.—Dentists Bill.

THE Public Health Officers (No. 2) Bill was read a second time.

The Dentists Bill was read a third time and passed.

TUESDAY, JULY 5TH.

The Public Health (Officers) (No. 2) Bill passed through Committee without amendment.

HOUSE OF COMMONS.

TUESDAY, JUNE 28TH.

The Blind Population of India.

Mr. GRUNDY asked the Secretary for India the approximate number of blind people in India; whether there was any legislation in force for their treatment and care; and, if not, whether he would make recommendations on this subject to the Government of India.—Mr. MONTAGU replied: At the Census of 1911, there were 175,214 blind males and 173,133 blind females in British India. There is no special legislation applicable solely to blind persons, nor has the need of such legislation become apparent. Dispensaries, stationary and travelling, are available throughout British India, where treatment is given gratuitously to all poor persons; and cataract and other eye operations form one of the largest and most widely appreciated branches of their work. In the United Provinces, for example, 12,326 in-patients were treated during 1919, and 591,229 out-patients, for eye diseases.

Health Safeguards in Slate Quarries and Mines.

Major BREESE asked the Secretary of State for the Home Department if it was intended at an early date to formulate fresh regulations for safeguarding the health and providing against accidents of men employed in the slate quarries and mines of the United Kingdom.—Mr. BRIDGEMAN replied: The revision of the existing regulations has already been taken in hand and will be completed as quickly as possible, having regard to the paramount claims of the work put on the Department by the prolonged stoppage of the coal-pits.

Report of Committee on Pensions.

Mr. PENNEFATHER asked the Minister of Pensions whether the Committee appointed by him some seven months ago had yet reported; if so, whether the report contained recommendations or suggestions in the direction of greater efficiency and economy in administration and greater satisfaction to pensioners; and whether the report would be published and an opportunity of discussing it provided before the House rose.—Major TRYON replied: The report of this Committee is now with the printers; and, as Chairman of the Committee, I hope to submit our recommendations for my right honourable friend's consideration within the next few days.

WEDNESDAY, JUNE 29TH.

Hospitals and the Key Industries Bill.

The House went into Committee on the Safeguarding of Industries Bill, Mr. JAMES HOPE in the chair.

Mr. KILEY moved an amendment to Clause 1 (Charge of Customs Duties on Goods in Schedule), the object of which was to postpone the operation of the Bill until January 1st, 1922. —Dr. MURRAY said while the amendment had been moved entirely from an industrial and commercial point of view, he thought the Government ought to remember that the hospitals of the country had been in dire straits ever since the Armistice. Their laboratories had got out of gear, and there was an almost universal need for new equipment. One of the tragedies of the last three years had been the fact that the hospitals had not only been unable to minister to the number of patients who required their aid, but had been unable to procure the instruments, glassware, and other equipment of that kind which they required in the interests of their patients. The Government had announced that they were going to give £500,000 to the hospitals, but if they did not get time to re-equip their laboratories, and re-stock their instrument departments, nearly the whole of that £500,000 would be used up in extra expense in that direction, so that the Government would be robbing Peter to pay Paul, and this £500,000 would be a sham and a delusion and a snare. This Bill was going to hit our hospitals very hard, and the governors of those institutions should be given sufficient time to replace their equipment. That could not be done in six months. They did not yet know how much of this money they were going to get, and unless they could carry out the whole thing before January all this money would be practically useless.—Major BARNES said that one could not go up and down the streets of London without seeing at every hospital bills notifying the closing of beds and the reduction in the number of out-patients. At a time when every charitable institution in this country was crying out to the charitably disposed for funds for, perhaps, the most sacred cause to which funds could be devoted—the alleviation of human suffering—the Government were bringing in a Bill to make it more difficult and more expensive to alleviate that suffering.—Mr. A. M. SAMUEL said no human being would do anything to clog the ability of a hospital to be properly equipped, but the hon. Members who had spoken had not given the Committee a single proof that the necessary instruments were not in the shops or warehouses of this country already to be bought if the hospitals needed them.—Col. PENRY WILLIAMS said that only the other day they saw an account in the press of a new scientific instrument which had been acquired by the West London Hospital for the treatment of cancer. It cost £2000. Under this Bill £600 odd would be added to its cost to the people who hoped to benefit by this treatment. Was that the policy of the Government? He believed that had it the money each hospital would acquire one of these new instruments. If they were given the extra six months, and they had £500,000 for the equipment of their hospitals, a large amount of human suffering would be saved.—Mr. BALDWIN (President of the Board of Trade) contended that the community had had ample notice of this Bill. He was quite unable to accept the amendment.

On a division the amendment was negatived by 189 votes to 77.

Deaths from Vaccination.

Mr. WATERSON asked the Minister of Health whether letters of inquiry were still addressed to medical men who certified deaths as due to vaccination; and, if so, how many of such letters had been sent in regard to such certificates during the past ten years.—Sir A. MOND replied: The answer to the first part of the question is in the affirmative; 20 such letters have been sent during the past ten years. It is also the practice in these cases for a medical officer of the Ministry to make personal inquiries into the circumstances.

The Occupational Census.

Mr. ROSE asked the Minister of Health if, in view of the urgent public need of information as to our industrial population and the fact that the full occupational census had usually taken from three to four years to compile in detail, he would take measures to issue as early as possible an approximate or round figure occupational census, showing the rough totals of occupied and unoccupied persons, and the allocation of the occupied population amongst the industries.—Sir ALFRED MOND replied: As no occupational figures for the whole country, however approximate, could in any event be furnished until every individual return has been examined and classified, it does not appear that advantage is to be gained by any departure from the present programme. It is intended to prepare and publish the occupational and certain other census statistics by counties. The earliest issue may be expected in a few months, and the whole will, it is hoped, be completed in two years. The importance of these figures is recognised, and every effort will be made to expedite their issue.

Administration of Dundrum Asylum.

Mr. HAYDAY asked the Chief Secretary to the Lord Lieutenant of Ireland who was responsible for the administra[illegible]on of the Dundrum State Asylum, in view of the fact that [illegible] staff worked over 12 hours a day, and that repeated [illegible]mises made many months ago to improve their general [illegible]nditions of service had not materialised.—Sir H. GREENWOOD replied: Arrangements have already been agreed to which should enable the hours of work of the staff of this institution to be substantially curtailed. The administration of the asylum is in the hands of the governor, subject to the usual administrative and financial control.

Army Statistics.

Major BROWN asked the Secretary for War what were the total numbers, all ranks, of the Army Service Corps, Royal Army Medical Corps, Royal Army Ordnance Corps, Royal Army Veterinary Corps, Royal Army Pay Corps, Corps of Military Accountants, Army Educational Corps, and Army Dental Corps in the year 1913-14; and what was their estimated total for the year 1921-22.—Sir L. WORTHINGTON EVANS replied: Excluding the Army in India, the total numbers in the corps mentioned in 1913-14 were 14,609, and the estimated total for 1921-22 is approximately 20,569.

New Hospital Commission.

Mr. LEONARD LYLE asked the Prime Minister what steps, apart from the grant of money towards voluntary hospitals, he proposed to take to give effect to the recommendations of Lord Cave's Committee dealing with the improvement of the financial position of these institutions.—Sir A. MOND (Minister of Health) replied: I am now taking steps to appoint a Hospital Commission which will be responsible for the establishment of Local Voluntary Hospital Committees for the distribution of the State grant and for assisting in raising fresh revenue and in combining and co-ordinating the activities of the hospitals generally on the lines recommended by Lord Cave's Committee. The other recommendations of that Committee, some of which would require legislation, are still under consideration.—Mr. LYLE: In view of the fact that the Finance Bill is passing through the House at the present time, may I ask if the Government will consider the report of the Cave Committee, which recommended that the contributions of employers should be exempt for the purposes of income tax.—Sir A. MOND: Yes, that point will certainly be considered.—Mr. DEVLIN: Will there be a representative on this Commission from Ireland?—Sir A. MOND: No, Sir.

Voluntary Hospitals in Ireland.

Sir MAURICE DOCKRELL asked the Minister of Health if he was aware that Ireland made a very large contribution to the medical and nursing staff of the nation during the war, and that the skill of those serving was to a large extent acquired in the voluntary hospitals of Ireland; if he would explain why Ireland was excluded from the reference to the committee appointed by the late Minister of Health, and was in consequence excluded from the grant of £500,000 about to be made to the voluntary hospitals of the United Kingdom other than those of Ireland; and if Ireland would be granted a sum at least proportioned to her taxation as part of the United Kingdom.—Sir A. MOND replied: I gladly acknowledge the value of the work of the voluntary hospitals of Ireland. I understand that Ireland was excluded from the purview of Lord Cave's Committee as it was thought that the Irish Parliaments might be left free to provide, as they may think fit, for the needs of Irish hospitals. The last part of the question should be addressed to my right hon. friend the Chief Secretary to the Lord Lieutenant.—Sir M. DOCKRELL: Is the right hon. gentleman aware that in Clause 1 of the report of the Cave Committee they evidently contemplate the inclusion of Ireland in the reference and that in Clause 56 they base the recommendation for a grant from the Government upon the fact that the voluntary hospitals of this country did very fine work in treating wounded soldiers? Further, is the right hon. gentleman aware that there was no country which did more in proportion to its resources in this respect than Ireland for wounded soldiers, and will he take steps to prevent gross injustice to Ireland, which will occur if Irish hospitals are excluded from participating in this grant; will the right hon. gentleman kindly give favourable consideration to this matter which involves a great hardship?—Sir A. MOND: As I pointed out in my previous answer, Ireland was not included in the purview of Lord Cave's Committee or in the reference and therefore the grant which I am going to ask the House to give cannot be affected by any question regarding Ireland. Ireland is not within the purview of my department and any further questions on the subject should be addressed to the Chief Secretary for Ireland.—Sir M. DOCKRELL: If Ireland had been included in the reference would the right hon. gentleman feel it his duty to recommend a grant to Ireland?—Mr. DEVLIN: May I ask whether as Ireland pays its proportion to the taxation of the country and as this is a grant to relieve hospitals out of taxation Ireland is not entitled to an equivalent grant for the purpose for which the general sum is intended?—The SPEAKER: The hon. Member should put that question to another Minister.—Mr. DEVLIN: May I then ask the right hon. gentleman whether he will not confer with the Chief Secretary for Ireland and see if the Irish Government cannot do something on behalf of those who are ill in Irish hospitals instead of merely driving more people into these hospitals?—Sir A. MOND: I am not responsible for the health of Ireland and to confer with the Chief Secretary on a matter of Irish business is not within the scope of my duties.

THURSDAY, JUNE 30TH.

Indian Medical Officer's Leave.

Brigadier-General COLVIN asked the Secretary for India whether he was aware that many officers of the Royal Indian Medical Service had had no English leave for many years, and whether having regard to the debilitating climate of India, he would take steps which would enable officers of this Service to have leave at regular periods.—Mr. MONTAGU replied: I regret that owing to the conditions created by the war it has not been possible to grant leave in the Indian Medical Service to the extent desirable. Every effort is being made to bring the Service up to full strength and so make it possible to grant leave more freely. As the hon. and gallant Member is doubtless aware, the terms of service have been immensely improved, with the object of attracting a larger number of candidates of the best type. But the falling-off in the out-turn of the medical schools during the war makes this a slow process. In the meantime all the Government of India can do is to restrict the amount of leave that may be taken by an officer at one time so that as many officers as possible may come home.

Medical Examinations for the Civil Service.

Sir Herbert Nield asked the Secretary to the Treasury whether he was aware that ex-Service men whohave passed the qualifying educational standard for the Civil Service were required to pay a fee of 15s. before they could be medically examined; whether, having regard to the fact that most of these men had been employed temporarily in Government departments at a salary of £3 15s. per week, out of which they had had to pay fees for entering the examination as well as for attending classes, this medical examination fee could be debited to the National Health Insurance Commissioners, seeing that many of these men had never received any pecuniary benefit under the National Health Insurance Act or failing this that only those who had passed the medical examination be asked to refund the money at a later date.—Mr. Hilton Young replied: The fee for medical examination demanded in the cases of candidates for all but the highest appointments in the Civil Service has, after negotiations with the British Medical Association, been fixed at 15s., and I am satisfied that this sum is a reasonable charge for the detailed report required. I am not prepared to impose a charge upon the Exchequer in respect of this fee, for which Health Insurance Funds could in no case be made liable.

Insurance Contributions of Miners.

Mr. Allen Parkinson asked the Minister of Health if any provision had been made to allow for the non-payment of contributions to the National Health Insurance by the miners who had been locked out; if not, was it intended that the workers in the coal industry who had missed 13 weeks' contributions in the present half-year should be mulcted in an arrears fine of 3s. to bring them into full benefit; or would he issue instructions that members were not to be penalised by fine or reduced benefits on account of their contributions not being paid during this period of unemployment.—Sir A. Mond replied: An insured person who has missed 13 contributions in the contribution year ended July 3rd next can, in accordance with the Regulations, avoid any reduction in benefit during the next benefit year by the payment of 3s. (if desired in instalments of 1s.) before the end of next November. In view of the easy conditions of payment and the prospect of regular employment in the mining industry during the intervening months it is not proposed to make any special provision as suggested by the hon. Member.

London Pension Appeal Tribunals.

Lieut.-Colonel Sir Frederick Hall asked the Minister of Pensions whether any and, if so, how many additional appeal tribunals had been set up in the London region since Feb. 28th last; what was now the average number of appeals being heard each week; and what was the usual period which at present elapsed between the date on which an appeal was received by the tribunal and the date on which it was listed for hearing.—Major Barnston (Controller of the Household) replied: There are at present eight Pension Appeal Tribunals sitting in London dealing with approximately 400 cases each week. The average period elapsing between the date a London area appeal is received by the tribunal and the date on which it is listed for hearing is about seven weeks. The number of waiting appeals in this area has been considerably reduced since March last.—Sir F. Hall: Cannot steps be taken to set up additional tribunals in order that this work can be expedited?—Major Barnston: I will communicate that suggestion to my hon. and learned friend.

Voluntary Hospitals in Ireland.

Sir M. Dockrell asked the Chief Secretary for Ireland if he was aware that Ireland made a very large contribution to the medical and nursing staff of the nation during the war, and that the skill of those serving was to a large extent acquired in the voluntary hospitals of Ireland; if he would explain why Ireland was excluded from the reference of the Committee appointed by the late Minister of Health, and was, in consequence, excluded from the grant of £500,000 about to be made to voluntary hospitals of the United Kingdom other than those of Ireland; and if Ireland would be granted a sum at least proportioned to her taxation as part of the United Kingdom.—Sir H. Greenwood replied: I am aware that Ireland made a large contribution to the medical and nursing staff of the nation during the war. The British Government already makes an annual grant of over £16,000 to Irish hospitals. Under present conditions the Government does not see its way clear to ask the House to increase that grant. Lord Cave's Committee did not consider the condition of Irish hospitals on the ground that under the Government of Ireland Act hospitals in Ireland come under the provisions of the two Parliaments.—Sir M. Dockrell: Is it a case of "live horse and you will get grass"? I am sure we have the right hon. gentleman's sympathy, and we ask for its exercise in favour of our hospitals.—Colonel Sir J. Greig: Are there equivalent grants in England or Scotland to hospitals from public funds?—Sir H. Greenwood: I think equivalent grants are not made to hospitals in England or Scotland but exclusively to Ireland. As the hon. gentleman says, I am fully sympathetic, but I regret that from the point of view of Ireland that the people of this country have taken the view, and, indeed, it is the view under the Government of Ireland Act, that matters that come under the two Parliaments of Ireland can no longer be treated by this House especially in face of the financial grants.—Sir. M. Dockrell: Is there to be no contribution until the Irish Parliaments function concurrently? If so we may have to wait indefinitely.—Mr. Devlin: Is it not the fact that one of these Parliaments has postponed its deliberations till September and that the other does not propose to meet at all; and in the meantime while the hospitals are suffering and are in debt because of these political events, are they to be denied the advantages of this grant from the public exchequer to which Ireland pays its fair share? Answer that with all your sympathy.—No further answer was given.

FRIDAY, JULY 1ST.

The Washington Conventions.

Dr. Macnamara (Minister of Labour) moved: "That this House approves the policy of His Majesty's Government respecting the several conventions and recommendations of the International Labour Conference at Washington in November 1919." Speaking of the Maternity Convention (which along with that dealing with the 8-hour day the Government have refused to ratify) the right hon. gentleman said that it was proposed to provide for the six weeks preceding and the six weeks following confinement, and these proposals related only to employed women. Now in this country we had developed over a period of years a system for dealing with this question which was on entirely different lines and which provided not only for employed women but for the wives of employed contributors to the National Health Insurance Scheme—a very much larger number. Our system was animated by the same spirit as this particular Washington Convention, but the Washington Convention if adopted would cut right across the arrangements which during a series of years had been made and built up in this country—and were in advance of those in any other country in the world—under the National Insurance Act and in connexion with maternity and child welfare centres throughout the country. Were they going to scrap their existing machinery built up with a remarkable measure of success as a result of years of effort in order to start again from the beginning on entirely new lines? After full consideration the Government decided that such a change would be unjustifiable.

Mr. G. Barnes appealed to the Government to revive confidence in the Labour Organisation of the League of Nations and to revive confidence in themselves as having signed the Labour Chapter of the Peace Treaty.—Mr. Clynes, speaking for the Labour Party, said that the two questions that still mattered to them were the questions of hours and of maternity conditions. They were asking that women who had to work for their living and enter into employment should be assured of the fullest care and rest many weeks before and after confinement. The nation could not afford to allow women and children to suffer for the sake of a saving of, may be, £2,000,000 a year.—Viscountess Astor urged that the Government should call a conference of women experts to see if any way could be found to deal with this question of maternity.—Mr. A. Chamberlain (Lord Privy Seal), supporting the motion, said this country had really been in the forefront of industrial legislation for the protection of the health of our industrial community. The accomplishment, however, of all their hopes and ideals was not possible so long as some of the greatest nations of the world, and especially some of the greatest industrial nations, took no part in these conferences, were no parties to their decisions, and did not act with us in the general endeavour. In super-legislation of this type the proposals must be made elastic if they were to be successful. He had made inquiries and he was informed that there was nothing comparable to the maternity benefit given in this country in any country in Europe, or, indeed, anywhere with the possible exception of one of our Dominions. If other countries could be persuaded to come up to our standard we would go forward in an endeavour to secure agreement with those countries for still further progress. But it was no use ratifying conventions with one exception in one country, another exception in another country, and a clause in a third which enabled them to accept anything. That way there would be no progress, but a hollow appearance of assent which covered an infinite difference of opinion.

On a division the motion was carried by 164 votes to 53.

Dentists Bill.

On the motion of Sir A. MOND the Lords amendments to the Dentists Bill were agreed to, and the House also agreed to introduce words to prevent the director of a dental company who is not a registered dentist calling himself a registered dentist as far as the company is concerned, while carrying on as a registered dentist during the amalgamation or reconstruction of the company.

MONDAY, JULY 4TH.

Overcrowding in Middlesbrough.

Mr. TREVELYAN THOMSON asked the Minister of Health whether he was aware that considerable sickness and ill-health was being caused in the county borough of Middlesbrough owing to the large amount of overcrowding which existed on account of the shortage of houses, estimated by the local authority as over 2000 houses; and would he therefore reconsider his decision not to sanction the immediate provision of a further 300 houses desired by the local authority.—Sir ALFRED MOND replied: My department has no information confirming the allegation made by the hon. Member. With regard to the latter part of the question, I am afraid I cannot add anything to the reply which I gave to the hon. Member to his question on Wednesday last.

Women in Ministry of Health.

Mr. SWAN asked the Minister of Health how many women in his department or in departments now comprised in the Ministry were receiving a salary of £500 a year in June, 1914; and how many were receiving such a salary now.—Sir ALFRED MOND replied: The number of women employed in 1914 in the departments now comprised in the Ministry of Health who were receiving a salary of £500 a year or over was three. The corresponding number for 1921 is seven.

Pension Appeal Delays.

Lieut.-Colonel HURST asked the Minister of Pensions whether he was aware that the appeal of C. A. Blake, late Royal Engineers, of 2, Priory-street, Greenheys, Manchester, (B D 41, 359) submitted on Dec. 22nd, 1920, was still unheard; whether he would expedite the hearing; whether he was aware of the excessive delay in the hearing of appeals by the appeals tribunals and the hardships thereby caused to appellants; and whether he would take steps to mitigate such hardships by increasing the number of tribunals and by enabling local committees to give grants in aid pending final decisions.—Major TRYON replied: I am informed by the tribunal authorities that this case will be heard during the present week, and that two additional tribunals have recently been set up to deal with appeals arising in the area of the north-western region. With regard to the last part of the question, I would refer my hon. and gallant friend to the answer given to the hon. and gallant Member for Royton on April 21st, of which I am sending him a copy.

Pension Statistics.

Sir WALTER DE FRECE asked the Minister of Pensions the number of applications for pensions which had been rejected; the number of pensions which had been terminated; the number of pensions which had been reduced; and the number of applications for pensions received within the last six months.—Major TRYON replied: During the last six months 59,000 first applications for pensions were made by officers and men, of which 40,700 were accepted and 18,300 were rejected. During the same period 512,500 pensioners were re-examined by medical boards, with the result that in 261,000 cases the pension was continued at the same rate, in 15,500 cases it was increased, in 149,000 it was reduced, and in 51,500 cases the pension was not renewed.

Small-pox and Vaccination.

Mr. ROBERT YOUNG asked the Secretary for Scotland whether any of the infants under five years of age who died of small-pox during the Glasgow outbreak in 1920 had at any time been vaccinated before dying of small-pox.—Mr. MUNRO replied: No child under five years of age who died of small-pox in Glasgow during the outbreak in 1920-21 had been vaccinated at any time.

TUESDAY, JULY 5TH.

National Health Insurance Bill.

On the motion for the third reading of the National Health Insurance Bill,

—Sir GODFREY COLLINS said that according to the report ated to the House by the Minister of Health the total of insured persons was 12,100,000. The intention Bill was to set aside a sum of 1s. 10d. per insured n per annum—a total sum of £2,750,000—for the ost of administration of Approved Societies. In tion a further sum of 6d. was to be set aside for the inistration expenses of the insurance committees, nting in all to £717,000, making a total of over absorbed in administration of the Act of 11. There was also a sum of nearly £600,000 which was uded in the Ministry of Health estimates to be spent in administration, so that nearly £1,000,000 was to be disbursed on administration. He thought that these sums were excessive but he did not suggest that they were unnecessary in the present administration. No one questioned the valuable work being done by Approved Societies and insurance committees throughout the country, but in the interests of insured persons he urged that before these sums were granted the Minister should take steps to curtail the enormous expenditure on the administration of the Act. It had been estimated in a report which had been presented to Parliament that for every £3 paid out in benefit £1 was required for administration expenses. He asked if the time had not come when the whole working of the Act should not be inquired into with a view to its simplification and the reduction of the number of officials employed, so that a large proportion of the contributions might be available for increased benefits.

After some discussion, Sir A. MOND (Minister of Health) said that the Committee which inquired into the cost of the administration of the National Health Insurance Act came to the conclusion that the additional charge of 5d. per head of the insured persons would be a reasonable amount for administration expenses. It would be terrible if it were true, as had been suggested by Sir Godfrey Collins, that for every £3 paid out in benefits £1 was spent in expenses of management. The fact was that those expenses only represented 12½ per cent. of the premiums received. The work of the Insurance Commission and the Approved Societies had been very carefully and conscientiously carried out and the valuations which were now being made were coming out extremely well in almost all districts. He was not sure, however, that the time had not arrived when a searching inquiry into the whole subject by a responsible body might not take place with advantage and he would consider whether such a body should not be set up.

The Bill was read a third time.

Appointments.

BRUCE, J., M.B., C.M. Glasg., D.P.H., has been appointed Medical Officer to the Post Offices of Paisley, Bishopton, and Linwood.

CROOKSHANK, F. G., M.D., F.R.C.P. Lond., Physician to In-patients, the Prince of Wales's General Hospital, N., and the French Hospital, W.C.

WORSTER-DROUGHT, C., M.D. Camb., M.R.C.P. Lond., Assistant Physician to the West End Hospital for Diseases of the Nervous System.

YOW, C. W., M.B. Edin., Senior House Surgeon and Registrar to the Royal Eye Hospital, Southwark.

Manchester Royal Infirmary: HISLOP, G., M.B., B.S. M.B. Syd., House Physicians; HARLEY, H. W., M.B., B.S. Melb., House Surgeon. WILLIAMSON, R., M.B., Ch.B. Vict., and FORD, W. J.

Certifying Surgeons under the Factory and Workshop Acts: FORT, H. M., M.B., Ch.B. Manch. (Oldham West); Lo J., M.B., Ch.B. Aberd. (Oldham East).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—Res. Surg. O. £250.
Ayr District Asylum.—Male Asst. P. £400.
Barnsley, Beckett Hospital.—Sen. H.S. £300.
Battersea Borough Council.—Asst. M.O. £550.
Bedford County Hospital.—H.S. £200. Asst. H.S. £150.
Birkenhead Borough Hospital.—Sen. H.S. £250.
Birmingham Education Committee.—Asst. Sch. M.O. £500.
Birmingham General Hospital.—Res. S.O. £180.
Birmingham Queen's Hospital.—Surg. Registrar. £100. As Obstet. and Oph. H.S. £90.
Bolton Infirmary and Dispensary.—Female Third H.S. £175.
Bootle Borough Hospital, Derby-road.—Hon. S. for Diseases of the Throat, Nose, and Ear.
Brighouse Education Committee.—Oculist. £2 2s. per session.
Bristol Royal Hospital for Sick Children and Women.—Hon. S. to Out-patient Department.
British Honduras.—Asst. M.O. $2130.
Bromley Education Committee.—School Dentist. £250.
Brompton Hospital for Consumption and Diseases of the Chest, S.W.—H.P. £50.
Cancer Hospital, Fulham-road, S.W.—H.S. £150.
Cape Hospital Board.—Three Res. Med. O.'s £30 per month.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
Croydon General Hospital.—Second H.S. £150.
Cumberland Infirmary, Carlisle.—Res. M.O. £180.
Derby, Derbyshire Royal Infirmary.—H.S., H.P. Each £2
Edinburgh Education Authority.—Asst. M.O.'s. £500.
Enfield Education Committee.—Sch. M.O. £500.
Holborn and Finsbury Hospital, Archway Road, N.—Sec Asst. M.O. £300.
Hull Royal Infirmary.—Asst. H.S. £150.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
Leeds University (Leeds Maternity Hospital).—Tutor in Obstetrics and Res. M.O. £300.

Leicester Royal Infirmary.—H.S. £200.
Liverpool, Royal Liverpool Children's Hospital.—Res. H.S. £90.
Llanelly, Borough of.—Female Asst. M.O.H. and Asst. Sch. M.O. £500.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Registrar. 40 guineas. Res. M.O. £200.
Manchester Ancoats Hospital.—H.S. £150.
Metropolitan Borough of Islington.—M.O.H. £1100.
Middlesex Hospital, W.—Cas. M.O. £104.
Miller General Hospital for South-East London.—H.S. £150.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Pathologist. £250.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £350.
Newport (Mon.) Royal Gwent Hospital.—H.S. £200.
Nottingham General Hospital.—Res. Cas.O. £250. Also H.S. £200.
Oxford, Radcliffe Infirmary and County Hospital.—Res. Accoucheur. £200. Cas. H.S. £200.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. £60. District Res. M.O. £80.
Reading, Royal Berkshire Hospital.—H.S. £200.
Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.
St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—H.S. £250.
Salford Royal Hospital.—H.S. £150. Cas. H.S. £150.
Salisbury General Infirmary.—Asst. H.S. £150.
Sheffield University.—Demonstrator in Department of Pathology and Bacteriology.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
South-Eastern Counties of Scotland Joint Sanatorium Board.—Med. Supt. £600.
South London Hospital for Women, Clapham Common, S.W.—H.P. £100. H.S. £100.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £200.
Wesleyan Missionary Society Women's Auxiliary.—Three Women Doctors.
West London Hospital, Hammersmith-road, W.—P.
Wigan Infirmary.—Jun. H.S. £200.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Pitlochry, at Milngavie, and at Middleton-in-Teesdale (Durham).

Births, Marriages, and Deaths.

BIRTHS.

Hendry.—On June 26th, at Elphinstone-road, Southsea, the wife of Major A. Hendry, R.A.M.C., of a son.

Langrishe.—On July 2nd, at Murdocks House, Ware, the wife of Major John du Pré Langrishe, R.A.M.C., D.S.O., of a daughter.

Lee.—On July 4th, at Gloucester-walk, Kensington, the wife of Robert H. Lee, M.D., of a daughter.

Murphy.—On June 24th, at Linthorpe, Middlesbrough, the wife of Dr. R. W. Murphy, O.B.E., of a daughter.

Smallman.—On the 30th June, at Eastbrook, Park Hill-road, Croydon, the wife of Lieut.-Colonel A. B. Smallman, C.B.E., D.S.O., M.D., of a son.

Warburton.—On July 1st, at *Campden House Court*, Kensington, the wife of P. D. Warburton, M.R.C.S., of a daughter.

Yeoman.—On June 28th, at 10, Duchy-road, Harrogate, to Dr. and Mrs. W. Yeoman—a daughter.

MARRIAGES.

Charlesworth—Bennett.—On June 28th, at St. Mary's Parish Church, Barnes, Henry Charlesworth, C.M.G., Brevet-Colonel, late R.A.M.C., to Constance Katherine, daughter of the late Mr. and Mrs. George Bennett, formerly of Holland Park, and Barnes.

Fry—Miall-Smith.—On July 1st, at the Ethical Church, Bayswater, Hubert John Burgess Fry, B.A., M.D., B.Ch., B.Sc., M.R.C.S., L.R.C.P., D.P.H., to Gladys Miall-Smith, B.Sc., M.B., B.S., M.R.C.S., L.R.C.P., D.P.H.

Malden—Durant.—On June 29th, at St. Andrew's Church, Clewer, Windsor, Edmund Claud Malden, M.A., M.R.C.S., L.R.C.P., to Margaret Dorothy, only daughter of Mr. and Mrs. Durant, of Clewer Court, Windsor.

Piggott—Porter.—On June 21st, at St. Stephen's, Winchmore-hill, F. Stanley L. Piggott, M.R.C.S., to Leslie, second daughter of Mr. S. J. Porter, of Woodside, Winchmore-hill.

Shore—McCallum.—On June 29th, at St. Margaret's Church, Putney Park-lane, Lewis Rudall Shore, M.C., M.A., M.B., Captain, R.A.M.C., to Christina, younger daughter of the late R. A. McCallum, of Putney, and Mrs. McCallum, of Thrale Hall, Streatham.

Tennent—Shearer.—On June 29th, at Strathaven, Robert Tennent, F.R.C.S.E., Park-grove-terrace, Glasgow, W., to Helen Fleming, only daughter of John P. Shearer.

DEATHS.

Dodd.—On June 28th, at Harley-street, W., Henry Work Dodd, F.R.C.S., in his 62nd year.

INDEX TO "THE LANCET," Vol. I., 1921.

The Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, will shortly be published in The Lancet.

Medical Diary.

SOCIETIES.

SOCIETY FOR THE STUDY OF INEBRIETY, at the Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.

Tuesday, July 12th.—3.30 p.m., Council Meeting. 4 p.m., Discussion on Alcohol and Alcoholism in Relation to Mental Deficiency, opened by Dr. W. A. Potts.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, July 11th.—12.15 p.m., Dr. Burnford: Pathological Demonstration. 2 p.m., Mr. D. Armour: Operations. 2.30 p.m., Dr. A. Saunders: Visit to Medical Wards. 5 p.m., Lecture:—Mr. D. Buxton: Irregularities of the Teeth.

Tuesday, 10 a.m., Surgical Registrar: Demonstration of Cases. (Surgical Wards.) 12 noon, Mr. T. Gray: Demonstration of Fractures. 2.30 p.m., Mr. Addison: Demonstration of Cases. (Surgical Wards.) 5 p.m., Lecture:—Mr. Addison: Inflammation and Tumours of the Breast.

Wednesday, 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 p.m., Mr. D. Armour: Visit to Surgical Wards. 2 p.m., Mr. Addison: Operations. 5 p.m., Lecture:—Dr. Pritchard: Forms of Arthritis and their Treatment.

Thursday, 10.30 a.m., Dr. Simson: Gynæcological Demonstration. 5 p.m., Special Lecture:—Mr. P. Dunn: Some Points in Relation to Tobacco Amblyopia. (Open to all Medical Practitioners.)

Friday, 10 a.m., Dr. G. Stewart: Neurological Demonstration. 12.15 p.m., Dr. Burnford: Applied Pathology. 2.30 p.m., Mr. Baldwin: Operations. 5 p.m., Lecture:—Dr. Pritchard: Meningitis.

Saturday, 10 a.m., Medical Registrar: Demonstration of Cases. (*Medical Wards.*)

Daily, 10 a.m., Visit of Post-Graduates to Wards. 2 p.m., In-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, July 11th.—10 a.m., Mr. W. E. Tanner: Surgical Out-patients. 2 p.m., Dr. A. J. Whiting: Medical In-patients. 2.30 p.m., Mr. J. B. Banister: *Gynæcological.*

Tuesday.—9.45 a.m., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 p.m., Dr. J. Metcalfe: X Ray Department. 3 p.m., Lecture Demonstration:—Mr. C. H. Hayton: Anatomy of Ear. Methods of Examination.

Wednesday.—2 p.m., Mr. C. H. Hayton: *Throat Operations.* 2.30 p.m., Dr. W. J. Oliver: Dermatological. 3 p.m., Lecture Demonstration:—Mr. W. E. Tanner: Specimens illustrating Acute Abdominal Emergencies

Thursday.—2 p.m., Mr. N. Fleming: Eye Department. 2.30 p.m., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

Friday.—2 p.m., Dr. C. E. Sundell: Diseases of Children. 4.30 p.m., Lecture Demonstration:—Dr. C. E. Sundell: Bottle Feeding. 5 p.m., Dr. Provis and Mr. Benians: Venereal Department.

Saturday.—10.30 a.m., Mr. W. E. Tanner: Operations. 3 p.m., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, *Post-Graduate Course*, Westmoreland-street, Marylebone, W.

Monday, July 11th.—11.15 a.m., Demonstration (Laboratory and Clinical): Dr. B. T. Parsons-Smith. 2 p.m., Ward Demonstration: Dr. R. O. Moon. 5 p.m., Lecture:—Dr. B. T. Parsons-Smith: Anatomy and Development of the Heart.

Tuesday.—11.15 a.m., Demonstration (Laboratory and Clinical): Dr. J. S. Goodall. 2 p.m., Ward Demonstration: Dr. J. Parkinson. 5 p.m., Lecture:—Sir Sydney Russell-Wells: Diseases of the Aortic Valve.

Wednesday.—11.15 a.m., *Demonstration* (Laboratory and Clinical): Dr. J. S. Goodall. 5 p.m., Lecture:—Dr. F. W. Price: Diseases of the Mitral Valve.

Thursday.—11.15 a.m., Demonstration (Laboratory and Clinical): Dr. R. O. Moon. 2 p.m., Ward Demonstration: *Dr. J. S. Goodall.* 5 p.m., Lecture:—Dr. J. S. Goodall: X Ray in Diagnosis of Cardio-vascular Lesions.

Friday.—11.15 a.m., Demonstration (Laboratory and Clinical): Dr. J. S. Goodall. 2 p.m., Ward Demonstration: Dr. F. W. Price. 5 p.m., Lecture:—Dr. R. O. Moon: *Heart Disease in Children.*

Saturday.—10.30 a.m., Ward Demonstration: Dr. P. Hamill.

Daily (except Saturday):—10 a.m., Sir Sydney Russell-Wells and Dr. J. Parkinson: Instruction in Instrumental Methods of Examination. *Blood Pressure, Polygraph*, Electrocardiograph, and X Ray. 2 p.m., Out-patients. Practical Clinical Demonstrations in the Out-patient Department.

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A Course of Twelve Practical *Demonstrations* on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

Tuesday, July 12th.—10.30 a.m., Demonstration IX., The Tuberculous Mother and her Child.

Thursday.—3 p.m., Demonstration X., The Syphilitic Mother and her Child.

Notes, Short Comments, and Answers to Correspondents.

THE WORK OF THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH.[1]

BY DR. H. H. DALE, F.R.S.

I HAVE been asked to speak upon the National Institute for Medical Research, which comprises the Central Research Laboratories under the Medical Research Council. I may remind you that the Medical Research Fund, which the Council administer, was originally established by the National Health Insurance Act, the sum of money annually available being assessed by the number of insured persons. It represented, indeed, a recognition of the fact, long familiar to anyone with knowledge of the position, that treatment directed to the cure or alleviation of existing disease touched only the fringe of the problem; that a relatively small sum spent on facilitating the discovery of causes, and therewith of methods of prevention or of radical treatment, would ultimately save more suffering and do more for national health, than vast sums spent on the application of such remedies as woefully deficient knowledge had yet been able to indicate. The Committee appointed to administer the fund decided that, while the major part should be employed for supporting and promoting medical research in existing institutions—hospital and university laboratories—a substantial sum should be devoted to the formation of a new central institute, staffed by workers who should be in the Committee's whole-time service, and free to receive, from time to time, attached workers from other institutions, whose research could be assisted by the facilities and the opportunities for help and collaboration which such a permanently organised institute could offer.

The History of the Institute.

The first members of the staff of the Institute were appointed in the middle of 1914, and the Committee had used a favourable opportunity to purchase a fine building and grounds at Hampstead, which, after many years' good service as the Mount Vernon Hospital for the treatment of consumption, had been abandoned in favour of more modern premises further from the centre of London. Then came August, 1914, and the whole of the Committee's resources and staff were, for five years, diverted to dealing with the pressing problems created by the absorption of the whole energies of the nation in the successful prosecution of the war. The Hampstead building was immediately handed over to the War Office, and was used as a military hospital by different branches of the services down to the early months of 1919. When at length it was no longer needed in this direction, the task of preparing it for the accommodation of the research staff was taken up again, and by April, 1920, was so far advanced that the members of the staff could take up their work there, and bring into actual being that close coöperation between the different branches of medical research which the Committee had in view in appointing the staff and planning the Institute. Meanwhile, with the absorption of the Health Insurance Commissions into the Ministry of Health, the Medical Research Committee, as a committee under the Insurance scheme, had passed out of existence, but the task which, during the war, they had discharged with such general approbation, was taken up by the newly-constituted Medical Research Council, administering a Treasury grant, and responsible to a Committee of the Privy Council.

The Work in Progress.—Bacteriological Media.

It will be clear, from what I have said that the National Institute for Medical Research at Mount Vernon has only been in existence as a working research institute for a little over a year. The building has been adapted with remarkable ease, and with very little real structural alteration, to provide spacious, airy, and well-lit laboratories. At the same time, in a first year of working in such newly-adapted quarters, a good deal of time has necessarily been spent in plans and preparations. It can cause no surprise, therefore, if I speak more of our organisation, our plans, and our hopes, than of fir[illegible] achievements. The staff, as originally appointed, [illegible] constituted, is organised in four main departments, [illegible] its independent director—the departments of [illegible]gy and experimental pathology, of applied physiology [illegible] hygiene, of biochemistry and pharmacology, and [illegible]al statistics.

[illegible] the new Institute was ready to receive the workers [illegible] constituent departments many of them were still [illegible] in problems arising out of their work during the war. This must be an experience common to many experimental laboratories. Under the stress of war conditions detailed investigation along established lines was largely thrown aside. New methods and new aims were forced upon us. Peace brought the opportunity for more thorough exploration along routes which the hasty survey of war-time had indicated. Let me give you one or two examples. The shortage of the common constituents of bacteriological media led Captain S. R. Douglas, now directing the Bacteriological Department of the Institute to devise, early in the war, a simple method of making such media from natural pancreatic digests of meat or other protein materials—a method which has safely established itself as a valuable aid to all kinds of bacteriological work. The necessity for making certain bacterial vaccines in large quantities, led him to investigate the value for this purpose of bacteria killed, dehydrated, and freed of their oily constituents by extraction with pure acetone. Again he found a method of wide application and usefulness. Possibly a combination of the two kinds of experience led him next to try the effect of the pancreatic ferments on the acetone extracted bacteria. The result is already full of promise, as giving, perhaps, the long-sought method for extracting from many bacteria the poisonous substances which they liberate when they undergo digestion by the ferments of the blood and tissues, and which are responsible for the symptoms constituting what we call the "disease." Hitherto the treatment of disease by antitoxic sera has had its most convincing success against infection by organisms, such as the diphtheria bacillus, which form their soluble poisons even when grown in an artificial broth. Large sums of money have been expended, and the lives of devoted investigators have been sacrificed in unsuccessful attempts to extract from organisms like the typhoid bacillus the toxic substances which they liberate in the body, so as to prepare antitoxins which will neutralise them. In some cases, such as those of the dysentery bacillus and the meningococcus, a fair measure of success has been obtained by injecting suspensions of the organisms themselves into horses and allowing the animals' own body juices to dissolve them and to excite the production of the appropriate antibodies. Captain Douglas's work, growing under the conditions of peace out of his experience during the war, gives hope of a real step forward in the direction of obtaining sera of higher and of definitely measurable value for the treatment of such diseases.

Researches on Tetanus and Silicosis.

Let me quote another example. During the war Dr. W. E. Gye's duties brought him into contact with the danger of tetanus from heavily infected wounds. The organism of tetanus produces an extremely potent toxin in the laboratory, and the antitoxin produced by immunising horses to this was used on a great scale, and undoubtedly saved many lives during the war. But no sufficient explanation was available of certain curious facts concerning the growth of the bacillus and the production of its toxin in the body. A suspension of washed tetanus bacilli or their spores can be injected without harm. If soil is introduced with them they will germinate, flourish, and produce the toxin which causes the disease. With Dr. W. Cramer, of the Imperial Cancer Research Fund, Dr. Gye investigated the soluble constituents of the soil, and found that two common constituents, calcium chloride and hydrated soluble silica, have the property that, when either of them is injected with tetanus spores under the skin of a mouse, it provides the necessary condition for the germination of the spores and the production of the disease. Now this knowledge, which the experimental use of animals alone could have produced, is bound to have a great influence on ideas as to the conditions under which the presence of tetanus organisms in a wound entails the development of tetanus. It is a new step in the direction of eliminating one peculiarly ghastly disease. But it goes much further than that. It directs attention anew to another condition with which the presence of silica has long been associated, though the nature of its action has been obscure. The fact that working in air impregnated with certain kinds of dust leads to injury to the lungs and predisposes to pulmonary consumption has been recognised for centuries. Though the special prevalence of this condition, in workers in materials creating a siliceous dust, has long been known, it is only since Haldane's work in 1902 that the singular position of silica, and the practical harmlessness, or even protective action of other dusts, have been made clear. But though it is now clear that the presence of silica in the lungs leads to fibrosis and predisposes to consumption, and though the vast importance of the matter for the hygiene of many kinds of workers is recognised, and though the possible means of its prevention are being vigorously investigated, such understanding of the condition as could lead to rational measures for its treatment has been wholly wanting. Now comes this evidence that hydrated silica in colloidal solution, can lead to the germination of tetanus spores in the tissues. Already Dr. Gye has applied the knowledge to a study of the mode of action of silicic acid on the tissues and its influence on the growth of other organisms, and already, with Dr. E. H. Kettle, of St. Mary's Hospital, he has been able to show that the tubercle bacillus, which normally in the tissues of the mouse causes at most a localised nodule of infection, when injected with silicic acid causes, in the same species, a spreading infection in the tissues which the silica has injured. Here, then, opens the possibility of a new light on the problem of the consumption which is a scourge of the tin miners, of the gold miners, of the knife grinders, of the ganister-brick makers, of a whole army of workers in indispensable trades; a possibility of new light from an unexpected quarter, shed by knowledge which would be altogether beyond reach without experiments on animals. And surely even a small step towards the solution of a problem of such importance to humanity is worth the sacrifice of a few mice or rabbits.

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[1] [illegible] address read at the annual general meeting of the [illegible]ch Defence Society on June 29th.

Disseminated Sclerosis.

Another example of work which, also in Dr. Gye's hands, is giving great promise, is the investigation of the disease of the central nervous system known as disseminated or multiple sclerosis. This is a condition regarded as so little susceptible to treatment that but few cases are to be seen in the voluntary hospitals, which must allot their beds to patients for whom there is some hope of remedy. It is to the Poor-law infirmaries that you must go to realise how many are the victims smitten by this mysterious and distressing disease, dragging its course, with alternations of apparent arrest and inevitable progress, through years of misery, for which no fault of the patient or his parents is in any way responsible. The disease has long been recognised and studied by physicians and morbid anatomists, who had arrived at the conclusion that it was "a derangement of the central nervous system due to an inherent defect." Now comes Dr. Gye's evidence that it is due to a definite infection, since the affected nervous matter or the cerebrospinal fluid from a human victim, when injected into rabbits, can transmit the disease, and evoke in them the characteristic lesions of the nervous system. At once we are lifted into an atmosphere of new possibilities. Nobody can investigate the means of preventing, or can suggest rational means of treating "an inherent nervous defect." But here is an infection, with an organism to be discovered, its channel of entry to be identified, its means of access to be removed, the methods for its elimination to be explored. He would be a rash man who would prophecy with confidence, or awaken expectations of early results. But at least there is new hope; there is a line of investigation to pursue. Who, with any knowledge of the vast sum of misery due to this one disease, will dare to lift a finger or speak a word which can hinder?

Other Branches of Work.

I should keep you much too long if I were to try to indicate to you merely the lines of work on which all the different workers in the Institute have embarked. Much of it, such as Dr. Leonard Hill's work on the conditions of ventilation and surface cooling needed for health and vigour, hardly needs at the moment experiments on animals of the kind which your Society is chiefly concerned to defend from ignorant attacks and misrepresentation. His usual experimental animals are himself, his colleagues, and volunteers from the Institute's personnel. Dr. John Brownlee, in his statistical department, takes his material chiefly from the large scale experiments which our ignorance allows Nature still to make on our fellow men. Mr. Barnard's investigation of the minute structure of micro-organisms, by means of his most recent developments of microscopic and photographic technique; Mr. Clifford Dobell's critical survey of the protozoological examinations made on the excreta of people in this country, showing the unsuspected presence of the amœba of tropical dysentery in a material percentage of us healthy Englishmen; these depend hardly at all on the use of animals for experiment at the moment. But the whole significance and value of all their work depend on the knowledge which we could not have obtained except by the directly experimental method.

There are many other items of our activity I could describe: Dr. Leonard Colebrook's work on actinomycosis, work by others of us on shock in wounded men, and on the significance of the capillary circulation in connexion therewith, work on anaphylaxis, on the reaction of blood in the body, and so forth. But there is only one other side of our work which I can mention with any detail. A very important task on which some members of our staff have been engaged has been the control of the activity and freedom from dangerous toxicity of some of the modern potent remedies, such as salvarsan and its analogues, which cannot by any known chemical test be guaranteed as invariably safe for use in human theuraputics. I need not say that such remedies were discovered by means of experiment on animals; but I am not sure whether it is generally realised that there is a large and growing class of them which could not be used at all, with any confidence in their efficacy and in their safety for the patient, if their quality were not subjected, regularly and systematically, to the test of experiment on animals. I venture to say that it is hardly creditable to this country that we have hitherto had no publicly established organisation for the control of such remedies; but, to the limited extent to which the present state of our law and the willing coöperation of British manufacturers make it possible, such control is already being exercised by a department of the National Institute.

I could spend much longer telling you of our plans, but I have said enough to enable you to realise how sincerely, with all workers in medical science, we must appreciate the efforts of this Society to help us, by developing a sane and informed public opinion. Genuine, well-informed criticism we shall always welcome; indeed, as an Institute supported out of public funds, it is peculiarly our duty to have to regard it. On the other hand, we should be false to our trust if we spent the time, which the Government pays us to give to research, in controversy with ignorance which no truth will convince. We realise the immense service to science which this Society is doing in making the real facts of the situation available to all who sincerely desire to know them.

PUBLIC HEALTH IN EGYPT, 1919.[1]

THE population of Egypt in 1919 is calculated to have been 12,878,000, as compared with 12,905,500 in 1918; on this basis the birth-rate was 38 and the death-rate 30 per 1000, as compared with 39 and 40 respectively per 1000 in 1918. Disregarding the exceptional cases of Ismailia (with a birth-rate of 160 and a death-rate of 211), and the Sinai province (with corresponding ratios of 78 and 113), the births ranged from 28 per 1000 in Aswân province to 44 in Port Said, Damietta, and Asyut; and the deaths from 25 in Damietta and Beni Suef to 41 in Alexandria and 42 in Cairo. In the case of each of these two large cities the deaths exceeded the births, which were 35 and 40 per 1000 respectively. Colonel Cathcart Garner, Director-General of the Department of Public Health, states that it was found that the formidable increase in cost of articles of food was having a very deleterious effect on the health of the population, especially of the poorer classes; and that energetic measures were taken, especially as regards the sale of flour at reasonable prices, by which a great improvement was brought about. This is a point that should be noted by the advocates of a policy of "self-determination" in countries, such as Egypt and India, where it is the strength and justice of British rule that constitutes a guarantee against oppression of the poorest and most helpless classes of the population. Much improvement has been effected in the methods of dealing with "unhealthy, inconvenient, and dangerous establishments"; model conditions for fifty different types of such (chiefly connected with the manufacture, storage, or sale of articles of food or drink) were laid down and published; all such licensed establishments were registered, and special inspectors appointed to ensure that the regulations were carried out. It is, however, admitted that these new conditions cannot be applied to existing establishments, in many cases, without practically pulling down the old building and reconstructing it anew; such a drastic procedure is not carried out, but improvements are effected, as far as possible, with the consent and goodwill of the proprietors.

There are 21 general hospitals in Egypt, providing 4502 beds, and the in-patients numbered 61,704, compared with 75,002 in 1918. The reduction was partly due to the disturbed state of the country in March, April, and May, and partly to the cessation of the epidemic of influenza. There is, however, an increased disposition on the part of the population to avail themselves of hospital treatment, and increase of accommodation is required in many places. There were also 219,573 new out-patients treated. The cost of maintenance was 183,142 livres Egyptiennes (one L.E. = 20s. 3¾d.), being an increase of L.E. 16,923 on that of the previous year, due to the high prices of food, drugs, &c.; the cost of building repairs and of the central administration is not included in this sum. The expenditure per bed per annum was L.E. 39.883, and per patient per day 170 milliemes (about 45 pence), as compared with 130 milliemes (32½ pence) in 1916. Since the commencement of the war there has been a total of 45,172 military patients (including prisoners of war) admitted to various hospitals throughout the country; 23,014 were discharged fit for duty, and 1307 died, the remainder being sent to convalescent camps, transferred to other hospitals, or discharged to England. During 1919 the total hospital in-patients treated throughout Egypt numbered 61,704, the most prevalent affections being venereal disease (9811), traumatic injuries (3929), dysentery, diarrhœa and enteritis (1670), and fractures (1544). There were 770 cases of ankylostomiasis, but only 667 of malaria.

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[1] Annual Report of the Department of Public Health. Cairo: Government Press. 1921.

THE WOOD-HILL FUND.

THE following subscriptions and promises have been received to the fund for reimbursing Dr. H. Wood-Hill in the very heavy expenses incurred by him in the case Clayden v. Wood-Hill, in addition to those recorded in the lists published in our issues of Dec. 3rd (p. 1187) and Dec. 17th (p. 1299). There is still ample need for further support.

	£	s.	d.
Amount previously acknowledged	471	7	6
Staff of the Radcliffe Infirmary, Oxford (per Dr. Ernest Mallam); Manchester Medical Committee (per Dr. John D'Ewart) .. .. .. each	21	0	0
Mr. A. E. Webb-Johnson, C.B.E., D.S.O., London; Sir Charles Ryall, C.B.E., London.. .. each	10	10	0
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"F." London; Dr. H. Russell Andrews, London; Drs. A. Ll. Vaughan and J. Cuthbert Pearce, Diss .. .. each	5	0	0
Mr. E. D. Telford, Manchester; Mr. C. F. Gray, Newmarket; Mr. Gordon H. Hackney, Edgbaston; Dr. O. R. M. Wood, Woolpit; Medical Staff of the Hospital of St. Cross, Rugby (per Dr. A. I. Simey); .. .. each	3	3	0
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HIGGINS, J. B., M.B., Ch.B. Vict., Honorary Assistant Radiologist to the Salford Royal Hospital.

KING, W. S., M.B., Ch.B. St.And., D.P.H., Medical Officer of Health for Stirling.

MITCHINER, P. H., M.S.Lond., F.R.C.S.Eng., Surgeon with charge of Out-patients, Great Northern Central Hospital.

Certifying Surgeons under the Factory and Workshop Acts: DAVIDSON, N., M.B., Ch.B. Aberd. (Peterhead); WICKHAM, H. B., M.R.C.S., L.R.C.P.Lond. (Rufford).

Vacancies.

For further information refer to the advertisement columns.

Beckenham Education Committee.—Ophth. S. 3 guineas per session.

Birmingham General Hospital.—Res. M.O. £155. H.P. and H.S.

Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.

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Bolton County Borough.—Asst. M.O.H. and School M.O. £400.

Bury Infirmary.—Jun. H.S. £150.

Chartham Mental Hospital, near Canterbury.—Second Asst. M.O. £350.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Res. M.O. £250.

Derby, Derbyshire Royal Infirmary.—H.S. and Asst. H.S. and Cas. O. Each £200.

Dudley, Guest Hospital.—Res. M.O. and Asst. Res. M.O. £270 and £150 respectively.

Fulham, Metropolitan Borough.—M.O.H. £900.

Gloucester County Mental Hospital.—Jun. A.M.O. £350.

Hertford County Hospital.—H.S. £200.

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Leeds Public Dispensary.—Sen. Res. M.O. £250. Hon. Surg.

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Royal Naval Medical Service.—Surg. Lieuts.

St. Mark's Hospital for Cancer &c., City-road, E.C.—Part-time Pathologist. X Ray M.O.

St. Marylebone Hospital, Ladbroke-grove.—Third Asst. M.O. £300.

St. Thomas's Hospital Medical School.—Dem. of Anatomy. £400.

Sheffield Royal Infirmary.—Cas. O. and H.S. £150.

Southampton Free Eye Hospital.—H.S. £150.

Springfield Mental Hospital, Wandsworth Common.—Asst. M.O. £625.

Sutton, Surrey, Downs Sanatorium.—Jun. Asst. M.O. £515 6s.

Walsall General Hospital.—Female Jun. H.S. and Anæsth. £175.

Births, Marriages, and Deaths.

BIRTHS.

FOLEY.—On Dec. 17th, at Ebury-street, the wife of Walter B. Foley, M.B., of a daughter.

LOVEDAY.—On Dec. 18th, at Spring Lodge, Fallowfield, Manchester, the wife of Dr. G. E. Loveday, of a son.

MARRIAGES.

WARDROP—SUTTON.—On Dec. 17th, at St. Anne's Church, Highgate, J. G. Wardrop, M.D., Leamington, eldest son of John G. Wardrop, Lynthorpe, Montpelier-road, Ealing, to Muriel, daughter of A. Sutton, 9, Brookfield Park, N.W.

DEATHS.

DOBRASHIAN.—On Dec. 21st, at 32, Greenhill-road, Harlesden, N.W., Gabriel S. Dobrashian, M.R.C.S. Eng., L.S.A., aged 67 years.

LITTLEWOOD.—On Dec. 18th, suddenly, at Erpingham Lodge, Norfolk, Harry Littlewood, C.M.G., F.R.C.S.Eng., in his 61st year.

OATES.—On Dec. 21st, at Langside-avenue, Putney, S.W., Robert Oates, M.B., L.R.C.S., in his 95th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

A NUMBER of provincial schools are reported to have been in the midst of an epidemic of influenza when they broke up for the Christmas holidays.

otes, Sho rt Comments, and Answers to Correspondents.

THE PERILS OF THE WEEK-END—AND AFTER.

In the normal healthy organism, apart from mere greediness, appetite is determined by the speed of basal metabolism, and, whatever physiological text-books say to the contrary, it is a matter of ordinary human experience that this metabolism can be greatly speeded up. The wider freedom of the leisure hours of the week-end produces in the case of many ordinarily sedentary people a condition of well-being and increased appetite which is apt to last on into the beginning of the working week with disastrous consequences; for, with the return to the warmth, shelter, and restricted elbow-room of the office, the means for getting rid of waste products of metabolism are at once reduced and a heavy price is paid for dietary indiscretion which would have been tolerated with impunity on the preceding days. Many people found the uncongenial restrictions associated with food rationing resulted in a diminution of digestive disturbances to which they had accustomed themselves as part of the inevitable routine of city life. It is easier to bear good-humouredly a compulsory rationing in which one's friends and neighbours share than personally to initiate voluntary restriction in the presence of plenty. But there is little doubt that it would greatly add to the amenities of office life and to the digestive comfort and mental efficiency of its denizens, should it become the usual practice of returned week-enders to drop their midday meal on Monday. Should this prove too high a task, other means might be taken to get rid of incomplete products of combustion arising from the excessive use of fuel in an engine which has slowed down. But restricted intake would be better.

HEALTH IN A FEW WORDS.

Sir Robert H. Firth, author of well-known text-books on hygiene and joint author with Colonel J. Lane Notter of *Practical Domestic Hygiene*, has compiled a useful 14-page folder which does not belie its title, Health in a Few Words. Intended for the use of anyone interested in domestic hygiene—and everyone should be—it is especially suitable for distribution by medical officers of health among their health officials, the published price, 2*d*., bringing it within the reach of all. The folder contains notes on the dwelling and its proper sanitary care, the physics of air and its effects upon health, water in the economy of the body, food, personal hygiene, the care of the child, and such matters as require to be known with regard to infection and disinfection, salient facts being printed in red. A table is given showing the value in calories per ounce of the more common articles of diet, and under the heading of infection are conveniently set out in tabular form the periods of incubation, onset, and disappearance of eruption, period of quarantine, and cessation of the contagious period of infectious diseases. If every man and woman in the community could be induced to digest and apply the information contained in this folder it would conduce to a healthier and more efficient population. Messrs. John Bale, Sons and Danielsson, Ltd., of 83-91, Great Titchfield-street, London, W., are the publishers.

SWIMMING-BATH SANITATION.

A comprehensive article by Mr. G. M. Fair in the current number of the *International Journal of Public Health* recalls the hygienic importance of aiming at a high standard of cleanliness for bathers themselves and the water in which they bathe. Among diseases which may be transmitted by bathing in public baths, he places infections of the intestinal tract, respiratory system, skin, eye and ear, and venereal disease. To the frequency of middle-ear affections recent correspondence in our columns has borne witness. As regards the mode of spread of disease, various possibilities are considered by Mr. Fair, including water-supply from an impure source and contamination by bathers, and the common use of infected towels and bathing suits which have been imperfectly sterilised. The lack of proper adjustment of the temperature of the water and room air and inadequate ventilation are also recognised as likely to lead to harmful results. The regulations in force in parts of U.S.A. to ensure the purity of the swimming bath are quoted by him as examples of sanitary administration which might well be universally adopted in the interests of the public. They concern the design and maintenance of the bath, the dressing-rooms, shower-baths, galleries, and enclosing structure, as well as the supervision of the bathers, their costumes, and towels. The requisite degree of purity of the water can be secured either by the periodic change or by the continuous flow system, or the re-purification process of circulation by pumping the used water through filters and returning it to the bath. As an alternative, disinfection of the water is advocated either by chlorination or by copper sulphate, or by exposure of the re-circulated supply to the action of ultra-violet light, chlorine, or ozone. It is clear that the hygienic condition of the bath will also depend on its size, the number of bathers, their state of cleanliness, as well as the amount of fresh or disinfected water added.

For the bath supply water bacteriological standards of purity, as proposed by the public health authorities, have been decreed in certain of the American States, varying between the total bacterial counts per c.cm. of 500 to 1000 organisms developing on agar incubated at 37° C. for 48 hours. For *B. coli* there should be a proportion not higher than 25 per cent. of this total. Other authorities aim at only one to 10 of *B. coli* per c.cm. and some even at an ideal standard conforming with drinking water, which permits a total count of 100 colonies and a *B. coli* content of one in 50 c.cm. The difficulties of formulating and adhering to such standards are recognised, but it is maintained that they can be met by properly organised control and supervision. In addition to governing the construction, equipment, and operation of the baths, the regulations conforming with the desired standards ensure sanitary control of the premises, the cleansing and emptying of the baths, and the correct disposal of the water on discharge. They further provide for the supply of sterilised towels and bathing suits and instruct bathers to cleanse themselves thoroughly with soap and water douche before entering the bath. Other important details, such as the supply of spittoons, the inspection of disease suspects, and the prohibition of smoking, are included in a code which, if carried out, should attain a standard of swimming-bath hygiene and sanitation approaching perfection. The only reservation in our mind is whether, in view of the formidable regulations, a prospective bather may not consider a fresh-water bath in an enclosure—never so enjoyable as a dip in the open sea—to be hardly worth the bother or the risk where the necessary precautions are not in force.

SAFEGUARDING OF INDUSTRIES ACT: EXCLUSION OF SANTONIN.

The Board of Trade announced on Dec. 21st that the referee, after hearing a complaint under Section 1 (5) that santonin had been improperly included in the lists of articles chargeable with duty under Part I. of the Act, had given a judgment upholding the complaint. Accordingly santonin is withdrawn from the lists as from Dec. 20th.

FLOWER HOUSE, CATFORD.

This well-known house of retreat for the reception of male patients suffering from mental and nervous disorders was visited recently by a representative of The Lancet in view of developments which are projected by the management of the institution. The house, which is just within the boundaries of the County of London, is an old family mansion standing in grounds of 22 acres comprising a large playing field, the cricket field being "as large as Lord's," tennis courts, football grounds, ornamental and vegetable gardens. The whole estate is well timbered, while the neighbouring park lands are exceptionally fine, making the environment beautiful. The house itself is well appointed and furnished, is licensed for 32 patients, and the voluntary boarder is especially catered for, all possibilities of freedom being accorded. A scheme is in progress for the reception of female patients. This will entail a good deal of outlay for extension, but there is no doubt that well found and managed retreats for female patients of this sort are required.

TAXATION FOR HOSPITAL UPKEEP.

The city of Whittier, California, established as a Quaker settlement 35 years ago, and now a flourishing community of 10,000 inhabitants, was in April, 1921, presented with a hospital, the gift of a neighbouring landowner. The latter philanthropist was prepared also to equip the hospital, but the municipal authorities decided to give the city the opportunity of sharing the task of this provision, and by invitation of the chamber of commerce the various churches, lodges, and clubs joined energetically in the work. The Woman's City Club of Whittier, for instance, became responsible for the maternity department, whilst the members of the medical profession equipped an operating room with the most modern apparatus. A fund of $25,000 was raised among the citizens for purposes of maintenance. Finally, in September, the California Legislature enacted a law authorising cities of the fourth and fifth classes to accept gifts from individuals for the establishment of hospitals, and empowering them to levy any necessary taxation for maintenance, upkeep, and extension of such hospitals.

The above information is derived from the *Bulletin* of the Chicago School of Sanitary Instruction, which makes the editorial comment that the action of the Whittier municipal authorities should be of value to smaller towns and cities throughout the U.S.A. in suggesting to them the way by which adequate hospital facilities may be obtained.

The training of native midwives has been continued, though the seven training centres had to be closed for various periods on account of the disturbances in March; 59 *dayas* were trained, a better type of pupil is being secured, and a considerable amount of public interest is now being taken in the matter. Another most important work is that of the ophthalmic hospitals, of which 18 have been established since Sir E. Cassel made his gift of 40.000 livres Egyptiennes in 1903: 11 hospitals have been built and equipped at a cost of L.E. 65,000, mainly raised by subscriptions among the Egyptians themselves. There are five travelling camp hospitals, of which it is stated that it is owing to the reputation gained by them that Egypt has learned to value the means of ophthalmic relief, and to obtain it by building permanent hospitals. More than 12,000 patients (15 per cent. of the new cases) during 1919 were blind in one or both eyes. A system of prophylaxis has yet to be discovered, but the clinical research work which is being carried out should eventually shed some light on prophylactic measures. The importance of treatment in young children is beginning to be recognised by the people, more than 6 per cent. of the cases were infants less than a year old, and 39 per cent. were under 15 years of age. All the provinces, except two, now have an ophthalmic hospital. Colonel Garner states that it is impossible to cope with the ophthalmic work in Cairo with the existing facilities, and that a new hospital with 100 beds, and able to treat 2000 cases daily in the summer, is urgently required.

In regard to infectious diseases generally, there was less typhus than in the four preceding years, but the death-rate (32·8 per cent.) among the 16,970 cases was higher than in any year since 1912: a similar observation applies to relapsing fever (3272 cases and 598 deaths). Small-pox was much more prevalent (7805 cases, of which 24·39 per cent. were fatal) than in any of the preceding nine years; the number of cases reported was probably much below those that actually occurred, but was still much higher than in any year of the decennium, 1910–19. Malaria was prevalent in the province of Aswân (1304 cases), especially in the district of Derr, where Abu Simbel (so well known to travellers on account of its gigantic statues) had a mortality in November at the rate of 400 per 1000 per annum. Anti-mosquito measures were taken immediately, and a passenger control station established at Shellal, just above Aswân. Influenza was made compulsorily notifiable in February, 2106 cases being recorded, and practically disappeared during that month. There were 877 "declared cases" of plague, of which 737 were of the bubonic type; 224 cases, with 112 deaths, occurred in the district of Mallawi in Asyut province, and 126 cases with 76 deaths in the governorate of Suez. Throughout Egypt as a whole, 59·4 per cent. of the deaths occurred in April, May and June. A very great increase in the output of vaccine lymph is recorded, 5,645,020 doses having been issued, compared with 1,428,500 in 1918; the quality, however, was kept up to a high standard, 81·8 of the samples tested producing four pustules. Of 860 persons fully treated at the Anti-rabic Institute only five died (0·58 per cent.); 15 others died either during treatment or less than 15 days after its completion, giving an additional mortality of 1·74 per cent. An increase of activity in many other spheres of public health work throughout the country is recorded in this interesting report. A map showing the existing administrative divisions of the country, such as are attached to the reports of most of the Indian and Colonial Governments, would be an acceptable addition.

HOUSING IN YORKSHIRE AND LANCASHIRE.

Overcrowding in Yorkshire.—At the Yorkshire Housing and Town Planning Conference held in Leeds on July 1st, the Chairman, Mr. E. Hawksworth, said that if they set about educating the working classes to the knowledge that it would be to the advantage of both themselves and their cities to live in a better type of house, it would be a very useful service. It was not always the poorest who lived in the worst house. The Conference passed the following resolution:—

> "That this Conference is emphatically of opinion that to enable the declared policy of the Ministry of Health concerning the deflation of prices in building tenders to be carried into effect, with the goodwill and full approval of local authorities in Yorkshire, the Minister of Health will be wise in recognising that wasteful and uneconomic results will inevitably follow if the financial officers of the Ministry continue to insist that schemes must be completed by July, 1922."

I[illegible] stated by one speaker that in the village of Grime-[illegible] ad come across three houses, each with two bed-[illegible] two downstairs rooms, in each of which there [illegible]s than 27 people living. Such a condition of [illegible] a standing disgrace to the country.

[illegible]ng in *Manchester.*—At a meeting of the Lancashire [illegible]ire Housing Council held in Manchester on June 28th [illegible]rman of the Manchester Housing Committee [illegible] that for the needs of the nation 800,000 houses were [illegible], but little progress had been made. At the end of the war 17,000 new houses were required to meet the actual shortage in Manchester alone, and if the slums were cleared away, 50,000 houses would be needed. Up to now 300 houses had been finished; work had been started on 2000, and it was calculated that by November next year—four years after the armistice—perhaps 2500 houses would be completed. To meet the annual increase of population in Manchester alone, 1500 new houses were needed—i.e., between 1918—22, 6000 were required and only 2500 would be available for the increased population during the four years. With the 17,000 required at the end of the war 23,000 houses should have been built. In the district of Didsbury, on the outskirts of the city, it was found that in three streets so great was the overcrowding that 20 per cent. of the houses had not enough rooms to allow separation of the sexes. Girls and boys between the ages of 10 and 18 years were sleeping in the same bedrooms. A resolution was passed calling upon the Government and Members of Parliament to fulfil the pledges given in 1918 relative to a National Housing Scheme. There are upwards of 10,000 people on the waiting lists in Manchester who are prepared to pay the rents demanded by the Ministry of Health.

Overcrowding in the South and West.—That the above information is typical of the state of affairs throughout the country is made evident by the annual reports of the medical officers of health for Norwich, Colchester, Torquay, Hove, Margate, Southwark, and Stoke Newington, in each of which mention is made of serious housing shortage and consequent overcrowding.

RUBBER RINGS ROUND TEST-TUBES.

A SUGGESTION especially useful for anyone who has to do minor chemical investigations in inconvenient surroundings is made in the *Chemical News* (July 1st, p. 7) by "W. K. F." Rubber rings, as he says, are obtainable in all sizes and the placing of a ring about ⅜ inch in diameter round a test-tube about 1 inch from the mouth has many advantages. The ring enables a test-tube to be supported between two nails driven into the edge of a shelf, and, moreover, enables it to be laid on a bench when not too full without spilling the contents, besides saving the fingers when the tube is held over a burner. "W. K. F." claims also that the ringed tube is less liable to be broken. Though the trained chemist in a well-equipped laboratory may find little use for this simple expedient, we can imagine its adoption by medical men to save the space of a test-tube stand.

THE WOMEN'S HOLIDAY FUND.

AN appeal is made for assistance to carry on the excellent work of the Women's Holiday Fund, a work rendered more than ever necessary this year by the distress arising through unemployment. In a period of economic stress the working woman is generally the first to suffer; her sacrifices for husband and children soon deprive her of the necessaries of life, and certainly of such a luxury as a holiday. More help is needed if many of these tired women are to obtain a rest in the country or at the seaside; they themselves can contribute but little towards the necessary expenses, and it is hoped that there will be a very generous response to the appeal from all to whom the thought of passing a year without such a change is inconceivable. The society has just opened, at St. Leonards-on-Sea, a small Home of its own, with a trained matron in charge, where good food and rest are available for a few London women and their babies. The full cost of a fortnight's holiday for a mother and baby, including railway fare, is £3 10*s*. Ten guineas will provide a holiday for three mothers and babies. Contributions, large and small, towards the upkeep of the Home and also for the general work of the Fund, are urgently needed, and should be sent to the Secretary, Women's Holiday Fund, 76, Denison House, 296, Vauxhall Bridge-road, S.W. 1.

L.R.C.S.I., L.S.A.—Our correspondent has decided on the best suburban locality in the circumstances which he mentions.

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A CASE OF PERSISTENT DIARRHŒA.

To the Editor of THE LANCET.

SIR,—Will any professional brother give me a help if he can? I am 75 and have travelled a good deal in the tropics, &c., but have had no disease from that. Now for a few years I have had persistent diarrhœa; no hæmorrhage, mucus, or pain; no albumin or sugar. I have seen specialists and been under treatment for three years. I have in all lost 4 st., and to-day I still have this persistent diarrhœa, which is weakening me, and nothing I can find to arrest. Will someone advise and give a prescription?

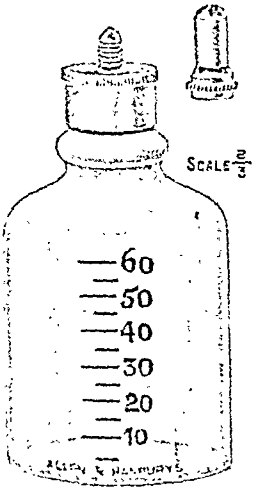
I am, Sir, yours faithfully,

Dec. 23rd, 1921. SURGEON.

A VALUABLE MEDICAL LIBRARY.

SEVENTY-SEVEN years have elapsed since the foundation of the firm now known as H. K. Lewis and Co., Ltd., of 136, Gower-street. The directors of the business have issued an illustrated brochure containing a brief account of its history and development from 1844 till the present day. The exact year when the well-known circulating library was opened is not certain, but must have been 1846, 1847, or 1848; it was established to meet the needs of professional men with regard to current medical literature, and enables subscribers to keep abreast of recent work of all kinds. A library reading and writing room is provided for the use of subscribers, and all books are arranged so that they may be freely inspected and exchanged. The catalogue, revised to December, 1917, with a supplement for 1918–1920, contains upwards of 13,000 titles, with a classified index of authors and subjects.

AN IMPROVED CHLOROFORM BOTTLE.



Mr. E. S. Ellis, M.R.C.S., honorary anæsthetist to the Hospital for Sick Children, Gloucester, calls our attention to an improvement which he has made in Mills's chloroform bottle. To prevent the falling out of the leaden stopper, an accident which may happen with disastrous result, he has had made by Messrs. Allen and Hanburys a bottle in which the stopper screws, not to a collar, which is also liable to come off, but to a thread cast in the glass itself. A second feature of the bottle is that its squat shape makes it more stable, while the graduation in cubic centimetres or ounces, reading from below upwards, simplifies the administration of mixtures.

RELATIVE VALUE OF INSULATING SUBSTANCES.

THE recently issued special report[1] on Heat Insulators by the Engineering Committee of the Food Investigation Board deals with the thermal conductivity of material usually employed in cold storage work. The experiments carried out in order to determine relative values in this respect were directed by Mr. Ezer Griffiths, D.Sc., a member of the committee. In the course of the work it was established that for most substances, *in order to maintain* a vertical wall lagged with a substance at a uniform temperature from top to bottom, it is necessary to supply more heat per unit area to the bottom than to the top of the wall. This necessity was traced to loss of heat due to convection currents set up in the air circulating through the pores of the insulating material, and much of the apparent change of conductivity with temperature was traced to these currents.

Cork, slagwood, charcoal, and wood fibres, when of good quality and dry, were found to have practically the same thermal conductivity—viz., 0·00011 g. cal. per sec. per cm. per 1° C. [= 0·32 British thermal units per sq. ft. per hour for 1" and for 1° F. diff.]; from the fact that entirely different materials were found about equally good as insulators it appeared that their resistance to conduction is not far from the limiting value that is *practically obtainable* by dividing the air space. Still air has a thermal conductivity of only 0·00005 C.G.S. units [= 14 B.T.U.'s per sq. ft. per hour for 1" and for 1° F. diff.] or barely half that of the best of these materials, so that there is still a margin for improvement by finding a more suitable material in cellular form.

It is definitely stated in the report that although different brands of cork vary slightly in their efficiency as insulators, with good brands such differences are not very considerable, and that the extravagant claims made for certain insulating materials are devoid of foundation.

A WARNING.

WE are informed that a man, posing as a naval officer and a nephew of Prof. Thelwall Thomas, of Liverpool, is calling on doctors in the London area who have been either students or house surgeons in Liverpool. He endeavours to obtain hospitality and money. Prof. Thelwall Thomas informs us that he is an impostor.

THE THERAPEUTIC VALUE OF ALCOHOL.

IN the *Journal* of the American Medical Association of Dec. 3rd, 1921, an attempt is made to secure the views of a representative number of the medical profession in America upon the use of alcohol as a therapeutic agent. The profession is quoted on both sides in the controversy upon this subject, and in order to obtain an accurate division of opinion with regard to the latter a questionnaire has been carefully prepared and sent to 40,000 physicians—every other name on the mailing list of the *Journal*—and to 10,000 physicians who are neither members of the Association nor subscribers to the *Journal*. The terms of the questions asked are briefly as follows:—

Questionnaire on Alcohol as a Therapeutic Agent.

In what line of practice are you engaged? General practice? Specialty?

Do you regard whisky, beer, or wine, as necessary therapeutic agents in the practice of medicine?

[By "whisky" is meant distilled liquors, whether whisky, brandy, gin, or rum. By "beer" is meant beer with the same alcoholic content as prevailed before prohibition went into effect, also ale, stout, porter, &c.]

Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?

How many times have you found it *advisable to prescribe* these liquors in a month?

Is the prescribing of alcoholic liquors forbidden by your State law?

The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?

In your opinion, should physicians be restricted in prescribing whisky, beer, and wine?

The list of names covers the whole country, and much interest will attach to the replies given in answer to this referendum.

INCREASE OF PENSIONS SINCE 1914.

THE following interesting table appears as an appendix to Mr. Wilkinson Sherren's exhaustive "Rights of the Ex-Service Man and Woman," a complete guide to war disablement pensions, allowances, grants, gratuities, rights of appeal, provisions for treatment and training, land settlement and overseas settlement, &c., to which the Right Hon. C. A. McCurdy, M.P., contributes a preface. The book is published by L. J. Gooding, 25, Old Queen-street, Westminster, at the price of 6*d*.

CLASS.	AMOUNT PAYABLE.		
	In 1914.	In September, 1918.	Present day.
Privates — Total disablement.	10/6 to 17/6	27/6 with children's allowances.	40/– with children's allowances.
Wife of totally disabled man.	Nothing	Nothing.	10/– a week.
Childless widow.	5/–	13/9 rising to 15/– at 45.	Under 40, 20/– Over 40, 26/8.
Widow with one child.	6/6	20/5 with 1/3 extra at 45.	36/8
Widow with three children.	9/6	29/7 with 1/3 extra at 45.	50/2
Motherless children.	3/– each	10/– for first, 9/2 for each other child.	12/– for first and 11/– for each other child.
Pending settlement of pension claim.	Nothing	27/6 with allowances for wife and children.	*40/– with allowances for wife and children.

* In the case of men discharged before Oct. 1st, 1921, or in the case of men who were in hospital on Sept. 30th, 1921, and were invalided without returning to duty.

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[1] Department of Scientific and Industrial Research: Food Investigation Board Special Report No. 5. Copies obtainable at H.M. Stationery Office, Imperial House, Kingsway, W.C. 2.

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LIBRARY,
JAIPUR

been caused, however much it may have been aggravated, by the individual experiences. In the armies of the Allies and those of the enemy millions of men were exposed to similar conditions, yet only a small number were brought to our hospitals suffering from a neurosis. Doubtless all of us who were in the line showed for a longer or shorter period the disturbances due to fatigue or functional hypertrophy of certain nervous mechanisms, but only those succumbed who were organically unsound. Sir Frederick Mott was able to obtain a history of pre-existing neurotic symptoms in 80 per cent. of the cases of soldiers under his care for neurotic disorders. But the point hardly needs pressing; had those who have contributed to the literature of the war neuroses been permitted to undertake regimental duty in the line, thus to know their men, as one only can do by constant contact, they would have found little difficulty in spotting the future cases of neurosis before ever a shot was fired. Were these cases of organic nervous weakness the victims of infantile and childhood experiences that left an indelible mark on their nervous constitution? There is no reason to suppose that as a whole their experiences differed from those of the average child of their particular social milieu. We are, I think, justified in assuming that an organic disability exists as an antecedent to every neurosis, and in employing methods for objective evaluation of organic efficiency in looking for it.

STUDY OF CONDUCT AND OF SPECIFIC REACTION OR MOVEMENT.

Such an objective study must necessarily be conducted along many lines of observation; but, broadly speaking, there are two methods at our disposal—the study of conduct and the study of specific bodily reactions or movements.

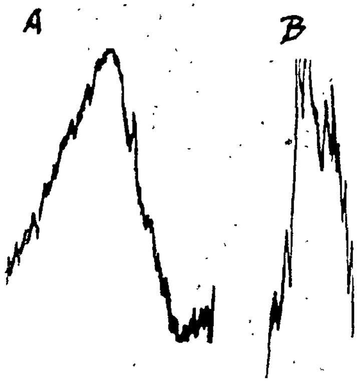
The study of conduct is a purely objective study of all those activities which collectively represent to us all that we can know by observation of the exterior aspect of life. The study of movements is supplementary to the study of conduct. By movement we understand not only the manifest muscular reactions, but also secretory and circulatory responses. The study of conduct in a search for signs pointing to definite organic disorders must of necessity furnish much evidence that is ambiguous and much that is definitely misleading. The recognition of the actuality of our own and our fellow men's life of unique and incommunicable feeling compels us to admit the existence of much that from its incommunicable nature falls outside the sphere of physical reality. The weakness of any objective study of conduct is that much of our information depends on verbal communications from the subject studied.

Now, quite apart from this unique incommunicable aspect of experience, there are a host of affective states and sensory experiences that we have to a great extent in common and that we find the greatest difficulty in communicating. Language is in its essence a method of communication evolved solely in response to practical needs—that is, for the communication of information essential to the maintenance of our social life. The communication of the greater part of our experience serves no such useful purpose, and hence has never acted as a stimulus for the evolution of appropriate language. Those of us who are musicians know that we have a whole range of experience which in its broader aspects we have no reason to suppose to be unique, but which for all that remains practically incommunicable. It is the function of the artist to bridge this gap in our social life by presenting his immediate intuition of reality, but we all know how rarely and how imperfectly art succeeds. It [illegible]ly for this reason that the study of those [illegible] which are the exterior signs of states of [illegible]mes so important. When our methods [illegible]on become sufficiently perfected we may [illegible] check by means of these stereotyped forms [illegible] the deductions that we draw from the actions, words, and silences of our patients.

TYPES OF MOVEMENT STUDIED.

The movements which I propose to study are of two types—those which are the exterior manifestations of the specialised response of certain nervous mechanisms, and those which connote the generalised reaction of the body as a whole to stimuli which disturb or threaten the unity of vital action. With movements of the first type we may deal briefly, because their disturbances belong rather to the category of what are known as organic nervous diseases than to that of the neuroses. When we speak and at the same time press the hand on the throat we become aware of movements of the larynx which are easily palpable. They are still more pronounced when we sing, and by pressing the nail of the index finger on the free edge of the upper border of the thyroid cartilage we may readily feel the cartilage move upwards higher and higher with each ascending note of an octave and descend by similar steps as we go down the scale. These movements may be recorded if we fix to the neck a firm leather collar supporting a small spring, one end of which presses downwards on the cartilage and the other is fixed to the collar. At right angles from the spring a small button is soldered which impinges on the drum of an air capsule conveniently attached to the collar. The vibrations of the tambour membrane are conveyed by a rubber tube to another tambour fixed on a stand and this in turn actuates an optical lever on which a beam of light is projected. The magnified excursions of the optical lever are recorded photographically. Fig. 1, A, is a record of the movements of the cartilage in singing up and down an octave. Now, if instead of singing audibly I think of the notes of the octave, and at the same time record the laryngeal movements, I shall obtain a similar picture (Fig. 1, B). The movements are generally smaller than in actual singing, and for purposes of comparison they have been roughly magnified three times in this figure by moving the recording cylinder further away from the optical lever.

FIG. 1.



THOUGHT A MODE OF MOVEMENT, WHETHER VOCALISED OR SILENT.

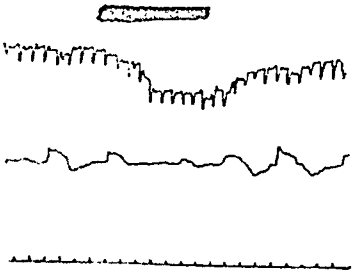
Thought is expressed either by external or internal speech, and whether the speech be externalised or internal it is a mode of movement. If I recite to myself a speech or a poem I can demonstrate the occurrence of similar laryngeal movements, though in this case their relation to the corresponding speech movements cannot be demonstrated with the same ease. Now to think of the notes of an octave or to recite a poem silently is not quite the same thing as to sit quietly and think over any problem or make arrangements for the future. In the first case we are trying to represent to ourselves every tonal step of the octave and every word of the poem, whereas in the latter we are not so concerned with the verbal niceties of our problem as with the conclusions to which it leads. Our motor manifestations in the second case will be more sketchy, the hint of the beginning of a word movement will be sufficient to convey to us the sensory impression of the word just as in reading psychological experiments have shown that the eye does not move along the line of print from letter to letter; but that in a series of jerky movements it seizes sufficient letters to allow of the recognition of any one word and then darts on to the next. The

less prone to take umbrage at a harsh expression than is the auditive.

CONNEXION OF MUSCULAR TENSION WITH INTELLECTUAL OR PHYSICAL EFFORT.

I next propose to deal with those movements that connote a generalised reaction of the organism, from the study of which I think we can gain much information as to the fundamental disturbances of mechanism in the neuroses. In the first place I will invite you to study those organic reactions by which the body responds as a whole to stimuli occasioned by the vigorous activity of some specific mechanism. To denote this form of response I prefer to avoid any terms that have subjective implications, such as attention and conation. I shall therefore speak of this type of reaction as effort, and distinguish for purely methodological reasons intellectual and physical effort.

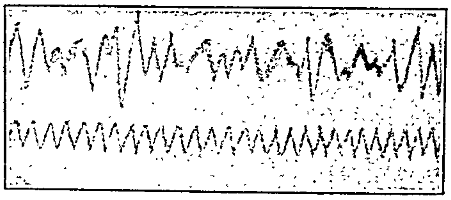
FIG. 5.



The upper tracing is that of the movements of the foot. A downward movement of the lever indicates an upward movement of the foot. The lower tracing is that of the respiration. Time in seconds. Thick black line indicates approximate duration of stimulus—a multiplication.

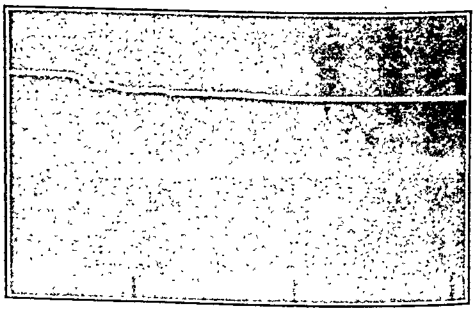
That effort is accompanied by some general alteration of muscular tension has been generally appreciated in a vague fashion, but I have found no record of any attempt to measure and determine the nature of these alterations. Now, there is a very simple and homely method by which the alterations of tension in the quadriceps muscle can be verified. Everyone has at some time or other noticed that when the legs are crossed in such fashion as to allow the crossing leg to hang almost freely downwards the foot can be observed to pulsate up and down with every beat of the pulse; the lower leg, in fact, constitutes the lever of a sphygmograph. If when the legs are so adjusted as to show the pulsation and we are reclining comfortably in an armchair in front of a tiled fireplace we carefully observe the height of the pulsating toecap against the line of intersection of the tiles, we can readily verify any change in the level of the foot. Now, still keeping the eye on the alignment between the toecap and the crevice in the tiles, make some voluntary effort—either attempt to perform some difficult piece of mental arithmetic or grip some object with all your force. It will be seen that coincidently with the effort there has been an appreciable upward movement of the foot—that is, a shortening of the extensor muscles of the thigh has occurred. It is quite easy to measure this shortening and to determine its nature. To do so, it is above all necessary to ensure that the crossing leg is completely relaxed and that the lower extremity is hanging sufficiently freely to exert a constant pull on the quadriceps tendon. This state is present when the foot can be observed to be pulsating vigorously with each heart beat, and is brought about by taking care that the free suspension is in no wise interfered with by the underlying knee supporting the calf muscles. The knee of the crossed leg should lie in the upper part of the popliteal space of the crossing leg. The toecap of the shoe is then attached by a thread to a suitably placed lever whose excursions are reco[illegible] the kymograph. A shortening of the quad[illegible] ward movement of the foot will be re[illegible] downward movement of the lever. [illegible] d of the quadriceps shortening mani[illegible] pe of effort, the solving of a problem [illegible] metic. It is now necessary to inquire [illegible] of this contraction of the quadriceps; is it of the nature of a so-called voluntary contraction—that is to say, produced by direct cortical innervation, or is it due to an increase of postural tonus? The work of Wertheim Salomonson has shown that it is possible to differentiate between these two types of muscular contraction. It was shown by Piper that the electromyogram of a voluntary contraction as recorded by the string galvanometer is manifested by an irregular oscillation having the frequency of roughly 50 vibrations per second. These vibrations were considered by Piper to indicate the number of motor nerve impulses reaching the muscle in a second. It is for many reasons certain that they really indicate nothing of the sort, but they served Salomonson to differentiate a voluntary muscular contraction from a tonic contraction which he proved to be entirely innocent of these vibrations. Fig. 6 represents a record taken by the Bock Thoma oscillograph of the vibrations occurring during a voluntary contraction of the quadriceps. In order to investigate the nature of the quadriceps contraction in effort, I recorded simultaneously the movements of a lever connected with the toecap and the electromyogram obtained by a string galvanometer connected with needle electrodes plunged into the substance of the quadriceps muscle. During the effort contraction produced by a dynamometer squeeze it will be seen that there is no trace of the Piper vibration, and we are entitled to speak of the effort phenomenon as a tonic contraction (Fig. 7). The electromyogram is, moreover, of some considerable interest, as it shows a phenomenon that I have verified in all my records of tonic contractions—at the commencement of the tonic contraction, as evidenced by the movement of the lever, there is a current of action of the order of about 0·1 millivolt. The current of action is of much longer duration than the diphasic variation of a single muscle twitch. Its duration is about 0·4 sec. It will be noted that after it has subsided the galvanometer registers a perfectly straight line in the position of rest, although the lever registers a continuance of the tonic contraction. It is of some importance to know the nature of the nervous mechanism responsible for this

FIG. 6.



Electromyogram of a voluntary contraction. Below time in 0·01 secs.

FIG. 7.



Upper line is that of movements of foot. Downward movement of lever indicates an upward movement of foot. Lower line is the shadow of galvanometer string. Time in ½ seconds.

LIB

Croonian Lectures

ON

THE OBJECTIVE STUDY OF NEUROSIS.

Delivered before the Royal College of Physicians of London on June 9th.

BY F. L. GOLLA, M.B. OXON., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO ST. GEORGE'S HOSPITAL.

LECTURE I.[1]

IN this series of lectures I propose to deal with certain types of movement that are the manifestations of those phases of cerebral activity which have been generally considered to be confined to molecular changes in the cerebral cortex and its great ganglia. I refer to processes of thought and feeling. The modern knowledge of the functions of the brain has led us to look to this organ almost exclusively for the manifestations of mental activity; we are apt to forget that to such a great psychologist as Aristotle the brain was nothing but a mass of cold matter whose function was to cool the blood coming from the heart and lungs, serving only as an intermediary link between the organs of sight, smell, and hearing, and the heart where their sensations were perceived. It is through our concentration on the cerebral aspect of mental activity that we have been so slow to realise that the body partakes in the movements that express this activity and, by ignoring these bodily signs, the possibility of establishing an objective standard in our interpretation of neurotic disturbance is, to a great extent, lost. What, then, are data furnished by objective observation of the activity of the nervous system? I cannot do better than quote the views of Bergson as summarised by Hoffding: "All that takes place in the surrounding world and in my own body, including my brain and nervous system, consists only of movements of different kinds and degrees. From the external world movement is spread abroad through our body. It reaches the spinal column and the brain by way of the sense organs and the nerves, and proceeds into peripheral movements. Our body is an instrument which receives movement from the outside, and restores it to the external world. There is not from this point of view any difference between the brain and other parts of the body. The brain is merely stronger than the other organs in preserving the action that it has thus received, and does not always reproduce them in movement immediately but often makes them coöperate in ulterior movements. The body, including the brain, is an instrument of movement and nothing else. To no degree, in no sense, from no point of view, does it serve to prepare and still less to explain a representation. That which, in our perceptions, can be explained by the action of the brain, includes the actions which are commenced or prepared or occasioned, but not our perceptions themselves. Still less does the activity of the brain comprise any explanation of memory and of higher mental activity. If everything in the brain and outside is movement we must not look for anything else than what is observable. The nervous system has only physical properties, and has no other power than that of receiving, preserving, and continuing movement. Movement alone is sensible to us and movement can produce nothing but movement. The whole effect of physical processes is exhausted by the effort of motive adaptation (le travail d'adaptation motrice). If the brain is ill, it is only movements and nothing else that are arrested." No scientific worker is likely to quarrel with this view, but it is important to realise that its adoption leaves us untrammelled by any metaphysical implications; it is as consistent with materialism as with idealism, with monism as with dualism.

RELATION OF PSYCHOLOGY TO PHYSIOLOGY.

It will be plain that a psychology founded on this objective basis leaves untouched all that constitutes for us the chief interest in life. In terms of objective psychology such expressions as meaning and purpose can find no place; by severing it from teleology, history, from the point of view of the psychologist, will become unintelligible. This was, indeed, the view of psychology held by Münsterberg, who argued that the sole function of psychology is to provide us with mechanical uniformities of sequence by the aid whereof to calculate the future behaviour of our fellows in so far as it is not modified by fresh purposive initiative, and that the whole of psychology is a temporary stop-gap, by which we eke out our defective physiology, but which must sooner or later cease to be of use, and therefore cease to exist, as physiology advances. Indeed, to such a pitch must psychology necessarily be brought, if we listen to the warnings of Avernarius on the besetting sin of "introjection."

Now this may or may not be a desirable state of affairs for the psychologist, but I maintain that for us as physicians it is the only possible. The late Dr. Mercier entitled his text-book of insanity "Disorders of Conduct," for of mind he said he knew nothing. It may, indeed, be held with some plausibility that there are no such things as disorders of mind. As physicians we are confronted with cases exhibiting disorders of conduct that is of the mechanism of expression, and our psychology must stand in exactly the same relation to mechanism as does our physical science. It is necessary to insist on these methodological points because we find both neurology and, to a lesser degree, physiology in a state of great confusion owing to their non-observance. Consider the mess that neurology has made of the subject of aphasia, by a careless use of physiological and metaphysical concepts. It arose merely because neurologists talked of memory—a non-physical entity—being stored up in nerve cells without realising that they were talking nonsense. All that they were really entitled to say is that the mechanism of representation is preserved in certain neurones.

PHYSICAL DISTURBANCES THE PRIMARY FACTOR IN THE NEUROSES.

Thanks to the labours of Pierre Marie, and in more recent times to those of Head, we are slowly reconstituting our knowledge of aphasia as being in all its forms a disorder of the mechanisms of expression. It is interesting to note that we have only now arrived at the same conclusion on the subject of aphasia as that advanced by a philosopher, M. Bergson, nearly 30 years ago, as soon as he detected the confusion of thought that lay at the root of our difficulties. It is from much the same causes that so much confusion arises in physiological literature on the subject of sensation—that is, from the incautious use of non-physical terms in the description of physical states. The point of view that I am about to deal with in these lectures has for its object an attempt to define in objective terms the chief data that may lead us ultimately to formulate the nature of the physical disturbance of mechanism that constitutes the primary factor in the neuroses. That such a physical disturbance is the cause of the neuropathic condition and precedes its manifestation I hold very strongly. One fact emerges from all the investigations that have been conducted in recent years by the methods of analytical psychology, and that is that in the vast majority of cases the experiences of the neurotic differ in no way from those that fall to the lot of ordinary healthy men. The data furnished by the war are often cited as an argument to the contrary, but I think that they really furnish irrefutable evidence that an organic disturbance or failure of organic equilibrium preceded the manifestation of the neurotic symptoms and could not have the tendon reflex response is universally admitted, though the current explanation that finds acceptance among neurologists is very unsatisfactory. We are always told that in consequence of the voluntary effort the inhibitory power exercised over the tendon reflex are by the cortex is relaxed, and hence the response is increased. We know, however, from clinical evidence that the magnitude of the tendon reflex varies directly with the degree of tonus, and I have shown that one sign of effort is an increase of muscular tonus. In order to obtain an exact comparison of any two reflexes it is necessary that the stimuli should be of equal magnitude. I constructed a pendulum hammer which when released at the same angle could be trusted to hit the patellar tendon with uniform force. The moment of occurrence of the stimulus was indicated by the hammer closing an electrical circuit which actuated a Deprez signal when it struck a piece of metal foil that was pasted on to the patella. Fig. 12 shows the tendon reflex at rest and during effort. It will be noted that in addition to an increased response during effort there is a shortening of the latent period from 20σ to 15σ. This shortening of the latent period presents some difficulty as to its interpretation. If we assume with Piper that the velocity of a nerve impulse is 120 metres per second, and with Jolly and Hoffman that the latent period of the receptor organs and that of the muscle is about 11σ, we obtain values for the synaptic time lost in the cord of about 4σ. Now, the shortening of the latent period in the second of these two reflexes is of such a magnitude that it is very difficult to ascribe it to a diminution of the lost time in the central nervous system, and the same remark applies to the effector muscle and the receptor nerve-endings. Even if we consider that the diminution is spread over all three, its magnitude is very great in comparison to the total time involved. There is no reason to suspect the measurement of the velocity of the nerve impulse of any marked degree of inaccuracy, because it is confirmed by the comparison of the latent periods of the achilles tendon reflex and the knee-jerk in the same individual when the increased length of the latent period in the first reflex corresponds to the additional nerve tract traversed. I have found similar concordant differences in measuring the latent period of the triceps-jerk and the knee-jerk in the baby. Whatever be the explanation, the effort tonus reflex appears to be associated with an increased velocity of response as well as an increase of magnitude, in as far as these simpler reflex mechanisms are concerned. While the diffuse tonic reflex that we have been discussing tends to cause extension of the limbs, the position of the head in effort is differently affected.

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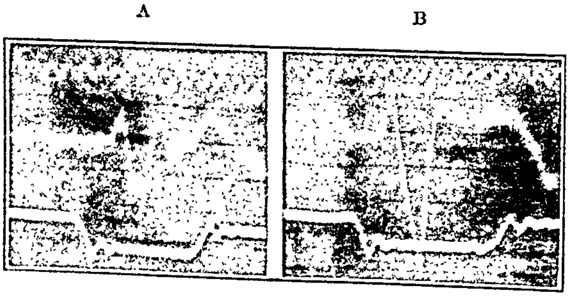
[1] The succeeding lectures will appear in THE LANCET.

FIG. 12.

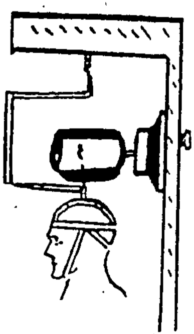


Upper record is the electro-myogram of the knee-jerk, elicited A, when resting; B, when engaged in muscular effort. Lower record is the signal. Time in 1/100th of a second.

EFFORT AND HEAD MOVEMENTS.

To study the head movements the subject was seated in a high-backed chair and to the vertex of a wire skeleton skull cap the free end of a piece of wire was connected by allowing it to lie loosely in a small brass tube soldered on to the vertex. The other end of the wire was fixed in a freely moving ball-and-socket joint on a wooden support fixed directly over the head. The wire was so curved as to allow a small recording drum to be at right angles to its axis, so that a writing point fixed to the wire immediately above its joint with the skull cap wrote directly on the smoked surface of the drum (Fig. 13). With this arrangement the only head movements that can be recorded are those which take place at right angles to the direction in which the drum is revolving. With this rather primitive instrument I had to obtain two successive records of the response to the same type of stimulus in order to obtain the resultant head movements. I soon found, however, that the lateral movements of the head are of irregular nature and bear no relation to effort. When, however, an effort, whether muscular or intellectual, is made there is a slight but definite forward movement of the head which lasts for the duration of the effort. The absence of the vibratory action currents characteristic of voluntary contraction in the sterno-mastoids has led me to consider this movement to be tonic in nature, but the difficulty of exploring the small flexor muscles of the head will not allow of dogmatic statement. The bowed head observable in certain people when thinking deeply is obviously an exaggeration of this reflex.

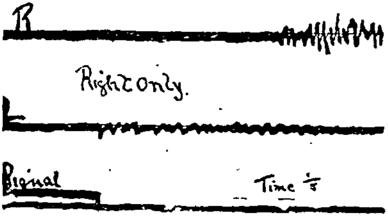
FIG. 13.



EFFORT AND RESPIRATORY MOVEMENTS.

The relation of the respiratory movements to effort has long been known, and a series of observers have studied the alterations of the respiratory curve in the hope of finding distinctions typical of different mental states. Time does not allow me to criticise these records in detail; I can only subscribe to the generally expressed want of faith in the existence of special types of respiratory curve associated with specific mental states. There is, however, one factor on which everybody is agreed, and that is the reduction of the amplitude of the respiratory movements associated with effort. The usual method of observing respiratory changes by recording the movements of the thorax and abdomen is, however, inconvenient. The apparatus concentrates the attention of the patient on his respiration, and the net effect of the respiratory movements on intrathoracic pressure can only be estimated by the correlation of thoracic and abdominal tracings. In fact, one observer, Rehwoldt, uses no less than five tambours placed on different portions of the thorax and abdomen. The method I have adopted allows the total respiratory variation to be estimated with a minimal amount of disturbance to the subject. A soft rubber No. 1 catheter tube is fixed to the upper lip by a piece of plaster so that its free end is on the same plane as the aperture of the nostril. The tube is connected with a Marey tambour and the pressure alterations in its air column caused by inspiration and expiration are recorded. After the first few minutes the subject is almost unaware of the presence of the apparatus, whereas the knowledge that the chest wall is influencing a tambour applied to it produces a curious concentration on the respiratory movements that as a matter of personal experience I have never been able quite to eliminate. The net results of the effect of effort on the respiratory movement are shown in Fig. 5 with a simultaneous record of the quadriceps tonus. The tidal air is reduced to a minimum and the respiration is slowed. We are all aware that when we attempt to perform any very delicate manipulation or some particularly exacting calculation we have a sensation of holding the breath and that the termination of a short effort of this description is followed by a prolonged expiration—a sigh of relief. Some years motor manifestations constitute what Ribot has happily termed the skeleton of our presentations. What, then, fills in the skeleton outlines? The answer varies for each individual. Ask a number of men to think of a given multiplication sum—some of them will see the figures, others will hear them, others will combine a feeble visualisation with a certain sense of movement, feeling as if the eye were travelling down a row of figures and each were visualised in turn in its place. Those who manifest most markedly laryngeal movement probably fill in the gaps of the skeleton with kinæsthetic representations of the vocal movements that do not actualise. The rôle of actual speech movements in representation is probably under-estimated. Had I been asked some years ago before I had considered the question in what way I represented to myself the octave I should have answered unhesitatingly that I heard it, I have now little doubt but that my laryngeal movements are the first link in evoking the ultimate auditory representation, because though I am told that I have a fairly good ear, my musical memory is to a great extent limited to the representation of those notes that lie in the compass of my voice. Similarly, in visual representation our visual images appear to be to a great extent stimulated by kinæsthetic images arising from the centres for movements of the eye muscles and in extreme cases the stimulation of the motor cell may translate itself into actual movement. I have often performed the experiment of asking an unsophisticated subject to describe to me Trafalgar Square as he would see it if he stood at the base of the Charles I.'s monument. If one is careful to avoid standing exactly face to face, and thus allowing him to fix his eyes on the observer's, in nine cases out of ten I find that as he reels off the series of objects to be seen his eyes move from the right when he mentions Morley's Hotel, to the left when he comes to the Union Club, and upwards as he describes the Nelson monument. It is not only in the mechanism of internal speech that we find these movements, but in the preparation for action. Figs. 3 and 4 represent the results I obtained in some experiments in which the subject was asked to dorsiflex both hands the moment he heard a sound signal. Both forearms were lying with the palms downwards on the table and the extensor group of each forearm was connected to two galvanometers which were constituted by two of the loops in an oscillograph. In the case illustrated the patient was a left-handed man, and in the experiment recorded in Fig. 2 he was asked to raise the right hand only when the signal sounded. It will be observed that from the time that the signal sounded till the actual moment that the right hand was raised there was a well-marked electrical vibration observable in the extensor group of the left arm. The idea of movement in this subject was represented by an actual activation of the muscles, and as he thought of all his movements primarily in terms of the left hand, it was the left extensors that responded. When he was asked to dorsiflex both hands simultaneously, we again see the representation of movement in the left hand (Fig. 3). On asking him to move the left hand alone, the same left-sided representation occurred (Fig. 4). It appears that this connoted the idea of movement on which he was concentrating, and was not in any way a preparatory performance, since the latent times of moving the left hand alone and the right hand alone were identical. In a right-handed subject the phenomenon was reversed. It is of interest to note that for reasons that I shall deal with when we come to talk of tonus one can be sure that this motor representation was of the nature of a voluntary muscular contraction, not an increase of muscle tonus. This motor representation has its influence on all our forms of thought. A very cursory survey of the expressions that we use, whether in the language of description or of abstract reasoning, is enough to show that a dynamic symbolism is universal.

FIG. 2.



Some time ago Binet made some observations on chess players who were able to play several games blindfold and simultaneously. We should anticipate that such men had an abnormally acute power of visual representation; but though they all stated that they could without much difficulty visualise the chessboard, they agreed that in actual play they never did so, and that visualisation would, if anything, rather impede than help them. The chessboard to them was represented in dynamic terms as a congeries of contending forces. A knight was a force acting diagonally and a rook vertically. I do not intend to pursue the subject of these specific forms of motor reactions further, because, as I said before, their disturbances belong more appropriately to the study of gross organic lesions; but it must not be assumed that the specific mechanism by which representations normally occur is without influence on the symptomatology of the organic disturbance which, I hope to show, underlies the neuroses. As to the nature of this influence on conduct I will confine myself to one hint. A surgeon with world-wide experience of the congenitally blind once told me that when a blind man was vicious his abnormality often assumed forms more gross and detestable than occur among the sane with normal eyesight. I have the impression that men with a predominantly auditory type of representation are less nice about physical matters than those with a predominantly visual type, and that the visualist is less nice about the choice of words and

FIG. 3.

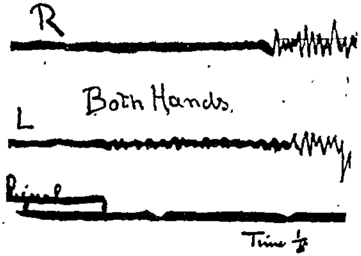
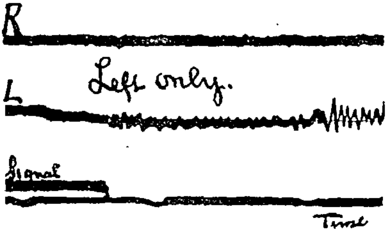


FIG. 4.



response to cerebral activity have been much studied, and the observations of Lehman and Weber—to mention only two of the writers who have most concerned themselves with plethysmographic studies—agree in recording a fall in the volume of the limb as a sign of effort. The vaso-constriction continues throughout the period of effort, and should the effort have been sufficiently intense to cause discomfort its cessation is followed by an increase in the limb volume to a greater size than before the beginning of the effort. We shall consider this after-effect when we study the objective signs of affective states. Weber has recorded alterations in the intra-abdominal pressure accompanying cerebral activity which he ascribes to a variation in the blood-supply to the intra-abdominal viscera.

EFFORT AND VISCERAL REACTION.

What we have seen of the increased muscular tonus during effort and the respiratory variations makes any interpretation of results obtained by introducing balloons into the hollow viscera exceedingly difficult. That many important visceral changes accompany cerebral activity is, of course, certain, in fact, they constitute the most important part of the bodily accompaniments of such activity, but so far their investigation has to be conducted by methods adapted to show chemical rather than gross motor variations. Lange has described fluctuations of the "active sense attention"—sinnliche aufmerksamkeit—the existence of which is shown by the fluctuating appearance and non-appearance in consciousness of a minimal sense impression. I have objectively demonstrated fluctuations of effort; for this purpose the subject was instructed to hold a wand in his hand and to keep the point of it in the middle of a small ring, suspended from a stand. The ring was lined on the inside with a hollow thin-walled rubber bag, which was blown up to a low degree of tension and connected at its orifice with a recording tambour. The quadriceps tonus and the respirations of the subject were recorded on a drum together with the pressure in the bag. A slight movement on the part of the subject would lead to the wand touching the bag and the increment of pressure was recorded by a movement of the tambour lever. When the touches on the ring bag were most frequent there was a diminution of the quadriceps tonus and an increase in the depth of the respirations. The back of the subject was turned to the drum so that he could not observe what was taking place. In this fashion it was possible to demonstrate fluctuations of the effort coinciding with periods of inaccuracy in the handling of the wand. Such periods became more frequent as the subject became fatigued, and in certain cases of neurosis complaining of nervous asthenia they were particularly frequent.

I have so far endeavoured to give some brief account of the movements that are the objective expression of effort. The first portion of my next lecture will be devoted to the consideration of the relationship of such movements to the sensory phenomena that are the concomitants of mental and physical effort.

DUBLIN UNIVERSITY WAR MEMORIAL.—The manner in which the 450 members of the College who fell in the war are to be commemorated has now been decided. The memorial is to take the form of a Hall of Honour in connexion with a reading-room, to be built when funds permit. The hall, placed between the library and the theatre, will extend some paces into the Provost's garden. A design by Sir Thomas Deane has been adopted, which, while not impairing the architectural dignity of the library, will provide a beautiful as well as a useful building. Between £5000 and £6000 have been subscribed, but a much larger sum will be needed. A large number of additional subscribers are hoped for now that the precise form which the memorial is to take has been announced.

The Gold Medallists' War Fund, which has no connexion with the official College memorial, amounts to over £1400, and will be used to help in educating the sons and daughters of the Trinity men who died in the war. A list of all those who served has been prepared, and will be published at the end of the long vacation. Prof. M.W. G. Fry will be glad to receive any additions to it that are sent to him at Trinity College, Dublin.

Lumleian Lectures

ON

SOME POINTS IN THE ÆTIOLOGY OF SKIN DISEASES.

Delivered before the Royal College of Physicians of London on March 10th, 15th, and 17th, 1921,

BY ARTHUR WHITFIELD, M.D., F.R.C.P. LOND.,
PHYSICIAN IN CHARGE, SKIN DEPARTMENT, KING'S COLLEGE HOSPITAL.

LECTURE II.*

I MAY now turn to some of the internal factors in the production of skin diseases. There is, I think, little doubt that until recently the internal factor has been to some degree slighted by the specialist in diseases of the skin, a fact easily explicable for three reasons. In the first place there is the great difficulty of tracing any constitutional change in most cases. In many skin diseases there are no very obvious accompanying signs or symptoms of defective health to guide even the most patient and thorough investigator. Secondly, I think I may say that in most of the simply inflammatory skin diseases the success of local treatment compared with that of internal is very striking, and this will naturally attract attention more to the local lesion than to the constitutional state. Thirdly, the expert in skin diseases is so frequently seeing diseases of purely local origin, such as scabies, ringworm, &c., treated as due to some obscure constitutional condition that he is apt to become prejudiced against internal factors as a potent cause.

In attempting to deal with the internal factors in the ætiology of diseases of the skin one becomes immediately conscious of the fact that any kind of attempt to form an orderly arrangement is a matter of extreme difficulty. It would seem natural to suppose that a certain definite defect of health would call forth the same cutaneous symptoms as a constant result.

This is, however, by no means the case, and we constantly see different cutaneous disorders associated with the same defect in the health of other organs, and also the same cutaneous diseases associated with one of several internal lesions. Thus diabetes may undoubtedly call forth diseases so different as furunculosis and xanthoma, whereas scarlatiniform erythema associated with fever may be caused by streptococcic tonsillitis or the ingestion of quinine.

After some consideration I have come to the conclusion that perhaps the least confusion will arise if I deal with the ætiological factors more or less consecutively, and indicate those dermatoses which are frequently associated with, and, in my opinion, are partly due to each.

SENSITISATION.

1. *Auto-sensitisation.*—I begin, therefore, with the question of eruptions due to sensitisation, and before dealing with sensitisation to bodies introduced from without I should like to draw attention to a short series of cases illustrating what I believe to be a form of auto-intoxication derived from changes in the patient's own tissues. As far as I know this type of poisoning has not previously received any attention.

The first case that I encountered was that of a young lady who received a severe blow with a cricket ball on the shin. The result of the blow was to produce a hæmatoma which was not accompanied by any breach of surface. Nothing further occurred for ten days, when there suddenly appeared a generalised, morbilliform, erythemato-urticarial eruption, strongly resembling that resulting from the injection of diphtheria antitoxin. On being consulted with regard to her skin trouble I made every investigation that I could think of into her diet, general health, and history, reflex, and this, unfortunately, must at present remain a matter of great uncertainty. Boeke has found in voluntary muscles nerve endings which appear to be of sympathetic origin, and there is some reason to believe that the centrifugal path of the tonic reflexes is guided by sympathetic fibres; but in spite of the suggestive work of De Boer the question must be regarded as still open. I have found this tonic effort reflex much increased in cases of unilateral pyramidal lesions on the affected side and very much diminished, but still quite definite in cases of tabes. In a case of cerebellar tumour with very marked unilateral hypotonus placed at my disposal by my colleague, Dr. J. S. Collier, the effort reflex was absent on the hypotonic side and normal on the sound side. In the case of the flexed knee, it appears that the tonus of the extensor group is alone increased, while that of the flexor muscles, which by virtue of the position of the leg are already in a state of greater tonus than the extensors, is unaffected or diminished. It is of some interest to determine whether this distribution of tonic innervation occurs elsewhere. If the forearm be flexed at the elbow and supported on a block, and the completely relaxed hand be allowed to hang over the end of the block in a position of supination, it is easy to obtain a record of the hand movements by attaching the lever thread to the head of the middle metacarpal by a pellet of wax. In such a case it will be found that dorsiflexion of the hand occurs in response to effort, whilst when the hand is supinated and allowed to fall backwards over the edge of the block a flexion of the hand at the wrist results (Fig. 8, A and B).

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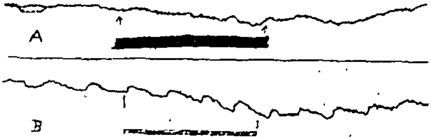
* Lecture I. appeared in THE LANCET of July 9th, p. 61. Lecture III. will appear in a subsequent issue.

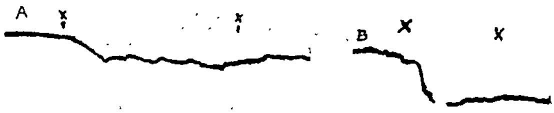
FIG. 8.



Tracings of A, tonus reflex of flexor; B, of extensor muscles of wrist during mental effort. A downward movement of the lever indicates an upward movement of the hand.

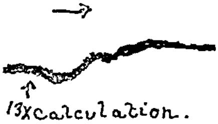
In the case of the elbow-joint, which like the knee-joint only permits movement through one half of a circle, the tonic effort reflex may be demonstrated in the triceps when the upper arm is supported at right angles to the body and the lower arm is allowed to hang downwards. The tonic effort reflex, as shown by the wrist-joint experiments, only affects those muscles which are in a stretched condition. I will next consider what happens when the limb is in a position in which the tonus of the antagonistic groups of muscles is presumably equal. To investigate this point it was obvious that movements of the extremities could no longer serve as indicators; it was therefore necessary to devise some method for the direct measurement of alterations of muscle tonus.

FIG. 10.



A, increase of tonus in flexors of wrist. B, increase of tonus in extensors. Stimulus between × — × — calculation.

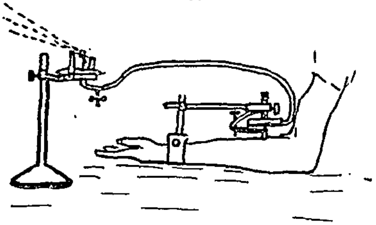
FIG. 11.



MEASUREMENTS OF ALTERATIONS OF MUSCLE TONUS.

It is obvious that for this purpose the registering apparatus must not vary its position in relation to the muscles of the limb, as otherwise a slight involuntary shifting of the limb would be interpreted as an alteration of muscle tonus. To secure this end, in the case of the forearm a suitably devised clamp was fastened firmly to the bony prominences formed by the heads of the radius and ulna. From the clamp a light rod projected backwards to hold a tambour, with a spring attachment that controlled the pressure, with which a short rod was pressed into the flesh over the belly of the muscle to be investigated. The free end of the rod was in contact with the centre of the tambour membrane. Any increase of the tonus of the muscle would press up the rod, and the resultant air displacement in the tambour was conducted by a tube to a delicate Marey tambour fixed on a stand. In place of the ordinary writing lever over this capsule an optical lever was substituted, consisting of a light mirror fastened to the middle of a piece of silk stretched immediately above the tambour. From the back of the mirror projected a short lever 2 mm. in length, actuated by a short reed projecting from the middle of the tambour membrane. By such an arrangement the air displacement, due to movements of the rod resting on the muscle, could be magnified to any desired extent, and a similar apparatus attached to the antagonist muscles allowed simultaneous records of the alterations of tonus to be taken (Fig. 9). The photographic records (Fig. 10) show that with the wrist-joint in the neutral position there is a simultaneous increase of tonus in both antagonistic groups of muscles of the forearm. Similar records have been obtained from the majority of the more accessible skeletal muscles. The effort reflex appears to increase the tonus of all those muscles that are in a stretched or a neutral state. Fig. 11 is a photographic record of the increase of tonus during an attempt to say the "thirteen times" multiplication table. The subject was a very poor arithmetician; the first three or four stages were rattled off with ease and no increase of tonus appeared, but as the difficulty of the multiplication increased the effort showed itself in a gradual increase of the muscle tonus. I have many records that show a similar correspondence between the degree of tonus and the intensity of the effort put forth, and we shall see later that in certain neurotics who are incapable of prolonged or intense effort the tonus reflex is correspondingly affected. Now as to the significance of the reflex—I have a very strong aversion to all forms of teleological explanations not confirmed by direct observation. One result of the increase of tonus is, however, fairly obvious. The influence of muscular and mental effort in increasing

FIG. 9.



other substances that they had never ingested. In such cases the eczema clearly was not due to the substance producing the reaction. Therefore, unless we can reproduce the second half of the experiment and cause the disappearance and reappearance by the withholding and administering respectively of the specific protein, as was done in the case of the cabbage-eating patient, we are not justified in assuming that the eczema is due to the ingestion of this protein.

I have in this relationship an interesting case of what I call a natural experiment.

A baby aged three months was brought to me for acute eczema of the face and head and a little on the body. The history showed that the eruption began about one week after the acme of development of his vaccination vesicles at the age of four weeks. He had been nursed for five weeks, i.e., one week after the outbreak of the rash, and after that was fed on raw cow's milk and water, cream, limewater, and sugar of milk. It is important to observe the fact that this baby's rash appeared before he drank any cow's milk. It has been suggested, and the suggestion appears to be not without probability, that the use of calf lymph as a vaccine may cause some sensitisation to protein from the cow, either in the milk or in the flesh of the animal. In this case there were no symptoms of indigestion and no constipation. The eczema proved very resistant and the child was brought to me seven times in eight months. Recently the interesting discovery has been made that the child is sensitive to egg. As he was doing well and was getting to a more advanced stage of feeding he was on one occasion given a small quantity of yolk of egg. This was followed immediately by intense vomiting and after a short interval by diarrhœa, and the child was ill for two days, but no exacerbation of his eczema followed. On a subsequent occasion he was given a small amount of custard, and this was followed by a similar train of symptoms, but again no apparent immediate or remote effect on his eczema.

Now here, therefore, we have a child who is suffering from eczema and who is "egg sensitive." Yet not only is his eczema not due to egg as it preceded its ingestion, but the ingestion of the offending protein makes him ill without affecting his skin.

Quite recently I have come across a second case of "egg sensitiveness" in a baby 14 months old, suffering from eczema. In this case the egg also makes him ill and gives him urticaria, but does not aggravate the eczema.

Secondly, there is a difficulty somewhat the converse of this. If we take the case of a patient who is sensitive to substance x, and in whom substance x causes a skin eruption on ingestion, we find that this was not always the case. The sensitiveness is not congenital, nor is it the consequence of any acute attack of poisoning from eating x in a state of decomposition. I suggest that in this type of case there is present either a gastro-intestinal error, so that x is broken up into noxious cleavage products, or that there is some inefficiency in the detoxicating function of the liver.

I have a curious example of this type of case in a middle-aged lady.

Some years ago this patient began to develop attacks of urticaria, usually of short duration. There was no history of acute poisoning or apparent gastro-intestinal error. After a considerable time the patient discovered the cause herself, and found that it lay in the ingestion of any kind of tinned meat or soup. Tinned fruit such as peaches or pineapple are without evil effect, as are also tinned sardines, but the ingestion of tinned beef or soups is followed in about three hours by an outbreak of urticaria, which dies away next day if no further tinned meat products be taken.

There is no question in this case of suggestion, as I have known her state (always correctly) that there has been tinned soup at dinner by the fact of her suffering from urticaria a few hours later, and she has been unaware that there has been anything tinned in the dinner until the rash has come out. Others partaking of the same food have in no instance been affected.

GASTRO-INTESTINAL ERRORS.

In relation to derangement of the alimentary canal there appear to me to be two types of case, namely, the irritative and the toxic, though these occasionally overlap. Some of the examples in the [illegible] group are fairly clear in their causation. Such are the cases of rosacea of the strongly angio-neurotic type. The patients are usually, but by no means always, of the female sex. The ingestion of a hot drink, especially tea, or of a highly condimented dish such as curry, or of an acid white wine, is followed in a few moments by an intense flushing of the face, usually affecting especially a triangular area in the middle of the forehead, the nose, the cheeks contiguous to the nose, and the middle of the chin.

The type of dermatosis which develops on this flush area has seemed to me to be dependent on the previous condition of the skin. Those with a naturally thin, dry, and fresh-coloured skin develop a papulo-squamous eruption associated with soreness, itching, and burning, whereas those whose skin is naturally thick, greasy, and pale tend more to the development of severe seborrhœa and pustulation. There is, however, a point here worthy of attention, namely, that this second class of case may be easily confused with a true acne of middle life which is not accompanied by flushing, and belongs, in my opinion, to the second or toxic class of eruptions due to derangement of the gastro-intestinal function.

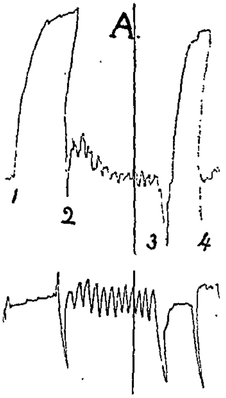
Ryle and Barber[10] have published a paper on rosacea, giving the results of gastric analysis in 12 cases. In 10 of these abnormal curves of hydrochloric acid production were found, and of these 7 showed extreme hypochlorhydria. Grouping achlorhydria and hypochlorhydria together, they found them present in 58 per cent. of the cases of rosacea.

I cannot agree with Barber's clinical description. He states that the patients have broad, flabby, pale tongues, marked by the teeth at the edges. Now I have paid great attention to this point, both before and since the publication of his paper, and I find it to be quite exceptional in what I consider the markedly angio-neurotic cases. It is, on the other hand, very commonly present in the cases which I regard as toxic acne, with a pale, lemon-tinted complexion and little or no flushing, and it is present in some of those border-line cases which show slight flushing and marked toxic symptoms. Barber admits that the fact that the flushing often occurs almost immediately after the ingestion of food is in favour of a reflex mechanism, but he suggests that it is possible that it is partly or wholly due to the absorption of vaso-dilator substances, such as alcohols formed by the fermentation of carbohydrates by yeasts, sarcinæ, or bacteria in the stomach or small intestine. He also thinks that the effects of oral sepsis and tonsillitis should be remembered in connexion with rosacea, thereby, in my opinion, revealing a confusion between the angio-neurotic and toxic types of eruption. The toxic type is much more variable as regards the cutaneous symptoms. It is also much more difficult to be precise as to the presence and variety of the toxæmia.

The methods that I have chiefly used are the testing of the urine for indican, urobilin, and bile salts, and its examination for bacterial infection, and also, in a certain number of cases, examination of the fæcal flora. I have found indican absent in every case in which there was no apparent reason in either the general or cutaneous condition of the patient to suggest a toxæmia. On the other hand, I have found it present in low or high degree in the most diverse cases of cutaneous eruption, so that one must be careful in attributing the eruption to the toxæmia. Also I have very frequently failed to find it present in cases where one might have suspected its presence a priori.

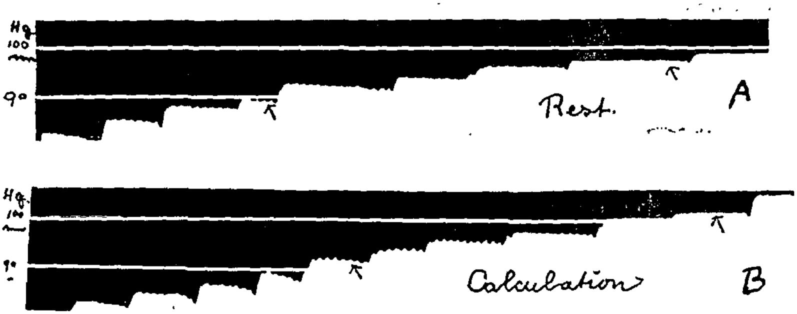
The chief cutaneous diseases in which I have frequently found it have been cases of irregular erythema, lupus erythematosus, pruritus without objective signs, widespread and obstinate acne, and very occasionally in psoriasis. In none of these diseases is the ætiology precisely known as yet, and there is a strong suspicion that all may be due to toxic absorption from some source. I should state at once that I am not for one moment suggesting ago, when I conducted some researches on the phagocytosis of carborundum particles under different conditions, I found that the respiratory reaction during the performance of counting the particles ingested in a number of leucocytes was the most irksome part of the proceedings. This flattening of the respiratory curve is not to be attributed to a simple diminution of the respiratory movements; it is conditioned by the general increase of muscular tonus, affecting primarily the expiratory muscles, whilst expiration is obstructed by closure of the glottis. The result is an increase in the intrathoracic pressure. On two occasions I have connected a manometer with the needle in cases in which paracentesis of the thorax was being performed for pleural effusion. In each case any voluntary effort on the part of the patient was accompanied by a well-marked rise of the intrathoracic pressure. The expiratory and inspiratory oscillations were markedly decreased. Turning to the effect of effort on the intracranial pressure we see what are the results of these respiratory changes. In the spring of 1914, together with W. L. Symes, I made some observations on the alterations of pressure of the cerebro-spinal fluid on a number of cases of cerebral syphilis who were being treated by the then fashionable remedy of injection of salvarsanised serum. Hitherto all observations of the intracranial pressure have been made with patients who have been trephined, and the pulsating skin and membranes over the trephined area have had their excursions directly recorded by a tambour. The advantages of the estimation of the pressure of the cerebro-spinal fluid by lumbar puncture in the intact organism over this method are sufficiently obvious, and its delicacy is very much greater. We examined in all six cases and found that the cerebro-spinal pressure responds to the slightest physical or intellectual effort by a marked rise. Our observations showed moreover the great influence of respiration on the cerebro-spinal pressure. Fig. 14 shows well the enormous fluctuations that occur with deep inspirations and expirations and the huge rise when the breath is held. The increase of the intrathoracic pressure during effort is the chief if not the only cause of the concomitant rise of intracranial pressure.

FIG. 14.



Simultaneous records of the cerebro-spinal pressure (upper line) and the respiration (lower line). Between 1 and 2 breath was held, 3 and 4 are deep inspirations.

FIG. 15.



Photograph of pulse oscillations of mercury column at different pressures of Riva-Rocci bag A when subject is at rest. B during calculation. The arrows point to beginning of pulsation and to the maximum oscillation.

EFFORT AND CIRCULATORY REACTION.

Since the fundamental work of Mosso the response of the circulatory system to cerebral activity has been the subject of a great deal of investigation. The increased frequency of the heart to intellectual effort is well shown in the slide. It is of some interest to discover whether this increased frequency is determined by accelerator stimulation or by removal of the vagal control. For this purpose I took some records with a much faster rate of movement of the photographic paper than in the record shown, and measured the time relations of the systole and diastole. Reid Hunt found that by stimulating the accelerator nerve the times of systole and diastole are decreased together, while with a loss of vagal control the loss of time is confined to the systole. My records all show that the systolic time is unaffected, whereas the diastolic time is diminished; thus the effort is responded to by a diminution of vagal tonus. The blood pressure is again very generally known to be increased in effort, and we shall see that in certain types of neurasthenia this increase is either very small or absent. The criticisms of Pachon have shown that the method commonly practised in this country of taking the records of the pulse at the wrist while the artery is compressed higher up is unsound; this is particularly true when investigating the changes accompanying effort and affective states in which there is reason to believe that vasomotor changes at the extremity of the limb are most marked. On the other hand, to record the pulse at the site of the application of pressure, that is, from the pulsations communicated to the Riva Rocci bag, precludes the use of tambours whose sensitiveness is affected by variations in internal pressure. For this reason I have connected the bag with a mercury manometer and photographed the pulsations (Fig. 15). It will be noted that contrary to the observations of Schrumpf and Zabel the systolic and diastolic pressures are both increased. It does not appear to me to be possible to apportion the relative degrees of influence exerted by the heart and the vasomotor system in this reaction. The vasomotor changes in the peripheral circulation in the ordinary intermittent pressure on the finger tips causes it to bend up at the tip and sides so that it becomes curved in a direction opposite to the normal. As a rule the nail-bed appears unaltered, but in some cases there is a varying degree of hyperkeratosis with separation of the plate from the bed.

The first case of this peculiarity appeared in my clinic at the Great Northern Central Hospital many years ago, and in searching for an explanation, I was struck by the fact that the patient, a middle-aged woman, had been many times in hospital for gastric ulcer and severe hæmatemesis. Since then I have seen a sufficient number of patients with this trouble to convince me that it is not a mere coincidence. In fact, in the last two cases I have been able to prophesy from looking at the nails that we should get a history of severe hæmatemesis. It is, I admit, difficult to understand the relationship of the two symptoms.

INTESTINAL ANAPHYLAXIS.

Before leaving the gastro-intestinal canal I may refer to the brochure recently published by Dr. DANYSZ[12] on the origin, nature, evolution, and treatment of chronic non-parasitic diseases. In this small work Dr. Danysz brings forward the view that many diseases of chronic nature in which a parasitic cause has not been found are due to the production of a state of anaphylactic immunity, and that they owe their origin to excess of immune substance in the blood. He considers that the main source of this is the alimentary canal, and that owing to congestion and functional disturbance proteid bodies are absorbed without being broken down sufficiently far into their component amino-acids, a view that I had already written in an earlier part of these lectures before seeing his book. Instead, however, of regarding the eruptions as due to the direct poisonous action of these bodies, he considers their action as antigens and invokes the production of excess of immune substance in the blood and a state of anaphylaxis to account for the skin lesion.

His method of treatment is to cultivate the easily grown fæcal organisms in such cases, to mix them in roughly the same proportion' as that in which they are found in the fæces, to kill them by heating to 70°C., and to use the resulting mixture as a vaccine. He describes a long list of cases treated by this method and gives a great number of successes.

Having read an earlier paper by Dr. Danysz on the same method, claiming the successful treatment of pemphigus and dermatitis herpetiformis, I tried it some years ago on a very typical and resistant case of the latter disease, and failed to find any effect whatsoever as a result.

At the present time I have a male patient under my care in hospital with a somewhat suppurative, symmetrical dermatitis and marked arthritis. This case resembles in type some of those in which Dr. Danysz claims his cures. Accordingly, after the patient had been under observation in bed for some time so that we could form an idea as to the course of his disease, we made a vaccine, following out Dr. Danysz's directions very carefully. This was administered hypodermically in the way and at the intervals recommended. The course is now finished, and the patient thinks it has done him good, but I confess I see no marked improvement as the result. At all events the eruption and the arthritis are still very obviously present and the suppuration has not stopped. Any alteration for the better is certainly in the subjective condition of the patient, and not in the objective signs.

On the other hand, in favour of Dr. Danysz's views, I feel that it is but just to refer to the fact that Dr. Barber showed at the Dermatological Section not long ago, some cases of psoriasis in which the treatment by this method had been followed by an improvement not obtained by any of the ordinary measures. It is, for me, difficult to follow the reasoning. If the sensitisation and consequent dermatosis are caused by the accumulation of excess of immune body or amboceptor, and the anaphylactic shock in severe cases caused by the sudden meeting of this excess with antigen, it is difficult to understand how the preliminary injection of a very small fraction of the usual dose of antigen acts. One would imagine a priori that this minute dose of antigen would only fix a correspondingly minute proportion of the excessive amboceptor, leaving a great mass to combine with the large subsequent dose, and produce the anaphylactic shock in only slightly less intensity.

Another difficulty also offers itself to my mind. Dr. Danysz reports improvement after ingestion of the vaccine by the mouth, though he considers subcutaneous injection the more potent method. If the administration of the dead bodies of those micro-organisms is therapeutically effective when administered by the physician, why is it not so when they are absorbed in the ordinary course of events from the patient's own intestinal canal?

I do not offer these objections to the theory as reasons against the practical use of the method if it be found to be beneficial after more extensive experience, but I protest against his off-hand assumption that the vaccine treatment of Wright depends on no kind of specific immunity reaction and only on this desensitisation.

XANTHOMA AND CHOLESTEROLÆMIA.

I may conclude this lecture with a reference to the work which has been done in elucidating the ætiology of a disease presumably connected with the alimentary canal—namely, xanthoma.

For many years this curious change in the skin has attracted the attention of the specialist. As far as I can ascertain Pinkus and Pick[13] in 1908 were the first to suggest that the body giving some of the staining reactions of fat was not an ordinary fat but a cholesterol ester. Pringsheim,[14] also in 1908, stated that this cholesterol ester was deposited in the tissues from the blood. In 1910 Cranston Low[15] of Edinburgh wrote an excellent article on the subject and corroborated the statement that the fat-like body was a cholesterol ester of a fatty acid. He pointed out that more apparent fat was found by means of staining with Sudan III than with osmic acid. He also referred to the nodules found in the heart, and suggested that a cardiac murmur heard in his case was due to this cause. In 1912 Chauffard and Roche[16] claimed that the disease was probably caused by an excess of cholesterol in the blood, though this was not apparently proved. They also assumed that it was due to a lypolytic insufficiency of the pancreas.

Rosenbloom in 1913[17] appears to have been the first to publish an estimation of the cholesterol in the blood in xanthoma multiplex. Curiously enough, he found in a case of G. H. Fox's that there was "no increase of cholesterol in the corpuscles and plasma compared with the normal control." His figures were as follows:—

	Cholesterol.	Cholesterol ester.
Xanthoma corpuscles ..	.. 65	Trace
Normal control ..	.. 68	"
Xanthoma plasma	.. 48	22
Normal control ..	.. 46	28

giving in the total blood:—

Xanthoma .. .. 135 | Normal control .. 112

In 1920 Dr. Burns[18] published a further report of a very severe case of xanthoma tuberosum in which estimations were made of the cholesterol in the blood. The patient's blood was estimated after 14 hours' fasting at the end of a week on three different diets. The blood uric acid was high, 4·3 mg. per 100 c.cm.; the blood sugar was 0·091 per cent.; cholesterol was found in the nodules in large quantities. Two estimations of the cholesterol in the blood after a week on the ordinary mixed diet gave:—

Cholesterol.	Fat.
(1) 660 mg. per 100 c.cm. = 0·66 %	2000 mg. = 0·2 %
(2) 650 mg. per 100 c.cm. = 0·65 %	1700 mg. = 1·7 %

The normal controls showed:—

Cholesterol.	Fat.
210–240 mg. per 100 c.cm. = 0·2 %	300–400 mg. = 3·4 %

The xanthoma patient showed on the low fat diet:—

Cholesterol.	Fat.
660 mg. per 100 c.cm. = 0·66 %	1400 mg. = 1·4 %

On the high fat diet:—

Cholesterol.	Fat.
999 mg. per 100 c.cm. = 0·99 %	1000 mg. = 1·0 %

Since this paper of Dr. Burns's, the high blood content of cholesterol has been confirmed by other and was finally reduced to the possibility that it might be connected with the absorption of broken-down tissue at the site of the bruise. The matter had to be left there for the moment as no further evidence was forthcoming.

Some time later I saw another lady who had fallen down stairs and damaged her left wrist, producing severe ecchymosis without breach of surface. Again on the tenth day the general erythema appeared, precisely as in the former case.

These two cases put me on to the track of this curious association, and since then I have seen three other cases due to aseptic trauma, and I believe, though of course it is much more difficult to prove, many due to trauma where the surface had been broken, and microbic infection might also perhaps be invoked. One of this latter class of case, seen with Dr. C. R. Verling-Brown, of Sutton, may be quoted as an illustration.

An elderly gentleman suffered from an irritable, but not purulent, eczematous dermatitis of the leg. Under suitable treatment this had been brought nearly to the point of cure. Then one day after his bath he thought that a brisk rubbing of the part with a rough towel would stimulate the circulation and hasten the complete recovery. The result of this injudicious treatment was a certain amount of swelling of the part accompanied by a little hæmorrhage and serous exudation. In eleven days' time a generalised eruption appeared, the individual lesions consisting of millet-seed-sized hæmorrhagic papules, associated with urticarial erection of the follicles, and intense itching. When I saw the patient the site where he had injured the original patch had settled down again, and it showed no sign of active sepsis. The skin of the body and limbs generally was covered with small petechial scratched papules which might have been diagnosed as eczema after an insufficient examination. Factitious urticaria was present to a slight degree and irritation was intense.

Such a case as this might well be ascribed to septic absorption, and had I not seen the aseptic cases, two of which I have quoted, I might have put it down to this cause, but as the matter stands I am confident that the physical damage to the tissues was the prime cause. I may add that this case, as well as all my others, except the first in which it was not tried, yielded rapidly to the internal administration of turpentine, a drug which in my experience is the only one with anything approaching a specific value in toxic purpura.

The question which I am entirely unable to answer is why this sensitiveness to the products of one's own bruised tissues should develop. It was not a congenital peculiarity in any of my cases, for I inquired carefully into this, and in every case there was of course a history of many bruises that had not been followed by a general cutaneous disturbance. At the same time I would submit that this is not a valid objection to the correctness of my view, since there are cases in some of which the poison is accurately known where the sensitiveness has developed for some reason entirely unknown.

Lest it should be thought that these cases are in reality merely coincidences to which I am attributing an erroneous explanation, I venture to mention another, but I think allied, phenomenon as to which I have direct experimental evidence. It is of course well-known that in vesicular eczematous dermatitis without marked pyogenic infection the rash spreads from one part to another in an apparently capricious manner. There are also, I may add, instances brought to one's notice from time to time in which there has been some degree of apparent contagiousness in the eruption. Those persons dressing cases of weeping eczema occasionally develop a similar eruption, usually of only a fleeting nature, on the hands. This spread is due, in my opinion, to the locally irritant nature of the eczematous discharge, which is generally toxic for the patient, rarely so for other people, and only for those who are probably of a peculiarly susceptible type. The most convincing case that has come into my experience was one of true gouty eczema, that is, in an elderly gentleman who suffered at the same time from classical acute gout in the toe and vesico-bullous eczema of the legs.

It was noticed that when his bullæ burst and the serum drained down across the legs there appeared in a few minutes a red streak which was followed in about ten minutes by the development of an urticarial wheal, and this in turn was succeeded first by a line of vesicles and then by a long narrow bulla. In order to put a stop to this process I drew off the serum from his bullæ with a sterile hypodermic syringe, and I wondered one day whether this fluid was irritating only to his skin or also to that of the normal individual. Having obtained a syringe full of this clear serum I therefore allowed this to trickle down my own forearm and dry on, and was interested to observe that this procedure was followed by no subjective symptoms or objective signs. This patient was then, I think, undoubtedly sensitive to his own tissue products, whereas I was not.

In this connexion I may draw attention to the fact that quite recently Dr. W. J. O'Donovan showed at the Dermatological Section a case of dermatitis herpetiformis, the diagnosis of which was generally accepted. Dr. O'Donovan himself remarked, however, that he hesitated a little about it as the disease was auto-inoculable, and that if he inserted fluid from a vesicle into another part of the skin it produced an outbreak locally. Dr. J. M. H. MacLeod suggested that this was not due to inoculation, but merely to the slight trauma inflicted. My explanation of this experimental production of the lesion is that it depends upon the patient's sensitiveness to his own morbid serum.

I attribute considerable importance to this series of cases, because I believe that some of the cutaneous rashes ascribed to the absorption of bacterial toxins from septic foci are in reality due to absorption of damaged tissue, though in the present state of our knowledge the disentanglement of the two agencies is impossible.

FOREIGN PROTEIN SENSITISATION.

I may now pass on to the effects of what has been termed protein sensitisation in the sense of a susceptibility to certain forms of protein introduced from without. I have myself carried out no experimental work on this subject, and as far as I am aware most attention has been devoted to it in the United States, where a large amount of painstaking work has been done. The method employed has been to take a large number of proteins derived from different articles of food and to inoculate them separately into the superficial part of the skin.

Fox and Fisher[9] used commercial proteins from various animal and vegetable sources. They scarified the epidermis, not deeply enough to draw blood, in lines one-eighth of an inch in length. On these they placed small quantities of the respective proteins and moistened them with a drop of N/10 caustic soda to facilitate absorption. At the end of half an hour the mixture was washed off and the results watched, control scarifications of course having been made. The smallest reaction admitted as positive was a wheal 0·5 cm. in diameter, and this appeared after a variable number of hours. They tested in this way to some 25 varieties of food protein 60 patients, of whom 41 gave entirely negative results, and 19 reacted positively to one or more proteins.

The most satisfacory result was in the case of a man who suffered from eczema and gave a strongly positive reaction to the protein of cabbage. This patient was in the habit of eating large quantities of both ordinary cooked cabbage and sauerkraut. They found that by alternately withholding and administering cabbage they could cause the disappearance and reappearance of his eczema at will. Fox and Fisher finally concluded that "It would appear to us that they (the tests) will ultimately prove to be of therapeutic assistance in a small proportion of eczema of adults." They also suggest that it may be of more general significance in the eczema of infants.

For all this careful and exacting work I have the highest respect, but there are a few words of warning which I think it fair to offer. The authors themselves draw attention to the fact that in some cases infants with eczema reacted to carrot and of the blood cells from the thirtieth week onwards might show the change from fœtal to infantile conditions to be sufficiently regular to form a basis for computing the period of development reached at birth. This inquiry could readily be carried out at a lying-in hospital, and might very well yield results of great practical value both to the obstetrician and the medical jurist.

Lying-in hospitals give a glimpse of the premature infant only from birth to the end of the second, or perhaps the end of the third week. Figures of gross mortality are of little practical value until they have been split up into the two groups, indicating (1) *mortality at birth*, including macerated fœtuses, non-viable fœtuses, and those which, though born alive, did not survive their birth (stillborn); and (2) *mortality in infancy*. The former is very largely uncontrollable; improvements in obstetric management might possibly enable a certain number to be saved, as in cases of toxæmia, ante-partum hæmorrhage, and syphilis. A very large number of premature infants are, however, non-viable when born. Group II. is the one with which we are chiefly concerned, and the gross mortality in this group, estimated in the reports of six hospitals, stands at the appalling figure of 40 per cent. In other words, nearly half the premature babies born alive in lying-in hospitals die before the end of the third week of life. Examination of the reports, however, shows that in this gross mortality are included a large number of infants so handicapped at birth as to have but a slender chance of survival. Thus, premature babies born in maternal toxæmia, or in labour with ante-partum hæmorrhage, cannot be said to start life with a fair chance of survival; in addition, there is a small number of infants born with serious developmental defects, or with a congenital syphilitic taint, and these are also severely handicapped from the start. We shall come nearest to an estimate of what are the chances of survival for a baby whose only drawback is prematurity, if we exclude these conditions, and correct the gross mortality figures accordingly.

Table II. shows (1) the gross infantile mortality, (2) the "corrected" infantile mortality for premature babies, and (3) the gross infantile mortality for babies born at term, "correction" of the figures being unnecessary in this latter case, as the maternal complications mentioned above are relatively very uncommon in labour at term.

TABLE II.

	Premature Babies.		Mature babies (per cent.).
	Gross mortality (per cent.).	Corrected mortality (per cent.).	
Hospital A (London)	41	34·0	1·8
Hospital B (Provinces)	41	—*	3·6†
Hospital C ″	46	38·0	0·7
Hospital D ″	30	—*	0·8‡

* No data for correction.
† This figure is quite abnormally high.
‡ O.P. Department (Extern maternity).

These figures show that from 30 to 45 per cent. of premature babies die in the lying-in hospitals; and if a selection is made of those premature babies which have no obvious disability in addition to their prematurity, on an average of two hospitals, less than two-thirds survive their third week. The percentage mortality of these selected premature babies during this period may be anything from 35 to 50 times as great as that of mature babies born under the same or similar conditions.

Induction of Premature Labour.

A certain number of premature births are the result of induction of premature labour for slight degrees of pelvic contraction. These are carefully selected cases, the gestation period being, in all but a very few, 36 to 38 weeks, the condition of the mother being good, with no complication apart from the pelvic contraction. These cases would, therefore, be expected to yield better infantile results than those just set forth. They come out as follows, and it is clear that these particular figures need no "correction": Hospital A (London), 14 per cent.; hospital B (Provinces), 36 per cent.; hospital C (Provinces), 20 per cent. The average of the three hospitals is about 23·3 per cent.

A certain small number of deaths are included in these cases, which occur during labour as the result of the birth process, or of obstetric interference, but they are too few to affect the percentage appreciably.

While these results are on the whole better than the "corrected" figures of premature infantile mortality it cannot be contended that they are satisfactory. The object of inducing premature labour in pelvic contraction is to obtain, with the minimum of risk to the mother, an infant that will survive. If the infant does not survive, the principal object of the operation has not been obtained. A percentage mortality of 14 is low enough to justify the procedure, but a percentage mortality of 36 condemns it. Perusal of the reports shows that at hospital A, with the lowest mortality-rate, a large number of inductions are done as late as the thirty-ninth and fortieth weeks. In the other two hospitals all but a very few inductions were done at the thirty-fifth and thirty-sixth weeks. This difference goes far to explain the more favourable results obtained at hospital A.

It would be of great interest to determine the relation between the mortality and the degree of prematurity, if the data could be obtained. In only one of the hospital reports are the returns presented in a form which enables this point to be investigated, and the numbers are, of course, very small. The following result was obtained:—

Week.	Percentage mortality.	Week.	Percentage mortality.
35th	33·3	38th	7·0
36th	18·1	39tb	10·8
37th	12·5		

These are all cases of induction for pelvic contraction, and the figures indicate that before the thirty-sixth week the infantile risk is much too heavy to be faced, and therefore one of the other available obstetric operations should be preferred in degrees of contraction which call for induction at such an early period. The figures show how rapidly the mortality-rate falls from the thirty-fifth to the thirty-eighth weeks, and this is, of course, to be expected in the nature of things. The rise in mortality-rate from the thirty-eighth to the thirty-ninth week is also not without significance to obstetricians.

Confirmatory evidence of this result may be found along parallel though not identical lines. One of the hospital reports furnishes a record of the progress of all *undersized* infants arranged in groups according to their weight at birth (Table III.).

TABLE III.

Class.	—	Total.	Dead.	Percentage mortality.
I.	5½ to 5¾ lb. (36 to 38 weeks).*	149	12	8·0
II.	4¾ to 5½ lb. (34 to 36 weeks).*	89	11	12·3
III.	4 to 4¾ lb. (32 to 34 weeks).*	77	26	33·7
IV.	3½ to 4 lb. (30 to 32 weeks).*	51	27	51·0
V.	2¾ to 3½ lb. (28 to 30 weeks).*	35	33	94·2

* Represents the approximate period of gestation at which this weight is usually reached.

Of course, it will be understood from what has been said in an earlier part of the note that babies may be born at term which are under the normal weight, and therefore the above figures are not that abnormal intestinal decomposition is the invariable cause of any of these conditions. I am quite clear from a long series of urinary examinations that indicanuria is not invariably associated with any one of them, and, as I shall mention later on, in some of these conditions I have met with other defects of health which I believe to have been quite definitely the cause.

INDICANURIA IN SKIN DISEASES.

It may be of use to give some illustrative cases of various diseases associated with indicanuria. I will deal first with psoriasis, and here I may mention that some 15 years ago I found that there was a small proportion of cases of psoriasis in which the eruption disappeared after the ingestion of creosote. In one case patches on the knees of nine years' duration, which had resisted internal treatment with arsenic and many forms of external treatment, disappeared in a few weeks while the patient was taking creosote. A long series of cases showed me, however, so few in which favourable results could thus be obtained, that the use of creosote for this disease almost ceased to be one of my methods, more especially as I was quite unable to distinguish any particular type in which it would be probably of some use. Since using the indican test with regularity, I find that it is only very rarely that indicanuria is associated with psoriasis, but it appears to be precisely in these exceptional cases that creosote is of value.

A male patient, aged 43, came to me suffering from psoriasis which had been slight for many years and severe for two. On the first occasion I treated him very successfully with arsenic internally, although he had a severe attack of herpes zoster while taking his highest doses. He did not remain quite clear, but kept his slight relapses under control with local treatment only. Seven years later he had another severe attack, and returned to the arsenical treatment and again cleared up almost entirely in two months. Nine months after this attack he developed another severe attack which did not yield at all to arsenic, even in very high doses. I tested his urine, and to my surprise found it went almost black with indican. I therefore put him on creosote, and in a fortnight his rash was somewhat improved though the indican was still present. Three weeks later the rash was gone and the indican had also disappeared. I have not seen him since to ascertain whether in this case the indican and the psoriasis accompany one another as a rule.

A second case occurred only very recently in my practice. The patient was a female, aged 27, who had suffered from psoriasis since she was 14 years old, and had therefore had a great deal of treatment of various kinds. The eruption was severe, and had been so for two months. The urine, somewhat to my surprise, turned almost black when tested for indican, and I therefore tried her with creosote. In five weeks' time she wrote to tell me that she was practically clear.

Now I have already said that it is only quite exceptional for me to find indican in the urine of psoriasis patients, and it is also only rarely that creosote is of value in psoriasis. I therefore think that there is more than coincidence in these cases, and that, although not the prime cause of psoriasis, the intestinal decomposition was the final determining cause of the particular outbreak.

With regard to lupus erythematosus, this is also a disease in which I have not very commonly found indicanuria present, but in those cases in which it has been present it seems to have been a valuable indication. The following appears to me to be an instructive case.

A lady who had been subject to great nervous strain developed a rather diffuse attack of lupus erythematosus on the nose and cheeks. She had lost a great deal of weight, but had no special symptoms beyond obstinate constipation. Fearing the tuberculosis which is so often associated with this disease, I had her thoroughly examined by an extremely expert physician, who found no evidence of tuberculosis. I then had her nose, throat, and teeth examined. The former showed nothing beyond some deviation of the septum, while the dental surgeon found some chronic periodontitis in one or two teeth. These were put right without any benefit accruing as regards the skin lesions. The bacteriological examination of the fæces showed a normal flora, but the urine gave a strong indican test. Treatment was then started, first by freezing with CO_2 snow and then by one or two other local methods, but none of these proved very efficacious. She was then put to bed for a month, carefully shielded from sunlight and cold winds, and this for the first time produced slight but definite improvement, with a small gain of weight. The improvement was, however, neither great nor well sustained, and soon after she got up she developed a fresh patch on the palpebral conjunctiva—not, in my experience, a very common situation for lupus erythematosus. Then, for the first time, she was put on creosote, which she took without trouble. In a short time the disease was completely arrested and the patch on the conjunctiva and several of the smaller patches on the cheeks disappeared. The weight rose steadily, and when for a short time salol was substituted for the creosote the gain in weight ceased, but returned when the creosote was resumed. This patient has not made a complete recovery as yet, but she has improved so much that she is no longer noticeably disfigured. Repeated examination of the urine has shown that indicanuria is no longer present. The nerve strain is, however, unfortunately continuing to a certain degree, and this I think militates against the cure.

I have given this case in some detail because Dr. Barber[11] believes that lupus erythematosus is a disease associated with the presence of *Streptococcus longus*, and in certain cases I believe this to be correct. This patient has had the examinations in each speciality carried out by one of the leading men, and in each case an ardent believer in the doctrine of focal infection, but we have none of us been able to find the *Streptococcus longus.*

Indicanuria is also not uncommon, in my experience, in urticaria and in pruritus without external evidence, and in connexion with the latter I have had one very interesting case.

This was in a young lady who suffered tortures from pruritus but showed no eruption at all. Finding very marked indicanuria I put her on to creosote with the, to me, astonishing result that the pruritus was very much worse, and she developed an urticarial eruption. The creosote was dropped and resumed, and the urticaria disappeared and reappeared concomitantly. Remembering that creosote is excreted mostly as sulphate, I conceived it possible that the drug took up some of her sulphuric acid and thus aggravated her trouble. I accordingly stopped it and put her on largish doses of sulphuric acid, and, post hoc or propter hoc, she was greatly improved.

PRURITUS ASSOCIATED WITH THE PRESENCE OF BILE SALTS IN THE URINE.

One other case of pruritus may be mentioned in connexion with urinary abnormality. In this instance I found in a case of obstinate pruritus that bile salts were present in the urine. Having read that the administration of thyroid gland was beneficial in this condition I ordered it and was gratified to observe the disappearance of both the bile salts and the pruritus. The case occurred many years ago, and of course the work bringing the matter to my notice is still older, but since then I have added the simple sulphur test to my routine examination of the urine, and I have never come across another case, so I think it must be a very rare condition.

BACILLURIA.

Before leaving the urine I may mention the frequent association, especially in women, of chronic urticaria with *Bacillus coli* infection of the urinary tract. This is so common that I think it should be carefully sought after in every chronic case. Some of the patients do very well for a time with inoculation, but it is difficult to discover how much of the good result is due to specific immunisation and how much to "proteid shock." At any rate I have found that a second course of inoculation, undertaken for a relapse of the disease after apparent cure, has been in my hands useless.

THINNING OF THE NAILS ASSOCIATED WITH GASTRIC ULCER.

I should like here to call attention to one other abnormality connected with the gastro-intestinal canal, more especially as I have not seen it recorded anywhere. This is a peculiar thinning and delicacy of the finger-nails. The nail-plate, without developing any ribbing or roughness, becomes so excessively thin that raspatory, and the sternal end of the clavicle disarticulated. Care must be taken not to injure the large vessels lying behind these structures. Thus loosened, the sternal end of the collar-bone, together with the skin flap still attached to it, is retracted upwards by means of a strong hook or a strip of gauze. The whole region of the subclavian vessels, anonyma included, and the brachial plexus becomes easily accessible. The details will be indicated in the following account of a case.

An officer, aged 26, suffered a gunshot wound on Nov. 11th, 1919. The bullet entered from the back, near the fourth dorsal vertebra, and came out one inch above the sternal third of the right clavicle, after which he spat blood, and his right arm became paralysed. There were no signs of aneurysm. On May 2nd, 1920, closer investigation of the nerve condition resulted as follows: Complete anæsthesia of the hand, except in the median area, where slight sensibility remained. Anæsthesia of the external half of the forearm (cutaneous branch of the radial nerve) and of the lower and external part of the deltoid region (axillary nerve). In the other parts of the arm normal or nearly normal perception was maintained. Very well-marked atrophy of all the muscles of the hand and the forearm—except of flexor digitorum communis profundus, which was less affected and probably made possible the very slight movements in the fingers. The deltoid muscle and the flexors of the humerus were also markedly atrophied, and also, in less degree, the triceps, which gave a very slight extension of the arm, after the forearm had been flexed passively. No other movement was possible in the arm. On the basis of this examination I inferred that all the nerves of the brachial plexus had been injured in greater or less degree.

Operation (6/5/20), under chloroform anæsthesia. The incision was made and the sternal end of the collar-bone disarticulated, as just described. Having retracted the skin and muscle flap upwards, together with the mobilised sternal end of the clavicle, we cut the fascia and the clavicular muscle on a director, tied and divided between two ligatures the external posterior jugular vein, and then the omo-hyoid muscle at the level of its tendon. After the two branches of arteria transverse colli and several small veins had been cut between two ligatures, the brachial plexus appeared at the bottom of the wound. It was found to be injured in its external part and compressed all round by cicatrices. The plexus was cleared from scar tissue, the injured part reconstructed by means of several stitches, and all this portion of the plexus protected from new adhesions by a flap of adipose tissue, taken in the neighbourhood. Having replaced the collar-bone and fixed the sterno-clavicular joint by two stitches, we closed the wound, with a drain left in its outer part for 48 hours. The arm was fixed to the trunk for two weeks. Healing took place by first intention. As the collar-bone seemed to protrude a little forward, a sandbag was applied to the sterno-clavicular joint with a satisfactory result. About three weeks after the operation the first definite movements appeared in the hand and fingers, which have since continued to progress.

This case shows that the method (to which I first drew attention in 1916) for operating on the subclavian vessels is also available for reaching the brachial plexus.

This observation illustrates the advantages afforded by temporary disarticulation of the inner end of the collar-bone, over the method of section of the bone usually practised; while affording freer access to the whole supra- and infra-clavicular regions, it disturbs their anatomical relations very little and, for an experienced surgeon, is very easy of performance. It is advisable, in order to protect the clavicle from subsequent dislocation, to stitch it firmly in place and to immobilise the arm for at least two weeks.

DONATIONS AND BEQUESTS.—The late Dr. Henry Barnes of Carlisle, vice-president and formerly president of the British Medical Association, and president of the Cumberland Infirmary, left his medical books to the Royal Society of Medicine; £50 each to the British Medical Benevolent Fund, the Medical Auxiliary of the C.M.S., Epsom College, and the Border Counties Home for Incurables, Carlisle. In the event of the failure of trusts for his wife and children, he left, among other bequests, £1000 to Cumberland Infirmary, £2500 to Edinburgh University for a Scholarship for Clinical Medicine, and £1500 [illegible] College for a similar scholarship.

TWO CASES OF ACUTE HÆMORRHAGIC PANCREATITIS

AND ONE CASE OF PANCREATIC ABSCESS.

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THE prognosis of acute pancreatitis in its various forms is grave and always uncertain. Of cases which appear to be clinically and pathologically identical probably the greater number die even after early operation. Others, although they finally recover, give rise to the gravest anxiety during the first few hours or days. Others again, a small minority, make a speedy and uninterrupted recovery. In a disease with such clearly defined and striking symptoms and signs it seems strange—as has often been remarked—that the diagnosis should be so seldom made before operation. It is therefore fortunate that the true nature of the case can practically always be recognised as soon as the abdomen is opened.

One of us (A. T. C.) has recently analysed 50 cases of acute pancreatitis recorded between 1910 and 1920 in eight of the most accessible British journals. At the operation fat-necrosis and ascitic fluid (usually blood-stained) are the two findings which attract immediate attention.

Fat-necrosis, either in the omentum, mesentery, or retro-peritoneal tissue, was found in 33 out of 35 cases subjected to operation. Blood-stained fluid, either in the lesser sac, the greater sac, or both, was found in 17 cases; "turbid" fluid in one, and "bile-stained" fluid in one. The condition of the pancreas itself is variously described as simple swelling, acute inflammation with or without cyst-formation, hæmorrhagic pancreatitis, abscess, or more or less extensive sloughing of the gland. Of six, definitely mentioned as cases of acute hæmorrhagic pancreatitis, three died and three recovered. In this series of 35 cases treated by operation, pancreatic fistulæ are stated to have developed only in two. One, a man of 51, in whom a cyst containing trypsin was found, had a fistula for four months, the amount of discharge of pancreatic fluid varying from 2 to 17 oz. daily. The other case, a male of 40, had a fistula for six weeks. Both fistulæ appear to have closed spontaneously.

In the case about to be described a fistula persisted for nearly six weeks and gave us the opportunity of verifying one or two facts relating to the physiology of the pancreas. For the first three weeks or more the pancreatic juice was mixed with pus and other discharge. Therefore the time available for our observations was limited to a few days only.

CASE 1.—Mrs. G. M., a Polish Jewess, aged 37 years, was admitted to the German Hospital on May 11th, 1920, suffering from intense epigastric pain with vomiting. There was nothing important in the family history. She had never been ill before. There were five children, the youngest being 5 years old.

History of present illness.—About the middle of April, 1920, the patient had an attack of pain in the epigastrium lasting for several hours and accompanied by vomiting of greenish fluid. As the bowels were not open she took magnesium sulphate. The pain and vomiting ceased entirely, and nothing unusual was noticed till the evening of May 10th, when she was again seized with the same violent pain. The onset was sudden, the pain described as an "intense cramp," accompanied but not relieved by vomiting of the same kind of greenish fluid. This condition persisted all through the night and the following day.

Condition on admission.—At 9 P.M. on the 11th the patient was much exhausted by incessant pain and repeated vomiting. The face was pale but not anxious. The tongue was dry, the pulse rather small and rising in frequency from 130 to 110 during the first hour after her arrival. By artificial light the colour of the skin and conjunctivæ could not be accurately made out, but on the following morning a very faint yellow tinge was visible. Examination of the observers, and it is now generally believed that the tumour-like growths are due to the irritation of the tissues by the deposit of cholesterol in them. At the discussion on Dr. Burns's paper it was pointed out that xanthoma-like masses had been produced by feeding rabbits with cholesterol and then inflicting local injury to determine the site of the deposit. I do not think that the pancreatic lesion has as yet been studied, but all the evidence points to its presence. It has also been suggested that xanthoma diabeticorum is not caused by the sugar disturbance but by the cholesterolæmia which accompanies it.

We seem therefore to be on the high road to elucidating the ætiology of one more of the puzzling skin lesions.

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A NOTE ON THE MORTALITY OF PREMATURE INFANTS.

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THE only source from which detailed information on this subject can be gathered is the medical reports of the lying-in hospitals. The greater number of such hospitals in the United Kingdom issued reports before the Great War broke out, and I have been able to examine figures from six different institutions. The statistics cannot be brought up to date, because in most cases publication of the reports has not yet been resumed. In some of the reports the figures are presented in a form which makes it very difficult to gather from them any detailed information. The total number upon which the figures given below are based is accordingly small—too small indeed to permit me to claim that they are anything more than an approximation. They will, however, serve at least to show how heavy is the mortality of premature babies born in the lying-in hospitals, in comparison with that of the mature babies.

Difficulties of Accurate Obstetric Calculation.

A serious inital obstacle has to be encountered in the difficulty of deciding, in many cases, whether a baby is premature or not, and in the affirmative case, what is its degree of prematurity. The ordinary obstetric calculation from the last menstrual date has a possible margin of error of roughly three weeks—corresponding to the length of the menstrual interval. Calculation from the last coitus is also open to error, for spermatozoa can remain alive in the fallopian tubes for a considerable period. Dührssen found active spermatozoa in the tubes of a woman operated upon three and a half weeks after the last coitus. It is known that in rabbits spermatozoa can survive in the uterus for from 8 to 10 days, and Dührssen's observation is not therefore inherently improbable. Both these errors tend to over-estimation of the duration of gestation—that is, they make the number of premature babies born appear to be lower than it really is; e.g., it would appear that the fortieth week has been reached when it is really only the thirty-eighth week. Occasional cases may occur in which menstruation continues for from two to three months after conception, and the effect of this error upon the obstetric calculation would be under-estimation of the duration of gestation. The latter cases are, however, so rare that miscalculation due to them is quite unimportant from a practical point of view.

Length and Weight as Indications of Maturity at Birth.

Next to the obstetric calculation the length and weight of the infant at birth are regarded as the most important guides. Most lying-in hospitals publish tables of their cases of induction of premature labour for pelvic contraction, in which the length and weight at birth are given along with the calculated duration of gestation. It was, therefore, possible to examine this point pretty fully. Table I. gives the average length and weight, with the extreme variations of both length and weight, of premature babies born at the thirty-sixth, thirty-seventh, and thirty-eighth weeks, in two hospitals.

TABLE I.

Hospital A (London).

	WEIGHT	LENGTH.
38 weeks ..	Average: 5 lb. 10 oz. Limits: 4 lb. 9 oz. to 7·0 lb.	Average: 19 in. Limits: 18 in. to 22 in.
37 weeks ..	Average: 5 lb. 9 oz. Limits: 4 lb. 12 oz. to 6 lb. 3 oz.	Average: 19¼ in. Limits: 19 in. to 21 in.
36 weeks ..	Average: 5 lb. 6 oz. Limits: 4 lb. to 6 lb. 3 oz.	Average: 18¾ in. Limits: 18 in. to 21 in.
Hospital B (Provinces).		
37 weeks ..	Average: 6 lb. 8 oz. Limits: 4 lb. 8 oz. to 8 lb.	This in only given in a few cases.
36 weeks ..	Average: 6 lb. 4 oz. Limits: 4 lb. 12 oz. to 7·0 lb.	

From these figures three points of interest may be gleaned—viz.: (1) Babies born at 36 weeks or at 37 weeks in Hospital B, are on an average nearly a pound heavier than those born in the corresponding week in Hospital A. (2) Babies born prematurely vary in length and weight to as great, or perhaps to a greater, extent than do babies born at term. (3) The relationship between length and weight is subject to very wide variation; premature babies may be long and light, or short and heavy. The most remarkable individual variations noted were the cases of a baby born at the fortieth week measuring 22 in., and weighing 5 lb. 10 oz., and another born at the thirty-sixth week measuring 20 in. and weighing 7 lb., and a third born at the thirty-seventh week weighing 8 lb.

It has been suggested by Frank that the ratio of length in centimetres to weight in grammes is different in mature and premature babies, and that $\frac{w}{e}$ gives a quotient of 50 or less in premature babies, and a quotient of 60 or more in mature babies. I tested this formula over a large number of cases, and did not find it at all reliable.

Necessity of Additional Means of Estimation.

Additional means of estimating the period of development of premature babies are badly needed. A certain amount of work has been carried out by radiologists upon the detection of centres of ossification in the long bones, and the developmental stages at which they appear, or can be recognised by X rays. Meanwhile this work is not sufficiently advanced to be of service.

A promising field, at present unworked, is the cytology of the fœtal blood. The mature infant's blood gives an average of 5½ to 6 million red cells per cubic millimetre; at the thirty-sixth week they may be as high as 8¼ million per cubic millimetre. The proportion of nucleated to non-nucleated red cells is about 1 to 1 at the thirtieth week, while at birth the nucleated cells have practically disappeared, not more than 1000 to 2000 per cubic millimetre being found (Schtchukin[1]). A systematic differential count catheterised himself since then, using a No. 4 catheter. The urine contained a little pus and 1 per cent. sugar. Since June 25th the patient had had continuous pain in the left side, made worse by taking food. The bowels had become confined and the urine had gradually diminished in quantity. The temperature was irregular. A diagnosis of pyonephrosis or possibly a malignant growth was made.

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[1] Quoted by Feldman: "Principles of Ante-natal and Post-natal Child Physiology."

Operation (July 10th).—Through an oblique lumbar incision, an abscess containing about a pint of slightly offensive pus was opened and drained. The kidney was not distinctly felt, but lay, covered by dense adhesions, behind the cavity. The abscess reached almost to the middle line, upwards to the diaphragm and downwards into the iliac fossa. It was retroperitoneal. A few days later it was found that the amount of urine had slightly increased, but that urine was also escaping through the wound. The pus gradually lessened, but a urinary fistula formed. On Oct. 27th the kidney was removed. At the operation, a hard, elongated body was felt running tranversely across the kidney. Unfortunately, it was impossible to make out its connexions. The kidney was shelled out of a bed of dense adhesions, and the renal pelvis was damaged during the removal of the organ. The kidney was found to be macroscopically normal. There was no more escape of urine from the wound, and the patient is now in good health. The urine is free from sugar.

The third case was one of acute hæmorrhagic pancreatitis in a man aged 54, with fat-necrosis of the omentum and blood-stained fluid in the peritoneal cavity. Free drainage of the retroperitoneal space was provided through an anterior incision, but the patient died 24 hours after operation.

ACUTE PANCREATITIS,

FOLLOWED BY THE DEVELOPMENT OF A PANCREATIC CYST; RECOVERY.

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The following case of acute pancreatitis with pancreatic cyst in a woman, aged 27, is of sufficient interest to merit record.

History previous to admission to hospital.—The patient's health up to the birth of a healthy child (10/9/20) had been very good. Two weeks after the birth she suddenly developed severe pain in the upper abdomen and back, this being repeated at irregular intervals during the next five weeks, during which time there was loss of appetite, irregularity of the bowels, and occasional elevation of temperature. On 30/10/20 a tender mass, about the size of a hen's egg, was discovered in the left hypochondrium; and two days later a marked increase in pain, accompanied by almost incessant vomiting.

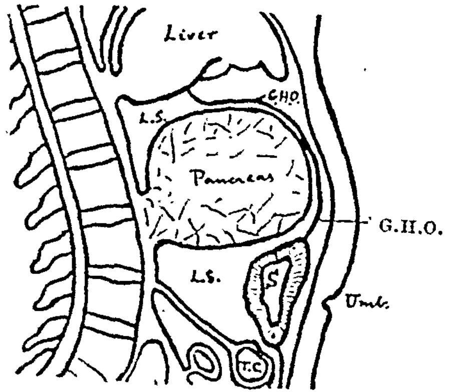

FIG. 1.—Enlarged pancreas, projecting into lesser sac (L.S.), pushing gastro-hepatic omentum (G.H.O.) forwards, stomach (S) and transverse colon (T.C.) pushed downwards.

Condition on admission (3/11/20).—General condition fair, with no emaciation; vomiting frequent, and great pain in upper abdomen and back. The mass, previously noticed in left hypochondrium, had increased in size and was very tender. No jaundice. Urine acid, containing a trace of [illegible] but neither blood nor sugar. Specific gravity 1024.

Operation (4/11/20) (see Fig. 1).—Within 12 hours of admission the general condition became much worse. Vomiting continuous; slight cyanosis; abdomen rapidly becoming greatly distended. The tender mass now filled epigastric and both hypochondriac regions. Abdomen having been opened in middle line, pancreas was found to be enormously enlarged, stomach and transverse colon being displaced downwards. The pancreatic enlargement, which was covered by the gastro-hepatic omentum, was solid, uniform, yellowish in colour, and involved the whole gland. There was marked œdema of the peri-pancreatic tissues, and, in the vicinity of the tail, fat necrosis (confirmed by histological examination) was present. The general peritoneal cavity contained some free fluid, which was not, however, blood-stained. The gall-bladder was distended and contained bile and numerous calculi. Owing to the size of the pancreas the common and pancreatic ducts could not be defined. The gall-stones were removed and the gall-bladder drained.

Progress.—For the next four days the patient was extremely ill, vomiting and hiccough being very persistent and the pulse being often uncountable. From the fifth day there was rapid and uninterrupted improvement, and two weeks after the operation the general condition was very good. By that time, also, the pancreatic swelling had become much reduced in size. Little bile came through the drain during the first two days, but for the next ten days there was an average of 5 oz.

Relapse.—On 1/12/20—that is, four weeks after the operation—there was a recurrence of vomiting, and within the next week a painless swelling appeared which soon filled the epigastric and left hypochondriac regions.

An estimate of the fat in the stools (by Dr. J. Anderson) at this time showed a slight degree of pancreatic insufficiency. The details were, total fat 23·6 per cent., neutral fat 16·0 per cent., fatty acids 7·6 per cent.

Second operation (9/12/20) (see Fig. 2).—Further operative interference being necessary owing to the persistence of the vomiting, the abdomen was again opened. The swelling was found to be a large cyst of the tail of the pancreas, about the size of a child's head. The cyst had pushed the stomach upwards and the transverse colon downwards. It was exposed through the gastro-colic omentum, incised and emptied. It contained a large quantity of slightly turbid, straw-coloured fluid, and a considerable quantity of yellow putty-like material of a tenacious character was adhering to the lining in several places. This was considered to be either secretion which had undergone chemical changes, or necrotic pancreatic tissue. The cyst was unilocular, and the lining was smooth and shiny. The edges of the opening having been stitched to the parietal peritoneum, the cavity was packed with gauze. The fluid was reported by Dr. Anderson to be alkaline, with a slight deposit of red blood corpuscles; on testing its digestive powers no amylase could be demonstrated, but a faint tryptic reaction was obtained.

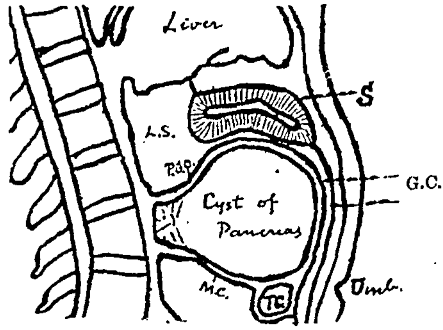

FIG. 2.—Cyst of pancreas, projecting forwards between posterior layer of great omentum (P.G.O.) and transverse mesocolon (M.C.), pushing forwards gastro-colic omentum (G.C.O.), and displacing stomach (S) up and transverse colon (T.C.) down.

Progress.—There was immediate improvement after the operation, the vomiting ceasing and the general condition rapidly becoming very satisfactory. The gauze packing was removed on the fifth day, and the cavity repacked daily thereafter. Two months after the second operation the cavity had become completely obliterated, and the patient has since then been perfectly well.

Remarks.

1. There was evidently at first a subacute inflammation in the tail of the pancreas; later there occurred a sudden spread, and within 12 hours of admission there was a typical acute pancreatitis involving the whole organ.

strictly coördinate with those based on infants known to be premature. Nevertheless the predominant factor in the birth of undersized infants is prematurity, and so far as can be made out from the reports from one-half to two-thirds of the "undersized" babies are premature. It will be seen that the mortality in Classes I. and II. corresponds pretty closely with the figures obtained from cases of induction for pelvic contraction at approximately the same period of gestation.

It is interesting to compare Table III., which represents results obtained during the last five years, with those obtained by Budin at the Clinique Tarnier in Paris in 1895 to 1900, as given in his well-known book "The Nursling." Budin organised a "department for weakling infants"; doubtless not all of the infants were premature, but probably the great majority of them were, and the figures are directly comparable with those just given (Table IV.).

TABLE IV.

Weight.	Percentage mortality.
4½ lb. and over	10·0
3½ to 4½ lb.	13·3
3 lb. to 3½ lb.	60·0
Under 3 lb.	100·0

It will be seen from Table IV. that Budin's results 20 years ago were as good as our own to-day, and *they can only confirm our admiration for the* value of the pioneer work which he carried out in regard to infant management. Probably no clearer or more suggestive thinking as ever been done on this subject.

Problematical Fate of Premature Infants.

A final question arises, which is of immense importance, but to which no answer is at present to be found—viz., "What is the fate of the premature babies after they leave the hospital"? The rule is observed generally in the lying-in hospital that premature babies are not discharged until they are at the time gaining weight; on occasions the mother may refuse to remain or to leave the infant, but, as far as may be, they are kept under observation until they appear to be thriving. Then they pass out of touch with the hospital except for the small proportion which may be passed on to an affiliated infant welfare centre. Lack of coöperation between these centres and the lying-in hospitals is a grievous hindrance to an adequate "follow-up," and is one of the points in inter-hospital coördination which urgently needs attention. Statistics bearing upon the ultimate fate of premature babies would be forthcoming if the hospitals and the centres could work together.

Budin was able to institute a partial follow-up system in Paris for the infants discharged from his clinique; for a portion of their full-time babies, being placed in charge of a wet nurse at the expense of the municipality, could be kept under observation, while those from the "weakling department" were all kept under observation, as far as possible, after leaving the hospital. He was thus able to trace the fate of these infants from 6 to 12 months after their discharge, and he gives the results shown in Table V.

TABLE V.

		Percentage mortality.
Normal babies (all breast-fed)		17·4
Weakling babies (mostly premature)	Breast-fed.. ..	15·0
	Bottle-fed ..	41·0

He believed from these figures that his weakling babies, after discharge from the hospital, had as good a chance of survival as normal babies, *so long as they were breast-fed*, but that if bottle-fed they did very badly, the mortality in the latter case being nearly three times as high as in the former; while in the weakling department of the clinique, all babies were breast-fed, a carefully organised rota of wet nurses being provided for that purpose.

Causes of Mortality of Premature Infants.

Not much information is available from the reports as to the *cause* of this heavy mortality among the premature infants. From the mortality tables it would appear that no other cause of death than "prematurity" was found in 78 per cent. of the cases. It is not stated in how many cases an autopsy was made, and the probability is that in the great majority the diagnosis of the cause of death was clinical only. It is fairly safe to assume that the predominant factor in death from "prematurity" is malnutrition—i.e., failure of the infant to digest or to assimilate the food given. The fatal susceptibility of premature infants to infections of all kinds must not be overlooked; it is due to the fact that their tissues have not yet elaborated a defence against bacterial invasion, and are therefore incapable of "resistance." Breast-fed babies do receive, with the milk of the first 14 days, immunity bodies, which are, no doubt, serviceable for defensive purposes. Bottle-fed premature infants are without defence of any kind, and, of course, fall an easy prey to infection. While in the lying-in hospitals they are fairly free from risk of infection, except that of seasonal catarrh, and the probability is that infections play but a small part in their mortality during the period under consideration.

Importance of Breast-Feeding.

Details of feeding of the premature babies are given in the reports of only one hospital. Here 35·7 per cent. were entirely bottle-fed, while of the mature babies in the same institution only 7 per cent. were entirely bottle-fed. Budin always insisted upon the great importance of breast-feeding for "weaklings," and this point appears to require emphasis at the present time. Mothers of premature babies are doubtless more often unable to nurse than those with mature babies, but in lying-in hospitals it ought to be possible to obtain sufficient breast-milk for the premature babies from the mothers of others, either by wet nursing or by the use of the breast-pump, without depriving other babies of their requirements.

In the case of a small lying-in ward a supply of breast-milk can often be obtained from nursing mothers in the extern maternity, who will usually readily allow their surplus milk to be given to a "sick baby in the hospital." The extern maternity nurse can collect it herself with the breast-pump, and take it to the ward in a previously sterilised bottle. If breast-milk thus obtained is insufficient to supply the total requirements of the premature babies, supplementary feeds can be given, and upon mixed feeding of this description they thrive very much better than upon artificial feeding alone.

It would be exceeding the limits of this note to go further into the question of the management of premature babies, but the *unsatisfactory* results at present obtained should induce all who are concerned with the lying-in hospitals to consider the whole matter afresh.

A NEW METHOD OF EXPOSING THE SUPRA- AND INFRA-CLAVICULAR REGIONS.

BY PROF. N. A. DOBROVOLSKAYA, M.D.,
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IN 1916 I described in the *Russky Vrach* a method, worked out on the cadaver, *for reaching the subclavian vessels*. I have now had an opportunity of testing the value of this method on patients, not only for reaching the subclavian but also the axillary vessels and brachial plexus.

The direction of the incision is as follows: It starts in the middle of the neck, between the two heads of the sterno-cleido-mastoid muscle, runs down to the sterno-clavicular joint, which it surrounds in semicircle, and proceeds along the lower border of the clavicle, where it is carried right down to the bone. The periosteum of the inferior and posterior surfaces of the clavicle is to be carefully separated with the man or are of hygienic interest; a little work is done on the diseases of domestic animals, the micro-organisms of milk and its products, plant diseases, and in a few other industrial directions. No one studies, and probably no one is competent to teach, how bacteria in general live and move and have their being. Our bacteriology is technological, and for the greater part medical—an unsatisfactory situation which has followed easily enough from its historical development. As would surely ensue in the case of any branch of knowledge where practical applications outstrip any firm fundamental basis, progress is now hampered by absence of general principles; serology is at a blind end and we have no sound system of distinguishing one species from another owing to neglect of the botanical and zoological aspects of the subject.

It has long been recognised that human anatomy is intelligible only on a foundation of comparative anatomy, the composition of urine only on some knowledge of chemistry in general. The appreciation that pathology and bacteriology cannot get much further on their present sandy and restricted bases is bound to come sooner or later; a careful study of the admirable summary edited by Prof. Marshall will help as a first step to convert those who may still think that human pathological bacteriology is the beginning as well as the end of the subject. Of 992 effective pages, 144 go to morphology, 152 to general physiology; air, water, sewage, and soil have 124, milk and its products 87, the bacteria and protozoa concerned with the diseases of man and domestic animals 245, while the rest is occupied with plant diseases, industrial processes, and so on. The treatment of each subject is, as it must be in a single volume, short and summary, but it is enough to shake the faith that our previous manuals contain all that we need know about bacteria. We are not aware of any other book which gives such an illuminating survey of the manifold activities of micro-organisms. Without any hesitation it can be said that every serious student and every laboratory ought to have a copy—which is the easier because, as things go nowadays, it is a very good guinea's worth of quantity. Many readers will probably complain that it does not say enough about the particular topic which interests them, but in a book of this size that cannot be helped; the same objection has, after all, been made to the Encyclopædia Britannica.

The book is handy in form, compact, and closely but clearly printed (in America), and the present edition has been expanded and rearranged in many places.

INSANITY AND MENTAL DEFICIENCY IN RELATION TO LEGAL RESPONSIBILITY.

A Study in Psychological Jurisprudence. By WILLIAM G. H. COOK, LL.D. Lond., of the Middle Temple, Barrister-at-Law. London: George Routledge and Sons, Ltd.: New York: E. P. Dutton and Co. 1921. Pp. 216. 10*s.* 6*d.*

"Dr. Cook has the good fortune to treat of a subject rarely dealt with as a whole." So wrote Sir John Macdonell, a learned lawyer, who has since died, in a foreword contributed to Dr. Cook's thesis for the doctorate of laws in the University of London, now published in book form. Sir John Macdonell's observation was apt, for we know of no similar work of so exhaustive a character, and Dr. Cook is to be congratulated upon his choice of an important but obscure subject in medical jurisprudence. It is in no way to his discredit as a lawyer if, having been able to assemble a large number of cases for discussion of the principles and rulings involved, with occasional references to the laws of foreign countries, he leaves us certain of little except of the uncertainty of the law with regard to the civil rights and liabilities of the mentally affected. Presumably the law would have been richer in decisions if insane persons, when financially worth proceeding against in respect of their [illegible] or their torts, were not, as a rule, too well [illegible] er to enter into the former or to commit the latter. However, in the cases that he cites, Dr. Cook finds plenty of material for criticism and for suggestion.

Medical science has made progress in its understanding of the problems presented by the varying phases of mental unsoundness, and is apt to find the law unprogressive and unsympathetic in dealing therewith. Dr. Cook's point of view in criticism is that of the medical expert rather than of the lawyer, where the two are not in accord, and the fact that he criticises and suggests as well as records precedents gives a readable quality to his work which the legal treatise often lacks. The occasions which raise questions of mental capacity in civil courts are not, of course, confined to actions arising out of torts or out of ordinary commercial contracts. They may arise also out of the desire to obtain a decree of nullity of marriage, or in reply to a petition for divorce, and perhaps they are discussed most frequently in connexion with the alleged incapacity of a testator.

Those who are interested in any aspects of these complicated questions will find much to interest them in the perusal of Dr. Cook's monograph.

ANDREAS VESALIUS.

Six Anatomical Plates of the Year 1538. Edited and presented by MORIZ HOLL (Graz) and KARL SUDHOFF (Leipzig) to the eighty-sixth meeting of German Philosophers and Physicians at the Festival of the 400th Anniversary of the Birth of Vesalius. Leipzig: Johann Ambrosius Barth. 1921. Pp. 12 and plates. M.60.

THIS reproduction of six anatomical plates designed nearly 400 years ago by Andreas Vesalius serves to show how advanced Vesalius was as an anatomist, although the great secret of the circulation was hidden from him. The first plate illustrates the portal vein; the second the distribution of the venæ cavæ; the third the great arterial system consisting, according to Vesalius, of 147 vessels which convey the "vital spirit" from the left side of the heart to the whole body; the fourth plate is a graphic representation of the skeleton from the front; the fifth is the skeleton seen sideways; and the sixth from behind.

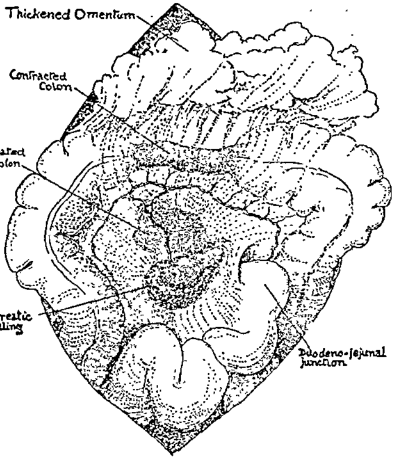
These old drawings have all the force and grace of those dances of death which were popular decoration in the Middle Ages. Skeletons as depicted in a nineteenth or twentieth century text-book are accurate collections of dry bones held together by wire; the skeletons of Vesalius have expression, and as they beckon, admonish, and encourage with gesture they remind us of the wall paintings in churchyards for which the word *macabre* has been coined.

THE CARE OF EYE CASES.

A Manual for the Nurse, Practitioner, and Student. By ROBERT HENRY ELLIOT, M.D., B.S. Lond., Sc.D. Edin., F.R.C.S. Eng., Lieut.-Colonel I.M.S. (Ret.), Lecturer in Ophthalmology, London School of Tropical Medicine. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 172. 12*s.* 6*d.*

A MEDICAL author can essay no more difficult task than that of writing a book for nurses. The middle course between inadequate simplicity on the one hand and overabundant and perplexing detail on the other is difficult to achieve and still more difficult to maintain. The intelligent nurse learns the actual practice of nursing ophthalmic cases in the wards under a sister's tuition, but she soon realises that there is a definite limit to the information available from this source. Questions regarding the uses of instruments, the theory underlying procedure, methods of examination, and the mysteries of disease, gain no satisfactory answers, and Colonel Elliot's desire to supply a source of reliable information is a praiseworthy one. Frankly, however, we do not think he has succeeded. He has covered a great deal of ground, and one or two of his chapters are excellent. The majority, however, especially those of Part II. on diseases, err on the side of simplicity and convey hardly more detail than the average chest showed nothing unusual. The abdomen moved fairly well except in the upper part, where there was a prominence, most marked half way between xiphisternum and umbilicus and slightly to the left of the middle line. Palpation caused no pain except over the swelling, which was extremely tender to the lightest touch and conveyed an elastic sensation to the hand. The limits of the swelling could not be precisely defined, fading off gradually below and on either side, and passing above into the liver dullness. In the series of analysed cases there are three in which the liver dullness was found to be diminished. In this case the liver dullness was normal in extent. The swelling was rather tympanitic on percussion. No friction sound was heard over it. The rest of the abdomen was slightly distended and dull in the flanks.

Operation.—The abdomen was opened over the epigastric swelling. A quantity of slightly blood-stained fluid escaped, perhaps three pints. The great omentum was found to be much thickened and rolled upwards towards the stomach. Nothing unusual was found at the examination of the gall-bladder or bile-ducts. The stomach, empty and natural in size and appearance, lay in front of part of the swelling described above, the greater part of the prominence being accounted for by the massing of infiltrated great omentum along the greater curvature of the stomach. The lesser sac probably contained half a pint of fluid. The pancreas was most easily reached from below the transverse mesocolon. In this region, just above and to the right of the duodeno-jejunal flexure, a dull-red swelling was found lying behind the parietal peritoneum and extending forwards for an inch or more between the layers of the transverse mesocolon. Opposite this infiltrated area the transverse colon was contracted and discoloured, as indicated in the illustration. The appearance of the affected segment was in striking contrast to that of the bowel above and below. For a distance of 3 inches the colon was so much contracted that its lumen must have been almost occluded. Yet the cæcum, ascending colon, and hepatic flexure were flaccid, but the small intestine contained a considerable quantity of gas. The contracted part of the transverse colon was marked off sharply at both ends. Its peritoneal covering was intact but had lost its glossy appearance. The colour was a dark mahogany, the wall thick and rigid. The pancreatic swelling was exposed and incised after the peritoneal cavity had been protected by gauze packing. A little dark-red somewhat offensive fluid escaped; also a few fragments of friable material, thought to be broken-down pancreatic tissue. The finger was now passed into the retro-peritoneal space and the pancreas examined. The head of the gland felt fairly firm, the body and tail soft and friable. The discharge from the cavity was mopped out, a large drainage-tube inserted, the gauze packing removed, and the abdomen partly closed. Nothing was done to the contracted colon, in order to avoid prolonging the operation. On May 13th the patient's hands became extremely cold and her face rather cyanosed. Her mind was quite clear, and she could answer questions. The radial pulse could no longer be easily counted. For some days her condition remained the same. She had to be catheterised morning and evening. The bowels were kept open with difficulty. The vomiting lessened, but the abdomen was still distended and tender. Contrary to expectation, improvement gradually set in. For nearly three weeks after the operation much foul brownish fluid came through the tube, causing excoriation of the surrounding skin. This was treated by the application of picric acid ointment. On May 29th the escaping fluid was still rather offensive, but we collected it in a vessel for daily examination. On June 21st the discharge suddenly and finally ceased. The patient left the hospital on the same day, weak and pale, but well as far as the abdomen was concerned. When she reported herself early in August her general condition was much better, but it was found that a hard mass the size of a tennis ball had appeared behind the centre of the scar. It was well defined, freely movable in all directions, and neither tender nor painful. There was also a diffuse swelling in the left iliac region, from which a little pus was removed with an exploring syringe. The patient was advised to come into the hospital again, but she refused. She was seen a few weeks later, and, curiously enough, both epigastric and lumbar swelling had entirely disappeared, and she looked and felt perfectly well.



Appearance of the transverse colon, transverse meso-colon, and pancreatic swelling after drawing the great *omentum upwards.*

The fæces were always brown, doughy, and offensive. A little fat was found in them during the first fortnight, but none after May 28th. The urine was always free from sugar.

Observations (made by F. H.) upon the Pancreatic Fluid Collected from the Fistula.

On May 30th the amount of pancreatic fluid secreted in 24 hours was 450 c.cm. This was about the usual daily quantity. On June 1st, between 11.20 A.M. and 12.20 P.M. (one hour before the mid-day meal), the amount secreted was 25 c.cm. At 12.20 a meal consisting of soup, a little meat, potato, and green vegetables was given. From 12.20 to 1.20 there was no secretion at all. From 1.20 to 2.20 only a few drops were collected. From 2.20 to 3.20 the amount secreted was 55 c.cm.

Disturbance of gastric digestion also influenced the quantity of the pancreatic secretion. On June 8th, for instance, the patient was not feeling well and was sick after a dinner consisting of meat and vegetables. The secretion between 8.30 A.M. and 5.30 P.M. on that day amounted to only 30 c.cm. As the gastric derangement passed off the secretion gradually increased again. On June 12th it was 300 c.cm. for the 24 hours. The presence of trypsin, amylopsin, and steapsin was proved by the effect of the pancreatic fluid on boiled white of egg, boiled starch, and olive oil. The fluid was never quite free from offensive odour. It contained a few pus cells and was soapy to the touch.

There are several noteworthy points in this case:—(1) The epigastric swelling was caused not so much by the pancreas as by the rolled-up and thickened omentum. (2) The remarkable condition of the transverse colon. The infiltration of the transverse meso-colon with dark red fluid did not actually reach as far as the colon; the middle colic artery ran through this infiltrated area towards the contracted segment of colon, the vessel and its accompanying nerves being doubtless influenced by the highly irritating fluid. The colon must have resumed its normal appearance and function soon after the operation. (3) The suddenness with which the pancreatic discharge ceased. (4) The absence of pancreatic secretion during gastric digestion and the re-establishment of the flow while food passed through the duodenum.

Besides this case there have been only two other cases of acute pancreatitis under the writer's care during the past seven years.

In the following there may be some doubt as to the correctness of the diagnosis.

CASE 2.—Mr. N. S., aged 50, gave a history of sudden severe pain beginning in the epigastrium and travelling through the left hypochondrium into the back. This occurred on June 25th, 1920, but he did not come under observation till July 7th, when the writer saw him in consultation with Dr. F. Parkes Weber, who has kindly consented to the publication of this note. When the patient was admitted on June 7th, there was a large globular swelling in the left lumbar region reaching from under cover of the ribs to the upper part of the left iliac fossa. The swelling was tender, dull on percussion, crossed by the left part of the transverse colon above, fixed, and reaching back into the loin. The patient gave a history of gonorrhœa in 1895, followed by the development of a stricture. He had

CONTROL OF MEASLES IN LONDON.

THE resolutions of the conference of London borough councils which was convened in February last have recently been under consideration by the Public Health Committee of the Council, and the recommendations which the committee is now prepared to make were this week presented to the Council for ratification. The conference of borough councils was invited to consider (1) proposals for further legislation, and (2) proposals for making more effective the existing powers of the Council and the local sanitary authorities. No proposals were made for further legislation, but on the second point of reference the conference adopted the following resolution :—

> "That for the better control of measles in the county of London there should be the fullest measure of coördination between the central and local authorities and other agencies concerned in the care of children : and it is desirable that : (i) Every effort should be made through the school organisation to obtain the earliest possible information with regard to the reasons for absence from school of children, especially those attending infants' departments, and that the fact of the existence of measles in the homes of the children should be communicated at once to the local medical officer of health. (ii) Steps should be taken, if possible, to ensure that parents and guardians of children liable to attend school should notify the head teacher of the school within 48 hours when a child is kept away from school on account of ill-health, stating the apparent nature of the illness or indisposition from which the child is suffering. (iii) Every possible effort should be made to develop the provision of nursing assistance in the case of measles, and that the authorities of all hospitals and dispensaries and private practitioners should be made aware of the facilities that exist for obtaining nursing assistance in the case of measles, and that forms should be supplied to them upon which application could be made for nursing treatment in suitable cases."

In order to meet the proposal contained in paragraph (1) of the resolution the Public Health Committee of the London County Council is prepared to take steps to issue to school teachers and attendance officers a general instruction to acquaint the borough medical officer at once of all detected cases of measles, particularly where young children under school age are affected and where home conditions are unsatisfactory. When there are indications, during times of normal prevalence of measles, that the disease is increasing in any particular school or group of schools the committee is also prepared to put into operation the scheme applied successfully in 1913. This scheme involved special arrangements under which head mistresses of schools in affected areas informed the divisional superintendent of all absentees every Tuesday morning, and cases of measles were at once reported to the borough medical officer. It is also proposed that when measles tends to become epidemic, when the number of reported cases from London schools approaches 1000 weekly, to apply the scheme experimentally put into force in 1920, entailing close cooperation between school nurses, the attendance officers, and the staffs of the local sanitary authorities.

Regarding notification by parents and guardians of absence due to illness of any sort, the Public Health Committee has been advised that it is not within the power of the Council to make a by-law requiring parents to make such notifications. The Education Committee however, is considering whether anything further can be done to secure the fuller coöperation of parents and guardians.

The recommendation of the conference that every possible effort should be made to develop the provision of nursing assistance is a matter in which the London County Council has no responsibility. This work in London devolves entirely on the City Corporation and the borough councils. It appears, however, that the work of the borough councils is impeded, owing to imperfect appreciation of existing nursing facilities, not only by parents but by those engaged in medical work. The Public Health Committee therefore pro- [illegible] to approval by the borough councils, to circularise hospitals, dispensary authorities, and private practitioners throughout London, directing their attention to available nursing facilities.

Compulsory Notification.

With reference to a second resolution passed by the conference : "That this conference is of opinion that the notification of measles by the medical profession is necessary for the following purposes—viz. : (*a*) To secure the prompt segregation of susceptible contacts attending the public elementary schools ; and (*b*) to render efficient any provision of nursing aid by the local authority," the Public Health Committee of the Council believes that more complete information with regard to new cases of measles is obtained through the school organisation than through compulsory notification. In a large proportion of cases a medical man is not called in at any stage of the disease. The committee agrees with the county medical officer that the detection and reporting by the school organisation of cases of measles gives a more complete result than would be attainable by compulsory notification, and that the public money that would be needed for compulsory notification could be more usefully spent on additional nurses, health visitors, or after-care of patients.

In response to an invitation from the Ministry of Health to express the views of the London County Council on a proposal by certain borough councils that measles should again be made notifiable, the following resolution was submitted by the Public Health Committee for consideration by the council :—

> (*a*) That if so desired by the metropolitan borough councils the Council is prepared to send to the authorities of all hospitals and general medical dispensaries and to all private medical practitioners in London a communication, in a form satisfactory to the borough councils, directing attention to the facilities available through the public health services for the nursing of cases of measles in London.
>
> (*b*) That the Council considers that until more experience has been gained of improved arrangements for the detection and notification of measles through the school organisation, it would not be desirable to adopt the proposal to make measles compulsorily notifiable by medical practitioners throughout London ; and that a representation to this effect be made to the Minister of Health.

After two members of the Council had spoken on the resolution, the debate was adjourned till the next meeting of the Council.

INTERNATIONAL CONFERENCE ON TUBERCULOSIS.

THIS Conference will be held at the Institute of Civil Engineers, Westminster, from July 26th to 28th, and over 100 delegates from other countries have already announced their intention of being present. Mr. Léon Bourgeois, President of the French Senate, will be in the chair, and among those who have accepted invitations are Sir George Newman, Sir Robert Philip (President-Elect), Sir Humphry Rolleston, Hon. Sir Arthur Stanley, Sir StClair Thomson, Prof. Sir German Sims Woodhead, Mr. Woolcombe, and Sir William Younger, Great Britain ; Prof. Calmette, Assistant Director of the Pasteur Institute, Dr. Armand Delille, Grancher Institute, and Prof. Léon Bernard, Hon. Secretary International Union, France ; Colonel Bushnell, head of Medical Department of the U.S.A. Army ; Dr. Hatfield, Managing Director of the National Association of the U.S.A. ; Dr. Linsley Williams, Dr. H. Landis, Miss Mary Gardner, Dr. Gerald Webb, and Dr. Charles Minor, United States ; Prof. Ascoli and Prof. Pio Foa, Italy ; Prof. Harbitz, one of the leading authorities in Europe, Norway ; H. E. the Chamberlain to the King, Sweden ; Prof. Nolen, Holland ; Dr. Dewez, President of the Belgian National League against Tuberculosis, and Dr. Gaston Grégoire, Governor of Liége, Belgium ; Dr. Siah, China ; and Prof. Winslow, League of Red Cross Societies. Delegates are also coming from Australia, Canada, South Africa, India, New Zealand, Denmark, Czecho-Slovakia, Greece, Argentina, Brazil, Spain, Roumania, the Republic of Colombia, Guatemala, Luxemburg, Haiti, Monaco, and Panama. Lord Curzon and Sir Alfred Mond, Minister of Health, will welcome the Conference on behalf of the Government.

2. The relief of the symptoms which followed the removal of the biliary calculi and drainage of the gall-bladder is difficult to explain in the absence of jaundice.

3. The vomiting which recurred on the development of the cyst was clearly due to pressure on, and displacement of, the stomach and duodenum and the consequent interference with their mechanical function. It was remarkable that, notwithstanding the size of the swelling, all other symptoms were absent, there was no pain, no jaundice, no glycosuria, no steatorrhœa, merely a slight degree of pancreatic insufficiency.

4. The chief point of interest was the formation of a large cyst within one month of the onset of the acute pancreatitis. This was not due, as is usually the case, to a chronic indurative pancreatitis, but was caused by the blocking of ducts, either by secretion which had become tenacious, or by necrotic pancreatic tissue. It is significant that it occurred in the tail, the part of the gland which was earliest and most acutely affected. The remainder of the gland recovered.

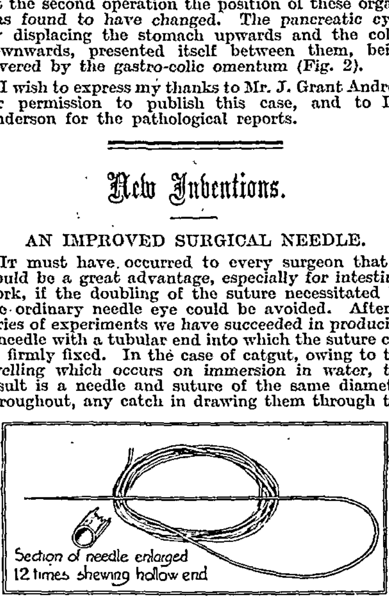
5. A further point of interest is the change in the relative position of the stomach, transverse colon, and pancreas. At the first operation it was noted that the enlarged pancreas had pushed the stomach and colon downwards, and was showing above the former, being covered by the gastro-hepatic omentum (Fig. 1). At the second operation the position of these organs was found to have changed. The pancreatic cyst, by displacing the stomach upwards and the colon downwards, presented itself between them, being covered by the gastro-colic omentum (Fig. 2).

I wish to express my thanks to Mr. J. Grant Andrew for permission to publish this case, and to Dr. Anderson for the pathological reports.

New Inventions.

AN IMPROVED SURGICAL NEEDLE.

It must have occurred to every surgeon that it would be a great advantage, especially for intestinal work, if the doubling of the suture necessitated by the ordinary needle eye could be avoided. After a series of experiments we have succeeded in producing a needle with a tubular end into which the suture can be firmly fixed. In the case of catgut, owing to the swelling which occurs on immersion in water, the result is a needle and suture of the same diameter throughout, any catch in drawing them through the tissues is entirely avoided, and the performance of delicate intestinal suturing is greatly facilitated. The needle is being manufactured for us by Messrs. Charles Spencer, of Redditch, who will shortly be able to supply it in every form, straight or curved, round or cutting, and in every size. Threaded with "London Hospital" catgut, packed sterile in tubes and ready for immediate use, they can be obtained from Messrs. Allen and Hanburys, the sole distributing agents for the hospital.



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Reviews and Notices of Books.

SQUINT.

Its Causes, Pathology, and Treatment. Fifth Edition. By CLAUD WORTH, F.R.C.S. London: Baillière, Tindall and Cox. With 42 figures in the text. 1921. Pp. 242. 12*s.* 6*d.*

THIS book is substantially the same as when it was first published in 1903. Its great value lies in the lucidity with which is explained the ordinary concomitant squint of children, a subject which formerly was commonly misunderstood. Early attempts to account for the condition by supposed anomalies in the eye muscles themselves were seen to be unsatisfactory, but the theory of Donders held the field for many years. This theory is based on the fact that the accommodation of the eyes for near objects is generally associated with convergence of the visual axes. In cases where hypermetropia exists the extra accommodation rendered necessary is apt, according to this theory, to involve such an extra amount of convergence that an internal squint may occur. That Donders' theory, however valuable as a partial explanation of the phenomenon of squint, was not by itself sufficient had long been felt by ophthalmologists, but no one had put the matter so clearly until the publication of this book. Since a great many children who suffer from convergent squint have no more than the average amount of hypermetropia, the latter, while doubtless a contributing cause in many cases, cannot be the essential cause of the condition. The real cause, Mr. Worth maintains, is to be found in defect of the faculty of fusing the two slightly varying images formed on the two retinæ, a faculty normally developed during the first few months of life. In its absence various conditions, one of which is the presence of hypermetropia, may determine the onset of squint. When this occurs it only rarely happens that any diplopia is noticed, the reason being that the image formed in the squinting eye is suppressed. From suppression of the image amblyopia in the squinting eye arises, a condition that easily becomes permanent unless combated by timely treatment. Nowhere, we believe, is all this so clearly set forth as in this book.

The non-operative treatment is very satisfactorily dealt with. In the case of young children the most urgent necessity is to combat the onset of amblyopia by occlusion of the fixing eye. In comparison with this first essential the education of the fusion faculty and of binocular vision is of secondary importance. Of the many devices which have been invented for the latter purpose Worth's amblyoscope is probably the best, provided that it is practicable for the surgeon to devote the necessary time to the education of the patient. With regard to the operative treatment of squint the varieties in the method of advancement practised by different operators are manifold, and the particular method described in this book will be considered unnecessarily complicated by some who are in the habit of obtaining excellent results from simpler ones. As to the question of tenotomy versus advancement there is also a variety of opinions, but we believe that the best of these supports Mr. Worth's conclusion in favour of advancement as the most satisfactory and the safest procedure. He goes so far as to reject tenotomy altogether on the ground that one never can tell just how great the ultimate effect will be.

MICROBIOLOGY.

Third Edition. By 25 Contributors. Edited by C. E. MARSHALL, Professor of Microbiology in the Massachusetts Agricultural College. London: J. and A. Churchill. 1921. Pp. 1013. 21*s.*

THERE is at present in this country no organisation for the study of bacteriology as such. At least nine-tenths of the energy and time that is put into its prosecution is devoted to those organisms which are known or suspected to be of pathogenic importance to vitro the presence of entero-kinase in the intestinal secretion of our patient.

We then chloroformed a dog, eight kilogrammes in weight, and during the period of digestion injected into the pancreatic duct 2 c.c. of intestinal secretion collected from the patient. The animal was killed three days later, and at the autopsy we found typical hæmorrhagic pancreatitis with fat-necrosis.

We can thus surmise, alongside of a biliary origin, the possibility of an intestinal origin of pancreatitis, in support of which conception we may quote the recent experiments of Gosset, J. Camus, and Monod,[4] who, when operating with the view of establishing permanent biliary fistulæ, noted the accidental occurrence of hæmorrhagic peritonitis. In their experiments the bile drained away, and was not able to be held responsible for the conditions which were due to the duodenal secretion.

3. *The Rôle of the Pancreatic Secretions in the Production of Pancreatitis.*

In a thesis, Paul Carnot[5] insisted at length on the possibility of reproducing the lesions of hæmorrhagic pancreatitis by injections into the gland of trypsin, of pancreatic extract, and of papaine, and experimental researches have led him to affirm that hæmorrhagic pancreatitis is the result of auto-digestion.

To these three categories of experiments may be added others which admit the conception of—

4. *A Multiplicity of Factors in the Production of the Pathological Condition.*

Calcium Salts.—Our experiments have shown[6] that the injections into the pancreatic duct of a sterilised solution of chloride of calcium will result in a pancreatitis remarkable for its intensity, and, secondly, will produce as a complication a pseudo-cystic cavity in the substance of the gland. We have made three researches along this line and three times we obtained hæmorrhagic peritonitis with fat-necrosis, while once we found on the surface of the body of the pancreas a cavity of the size of a large nut reproducing the type of a spurious cyst of the pancreas in its earliest stage of formation.

Pilocarpin.—We have repeated with identical results the experiments of Opie, making, that is, an intravenous injection of pilocarpin after ligature of the pancreatic duct, when the animal developed hæmorrhagic pancreatitis and fat-necrosis.

Traumatism.—Experimental injuries to the pancreas of a dog with the duct ligatured in the process of digestion resulted in hæmorrhagic pancreatitis, which did not occur in the fasting animal.

Leucocytes, Microbes, Toxins. — The injection of leucocytes, without microbes, into the pancreatic duct of a dog has been followed by pancreatitis and fat-necrosis. The injection of coli bacilli and of diphtheria toxin has been found by Paul Carnot to produce the same in typical form.

5. *The Interpretation of the Researches.*

From the preceding facts we may conclude, as Carnot has premised, that the condition of hæmorrhagic pancreatitis with fat-necrosis is an auto-digestion. Its pure form presented appears to us to be a process of fermentation, allied to the activation of pancreatic ferments, trypsin, and lipin. Normally in the gland and in the pancreatic duct system the ferments are inactive in the condition of pro-ferments; the trypsin in particular exists as a pro-trypsin, or trypsinogen. It can be activated in situ by the entero-kinase (duodenal reflex), by a cyto-kinase derived from pancreatic tissues injured by traumatism, by calcium salts experimentally injected; by a leuko-kinase or bacterio-kinase, in the case of an ascending infection in septicæmia.

When activated the trypsin damages the vessels and the cells and causes the hæmorrhage. On the other hand, the lipin attacks the fats and saponification results, with evolution of fatty acids, and soaps, and the appearance of fat-necrosis. It can be imagined that the pancreatic juice will act the more powerfully as its excretion becomes more difficult. As to the mode of action of the bile, this can be interpreted in several ways. The bile reinforces the pancreatic lipase (Claude Bernard, Dastre) and the fat-necrosis becomes intense; but if we attempt to incriminate the bile in its isolated state, and not the intermixture of bile and intestinal secretion—i.e., the duodenal content, how can we explain the activation of the trypsinogen? Either there is direct activation of the pro-trypsin by the bile, or the bile damages the pancreatic cells with the production of cyto-kinase, and thus indirect activation of trypsinogen.

A last question arises, What is the mechanism by which either the bile or the intestinal secretion reaches the intra-pancreatic secretory system? The possibility of a direct reflux of the bile into the canal of Wirsung is admissible while dealing with man—a calculus in the ampoule de Vater, hypertension in the biliary ducts, or spasm of the sphincte of Oddi.

Recently, in experiments full of interest, E. Archibald and Bron[1] have produced hæmorrhagic pancreatitis in the cat by a reflux of the bile of the common bile-duct into the pancreatic duct, or by simple elevation of the pressure in the biliary system, or by associating with this elevation of pressure a spasm of the sphincter of Oddi secured by cauterising the duodenal orifice of the canal of Wirsung with a solution of hydrochloric acid after duodenostomy.

In the case, as of man, where the pancreatitis manifests itself outside lesions of the biliary tracts, it may be the result of a reflux into the pancreatic system of the duodenal contents. This reflux, difficult in the main duct which is protected normally by the anatomical structure of the ampoule de Vater and the sphincter of Oddi, could perhaps be possible in the accessory canal of Santorini, which, according to the researches of Opie, discharges in a tenth of the subjects the principal duty of excretion. The orifice of such an abnormal canal is, perhaps, says Opie, incapable of preventing regurgitation of the intestinal contents when the pressure in the duodenum is increased by vomiting, by intestinal spasm, or by occlusion at the duodeno-jejunal angle, or in the third portion of the duodenum.

Siedel (1910) no doubt recognised the condition of hæmorrhagic pancreatitis as following on duodenal stasis. One of us has experimented in this direction and obtained on the dog a typical hæmorrhagic pancreatitis while operating in the following manner.[8] In the first instance, exclusion of the pylorus and posterior gastro-entero-anastomosis. A month and a half later, in the second instance, stricture of the terminal portion of the duodenum by means of a cord strongly tied on the duodenum, at two fingers-breadth above the mouth of the jejunum. The third day after the operation the animal died from typical hæmorrhagic pancreatitis. It is true that the conditions of this experiment are different from those which could occur in man. However, it seems to us permissible to think that in certain abnormal or pathological states of the anastomosis of Wirsung or of the sphincter condition of Oddi, hyper-pressure in the duodenun caused by vomiting or by exaggerated contractions in duodenal occlusion could bring about pancreatitis by reflux of duodenal contents into the pancreatic canal.

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popular medical dictionary. Part I. is mostly concerned with nursing proper, but contains a chapter on the anatomy of the eye, and one on special methods of ophthalmic diagnosis, wherein various instruments, such as the binocular loupe, the transilluminator, the perimeter, Bjerrum's screen, tonometer, and others are briefly described. Illustrations from trade catalogues are given of almost all. The chapters on nursing are the best, but they hardly bear comparison with Mr. Sydney Stephenson's manual on the same subject, though perhaps more up to date. A whole chapter is devoted to subconjunctival injections. In an appendix a list of instruments for various operations is given, also illustrations of most instruments in ordinary use.

Colonel Elliot has, we think, attempted to combine in one a book of reference and a manual of nursing. The result is not satisfactory. Both are needed, but they should be kept separate and distinct. His book, however, contains many good things, and in the absence of a better should without question be recommended to the ophthalmic nurse.

BOTANY.

An Introduction to the Structure and Reproduction of Plants. By F. E. FRITCH, D.Sc., Ph.D., F.L.S., and E. J. SALISBURY, D.Sc., F.L.S. London: G. Bell and Sons, Ltd. 1920. Pp. viii. + 458. 15*s.*

THIS book is intended as a sequel to the "Introduction to the Study of Plants" by the same authors. The two volumes form together a very complete introductory course in botany; and the later one will also prove valuable by itself, since it treats of anatomy rather more fully, and more from the physiological standpoint, than has been usual in handbooks of an intermediate standard. In the first part of the book the structure of the plant cell, its methods of division, and its contents are described; then follow chapters on the structure of the various plant organs and anatomy related to habitat. The second part gives a general survey of the great groups of the vegetable kingdom and closes with a useful chapter on heredity and evolution. The illustrations are numerous and are arranged in 230 figures, about two-thirds of which are original. These are well drawn, and though finished in a slightly diagrammatic style that makes them particularly useful to students, they are not untrue to nature. In order to give the reader a better general description of each group of plants as a whole, the study of isolated types is abandoned. Numerous examples are introduced and thus the range of form and reproductive methods characteristic of each group are well illustrated. The book will prove of great value to the general botanical student and can be warmly recommended to those preparing for the Intermediate Science and First Medical Examinations.

JOURNALS.

Journal of Anatomy. Vol. LV., Parts 2 and 3. January and April, 1921. Cambridge University Press. Pp. 79–217, with 10 plates. 20*s.*—Dr. E. A. Linell opens this number with an account of variabilities in distribution of nerves in the upper limb. This record of painstaking observation, of great clinical interest, is not of a nature to admit of abstraction, but will form a source of information for anatomical textbooks and for surgeons.—Miss I. C. Mann, writing on the development of the fissural region in the eyes of chicks and some mammals, calls attention, among other things, to the eversion of the non-pigmented layer of the optic cup along the lips of the fissure. This is a definite sauropsidan feature, and leads to the appearance of the "cauda" on the surface of the eye in this class, but it is also definitely seen in mammals at early stages. She also describes the pecten as ectodermal in origin, not mesodermal as usually described.—Mr. W. B. Primrose deals with the evolution of the vertebrate endoskeleton, bringing it through hydroskeletal, hydrostatic, sclerotomic, and neural stages to the final neuro-muscular skeleton of the vertebrate. The views he promulgates are of interest in relation to certain ontogenetic details such as the nature of the changes occurring in formation of the notochord from cells. The paper is one of great interest; the relation between segmentation and excretion, however, calls for consideration.—Prof. L. Bolk, of Amsterdam, contributes two important "odontological essays." The first deals with the development of the palate and alveolar ridge in man, in which he shows that the alveolar ridge is a new formation, not made from the outer border of the secondary palate. This has, of course, been known to English anatomists for a considerable time, those who had worked in this region being well aware that the so-called "alveolar ridge" of the earlier stages is taken into the palate, with secondary formation of a true alveolar ridge, but it is well that the matter should be definitely pushed home in detail. Prof. Bolk incidentally points out with justice that there is no heaping up of epithelium along the jaw such as German writers distinguish as the "Zahnwall." The second essay, on the development of the enamel-germ, is much longer, and is filled with observational details of these organs in many varieties of animals, including man. The general presence of what he terms an "enamel-niche" and "enamel-canal" makes a new feature brought forward by the writer of the essay and not described previously. It has been customary to describe an area of stellate change in the cells of the organ, but Prof. Bolk shows that there are double areas in mammalian teeth, lingual and labial; as there are single areas in reptilian organs, the phylogenetic interest becomes apparent. Morphologists will look forward with interest to the appearance of the further essays of this series.—Prof. E. Fawcett adds to his work on the chondrocranium with a careful and detailed account of the primordial cranium in 12 mm. and 17 mm. embryos of *Tatusia novemcincta*, the paper being furnished with several beautiful plates. Among many interesting features, it may be pointed out that these embryos show clearly that the interorbito-nasal cartilage (septum) is probably not to be looked on as a trabecular prolongation; the appearance of the maxilla is very suggestive of a double centre of ossification; the posterior paraseptal cartilages develop independently of the hinder part of the floor of the nasal capsule. This is a most important contribution to our knowledge of mammalian crania.

Japan Medical World. Vol. I., No. 1. May 15th.—Although many adjustments may yet be required before East and West can meet in full communion of spirit, medicine, which is international in its outlook and bearings, has already gone far to this end. Japan has rapidly risen from oriental mediævalism and while some 50 years ago she was simply receptive of Western culture she is now adding her share to the common stock of knowledge which makes for progress, particularly so with regard to medicine. This is exemplified by a new monthly journal published in English, entitled the *Japan Medical World*, which deals with medicine, surgery, and collateral sciences. The editor is Dr. K. Miyajima and the journal is published by the Nippon-No-Ikai Sha, at Kanda. The first number includes original articles, a review of Japanese medical literature, a report of the proceedings of medical societies, and medical news. The original articles are: A New View of the Intermediate Metabolism (Y. Kotake, Osaka); On the Diuretic Principle of the *Myrica Alba* (K. Abe and H. Takahara, Tokyo); Experiments on the Filtration of Water Containing Encapsulated Larvæ of *Clonorchis Sinensis* (M. Muto, Nagoya); On the Influence of the Amino Acids for the Growth of Gonococcus and other Cocci (R. Kobayashi and E. Nishikawa, Tokyo); On the Structure of the Cell Nucleus (O. Tamura, Okayama); and On the Development of the *Paragonimus Westermanni* and its Prevention (S. Kobayashi, Korea). The journal consists of 48 pages, and is published at a yearly subscription of 12 yen, post free, or $6 for foreign subscribers.

glands and the pancreas have been recently sought for (R. Pemberton and J. E. Sweet, E. Gley, Lusk, Graham and Riche, F. C. Mann and Della Drips).

First dog, weighing 10 kg., injection of 1 mg. adrenalin.

Blood Sugar.

	Before.	After pancreas was extirpated.
Before injection ..	0·65 g. ..	3·20 g.
After 10 min.	0·80 „ ..	3·0 „
„ 20 „	0·60 „ ..	3·20 „

Second dog, weighing 10 kg., pancreas extirpated six days. Injection of 2 mg. adrenalin into the saphena vein; the blood sugar, within the following half hour, remains at 3 g. per litre:—

	Blood sugar.		Blood sugar.
Before adrenalin	.. 3 g.	After 20 min.	.. 3 g.
After 10 min.	.. 3 „	„ 30 „	.. 3 „

Such facts are not stated if the extirpation of the pancreas is not complete, and a dog which had the pancreas removed 13 days before, but had still got a stump of gland, as it was shown by autopsy, showed an adrenalinic hyperglycæmia:—

Dog weighing 9 kg. had its pancreas extirpated, on May 21st, was injected on June 4th with 2 mg. adrenalin:—

	Blood sugar.
Before	1 g.
After 15 min.	1·30 „
„ 30 „	1·50 „

The animal was killed and a stump of pancreas, about the size of a pigeon's egg, was found close to duodenum.

These experiments prove that adrenalin hyperglycæmia is not produced after extirpation of the pancreas. Finally it is as if adrenalin injected into a dog prevented the action of the glycolytic ferment from the pancreas. Its action on glycose seems an indirect one and is suppressed by the previous suppression of that ferment in consequence of the extirpation of the pancreas.

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FRENCH SPAS.

THE French have always had the spa habit. No country in the world is richer in mineral springs, and besides such well-known spas as those of Aix-les-Bains, Evian, Contréxéville, or Vichy, there are literally hundreds of other resorts dotted about in the hills and plains of France, to which the great and little bourgeoisie repair each year, as a matter of duty and inclination, to spend a pleasant holiday and cure their bodily ills. The French can justly claim that they have curative waters for almost every disease under the sun; some, such as those of the copper springs of Saint Christau, quite useful in skin affections, are the only ones of their kind as yet discovered.

The Romans were the first to exploit the natural waters of the country; Aix-les-Bains, "queen of resorts and resort of queens," was fashionable even in their days, as it was in the times of Charlemagne and Henri Quatre. Néris-les-Bains, in the Bourbonnais, was the Aquæ Neriæ of the Romans, and the remains of their ancient baths can still be seen at Royat in the Auvergne. The greatest numbers of medicinal springs are to be found in the Pyrenees, the Vosges, and the Auvergne, all places that deserve to be better known to England. The French have been backward in advertising their health resorts; content to benefit themselves, they have left it to the [illegible]ns and Austrians to cry aloud the virtues of the spas in no way superior, and often inferior, to their own.

The Pyrenees, now made accessible, are extraordinarily rich in mineral springs of every variety, particularly those impregnated with soda and sulphur. Luchon, with its highly rádio-active waters, and Cauterets, with its 22 springs containing both argon and helium, are perhaps the most famous, the latter being the classic resort of patients afflicted with chronic catarrh of the nose, throat, and respiratory organs. Salies-de-Béarn is popular amongst those suffering from debility and wasting complaints, and is much frequented by Frenchwomen of all classes, as is Saint Sauveur in the Luz valley. There is Vernet-les-Bains for arthritis, Le Boulou, called "the Vichy of the South," for stomach and liver disorders, Barèges and Eaux-Chaudes for rheumatism, Aylus for gout, and Eaux-Bonnes, called "Eaux d'Arquebusades" in the time of François Premier because of its healing properties in gunshot wounds.

Auvergne, the geological heart of France, has more than 300 springs that are turned to account, the best known being Le Mont-Dore, La Bourboule, Royat, Chatel-Guyon, and Saint-Nectaire. The radio-active waters of La Bourboule, which is pre-eminently a health resort for children, are replete for anæmia and diabetes; those of Chatel-Guyon for diseases of the digestive apparatus and the intestines; Saint-Nectaire, with its "mineral lymph," is popular for albuminuric cures, Mont-Dore for the treatment of asthma, bronchitis, and other nose and throat ailments, whilst Royat is recommended for disorders of the circulation. Vichy, whose bottled waters for stomach, liver, kidney, and other organic complaints are sold in every chemist's shop throughout the world, is also in this neighbourhood, standing on a plateau, with a cluster of smaller and less expensive spas around it. Vittel and Contréxéville, whose springs were first brought to public notice in 1760 by Dr. Bagard (physician to Stanislas, of Lorraine, ex-King of Poland) are well known to English sufferers from liver and kidney diseases, diabetes, and gout, as they are only a day's journey from London. Other spas in the mountainous Vosges district are Plombières, Luxeuil, Bains-les-Bains, Martigny, and Bussang.

Lastly, Biarritz, widely known as a seaside resort, has waters of much curative value for scrofulous and lymphatic subjects, whilst Evian on Lake Geneva is famous for its diuretic springs.

OCCIPITALISATION.

INTEREST in sacralisation of the fifth lumbar vertebra has extended to synostosis occurring at the other end of the vertebral column. The most interesting form of synostosis (or "occipitalisation"[1]) of the atlas is the unilateral variety which results in an inclination of the head towards the affected side, to which is often added a certain amount of rotation, the resulting attitude precisely resembling that in a muscular torticollis, with which, indeed, the anomaly is often associated. Normally flexion and extension of the head remain free; only the lateral movements are impeded. Great difficulty is often experienced in separating the jaws widely so that radiography by the mouth is often impossible. There is frequently but not always an accompanying kypho-scoliosis, and often also some cranio-facial muscular atrophy of the affected side. Occasionally the malformation is not perceived until as late as the twentieth year. Torticollis of bony origin is distinguished from muscular torticollis by the less-marked rotation of the head, the unretracted sterno-cleido-mastoid, the marked limitation of lateral movement and its later appearance, for it is seldom observed before the age of 3 or 4 years. Radiography provides conclusive evidence when it is possible to take a picture through the buccal orifice.

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[1] Presse Méd., June 29th, p. 515.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of
Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS, AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

THE PATHOGENESIS OF HÆMORRHAGIC PANCREATITIS.

BY
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AND
PIERRE BROCQ, PROSECTEUR ET CHEF DE CLINIQUE, À LA FACULTÉ DE MÉDECINE DE PARIS.

HÆMORRHAGIC pancreatitis can be recognised by a clinical syndrome, often of a striking character, to which *Dieulafoy* has given the suggestive name "*the pancreatic drama*"; anatomically the condition is characterised by two orders of lesion. These are: (1) a pancreatic hæmatoma, which transforms all or part of the gland, normally small, pink, and soft, into a gross, red, tender mass; (2) ivory-white blotches of fat-necrosis, commonly called "taches de bougies," especially abundant on the pancreas and great epiploön, but sometimes disseminated throughout the abdominal cavity, for they can be detected on the kidney and spleen and even in the pelvis. Moreover, we find habitually in the peritoneum a bloody effusion of variable quantity.

Experimental Demonstration of Hæmorrhagic Pancreatitis.

This group of associated lesions can be reproduced experimentally on the dog. Care must be taken to anæsthetise the animal either with chloralose or with *a mixture of morphine and chloroform.* Atropine-morphine mixture must not be employed because of the arresting action exercised by atropine on the pancreatic secretion. On the other hand, as one of us has *shown in collaboration with L. Morel*[1] the animal ought to be in full tide of digestion. For this reason, about three hours before the beginning of any experiment of the sort, the animal should be given a *meal rich in meat and fat.* All precautions, of course, must be taken against the errors that would arise from any infection during the operation.

Simple ligature of the chief pancreatic duct is not followed by *hæmorrhagic pancreatitis*, that is to say that arrest of the pancreatic secretion, such as can normally occur in the ducts, cannot by itself give rise to the syndrome which we are considering. On *the other hand, the pancreatic duct having been* ligatured near the duodenum, the injection into it of various fluids will give rise to typical hæmorrhagic pancreatitis, subacute or acute, generalised or discreet, *appearing in from 24 to 48 hours*, and apparent on examination of the animal after it has been killed.

We do not intend here to pass in review all the substances capable of giving rise by injection into the pancreatic duct to hæmorrhagic pancreatitis. The occurrence of the lesions described above has been ascertained to succeed the employment of irritant solutions—formol, chloride of zinc, hydrochloric and *nitric acid (V. Oxner), fatty acids (Jean Camus and Ph. Pagniez)*, chromic acid, and other agents. We are only taking into consideration here *the body whose action can be incriminated in the* pathogenesis of hæmorrhagic pancreatitis produced clinically.

1. *The Rôle of the Bile in the Experimental Reproduction of Hæmorrhagic Pancreatitis.*

In 1856 Claude Bernard, injecting into the pancreatic duct of a dog a mixture of bile and sweet oil, observed that the animal died in eighteen hours from pancreatic hæmorrhage. Opie, in 1901, injected pure bile and made the same observation. In 1906 Flexner observed that in these experiments the salts were the active principles of the bile. The experiments were often attended with no results, but one of us in *collaboration with L. Morel*[2] in 1913-1914 *has demonstrated* that to obtain hæmorhagic pancreatitis in constant fashion by the injection of bile into the duct, it was necessary that this gland should itself be in the state of secreting—*that is to say, that the animal ought to be digesting at the moment of the experiment.* The meal before the operation can be replaced by an injection of secretin which has the same result. Fourteen dogs during the process of digestion had injected into the pancreatic duct 5 c.c. of their own bile, derived aseptically by puncture of the gall-bladder. The injection was followed by ligature of the duct. From these 14 experiments positive results were obtained in 12; acute cases (6); the animals dying between 20 and 48 hours, and subacute cases (6), the animals surviving. The necessary condition for *obtaining constant results was found to be that the* pancreas should be actively secreting, as indicated by the fact that the injection of secretin has the same effect as a pre-operation meal.

It can be urged against these experiments that the pancreatitis followed traumatism, whether by the injection of the bile in the canal of Wirsung, or by the retention of the pancreatic juice above the ligature. In reply to these objections one of us[3] has carried on with Morel a series of researches with the object of testing the pathological composition of bile and pancreatic juice outside the pancreatic excretory system. *To bring about the new conditions* we left open in the abdomen the cut pancreatic duct and gall-bladder. The animals died within 22 to 36 hours, with free hæmorrhagic exudation in the peritoneum, and many large patches of fat-necrosis.

2. *The Rôle of the Intestinal Secretion in the Experimental Reproduction of Hæmorrhagic Pancreatitis.*

The injection of the secretions of the duodenum into the pancreatic duct, followed by ligature of the duct, brings about intense hæmorrhagic peritonitis. This *fact, demonstrated in 1906 by Polza*, and verified by us, is very complex in origin. In the duodenal secretion different constitutents contribute to give rise to hæmorrhagic peritonitis—for example, the bile, the *hydrochloric acid* of the gastric juice, if this has not been neutralised, and finally entero-kinase.

This last alone, among the factors of the intestinal secretion, can operate in *the genesis of pancreatitis as* the result *of* its own action on the trypsinogene, which it transforms into active trypsin; we have been able to demonstrate this reaction by working with pure intestinal secretion, alkaline, *and free from* bile.[3]

The intestinal secretion which we employed was human, collected from a case of intestinal fistula, which was an exact pathological reproduction of the experimental fistula of Thiry. It opened into a loop of the damaged gut, 40 cm. in length, and was closed at each end so as to be shut off from the rest of the intestine. The collected secretion was pure, without food material or bile. *It was clear, viscid, and alkaline,* while the presence of entero-kinase was demonstrated by the method of H. Bierry and V. Henri. Into three test-tubes we poured 5 c.c. of milk deprived to a great extent *of its fat.* To the first tube we added 20 drops of pancreatic juice obtained after the injection of secretin from a temporary fistula in a dog. To the second tube we added the same quantity of pancreatic juice and five drops of intestinal secretion collected from our case of intestinal fistula. To the third tube we added five drops of intestinal secretion without pancreatic juice. These three tubes were placed in a bain-Marie warmed to 37° C. for 20 minutes, when only the second tube became transparent, owing to the digestion of the casein, thus demonstrating in the time of its inception, was bound to attract a great deal of attention elsewhere. And now in the metropolis the London Hospital, St. Thomas's Hospital, and the Royal Free Hospital have embarked upon a similar adventure.

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Acute Hæmorrhagic Pancreatitis.

DISEASED conditions of the pancreas are notoriously difficult to diagnose and, moreover, unsatisfactory to treat in many instances. It is natural to expect, or at any rate to hope, that increase in our knowledge of their pathology, and improvement in our means of diagnosis, may lead to the development of satisfactory methods of treatment. The deep situation of this gland and its important anatomical relationships combine with its complex functions to render its examination and investigation difficult. The problems are further complicated by the facts that the internal secretory functions of the pancreas are profoundly influenced by the activities of other endocrine glands, notably the suprarenals, thyroid and pituitary, and that the effects of want of balance between these various inter-related endocrine functions, though recognised and generally admitted, are imperfectly understood and not yet delimited. The problem of the diagnosis of pancreatic disease is of especial importance in the more acute lesions of that organ, more particularly in that variety known as acute hæmorrhagic pancreatitis, in which the only hopeful form of treatment at present, and in the majority of cases, is early operation.

We publish in the French Supplement to THE LANCET this week a paper by MM. LÉON BINET and PIERRE BROCQ, which is an important contribution to the pathology of this condition. They point out that the morbid anatomy, as revealed by operation or necropsy, is characteristic, comprising a hæmorrhagic change in the pancreas itself, whereby it becomes converted into an enlarged, red, "hæmatoma," while we find ivory white areas of fat-necrosis in the pancreas itself, in the omentum, and sometimes widely distributed in the abdomen and pelvis. With these characteristic and almost constant appearances there is frequently a blood-stained effusion into the peritoneum, often of considerable quantity. This distinctive morbid anatomy is familiar to pathologists and surgeons, who are often confronted with it unexpectedly. The question therefore arises as to whether the clinical manifestations afford sufficiently definite indications to allow a diagnosis to be made. Sir ARCHIBALD GARROD, in his interesting Schorstein lecture on the Diagnosis of Disease of the Pancreas[1] pointed out that there are three main groups of diagnostic indications. The first of these comprises the actual symptoms and clinical signs. One of these is pain, often sudden in onset, severe in character, and referred to the back as well as to the abdomen. Other symptoms are persistent vomiting, constipation, a moderate degree of cyanosis, rapid pulse, tenderness, and sometimes swelling or tumours in the upper abdomen. The aspect of the patient is that of severe abdominal disease, and the constitutional symptoms are often profound. Unfortunately, the concurrence of all these symptoms cannot be regarded as characteristic—indeed, they are equally suggestive of some acute abdominal catastrophe, such as intestinal obstruction, for which this condition is not infrequently mistaken. Even when sufficient enlargement of the pancreas occurs to produce a palpable and tender tumour, or to cause pressure on adjacent structures, it usually presents no characteristic features, though resonance in front of it, due to the anterior relationship of the stomach, may give a suggestive indication. The second group of symptoms comprises those due to defects in the digestive or external secretion of the pancreas, as demonstrated by examination of the fæces, the proteins, fats, and carbohydrates of the diet being all concerned. The third group includes manifestations of interference with the internal secretory or endocrine functions of the organ, particularly its relationship to sugar tolerance and glycosuria. Both the external and internal secretory functions of the pancreas are matters permitting of laboratory investigation, and in view of the dubious indications at the bedside, it is natural to turn to the laboratory for aid. The tests of pancreatic efficiency are very numerous. In regard to the external secretion alone, GARROD has referred to no less than 12. There are in addition those of the investigation of the presence of glycosuria and the degree of sugar tolerance. There is also the well-known adrenalin mydriasis reaction of LOEWI. These tests were described and critically studied in an important article by Dr. MACKENZIE WALLIS in the *Quarterly Journal of Medicine* for October, 1920. Unfortunately, as both GARROD and WALLIS insist, none of these tests individually affords consistent indications. On the other hand, when several of them give positive indications they are of great value. This is well shown in the protocols of a considerable number of cases recorded in WALLIS's paper, and we may quote his general conclusions to the effect that the coexistence of an increased diastase content in the urine, LOEWI's adrenalin mydriasis, and the presence of glycosuria afford strong evidence of faulty function of the pancreas, while the occurrence in addition of creatorrhœa and steatorrhœa render it certain. In view of the acute character of some pancreatic lesions, the fact that the tests just mentioned take less time for their performance than some of the others renders them of special value—for example, GARROD states that the urinary diastase and adrenalin mydriasis tests can both be carried out within an hour.

Other questions of great interest in connexion with this disease are those concerned in its pathology, prognosis, and treatment. At present we have little or no basis on which to construct a satisfactory prognosis. We may refer our readers to an interesting paper on two cases of this disease by Mr. ALWYNE T. COMPTON and Mr. FRANK HEBER, who point out the gravity and the uncertainty of prognosis (p. 130). In one of their cases a successful result occurred after operation in what appeared to be an unpromising case. Another case, progressing to cyst formation and cured as the result of two operations, is recorded by Dr. R. B. CARSLAW on p. 132. The only form of treatment which seems to give any hope of success at the present time is surgical—namely, opening the abdomen and dealing with the pancreatic condition found whenever this is practicable. In view of the difficulties in diagnosis, prognosis, and treatment, any researches tending to throw light upon the pathogenesis of this disease and to elucidate the mode of production of its characteristic morbid anatomy must be welcome. MM. BINET and BROCQ's observations in the paper to which we have already referred are of great interest in this connexion. They conclude that the condition of the pancreas and of the fat in its neighbourhood are the result of auto-digestion, due to the activation of the pro-ferments

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[1] THE LANCET, 1920, i., 749.

RESEARCHES ON ADRENALIN DIABETES.

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AND
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SINCE Blum and then Zuelzer described, in 1901, the glycosuria following the subcutaneous or intravenous injection of suprarenal extract a great deal of work has been done on the effect of suprarenal extract and adrenalin on carbohydrate metabolism.

Achard and Desbouis[1] in 1913 have shown that the injection of suprarenal extract produces a general glycolytic insufficiency, that is a decrease of the power of the tissues of burning glycose. After an injection of adrenalin the injection or ingestion of glycose is not followed with an increase of the carbon dioxide discharge through the lungs.

We have extended those experiments on adrenalin diabetes, and we are submitting now three series of researches:—

1. On the influence of adrenalin on the glycolytic power of organism, indicated by means of provoked hyperglycæmia.
2. On the relations between adrenalin and pancreatic extract and concerning their effects on glycolytic power.
3. On the effect of adrenalin on the depancreatised animal.[2]

1. *Effect of Adrenalin on the Glycolytic Power of Organism.*

For that purpose we have studied in the dog the characters of the hyperglycæmia provoked by an injection of glycose, and, those characters being known, the variations of this hyperglycæmia when a certain quantity of adrenalin is injected together with sugar. In every experiment glycose was injected in water-solution (35 g. per litre), and blood takings were done at first before the injection and then every ten minutes following the injection. Our dosings have been made according to Epstein's method, which allows numerous takings of blood without decreasing the volume of blood in a great proportion, and therefore without altering the total quantity of blood sugar. The duration of the hyperglycæmia provoked by the injection of glycose seemed to us a most important point, susceptible of showing the aptitude of organism for fixing this sugar. In a well constitutioned dog we obtained the following results:—

First dog, weighing 12 kg., was injected with 12 g. of glycose; after two minutes the quantity of blood sugar had gone from 1 g. per litre up to 3·10 g.; the glycæmia had come down to the starting-point after 40 minutes.

Second dog, weighing 19 kg. was injected with 12 g. of glycose; after two minutes the blood sugar had gone from 0·90 g. up to 2·65 g., and gone down to 0·90 g. after 30 minutes.

Third dog, weighing 19 kg., was injected with 10 g. of glycose; the blood sugar had gone from 1·05 g. up to 2·85 g. after two minutes, and came back to the starting-point after 20 minutes.

Fourth dog, weighing 15 kg., was injected with 3·50 g. of glycose; the blood sugar had gone after two minutes from 0·95 g. up to 1·40 g., and was normal after 20 minutes.

Fifth dog, weighing 33 kg. was injected with 7 g. of glycose; after two minutes the blood sugar had increased from 1·15 g. to 1·95 g., and back to 1·15 g. after 10 minutes.

From those experiments, chosen among several others, we can conclude that the quantity and duration of hyperglycæmia provoked by the injection of glycose are evidently in proportion with the quantity of the glycose injected. The duration of that phenomenon gives very clear indications, and we can admit that with 0·50 g. of glycose per kg. the hyperglycæmia lasts about 20 minutes, and with 1 g. per kg. it lasts about 40 minutes. We might wonder what becomes of the injected glycose; one part is eliminated through the kidneys, as it is shown by a glycosuria following the hyperglycæmia; the rest is either fixed in or burnt. In fact, the analysis of gases in venous blood or in expired air shows the quick combustion of the assimilable sugar.

The comparative study of the quantity of sugar after the injection of assimilable glycose and, on the other hand, after the injection of unassimilable lactose clearly proves the part of the destruction and fixation of the sugar during the phenomenon.

A dog weighing 22 kg. was injected with 15 g. of glycose; hyperglycæmia disappeared 45 minutes after. Some days later it was injected with 15 g. of lactose; the quantity of sugar was double 45 minutes after; 0·78 g. at the beginning, 1·95 g. after 45 minutes.

What becomes of hyperglycæmia when adrenalin is injected together with glycose? We have studied that, considering in each experiment the effect of glycose alone, then the effect of adrenalin, and lastly the effect of both together.

A dog weighing 15 kg. was injected at first with 3·50 g. of glycose, two days later with 1 mg. adrenalin, and lastly, two days later with 3·50 g. of glycose + 1 mg. adrenalin:—

TABLE I.

—	Rate of blood sugar after an injection of		
	3·50 g. glycose.	1 mg. adrenalin.	3·50 g. glycose + 1 mg. adrenalin.
Before	0·95 g.	0·95 g.	0·95 g.
After—			
2 min. ..	1·40 ,,	—	1·70 ,,
10 min. ..	1·10 ,,	1·40 ,,	2·10 ,,
20 min. ..	1·0 ,,	1·20 ,,	1·70 ,,
40 min. ..	—	0·92 ,,	1·30 ,,
1h. 20 min.	—	—	1·10 ,,
2 hrs. ..	—	—	0·95 ,,

From this experiment (Table I.) it results that the addition of adrenalin to glycose brings an increase of sugar greater than the sum of the both increases brought by adrenalin alone and glycose alone. Besides this hyperglycæmia lasts longer, since it lasted after 1 h. 20 m. It is as if the organism, under the influence of adrenalin, could no longer fix in and burn sugar; its glycolytic power seems absent. Those experiments seem to be capable of practical applications; in therapeutics it seems that there is incompatibility between glycose and adrenalin; the serum composed of both glycose and adrenalin seems not to be used.

2. *Relations between Adrenalin and Pancreatic Extract with regard to their Effect on the Glycolytic Power of Organism.*

The hyperglycæmia, provoked by the injection of glycose in the veins, is exaggerated as rate and duration, when in the same time adrenalin is injected. On the contrary, it was experienced that the hyperglycæmia decreased when fresh pancreatic extract was injected—that is, that adrenalin produces a glycolytic insufficiency, and pancreas, on the contrary, increases glycolyse. Moreover, the pancreatic extract, added to adrenalin, inhibits the effect of adrenalin, as shown in the following experiment (Table II.):—

TABLE II.

Time of examination.	Rate of blood sugar after injection of—		
	7 g. glycose.	7 g. glycose + 1 mg. adrenalin.	7 g. glycose + 1 mg. adrenalin + aqueous pancreatic extract.
Before	1·15 g.	0·95 g.	0·95 g.
After 2 min. ..	1·95 ,,	1·80 ,,	1·25 ,,
,, 10 ,, ..	1·15 ,,	1·45 ,,	0·95 ,,
,, 20 ,, ..	—	0·95 ,,	—

3. *Mechanism of Adrenalin Hyperglycæmia.*

We have tried to solve that problem by studying the effect of an injection of adrenalin after the extirpation of pancreas. It is a problem so much the more interesting as the connexions between the suprarenal nearer to that of butter, is comparatively rich in this vitamin. These two margarines possess the same gross energy value, yet their true food value is very different. In spite of such considerations, not only the War Office but other Government departments are prepared to accept a classification of foodstuffs based on thermal values. It is an undesirable perpetuation of the doctrine promulgated in the well-known report issued in 1916 by a Committee of the Royal Society on the Food Supply of the United Kingdom. This report was prepared at a time of national stress, when a stocktaking of our food-supply and its evaluation on some sort of basis was a necessity. The inquiry served its purpose, and we do not for a moment think that the distinguished members of that Committee would claim more for it. It must also be borne in mind that the presence of vitamins, even coupled with thermal values, by no means represents finality in food values; the appearance, the flavour, and the many combinations of foods which are the outcome of our civilised experience all play their part in the physiology of nutrition.

TROPICAL SANITATION.

THE rapid development of tropical medicine has necessitated the devotion of a considerable amount of space in the *Tropical Diseases Bulletin* to the consideration of sanitation and hygiene in the tropics. From 1914 up to the present this demand was met by the issue from time to time, as occasion warranted, of special numbers of the *Bulletin* entitled "Applied Hygiene in the Tropics," edited by Colonel W. G. King, I.M.S. (ret.). These numbers were much appreciated by sanitarians throughout the tropics, containing as they did a large amount of useful information especially welcome to those sanitary officers whose duty lay in tropical countries during the war. The development of sanitary science in the tropics since the commencement of the war and the establishment of a special department of sanitation and hygiene in the schools of tropical medicine in this country have rendered desirable the regular publication of a summary of recent progress in that science. A new departure has therefore been made by the quarterly issue of supplements to the *Bulletin* entitled "Sanitation Supplements."[1] The first of these is under the editorship of Colonel W. W. Clemesha, I.M.S. (ret.), an authority on Indian sanitation, who is at present lecturing on that subject at the London School of Tropical Medicine. The supplement contains 82 pages, abundantly illustrated with plans, diagrams of appliances, and photographs of various sanitary undertakings. A résumé is given of recent work in the control of malaria, with special reference to the campaign in Dar-es-Salaam. Consideration is also given to yellow fever, kala-azar, yaws, tuberculosis, enteric, influenza, leprosy, typhus prevention in China, and plague. There are also sections dealing with conservancy appliances, milk in the tropics, small-pox vaccination, disinfection, vital statistics, and miscellaneous questions; reviews of books are included. The second number is concerned to a great extent with recent work on malaria prevention, with especial reference to town planning in the tropics. The picture on p. 96 of the model town of La Boca at the Pacific entrance to the Panama Canal is unusually interesting. The section devoted to the prevention of disease includes an account of the intensive treatment of yaws in Grenada, from which we learn that in 1919 3000 cases were injected with novarsenobillon, and of these 808 were cured, at an expenditure of £1739 9s. 6d. The conservancy section deals with the latest investigations upon sewage disposal; ample space is again devoted to water, milk, vaccination, and disinfection. Vital statistics receive due attention, and Colonel Clemesha deserves commendation for the attractive manner in which he presents a subject in which the majority of medical men take insufficient interest. From this short account it may be inferred that the Sanitation Supplements will well maintain the reputation of the *Tropical Diseases Bulletin*. Though primarily intended for medical men, future numbers will contain sanitary hints which can be appreciated by any person interested in sanitary progress throughout the world. These will be welcomed by officials in India and elsewhere, in so far as they may be spared the labour and tedium of wading through blue-books.

VICTOR VON URBANTSCHITSCH.

IT is barely a year since we recorded the death of Adam Politzer, and now we regret to note the death of Prof. von Urbantschitsch, who succeeded him as Director of the Aural Clinic in the University of Vienna. Urbantschitsch passed his life in Vienna, where he was born in 1847, in the study of otology and became, on Politzer's retirement in 1907, director of the Aural Clinic, from which he in turn retired three years ago at the age of 70. Though not so great a man nor so famous an otologist as his predecessor, he was an original worker of much ability, and did good service in improving the education of deaf-mutes and in the study of tuning-fork tests of deafness. His text-book of otology is a standard work which has run into five editions.

THE FUNCTIONS OF THE OTOLITHS.

THE complicated functional relations of the labyrinth of the ear to the muscular apparatus of the body are far from being fully revealed to us. The investigations of A. de Kleijn and R. Magnus of Utrecht[1] add considerably to our knowledge. It must be kept in mind that there are the semicircular canals on the one hand and the utricle and saccule, with their otoliths, on the other. Besides the effects on movement the labyrinth discharges tonic reflexes, dependent on the position of the head in space, such as (1) tonic labyrinth reflexes on the musculature of the body; (2) a labyrinth posture reflex; and (3) tonic labyrinth reflexes on the muscles of the eyeball. These reflexes are mediated by the otoliths, while the labyrinth reflexes on movements (turning and progressive movement) are discharged from the semicircular canals. The authors adduce evidence of the connexion between the otoliths and the tonic labyrinth reflexes, which disappear as soon as the otoliths are dislocated and, as it were, cast aside, by submitting the animal to the action of a centrifuge making 960–1000 revolutions per minute for a period of 1½–2 minutes, a method originally devised by Wittmaack. The reflexes of movement, however, remain after the removal of the otoliths. The authors deal first with the relation between the position of the otoliths in space and the maximum and minimum of the tonic reflexes. The tonic labyrinth reflexes of the extremities depend on the otoliths of the utricle, since after removal of the labyrinth canals the tonic limb reflexes remain. If the sacculus otolith was the agent the reflex would be altered on removal of the labyrinth. Each utricle seems to be in functional relation with the extensor muscles of both sides of the body. The tonic labyrinth neck muscle reflexes seem also to be in relation with the utricle reflexes, but in this case the neck muscles of one side of the body are in functional connexion with the opposite utricle otolith. The labyrinth posture reflexes are in connexion with the saccule and have their centre in the mid-brain, while the saccule otoliths are in relation to the tonic labyrinth reflexes of the eye movements. In the cases in which, after centrifuging guinea-pigs, all the labyrinth reflexes were present or returned after a time, no histological changes of any consequence were observed in the otolith apparatus. In all the uncomplicated cases in which the tonic labyrinth reflexes of the extremities, the posture, and the compensatory positions of the eyes

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[1] Sanitation Supplements of the Tropical Diseases Bulletin, N[illegible] 18, No. 2, June 30th, 1921. London: Tropical [illegible] 23, Endsleigh-gardens, N.W.

[1] Pflüger's Arch. f. d. gesammte Physiologie, vol. clxxxvi., 1921.

THE LANCET.

LONDON: SATURDAY, JULY 16, 1921.

The Position of the Voluntary Hospitals.

Hospital authorities have had much to think about during the last week. Lord Cave's Report,[1] it will be remembered, put out certain schemes under which contributions could be obtained in mass from the public without, in the opinion of the Committee, interfering with the voluntary principle of conduct. And, as a main premiss, the Committee regarded the coöperation of the National Health Insurance Commission as essential to the maintenance of that principle. The social circumstances of the country, to meet which voluntary hospitals throughout the whole of their nineteenth century developments were designed, were changing rapidly before the war, and the fluctuations of prosperity, though making a severe charge upon hospitals, were really representative alike of the national position and of enlarged scientific views. The hospitals were coming to be regarded no longer as being run by the medical profession as homes of refuge in the last resort for the sick and suffering poor. A general spirit of intelligence had revealed to the public, as well as to the medical profession, that these institutions should be used in as early a stage as possible, so that curable cases should be treated and intractable complications obviated. The tangible outcome of the spread of public intelligence was hospital abuse—often of the most flagrant sort. While the charities were thus being exploited, the expense of maintaining the patients and administering the hospitals went up, while the cost of medical education—a thing apart from the financial side of hospitals though otherwise affiliated in every direction with hospital work—was quadrupled. Thus, some ten years ago, everyone connected with the administration of voluntary hospitals—the administrator, the doctor, the patient, the teacher, and the taught—was struggling in a morass. Then came the war, when, in circumstances which have been set out over and over again in every newspaper in the kingdom, and in every hospital report that has appeared, it became clear that the voluntary system of support must either be reinforced or make way for methods of financial stability.

At this parting of the ways the road which we consider the right one—namely, the maintenance of the voluntary system—was advocated on all sides, and advocated with a unanimity that was not a little remarkable considering the reiterated assurances from pessimists that the system was already dead. Red Cross and the great Hospital Funds declared their belief that the voluntary system had not only a splendid past but a splendid future if the public could be induced to coöperate with some measure of adequacy; and Lord Cave's Committee crystallised this view by putting out schemes in furtherance of this happy consummation. Last week a Conference of hospital authorities was held at the Mansion House, Lord Stuart of Wortley, Chairman of the King's Fund Policy Committee presiding, the object being to discuss the alternatives set out by Lord Cave's Committee. That Committee, it may be remembered, drew attention to a number of steps which might be taken to improve the financial position of voluntary hospitals by managers and by the public. They considered, for example, that managers might review expenditure, particularly in the light of comparative costs which could be ascertained by the general adoption of a uniform system of accounts; might establish a coöperative buying of drugs, apparatus, stores, and some kinds of provisions; might remove convalescent cases to auxiliary hospitals; coördinate appeals for subscriptions; further develop new sources of income, such as subscriptions from wage-earners and employers, and other contributory schemes; and might obtain larger contributions from Approved Societies. The last of these suggestions was made the subject of an interim report by Lord Cave's Committee, and it is a concrete indication which is bound to come under early notice. But with regard to the various contributory schemes which have been put forward on business or philanthropic grounds, time may elapse before they come to trial.

One scheme, however, is in actual being. The Sussex Provident scheme was set out in The Lancet, at the time of its publication some months ago, in the words employed by its originator Dr. Gordon Dill, senior physician to the Royal Sussex County Hospital.[2] Under this scheme residents in Sussex, who pay the annual subscription—£1 per annum for a single member, £1 10s. for a married couple without children or a widow or widower with one child, and £2 for married people with children—obtain a number of valuable benefits hitherto out of their reach. The scheme does not aim at providing ordinary medical attendance or at giving benefits supplied by the State or local authorities, but the medical attendants of members are able to arrange for private consultations at the following hospitals: Royal Sussex County Hospital, Royal Alexandra Hospital for Sick Children, Brighton and Hove Hospital for Women (for Obstetrics and Gynæcology), Brighton and Hove Provident Dental Hospital (for Dental Surgery), Brighton, Hove and Preston Dispensary, Sussex Eye Hospital (for Ophthalmic Cases), Sussex Throat and Ear Hospital (for Diseases of the Throat, Nose, and Ear), Lady Chichester Hospital (for borderland Mental Cases), and New Sussex Hospital for Women and Children. Any treatment found to be necessary as the result of this consultation is given at the hospital, while patients confined to bed are visited by consultants at their homes. At the Dental Hospital members receive ordinary dental treatment, and dentures are supplied at hospital rates. All the resources of the Stephen Ralli Memorial Laboratory at the Royal Sussex County Hospital are available, including bacteriological and pathological investigations, vaccines, and X ray examinations and treatment; also massage and electrical treatment. All who are insured under the National Health Insurance Acts come within the scope of the scheme, and for others the maximum income limit is £260 for single members, £400 for married people without children, or a widow or widower with one child, and £500 for a family. All subscriptions received during the year will be divided among the coöperating bodies in proportions which have been already agreed upon for the first year. The scheme, which has been working successfully for several months, immediately gained the approval of all branches of the medical profession in the county of its origin, and, as we said first to discover the real germinal vesicle in the human and mammalian ovum, and to demonstrate the nature and significance of that body." Working on the subject of the blood, in 1852 he contributed to *Trans. Roy. Med.-Chir. Soc.* his paper describing the phenomena of inflammation as it occurs in the bat's wing, his previous observations having been confined to the web of the frog's foot. He also described the amœboid movements of the white blood corpuscles. These are his discoveries which rank as of supreme importance, but to appreciate the whole range of Wharton Jones's achievement the reader should consult his bibliography, containing 68 elaborate titles of books and papers, which concludes Sir Rickman Godlee's biography. His fine work in ophthalmology has been well described by his biographer in THE LANCET.[2]

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[1] The Lancet, June 18th, pp. 1311 and 1320.

[2] The Lancet, 1921 i., 153.

Wharton Jones's personality was interesting and prickly. He is described by Huxley, his pupil at Charing Cross, as lecturing to a remote generation of students, fathers of the great scientific movements of later years. "The true *lumen siccum* of science glowed in every proposition which fell from the lips of the pale adust little man as he stood with downcast eyes, and fingering his watch chain, at one corner of the table. He never had any notes, but the lectures would have read perfectly well if printed straight off. I used to wonder at and envy his 'facility.'" He lived a recluse life, was ultra-susceptible, given to tears, "fundamentally a tender-hearted, sentimental Celt (a Cymric Celt)," says Dr. Robertson, of Ventnor, who knew him well in his closing years. Shyness, pride, and a kind of perverted love of truth which led him to argue most logically at times from passionately-held false premisses, made him probably the unhappiest of men. He loved polemics, imagined slights, and showed a touch of genius in the manner in which he could create a quarrel. His published series of letters to James Whatman, F.R.S., M.P. for Maidstone, is a model instance of what Whistler called "the gentle art of making enemies." He believed that heirlooms and much wealth, which should have come to the Joneses, had been retained by the prosperous Whatmans. The squabble centred in Wharton Jones's great-grandmother, an Elliston by descent from Alestan, a freeman of Essex, whose land had been confiscated in 1066. Wharton Jones was intensely proud of his pedigree by the distaff side, and this pride influenced his passionate character and led to his impoverishment. He gave time to antiquarian, historical, and heraldic researches, which had better have been spent in the service of his professorship. Had he been a man of means he might have happily justified his opinion that "historical and ordinary anatomico-physiological researches have much in common." As it was he lost practice, made enemies, ceased to be in touch with the world, and at last hunger knocked at his door. In 1881 he was found by Sir John Tweedy, his successor at University College, starving by a fireless grate on a freezing day. The pupil saved the master's life, got him food, collected money for him, eventually obtaining for him two pensions. It is a charming story. The old professor ended his days at Ventnor, never suspecting who were his real benefactors. He left a substantial sum of savings to a well-known man, who had been quite ignorant of the affair of 1881.

HYDROCYANIC ACID AND SANITATION.

THE May issue of the *Office International d'Hygiène Publique* contains details of recent legislation in the United States, Italy, and Sweden, concerning the use of hydrocyanic acid for fumigation of ships and buildings, together with communications on the subject made by Drs. Lutrario and Wawrinsky, Italian and Swedish delegates to the April–May session of the *Office International*. In all cases the regulations emphasise the dangers attendant upon the employment of this means of deratisation and disinfestation; elaborate precautions are demanded from the responsible port and sanitary authorities, and, these being observed, the results of the processes appear most satisfactory. The properties of hydrocyanic acid, as prepared for sanitary use, vary. In Italy the proportions used are sodium cyanide 1 g., sulphuric acid 0·8 c.cm., water 3 c.cm.; in Sweden, sodium cyanide 1 g., sulphuric acid 1·5 c.cm., water 4 c.cm. The acid is very destructive of rats and other warm-blooded animals; cockroaches, flies, mosquitoes, with fleas, bugs, and other parasites, are all exterminated in a period varying with the concentration of gas used. At Rome an exhaustive inquiry was made into generation, diffusion, and chemical action, with special reference to the rat problem; amongst the comprehensive information given as a result of this inquiry it is noted that although woollen stuffs retain a considerable quantity of acid the latter is easily removed by sufficient ventilation or by a raising of temperature. Substances rich in glucose (marmalade, syrup, honey) retain a small amount of acid on their surfaces only. Semi-solids and liquids, it must be remembered, may always retain some of the acid in solution. Cereals, and seeds in general, do not lose their power of germination when fumigated in this way. Merchandise in bulk (e.g., grain), compressed, or in the form of powder (e.g., meal) must be treated in chambers hermetically sealed. The Italian sanitary authorities have fumigated 256 ships during the year March, 1920, to March, 1921; in all, more than 2,300,000 cubic metres of warehouses, dock space, hotels used by emigrants, &c., have been similarly treated; whilst the rapid destruction of mosquitoes in houses and stables by this means has shown hydrocyanic acid to be a valuable factor in the campaign against malaria.

PYELOGRAPHY.

IT was in 1896 that the research of Chapius and Chauvel on the corpse, and of MacIntyre on the living subject, laid the foundations of pyeloscopy. Improvements in X ray technique rendered this method of investigation more and more useful to urologists, until in 1905, Voelcker and Lichtenberg made possible a great advance in the X ray examination of the kidney by injecting the ureter and pelvis with an opaque solution, so revealing changes of form and direction which previously could only be discovered by an operation. The art of pyelography has made great progress in the last 16 years, and developed from a risky procedure into one that is at present rarely fraught with unhappy consequences and is often of the greatest value in diagnosis. The modern technique is described by Drs. C. Beyer and J. De Nobele[1] as follows: "the patient is purged; without any preliminary injection of morphine, the catheter, for preference a No. 12 olivary with two eyes, is passed into the ureter; the cystoscope is removed, the catheter fixed to the thigh, and the patient lying on his back is wheeled into the X ray room . . . . the limbs are flexed on the pelvis to straighten the lumbar saddle . . . . a first radiogram is taken to expose any calculus whose outline might be obscured by the subsequent injection." This is made by a record syringe, the piston of which is pushed home till pain announces that the solution has reached the renal pelvis. A photograph is then taken and examined by the negatoscope, while a finger on the syringe maintains the solution in place. If the photograph is successful, the solution, which is usually 10 per cent. collargol, is allowed to run back and the catheter is withdrawn. In order to avoid accidents the injection must be made very gently and stopped directly the patient complains of pain. the ureteral catheter should be sufficiently fine to allow a reflux of the collargol solution. Several accidents, some fatal, have been attributed to the collargol itself, and the writers above-mentioned suggest that in the future some other opaque solution

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John Tweedy, THE LANCET, 1891, vol. ii., p. 1256.

[1] Le Scalpel, May 28th, 1921, p. 530. (This number is devoted entirely to the subject of pyelography.)

recognised that these pro-ferments are normally activated in the intestine by entero-kinase, and it is suggested that under conditions of disease a similar activation *in situ* in the pancreas can be induced by a cyto-kinase derived from the pancreatic cells, by a leuko-kinase produced in the blood, by bacteriokinases generated by bacterial activity, and possibly by the bile and duodenal contents if they regurgitate into the duct. This conception was originally brought forward by PAUL CARNOT and has been developed and submitted to experimental test by MM. BINET and BROCQ. They have investigated the rôle of the bile, of the intestinal and pancreatic secretions, of leucocytes, microbes, and toxins, and of calcium salts on the genesis of acute hæmorrhagic pancreatitis experimentally. They suggest that in some cases an escape or regurgitation of duodenal contents may occur into the pancreatic duct and thus reach the parenchyma of this organ. On this hypothesis the hæmorrhagic and destructive changes in the pancreas are due to activation of the trypsinogen or pro-trypsin—the trypsin thus formed damaging the vessels and the cells. The fat necrosis is also regarded as due to a similar activation of the precursor of the fat-splitting ferment or lipase. These researches emphasise the need for early diagnosis, since they hold out a hope that if the condition leading to the pancreatitis can be recognised sufficiently early it may be dealt with effectively. If the work is confirmed, it may explain the uncertainty of prognosis which presumably depends upon the extent of the pancreatic auto-digestion produced. The whole subject is one which would seem to be ripe for carefully coördinated team-work by physiologists, pathologists, physicians, and surgeons. The difficulties of the problems concerned invest them with a special interest and importance, and sufficient evidence is now available to indicate that they are not insoluble.

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Curves of Resistance.

THE processes by which bacteria are killed by hot water or disinfectants have been analysed by several observers. The work of MADSEN and CHICK in this connexion will be familiar, and the question was dealt with at some length by HEWLETT in his Milroy Lectures.[1] The general result of these experiments on the rate of killing has been that bacteria in hot water or phenol die logarithmically—which is to say that the number which die during each time interval is a fixed proportion of those alive at the beginning of it, so that the great majority die at the beginning of the experiment. Thus if the numbers of survivors are plotted against time a curve is obtained of the type of a reversed J, while if the logarithms of the numbers are used the curve is a straight line. The charm of this result is that molecules of cane sugar and some other simple substances break up on the same plan when they are boiled with hydrochloric acid. The difficulty about it is that it is apparently in flat contradiction to the biological law that all measurable qualities of live things vary according to the normal curve or something like it. On this arrangement there should be a few bacteria of exceptionally small resistance, a few of exceptionally high resistance, with the majority graded between these extremes in such a way that most of them are at or near the average value for the whole lot. If such a population is killed off, a few will die quickly and easily, the majority will die moderately fast, and a few will take a long time to kill; plotting the survivors against time will give a curve like a reversed S. An important paper by Dr. J. HENDERSON SMITH,[2] formerly of the Lister Institute and now attached to the department of plant pathology at Rothamstead, on the killing of the spores of the mould *Botrytis* by phenol, may be welcomed as a successful attempt to bring the two views into harmony. He shows that with 0·4 per cent. phenol the curve is sigmoid, and that as the strength of disinfectant is raised it becomes less and less sigmoid, so that with 0·7 per cent. it is of the logarithmic type. Both types of curve are explicable on the assumption that the individual spores differ in resistance and that the resistances are distributed among the individuals approximately in accordance with the normal curve. It is highly satisfactory to find in this way that these lowly organisms conform to the laws which summarise the properties of other live things. The work may also go further and indicate how the properties of dead matter can be brought into line; it is impossible to say at present how large a generalisation is opened up.

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[1] THE LANCET, March 13th, 20th, and 27th, 1909.

[2] Annals of Applied Biology, vol. viii., 1921, p. 27.

Annotations.

"Ne quid nimis."

ENERGY VALUES OF FOOD.

THE Director of Publicity of the War Office has forwarded us a copy of a volume[1] prepared by Dr. R. H. Plimmer containing tabulated analyses of all the ordinary foodstuffs. So comprehensive a series of analyses has never before been published in this country, and the figures will no doubt be accepted as standards in the United Kingdom.

Dr. Plimmer is so well known and careful a worker that his analyses will carry the weight to which they are entitled. They comprise the usual estimations of water, ash, protein, carbohydrate, and fat, and the corresponding energy values expressed per 100 grammes, per ounce, and per pound. So far as gross values are concerned it is doubtful whether the labour involved in the collection of such an enormous amount of analytical data is justified. We think the publication of this volume represents only part of the story, for no serious consideration is given to the all-important presence or absence of accessory food factors, although it is true that the appendix contains a list, taken from the Medical Research Committee's report, which expresses qualitatively the presence, either singly or collectively, of the three vitamins in the common foodstuffs.

In this matter of the energy value of foods we need to be clear-headed. It is no longer possible to regard food values from the calorific standpoint alone; the vitamin content is probably a factor of even greater importance. At present all we can do is to determine the presence or absence of accessory food factors by actual feeding trials, and until our technique is vastly improved and we have reliable quantitative methods, the natural instinct which man has for a varied diet will continue to play its part. Dr. Plimmer rightly points out that the significance of the presence of the anti-rachitic vitamin in butter, margarine, dripping, and lard should not be neglected. It is present in butter, probably in dripping, but not in lard. Margarine made from vegetable fats, which represent the bulk on the market, is deficient in the anti-rachitic vitamin, whilst the other type of margarine, which contains the olein fraction of animal fat in order to make the consistency of the product he has received warm and sincere congratulations. Mr. Teale's career has, indeed, been a remarkable one. The son of a distinguished father, who was surgeon to the General Infirmary at Leeds, he was himself appointed surgeon to that institution in the year 1864. He increased the reputation of the hospital and of the medical school, and in an unobtrusive way he always stood for what was highest and best in professional conduct, though no man was less bound by rules; it was the underlying spirit that dominated his conduct. Mr. Teale's zeal in promoting education, his pioneer work in sanitation, and especially his original methods of popularising the knowledge of this branch of science, are known to all. Among the more formal congratulations which reached Mr. Teale was one from the Council and Senate of the University of Leeds which was presented in person by the Vice-Chancellor, Sir Michael Sadler. In a congratulatory letter Mr. Teale's services are happily referred to. From it we quote as follows: "We thank you for your sympathy with the young; for your alert and resourceful counsel; and, above all, for the example of your life. Your colleagues and friends of more than one younger generation join in cordial and grateful greetings to you, who, though the oldest among us, are still young in heart and mind." On the day following his birthday Mr. Teale was entertained to tea at the infirmary by the board and the Faculty.

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[1] Analyses and Energy Values of Foods. By R. H. Plimmer, D.Sc., Captain attached to the Directorate of Hygiene, War Office. H.M. Stationery Office, 1921. 6s.

Mr. Teale was elected to the staff in the year 1864, the same year that saw the beginning of Sir Clifford Allbutt's and Mr. C. G. Wheelhouse's connexion with the infirmary. It was owing to the willing coöperation of these three men that opportunities were afforded to the younger men in Leeds who were desirous of devoting themselves to medicine or surgery to become connected with the infirmary; and by a self-denying ordinance they agreed that the new rule, which set a time-limit of 20 years for service on the full staff, should apply to themselves. This rule was associated with the provision that, when a member of the staff is, at the end of his 20 years' service promoted to the consulting staff, he retains the right to the use of six beds, and we are glad to note that this is a privilege which has been largely exercised. Mr. Teale, therefore, is still on the consulting staff and has the right to the use of six beds. The gathering at the infirmary was of a very informal but delightful character; there were no speeches, but Mr. and Mrs. Teale received the congratulations of their many friends; two photographic groups were taken, one of the general company which included the board and some medical men who had been especially invited as representing the profession of Leeds, and one of the honorary staff of the infirmary in which, of course, Mr. Teale figured as the oldest member. It is pleasant to record that Mr. Teale retains much of his old alertness of mind and manner; it is little more than two years ago since he gave the introductory address to the University Medical Society, and the students to who it was delivered were delighted and surprised with his charm and vigour. During the last session of the Leeds and West Riding Medico-Chirurgical Society he gave a paper on the subject of lithotrity, an operation which has probably been by no one more deftly performed than by Mr. Teale. Truly "those whom the gods love die young," but it is for this reason—that they never grow old.

MEDICAL COUNCIL FOR THE CARE OF SICK CHILDREN. On the invitation of the medical board of the Royal Liverpool Children's Hospital a meeting of physicians and surgeons specially interested in the institutional care of sick children took place in the board room of the hospital on July 1st. It was unanimously agreed: "That this meeting constitute itself the Medical Council for the Care of Sick Children of Liverpool and District." Thereafter an executive committee was appointed, and subcommittees were formed, to which the following subjects were referred: (1) the development of increased efficiency through coördination in the care of sick children; (2) after-care; (3) institutional care of sick babies; (4) research and post-graduate

CONFERENCE ON INFANT WELFARE.

UNDER the auspices of the National Association for the Prevention of Infant Mortality and the National Baby Week Council, a three-day Conference was held at the Central Hall, Westminster, on July 5th to 7th. Judging by the sustained attendances and the enthusiasm, the subject evoked very wide interest. On Tuesday the proceedings opened with an address by the President, the Right Hon. Viscount ASTOR. Sir GEORGE NEWMAN, who was to have presided at this Session, was about to take part in the sittings of the League of Nations at Geneva, which prevented his presence.

An Anti-Waste Conference.

The PRESIDENT said no one would be sorry that the nations of the world were foregathering periodically to discuss matters of importance, such as public health; it must mean a great benefit to the world at large. The issue of the moment was, quite rightly, economy; but it was equally necessary to save every single baby's life. It depended on the parents and others whether a child, when it grew up, would be a producer of wealth, or whether, conversely, it would be a cost and a charge on the community. Let the gathering resolve itself into an anti-waste conference, and let its message to the world be that it was out to prevent loss of all child life due to preventable causes. The recent coal strike was estimated to have cost the country 250 millions sterling; it was very difficult to get the country to recognise the indirect cost of ill-health. The Health Insurance Act statistics showed that the total cash benefits paid for sickness and disability amounted on an average to 14 million working weeks lost in a year. Put in another way, there were 270,000 persons unemployed owing to ill-health for the whole year. Also, there were a million children of school age so physically or mentally deficient that they were unable to receive the full benefit of the education provided. It was said that too much was being spent on education; the cost of education ought not to be reduced, but every effort should be made to see that the children were able to get full value from the education offered. The President proceeded to deal with public health services, including slum clearances and the provision of means of recreation for both children and adults. The question of venereal disease was a very difficult one; it touched morality, sex, the social life of the community, but work in connexion with it should not be neglected because of these things. Turning to the question of milk, he said the country consumed too little milk: the average amount consumed—by men, women and children—was ¼ pint per day. The Committee over which he presided found that in the winter, when the supply was reduced, if each child had the amount of milk it required, there would be none left for adults. If milk were a transparent instead of an opaque fluid, it would be much more easy to ensure a pure supply. A glass of milk often hid a multitude of sins. He did not believe there was any likelihood of increased efforts to ensure a pure milk supply resulting in a reduction of the supply. A clean universal supply of milk could only be brought about by general education. Turning to maternity and child welfare, there was, he said, an awakening of the world conscience on this matter; it was recognised that here was the foundation of the work of the countries of the world. There was no wish to break up the home, or to relieve any mother of her sense of responsibility; the desire was to make her feel to an increasing extent her sense of responsibility to her children. The President referred also to the school medical services and their satisfactory growth. In the presence of such a complexity of Governmental intrusion into the life of cities he appealed for a continuance of voluntary effort. In conclusion, he said the public was apathetic largely because the victories of preventive medicine were unseen; it was the failures which were apt to be seen. We did were permanent, but in which the reactions on turning, or those on progressive movement, were retained, anatomical investigation showed that the otoliths had been completely removed by the centrifuge, while the semicircular canals and the *cristæ* were found intact. The authors conclude that the tonic reflexes are mediated by the otoliths while the turning reactions and the reactions on progressive movements are discharged by the semicircular canals. These views are opposed to the older view of Mach and Breuer that the sensations and reflexes of progressive movements—for example, acceleration of movement—are determined by the otoliths.

ANNUAL REPORT OF THE NATIONAL PHYSICAL LABORATORY.

THE annual report of the National Physical Laboratory for 1920 indicates an ever-widening range of activity. The section of chief medical interest is that devoted to radiology (p. 49) under the direction of Dr. G. W. C. Kaye. The British radium standard of about 30 milligrammes of hydrated radium bromide has been supplemented by two other specimens which allow of accurate measurements of single quantities up to 120 milligrammes. For testing larger quantities it would be of advantage were a bigger working standard available. The two existing methods of measurement are being supplemented by a third one, elaborated by Madame Curie—namely, an ionisation method involving the use of the quartz piezo-electrique—with which the French school has long been familiar and adept. The examination of materials used in the construction of X ray apparatus is now carried out on a routine basis and will be welcomed by manufacturers who wish to have a guarantee of the effectiveness of the protective materials they use in their outfits. The Sabouraud pastille has been put through an exhaustive series of experiments to see how far it may serve as a measure of the dose of X rays received by a surface. If the X rays used are not of very short wave-length the pastille emerges from these tests with a very fair amount of credit. Different batches of pastilles, however, are apt to vary in their sensitiveness, and for this reason it is advisable that a sample from any new batch should be tested before reliance can be put upon the probable sensitiveness of the whole batch. The investigation is being extended to pastilles other than the original Sabouraud. The definition of X ray tubes is of great importance in radiographic work; the rough classification, fine, medium, or broad focus, serves at the present time, and tests of X ray tubes are carried out on these lines. It may be anticipated that the work of this section will increase in the future if the general recommendations of the X Ray and Radium Protection Committee gain general approval and adoption.

THE UNKNOWN ÆTIOLOGY OF INFLUENZAL PNEUMONIA.

ONE of the most comprehensive surveys of the problems of influenza yet published has just been issued by Gade's Pathological Institute in Bergen. The author, Dr. K. Skajaa, frankly admits nescience of the central problem, but he is able to throw many instructive sidelights on the epidemiology of the disease and the part played by secondary infection. Answers from general practitioners to an enquête sent out by Gade's Institute brought out some instructive points. In no case had any abnormal prevalence of pneumonia been observed after the influenza itself had subsided. This is one of the many points Dr. Skajaa makes in connexion with his argument that influenzal pneumonia is due to the unknown virus of influenza, and not to such microbes as streptococci and pneumococci. In several of the 184 necropsies made at the institute on persons dying of influenza the bacteriological examination of the lungs was negative. It would seem that uncomplicated influenzal infection of the lungs determines a serous and hæmorrhagic effusion which gives rise to diffuse, smooth consolidation. From this stage onwards the germs of mixed infection may play a subsidiary part, although the virus of influenza itself continues to influence the course of the disease. To emphasise the importance of the virus of influenza in determining the outbreak and course of influenzal pneumonia, Dr. Skajaa refers to three cases which occurred at the same time and in the same place, and which could be traced to the same source of infection. The condition of the lungs was identical in each case; below a horizontal, clear-cut line of demarcation there was a consolidated area which on section was seen to be smooth, shining, and almost black. The veins in every case were distended with clotted blood. So far there was nothing to distinguish one case from the other. But the bacteriological examination showed pneumococci in the first case, hæmolytic streptococci plus Pfeiffer's bacillus in the second, and streptococcus mucosus in the third. Pfeiffer's bacillus, it would seem, could not once be found at Gade's Institute during the first two waves of the recent pandemic, and in the later waves it was not found more often in the subjects of influenza than in healthy persons. Serological examinations also failed to associate any specific antibodies with Pfeiffer's bacillus, and its relation to influenza may now be regarded as even more problematic and doubtful than that of streptococci and pneumococci. With reference to immunity conferred by an attack of influenza, the conclusion is drawn that it is effective but of comparatively brief duration, being appreciably greater after a year than 18 months. As for susceptibility, underfeeding seems to play no part, and the tendency for influenzal pneumonia to break out in several members of the same household is traced to massive infection in overcrowded and insanitary quarters. Of the cosmopolitan diseases, such as plague, cholera, and small-pox, which have periodically devastated the world, influenza alone remains absolutely unbridled, rejoicing, as it does, in a sinister immunity to the restraining influences of civilisation.

THOMAS WHARTON JONES.[1]

Thomas Wharton Jones, pioneer in physiology and ophthalmology, teacher and quaint character, has been missed out of the "Dictionary of National Biography." Fairly full obituary notices appeared in *The Lancet* and *British Medical Journal*, and a compilation from these sources forms part of the "Roll" of the Fellows of the Royal College of Surgeons of England, now in accessible MS. in the College Library. Still, Sir Rickman Godlee's careful and interesting biography is welcome of one whom the scientific world has too readily forgotten.

Thomas Wharton Jones was, indeed, a giant in science, the teacher of Huxley and Lister, a man to reckon with. Born in 1808, in Scotland, he retained to the last the strong Scottish accent of his mother, though his father was of Welsh and English descent. He received his medical education at the University of Edinburgh, and became assistant to Robert Knox, the anatomist, with whom he shared in the odium visited on the Edinburgh anatomical teachers at the time of the Burke and Hare murders in 1829. After various wanderings he arrived in London in 1838, and was appointed lecturer on anatomy, physiology, and comparative anatomy at Charing Cross Hospital. He held this post till 1851, when he became first Professor of Ophthalmic Medicine and Surgery at University College. In 1881 he retired, and died at Ventnor on Nov. 28th, 1891. During the period from 1838 to 1881 he established the reputation which he had already made before coming to London. In 1835 he "was one of the

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[1] "Thomas Wharton Jones, F.R.S." Reprinted from the Brit. Journ. Ophthal., March and April, 1921. 8vo. London: Putnam and Sons, Ltd. 1921.

In the absence of Mr. Nathan Straus, his paper advocating pasteurisation of milk was read by Dr. S. G. Moore.—A paper on Milk in its Economic Aspect by Prof. R. Stenhouse Williams and Mr. J. Mackintosh was then read, calling attention to the present discrepancy between the summer and winter prices of milk, in contrast with the almost flat all-year-round rate obtained before the war.—Mr. F. Arnold Lejeune followed with a paper on The Production of Clean Milk from the Consumer's Point of View, in which he outlined a scheme by which a company concentrating on clean milk production might at once make a fair profit and render a public service.—A paper on The Supply of Milk to Expectant Mothers, Nursing Mothers, and Infants was read by Dr. E. W. Hope (Liverpool), who emphasised the need for providing milk to infants whose mothers were unable to suckle them. The points made in the discussion can be summarised as follows:—

Dr. H. Scurfield considered that we, as a nation, consume too little milk, and he pointed out its great importance as a food, especially in regard to its vitamin content. With some members of the medical profession the potential dangers of milk loomed so large that they discouraged its use. The slogan should therefore be, "Pure milk and safe milk"; hence the aims of the National Clean Milk Society should receive large support. Pasteurisation, as so often carried out in this country, was a farce, and therefore, in the result, a fraud. Dried milk was safe in regard to tuberculosis, and the drying process left the anti-rachitic vitamins intact. The public could largely protect themselves by using a home pasteuriser.—Dr. S. G. Moore (Huddersfield) emphasised the points made by Dr. Scurfield, and hoped that farmers would rise to the importance of supplying plenty of pure milk.—Dr. W. G. Savage (M.O.H., Somerset) declared the milk-supply of the country was no better now than 20 years ago. There were only two driving forces to bring about a better milk supply: (1) legal compulsion; (2) to make the production and supply of clean milk worth the while of those concerned. Dirty milk was dear at any price. He pointed out that milk which had been pasteurised was more dangerous when allowed to stand than was raw milk, because so many of the protective lactic acid organisms had been killed out by the pasteurisation.—Dr. F. E. Wynne (M.O.H., Sheffield) considered that fresh, or alleged fresh, cow's milk was an entirely unsuitable medium of nutrition for either adults or children. It was an economic absurdity to give so much attention to transporting vast distances a fluid which was 88 per cent. water; and scientifically it was bad because it presented the consumer with a first-class culture medium for bacteria. He urged the use of dried milk in preference.—Dr. C. W. Saleeby compared, unfavourably to the British, the physique of Americans with our own, and spoke of the much larger proportion of milk consumed in the States. Milk was a unique food, and it should be produced and consumed in far larger quantities by everybody.

Many other speakers, including Mr. W. Buckley and Mr. Tustin as representing the dairy industry, took part in the discussion and a resolution was carried urging the Government to proceed with the Milk and Dairies Bill and to make provision for further regulations therein.

Dr. A. Dingwall Fordyce (Royal Liverpool County Hospital for Children), speaking with regard to the sources of milk for babies, considered an advance had been made beyond the pre-war tendency to think that many difficulties in connexion with infant welfare would be solved if only there could be a clean milk supply. The problems to be faced were that of the best food for the baby and that in connexion with over frequent pregnancy. If the State provided food for babies it should obtain the best possible, and that was not cows' milk in any form, but mothers' milk. A certain number of mothers could not nurse their own babies, but a large number with milk had no babies to give it to, and for the purpose of allowing the right milk to be provided it was quite easy to discover whether another mother was disease free. He considered that welfare centres were going back in their educational work by providing such a large amount of proprietary food for infants.

Dr. J. C. Drummond (Lecturer in Physiology, University College, London) dealt with the subject from the physiological point of view, and Dr. Harold Waller (Medical Officer, Royal College of St. Katharine, Poplar) spoke from the biological aspect.—Dr. Cecil L. Williams emphasised the peculiar value of the milk supplied by the child's own mother.—Miss Breckenhurst (American Committee for Devastated Areas of Northern France) pointed out that directly the children in those areas had been taken in hand and given milk, either cows' or condensed, or dried, they had immediately increased in weight. It was generally admitted that there was much more infant mortality in the poor districts of large cities than in those parts where diet was more carefully studied and more milk available.—Miss Morson (Malvern) blamed the doctors for recommending patent foods to the poorer mothers, and the welfare workers for encouraging the sale of dried milk and other preparations, and Dr. Mills (Philadelphia Hygienic Association) in urging the absolute necessity of breast-feeding, condemned the bottle as being the cause of the increase in enlarged tonsils and adenoids.—Miss Batt (Health Visitor, Chelmsford) thought that worry had a very detrimental effect on the secretion of milk, and urged doctors and welfare workers when dealing with the failure of a mother to supply milk to aim at trying to discover whether their patient had worry of any sort.

Wednesday Evening Session.

Dried Milk.

On Wednesday evening, July 6th, a Special Medical Session, organised by the Society of Medical Officers of Maternity and Infant Welfare Centres, under the Chairmanship of Dr. Flora Shepherd, met to discuss the Uses and Abuses of Dried Milk, the subject being introduced by Dr. Scurfield. He thought that nothing but good would result from the more extended use of dried milk, whether for young children, expectant and nursing mothers, invalids, or adults of all ages. As there was no grade A milk to be had, and as pasteurisation gave little or no security at present, he regarded dried milk as the only safe milk on the market. He did not suggest that any milk, however obtained, was suitable for drying; it should always be taken clean from healthy well-fed cows. The only danger of the abuse of dried milk was that some ignorant person might think dried milk from cows, being so easily digested, was an adequate substitute for the milk of the human mother, and it was the business of all infant and maternity centres to counter that danger.

Dr. R. C. Jewsbury thought the first ideal to aim at was the breast-fed child; secondly, to breast-feed and supplement with modified fresh milk brought to the boil; thirdly, to feed the child on a modified unsweetened condensed milk in preference to dried milk. At present they were somewhat in the dark as to the effect of drying on the vitamins in the milk, but he had seen cases of rickets in children who had been fed on dried milk, and it was probably because they were getting fat in insufficient quantities.—Dr. Clarke (Baby Hygiene Association, Boston, U.S.A.) gave details of records kept with regard to about 6000 artificially fed babies, which went to show that children fed on dried milk put on more weight than those fed on other forms of milk.—Dr. Eric Pritchard thought they were all agreed that one of the most important elements in correct physiological feeding was the adjustment of balance and provision against excess, especially of the nitrogenous protein constituents. In his view weight was no guarantee as to the successful feeding of children.

As the outcome of further discussion Dr. Harold Waller moved a resolution recommending infant welfare centres to resolve that the tins containing such as that suggested by J. E. Burns: 10 per cent. thorium nitrate in 50 per cent. solution of citrate of soda. Naturally where infection is suspected the precautions must be redoubled.

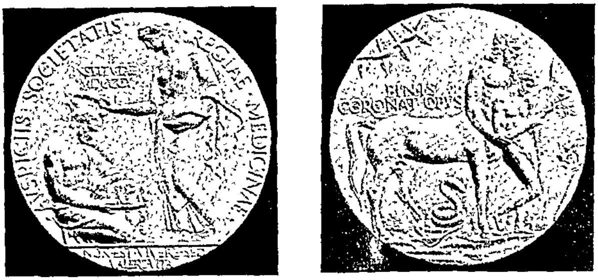
OVARIAN HYPERNEPHROMATA.

SINCE the appearance in 1883 of Grawitz's original paper on the derivation of the common type of malignant renal blastoma, much attention has been directed to the neoplastic potentialities of aberrant suprarenal tissue. On histological and embryological grounds, Grawitz maintained that the renal hypernephromata were derived from groups of cells of the adrenal cortex which had become displaced from their normal environment during development, and although his views have been challenged from time to time, they continued to carry weight until comparatively recent years. Gradually the belief has gained ground that the origin of the renal hypernephromata must be sought for in the kidney itself, but the controversy has left its traces in a good deal of erroneous pathological teaching. The recognition of the occurrence of suprarenal rests, or accessory suprarenals, in other situations than the kidney, and the belief, supported by the authority of Cohnheim, that such rests might be expected to be peculiarly liable to neoplastic phenomena, led naturally to the search for hypernephromata elsewhere, and it was not long before this search was crowned with apparent success. Hypernephromata were described in the liver, the ovary, and elsewhere, and many pathologists taught that this type of neoplasm was fairly common in many situations other than the kidney. There is no doubt, however, that this somewhat fantastic pathology was accepted without a sufficiently critical consideration. It is certainly no longer possible to regard all the renal hypernephromata as being derived from accessory adrenals. On histological evidence alone this view is untenable, and the observations of Bulloch and Sequeira and of Glynn on the true suprarenal hypernephromata is very strong evidence against the Grawitzian theory. These authors have clearly established the fact that tumours of the suprarenal cortex are associated with alterations in the secondary sexual characters, changes which are not seen in patients suffering from renal tumours of the Grawitz type. Scrutinised in the light of this histological and clinical evidence, grave doubts must be thrown upon the diagnosis of hypernephromata in other organs. In the liver, for example, it is doubtful whether more than three or four true examples of this variety of tumour have been recorded; nearly always the apparent hepatic hypernephromata may be regarded as liver-cell carcinomata. Similarly, another origin than that from rests of displaced suprarenal cells must be sought for to explain the so-called hypernephromata of the ovary. In a valuable communication,[1] Prof. Ernest Glynn subjects the recorded instances of ovarian hypernephromata to a critical examination, reaching the conclusion that probably all of them are of lutein origin, and not at all related to the suprarenal gland. He points out that though suprarenal tissue occurs in the broad ligament, as it does in the vicinity of the testicle, no undoubted example of an accessory adrenal has ever been recorded actually within the ovary or the testicle. Again, though there are pronounced differences between the true suprarenal hypernephromata and the ovarian tumours, the latter correspond very closely to the accepted examples of luteomata recorded in the literature. And, finally, suprarenal virilism, the appearance of changes in the secondary sexual characters, does not occur in association with the ovarian hypernephroma. Prof. Glynn would seem to have proved his case fairly conclusively, and has delivered another blow at a theory which has for some time outlived its usefulness.

THE GOLD MEDAL OF THE ROYAL SOCIETY OF MEDICINE.

THE Council of the Royal Society of Medicine made on July 6th, at the annual general meeting of the Fellows, the first award of its gold medal to Sir Almroth Wright, K.B.E., C.B., F.R.S., in recognition of his valuable services to medicine during the recent war. The medal is the gift of the late Dr. Murray Leslie, and is to be awarded triennially on St. Luke's Day for original discovery in medicine and other allied sciences, or for the practical application of the results of previous investigations of other scientists, or for the most valuable contribution in any other way towards the progress of the art and science of medicine, preventive medicine, or surgery. The medal, a photograph of which is here reproduced to full size, was designed by Mr. E. Carter Preston, the well-known numismatic artist. The obverse represents Hygieia, daughter of Æsculapius, bestowing a wreath upon Research, represented as a kneeling figure holding a lamp. The inscription round the rim is "Auspiciis Societatis Regiae Medicinae," in exergue the motto of the Society, "Non est vivere sed valere vita" and, in field, "Institutae MDCCCV." The reverse represents Cheiron teaching Æsculapius the art of healing; beneath the centaur appears the serpent of Æsculapius. In the field to the left is the bow of Apollo (father of Æsculapius), symbolising the sun, the deliverer from plagues. The fountain on the right suggests the fountain of truth, and the inscription runs "*Finis Coronat Opus.*" The presentation was made by Sir John Bland-Sutton, President of the Society. Dr. C. T. Hagberg Wright received the medal on behalf of his brother, who is at present abroad.

Reproduction of the Gold Medal of the R.S.M.



Obverse. Reverse.

MR. PRIDGIN TEALE.

Mr. Pridgin Teale celebrated his ninetieth birthday on June 28th. From the members of his own profession, from the University of Leeds, and from other public bodies with which he has been so long associated and from many members of the general public, had a guarantee, given reasonably good economic conditions, of an early reduction in the proportion of the C 3 population.

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[1] A Comparison between Ovarian "Hypernephroma" and Luteoma and Suprarenal Hypernephroma, with comments on Suprarenal Virilism, Journal of Obstetrics and Gynæcology of the British Empire, Spring, 1921

Mrs. HOOD voiced the views, through a coöperative women's guild, of over 50,000 working-class women when she urged that they should, first of all, consider the welfare of the mother from which the welfare of the child would follow. It was not a bit of good telling a working man's wife that she must stay a fortnight in bed if she was not provided with the wherewithal. She much regretted the great shortage of midwives, especially in view of the fact that panel doctors were not taking confinement cases. If midwives were given a proper status, better remuneration, and a chance of progressing, the supply would soon increase. In conclusion she advocated the provision of home helps for working-class mothers, so that whilst they were obliged to remain in bed after confinement their minds should be free from worry as to household matters. The ideal would, of course, be for working-class women to go into maternity homes or hospitals, but they would have to be educated to it.

Dr. NASH, in urging that the husbands should also be educated, said the hardest worker in the world, and one who knew no trade union eight hours' day, was the working man's wife with a family of children, and the sooner that fact was hammered into the trade union husband the better.—Mrs. BRACKENBURY said that women were learning what was necessary, and would soon find the courage to voice their needs in no uncertain voice, whilst Mrs. FOWLES emphasised the necessity of welfare workers getting into touch with the expectant mothers.—Miss BEVAN (Liverpool) stressed the necessity for coöperation and economic spending, and thought if they were to cut down expenses in regard to welfare work they might look into the expenditure on day nurseries; Miss LEE (Matlock Bath) pointed out the great importance of ante-natal visits in country districts.

Dr. SCURFIELD, in closing the discussion, thought when it could be said that everything that was possible was being done to prevent rickets, bad teeth, and to secure nose-breathers, then all else would follow and the nation could then be classed A 1.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Organisation of the Medical Profession in Ireland.

FOR many years past the organisation of the medical profession in Ireland has been unsatisfactory, and there has been no permanent body able to speak for the profession as a whole. The Irish Medical Association and the British Medical Association exist side by side, each with a membership of about 600. As many members are common to both bodies, probably not more than 900 medical men in Ireland—roughly one-third of the entire number—subscribe to any medical association. Since 1914 the British Medical Association has kept up a branch office in Dublin with a whole-time medical secretary, and Irish medical affairs are to a large extent under the autonomous control of the Irish Committee of the Association. Since neither of the two associations is sufficiently representative to warrant its speaking on behalf of the profession as a whole, it was found desirable in 1913, in the middle of the struggle over the Insurance Act, to form a third body with a broader basis of support in the profession. The Irish Medical Committee, formed by representatives of several local medical committees, and therefore representative of the profession at large, reports annually to a meeting of delegates of the entire profession, and it has received the support of both of the associations previously mentioned, whose secretaries act as honorary secretaries to the Committee. The Irish Medical Committee gained much kudos by its successful work for the profession during the Insurance Act struggles some years ago, and its constitution merits full confidence, but unfortunately it has no funds at its disposal and is dependent on the generosity of a few individual subscribers and on the assistance of the two associations for its existence.

It has long been felt that such a multiplication of bodies concerned with identical interests was uneconomical and unsatisfactory. Two years ago, therefore, the three bodies appointed a Joint Organisation Committee in an attempt (1) to organise the entire medical profession of Ireland into one body; (2) to establish some form of alliance or affiliation between such a body and the British Medical Association. Up to the present little progress has been made in these directions. The political and social condition of Ireland, in addition to rendering travelling and absence from home dangerous or unpleasant, has so occupied all minds as to prevent any constructive medical work. Moreover, before the British Medical Association could recognise such a body as is proposed its constitution would have to be altered, a step which would probably require much deliberation. It is hoped in certain circles that such amendments in the constitution of the British Medical Association may be framed as will meet not only the needs of Ireland, but the wishes of certain overseas branches of the Association. With this view in mind a conference was held at the offices of the Association last week between the Council and representatives of Ireland and the colonies, and certain proposals will be under the consideration of the forthcoming representative meeting at Newcastle-on-Tyne.

Grants to Irish Hospitals.

The Chief Secretary to the Lord Lieutenant of Ireland was asked in the House of Commons recently whether he could state for what period of years the Irish hospitals (or some, and which, of them) had been receiving out of public funds the sum of £16,000 per annum or what other sum; and whether during that period any equivalent grant had been made out of such funds to Scottish or English hospitals. Sir H. Greenwood replied that the grants to Dublin hospitals from the Imperial Exchequer originated in a clause of the Act of Union which bound the Parliament of the United Kingdom to continue certain grants made by the Irish Parliament for the maintenance of institutions for charitable purposes. These grants had been paid by the Irish Parliament to the following hospitals which are still in existence—namely, the Hospital for Incurables, the House of Industry, and the Westmoreland and Meath Hospitals. The Irish Parliament had also contributed generously to the construction of the Rotunda Hospital. The United Parliament, said the Chief Secretary for Ireland, became bound to continue these grants for a period of 20 years, but a far wider view of the contract has been taken, for in fact the grants have been continued to the present day and extended in number. The amounts paid to the hospitals have varied from time to time but were finally fixed at their present figures by the Select Committee on Irish Estimates, 1834, and modified by the Report of the Royal Commission of 1859. Neither English nor Scottish hospitals have directly received similar grants, nor have any Irish hospitals outside of Dublin received them.

Royal College of Physicians of Ireland.

At a meeting of the President and Fellows, held on July 7th, Sir James Craig, the President, announced the award of the Harry Godfrey Massy-Miles Prize to Dr. George Edward Strahan, who was a former student in the school of the Royal College of Surgeons and served during the war as Surgeon Sub-Lieutenant in the Royal Navy, was mentioned in despatches, and received the Distinguished Service Cross in recognition of his work. The prize was established in memory of Captain Harry Godfrey Massy-Miles, M.C., R.A.M.C., a licentiate of the College, who died in 1918 of wounds received in France, by his widow.

not want to see the failures, which became evident when epidemics occurred. This country could not afford to lose the progress and the gain in knowledge achieved during the past years, and he was sure those present would feel as a result of the Conference renewed courage and enthusiasm.

Maternity Homes.

DR. JANET CAMPBELL (of the Ministry of Health) read a paper on Maternity Homes, which we publish in our present issue.

Miss BEAVAN, of the City Council, Liverpool, spoke of the restrictions on this work imposed by municipal economy, and asked what factors in the work should be placed first in importance.—Miss CAMPBELL replied that the right course was to cater for the average mother and the average baby. No great improvement in midwifery service could be expected to be brought about unless in-patient accommodation could be provided where treatment would be available. If adequate salaries could be offered, she did not doubt that more women of education could be induced to take up this work; the need was easily demonstrated. She spoke of the accommodation already available for venereal cases.

Provision for Blind Babies.

Miss WALKER FINLAY, herself afflicted in the same way as those for whom she pleaded, spoke well and eloquently on this subject.—Dr. ERIC PRITCHARD highly praised Miss Finlay's work at "Sunshine House," the home for blind babies at Chorley Wood, Herts. So many of these little inmates were "not wanted" children and had been so badly neglected when they reached the home, that there did not seem much prospect of improvement, but in a short time astonishing progress was noticed.

Dr. C. J. MACALISTER spoke on the Residential Treatment of Ailing Children, and Dr. HOWARD GLADSTONE on the Value of Wards for Ailing Children.

AFTERNOON SESSION.

The afternoon session was presided over by Dr. CLARK, representing the United States National Health Department. He expressed the high appreciation of the Government he represented of the invitation sent by the Council. He also represented the American Public Health Association, which consisted of more than 2000 medical officers of health and others interested in public health problems; likewise he was spokesman here for the American Hygiene Association, a well-established body for the prevention of infant and maternal mortality. In America there was lacking, as yet, the degree of coördination in this work which he had found in this country.

Provision for Unmarried Mothers.

A paper on this subject was read by Mrs. CYRIL SMITHETT, in the course of which she said that though the increase of illegitimacy during the war had not been so great as was expected, since the war there had been a decided augmentation due to relaxation of discipline among girls and lack of parental influence. These unmarried mothers were very glad to accept the help offered them, and there was not nearly enough room in the homes of the National Council for the Unmarried Mother and her Child.

The discussion on this subject hinged chiefly on the means of enabling these mothers to support themselves and their children after leaving the home, and to discovering the male parent and compelling his support. Dr. E. H. T. NASH, of Isleworth, contended that these unmarried mothers were not, as a whole, immoral; and he urged a broad and much more tolerant spirit on the question.

Poor-law Accommodation for Mothers and Infants.

A paper on this subject was read by Miss M. E. BROADBENT, who described the value to the community of the lying-in wards of Poor-law institutional maternity wards during the war, when lack of housing and hospital accommodation created difficulties.

The principal discussion following this paper turned upon a question as to the systematic treatment of the eyes of the newly-born to prevent ophthalmia neonatorum. The CHAIRMAN spoke of the universal requirement in America for the instillation into the eyes at birth of a solution of nitrate of silver.—Dr. H. SCURFIELD said there was no such uniform requirement in this country, and that the practice varied in different parts.—Mr. C. W. GODBERT spoke of the thoroughness with which this matter was dealt with in Manchester, in close association with the eye hospital of that city.—Dr. NASH pointed out the requirement for cleansing the child's eyes contained in the Midwives Act, and the necessity placed on the holder of the C.M.B. certificate to notify to a doctor the occurrence of a discharge from the child's eyes. He also spoke of the provision for the treatment of syphilitic cases without public revelation.—The CHAIRMAN said that Dr. Williams of the Johns Hopkins University Hospital, in the States, kept an accurate record of 10,000 consecutive pregnancies which occurred, taking the period from the seventh month of gestation to the second week after birth, and he found, by an examination of the placental and other fœtal tissues that 26 per cent. of the deaths were due to syphilis. He emphasised the importance of intensive treatment of the syphilitic mother before the birth of the child in producing an apparently normal baby.

Residential Provision for Mothers and Babies.

A paper on this subject was read by Miss J. HALFORD, who described the different means of provision made in municipal maternity homes and in those run by voluntary agencies, and also in convalescent and rest homes for mothers and babies. A fortnight's stay in the latter was all the holiday some mothers ever got. Homes for babies only, both well and ailing, were also dealt with; Miss Halford pointed out that if more of the right kind of foster mothers were available, and if regular medical inspection at Infant Welfare Centres was supplied, this expensive institutional care could be superseded.

Miss Halford, after reading her paper, proposed the following resolution:—

> "That closer provision than at present obtains be exercised by the State and local authorities over all institutions which take children of under school age for payment."

It was seconded by Miss MAWSON.

Miss VANCE (St. Pancras) thought a society should be formed for the registration and closer inspection of foster-mothers. Much of the inefficiency of a particular type of foster-mother was due to inadequate payment and the lack of inspection.—Dr. MILLS (Philadelphia), in a breezy and humorous speech, advocated a "Fathers' Day," as such a large proportion of fathers were thoughtless and selfish on these matters, and did not realise what was due to the mothers in bringing up their children. He had addressed men in his city on the subject, where many people willingly received mothers into their families during an important period. The resolution was carried unanimously.

Dr. B. E. POTTER proposed:—

> "That this Conference is of opinion that a great deal of unnecessary loss of sight is still being caused by the failure to secure adequate preventive measures and prompt skilled treatment for ophthalmia neonatorum, and urges the Ministry of Health to institute an inquiry into the causes of such failure."

Mrs. RUSSELL (St. Pancras Board of Guardians) seconded, and it was unanimously adopted.

WEDNESDAY MORNING SESSION.

Under the chairmanship of Dr. JANET LANE-CLAYPON, the Conference discussed

The Supply of Milk: Its Physiological and Economic Aspects.

At the commencement a telegram from the Commissioner of Health, Chicago, was read, as follows: "In Infant mortality, average ten years 1907–16, before pasteurisation of milk, 116. Average four years since pasteurisation, 95·5. Diarrhœa and enteritis under two years of age, rate 134 per 100,000 population, before pasteurisation, 100 since."

arteries. But if the contraction is sufficiently severe and intense, as in a case of profound shock, fluid escapes from the vascular system, pressure in the arterioles falls, and this fall of pressure extends, quickly or slowly, but surely from the arterioles to all the vessels in proportion to the loss of fluid.

Prof. Bayliss and the Medical Research Committee teach that in the state of shock the capillaries dilate, the blood collects in them as in a sponge, and therefore the blood pressure falls. Dr. Hill and Dr. McQueen assert that in shock the capillaries are "choked with concentrated blood." But surely capillaries choked with concentrated blood, especially if they are also dilated, should cause a red or blue discoloration of the tissues, whereas in a state of uncomplicated shock the tissues are characterised by extreme pallor. Prof. Bayliss writes that "the colour of the skin in white races is almost entirely due to the blood in the capillaries. When these are empty of blood the tissues are white and cold."[1] From this it seems a direct conclusion that in the pale tissues of shock the capillaries are not dilated.

The main argument that the capillaries dilate in shock is stated as follows by the Medical Research Committee: "If in wound shock the lost blood is not in the arteries, and probably not to a great extent in the veins, it must be mainly stagnant in the capillaries."[2] With all due deference to the very great authority behind these reports, I submit that this is not a conclusive argument. Fluid may, and there is abundant evidence that it does, pass out of the vascular system and to a great extent out of the body in the state of shock, leaving the capillaries with all the other blood-vessels contracted and the tissues pale.

I am, Sir, yours faithfully.

London, July 11th, 1921. JOHN D. MALCOLM.

PSYCHOTHERAPY.

To the Editor of THE LANCET.

SIR,—In answer to Sir Bryan Donkin's remarks in your issue of July 9th upon my article Post-War Neurosis, may I be permitted to make two observations:—

1. I did not confuse psychotherapy with psycho-analysis, either intentionally or unintentionally. Having practised hypnotism and suggestion for many years before psycho-analysis, I am well aware of the mass of work done in the field of psychotherapy apart from psycho-analysis. A book like Dr. Ernest Jones's "The Treatment of the Neuroses" is sufficient to expel ignorance on this point. In italicising some of my statements Sir Bryan Donkin has been tempted by his bias against psycho-analysis to overlook the careful wording of my remarks. Using my own italics, I insisted upon "the importance of the sex factor as *a* cause of psychoneurosis," and said further that "it is the recognition of the sex factor which enables us to deal with *such a* neurosis in a satisfactory manner, and effect a proper cure by means of psycho-analysis."—

2. As a matter of fact, all I tried to show in my article is that there is the danger of under-estimating the significance of sex, especially in such cases as are labelled "Post-War Neurosis," and I tried to prove it by giving some typical cases from my own practice.

Like all anti-Freudians, Sir Bryan Donkin of course admits—at least in theory—the validity of the sex factor as "a cause of mental and nervous disorders"; indeed, he finds nothing new in this. It is only when a psycho-analyst proceeds to apply the theory in practice that he demurs. Yet he himself says: "There is no doubt that in certain periods and certain circumstances the prevailing repression of the sex impulses leads to the establishment of some form of neuropathy or psychopathy." My own cases only tried to show this principle in its working. Sir Bryan Donkin goes on to say that "a great measure of 'repression' is the rule of custom in nearly all civilised countries. Yet neuropaths and psychopaths are still far from dominating any civilisation by their numbers." Just so! Freud has pointed out repeatedly that all civilisation is due to the repression of primitive impulses; but he was the first to show that it is the inability to "repress successfully" that causes the characteristic "conflict" of the neurotics (who do not necessarily form the majority of the population). If the time is not yet for Freud's view to be accepted as established truth, there is certainly no justification for proclaiming it confidently as "false psychology."

I am, Sir, yours faithfully,

Manchester, July 9th, 1921. S. HERBERT.

OPEN ETHER ANÆSTHESIA DURING THROAT OPERATIONS.

To the Editor of THE LANCET.

SIR,—The deep anæsthesia needed for tonsil dissection has been found by some a path rather overhung by brambles. As an anæsthetist and as a patient I yield to no one in praise of chloroform, but in these cases I am sure that ether or ethanesal is preferable, if a Grand Guignol of possible thrills is to be avoided.

I therefore welcome the publicity Dr. H. Sington gives to warmed ether by the description he publishes in THE LANCET of July 2nd of his apparatus. I designed and have used since six years a similar one. It was described and illustrated in the *Journal of the Royal Army Medical Corps* of February, 1919, and reproduced in an article I submitted at the Sixth Meeting of the Interstate Association of Anæsthetists at Pittsburg, and published in the *American Journal of Surgery*, Quarterly Supplement of Anæsthesia, January, 1921. This apparatus is now manufactured by Messrs. Coxeter.

I am, Sir, yours faithfully,

CHARLES T. W. HIRSCH,
Anæsthetist, Metropolitan Ear, Nose, and Throat
and Royal Ear Hospitals.

July 10th, 1921.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. and Bt. Maj. F. C. Cowtan resigns his commn. on appt. to the R.A.F.

Capt. J. A. Binning retires, receiving a gratuity.

The undermentioned temp. Capts. relinquish their commns.: (Actg. Maj.) G. Cooper, and is granted the rank of Maj.; H. H. Perry, and retains the rank of Capt.

Lts. (temp. capts.) A. H. Clarke and E. P. N. Creagh to be Capts.

DEFENCE FORCE.

To be temp. Capts.: G. H. H. Waylen, H. H. Back, and J. Marshall.

1st (S. Midland) Fd. Amb.—Temp. Capt. C. W. J. Brasher relinquishes his commn.

1st (Lowland) Fd. Amb.—Temp. Maj. E. P. Cathcart relinquishes his commn.

3rd (Wessex) Fd. Amb.—To be temp. Capt.: A. E. Knapp.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. A. W. T. Buist and Maj. C. G. Seymour.

The King has approved the relinquishment of their commns. by the following officers:—Capts. (T.C.) Jesudason Sellyah David, Giddu Siva Ram, Subrata Chander Sen, Jitendra Nath Sen Gupta, Ram Sarup Gupta, Shankar Ganesh Chavan, Santokh Singh, George Patrick de Silva, Sardari Lal Chopra, Chuni Lal Nandi, Ikram Ali Sufi, Lieut. (T.C.) Mangalore Gopal Kini, Jehangir Kaikhusro Nariman (granted the rank of Maj). Subrata Chander Sen (to retain the rank of Capt.). Captains: Nariman Bejanji Kolsawalla (granted rank of Capt.), Govindarajapuram Rama Pattar Parasuram, Parmeshwari Das, Gulvadi Ram Dinker Rau, Nibaran Chandra Mitra, Kharg Bahadur Singh Kharki, Sheikh Guhulam Rasul, Kshitindranath Das Gupta, Satya Sakha Maitra, Mulk Raj Sawhney, Shripad Bhaskar Gothaskar, Mohamed Ajmal Husain, Lt. Kali Prasad Sinha dried milk should be free from the instructions supplied by the firms.—Dr. H. M SCARBOROUGH seconded the resolution, and the chairman declared it carried unanimously.

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[1] Principles of General Physiology, p. 705.

[2] Special Report Series No. 25, p. 123.

THURSDAY MORNING SESSION.

The conference reassembled on Thursday, July 7th, when Sir ARTHUR STANLEY presided.

Dr. HELEN MACMURCHY read a paper on *Inheritance and Environment as Factors in Racial Health.*

Dr. C. W. HUTT (M.O.H., Holborn) read a paper by Mr. F. I. HOFFMAN, of the Prudential Insurance Company of America, on

The Influence of Weather Conditions on Morbidity and Mortality in Early Infancy,

which resulted in an interesting discussion, in the course of which Dr. NASH and Mrs. LASSEY emphasised the importance of studying the effect of rainfall and of climatic changes on infants and young children.—Dr. CECIL WILLIAMS thought, so far as England was concerned, the great question to be considered in regard to babies was not so much infantile diarrhœa as respiratory diseases brought about by climatic changes.—Mr. SCOTT (Heston Urban District Council) considered that people's energies would be far better spent if they concentrated on removing slums and building better houses by not conforming too strictly to the requirements of the Ministry of Health.—Mr. GODBERT (Manchester) regarded infantile diarrhœa not so much due to heat as to other causes stimulated by the heat, such as the increase in the house fly and the resulting contamination of food, whilst Dr. DUNSTAN BREWER (M.O.H., Swindon) believed that the decrease of epidemics of infantile diarrhœa depended mainly upon getting into touch with earlier cases.

Dr. C. W. SALEEBY read a paper on the

Ante-Natal Factors of Life and Death,

which gave rise to a great deal of discussion. He described as the outstanding fact of infant mortality in the past decade in Great Britain to be the suppression of summer diarrhœa. Passing on to the arguments of the "better-dead" school of eugenists, Dr. Saleeby described the theory that infant mortality is an illustration of natural selection as baseless, completely breaking down even in the one instance—hæmophilia—which might be expected to illustrate it; and considered in turn the genetic, toxi-genetic, gestational, and obstetric factors of the problem.

Mr. JAMES STEWART (Glasgow) maintained that many difficulties did not arise through ignorance, but purely and simply owing to social conditions, and until such conditions were adequately ameliorated, and every mother had all that was necessary for the well-being and comfort of herself and her child, there would be no good done, even though they held conferences to eternity.—Councillor ANGUS MCDOUGALL (Subcommittee on Child Welfare, Glasgow) also emphasised the need of improved social conditions, and Dr. WYNNE thought the more successful they were in their endeavours in reducing infant mortality the more seriously would they have to contemplate what steps they were to take towards reducing the unregulated begetting of unwanted children.

Dr. SALEEBY, in replying to points raised in the discussion, observed that drinking amongst young mothers was a peculiarity of this country. As to improvement in social conditions there was nothing more tragic than a mother doing her maternal duty and breast-feeding her baby when she herself was badly nourished. The first charge on the State ought to be the mothers and the children of the country. We paid the Prime Minister and the Archbishop, why not pay mothers in order that they might properly do that for which they were fitted?

At the afternoon session Dr. GORDON LEY read a paper on a Comparision between Working-class Mothers and those of the Educated Classes from the Point of View of Difficulties Encountered in Pregnancy, Labour, and Lactation.—Miss MCCONNELL dealt with infant mortality in Poland, and Dr. J. H. SEQUEIRA read a paper on Syphilis as an Ante-natal Factor in Racial Health.

Mrs. SCHARLIEB, speaking with regard to Dr. Ley's paper, said there was a time when every mother suckled her own child, but there came evil days when both the doctors and the nurses encouraged mothers to think that it was undignified to nurse their own children, and that it would interfere with the regaining of their figures. She, however, thought that both nurses, doctors, and—most important of all—mothers, were realising that if the nation was to prosper and the infantile mortality to be reduced, the first duty of a married woman, blessed with a child, was to suckle it herself.—Dr. SCURFIELD thought less damage was done by the monthly nurse than by ignorant or slack doctors who did not realise what the baby lost by not being breast fed. But once every woman knew that she must feed her baby and was supplied with the proper amount of information, she would not be put off by any doctor. In his opinion a woman who refused to feed her baby was more a murderess than the woman who, in a state of frenzy, attempted to kill her child.—Dr. DUNSTAN BREWER (Swindon) said although they quite rightly blamed the monthly nurse and the doctor, there was someone else to whom blame could be attached—namely, the school teacher—who could do so much with young people. He had only discovered one thing which rendered mothers physically incapable of feeding their own children, and that was the destruction of the breast tissue.

Mrs. SCHARLIEB, speaking with regard to Dr. Sequeira's paper, urged that they should endeavour to bring about more coördination between the venereal clinics, the infant welfare, the maternity centres, and the tuberculosis centres, so that there might be a reduction of expense and increased facilities for the detection and treatment of venereal diseases. They were acting wrongly if they disregarded the serious warning Dr. Sequeira had given.—Mrs. NEVILLE ROLFE (National Council for Combating Venereal Diseases) hoped that infant welfare organisations would not shirk the question, for it was only with their aid that that very large group in the population, the respectable married woman, could be reached.—Miss AMY HUGHES thought quite young boys and girls should be educated as to the danger of venereal disease, for they were very apt to become infected and pass the disease on to their babies when married.—Dr. SALEEBY said unless the problem was better dealt with than it had so far been venereal diseases would become a deadly menace to the future of the race.

THURSDAY EVENING.

In the evening there was a meeting of the General Council of the Association of Infant Welfare and Maternity Centres for the purpose of discussing the most vital and essential forms of child welfare work.

Miss ZOE PUXLEY opened the discussion, and in doing so regretted the lack of coöperation between the workers in infant welfare centres, both official and voluntary, the main reason being the difference in outlook and point of view. Next came misunderstanding and suspicion, and then prejudice. She urged them to remember that the aims of their work were the things that mattered most, and they could only dimly approach the goal if they all pulled together. If they learnt to put themselves last and the work first the battle would be won. The game was more than the player, as the ship was more than the screw.

Dr. H. KENWOOD (M.O.H., Stoke Newington) said that in public health generally the real need of the hour was for more knowledge of the very simple laws of health. Whatever the baby was fed upon, the parents must also receive the mental pabulum, rendered easily assimilable—peptonised and humanised. In maternity and child welfare work, extended to the school age and followed by medical inspection among school children, they where he devoted all his attention to diseases of the eye. In a short time he acquired a large consulting practice. Still retaining the idea of becoming an academic teacher of physiology, he again became a demonstrator of this subject. During his demonstratorship in the University of Manchester Menzies carried out original work on the spectral and other characters of derivatives of hæmoglobin for which, from the University of Edinburgh, he, in 1894, obtained the degree of M.D. with first-class honours. Appointed lecturer in 1911 in the Medical School of Newcastle-upon-Tyne, first under Sir Thomas Oliver, he held this post with marked success until 1915, when, on the transference of Prof. F. A. Bainbridge to London, Menzies became professor of physiology—a post he held until his death. Besides his contributions on methæmoglobin, and the action of acids on the blood corpuscles, on the secretion of bile, on vision in children, the urine in the frog and the frog's kidney, Menzies' name will, perhaps, be best known by the popular and successful "Essentials of Physiology," published jointly with Bainbridge. Prof. Menzies leaves a widow and a daughter.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Royal Leamington Spa.

Dr. W. L. M. Goldie points out at the beginning of his report for 1920 that the population of Leamington is exceptionally constituted. The town is a health resort, a residential district for retired persons, and a residential suburb for people who work in Coventry and Birmingham. There are no industries worth mentioning, and the population is mainly concerned in supplying the wants of residents and visitors. The estimated population for 1920 was 29,445, the recorded death-rate 13·04, and the death-rate corrected for the age and sex constitution of the population 10·83. The infant mortality rate was 62·5, the death-rate from pulmonary tuberculosis 0·30, and the birth-rate, as in other towns, showed a great increase on the previous year. In 1919 there were 456 births and in 1920 654, making a rate of 22·2, the highest recorded since 1888. Commenting on the infant mortality rate Dr. Goldie says: "It is a cause of regret that the infant welfare clinic up to the present time does not appear to have attracted those mothers in poorer circumstances to whom it might be thought advice as to the upbringing and feeding of their children would be most beneficial." A community like Leamington should afford an ideal opportunity for intensive child welfare work, helped by voluntary workers. The borough also has its housing problem. For some years before the war, despite the increase of population, there had been a marked diminution in the number of houses annually erected; the shortage was estimated in 1919 at 529. To meet this need schemes have been sanctioned for the erection of 166 houses, a number obviously inadequate for the needs of the town. Vaccination is not fashionable in Leamington Spa. Out of 580 children born between July 1st, 1919, and June 30th, 1920, and alive at the latter date, only 20 per cent. were known to have been vaccinated.

West Gloucestershire United Districts.

The rural districts of East Dean, Gloucester, and Lydney, and the urban districts of Awre, Newnham-on-Severn and Westbury-on-Severn are dealt with in Dr. O. W. Andrews's report for 1920; the area covered is nearly 100,000 acres in the Forest of Dean, around the city of Gloucester, and between the Severn and the [illegible] The two most important industries are coal-[illegible] and tin-plate manufacture. The population [illegible] for 1920 was 41,314; a remarkable increase in the birth-rate is reported—from 19·3 in 1919 to 28·6 in 1920. The death-rate was 12·6 per 1000 and the infant mortality rate 57·2. The figures, it is pointed out, compare favourably with those for England and Wales, and it is doubtful if any other coal-mining district is able to show as low a rate for infant mortality. The housing problem remains unsolved, although substantial progress has been made in two portions of the district, more particularly in Gloucester Rural District, where 19 houses were actually completed in 1920 and 65 others were in course of erection. Work at the shipbuilding yards at Beachley and Chepstow caused a demand for houses, but the closing down of the yards has ended this artificial demand and houses are now only wanted for bonâ-fide residents. In the near future in the agricultural portions of the district the need for more houses is expected to become reduced, as more and more land is going out of cultivation on being converted into permanent pasture, and the demand for agricultural workers gets regrettably less. A separate report is included for each of the six districts, and that for East Dean contains an interesting note on the maternity and child welfare work carried out during the year by the Cinderford Mothers' Club and Babies' Welcome.

Corrigendum.—In the notice of Bootle School Medical Service, which appeared in THE LANCET of June 25th, 1921, p. 1385, the second paragraph should have commenced as follows: In the year 1920 there were 3687 routine and 2264 special inspections, while 5808 re-examinations were made; and since the inauguration of school medical inspection in 1908 there was an average attendance of 11,424 children, &c.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual meeting of the Fellows of the College was held on July 7th, for the election of four members of the Council. Sir Anthony Bowlby, the President, was in the chair. 923 Fellows voted, and of these seven were personal votes. Three voting papers were spoiled. The result of the voting was as follows:—

	Votes.	Plumpers.
H. J. Waring	415	3
F. F. Burghard	410	2
C. H. Fagge	353	47
W. T. Thomas	331	34
L. B. Rawling	271	10
Victor Bonney	247	14
J. H. Fisher	214	31
R. J. Howard	193	17
A. H. Cheatle	186	5
D. J. Armour	124	9
W. Turner	94	3

The President declared Mr. Waring and Mr. Burghard to be re-elected, and Mr. Fagge and Mr. Thomas to be elected, members of the Council. Mr. H. J. Price and Mr. Willmott Evans acted as scrutineers.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—At the annual meeting of the metropolitan branch held on July 8th, Dr. W. H. Hamer, M.O.H. Administrative County of London, was elected president of the branch for the forthcoming session.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—The following have been admitted as Fellows of the Faculty:—

Charles Cameron, M.B., Ch.B.; Charles G. A. Chislett, M.B., Ch.B.; James P. Crawford, M.B., Ch.B.; Lachlan Grant, M.D.; James L. Gregory, M.B., Ch.B.; Robert Kennedy, M.D., D.Sc.; David D. Logan, M.D., D.P.H.; and James E. Middlemiss, M.R.C.S., L.R.C.P.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR THE DIPLOMA IN DENTAL SURGERY.

Kenneth George Hyland, Evan Elwyn Lewis, and John Christopher Leslie Phillips.

EXAMINATION FOR THE DIPLOMA IN PUBLIC HEALTH.

Correspondence.

"Audi alteram partem."

THE FÆCES IN ALIMENTARY DISORDERS.

To the Editor of The Lancet.

Sir,—In the *British Medical Journal* there has been an interesting discussion on the relative value of clinical and laboratory methods in the investigation of disease. The paper in your columns of July 2nd by Dr. Robert Coope on the "Fæces in Alimentary Disorders" supplies data for comment. As an expert laboratory worker on biochemistry Dr. Coope has found little help from the application of a Gram-stained bacteriological film in diagnosis. He has "found little help from it, and in our present state of knowledge it seems to me not worth while for clinical purposes to take time over it. It is another matter if definite bacteria are suspected, such as the typhoid group or tubercle." It is difficult to understand what the author means by the value of the application of Gram stain in the recognition of a typhoid organism, as this organism is, like *B. coli*, Gram-negative.

These statements are surely inaccurate and misleading. Clinicians who are in the habit of examining the stools by simple staining methods know that in many instances information is obtained from their use that is of much greater clinical value than that furnished by the other methods of examination described by Dr. Coope. The laboratory worker is by no means altogether to blame for the erroneous teaching for which he is sometimes responsible. The clinician has at least equal responsibility. The fault appears to lie in the tendency to excessive specialisation in research, and to the segregation of special laboratories for chemical pathology and for bacteriology away from the immediate proximity of the patient. The field of biochemistry and chemical pathology is considered big enough to fill the whole horizon of the worker. He is disinclined to attach importance to simple bacteriological questions on which he feels, rightly or wrongly, that he has little right to have an opinion. The real condition of affairs obtaining in the human tissues and excretions, one of interdependence of various factors concerned in normal and abnormal nutrition, is overlooked.

If Dr. Coope will coöperate with some of his clinical friends in making a Gram-stained film from the stools in a selected series of cases, careful attention being paid to the diet, the clinical condition of the patient, and the state of the urine, I venture to think that he will profoundly modify some of his teaching.

I am, Sir, yours faithfully,

Edinburgh, July 6th, 1921. Chalmers Watson, M.D.

X RAYS IN MALIGNANT DISEASE.

To the Editor of The Lancet

Sir,—The end results of surgery in some forms of malignant disease—notably, cancer of the uterus—are so far from being satisfactory that experiments in the way of a purely radiotherapeutic treatment are justified. And if X ray treatment is to take the place of surgery, it is certain that the dosage must be large, and, within certain limits, concentrated in time. I say within certain limits, because it is quite possible, and, in my opinion, likely, that a large dose spread over four or five days instead of being administered in one, would be as effective and less risky. It is, however, improbable that for some time to come, in this country at least, professional opinion will countenance non-operative treatment of cancer; and we thus have to consider what is the best method of applying X rays in conjunction with surgery. In the writer's opinion, it is not justifiable to subject patients to the double risk of a major operation and an enormous dose of X rays, which lessens their vitality for many weeks. Rather should we employ a technique which produces a definite improvement in health almost from the first. Such a technique we possess in the repeated medium dose method, which has now been used with success in cancer of the breast, and to some extent in cancer of the uterus, for at least a decade.

It consists in giving the patient, if possible, before operation a series of seven or eight sittings, extending over about a fortnight; and subsequently a course of ten or twelve sittings extending over a month, twice a year for two to three years. Indeed, when practicable, it would be desirable that the patient should have a course every year or eighteen months for the rest of her life—for the "cancerous tendency" remains, no matter by what method an individual growth has been removed. It may be true that a single medium dose excites the cancer cell to activity; of this I have no experience. But it is certain that a series of such doses produce rapid diminution, and even the disappearance, of any palpable cancer masses, if such are present; and in any case has a remarkably beneficial effect upon the physical energy and the subjective well-being of the patient. In making these statements I feel sure that I shall have the approval of nine out of every ten radiologists who have been treating breast cancer during the past ten years. No claim is made that cancer is "cured" by such methods, but courses of X ray treatment given after the manner described do enable patients who show definite recurrence when first seen to recover a fair degree of health, and often to live in comfort for many years. Although this form of treatment was commenced more or less empirically, it probably finds its rationale in recent experiments at the Rockefeller Institute in America, and by Professor Sidney Russ and his colleagues in this country—experiments which have shown that a series of comparative small doses of X rays raises on animals the resistance of the body to cancer implantation. Hence, to give such courses even when there is no ascertainable recurrence may be regarded as a proceeding analagous to preventive inoculations.

The same experiments have shown per contra that a large single dose of X rays reduces the body resistance; and there can be little doubt that, whatever happens to the original tumour, a similar fall occurs in the human subject, and is maintained for many weeks. The danger in cases where there are already existing metastases is thus very evident. It must also be remembered that in the year 1913, at the British Medical Association annual meeting at Brighton, Gauss of Freiburg described a treatment not very dissimilar to that now used at Erlangen; a few months later reports began to come through of severe skin lesions which had come on in some cases as much as a year after the cessation of the treatment.

The fact, on the one hand, that great benefit can be produced by a series of moderate doses, and, on the other, that the single massive dose, whatever its virtues, is not unaccompanied by dangers, will, I think, induce British radiologists, if and when they come to treat certain cancerous tumours by X rays alone, to seek some means of dividing the dose in a manner to minimise its ill-effects while producing an equally good therapeutic result.

I am, Sir, yours faithfully,

F. Hernaman-Johnson.

Harley-street, W., July 6th, 1921.

THE CIRCULATION IN SHOCK.

To the Editor of The Lancet.

Sir,—In The Lancet for July 9th Dr. Leonard Hill and Dr. J. McQueen assert that "the data of systolic and diastolic pressures in the main arteries so laboriously compiled is then information of little or no clinical value." May I be allowed to emphasise this point? The blood pressure in the large arteries is no index of the pressure in the arterioles or in the capillaries. Pressure may rise in the aorta and fall in the capillaries. Contraction of the arterioles tends to reduce pressure in the arterioles, and, in proportion to its intensity, cuts off the blood-supply from the capillaries. It also usually raises pressure in the large

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, JULY 12TH.

National Insurance Bill.

On the motion of the Earl of ONSLOW, the National Health Insurance Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 6TH.

Medical Staff of the Health Ministry.

Sir J. D. REES asked the Minister of Health whether the 32 doctors on £1000 a year, who were appointed by his predecessor, were still retained at his Ministry; and, if so, when he would dispense with their services.—Sir A. MOND replied: I presume my hon. friend refers to the Regional Medical Officers. If so, the answer to the first part of the question is in the affirmative. In answer to the second, I refer him to my statement on May 12th, introducing the Ministry of Health estimates, in which I made it clear that after personal investigation I thought that this staff does useful work, and should be continued. In any case, I am not in a position to dispense with their services except on the terms of their engagements.—Sir J. D. REES: Is not the right hon. gentleman examining the situation with a view to dispensing with their services as soon as their agreements allow, and has he inquired into the feeling locally where these gentlemen work as to the necessity for their appointment?—Sir A. MOND: As I have said, I have personally gone into the work of the officers concerned, and am satisfied that they are doing very useful work. In any case their period of service would not come to an end for several years.—Colonel ASHLEY: Are we really to understand that the Ministry of Health have tied themselves down for several years in the engagement of their public officials, and is that not a most extraordinary procedure?—Sir A. MOND: In view of the fact that most Government officials are engaged for life in the Civil Service I think that a temporary engagement for five years in an important office is not a very unreasonable agreement.—Colonel ASHLEY: Are Government officials never dismissed?—Captain COOTE: Is it not a fact that the public health has never been so good as it is to-day?—Viscountess ASTOR: Is not infant mortality going down?—No further answer was given.

Kinematograph Lights and Blindness.

Captain Viscount CURZON asked the Minister of Health whether the Committee on the Cause and Prevention of Blindness had as yet reported upon the question of the injury to eyesight resulting from the extreme power of lights used in film production; and whether any action was contemplated as a result.—Sir A. MOND replied: I have received the Report of the Committee referred to. Their conclusion is that there is evidence of only transient injury to the eyes having occurred in a few cases and that such injury was associated with the use of a particular open arc lamp without a proper screen. I have received an assurance from the Incorporated Association of Kinematograph Manufacturers that no member of the Association will permit any open arc lights to be used in their studios for general illumination without glass filters, and in view of this I do not consider further action necessary.

Licensing Reform.

Major KELLEY asked the Attorney General when he proposed to introduce a Bill incorporating the recommendations of the recent conference on the revisal of licensing restrictions.—Mr. SHORTT (Home Secretary) replied: My right hon. friend has asked me to reply. He hopes that the Bill may be introduced at the earliest possible moment, but it is not possible at present to be more definite.

Scottish University Grants.

Sir ROBERT THOMAS asked the Secretary for Scotland whether his attention had been called to the fact that on pages 271 and 286 of the Returns from Universities and University Colleges in Receipt of Treasury Grants, 1919–20 [Cmd. 1263], it was stated that the Universities of Glasgow and St. Andrew's received no grants from local authorities, and that in the statements of accounts on pages 274 and 288 of the same publication, it was shown that Glasgow University received £8700 and St. Andrew's University received £1500 in grants from local authorities; whether he would say which of these statements was correct; and whether he would say exactly from what source these sums of £8700 and £1500 were derived.—Mr. MUNRO: The headings on [illegible] 74 and 288 of the Return referred to are in my [illegible] somewhat misleading. In point of fact there are [illegible] made to the Universities of Glasgow and St. Andrew's from local rates. The sums mentioned by my hon. friend are annual payments made from the Local Taxation (Scotland) Account under the Education and Local Taxation Account (Scotland) Act, 1892, out of the Scottish share of moneys made available by Statute for relief of local taxation in the different parts of the United Kingdom. These payments to the Scottish Universities reduce the amount which might otherwise be distributed among local authorities in Scotland in relief of local rates, and therefore might be said to represent indirect contributions from the rates to the Universities.

An Epileptic Soldier's Treatment.

Viscountess ASTOR asked the Minister of Pensions whether he was aware that F. J. Horn, late Private No. 241,316, Devon Regiment, was ordered residential institutional treatment which he obtained at the Maghull Epileptic Colony, near Liverpool; that, owing to the death of his wife and to his having seven young children, he was obliged to leave the institution before his treatment was completed; whether the institution was prepared to readmit him, but he was unable to leave home, although his condition was becoming worse, as he could not obtain help under Section 9, Sub-Section (i) of the War Pensions (Administrative Provisions) Act, 1918; and whether, since he could not get an adequate grant from the United Service Fund, it was possible to give any further financial help.—Major TRYON replied: My right hon. friend is having immediate inquiry made in order to ensure that this man shall receive such medical treatment as is appropriate to his condition. With regard to the last part of the question, I would point out that if this man becomes an in-patient of an institution not only is he maintained free of cost, but a sum of 88*s*. a week (less any pocket money he may require) becomes available for his children.—Colonel C. LOWTHER: Does this mean that he will get outdoor relief?—Major TRYON: It is not a question of outdoor relief. It is a question of allowance paid by the Ministry of Pensions to the children of those who are under treatment for war disability.

Tuberculosis Statistics.

Mr. WIGNALL asked the Minister of Health the number of cases of tuberculosis for the years 1914–20, giving each year separately.—Sir A. MOND replied: The number of cases of tuberculosis notified in England and Wales in each of the years 1914 to 1920 is as follows:—

(A) Pulmonary Tuberculosis. (B) Other Forms of Tuberculosis.

Year.	(A)	(B)	Total.	Year.	(A)	(B)	Total.
1914	76,109	23,388	99,497	1918	71,631	18,942	90,573
1915	68,309	22,283	90,592	1919	61,154	16,357	77,511
1916	68,109	22,799	90,908	1920	57,844	15,488	73,332
1917	68,801	20,884	89,685				

THURSDAY, JULY 7TH.

Hastings Pensioners and Regional Director.

Mr. FREDERICK ROBERTS asked the Minister of Pensions if his attention had been drawn to the fact that a letter was forwarded to the Department from Hastings on June 23rd regarding the position of various pensioners in that town; whether he was aware that in reply the regional director stated that all cases were required to be dealt with in the first instance by the local war pensions committee concerned; and whether, in view of the fact that all the individuals had placed their cases before the local committee previous to the communication being forwarded, he would have inquiries made into the various cases concerned.—Mr. MACPHERSON replied: The answer to the first two parts of the question is in the affirmative. The fact stated in the last part of the question, however, had not previously been brought to notice, and in view of that fact I am now having further inquiries made. I will inform my hon. friend of the result.

Phthisical Pensioners and Widows' Pension.

Dr. M'DONALD asked the Minister of Pensions if a widow whose husband had died from phthisis within two years of discharge from the army, owing to debility, was entitled to a pension.—Mr. MACPHERSON replied: It is not possible to give a categorical answer to this question, as each case has to be considered on its merits. I may say, however, that it has frequently been found possible to award full pension to the widow when the husband's death has occurred in the circumstances stated.

Medical Examination of Pensioners.

Colonel NEWMAN asked the Minister of Pensions whether he would see that the assessment committees encouraged medical officers employed in the Ministry to get men who had recovered off the pension list and men who were permanently disabled and in a final and stationary stage on to the list for permanent pension; and was he aware of the grievance felt by men who were aware that they could

Obituary.

SIR GEORGE HENRY SAVAGE, M.D., F.R.C.P. LOND.,

CONSULTING PHYSICIAN FOR AND LECTURER ON MENTAL DISEASES AT GUY'S HOSPITAL.

Sir George Henry Savage, who died at his residence in Devonshire-place on July 5th, at the age of 78, was a recognised authority—perhaps the most widely known in the kingdom—on psychological medicine, a subject to which he had devoted a long and strenuous life from the time of his appointment as assistant medical officer to the Bethlem Hospital in 1872. The son of a chemist and druggist of Yorkshire stock he was born at Brighton in 1842, and after being educated at Brighton entered as a medical student at Guy's Hospital, where he subsequently won the Treasurer's Gold Medal. In 1864 he qualified with the M.R.C.S. Eng., obtained the L.R.C.P. Lond. in the following year, and also graduated M.B. at the University of London, proceeding to the M.D. in 1867. After holding house appointments at Guy's Hospital and at the Sussex County Hospital, and a spell of general practice in the north of England, he became house physician to the Royal Bethlem Hospital, a post which he held for seven years, a period which proved the turning point of his life. He took the M.R.C.P. while holding this appointment, being elected to the Fellowship in 1885, seven years later. In 1879 he was appointed physician-superintendent, occupying that position for 10 years, and his simple yet authoritative teaching attracted visitors from the United States, the colonies, and the continent, while he was in great request as a post-graduate teacher, particularly for the M.D. degree of the University of London. He also delivered systematic lectures on mental diseases to the students of Guy's Hospital, where he was physician for mental diseases.

For over 20 years he was consulting physician to the Royal Institution for the Mentally Deficient at Earlswood, which he visited almost regularly once a month, giving advice to the staff on points of detail, and taking the greatest interest in the patients, many of whom became warmly attached to him. His great literary capacities were mainly revealed in sporadic essays and addresses. He edited the *Journal of Mental Science* for some time, added largely to our conceptions of mental diseases by his practical knowledge, and enriched the literature of the subject with a sound manual and many addresses and lectures. In 1907 he delivered before the South-West London Medical Society the Bolingbroke Lecture, taking for his subject the Factors of Insanity, and in the same year the Lumleian Lecture before the Royal College of Physicians of London, his subject being the Increase of Insanity. Two years later he was appointed Harveian Orator of the Royal College of Physicians, when he delivered an admirable oration upon Experimental Psychology and Hypnotism.

He was at different times examiner in mental pathology at the University of London, and president of the Medico-Psychological Association. In 1912, the year in which he was knighted, he became the first president of the newly formed section of psychiatry of the Royal Society of Medicine.

J. T., a personal friend, gives the following intimate picture of Savage:—

By the death of Sir George Savage English medicine is the poorer for the loss of a great personality. Savage touched medicine at many points, although in his specialty he was *facile princeps*. His early experiences in general practice in Cumberland were no doubt a potent factor in evoking wide medical understanding and sympathy. His work there was exacting, often entailing 20 miles or more on horseback, but it gave him an experience which he himself always described as invaluable. When he came to Bethlem there were suspicions in some minds that mental disease was, in many instances, physical in origin, and Savage was one of the earliest to recognise and to insist upon, for example, that general paralysis was the result of structural changes in the nervous system. Those of us who had the privilege of going round with him at Bethlem can never forget his insistence on the dictum, "show me a case of general paralysis and I shall show you a case of syphilis." But to those who knew Savage intimately—a privilege which the writer enjoyed—the extraordinary width of his non-medical interests was a source of continual wonder. He had, for example, a remarkable collection of minerals, and the writer can never forget a memorable evening when he was taken to an upper room where he and his wife enjoyed a wonderful demonstration of his specimens, often with the graphic history of how he came by them, interposed. Sometimes they were the result of a descent into a coal or lead mine, sometimes a present from a grateful patient in Cumberland who knew that the "young doctor" was interested in curious stones, and sometimes they were an accidental find in the course of a long moorland ride to see a patient.

Savage was also a remarkably keen botanist. At a very early age he compiled, or assisted in compiling, a flora of Sussex and his interest in the flora of his native county, and, indeed, in all flowers, remained unabated. The writer once spent a happy afternoon with him at Shoreham hunting—unsuccessfully as it happened—for the *Trifolium stellatum*, which Savage had found there 40 years before! It is still there—an escape from the Levant through a wreck which occurred more than 100 years ago. But the afternoon was not wasted, for Shoreham is rich in many curious things, and Highdown Hill to which we went afterwards, as Savage demonstrated it, was a mine of treasures. To see Savage when he came to a place where something *should* be growing go down on his knees and push up his glasses or leave them hanging on one ear, was to witness the keen joy of the "seeker," and it was not often a seeker who sought in vain.

Savage touched life at so many points that he was always a delightful companion. He was an alpine climber of no mean achievement, and but for his deafness would have been President of the Alpine Club. He was a fisherman who fished with the dry fly for three years before he caught a trout, although he caught many afterwards, and he had done most things in sport and nearly all he had done well. But, after all, it was the man we all loved, the many-sided in his sympathy and understanding, the big-brained vigorous bodied man, with his rich intellect and his strong body who yet had time to think of "the little things that matter."

Sir George Savage married first, in 1867, a daughter of Mr. Jacob Walton, of Alston Moor; and secondly, in 1882, a daughter of Dr. H. Gawen Sutton, physician to the London Hospital. This obituary notice would not be complete without recording that Savage was, from the start of the movement to the end of his life, a consistent supporter of the cause of medical education for women.

JAMES ACWORTH MENZIES, M.D. EDIN., M.A. DUNELM,

PROFESSOR OF PHYSIOLOGY AT DURHAM UNIVERSITY COLLEGE OF MEDICINE, NEWCASTLE-UPON-TYNE.

THE death of Dr. James Acworth Menzies—professor of physiology at Durham University College of Medicine, Newcastle-upon-Tyne—on July 8th, at his brother's residence in Luton, brought grief to numerous friends, for he was beloved by all who had the privilege of his acquaintance. Dr. Menzies was a son of the Rev. R. Menzies, of Riding Mill, Northumberland, and he married a daughter of the eloquent and outstanding Rev. Alexander Maclaren, D.D., of Manchester. After studying medicine at the University of Edinburgh, where he qualified M.B. and C.M. in 1890, he was appointed demonstrator of physiology in the University of Manchester, a post which he held until 1906. Menzies endeared himself to all—colleagues and students alike—who came in intimate relation with him. Patient and untiring in his devotion to the interests of his students and to his department, Menzies proved himself a genuine and eminently successful teacher, who soon attracted and retained not only the respect but even the love of his pupils. Never was anything a trouble to him where the interests of students were concerned.

Circumstances determined him to quit for a time—but it was only for a time—the pursuit of physiology, and he turned to ophthalmology, acting during 1896–97 as house surgeon of the Royal Eye Infirmary, Manchester, and as a successful consultant in Rochdale permanent pensions, which was the most important point of policy in the Bill, he proposed to make the fourth year after the man's discharge the date at which a man should be finally examined for permanent pension. It was in the interests both of the disabled men and the State that the machinery of the Ministry should be reduced as soon as possible to its minimum, so that within a measurable time all that would be left would simply be a system of regular payments through the Post Office. The present system with its periodical examination of men involved an elaborate structure of medical boards, referees, and so forth. The medical machinery of the Ministry had hitherto involved the employment by the Department for whole-time or part-time of one man in every four or five of the medical population of the country. The periodical examination of disabled men and officers meant annually the equivalent in working time of a strike of 20,000 men. But more important than all was the effect that finality would have on the mind of the man who had been harassed by medical boards and the relief he would feel at getting away from the atmosphere of the war and its disabilities. But there were insuperable obstacles in the way of granting a great many permanent pensions. Where a case was clear, such as in the case of amputation, he gave permanent pension, but any other permanent pensions which he gave now meant a one-sided process. A pensioner if he got worse could come back and get an increased pension, but if he got better the Minister had no right of appeal. The fixing of four years after discharge had been arranged under the advice of the Government actuary. If a medical board when examining for final pension was satisfied that a man might get worse he proposed to instruct them not to make the award permanent, so that the man might get the benefit of the doubt.

He also proposed to set up an independent appeal tribunal, composed not of a lawyer, an ex-Service man, and a doctor, as at present, but of two doctors (one of whom would be president of the court), an ex-Service man, and an officer. Any discharged man would have the right to be examined in the fourth year for permanent pension by this independent tribunal. On a conservative estimate he hoped to save £2,000,000 a year in administration alone. If a man became seriously worse after his permanent pension had been given to him he (Mr. Macpherson) still retained the right which he had under Article 6 of the Royal Warrant, and even if the claim had been finally settled a man would be entitled to hospital treatment and to certain allowances, and those privileges he would retain for the rest of his life. The Ministry might have said to the men who left the Army without medical examination that they could not go into their claims for pensions afterwards, but they had not done so, and under Article 9 they had given a right to every man who had served in the British Army, even though he had not been examined on discharge, to come before a medical board and have all the rights of a man who was examined at the time of his discharge. The House would realise that that was a privilege which could not be open to all men always. He had decided to fix the limit for appeal at seven years after service. If they did not have a final limit of that kind they would have to keep up permanently the medical boards, the appeal tribunals, and all the paraphernalia with which the Ministry was associated. The independent tribunal which was in existence now had the right to hear all cases of discharged men, but he was asking the House in this Bill to place a time-limit on the right of appeal of six months, because otherwise the pensioner would become forgetful, papers would be lost, and they would find that the man's disease, if he had a disease, was changed, and all sorts of conditions would be superinduced. In Subsection (2) of Clause 5 he was making it quite clear what procedure was necessary in order to effect a right judgment in any appeal case. In Clause 6 he was taking the same power of commuting the disability pensions of seamen and marines as he had already in the case of soldiers and airmen. In regard to Clause 7 there were some boards of guardians which objected to the Minister of Pensions being the guardian of an orphan of a soldier or sailor. Of course, he could not get back from boards of guardians cases of epilepsy and imbeciles, but he was taking powers to get those children whom the Ministry could take charge of under its control. He would listen to any reasonable amendment to the Bill in Committee, but naturally he would stand by the principles which he had endeavoured to set forth.

In reply to Colonel ASHLEY, Mr. MACPHERSON said that as a conservative estimate the economies in administrative expenses resulting from the doing away with the 800 committees would be anything from £6,000,000 to £12,000,000.

Mr. LAWSON, in moving the rejection of the Bill, explained that he did so in no hostile spirit. The Labour Party did not really desire to see the Bill thrown out, but wanted to call attention to the financial and administrative powers of [illegible] committees. The Minister proposed to reduce local [illegible] to the same position and degree of impotence [illegible] old-age pension committees. He was opposed [illegible] limit for permanent pensions.

Mr. C. EDWARDS, another Labour Member, seconded the amendment.

Major ENTWISTLE supported the Bill and urged that it was not a measure to set up a new bureaucracy. The bureaucracy was there already; the only question was whether they should be controlled by the local committees or by the Ministry who supplied the funds.

Colonel F. E. FREMANTLE, after narrating personal experiences of the fraudulent methods which had been employed for the securing of pensions, commented warmly on the fact that out of 21 members of the Departmental Committee there was not a single medical man. He added that while it was quite right for the State to obtain finality, if it should prove that in 10 or 20 per cent. of the cases finality was unfairly secured, it would be a serious matter. He pointed, for example, to the recurrences occurring in mental cases and in tropical diseases, such as malaria. He asked for provision to be inserted under which final awards should be subject to reconsideration in ten years' time.

Major TRYON (Parliamentary Secretary to the Ministry of Pensions), replying to the debate, pointed out that the medical question was one of great magnitude. At the present moment there were 125,000 officers and men on the hands of the Ministry for treatment as the result of wounds or sickness. It was not altogether realised that this task had been put on the Ministry quite lately as the result of the transfer of wounded and sick from the Navy, Army, and Air Force on demobilisation. Lieut-Colonel Fremantle's proposal that final awards should be liable to revision after ten years would mean the resurrection of the whole machinery of medical boards, &c., which they were so anxious to get rid of. He did not think that such a suggestion was in the interests of the pensioners or of economy.

The second reading of the Bill was agreed to without a division.

Drunkenness Statistics.

Sir J. D. REES asked the Home Secretary the number of convictions for drunkenness which occurred during the first 26 weeks of 1921 in the City of Carlisle where direct control of the liquor trade was in operation, and in the remainder of the areas scheduled by the Central Control Board (Liquor Traffic) in England and Wales, together with the figures for the corresponding period of 1920.—Mr. SHORTT replied: I understand that complete figures on all the points raised by the hon. baronet are not available. But the following table with which I have been supplied covers the main points on which he desires information:—

Convictions for Drunkenness in Carlisle and the Rest of the Scheduled Areas of England and Wales.

—	23 weeks 5th Jan.–13th June, 1920.	23 weeks 3rd Jan.–12th June, 1921.
Carlisle	44	72
Rest of scheduled areas of England and Wales	41,309	32,224

MONDAY, JULY 11TH.

London and the Water Shortage.

Viscount CURZON asked the Prime Minister whether, in view of the present shortage of water and of the fact stated in the press that there was only three weeks' supply of water remaining for the metropolis at the present rate of consumption, it was the intention of the Government to take such action as would compel economy generally in the use of water during the present shortage.—Sir A. MOND replied: I have been in constant communication with the Metropolitan Water Board in regard to the great need for economy in the use of water in consequence of the continued drought, and the steps taken by the Board have resulted in an average daily reduction in the week ending July 1st of 37 million gallons below the figure for the corresponding period last year. This is due largely to the assistance of the press and the ready coöperation of the public. I shall not hesitate to take further action to compel economy should this be necessary.

Medical Boards and Disability Pensions.

Rear-Admiral SUETER asked the Minister of Pensions whether the medical boards had had instructions from the Ministry of Pensions to cut down disability pensions by 10 to 20 per cent.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: No, Sir. Nor is there any prospect of my right hon. friend being induced to attempt economy by such means, as he has already made it abundantly clear that he will be no party to the issue of any such instructions.

Blind and Paralysed Ex-Service Men.

Mr. HANNON asked the Minister of Pensions the number

ARTIFICIAL LIMBS FOR PENSIONERS.—The Minister of Pensions has appointed a Committee to inquire into the arrangements for the supply and repair of the various types of artificial limbs, which are provided under the Royal Warrants and Orders in Council, and into the comparative advantages of the metal limb and the wooden limb; and to make recommendations thereon. The members of the Committee are: Sir Archibald Williamson, Chairman; Prof. A. F. C. Pollard; Major Maurice Sinclair, C.M.G., R.A.M.C.; Major M. P. Leahy; Major A. A. Atkinson; Sir Lisle Webb, Director-General of Medical Services, Ministry of Pensions; Mr. Frank Cecil Meech, ex-Corporal of Horse, Royal Horse Guards. Mr. W. J. Sullings has been appointed Secretary of the Committee.

VOLUNTARY HOSPITALS COMMISSION.—The following nominations to the Voluntary Hospitals Commission have now been made:—

The Earl of Onslow (Chairman), Lord Clwyd, Captain W. E. Elliott, M.C., M.P., Sir Robert Hudson, G.B.E., and Mr. D. O. Malcolm, nominated by the Minister of Health.

The Marquess of Linlithgow, nominated by the Secretary for Scotland.

Sir Napier Burnett, K.B.E., M.D., nominated by the Joint Committee of the British Red Cross Society and the Order of St. John of Jerusalem.

Sir Cooper Perry, M.D., F.R.C.P., nominated by King Edward's Hospital Fund.

Mr. H. Wade Deacon, C.B.E., nominated by the British Hospital Association.

Sir John Rose Bradford, K.C.M.G., M.D., nominated by the Royal College of Physicians.

Sir George Makins, G.C.M.G., F.R.C.S., nominated by the Royal College of Surgeons.

Dr. R. A. Bolam, O.B.E., nominated by the British Medical Association.

The remaining member will be nominated by the Scottish Committee of the British Medical Association, whose nomination has not yet been notified. Mr. L. G. Brock, C.B., Ministry of Health, has been appointed Secretary to the Commission.

GREAT NORTHERN CENTRAL HOSPITAL OF RECOVERY: SUMMER FÊTE.—On Saturday last the Princess Royal accompanied by Princess Maud, opened the Hospital of Recovery, which is charmingly situated at Grovelands Home Park, Old Southgate. The Princess Royal inspected a number of patients who were lying in beds in the open air, and afterwards went through the wards of the hospital. Short addresses were delivered, amongst others, by Sir G. Lawson Johnston, treasurer, and Mr. G. B. Mower White, senior surgeon to the hospital, who remarked that the cost of new accommodation was substantially reduced by the system of transferring less serious cases from the main hospital to the present building. A feature of the entertainment provided was the Maypole dance and country dances by children, trained by Miss Sayer, of Finchley, in aid of the children's ward balcony, while the band of the Coldstream Guards played during the afternoon and evening. At present 45 beds are occupied at Grovelands, but this number can be increased to at least 70 when sufficient funds are forthcoming. The Hospital of Recovery was presented to the Great Northern Central Hospital by the Southgate Voluntary Aid Organisation, and was used during the war as a hospital for wounded soldiers.

METROPOLITAN HOSPITAL SUNDAY FUND.—The following are among the amounts received at the Mansion House. The total to date is £70,000.

	£	s.
St. Columba's Church of Scotland, Pont-street ..	720	0
St. James's, Piccadilly	428	0
Holy Trinity, Sloane-street	304	0
St. Paul's, Knightsbridge..	265	0
St. Jude's, South Kensington	244	0
St. Peter's, Belsize Park	193	0
St. Anne's Wandsworth	183	0
Christ Church, Gipsy Hill	174	0
Greek Church, Bayswater	156	0
St. George's, Hanover-square	154	0
St. Andrew's, Frognal	152	0
Temple Church	147	0
Bromley (Kent) Churches and Brixton Independent Church .. .. each	145	0
St. Ann's, Stamford Hill	130	0
All Saints, Knightsbridge	127	0
St. Philip's, Kensington	125	0
St. Margaret's, Westminster	121	0
Islington Parish Church	105	0
Donations have been received from—		
London Joint City and Midland Bank, Ltd., and Lloyd's Bank, Ltd. .. .. each	1000	0
Forestal Land Timber and Railways Co., Ltd. ..	262	10
Alfred Farquhar, Esq.	100	0

FEDERATION OF MEDICAL AND ALLIED SCIENCES: ANNUAL REPORT.—The report for 1920–1921, issued by the Executive Council of the Federation, opens with the statement that the Federation was registered on March 29th last under the Companies Acts as an Incorporated Association. The Council claims on behalf of the Federation, which has now completed the second year of its existence, a considerable advance towards true representation of the members of the medical and allied professions—an advance which, despite the hampering effect of present high prices and limited financial resources, permits a hopeful outlook for future success. The past year is described as memorable for the introduction of legislative measures involving radical changes in the conduct of the health services of the country. The voluntary hospital system and the independence of private practice have been threatened; prodigal schemes for the coördination of medical services have failed, but rather because of national poverty than because of any united action on the part of the professions affected. Those professions are now awakening to the necessity of fuller participation in the councils of the nation. The bringing of moderate and reasoned views to the notice of those responsible for the formative stages of legislative measures, rather than the application of criticism at a later stage, has been the aim of the Council, and much of the useful work thus performed is not immediately apparent. Amongst other activities in this direction may be mentioned the assistance given to the Medico-Psychological Association of Great Britain and Ireland in support of certain amendments to Clause 10 of the Ministry of Health Miscellaneous Provisions Bill, and the memorandum and questionnaire sent to all constituent societies of the Federation on the subject of Clause 11 of the same Bill, which sought to establish municipal hospitals and authorise rate maintenance of voluntary hospitals. At a conference of the Federation, held on Nov. 5th, resolutions were unanimously adopted expressing regret at the introduction of health legislation involving important questions of principle in a Miscellaneous Provisions Bill; maintaining that the public interest demanded that the Minister of Health should consult collectively the medical, dental, pharmaceutical, nursing, and midwives' professions, and others concerned with public health; pointing out that the voluntary hospital system should now be supported by State aid, but that the system of patients' contributions towards their maintenance, and the attempts to link up voluntary hospitals with Poor-law infirmaries, should be given fair trial; and emphasising the necessity, in the event of the establishment of municipal hospitals, of clearly-defined representation of the professions concerned on all bodies responsible for the administration of such hospitals. The support of the Federation was also sought by the British Dental Association in the introduction and passage of the Dentists Bill in Parliament. The Council was asked to express an opinion regarding the new panel record cards, and advised a fair trial of the latter. The Draft Regulations, issued under the Dangerous Drugs Act, 1920, engaged the attention of the Council; the views of the constituent societies were obtained concerning certain clauses, and representations were thereupon made to the Home Secretary and incorporated in the amended regulations now issued. Amongst other details of internal organisation of the Federation, the nucleus of a "citizens' council" has been formed to provide the Federation with a body of representative lay opinion on matters of public health. With a view to discussing means of coöperation with certain bodies not represented in the Federation, a conference was arranged on Feb. 1st, 1921; the Royal Colleges, the British Medical Association, the Society of Medical Officers of Health, the National Medical Union, the Medico-Political Union, and the Federation were invited to send delegates. The four last-named bodies accepted and attended the conference, which adopted resolutions urging the medical profession to concentrate its efforts and speak with one voice when the need arises, and expressing the opinion that the only method at present available for such concentration of effort is a federation of representative bodies. No medical candidates have stood for Parliament during the year; the Council has interviewed two prospective candidates, and has in mind the possibility of a general election. Various associations have been elected to the Federation, and one society has withdrawn. Sir Berkeley Moynihan had consented to be elected the first President of the Federation on its incorporation, and Sir Malcolm Morris (Chairman of the Executive Council during the past two years) was at the same time elected the first Vice-President. The offices of the Federation are shortly to be transferred to more suitable premises, where a conference hall will be available. The Council has decided to publish a weekly paper devoted to the national aspect of the work of the medical and allied professions, and a subcommittee has been appointed to make the arrangements.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, July 25th, at 5.30 p.m.

Lecture and Demonstration: Dr. M. Diamond: On Some New Phases of Old Problems in Dental Reconstruction.

Tuesday, July 19th.

GENERAL MEETING OF FELLOWS: at 5 P.M. Ballot for election to the Fellowship.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 18th.—2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—2 P.M., Mr. Addison: Operations. 2.30 P.M., Mr. D. Armour: Visit to Surgical Wards.

THURSDAY.—2 P.M., Mr. D. Armour: Operations.

FRIDAY.—2.30 P.M., Mr. Baldwin: Operations. Dr. Pritchard: Visit to Medical Wards.

Daily, 10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, July 18th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.

TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 P.M., Dr. J. Metcalfe: X Ray Department. 3 P.M., Lecture Demonstration:—Mr. C. H. Hayton: Cases Illustrating Diseases of the Ear—(1) Middle Ear: (2) Internal Ear.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Dermatological. 3 P.M., Lecture Demonstration:—Mr. T. H. C. Benians. The everyday Bacteriology of the Sputum.

THURSDAY.—2 P.M., Mr. N. Fleming: Eye Department. 2.30 P.M., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

FRIDAY.—2 P.M., Dr. C. E. Sundell: Diseases of Children. 4.30 P.M., Lecture Demonstration:—Dr. C. E. Sundell: Dyspepsias of Infants. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Operations. 3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Post-Graduate Course, Westmoreland-street, Marylebone, W.

MONDAY, July 18th.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. B. T. Parsons-Smith. 2 P.M., Ward Demonstration: Dr. R. O. Moon. 5 P.M., Lecture:—Dr. F. W. Price: Auricular Flutter and Fibrillation.

TUESDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. P. Hamill. 2 P.M., Ward Demonstration: Dr. B. T. Parsons-Smith. 5 P.M., Lecture:—Sir Sydney Russell-Wells: Angina Pectoris.

WEDNESDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. P. Hamill. 5 P.M., Lecture:—Dr. J. Parkinson: Diseases of the Myocardium.

THURSDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. R. O. Moon. 2 P.M, Ward Demonstration: Dr. J. S. Goodall. 5 P.M., Lecture:—Dr. P. Hamill: Cardio-vascular Neurosis.

FRIDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. P. Hamill. 2 P.M., Ward Demonstration: Dr. F. W. Price. 5 P.M., Lecture:—Dr. R. O. Moon: Prognosis in Heart Disease.

SATURDAY.—10.30 A.M., Ward Demonstration: Dr. P. Hamill.

Daily (except Saturday):—10 A.M., Sir Sydney Russell-Wells and Dr. J. Parkinson: Instruction in Instrumental Methods of Examination, Blood Pressure, Polygraph, Electrocardiograph, and X Ray. 2 P.M., Out-patients, Practical Clinical Demonstrations in the Out-patient Department.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

TUESDAY, July 19th.—10.30 A.M., Demonstration XI., Rickets, Causes, Symptoms, and Treatment.

THURSDAY.—3 P.M., Demonstration XII., The Feeding of Children between 9 months and 2 years.

VOCAL THERAPY SOCIETY.—On Saturday, July 9th, at the West End Hospital, St. Catherine's Lodge, Regent's Park, a competition concert was given by the King's Services Choirs, which consist of ex-Service singers in and out of hospital. The work of the Vocal Therapy Society, under whose auspices the concert was held, is the endeavour to restore physical and mental health to ex-Service men suffering from loss of speech, mutism, stammering, stuttering [illegible] resulting from war injuries or shell shock. The [illegible] Society is at 27, Grosvenor-place, S.W.1.

Notes, Short Comments, and Answers to Correspondents.

MATERNITY HOMES.[1]

By Dr. Janet M. Campbell,

SENIOR MEDICAL OFFICER, MINISTRY OF HEALTH.

THE Ministry of Health have now recognised between 60 and 70 maternity homes in England and Wales, with about 700 beds, and some 20 proposals for new homes are under consideration. This is in addition to maternity beds found in homes for unmarried mothers, and to old-established maternity hospitals and Poor-law lying-in institutions.

The Need for Maternity Homes.

The great reduction in the infant mortality-rate which has taken place during the past 20 years has not been accompanied by a corresponding lowering of the maternal mortality rate, as is shown by the following table:—

Year.	Birth-rate.	Death-rate.	Infant mortality-rate.	Maternal mortality ‖ (Classification as in use before 1911).			
					Deaths per 1000 births.		
				No. of deaths.	Sepsis**	Other causes.	Total childbirth.
1905	27·3	15·3	128	3905	1·87	2·33	4·20
1906	27·2	15·5	132	3757	1·75	2·27	4·02
1907	26·5	15·1	118	3520	1·60	2·23	3·83
1908	26·7	14·8	120	3361	1·48	2·09	3·57
1909	25·8	14·6	109	3379	1·56	2·14	3·70
1910	25·1	13·5	105	3191	1·42	2·14	3·56
1911	24·3	14·6	130	3236	1·52	2·15	3·67
1912	23·9	13·3	95	3299	1·47	2·31	3·78
1913	24·1	13·8	108	3271	1·34	2·37	3·71
1914	23·8	14·0	105	3469	1·63	2·32	3·95
1915	21·9*	15·7†	110	3210	1·56	2·38	3·94
1916	20·9*	14·4†	91	3038	1·47	2·40	3·87
1917	17·8*	14·4†	96	2446	1·39	2·27	3·66
1918	17·7*	17·6†	97	2353	1·35	2·20	3·55
1919	18·5*	13·8†	89	2852	1·76	2·36	4·12
1920	25·4	12·4	80	3942‡	1·87	2·25	4·12

* Based upon populations specially estimated for this purpose.
† Based upon civilian deaths and estimated civilian population.
‡ Subject to slight alteration.
‖ Excluding deaths not classed to pregnancy and childbearing, but returned as associated therewith.
** Including phlegmasia alba dolens.

Note.—In the Registrar-General's Annual Report for 1920 the birth-rates and the death-rates, 1911–1920, will be based upon revised estimates of population made after the results of the next Census become available. The rates in the Registrar-General's Report may differ, therefore, from those in the above table.

In 1900 the infant mortality-rate was 154 per 1000 births and the maternal mortality-rate 4·8, the total number of maternal deaths due to pregnancy and childbearing being 4455. In 1920 the infant mortality-rate had fallen to 80, but the maternal death-rate was 4·2 with 3942 deaths. During the earlier years of the century there was a slight though fluctuating improvement in the maternal death-rate, 3·5 per 1000 births being the lowest figure reached. In 1919, however, the Registrar-General reported that puerperal mortality was higher than for any year since 1905 and that the increase was *preponderantly due to sepsis.* This was sufficiently arresting, but it is still more disquieting to learn that in 1920 there has been no decrease in the maternal death-rate, which remains, as in 1919, at 4·12 per 1000. The death-rate from septic infection in 1919 was 1·76, but in 1920 it was still higher, being 1·87, the same rate which obtained in 1905. In other words, in spite of our modern knowledge of the causes and prevention of infection, of the successful application of this knowledge to the practice of surgery, and of the elaborate training given to medical students and nurses in surgical technique, we are, as regards midwifery, almost back in our old position at the beginning of the century before the Midwives Act was passed.

Most maternal deaths at the time of childbirth are preventable if proper facilities and reasonable skill are to hand, and deaths from septic infection should be rarely met with. Sepsis is almost invariably introduced from without by one or other of the attendants on the woman, the doctor, the midwife, or the handywoman. Every committee for examination, and of the fact that each examination entailed a substantial cost to the taxpayer.—Mr. Macpherson replied: I am aware of the facts stated, and I am entirely in sympathy with my hon. and gallant friend. I have, in fact, already anticipated his suggestion in the War Pensions Bill which is now before hon. Members, and which is down for second reading to-morrow.

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[1] Abridged from a paper read at the second English-Speaking Conference on Infant Welfare on July 5th.

Appeal Tribunals.

Lieut.-Colonel Sir Frederick Hall asked the Minister of Pensions what was the number of cases awaiting hearing by the pensions appeal tribunal on March 31st and June 30th, respectively; whether, in view of the very important nature of their work, the appeal tribunals would sit constantly through the summer vacation; if so, what number; and how many of these would be in the London region.—Colonel Gibbs (Treasurer of the Household) replied: The number of cases awaiting hearing by the pensions appeal tribunals on the dates mentioned was as follows:—

—	March 31st, 1921.	June 30th, 1921.
Listed and in course of being heard	1134	3071
Outstanding awaiting listing for hearing	7734	6779
	8868	9850

Of the total number of cases awaiting hearing approximately 1000 are cases in which the appellants have already been afforded one or more opportunities of appearing before a tribunal. During the latter part of May and in June additional courts were set up and 1000 cases are now being dealt with each week. Further tribunals are in course of formation. Tribunals will sit constantly through the summer vacation. The number of tribunals to sit in August and September has not yet been arranged, but approximately 16 will sit during August and 12 during September. The number of tribunals to be allocated to London for the holiday period will depend upon the state of the work in London as compared with other regions.

International Health Organisation.

Sir J. D. Rees asked the Lord President of the Council if he would give the House some information as to the recently announced determination of the League of Nations to look after the health of the world, the manner in which this enterprise was to be conducted, and the probable cost to the taxpayers of this island.—Mr. Balfour replied: In pursuance of Articles 23 and 25 of the Covenant the League is proceeding, as it is bound to do, to set up an International Health Organisation. At the present moment the arrangements are in the initial stage only. Great Britain makes a lump sum contribution towards the expenses of the League, no part of it being ear-marked to particular branches of the League's work.

League of Nations and Typhoid in Poland.

Lieut.-Colonel Sir Frederick Hall asked the Lord Privy Seal how many countries belonged to the League of Nations; what was the estimated cost of maintaining the League for the current financial year; and what part of such cost would be borne by Great Britain.—Mr. Balfour replied: Forty-eight States are at present members of the League of Nations. The Budget of the League covers the calendar year, and for 1921 amounts to 21,250,000 gold francs, or, quoted in sterling, reckoning 20 gold francs to the £ about £1,062,500. Great Britain's contribution is approximately £52,000—the exact amount will depend on the rate of exchange current at the time that the instalments are made.—Sir J. D. Rees: Does the £52,000 include such benefactions as the money granted for dealing with typhoid in Poland or will that necessitate an extra budget?—Mr. Balfour: I think it is inclusive, but I do not think it includes what my hon. friend calls benefactions.

Financial Position of Irish Hospitals.

Mr. Devlin asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to the annual report of the board of superintendents of the Dublin hospitals issued last week; whether he was aware that the report stated that the board were satisfied that all the hospitals were conducted in an economical and thoroughly efficient manner, but that all were in a more or less critical condition financially; whether he was aware that the indebtedness of each hospital was as follows: Westmoreland, £7046; Meath Hospital and County Dublin Infirmary, £6688; Cork Street Fever Hospital, £5882; House of Industry Hospitals, £5843; Rotunda, £5014; Coombe, £1355; Royal Victoria Eye and Ear, £7500; Royal Hospital for Incurables, £7270; and whether he would take immediate action to have grants made to these and to other hospitals in Ireland out of the £500,000 which had been allocated for the relief of voluntary hospitals in the United Kingdom or an equivalent grant to relieve their financial difficulties.—Sir H. Greenwood replied: I am aware of the facts and figures disclosed in the report of the board of superintendents of Dublin Hospitals for the year ending March 31st, 1920, but in regard to the mode of relieving the financial condition of the hospitals I can only refer to my right hon. friend the Chief Secretary's reply to my hon. friend the hon. Member for Rathmines of June 30th last. The hon. Member's figures need a small correction in one item—namely, the figure of £7046 is that for Stevens Hospital, not for the Westmoreland Hospital. The latter hospital has, I understand, no deficit.

Pharmacists and Dangerous Drugs Act.

Mr. Alfred T. Davies asked the Secretary for the Home Department whether he was aware that the committee appointed to consider outstanding objections to the draft regulations issued under the Dangerous Drugs Act, 1920, after considering the claim that prohibition of retailing by pharmacists was ultra vires in view of Section 7 (2) of the Dangerous Drugs Act, and observing that the point could only be settled by a competent judicial authority, proceeded with their inquiry as if the contentions were not well founded; and whether he had since obtained, or proposed to obtain, the opinion of the Law Officers of the Crown on this contention of the pharmacists.—Mr. Shortt replied: The answer to the first question is in the affirmative; to the second, in the negative.

FRIDAY, JULY 8TH.

War Pensions Bill.

Mr. Macpherson (Minister of Pensions), in moving the second reading of the War Pensions Bill, said it was a measure for securing administrative economy, but not at the expense of any pensioner, for that was a policy to which he would never be a party. The number at present on the pension list was as nearly as he could make out 3,500,000 beneficiaries of all kinds. It was the unanimous proposals of the Departmental Committee, which he had appointed in December last to examine the large and intricate machine of pensions administration, which he was presenting in the form of a Bill to the House. These proposals he believed would be to the best interests not only of the taxpayer, but of the pensioner and of the State. The expenditure of the local war pensions committees out of public funds was over £20,000,000 a year, but the committees were virtually independent bodies over which as Minister of Pensions he had no control. That position was quite intolerable. The local committees had now drifted into an entirely false position. In 1917, when the Pensions Ministry was formed, the staff of the local committees amounted to 300; to-day it had grown to nearly 7000 and the voluntary workers were comparatively few. In nine cases out of ten the expenditure of the local committees was now left to the discretion of these paid officers, and the result was that there was laxity, and even fraud, in the expenditure. During the past seven months the Ministry discovered no fewer than 126 cases of fraud by officers. In these circumstances he thought he ought to be responsible for the appointment of those men. He proposed to reduce the number of the local committees from 1200 to not more than 450, thus getting rid of about 800, and effecting what he regarded as large economies. Under the new scheme there would be large areas of administration, each having at its centre an office with a war pensions committee attached to it. In some sparsely populated districts of the country, such as his native Highlands, it would be necessary to appoint only a local man as officer without a committee. The committees and the officers of the different areas would be directly under him as Minister, and he should feel himself responsible for the financial and administrative work of the offices. He hoped to appoint in each office a "soldier's friend" to give advice to ex-Service men in regard to pensions, a departure which in London had proved most valuable. The composition of the new committees would be substantially the same as it was now, but there would be somewhat different proportions of interests. Instead of one-half the representation of the local authority would be only one-fourth, for the reason that the local authority did not any longer contribute to pension funds. He would take upon himself the power of appointing the local committees. In future it would be made perfectly clear that the staffs of the local committees were State servants. Under Clause 2 the committees would retain all their powers under the Act of 1915 except with regard to the provision of medical treatment and employment. The committees having been relieved of all executive responsibility for the making of medical and other administrative arrangements, or for any expenditure under the warrants or regulations of the Ministry, would be able to devote their time to voluntary work and voluntary administration of pensions in their own locality. With regard to the question of interest, though not comparable with any statistical returns from the country as a whole:—

No. admitted to home.	Average stay.	Cases delivered.		Notified puerperal sepsis.		Ophthalmia neonatorum (number).	Maternal deaths.*	Fœtal deaths.†
		By midwives.	By doctors.	Number.	Deaths.			
9108	14 days.	6835	1844	28	10	74	57	583

* Including puerperal sepsis.
† Stillborn or within 10 days of birth.

Among 9108 women admitted, 28 cases of puerperal sepsis occurred and there were 57 maternal deaths, including 10 from puerperal infection. When ante-natal supervision is more fully developed it may confidently be hoped that the maternal mortality and the fœtal mortality will be considerably reduced. At the same time it must be remembered that a maternity home, like a maternity hospital, may be obliged to admit moribund patients for whom little can be done, and that more claims are made upon some homes than upon others to admit cases which should rather be sent to a hospital if such were available.

Conclusion.

The secret of the success of a maternity home does not lie only in convenient accommodation, modern equipment, and a competent staff. There must indeed be a conscientious application by the staff of the principles of aseptic midwifery, with no slurring over of details, and with accurate observation and recording of results. But this is not enough to satisfy a high standard. The mother coming into the home should experience a sense of calm relief, and should instinctively feel assured of a successful issue. Wisdom in the management of labour is essential; the mother must not be allowed to become fatigued or exhausted before the final trial of strength and control becomes necessary. The patient should only leave the home when well on the way to complete physiological restoration, feeling rested and refreshed. Breast-feeding should be regarded as a matter of course. Such an atmosphere is almost wholly personal, depending on all concerned in the management of the home, but most of all upon the matron and the inspiration she can give.

Properly directed and used, the maternity home will undoubtedly serve as one of the most effective weapons in the endeavour to raise the standard of midwifery and so reduce the disastrous death-rate among mothers. Rightly conceived, it forms one link in a chain. Standing alone, its activities are restricted, but in relation on the one hand with the ante- and post-natal clinic, and on the other with a maternity hospital (or medical school) and its consulting staff, in touch with the district midwifery of its own area and available for the local medical practitioner, its value as a treatment centre and as an example and incentive to sound midwifery practice can hardly be over-estimated. For well-managed midwifery secures something more than immediate safety; it serves as a means of encouragement to the whole instinct of maternity. Thus established and thus related a maternity home becomes an institution of the highest national importance, first, for the safe delivery of the child and the proper treatment of the mother, and secondly, for the advance of the science and art of medicine.

A GUEST HOUSE FOR MOTHERS AND BABIES.

A Guest House, available for breast-feeding mothers and their babies, the families of unemployed or disabled ex-Service men, was opened on July 13th by the Duchess of Albany. The institution has been organised and financed by the National League for Health, Maternity and Child Welfare, and the Save the Children Fund. It is called the Lady Forster Guest House for Mothers and Babies, and is situated in pleasant surroundings at Peak Hill Lodge, Sydenham, London, S.E. Only those mothers and babies are admitted who are not definitely ill, but would benefit by a change of air and good food. Guests must have attended an infant welfare centre at least twice before admission, and applications for admission must be made through the local medical officer of health or through a centre; a medical certificate must be submitted the day before admission. Guests pay their own fare to and from the home, but no charge will be made for their stay, which may extend up to four weeks. All applications for admission should be addressed to Miss Reed, Secretary, Babies' Homes Department, National League for Health, Maternity and Child W[illegible] and 5, Tavistock-square, London, W.C. 1, from [illegible] particulars can be obtained.

MEDICAL GOLFING SOCIETY.

At the annual general meeting, held on June 29th at the Florence Restaurant, Rupert-street, Dr. Rolf Creasy was elected President of the society, and Dr. Rolf Creasy, jun., 36, Weymouth-street, London, W., secretary and treasurer. The following constitute the committee: Mr. H. D. Gillies, Dr. J. Clarke, Dr. G. E. Haslip, Dr. M. J. Bulger, Mr. T. H. P. Kolesar, Dr. R. Cruise, Sir Milsom Rees, and Mr. Joscelyn Swan. It is proposed to hold an autumn meeting in addition to the usual summer one, for competition, at which Mr. Canny Ryall has presented a challenge cup. The President has also presented a cup, and Mr. Ernest Clarke will give a small cup each year to be kept by the winner.

NATIONAL COUNCIL OF PUBLIC MORALS.

A brief outline of the objects and work of the National Council has been published in the form of a 48-page booklet entitled "To Save the British Race." A preface is contributed by the Bishop of Birmingham, president of the Council, and the chapters deal with the action and reports of various commissions appointed by the Council to inquire into such problems as those of birth-rate, illegitimacy, and venereal disease. The chapter headed "The Health of the Race" contains statistics epitomising the returns of the medical boards of the Ministry of National Service in 1917-1918, and figures drawn from the medical inspection of public elementary schools, from National Health Insurance returns, and from the general death-rate for the country, together with a note on housing conditions and a suggestion for the inclusion in the Ministry of Health of a permanent anthropometric department, a vocational bureau, and an office of general registry of population. "Youth and the Race," "The Family and the Race," "An Imperial Race," and "The Amusements of the Race" are headings sufficiently indicative of the wide scope of the National Council's activities and the amount of information compressed into this useful booklet.

A MEDICAL MAN'S INVESTMENTS.

A medical practitioner recently brought an action against several defendants for the recovery of £375 which he had been induced to invest with them by representations of a misleading character as to the value of certain enterprises. These included interests in radium mines in Portugal, and processes for the production of an explosive, aniline dyes, and petrol from coal. The alleged fraud was denied by the defendants, who said that they had made their representations in good faith and that they were true. After a trial lasting three days a special jury found a verdict for the plaintiff, who to that extent is to be congratulated. In comment it may be observed that investments that will bring in large profits with any degree of security are very seldom offered to the public by the promoters of attractive speculations. It is they who expect to obtain the lion's share of the profits if any are forthcoming. A professional man will find the advice of his stockbroker or banker a valuable protection if he consults them. All this is so obvious that to write it appears unnecessary, until it is remembered that medical men and clergymen appear to be particularly gullible. Finance is outside their sphere of thinking.

County Borough of Halifax: Appointment of Medical Officer of Health.—In the advertisement of this appointment which appeared in our issue of July 9th, the salary was wrongly stated as £1000. The salary offered is £800 per annum.

Rubber sheetings and other productions treated by the "Mintite" patent finish, on which we commented last week, are obtainable from india-rubber manufacturers only and not from the owners of the patent.

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ADVERTISEMENT RATES.

Books and Publications	Four Lines and under 6s. 0d.
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respectively, who were totally paralysed through wounds received in action, and who were so helpless as to necessitate their remaining in hospital; in how many of these cases the paralysis was permanent; and what was the number of ex-officers and men of the Navy, Army, and Air Force who were blind as a result of wounds received in action.—Major TRYON replied: There are 258 totally paralysed officers and men in hospital, but I am unable to say how many of them cannot be expected to recover. There are 1453 officers and men who are totally blind as the result of their war service. Of these 730 were blinded by wounds received in action.

Clinical Thermometers.

Mr. BALDWIN, President of the Board of Trade, introduced a Bill to regulate the sale of clinical thermometers. The Bill was read a first time.

TUESDAY, JULY 12TH.

Treatment of Bilharziasis.

Mr. GRATTAN DOYLE asked the Minister of Pensions whether, in view of his recently expressed sympathy with the proposed treatment of pre-recent war sufferers from bilharziasis by the Christopherson treatment, he would inform the House of the result of his communication with the Secretary of State for War on this subject.—Major TRYON replied that the necessary arrangements were being made to provide the modern treatment for men still suffering from bilharziasis contracted as a result of their service in former wars.

Conference on Treatment Bonuses.

Mr. ALFRED DAVIES asked the Minister of Pensions whether, on May 27th, 1921, a conference was held between the Ministries of Pensions, Health, and Labour on the question of the bonuses to be paid to men undergoing training during their treatment in sanatoriums; whether, having regard to his previous statements in respect of payment of such bonus, he would state whether the conference recommended any difference of procedure with regard to this matter; and whether he would say how many men who had undergone training arranged by the local insurance committee during a course of treatment had been paid the bonus prior to the date of the conference.—Major TRYON replied: One of several conferences on the matter referred to by my hon. friend took place on the date in question. The character of the training in individual sanatoriums which would satisfy the conditions necessary for the payment of bonus was discussed and agreed, and effect is now being given to the conclusions arrived at. I regret that the information asked for in the last part of the question is not available.

Ministry of Health and Sanatorium Treatment.

Mr. WALTER HALLS asked the Minister of Health whether he had refused to allow the Lancashire Insurance Committee of the National Health Insurance to assist the county council financially from their credit balances in providing and equipping a new sanatorium to make further provision for the treatment of insured persons and their dependants; and, if so, would he state the grounds for this refusal.—Sir ALFRED MOND replied: I presume the hon. Member is referring to the action taken by my department in connexion with the proposal of the Lancashire Insurance Committee for the application of the estimated surplus standing to the credit of the Sanatorium Benefit Fund of the Committee on April 30th last. The disposal of that surplus is governed by the provisions of the National Health Insurance (Termination of Sanatorium Benefit) Regulations, 1921, and I am unable to sanction any departure from those Regulations. Substantial grants are available from the Exchequer in aid of the provision made by the Lancashire County Council for the sanatorium treatment of tuberculosis.

Appointments.

BEGGS, S. T., M.D., D.P.H., has been appointed Medical Officer of Health for Middleton.

WALKER, H., M.B. Cantab., F.R.C.S. Eng., to be a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuits Nos. 2 and 15.

WARBURTON, G. B., Ch.M. Manch., F.R.C.S. Eng., Assistant Surgical Officer, Manchester Royal Infirmary.

Surgeons under the Factory and Workshop Acts: NEIGHBOUR, P. M., M.R.C.S., L.R.C.P. Lond. (Walton-on-Naze); BRUCE, R., M.D. Aberd. (Peterculter).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—H.S. £200.

Ayr County Hospital.—Lady Supt.

Bedford County Hospital.—H.S. £200. Asst. H.S. £150.

Birmingham General Dispensary.—Res. M.O. £400.

Birmingham General Hospital.—Res. S.O. £180.

Bootle Borough Hospital, Derby-road.—Hon. S. for Diseases of Throat, Nose, and Ear.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £200.

British Honduras.—Asst. M.O. $2430.

Brompton Hospital for Consumption and Diseases of the Chest, S.W.—H.P. £50.

Cancer Hospital, Fulham road, S.W.—H.S. £150.

Carlisle Non-Provident Dispensary.—Res. M.O. £300.

Croydon General Hospital.—Second H.S. £150.

Cumberland Infirmary, Carlisle.—Res. M.O. £180.

East Suffolk and Ipswich Hospital.—H.S. and Cas. Officer. £100.

Great Northern Central Hospital, Holloway, N.—Cas. O. £200.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Guy's Hospital, S.E.—Chief Clinical Asst., Ophth. Dept. £100. Also two Female Clinical Assts. in Ven. Dept. One guinea per session.

Hull Royal Infirmary.—Asst. H.S. £150.

Jersey Poor House Infirmary.—M.O. £750.

Lancashire County Asylum, Winwick, Warrington.—Sec. Asst. M.O. £300.

Leeds Public Dispensary.—Sen. Res. M.O. £200.

London Temperance Hospital, Hampstead-road, N.W.—Surg. Registrar. 40 guineas.

Manchester Ancoats Hospital.—H.S. £150.

Manchester Hulme Dispensary, Dale-street.—Res. M.O. £400.

Miller General Hospital for South London.—H.S. £150.

Ministry of Pensions.—Jun. M.O.'s. £350.

Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £350.

Newport (Mon.) Royal Gwent Hospital.—H.S. £200.

Northamptonshire County Council.—Asst. Tuberculosis Officer. £500.

Nottingham General Hospital.—H.S. £200.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—District Res. M.O. £80.

Queen's Hospital, Birmingham.—Surg. Registrar. £100.

Reading Royal Berkshire Hospital.—H.P. £200. Sec. H.S. £200.

Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £200.

Saint Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P. or S.

Salford Royal Hospital.—H.S. £150. Cas. H.S. £150.

Salisbury General Infirmary.—Asst. H.S. £150.

Sheffield University.—Demonstrator in Department of Pathology and Bacteriology.

South London Hospital for Women, Clapham Common, S.W.—H.P. £100. H.S £100.

South Shields Union.—Asst. Res. M.O. £250.

Stirling District Asylum, Larbert.—Jun. Asst. M.O. £300.

Talgarth, Breconshire South Wales Sanatorium.—Sec. Asst. Res. M.O. £400.

Union of South Africa (Natal Provincial Administration).—House Surgeons, Grey's Hospital, Pietermaritzburg. £400.

Wigan Infirmary.—Jun. H.S. £200.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories announces the following vacant appointments.—Senny Bridge (Brecon); Swinton (Lancaster).

The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Middleton-in-Teesdale.

Births, Marriages, and Deaths.

BIRTHS.

EDE.—On July 5th, at West Hill House, Calne, Wilts, the wife of Dr. Cuthbert Ede, of a daughter.

WELCH.—On July 3rd, at West Norwood, the wife of Dr. C. H. Welch, of a daughter.

WESTBY.—On June 27th, to J. T. Westby, M.B., B.Ch, and Marjorie Westby, L.R.C.P. & S.I. (neé McMullen) 9, Redcliffe Gardens, Southsea, a son.

MARRIAGES.

COLDWELL—SMITH.—On June 29th at St. James Church, Piccadilly, W., by the Rev. Prebendary Cronshaw, M.A., Walter Herbert Coldwell, M.B., B.S., to Barbara Joan Smith, younger daughter of Mr. and Mrs. A. E. Smith, The Quarry, Warwick.

MILLS—HAWES.—On June 29th, at St. Paul's Church, Portman-square, W., Dr. R. J. Mills, of Norwich, England, and Langenschwalbach, to Enid Ida Hawes, of Melton Constable, Norfolk. *American papers please copy.*

DEATHS.

BATSON.—On July 5th, at Marine-terrace, Rodwell, Weymouth, William Lascelles Batson, M.R.C.S., L.R.C.P., aged 69 years.

BLOMFIELD.—On July 8th, at The Drive, Sevenoaks, James Edward Blomfield, M.A., M.D. Oxon., aged 64 years.

RAY.—On July 8th, at Coventry House-chambers, Haymarket, after a long illness, Edward Reynolds Ray, M.R.C.S. Eng., L.S.A., aged 79 years.

SAVAGE.—On July 5th at his residence, 26, Devonshire-place, Sir G. H. Savage, M.D., F.R.C.P., aged 78.

the training of the practitioner. As a scientific profession we naturally aim at precision, but unfortunately take no steps to secure it in our daily work. Of what value, has any one ever asked himself, are the statistics upon which the computing officials of our Insurance Companies are accustomed to base certain actuarial statements which are accepted as guides to practice because they are founded upon statistics compiled from official returns which, we have reason to believe, are so hopelessly inaccurate that the results can at best be nothing more than rule of thumb guides? Some may possibly doubt this statement. Well, let anyone that does, institute an inquiry, say, into the accuracy of the death certificates as tested by post-mortem examinations in even the best of our clinical hospitals, and he will have his eyes opened, and his knowledge of practice may possibly lead him to draw a still more striking inference from the contemplation of the question of the accuracy of the returns throughout the country generally—outside the walls of our great hospitals.

Accuracy in diagnosis is, as I have said, of the first importance, but the search after truth in nearly every other direction as well is lax and indeterminate. Time will not permit me to pursue this most important subject, but I am convinced that until there is instituted in every large teaching hospital connected with our medical schools a statistical department with a highly trained official at its head—call him registrar, or what you will—whose duty it would be to collect and systematise all returns having accuracy as the constant aim, we shall continue to flounder on as we have been doing, groping after truth, and failing to read correctly the signs ready to hand and awaiting interpretation.

PRESENT WASTE OF RAW MATERIAL.

At present the returns are grossly inaccurate, and therefore many of the deductions are necessarily fallacious, whilst, for the want of a proper system, the waste of what I may call raw material is simply appalling. Observations of interest are made daily in the wards, post-mortem rooms, and the adjacent pathological and chemical laboratories of every teaching hospital of which use is never made, perhaps because they are isolated and their significance is not at the moment recognised. They are forgotten and, in many instances, pass even from the minds of the physician, surgeon, or pathologist who made them. Prof. Vincent tells us of a physicist who, long before the discovery of X rays by Röntgen, noticed cloudy markings upon his photographic plates whenever they were brought near to Crookes's tubes, but disregarded the observation as of no value. But instances could be indefinitely multiplied illustrative of the loss to science that may be involved in the failure to note, collect, collate, and investigate simple observations in medicine, surgery, pathology, and collateral sciences. This loss, which cannot be estimated, may very properly be compared with the loss to commerce and science involved in the crude uses to which tar was put before the discovery by Perkin of the colour mauve in the year 1856. Then followed other colours, together with benzine and its homologues, toluene, xylene, naphthalene, and anthracene, not to mention the manifold uses to which the long series of coal-tar derivatives have been put. So, without any great stretch of imagination, may we regard the waste of which I have spoken.

The fact is, the work in every hospital ward, post-mortem room, and scientific laboratory engaged in the investigation of disease for the purposes of teaching should be regarded in the light of research, and I think the assumption is only reasonable that the establishment of whole-time professorships in medicine, surgery, and midwifery in connexion with all our medical schools, together with properly organised registration departments, would help very greatly to promote this most important side of the teacher's fun[illegible] The importance of collecting this raw [illegible] present running to waste, will be recog- [illegible]ll, but especially by teachers themselves, who would have the results of their own labours, of their hospital's records and statistics by which to drive home the lessons they would inculcate, for, as Prof. Vincent very properly points out, students pay more attention to the personal observations of their teachers than to text-book statements. And further, research workers would be in possession of vast quantities of accurately noted and properly collated facts for the pursuance of their investigations. Thus our teaching facilities would be promoted, and our methods of instruction put upon a more satisfactory basis, whilst our knowledge would increase more rapidly and our science correspondingly benefit, and, transcending all, truth would be recognised as the presiding genius of our activities—our great purpose, our highest aspiration.

PROFESSIONAL EDUCATION A CONTINUOUS PROCESS.

The history of the general practitioner, the cornerstone of the profession of medicine, told in terms of his professional education, is, or should be, a record of continuous progress from the first stage of the introduction to the end of the last chapter, when finis marks his retirement or his decease. He travels along a road, at times rough and uphill, in which there is no break, and perhaps the easiest going, from the education point of view, is the outset, carefully indicated by notices bearing the official imprint of the curriculum. It is greatly to his advantage if, at the end of this part of his journey, he can secure a resident appointment in a first-class hospital. This cannot be too strongly emphasised, and it is impossible to over-estimate the value of six months' intensive training at this period of professional life, when responsibility and a certain measure of authority under discipline, with ample opportunity for the study of special problems, unite to shape and develop character, and furnish illustrations in abundance of the principles already forming the foundation of that superstructure of experience, the endowment of the trusted practitioner.

So helpful is this experience that the young graduate who has enjoyed it begins life with a take-off vastly superior to his neighbour who has not—who is, indeed, in comparison badly handicapped in the race of life. I feel so strongly upon this point—the advantage of a resident appointment—that I would like to take this opportunity to warn the rising generation against the practice, which is becoming only too common, of declining these appointments in order that an immediate financial return may be secured. It is true there are not at present hospital appointments for all, but sooner or later, with perhaps some adjustment of the period to be served, this want will be remedied, and I venture to hope that the time will come when a resident appointment will be found to be an essential feature of the training of the doctor. Having regard to its educational value, the period of the student's career at which the appointment is held is, I believe, a matter of great importance. During the war, when every available practitioner was called upon to serve, our hospitals had to fall back upon students to fill the posts usually held by qualified doctors, and it was the common experience that in the case of many students who were appointed before they had reached a certain stage in their professional training to fill these gaps the appointment and all that it entailed was not only valueless but actually harmful. But coming in due course at the end of the curriculum, and after the final examination, the experience is most useful, and cannot fail to produce a lasting impression upon the future career.

QUALITIES NEEDED FOR SUCCESS IN PRACTICE.

Whilst urging thus strongly the importance of post-graduate training I must not overlook the claims of the student to whose work, training, and examinations I may be permitted to make brief reference. I have already hinted that of the many who elect to study medicine there are some who are quite unsuitable, and who would be well advised to try some other walk in life. This I admit raises a very difficult question, and it is one to which hitherto vaginal examination with imperfectly cleansed fingers is fraught with danger, every forceps delivery is a potential source of sepsis either because the forceps are not used under aseptic conditions, or because lacerations may be caused which allow the entry of infection. Thus in 1920, 3942 women died and a much larger number were injured, many of them permanently, from causes which are almost entirely avoidable. It is a matter of common knowledge that a large proportion of the patients in gynæcological out-patient departments seek advice because of the effects of bad midwifery, and that much of the chronic ill-health from which so many working-class mothers suffer may be traced to the same cause. Such facts are a grave commentary upon the standard of midwifery practice in this country. The majority of those women might have been saved suffering and even death if the needful facilities had been available for their treatment and if practitioners of midwifery were better instructed and more alive to their responsibilities.

The Ministry of Health are anxious to do all that is possible to encourage effort to combat this regrettable and unnecessary loss of life and health. Action may be directed —first, (*a*) towards improving the midwifery service in the homes of the people by ensuring more skilled and careful professional attendance, and (*b*) by providing a supply of sterile equipment and appliances for those who cannot afford to pay for them. Secondly, it is also essential to increase the accommodation in maternity homes and hospitals so that all mothers requiring in-patient treatment may be able to obtain it and may be assured of safe and cleanly methods of delivery, while the obstetrician may be in a position to practise any operative measures which are needed unhampered by the difficulties inevitable in the private house. Thirdly, there is the need for a study of the physiology of normal pregnancy, labour, and lactation, our knowledge of which is far from complete, and this was one of the reasons for the establishment of such an institution as the Kaiserin Augusta Victoria-Haus in Berlin as long ago as 1909. A sufficient number of maternity beds, therefore, is one of the most important requirements of a complete midwifery service.

Until recent years almost the only accommodation besides the maternity hospitals in some of the large towns was to be found in Poor-law institutions and in private nursing homes. Maternity hospitals were unable to admit even all cases from their own districts, and many parts of the country were entirely unprovided.

Some Advantages of Small Homes.

After careful consideration the Ministry decided to encourage the establishment of maternity homes of, say, 10–20 beds, for normal and slightly abnormal cases rather than hospitals for larger numbers, fully equipped to deal with any complications. First, because of the initial expense involved; secondly, existing maternity hospitals already deal with many of the seriously abnormal cases; for the rest, a physiological rather than a pathological atmosphere should be the aim, and is more acceptable to the women. Further, it is desirable that maternity beds shall be accessible from the homes of the women they serve.[2]

General Requirements.

Maternity hospital construction is in a more or less experimental stage, but some general guidance being immediately necessary a Memorandum[3] was issued in January, 1920, dealing with construction, equipment, and organisation, an endeavour being made to simplify the design and eliminate redundance and extravagance while insisting upon the minimum requirements for safety. The Memorandum was concerned mainly with new buildings, but the recommendations were intended to apply as far as practicable to the alteration of existing houses.

The maternity home should contain wards for lying-in patients (some of which may suitably be one, two or three bed wards), one, or preferably two, labour-rooms, a prematernity ward, a duty-room, a receiving-room with bathroom, properly fitted sink-rooms, a nursery, a laundry, and separation or isolation-rooms, in addition to staff quarters. It should have an ample supply of hot water; there should be central heating and electric lighting; not less than 15–20 beds should be provided when possible, as smaller homes are more costly to maintain efficiently in proportion to the work done.

Patients are usually delivered by midwives, medical aid being called in as and when necessary. It is often convenient to arrange that several local medical practitioners shall be invited to deal with emergencies, but it is important that the clinical supervision of the home as a whole shall be vested in one medical officer, who will be responsible for the general standard of the midwifery practised and for the admission and discharge of patients. Whenever practicable a consultant medical officer should also be appointed. The matron should be a trained nurse as well as an experienced midwife, and even in a small home should have at least one fully trained assistant. It is difficult to lay down a precise rule as to the number of additional staff required, but there should not be less than one nurse or pupil for every three mothers and babies by day and for 8–10 mothers at night, in addition to labour room and special staff.

[Dr. Campbell then gave as examples of typical arrangements of well-organised maternity homes particulars of the Queen Mary's Maternity Home, Hampstead; St. Mary's Hostel, Croydon; Lewisham Municipal Maternity Home; and the Sunderland Maternity Home.]

Separate provision for antenatal care is unfortunately rare, though expectant mothers are sometimes admitted to the ordinary wards of a maternity home. A pre-maternity home was established in Liverpool in 1915 in connexion with the Maternity Hospital; the home contains 12 beds for pre- and post-natal care. It is in charge of a trained nurse-midwife and pupils from the hospital spend six weeks of their training there. The hospital is thus relieved of patients for whom it is not primarily intended, and the pupils gain much valuable experience of ante-natal hygiene.

As a rule patients suffering from venereal disease cannot be admitted to maternity homes because of the difficulty of effective separation. In some cases, however, special provision has been arranged. For example, in the Sunderland Maternity Home, already mentioned, in the Endsleigh Street Maternity Home, London (*five beds and a labour ward*), and in the Municipal Maternity Home recently opened in Battersea (*five beds and a labour ward*).

Limitations of Adapted Buildings.

It is relatively simple to plan a new building, but it has been found extremely difficult to adapt satisfactorily and cheaply the large mansion which is usually suggested as an ideal maternity home. The dangers of incompletely equipped maternity homes are frequently overlooked, and with every desire to make no unreasonable demands the Ministry have then the ungrateful task of criticising and apparently discouraging schemes which have been passed locally as satisfactory.[4]

One of the chief difficulties is to secure separation accommodation for cases of puerperal sepsis. There should be at least one single room reserved for cases suspected of infection. Although one can insist on an infected woman being removed from a maternity home for the sake of the remaining patients, it is no easy matter to find a place to send her where she will be skilfully treated. The alternatives are usually the workhouse or a fever hospital, neither of which is satisfactory for the reception of a patient dangerously ill and needing advice and treatment by an obstetrician. In view of the high mortality from puerperal infection this is a matter which demands the early and careful consideration of local authorities. The following suggestion offers a satisfactory solution in one case. It is proposed that a small ward in the local fever hospital shall be set aside for septic cases from the neighbouring maternity home and the district round, but that the maternity home and not the fever hospital shall be responsible for the nursing and treatment of all patients admitted.

Results.

In order to check the results obtained in maternity homes, the Ministry require immediate notification of all maternal deaths which occur, and an annual return showing the results of the work as a whole. The following table summarises returns made by 50 unselected homes for the year 1920 under certain headings, and the figures are of

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[2] The arrangements proposed in Wiltshire may be quoted as illustrating a scheme for providing maternity beds in a rural county where in-patient accommodation is needed for women suffering from the ordinary emergencies of pregnancy and labour, and also for patients living in remote districts where neither doctor nor midwife can be obtained. It is suggested that there shall be five small centres rather than one home for the whole county, three to six beds being subsidised in existing homes or hospitals at Salisbury, Malmesbury, Swindon, Corsham, and Calne. The fact that the beds are associated with other hospital or maternity provision meets the usual objections to the independent two or three bed maternity home which is so difficult to supervise properly and economically.

[3] Memorandum in regard to Maternity Homes and Hospitals, with plans. M.C.W.15.

[4] To take some examples of this: A home was provided containing one ward large enough for three beds and one bedroom for the midwife in charge. There was no labour-room, no sanitary convenience, except in the yard, there was a movable bath in the ward from which water ran off by means of a drain in the floor, there was no means of sterilising dressings, &c. or of separating patients. In another case, besides insufficient staff accommodation, there was no reception-room, no duty-room, no sink-room or hospital sluice, no nursery, no milk larder, no sterilising plant and no separation-room, while the labour-room was small and had no special equipment. The importance of maintaining surgical cleanliness in the labour-room is not always understood. In one home, for instance, the labour-room had papered walls and rugs on the floor; in another, the only hospital sluice was fitted there; in a third it was proposed to utilise it also as an operating theatre for the removal of tonsils and adenoids from school children.

Lumleian Lectures
ON
SOME POINTS IN THE ÆTIOLOGY OF SKIN DISEASES.

Delivered before the Royal College of Physicians of London on March 10th, 15th, and 17th, 1921,

BY ARTHUR WHITFIELD, M.D., F.R.C.P. LOND.,
PHYSICIAN IN CHARGE, SKIN DEPARTMENT, KING'S COLLEGE HOSPITAL.

LECTURE III.*

FOCAL INFECTION.

I NOW turn to what I believe to be one of the most important doctrines of modern medicine—namely, the causation of various symptoms by the absorption of toxin from one or more infected—areas in short, what is known as "focal infection." As in other medical matters, the skin offers a valuable field for the investigation of the correctness of this theory, and provides convincing instances of its correctness in some cases.

INFECTION FROM FOCI IN THE SKIN ITSELF.

A great deal of attention has been paid to the influence of infective foci on the skin, and in most cases the focus has been sought for, and in many located, in some organ other than the skin. As far as my reading has informed me, I think perhaps the fact that the original focus may be in the skin itself has received less attention than it merits.

As an example of what I mean I may instance ordinary pediculosis capitis. As a result of the invasion of the scalp by pediculi it is of course frequently the case that an attack of impetigo contagiosa develops as a secondary infection. In most cases nothing more occurs, but in a certain proportion a further train of symptoms may be observed.

The first sign to be added to those of the simple impetiginous lesion is the eruption of extremely fine miliary papules situated at the orifices of the hair follicles of the sides and back of the neck extending down nearly to the clavicles. These papules appear to be produced by the erection of the hair follicles and are at first only slightly if at all reddened. They may remain in this stage until they subside or they may redden and even become covered with minute vesicles, though this is uncommon. They resemble closely, except as to situation, the papules of lichen scrofulosorum. In some cases the secondary eruption is limited to this, but in others there occurs, after a variable number of days, an acute outbreak all over the chest, abdomen, and shoulders of an annular or figurate erythematous eruption with secondary scaling, such as would be classed in the ordinary way as a circinate seborrhœic eczema of the trunk.

If the pediculosis and impetigo of the scalp be efficiently treated and the trunk left alone, the whole of the eruption disappears speedily. In such cases I think the generalised eruption may be fairly assumed to be due to the absorption of toxin from the streptococcal infection of the scalp. A similar train of symptoms may develop in scabies, and frequently does so, but owing to the widespread diffusion of the primary disease, the separation of the primary and secondary eruption is much more difficult and less convincing.

I remember many years ago being fairly trapped by the secondary toxic eruption in two cases. This occurred when the seborrhœic eczema of Unna was in the height of fashion, and many of us were on the look-out for instances of definite contagion.

Two brothers attended my out-patient department showing very fine examples of "seborrhœic eczema" on the trunk and limbs. The history was that one had first developed it on the chest and then the second had begun to come out in a similar eruption a fortnight later. Being somewhat under the influence of the parasitic-contagious theory of seborrhœic eczema, I regarded these cases as good examples of its contagious nature. Later in the same afternoon I saw a girl suffering from ordinary typical scabies without any secondary eruption of note. She volunteered the fact that I had just seen her two brothers, and as they had not left the hospital I fetched them back and was somewhat crestfallen to find that their contagious disease was common itch!

It is also not uncommon to see in patients with a patch of so-called varicose eczema, i.e., pyogenic dermatitis, on the leg, the development of an acute outbreak on the arms and trunk of a papulo-vesicular eczema which will readily disappear if the original patch be brought under control. I regard all these as instances of intoxication from focal infection, but I confess that I am not certain as to how far they may be due to bacterial poisoning and how far to the absorption of the patient's own tissue products, to which I have already referred in the cases of extensive ecchymosis. Unfortunately, with the methods of investigation at present in our hands, I see no way of separating these two factors.

In this connexion I may draw attention to a recent paper by Prof. Bruno Bloch[19] of Zurich, who has for many years been studying the constitutional effects of trichophytic invasion of the skin. Prof. Bloch points out that this effect varies with the depth of the inflammation caused by the fungus. The ectothrix class is that which gives rise to the greatest degree of constitutional disturbance; the actual toxin present is not specific for one variety of fungus, but is common to all the trichophytons, the microsporons and the favus fungi, the achorions. He therefore proposes for this common toxin the name of "mycine." Resulting from the absorption of this toxin, either naturally in the course of the disease, or from an experimental and therapeutic injection of vaccine prepared from cultures of the fungi, he and others have observed eruptions on distant parts of the body. A number of observations by different investigators now exist in which the appearance has been noted of an eruption closely resembling that of lichen scrofulosorum. Cases have also been observed in which the eruption has been squamous in character, resembling that of "seborrhœic eczema."

It is interesting to compare this with what I have just described in connexion with streptococcic impetigo. Also, seven cases in all have been collected by different observers in which apparent characteristic erythema nodosum has appeared as the result of deep trichophytic infection, and, lastly, scarlatiniform erythema and erythema exsudativum multiforme have been seen.

The type of eczematous eruption which is, in my opinion, most typically the result of focal infection is that which I term for convenience "flexural eczema." In this case the eruption has its main seats in the axillæ, the groins, the umbilicus, the submammary regions in women, the flexures of the knees and elbows, and the base of the neck. In most of my cases the focus has not been situated in the skin itself, but it may be.

A middle-aged lady consulted me for a widespread and severe eczematous eruption with the above distribution. On inquiry I found that she had scratched her neck with a pin or the metal support of a collar, and the small wound had festered, and about ten days later the generalised eruption broke out and deprived her of rest at night. The whole of the eruption yielded at once when the original pyogenic patch was efficiently treated, and for the subsequent several months during which I heard of her showed no tendency to recur.

As I have already said, I do not find that the focus of infection is nearly always in the skin itself. On the contrary, I think it is more often elsewhere. The gums, teeth, tonsils, and accessory sinuses of the nose are frequent offenders, less frequently in my experience the uterus, bladder, and urethra.

ORAL SEPSIS.

Dealing first with the gums and teeth, I have notes of very many cases of the most diverse eruptions which I consider to be proved to be due to chronic

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* and II. appeared in THE LANCET of July 9th and
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An Address
ON
ACCURACY IN DIAGNOSIS.

Being the concluding part of the Presidential Address at the Annual Meeting of the British Medical Association delivered on July 20th, 1921,

BY DAVID DRUMMOND, C.B.E., M.A.,
M.D. DUB., D.C.L. DURH.,
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REVIEWING forty busy years of consulting practice Prof. Drummond set himself to answer the question: Are we satisfied with things as they are, and, if not, in what manner can they be improved? The first part of his address dealt critically with the position now occupied by the medical profession in the scheme of national polity. Prof. Drummond then turned to the room for improvement in the quality of service given.

In thus suggesting that there is room for improvement in our service, we must remember we are dealing with knowledge in the practice of medicine and surgery, which it is the aim of all workers, in the interests of all, to raise to the highest possible level of exactness. This is a design to which every practitioner could under favourable circumstances contribute, though at present he is heavily handicapped, as he has to live and work in the most depressing atmosphere of constant doubt—of problems unanswered, of opportunities lost. This wail, for it is a wail, will probably suggest to the minds of all here one of the chief difficulties in the way of progress, and will, I hope, elicit a sympathetic interest in the problem—How are these difficulties to be overcome?

POST-MORTEM VERIFICATION.

It may perhaps be a surprise to many, but not, I suspect, to the more thoughtful section of the public, that the diagnosis in many cases (very many, I am afraid) is only a matter of opinion, which must remain in doubt unless cleared up by an autopsy, and in making this statement it will not, I trust, be thought that I am casting blame upon the doctor; far from it, for the marvel is that his opinion is so often correct, considering the difficulties with which his path is beset in his endeavour to contribute his quota to the common cause. I have alluded to this state of matters as an atmosphere of doubt; it is more so, it is in the highest degree discouraging and is calculated to kill the scientific spirit with which it is our aim at college to inspire all our students; and in claiming the right of the doctor to follow up the lines of his training, I am urging a change in the interests of all; in the interests of scientific medicine and surgery, and particularly in the interests of his patients.

I found myself recently discussing the present status of the medical practitioner with a prominent member of our profession, a man of high standing and wide experience as a general practitioner, and the conversation inclined towards the question of education and training of the doctor, and I asked him what in his opinion could be done to improve his scientific and professional standing. His reply was definite and uncompromising. "The one thing above all others," he said, "calculated to elevate and generally to improve the standing of the general practitioner is opportunity for post-mortem verification or the contrary of his expressed opinion." He added, "We shall never be any better until we are entitled to claim, with the knowledge that we shall not be denied, a post-mortem examination." I was much impressed by this view of the matter, coming as it did from one whose knowledge and experience of general practice could not fail to make clear to him the revolutionary character of the suggestion, and how inconvenient it might be to have to acknowledge our mistakes, for, indeed, the opinion my friend expressed coincided fully with my own. Revolutionary it certainly would be; but what an enormous gain to have our doubts set at rest; and it is not too much to hope that before very long both the public and the profession will be educated up to feel that truth above all things must prevail. Could we but engender amongst our members the love of truth as the fundamental essence of our professional life and the mainspring of our activities, and could we also inspire eagerness to search after and courage to proclaim it, what a noble profession would be ours! I believe the desire to rise and live up to our loftiest professional aims is there; but we are unfortunately trammelled and moulded by public opinion and prejudice and the requirements imposed upon us by the State. The very loftiness of the estimate which is entertained of the doctor is his undoing, for he is set tasks which he cannot perform; he is expected to make bricks without straw, and not infrequently we assume to ourselves personally the public estimation of our calling, though this I believe in the main to be a failing of youth.

ITS PLACE IN POST-GRADUATE TRAINING.

In urging the importance, nay more, the necessity for greater facilities for post-mortem investigation in clearing up doubts which must arise in the mind of the doctor in many cases, I am indicating the most important step towards a rational scheme of post-graduate training. It is, perhaps, unnecessary to insist upon the enormous advantage it would be were post-mortem examinations universal, for all, save those who never make them, are prepared to admit their educational value, and I have little doubt that the opposition to a movement in this direction, begotten of prejudice in the public mind, would soon vanish were the incalculable service to the science of medicine made sufficiently clear. I have said that medicine has advanced in every direction, but I regret to have to admit that the advance along certain diagnostic paths is not as rapid as we could wish, and not nearly so rapid as it would be were post-mortem examinations more frequent; and I believe I am stating what is correct when I say that in private practice they are not even so frequent as they were in my earlier days. It is true that in a few of our large hospitals throughout the country, in the wards of which students of medicine enjoy the inestimable privilege of clinical study, the enlightened committee of management now sanctions an autopsy in every case under fitting limitations, but in the majority of our clinical hospitals the old restrictions still obtain and the study of pathology is still hampered as of old to the great disadvantage of the medical school and, if they but knew, to the public themselves.

Did anyone question the service rendered diagnosis by the substitution of the unclouded prospect of certainty for the befogged atmosphere of uncertainty—the educational value of exact diagnosis in a doubtful case—let him ask himself what he has learnt from the modern surgeon's exploratory operations, and he will candidly admit that nearly all he knows of abdominal diagnosis is the outcome of the lessons he has learnt in consequence of the ease and impunity with which we can now "open and see." It is the examination *ante* which is often effectual in averting the *post*.

We all recognise the value of post-graduate teaching in connexion with the Fellowship of Medicine and Post-Graduate Association, and similar courses of study instituted in various centres, and no doubt many take advantage of these opportunities, but after all they are only supplementary to the curriculum of the student and cannot take the place of the natural progress and ever-ripening experience, the outcome of facilities which I would like every practitioner to be able to claim as a right, and for which I have little doubt sooner or later the State will make provision in the interests of medical science and the health of the nation.

ACCURATE DIAGNOSIS IN DAILY WORK.

The importance of accuracy in diagnosis cannot be overstated, and it is unnecessary to insist upon the value of the autopsy in promoting it as well as in disease to be attributed to disease of the tonsils appears to me due to the absence of any very definite clinical appearance of the tonsils in some cases.

To the recent publication by Dr. Barber on the association of infection of the tonsil with alopecia areata, Mr. Zamora has appended a short article on the signs of tonsillar infection. I confess that this article left me with a sense of depression, as it seemed to me that almost the only certain way of diagnosing tonsillar infection was to enucleate the organ and examine the deeper parts bacteriologically. Nevertheless, short of this there are, of course, many cases in which examination carried out with a high degree of skill will reveal perfectly certain disease.

The types of disease that I have chiefly seen associated with tonsillar infection are lupus erythematosus and "flexural eczema." In carrying out my investigations I have differed slightly from Dr. Barber, who has, I think, generally had a streptococcic vaccine prepared from the tonsil and used it at once. I have preferred, after the enucleation of the tonsil and the preparation of the vaccine, to wait and observe the change that takes place from the mere abolition of the infective focus before using the vaccine. I have done this in order to avoid being misled by the improvement which follows in so many diseases after the injection of a non-specific vaccine, and is termed "protein shock."

My experience has led me to be confident of the direct effect of infected tonsils, with or without adenoids, in the production of certain cases of eczema and lupus erythematosus.

A child aged two was brought to me with a severe eczema of the "flexural" type. The family history was about as bad as it could be, asthma and eczema occurring very frequently on one side and eczema on the other. The child herself was liable to an irritable cough and was suspected of being in the early stages of asthma. The eczema came on in severe attacks, but did not clear up entirely in the periods of quiescence. The highly intelligent nurse told me in the course of my examination that the attacks of eczema were invariably preceded by a period of four or five days during which the child snored loudly at night and had difficulty in breathing during the day. On examination of the throat it was found that the tonsils met in the middle and appeared to be as large as walnuts. I advised enucleation and this was done in my presence, a large patch of adenoids being removed at the same time. I secured a culture of streptococcus pyogenes from the depth of the tonsils and prepared a vaccine in case of need, though as a matter of fact it was never used. The only local treatment given was lotio nigra, yet the eczema all disappeared within a few weeks, and the cough and difficulty of breathing ceased. Two years later I heard that she was still well, though her skin remained a little more sensitive to climatic variations than that of most children.

Before the operation this child had had very expert local treatment, and a course of inoculations with organisms cultivated from the skin. No benefit had resulted from these forms of treatment, and scarcely any local measures were necessary after the pharynx was cleared. It will be noted that the patient was very young, and the disease had consequently not been running for a very long time. I believe this to be important, and that if the patient is left with the focus until adult life cure will be problematical, though improvement seems almost always to occur.

I have now under observation from time to time a girl of about 20 who has suffered for very many years from an eruption which is, I think, identical with what the French call "prurigo à papules grosses." The eruption comes up as lenticular papules, almost entirely confined to the arms and legs, most profuse on the forearms and below the knees. These papules are maddeningly irritable, and she only obtains relief by decapitating them with her nails. The skin of the affected region is, in consequence, somewhat pitted and very harsh. When she consulted me I advised that her large and very foul tonsils should be removed, more especially as there was a history of repeated tonsillitis. This was done in King's College Hospital, and she had two years of complete immunity from her trouble. She then came again with a milder attack of the same thing. I found on inquiry that she had had several infected teeth removed and the relapse occurred soon afterwards. I hazarded the guess that if the mouth were put into thorough order the rela[illegible] die away again, and this has occurred almost [illegible] any little illness such as a severe cold or gastric upset will cause a slight and temporary return of the old trouble. My idea is that the many years of intoxication of the skin have so weakened its resistance that it will be only after a very long time, if at all, that it can return completely to the normal.

As regards the connexion of lupus erythematosus with infected tonsils, the following appears to me to be a convincing case.

A girl aged 17 was brought to me for several patches of lupus erythematosus of the congestive type, with some scaling and atrophy. There was present in addition to the lupus erythematosus some septic dermatitis of the nares. The history showed that her father had died of tuberculosis of the lungs and larynx, a fact that caused me to be very suspicious that the girl herself might be suffering from latent tuberculosis. The tonsils had been guillotined, but not enucleated, in childhood, and showed to my eye nothing abnormal. The dermatitis of the nares led me to suspect trouble within the nose, and she was therefore taken to a first-class rhinologist, who reported nothing wrong within the nose or in the pharynx. She was then thoroughly examined by an expert physician with a view to finding or excluding tubercle. He reported that she was free from evidence of active tubercle, but said that there was pus in one tonsil. The tonsils were accordingly enucleated, nearly a drachm of pus being found in one of them, and from this pus a vaccine of streptococcus pyogenes was made, though never used. In two months' time the lupus erythematosus had disappeared, and she remained clear for nine months. At the end of this time she contracted measles, and a little while after this a mild return of the eruption occurred, which I am hoping will disappear spontaneously.

The influence of acute specific fevers on lupus erythematosus is familiar to me, and I remember well one man who had so slight a lesion on his nose that I could only make a tentative diagnosis. I was taken, however, later to see this patient while suffering from enteric fever, and found that the effect of this was to bring out a widespread attack of lupus erythematosus over the nose, both cheeks, and ears. This subsided after his convalescence from the enteric fever.

This effect of acute illnesses on lupus erythematosus is, I think, also interesting because it is the converse of what is generally observed in eczema and sometimes in psoriasis. Certainly, in the former an acute febrile illness is generally accompanied by an amelioration in, if not the disappearance of, the eczema. So much so is this the case that it is well known to the lay public, and they carry it further and state that while they have the eczema they do not suffer from other troubles, and when their eczema is in abeyance joint pains and general malaise occur.

As to the right position of cause and effect in this I do not wish to be dogmatic, but from careful observation I am inclined to think in most instances the illness is the cause of the fading of the eruption and that the fading of the eruption is not the cause of the illness. Others, among whom may be mentioned Dr. Brocq of Paris, hold the opposite view, and consider it dangerous in some cases to cure a widespread eczema too rapidly.

With regard to this view I am in complete agreement with Sir Malcolm Morris in finding myself unable "to calm down abruptly" cases of furious eczema. In fact it is only in those instances where I have been able to detect more or less accurately the causal agency and to remove it that any of my cases of severe eczema have got well abruptly.

NEUROSIS AND SKIN DISEASE.

The last ætiological factor to which I shall allude is the influence of the nervous system on skin diseases. This is a matter of such intense difficulty that I approach it with considerable misgiving. I think there is no doubt that in many instances the prejudices of the observer have led to the drawing of unjustifiable conclusions, and that slipshod clinical examination has resulted in the attributing of eruptions to the nervous system when they are plainly due to another cause. On more than one occasion I have seen that much mistaken disease, scabies, attributed to nervous shock.

The frequently mistaken attribution of skin disease to obscure defects of the brain summed up a attention has been given, nor can it very well be discussed in a public address. I pass it by, therefore, with the observation that it is a question that deserves our attention, and I would particularly commend to the authorities the question of preliminary general education of the doctor.

Success in the profession of medicine, by which I mean the proper fulfilment of the duties of the practitioner, is attained by the exercise of certain faculties which are capable of development. Among these gifts stands out prominently the faculty of taking notice. This gift—the power to observe—is in many people, until developed by special training, entirely in suspension, but there is no endowment of which the complex mental organisation of man is composed more capable of development than this. A party of grouse shooters, when tramping through the heather between the rows of butts, made a search for white heather, and the host was the only member of the party who succeeded in gathering the white sprigs. He was invited to explain his success. "Oh," he remarked, "you know I am a manufacturer, and I have trained myself to observe flaws in certain goods when passing rapidly through the galleries." And in like manner, I maintain, may the faculty be trained in the case of the students. The training could go on *pari passu* with the teaching of physics, chemistry, anatomy, and physiology, in connexion with which courses the habit of observing accurately might be acquired, to be further developed in the out-patient department, wards, and post-mortem room. The opportunity to promote this kind of training will increase in the case of anatomy and physiology when these subjects are brought into closer touch with clinical work, as recommended by Keith, Berry, Vincent, Lewis, and others, the importance of whose suggestions, it is to be hoped, will be recognised and put into universal practice. These have for their aim the realisation of the vision of the prophet Ezekiel—to make the dry bones to live; the giving of a vital interest to subjects at present dead, at least in the mind of the average student; the bringing into prominence from the outset their practical utility, and thereby furnishing a living continuity between the earlier and the later subjects of the curriculum.

DIAGNOSIS OF EARLY DISEASE.

The question of special instruction of our students in the diagnosis of early disease is intimately associated with this subject. It is recognised by all that the earlier a diagnosis is made the better for the patient, and notwithstanding this self-evident truth it is remarkable how little attention has been given to the training of students in the recognition of the earliest indications of disease. The wards are, as a rule, filled with examples of advanced disease, and the subjects selected for clinical lectures and demonstrations are usually conditions in which history and physical signs are as far as possible characteristic and strongly marked. And, of course, this is almost inevitable, for the student has but a short two years into which to crowd his clinical training, and he is naturally attracted by outstanding and obvious pathological changes in which the signs and symptoms are more or less gross and appeal to his untrained senses. It is evident that something must be done to help forward the student's training in this direction. At present, as things are, his opportunities are derived from attendance in the out-patient department of the hospital, where as a rule a large number of patients have to be seen, and the teacher is a member of the junior staff, and is not infrequently only just qualified. I have no wish to under-estimate the value of the out-patient teaching, but the diagnosis of incipient disease is at once the most difficult and the most important problem the doctor has to face, and yet it must be admitted that hitherto but little attention has been given to this phase of clinical medicine. It is generally supposed that the art of early diagnosis will be acquired later in the course of practice, but it is then too late, for in panel practice there is, I fear, contrary to the expectations of the authors of the present system, no such thing as early diagnosis. The truth is there is no time to work out an accurate diagnosis in an early case in a crowded consulting room in panel practice, and there is a danger of the aptitude becoming a lost art. For, on the one hand, the doctor has not the necessary time to devote to a careful examination, and, on the other, the tendency of the present day is to ignore physical signs and to rely altogether upon laboratory methods. I would, therefore, earnestly plead for some alteration in our system that will give due prominence to training in the methods of early diagnosis.

It is obvious that a thoroughly serviceable knowledge of the functions and structure of the human body in health and the possession of well-trained senses—the ability to observe—are essential to successful diagnosis. Nevertheless, I believe I am correct when I state that comparatively few practitioners are familiar with the range of the limits of health as signified by signs evident to the trained senses. For instance, to take but one example, failure to recognise the fact that our stethoscopes employed in the examination of chests (heart and lungs) detect the widest possible differences in normal individuals has been the source of much error in practice. The truth of this assertion was made apparent in connexion with recruiting examinations during the war, when thousands of perfectly healthy young men were graded low, or rejected altogether, on account of the erroneous interpretation of some physical sign. And, in the same way, everyday life assurance problems are settled incorrectly on similar grounds. The fact is, when we recognise that a comprehensive knowledge of the functions of man, together with the indications of their working, is necessary to enable us to detect abnormalities, it is plain that the normal state demands our very special attention, for we are dealing with what is at once the most perfect and the most faulty machine of creation.

THE WORKING OF THE HUMAN MACHINE.

Students in future will be taught the working of this machine in such a way as will make it more easy for them to appraise at their proper value departures from the normal; and it will be the aim of the teacher to render his teaching more vivid and to demonstrate as far as possible its bearing upon clinical problems.

I am fully aware that there are objections to this attempt to abolish the line of demarcation between pure science and practical application, and that from a university point of view, on the ground that the foundations of applied science are ever extending, it would be a mistake to do anything that would tend to limit the range of the student's studies; but the patient must be our first consideration, and it cannot be denied that the practical side of the curriculum is hazardously short.

I must not conclude this dream of progress without a reference to the examination test which all students of medicine must pass before their names are inscribed upon the Official Register. For long I have questioned the wisdom of the present system, which wholly neglects to take into account the candidate's record as a student. He is known as a number, his anonymity is preserved as far as possible throughout the examination, and no notice is taken of the results of class, prize, or scholarship examinations, or of what should be the most valuable evidence of teachers of industry and capacity during his period of training; indeed, as far as I know, except in the case of one or two universities, there is no official record kept. The examination is not competitive, and the object of the examining board, composed of home or internal and external examiners, is to impose a test that will safeguard the public. But as such a test it is necessarily very imperfect, since it takes cognizance only of the present, ignores the past, and makes no attempt to anticipate the future. I welcome, therefore, the support and recommendation of the General Medical Council in this direction.

I repeated the procedure with improvement. It is not clear in what way the beneficial effect is produced since, as already stated, there does not seem to be any notable abnormality present either in the pressure or quality of the fluid, but it would seem to indicate some obscure relationship between lichen planus and the central nervous system.

These are the chief diseases that I have observed in relationship to the psychical state of the nervous system, and in the case of lichen planus there seems to be some relationship to the organic side although it is obscure. There are, of course, many other diseases, such as glossy skin, herpes zoster, and probably erythromelalgia which are connected with inflammatory disease of the peripheral nerves and ganglia. With these I do not propose to deal. There is, however, another group to which I should like shortly to refer.

REFLEX IRRITATION.

In 1897 Dr. Pernet [25] published a case of relapsing herpes zoster of the right side, once on the body and three times on the neck and head. In this case he suggested ocular strain as a possible cause, and the oculist to whom he sent her found hypermetropic astigmatism. In 1903 Dr. Pernet referred to this case again and reported that she had remained free since the eyes had been corrected. It is noteworthy that in this report Dr. Pernet stated that he thought some cases of alopecia areata might turn out to be associated with eyestrain. In 1902, a year previous to Dr. Pernet's second communication, Jacquet [26] published a couple of long articles on alopecia areata, and claimed that a great number of cases in children were associated with dental irritation and were produced reflexly. Curiously enough he noted that enlarged tonsils and adenitis of the neck were also frequently met with, thereby anticipating Dr. Barber, though I think he implied that the tonsils acted rather by nerve irritation than as sources of septic intoxication.

This theory of reflex irritation set us all to work to make control observations. Most observers express great doubt as to the validity of the theory, but I myself, though uncertain, have thought that there was some evidence in its favour, as I have already stated in an earlier part of these lectures. In 1904 [27] I published a series of cases of alopecia areata associated very definitely with eyestrain and headache. My cases had been extremely resistant to treatment by well-known experts before they came to me. With the exception of the prescribing of glasses no treatment was given and the results were in all cases striking. At the time I thought I had hit on the cause of the disease, but I soon found out that these cases were quite uncommon. In only one case with this ætiology was the age below 20, and in nearly all the patients were in the neighbourhood of 40. In every case where the relationship was apparently established by the resulting cure on correction of the error of refraction, headache was a marked symptom. Since that time I have seen a fair number of cases in which I think that the wearing of glasses and the rapid recovery of the hair has offered good evidence of this relationship, but as I have said it is certainly not the commonest cause, and I am not certain that it accounts for any of the juvenile cases—i.e., those between 7 and 12.

I may conclude these remarks with an apology for the somewhat discursive and unsystematic treatment of my subject. Some points, however, there are that I have endeavoured to bring out in these lectures:—

First, that a careful examination of the clinical signs on the skin is a necessary prelude to the forming of a correct opinion as to the ætiology of the eruption, since without this wild theories will be substituted for real knowledge.

Secondly, that in some of the recent work our attention has been directed to a greater extent towards the working out of the whole physical condition of the patient, and dermatology has therefore been brought into a closer relationship with general medi

To these I may add a third—namely, that this deeper insight which we have begun to gain into the true ætiology of disease as it affects the skin has been already in many cases the means of securing a greater efficiency in the treatment of our patients.

Finally, I should like to thank those of my colleagues in the specialty who have afforded me a frank discussion of ætiological difficulties, and especially would I express my gratitude to Dr. G. A. Harrison, lecturer on biochemistry at King's College Hospital, for much valuable help.

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A CASE OF
PRIMARY TUMOUR OF THE PLEURA.

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PRIMARY tumours of the pleura are interesting by reason of their rarity and difficulty of diagnosis. The case here described has been thought worth recording in that the evidence of its primary nature is clearer than in many recorded cases, the patient dying at a comparatively early stage, before metastases in other organs had formed.

History.

J. H. C., a well-developed, well-nourished man, was admitted to the Royal Southern Hospital under Dr. C. J. MacAlister on Jan. 29th, 1921. He gave his age as 38 years. He said that for about five weeks he had been feeling "out of sorts," had a slight cough, and suffered from shortness of breath; the breathlessness had gradually increased until he was unable to go about his work (publican), and was compelled to sit in a chair all day. He had no pain in any part of his body, but for a fortnight he had been aware of a tender spot on his breast bone.

On admission patient had a temperature of 98·4° F.; pulse 104 per minute, respiration 28 per minute; slightly cyanosed. Veins in neck dilated and prominent, but not pulsating. He had a slight cough, amounting to little more than "clearing his throat," and his voice was hoarse, but he said it had always been so. There was a prominence on the chest just below the angle of the sternum, and at the left side of this prominence, at the junction of the third costal cartilage with the sternum, there was a point of great tenderness. The surrounding area was not tender. The other signs were those of a large right-sided thoracic effusion—dulness on percussion over the whole of the right side of the chest and extending in front across to the left border of the sternum above the area of cardiac dullness; no Grocco's triangle; vocal fremitus absent on the right side; breath sounds absent anteriorly but present posteriorly, bronchial in type, and weak; vocal resonance much less on the right side than on the left. The apex beat was displaced outwards, being situated 2 inches outside the nipple line and in the sixth interspace; heart sounds normal. There was no other visible or palpable pulsation in the chest. Measurement showed that the two sides of the chest were equal. The lower border of the liver could be felt 2 inches below the right costal margin in the nipple line; the organ was of normal consistence, smooth, and not tender; the abdomen was otherwise normal. The pulse was small, soft, regular, and equal in the two wrists; the vessel wall was not palpable. The urine was normal—sp. gr. 1020 acid, no albumin or sugar. No enlarged glands were to be made out anywhere in the body. The pupils were equal and reacted to light and accommodation.

Progress.

As there were all the clinical signs of fluid in the right side of the chest and patient was in need of early relief, a infective periodontitis. In every case I have tried to survey the position critically before assuming the direct connexion. Oral sepsis is so common and the evil effects ascribed to it so multifarious that one naturally acquires a feeling of mistrust, especially since one so frequently sees terrible mouths associated with otherwise apparently faultless health. Also I have a vivid memory of one lady who was treated from June to October for what was obvious scabies by the inoculation of a vaccine made from her suspected gums.

The postulates that I have laid down for myself have therefore been the following: (1) that the skin disease shall be either chronic or frequently recurring; (2) that after a thorough examination no other cause shall be found; (3) that the usual methods of treatment shall be found unavailing; (4) that appropriate treatment of the teeth and gums shall be followed by cure or at least marked improvement.

The cases which have complied with these tests have belonged either to the group containing purpura, erythema multiforme, and lupus erythematosus, or have been forms of eczematous dermatitis. As regards the latter I believe Dr. Barber considers that a certain type of eczematous dermatitis of the arms showing large, chronic, and well-defined patches is characteristic of chronic infective periodontitis.

The first case in which my attention was drawn to the possible connexion between disease of the skin and that of the gums occurred in my practice 13 years ago.

This was the case of a lady who suffered from lupus erythematosus in small indolent patches on the face. She was under my care for the face, and under Mr. J. G. Turner for pyorrhœa. The patches yielded rather satisfactorily to local treatment, but fresh ones continually appeared. It was then noticed that fresh exacerbations invariably occurred about two days after local treatment had been applied to the teeth. Unfortunately I had no opportunity of observing the final result of the treatment of the teeth, as I lost sight of the patient.

Since then I have seen a fair number of such cases, and some at least have got well in a comparatively short time after wholesale extraction has been performed.

As regards the erythema multiforme group the following is a typical case.

A gentleman aged 70 years consulted me for a nodular erythema, somewhat resembling chilblains, on the hands. The duration of the eruption was two years, and although it had varied in severity the hands had never been clear during this period. After examining him carefully I found what I thought was pyorrhœa of several teeth, although he told me that his dentist had assured him that his mouth was clear. I ordered him quinine in high doses, and suggested that he should obtain a further dental opinion and if necessary submit to extraction of the unhealthy teeth. A month later I heard from him that the quinine had apparently caused the entire disappearance of the eruption in ten days, but that it had returned, was not further controlled by the quinine, and he was therefore going to take my advice about his teeth. I did not see him again, but was told by the dental surgeon whom he had consulted that many tooth sockets were heavily infected, and that after numerous extractions the erythema had entirely disappeared. I therefore wrote to the patient later on asking him whether he was in reality quite well, and whether he was confident that his recovery was entirely due to the dental treatment. I received a somewhat enthusiastic reply stating that he had entirely recovered, but that at first he had been somewhat depressed as the early result of treatment was to make his hands distinctly worse, and that an indurated lump had appeared in the muscle of the right shoulder. All these symptoms had, however, slowly disappeared, and at the time of writing he was quite clear and had been so for a considerable period.

Many years ago there was a considerable discussion as to the nature of the disease described by Bazin under the name of erythema induratum scrofulosorum. Bazin's description was applied to the nodes that occurred in the legs of young girls whose occupation involved prolonged standing. The nodes frequently softened and led to obstinate ulceration. The question of the ætiology of this form has been, I think, answered by inoculation experiments and tuberculin injections, and the disease has been proved to be tubercular in nature. Later on, however, I described some cases which occurred in middle-aged rather than young women, in patients who suffered from dyspepsia, "rheumatism," and varicose veins. I pointed out that the nodes in these cases were much more painful; that they seldom, if ever, produced ulcers; that they disappeared fairly quickly with rest in bed; that the patients gave no tuberculin reaction; that inoculation experiments gave negative results; and that the histology differed in some degree from that of the nodes in Bazin's disease. At the time I offered no theory as to their ætiology beyond attaching them to the group of the obscure "chronic rheumatic" type. Looking back on my cases, I remember that they all had bad teeth, and I incline to the view that these should be put into the group of infiltrative erythematous lesions due to focal infections.

An American author, E. D. Chipman[20] has claimed that lichen planus is often associated with and is probably caused by abscesses at the apices of the teeth, but this I have been unable to corroborate. I have seen a goodly number of cases of lichen planus in which careful radiographic examination has failed to reveal any evidence of disease of the sockets, and also I have seen cases in which the eruption has appeared in patients who have been completely edentulous for several years.

Recently Dr. Barber[21] has published a paper in which he urges the claims of alopecia areata to be due to focal sepsis, in some cases pyorrhœa, but more frequently septic tonsils. It is many years now since Jacquet announced his theory that this disease was due to decaying or erupting teeth, a theory difficult to confirm or combat, but one in favour of which I have seen some evidence. Jacquet's idea was, I think, to attribute the disease rather to nerve irritation than to bacterial intoxication, and the series of cases that I published in which alopecia areata of middle age, associated with headache, responded to correction of errors of refraction after resisting other treatment seems to fall into line with Jacquet's theory of nerve irritation.

DENTAL IRRITATION.

Before leaving this question of the teeth there is another group of cases to which I should like to refer, though I do not think these belong to the infective group. The first is the occurrence of a persistent erythematous patch on one cheek and found in children only. The eruption is not common, but I have now seen a considerable number of cases. There is no disturbance of the texture or consistency of the skin, but merely the presence of an ill-defined, circular patch varying in diameter from half an inch to an inch, and of a bright red colour. These patches have proved, in my experience, resistant to treatment, have lasted several months and eventually disappeared without leaving any trace. Most of the patients in whom I have seen the eruptions have been cutting their permanent teeth, and I am inclined to think that it is the canines and first molars that are most often associated with it. Another eruption, possibly allied to this but more acute, is the so-called herpes of the cheek, which is almost limited to children. Herpes febrilis of the lips, nose, and chin is, of course, commonly associated with colds, pneumonia, gastritis, and other acute disorders, but the peculiar discoid group of vesicles in the neighbourhood of the zygomatic process is, as far as my experience goes, limited to children during the second dentition, and I have seen these patches relapse just before the eruption of the permanent molars time after time.

TONSILLAR INFECTION.

The tonsils are naturally regarded by the believers in focal infection as a fruitful cause of skin eruptions. Dr. Barber, I believe, holds the view that lupus erythematosus is definitely due to a chronic streptococcic poisoning most frequently derived from the tonsils or teeth. Without being quite so precise as this, I may say that after many years of investigation I have no doubt that he is right in some cases. One of the difficulties of assessing the amount of skin

The great difficulty in naming a tumour endothelioma is to demonstrate its origin from endothelium, and it is practically impossible, as Du Bray and Rosson[1] point out, to eliminate the supposition that they are carcinomata originating from the lung epithelium, either alveolar or bronchial, as the tumours are never seen when confined purely to pleura and without having extended to some degree into the lung substance. Writers on histology [2] classify endothelium generally as pavement epithelium of mesoblastic origin, and there does not seem to be any satisfactory method of distinguishing this mesoblastic epithelium from the true epi- or hypoblastic type. Miller and Wynn [3] describe a case of endothelioma of the peritoneum in which, using Van Gieson stain, they demonstrate an apparent connexion between the processes of the epithelial-like cells and the fibrils of the stroma, and suggest that this points to a connective tissue origin. Adler [4] thinks they originate from the lining endothelium of the pleura, while Schultz and Eppinger believe that these tumours usually originate in the endothelium of the lymphatic vessels. Bloch[5] collected 63 cases, which he divided into two groups, the larger (47 cases) being endotheliomata, which he considers had origin in the endothelial lining of the pleura, and the smaller (16 cases) being spindle-celled sarcomata from the subjacent connective tissue. Adami [6] calls these tumours mesotheliomata, grouping them with epitheliomata as lining membrane growths, in this case of mesoblastic origin.

In the case described above the uniform growth—almost entirely confined to the pleura, with only slight and superficial involvement of the lung, and the general histological appearance—seem to indicate the endothelial lining cells of the pleura as the primary source, and so, adopting Adami's nomenclature, it would be called a mesothelioma. The general characteristics in this case correspond with most of those recorded, but it seems to be at a rather earlier stage. The age of incidence (Patterson[7]) is said to be usually between 40 and 60; the tumours are slightly more common in males than females, and are more often right-sided. They are frequently associated with profuse blood-stained exudate, although many cases are described in which the pleural cavity is completely obliterated with growth. Extension is usually by direct infiltration rather than by the blood stream.

We are much indebted to Dr. MacAlister for his help and for permission to publish this case, and to Mr. R. Gick for the drawing (Fig. 1) reproduced here.

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A CASE OF
CURE OF DETACHMENT OF RETINA.

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My reasons for publishing a single case in which the complete disappearance of a detachment of the retina has followed a definite line of treatment are, on the one hand, that it is a condition in which almost entire loss of useful sight eventuates in all but a few cases, and, on the other hand, the great variety of forms of treatment advocated, is sufficient testimony to the unsatisfactory nature of the results obtained. My own experience of any form of operative treatment wh [illegible] for its object the evacuation of the sub- [illegible] l has been uniformly discouraging: and many cases are made worse by the procedure. I believe it is the general experience of ophthalmic surgeons, that when a patient has been confined to bed for a month—a course which is generally insisted on as auxiliary to any form of treatment—he usually says his sight is improved, although no alteration in the objective signs is detected, the detachment being as large as before.

There is one form of detachment from which recovery is almost invariable, and another which I believe to be so entirely hopeless that an attempt at treatment is not worth while. The former is that occurring as a complication of renal retinitis. In this condition, if extensive retinal changes are present, and especially in pregnancy cases, it is not rare to find retinal detachment occurring, from the transudation of fluid from the retinal tissues into the subretinal space. I found 13 such cases in two years in the medical wards of St. Bartholomew's Hospital.[1] If the patient survives, these detachments usually disappear quite quickly, and in any case no local treatment is called for. The second group consists of those cases in which it is known from ophthalmoscopic examination that a rent is present in the retina, so that the vitreous is free to invade the subretinal space; I believe such cases hold out no prospect of cure.

Other cases of what one may speak of loosely as primary retinal detachment come within the scope of our treatment, but good so seldom results that the prospect often seems hardly to justify the recommendation of a course of treatment which is somewhat tedious and prolonged.

For the last two years I have nevertheless admitted all such patients who were willing, and have treated them on the following lines. They have been confined to bed, and injections of 5 per cent. sodium chloride and 5 per cent. sodium citrate solutions, with the addition in each case of 4 per cent. novocain, have been injected, by means of a hypodermic syringe, in amounts of about 15 minims, under Tenon's capsule over the site of the detachment. The injections cause some local reaction, so that it is not found practicable to repeat them more often than about every third day—i.e., the sodium chloride is injected one day, and three days later sodium citrate; three days later again sodium chloride, and so on for nine or ten injections.

E. J., aged 44, attended at Moorfields on March 30th, 1921, because the sight of the left eye had failed for two months; he had always been short-sighted. He had a large transparent retinal detachment, and I admitted him for treatment. The following details are abstracted from the notes of Mr. E. F. Wilson, house surgeon at the hospital, by whom the treatment was carried out. "In the left eye is a large myopic complete crescent, and a large transparent retinal detachment down and out." The patient was admitted on April 1st, and a month's treatment on the above lines was carried out; on examination, when he was about again, the detachment had completely disappeared. Mr. Wilson's note of May 10th says: "Left eye quiet, pupil dilated; no detachment can be seen; field shows reduction of scotomatous area; few pigmentary changes down and out; V.R.−6=6/9; V.L.−7 =6/12."

Five of my colleagues were good enough to examine the man for me with the express intent of finding if possible any evidence of retinal detachment, and all were agreed that none was present. I do not claim any great originality for the line of treatment adopted, nor do I fail to appreciate that the condition may recur, but for myself I am encouraged to continue on this definite line of treatment, at a time when I had almost despaired of ever effecting any real good, and it is satisfactory to find justification for holding out some prospect of help for a condition looked upon as almost hopeless.

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[1] Moorfields Eye Hospital Reports, vol. xx., Pt 2.

Liebig's Extract of Meat Company, Ltd.—The Board has resolved to recommend an increase in the Company's capital of an additional 180,000 new ordinary shares of £5 each, thus increasing the ordinary capital to 300,000 shares of £5 each.

"nervousness" has, perhaps, led the specialist in some cases to underestimate the influence of psychical states on the skin. I think, however, that one should approach this subject with critical reserve, and only after very careful examination of the evidence put down a dermatosis to psychical influence.

The dermatological world is very familiar with a series of eruptions, chiefly wheals, bullæ, abrasions, and ulcers, which have been described on the continent as due to the direct trophic action of a psychic influence. These diseases are not recognised in this country because in every case, as far as my knowledge goes, in which an apparent instance has been encountered careful observation and investigation have established the fact that although no doubt a psychic influence has been at work, the actual eruption has been produced by the self-infliction of injury, and the cases are therefore classified here under the heading of "feigned eruptions." In some of these cases the eruption has been produced deliberately, and during the late war a new, or at least an unfamiliar, dermatosis of a pustular nature appeared in unwilling conscripts, and I have heard that there was an establishment somewhere in London where one could take lessons in the art of its production. Certainly I was deceived by the first case I saw and put it down to the effect of sweating in a coarse woollen shirt and the carrying of a pack. Later on I became familiar with it, as did many of my colleagues in the specialty.

In other cases I am pretty confident that patients produce the eruption in a state of mind that I believe would be classed under the heading of dissociation, and are not aware of their own behaviour. Dr. Pernet advanced this view of double personality some time ago. Putting these locally produced eruptions aside, there undoubtedly remain others, though the mechanism of their production is obscure.

To begin with, we may note that in female patients there is an eruption called erythema pudicitiæ which is clearly nervous in origin. On exposing the trunk of the patient a lenticular erythema is seen on the chest and shoulders, and this fades gradually away. It is not due to change of temperature, as it is often seen immediately the dress is undone and before the chilling has come into action. The eruption is quite common, and its only interest, as far as I am concerned, lies in the fact that it is produced by a psychic influence. If congestive erythema may be thus produced it seems not unlikely that a more serious eruption may also result if the psychic disturbance be more pronounced or prolonged.

It is not so very uncommon for very nervous patients to suffer from so-called "dead finger," and to state that this condition may be brought on by their being startled.

Within the last few years I have had such a patient in my room, and while questioning her I contrived to upset a heavy tray of notes on to the floor so as to make a sudden and considerable noise. In a short time three of her fingers, two on the left hand and one on the right slowly became ivory white. More prolonged circulatory disturbances might, I think, lead to persistent affection of the skin, and I have, I believe, instances of the kind. One was the case of a lady who was not at all well off, whose sons in turn as they grew older competed for scholarships which meant a great deal to her. As the critical time approached she had attacks of weeping eczema on the fingers, and these subsided after the results were known. I saw her during one of the attacks and was unable to do more than palliate it until the period of suspense was over.

Another patient, also a lady, lived in a town over which hostile aeroplanes were frequently passing during the war. She was very stouthearted, and as her husband was obliged to live there she refused to leave. At first all went well, but after a time bouts of nocturnal firing by our guns and the dropping of bombs by hostile aeroplanes were followed by an acute outbreak of vesicular eczema on the face and hands. Later still if her baby cried in the night she woke startled and the eczema soon reappeared. I then persuaded her to leave and go inland, where the whole trouble disappeared in a short time.

It must, I think, be in the common knowledge of all of us that alopecia areata was much more frequent during the war, and not only in those in the army. To so great an extent was this the case that a witty colleague christened it "alopecia airraider." This is to me a matter of interest, as I have always held the trophoneurotic theory of this disease, and this fact seems to me to be difficult to reconcile with Dr. Barber's theory that alopecia areata is due to septic absorption from gums or tonsils.

Dr. Vigulo-Lutati[22] has also published a series of cases of somewhat similar nature in the Italian army.

The hair of an artillery captain, 24 years of age, turned almost completely white during the two days of the battle on the Piave. A young lieutenant had barely escaped being taken prisoner by the enemy and part of the hair on one side turned white in a day or two. In another case a railroad man of 38, after a bombardment of his train, had all the hair of his head, eyebrows, and beard drop out. As it grew again it came in white, but by the end of eight months the eyebrows and beard had returned to the former chestnut colour, while the scalp hair still remained white. Another soldier noticed a long patch of white hairs on the side of his head the morning after a battle. This white strip was still obvious eight months later when Lutati first saw him.

Other cases of premature blanching have been observed. Cases of this kind seem to suggest a direct psychic influence on the skin, but I am of opinion that it is not infrequent for the mental condition to act indirectly on the skin.

One cannot deal with large numbers of patients suffering from those skin diseases such as urticaria, dermatitis herpetiformis, eczema, and psoriasis, in which, at all events, up to the present no one specific cause is known, without being struck by the frequency with which one gets a history of mental shock or overstrain. Of course, one must be on one's guard against the too ready acceptance of the patient's story, as in the case mentioned earlier in these lectures in which an eczema ascribed by the patient to worry and overwork proved on investigation to be due to the poison of *Rhus toxicodendron*, but after one has used the utmost care there remains a number of cases which, at all events, get better or worse according to the mental condition of the patient.

We are all, I suppose, familiar with the great influence of the mental condition over the state of the digestive functions, including both secretion and motility, and I venture to think that it is through these vital processes that the mental condition sometimes acts indirectly. As a further instance of the relationship between the central nervous system and the skin I may mention lichen planus. For very many years there have been numerous expert dermatologists, among others the late Dr. Colcott Fox, who were convinced that there was a close relationship between lichen planus and the nervous system. This idea owed its origin, I think, to the frequency with which this disease was associated with a history of sudden shock or prolonged nerve strain. No further convincing evidence was obtained for some time.

Then Drs. Thibierge and Ravaut[23] drew off some of the cerebro-spinal fluid by means of lumbar puncture. Nothing abnormal was found in the pressure or the constitution of the fluid, but the eruption was very favourably influenced by the procedure. This operation has been repeated by several observers, and in one case Dr. Pernet[24] obtained a fluid which did not reduce Fehling's solution. My own experience of this method has been almost entirely favourable. The worst case that I have treated had a nearly universal eruption which was so intensely irritable that she had been almost sleepless for three weeks. Relief from the itching and consequent return of sleep were secured within 48 hours, and the eruption began to flatten in a few days. Fourteen days after the removal of about 8 c.cm. of cerebro-spinal fluid she left the hospital in good health, and with only a widespread brown pigmentation to mark the distribution of her previous eruption. I am of opinion that in this case the procedure saved her reason, if not her life.

In all cases so treated by me the effect on the subjective symptoms has been dramatic, and in all but two the eruption has lost its infiltrative character soon after the withdrawal. In one of these two

The great difficulty in naming a tumour endothelioma is to demonstrate its origin from endothelium, and it is practically impossible, as Du Bray and Rosson[1] point out, to eliminate the supposition that they are carcinomata originating from the lung epithelium, either alveolar or bronchial, as the tumours are never seen when confined purely to pleura and without having extended to some degree into the lung substance. Writers on histology[2] classify endothelium generally as pavement epithelium of mesoblastic origin, and there does not seem to be any satisfactory method of distinguishing this mesoblastic epithelium from the true epi- or hypoblastic type. Miller and Wynn[3] describe a case of endothelioma of the peritoneum in which, using Van Gieson stain, they demonstrate an apparent connexion between the processes of the epithelial-like cells and the fibrils of the stroma, and suggest that this points to a connective tissue origin. Adler[4] thinks they originate from the lining endothelium of the pleura, while Schultz and Eppinger believe that these tumours usually originate in the endothelium of the lymphatic vessels. Bloch[5] collected 63 cases, which he divided into two groups, the larger (47 cases) being endotheliomata, which he considers had origin in the endothelial lining of the pleura, and the smaller (16 cases) being spindle-celled sarcomata from the subjacent connective tissue. Adami[6] calls these tumours mesotheliomata, grouping them with epitheliomata as lining membrane growths, in this case of mesoblastic origin.

In the case described above the uniform growth—almost entirely confined to the pleura, with only slight and superficial involvement of the lung, and the general histological appearance—seem to indicate the endothelial lining cells of the pleura as the primary source, and so, adopting Adami's nomenclature, it would be called a mesothelioma. The general characteristics in this case correspond with most of those recorded, but it seems to be at a rather earlier stage. The age of incidence (Patterson[7]) is said to be usually between 40 and 60; the tumours are slightly more common in males than females, and are more often right-sided. They are frequently associated with profuse blood-stained exudate, although many cases are described in which the pleural cavity is completely obliterated with growth. Extension is usually by direct infiltration rather than by the blood stream.

We are much indebted to Dr. MacAlister for his help and for permission to publish this case, and to Mr. R. Gick for the drawing (Fig. 1) reproduced here.

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A CASE OF
CURE OF DETACHMENT OF RETINA.

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MY reasons for publishing a single case in which the complete disappearance of a detachment of the retina has followed a definite line of treatment are, on the one hand, that it is a condition in which almost entire loss of useful sight eventuates in all but a few cases, and, on the other hand, the great variety of forms of treatment advocated, is sufficient testimony to the unsatisfactory nature of the results obtained. My own experience of any form of operative treatment which has for its object the evacuation of the subretinal fluid has been uniformly discouraging; and many cases are made worse by the procedure. I believe it is the general experience of ophthalmic surgeons, that when a patient has been confined to bed for a month—a course which is generally insisted on as auxiliary to any form of treatment—he usually says his sight is improved, although no alteration in the objective signs is detected, the detachment being as large as before.

There is one form of detachment from which recovery is almost invariable, and another which I believe to be so entirely hopeless that an attempt at treatment is not worth while. The former is that occurring as a complication of renal retinitis. In this condition, if extensive retinal changes are present, and especially in pregnancy cases, it is not rare to find retinal detachment occurring, from the transudation of fluid from the retinal tissues into the subretinal space. I found 13 such cases in two years in the medical wards of St. Bartholomew's Hospital.[1] If the patient survives, these detachments usually disappear quite quickly, and in any case no local treatment is called for. The second group consists of those cases in which it is known from ophthalmoscopic examination that a rent is present in the retina, so that the vitreous is free to invade the subretinal space; I believe such cases hold out no prospect of cure.

Other cases of what one may speak of loosely as primary retinal detachment come within the scope of our treatment, but good so seldom results that the prospect often seems hardly to justify the recommendation of a course of treatment which is somewhat tedious and prolonged.

For the last two years I have nevertheless admitted all such patients who were willing, and have treated them on the following lines. They have been confined to bed, and injections of 5 per cent. sodium chloride and 5 per cent. sodium citrate solutions, with the addition in each case of 4 per cent. novocain, have been injected, by means of a hypodermic syringe, in amounts of about 15 minims, under Tenon's capsule over the site of the detachment. The injections cause some local reaction, so that it is not found practicable to repeat them more often than about every third day—i.e., the sodium chloride is injected one day, and three days later sodium citrate; three days later again sodium chloride, and so on for nine or ten injections.

E. J., aged 44, attended at Moorfields on March 30th, 1921, *because the sight of the left eye had failed for two* months; he had always been short-sighted. He had a large transparent retinal detachment, and *I admitted him* for treatment. The following details are abstracted from the notes of Mr. E. F. Wilson, house surgeon at the hospital, by whom the treatment was carried out. "In the left eye is a large myopic complete crescent, and a large transparent retinal detachment down and out." The patient was admitted on April 1st, and a month's treatment on the above lines was carried out; on examination, when he was about again, the detachment had completely disappeared. Mr. Wilson's note of May 10th says: "Left eye quiet, pupil dilated; no detachment can be seen; field shows reduction of scotomatous area; few pigmentary changes down and out; V.R. – 6 = 6/9; V.L. – 7 = 6/12."

Five of my colleagues were good enough to examine the man for me with the express intent of finding if possible *any* evidence of retinal detachment, and all were agreed that none was present. I do not claim any great originality for the line of treatment adopted, nor do I fail to appreciate that the condition may recur, but for myself I am encouraged to continue on this definite line of treatment, at a time when I had almost despaired of ever effecting any real good, and it is satisfactory to find justification for holding out some prospect of help for a condition looked upon as almost hopeless.

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[1] Moorfields Eye Hospital Reports, vol. xx., Pt 2.

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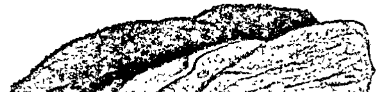
needle was inserted at once, and 21 ounces of clear straw-coloured fluid were aspirated off (needle then got blocked). The next day there was a slight hyper-resonance above the third rib on the right side, but the cardiac apex beat remained in exactly the same position as before, and patient did not seem much relieved. On Jan. 31st patient was X rayed to see whether there was any aneurysm, but nothing suggestive of that condition appeared on the plate. On Feb. 3rd the right side of the chest was again dull up to the clavicle, and 30 ounces of the same light yellow fluid were withdrawn. Still the apex beat remained in the same position. A blood test of this date showed that the Wassermann reaction was negative. Patient was aspirated again on Feb. 10th and 13th, and on the latter occasion the fluid withdrawn was blood stained. The diagnosis was now put forward that a growth was pressing on the superior vena cava and coming towards the surface at the left border of the sternum, thus fixing the mediastinum and therefore the apex beat, but it was not suspected that the site of the growth was in the pleura. After this an attempt was made to allow the fluid to drain away continuously by inserting a Southey's tube in the axilla and afterwards in the back, but the tube did not tap the fluid unless it was held firmly pushed in up to the guard, and it was found impossible to keep it in this position.

Between Jan. 29th and Feb. 18th 200 ounces of fluid had been withdrawn altogether, and the right pleural cavity was still three-quarters full, and the position of the apex beat unchanged. The tender spot was still present at the border of the sternum. The general condition of the patient had not altered, except that he had become weaker; his temperature ranged between 98° and 99° F.; pulse 104 to 120; respiration rate 28 to 38 per minute. A swelling of firm consistence, apparently due to distortion of the thoracic wall, had gradually developed on the right side just below the angle of the scapula; the ribs seemed to have come closer together at this place, so that it was hard to insert a trocar between them.

Aspiration was repeated on Feb. 22nd and 25th, and March 5th, as much as 70 ounces of deeply blood-stained fluid being withdrawn on the last two occasions, and then the aspiration was stopped, each time because patient began to cough. From the beginning of March the lower lobe of the left lung began to be œdematous, and patient became more breathless and often delirious. He began to complain of pain along the right costal margin and in the right side of the abdomen, and the skin was hyperæsthetic in the same area; this was thought to be due to pressure on intercostal nerves in the swelling posteriorly.

He died suddenly on the morning of March 12th, six weeks from the date of his admission and 11 weeks from the onset of symptoms.

FIG. 1.



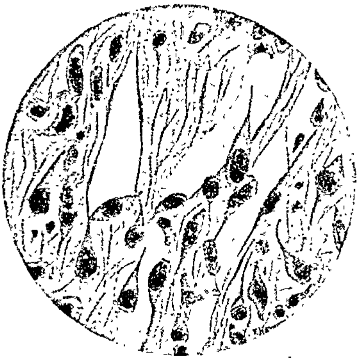
Drawing of posterior aspect of tumour.

Post-mortem Findings.

The autopsy was performed 18 hours after death. P.M. lividity and rigidity normal; body fairly well nourished. A small tumour was felt on anterior thoracic wall, not attached to skin, at the level of the fourth intercostal space, just internal to right nipple line. On opening thorax a growth was found which took the form of a massive nodular thickening of the parietal pleura lining the whole of the ribs, costal cartilages, sternum, and diaphragm on the right side, and which to some extent had spread on to the visceral pleura at the root and base of right lung. The nodules varied in size from that of a pea to a hazel nut, the larger being umbilicated. The greatest thickness of growth, amounting to about ¾ inch, was in the region of the angles of the eighth to eleventh ribs.

The space between lung and tumour contained about two quarts of blood-stained fluid. There were no bands or adhesions. The right lung was collapsed and fibrous, and except at the base and root was covered with thickened pleura which was apparently inflammatory and not new growth. At its base the lung had been superficially infiltrated with growth, which formed a nodular layer about ⅛ inch to ¼ inch thick. The growth had extended between the fourth and fifth ribs on the right side to form a subcutaneous swelling above noted, but had not infiltrated the bone or cartilage. The left pleura and lung were normal, except for a few superficial scattered nodules of growth on the visceral pleura and a slight degree of emphysema of the lung. The mediastinal glands were somewhat enlarged, and were found to be heavily infiltrated with growth.

FIG. 2.



High-power drawing to illustrate type of cell; magnification, 600.

The parietal pericardium at its upper end was invaded with nodules, which had not extended to the visceral layer, but were of sufficient bulk to cause compression of the superior vena cava and the coronary veins, the latter being dilated and somewhat varicose. The heart itself was normal, except for its position, which was well to the left of normal. The trachea and bronchi were opened up as far as possible, but no growth was found, and the œsophagus was normal. The peritoneum showed no evidence of growth. The liver was large (88 ounces) and pale, showing slight chronic venous congestion, and was displaced downwards, the lower margin being 3 inches below costal margin. All other organs were normal except for slight congestion, and showed no primary or secondary tumour formation. The mesenteric glands in the region of the solar plexus were somewhat enlarged.

Microscopic Appearances.

Histologically the tumour consisted of a fibrous tissue stroma in which were seen epithelial-like cells of rather polymorphous appearance, varying according to their situation from round, flat cells, indistinguishable from squamous epithelium, to pear-shaped or spindle-shaped forms. Some of these cells appeared to be branched, and on staining with Van Gieson in some places the "tails" seemed to be continuous with the fibrils of the stroma. The nuclei were rounded and uniformly rich in chromatin, but mitotic figures were rare. The cells were grouped in columns or clumps, but no definite alveolar arrangement could be made out. The very few blood-vessels seen were mostly well formed. In sections through the main growth (i.e., from upper surface of diaphragm) the cells were more spindle-shaped, and the fibrous stroma more abundant, whereas in some of the superficial alveoli of the base of the lung and in the mediastinal lymphatic glands masses of tumour cells with little or no stroma were found, and the cells were much more spherical.

Remarks on the Case.

The true nature of these tumours of the pleura has been the subject of much controversy, as is seen by the variety of names given to them—e.g., endothelial cancer, sarco-carcinoma, alveolar endothelial sarcoma, mesothelioma, and so on.

the air bag is fastened to the urethroscope by means of a piece of fine wire and that the connexion between the cannula and the urethroscope is in order and secure. An excellent plan is to practise on an artificial urethra in the shape of a piece of white rubber tubing a size or two larger than the cannula, which should engage it quite loosely.

To anæsthetise the urethra 10 drops of a 1 per cent. solution of cocaine hydrochloride injected into the canal and held in for three or four minutes is sufficient. The cocaine may be dissolved in a 1 in 2000 mercury oxycyanide solution. The injected fluid should not be forced down into the bulbo-membranous region, or the air on inflation will pass too readily through this part into the bladder.

Modifications of the Urethroscope.

Apart from the new operating tubes the body of the urethroscope has been remodelled, but ability to operate through the open cannula without air distension, as in the case of the posterior urethra, is retained as a feature of the instrument.

The mechanism, by means of which nozzle and cannula can be moved further away from the body of the urethroscope, so as to allow room for the play of the handle of an instrument when used through the open tube without air distension, has been accomplished by making the horizontal bar which carries the nozzle reversible. Likewise the head or hood which carries the mirror can be turned back, as in previous models, to facilitate the introduction of an instrument into, and its removal from, the cannula when used in similar circumstances.

The focussing arrangement has been improved and simplified. It is, however, essential, as in the old model, to focus the light from the tri-filament lamp *before* the mirror has been placed in position in front of the lens. To do this, turn back the hood which carries the mirror out of the way, point the bull's eye lens to some white object about nine inches from it, and move the lens by the means provided until the limbs of the star-shaped light are about half an inch wide at the middle where they cross. It is only the small central area of light which is reflected down the cannula, the limbs of the "star" being simply lost. Care should be taken that this central area of light is as perfect as possible and no larger than a threepenny piece. When the mirror has been placed in position in front of the lens by replacing the hood it can be manipulated by two movements, so as to direct the beam of light accurately down the urethral tube. In the first place it can be moved around a vertical axis by rotating the inner cylinder into which it is fixed, and secondly, around a horizontal axis by means of a thumb screw. The rotation of the cylinder is controlled by a binding screw. These focussing details should always be attended to before the instrument is used on a patient.

The switch for the light can be operated with one hand—a point of importance. The telescope, which is now screwed into the centre of the cylinder forming the head, is more easily made in correct alignment with the urethral cannulæ than was formerly the case. The glass window of the air-chamber has been brought right up to the mirror and is surrounded by the cylindrical head. This effectually prevents all reflections of light from extraneous sources which formerly were very annoying. Operating cannulæ are now fitted with a binding screw, making its connexion with the nozzle of the urethroscope secure.

Principal Instruments.

The following is a list of the principal instruments made: those marked with an asterisk are supplied as a standard set by the manufacturers with the new urethroscope:—

*1. Probes for caustic and one long exploratory. *2. Knife. *3. Blunt spoon. *4. Curette. *5. Probe, sharp, for electrolysis. *6. Capillary syringe. 7. Forceps. 8. Snare. 9. Cautery. 10. Flexible metal bougie. 11. Filiform gum-elastic bougie. 12. Probe and cautery for use with the open prostatic tube.

The examining cannulæ, which are five inches long, are supplied in four sizes—viz., 20, 22, 24, and 26 of the French scale. The operating tubes are supplied in three sizes—viz., 22 F, 24 F, and 26 F. They are four inches long, but any size and length can be obtained by a special order.

Notes on the Use of Some of the Instruments.

Caustic probe.—This instrument is chiefly for the cure of chronic suppurating lacunæ. The probe is projected for three-quarters of an inch beyond the end of the cannula, heated in a spirit flame or Bunsen burner, and a very thin layer of lunar caustic melted on to the terminal quarter of an inch. It is then withdrawn into its sheath. The cannula should be passed to its full extent before the urethra is inflated and the probe projected, which should only be to the extent of half or three-quarters of an inch. The sheath with its contained probe should lie over the affected lacunæ. These can be probed as they come into view while the cannula is slowly withdrawn, its distal end being slightly tilted towards the lacunæ. If the projected part of the probe is not well seen on looking down the cannula it must be slightly bent, before it is used on the patient, to bring it well into view.

Electrolytic needle.—This needle, connected with the negative pole of the battery, is used for cauterising the small superficial infected and swollen follicles so commonly found in the non-gonococcal variety of urethritis. The follicle is punctured or is entered through its natural outlet. The operation is performed across the urethra and the terminal half inch of the needle must be bent up to bring it well into view. Three to five milliamperes may be used for from five to 20 seconds in each affected follicle. Cysts and large inflamed glands of Littre may also be treated in this way.

Capillary syringe.—This is used for syringing out fistulæ, &c., also for treating the large lacunæ if milder treatment than the caustic probe is indicated. Care must be taken not to penetrate the mucous membrane and inject the fluid into the submucous tissues. A rubber teat may be used instead of a small (hypodermic) syringe. The distal end of the syringe should be bent up a little to bring it into view when looking down the cannula.

Blunt spoon.—This may be used for milking and collecting the discharge from infected lacunæ, sinuses, &c., for bacteriological purposes. In this way it will be found valuable in the treatment of gonorrhœa.

Curette.—For use in wart and polypus cases, and as a substitute for the end of the cannula, for scraping off the heaped-up necrosed epithelium which covers some chronic and sclerosed patches. A dab of silver nitrate solution, 20 grains to the ounce, should follow this treatment, and subsequently dilatation of the canal. Care must be taken not to cut through the mucous membrane with a sharp curette.

Knife.—The fear of admitting air into the cellular planes or into the circulation itself deters the cautious from making a deep incision into the urethral wall in the inflated condition. Were it not for this fear a large number of cases of isolated strictures could be easily and accurately cut under control of the eye. Until the subject has been worked out the use of the knife must be confined to such small undertakings as the division of superficial bands, congenital or otherwise, incising small abscesses and cysts, or slitting up sinuses.

Cautery.—Sometimes useful in cases of warts, polypi, and cysts, and for endeavouring to seal up the internal orifice of a fistula. Being a powerful means of treatment great care should be exercised in its use. For instance, if used for the cure of suppurating lacunæ the little cavities which result harbour a drop of mucus which appears at the meatus on stripping the urethra, much to the annoyance of the patient.

Fine-wire snare.—This instrument will perhaps be occasionally required for polypus cases.

I am indebted to the Genito-Urinary Manufacturing Co., Ltd., and to Messrs. Allen and Hanburys, Ltd., for the care and skill they have shown in the manufacture of all these instruments.

LITERARY INTELLIGENCE.—Messrs. William Heinemann (Medical Books), Ltd., announce the forthcoming publication of the following: Special Pathology, second edition, by Dr. J. Martin Beattie and Dr. W. E. Carnegie Dickson. The Surgical Exposure of the Deep-seated Blood-vessels, by Dr. J. Fiolle and Dr. J. Delmas, translated and edited by Dr. C. G. Cumston, with a preface by Sir D'Arcy Power. The Surgical Treatment of Non-malignant Affections of the Stomach, by Dr. C. G. Cumston and Dr. George Patry, with an introduction by Sir Berkeley Moynihan.

OPERATIVE URETHROSCOPY:

AN IMPROVED URETHROSCOPE.

By W. WYNDHAM POWELL, F.R.C.S. Eng., L.R.C.P. Lond.,

LATE SURGEON TO THE WESTMINSTER GENERAL DISPENSARY.

For a long time I have been engaged in an endeavour to simplify the method of operating in the anterior urethra under air-distension. The variety of instruments on the market show that a satisfactory solution of the problem has not yet been attained. The former difficulties of operating may be summed up under two heads. In the first place means had to be found for retaining the air in the urethra while the instrument was in use, and secondly, the long shaft of the instrument had to be made sufficiently slender not to interfere unduly with the view, or, also, with the illumination when an external light was used. The chief defect was associated with the length of the shaft of the operating instrument, the weakness of which was fatal to all but the most trivial undertakings. That these difficulties have now been satisfactorily overcome, I venture to submit, will be apparent from the following description of the new instruments.

To put it very simply the scheme has been to affix to the distal end of the urethroscopic tube or cannula a short instrument by means of which a small operation can be performed exactly under the same conditions as apply to an ordinary urethroscopic examination. By using the urethroscope as the handle and the cannula itself as the shaft of the instrument, the former long, weak intra-urethral operating instrument is replaced by a powerful one with practically no obstruction to the view.

The scheme involved two problems, which were solved by one device. In the first place the urethra had to be guarded against accidental injury, and secondly, means had to be found for varying the length of that part of the instrument which jutted out beyond the end of the cannula. I found that by housing the long, slender shaft of the intra-urethral operating instrument in a tiny tube or sheath, fixed to either the inner or outer wall of the cannula, and extending from the flange to the distal end, the necessary means for protruding it beyond the end of the cannula and for withdrawing it into the shelter of the tube were secured. Owing to the support which the sheath gives to the shaft and to the insignificant work required of the latter where enclosed and supported by the sheath, only a slender and pliable steel wire is necessary. The distal end, however, requires more rigidity; but as it is necessary to project the instrument for operative work only to the extent of about half an inch beyond the end of the sheath and cannula a very little increase in thickness of this part is sufficient to meet any ordinary strain.

The sheath and its contained pliable shaft, tracing them outwards, leave the cannula altogether at the flange, and terminate away from the line of vision. A small cap, with rubber disc, through which the shaft passes, is fixed to the outer end of the sheath and prevents the escape of air from the urethra by this route. A tiny sleeve-like handle, fitted with a binding screw, can be slipped over the end of the shaft and fixed in any position, controlling the distance to which the instrument can be projected beyond the end of the cannula.

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Even when a filiform bougie or a long silver exploratory probe is used through the sheath it is usually better to push it well beyond the end of the cannula into the inflated urethra and to use it by manipulating the whole apparatus in the usual way. By this method it is easy to catheterise Cowper's ducts when the orifices can be made out. It will be noticed that as the cannula is made to serve the joint purposes of urethroscopy and instrumentation the light during the various movements will automatically follow the point of the instrument, and will at the same time be invariably directed to the spot that is being operated upon.

Owing to the mobility of the parts the oblique end of the cannula can be directed to any section of the urethral wall by tilting the urethroscope, and the least protrusion of the instrument beyond the end of the tube will bring it into relationship with the mucous membrane. An instrument must not be projected beyond the end of the cannula into the urethra until the latter has been inflated, and then only under direct control of the eye, and at the completion of the operation it must be withdrawn into the shelter of the cannula before the urethra has been emptied of air or the cannula removed.

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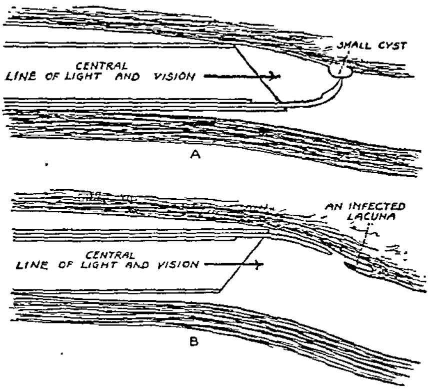
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Before use a little sterile vaseline may be smeared on the shaft of the instrument. After use it should be withdrawn from its sheath and thoroughly dried before putting away. A disc, in the absence of proper packing, may be improvised from a rubber glove or tube. It is essential when using a cutting instrument to maintain uninterruptedly the inflation of the urethra. Therefore, see that the tubing from although gangrene often resulted. (3) Artificial respiration was useful in colubrine bites, if an antidote was available to neutralise the venom after its absorption. (4) Incision and forcible expression of the venom, cauterisation, electrolysis, bleeding, and saline perfusion were measures of but little avail. He then estimated the value of certain chemical remedies.

About 200 chemical reagents had been tested, and those found to neutralise venoms *in vitro* were numerous. (1) The action of tissue extracts, bile, and ferments was slow and weak; (2) caustics acted solely by causing proteid coagulation. (3) Oxidising agents—e.g., chlorates, permanganates, hydrogen peroxide, and antiseptics were only weak antidotes; (4) soluble salts of heavy metals—e.g., chlorides of gold, platinum, palladium, mercury, zinc, and silver provided most hope of effective remedy by chemical means. The value of local remedies was limited by and dependent on two factors: (*a*) the necessity of injection before a fatal dose of venom had been absorbed into the general circulation—in the case of cobra venom, this period for man was about 15 minutes, a time limit which was increased by effective ligature; (*b*) their capacity only of destroying the venom with which they came in contact at the seat of injection, provided an efficient ligature had been applied. The subcutaneous injection of chemical antidotes gave better results than did incision and rubbing in moistened crystals. Major Knowles referred to the failure of the Lauder Brunton technique with potassium permanganate crystals and to the greater efficacy of forcible injection into the tissues at the seat of the bite, particularly in the use of zinc permanganate solution. Iodine tetrachloride and other known remedies had proved less satisfactory, but immediate subcutaneous injection of 10–20 c.cm. of 1 to 5 per cent. solution of gold chloride was more reliable than any other form of local remedy. Its neutralising effect was greater when brought in contact with larger doses of venom in concentrated solution, than on small doses in dilute solution. Intravenous injection of chemical solutions was useless. The value of all local remedies was greater in the case of viperine than of colubrine bites. They acted by causing local coagulation necrosis, destroying both tissues and venom, and so were productive of local gangrene. After the lapse of 15 minutes from the bite—that is, when one M.L.D. of venom had been absorbed—it was necessary to supplement local by systemic remedies. Thence had originated that important section of their work dealing with the study of antivenene.

Antivenene.

To Calmette the world was indebted for the introduction of this very promising method of treatment. Calmette's observations, however, had led to the erroneous conclusion that a cobra did not inject more than 20 mgm. of desiccated venom at a good bite. This their own experiments had disproved, for as already stated, there might be a yield of anything from 0 to 570 mgm. of venom from a single bite. Calmette had also regarded 1 c.cm. of antivenene *in vitro* as neutralising 1 mgm. of desiccated cobra venom. Their results with rats had clearly established this to be a considerable underestimate, for they had found that the *in vivo* value of 1 c.cm. of antivenene was only equal to $\frac{1}{10}$ mgm. of desiccated venom. The antivenene now in use in India was all prepared at Kasauli by immunising horses against the venoms of the cobra and Russell's viper. It was strictly specific and experimentally was incapable of neutralising other colubrine or other viperine venoms. Its potency, however, was weak and diminished on keeping. Improved results could be obtained, firstly, by altering the mode of administration, the intravenous method being more effective than the intraperitoneal, and the latter than by hypodermic injection: secondly, by securing a concentrated antivenene by methods analogous to those for the concentration of antidiphtheritic serum. This had eventually been arrived at after two years' experimental work at immunising the antivenene animals for colubrine and viperine venoms and by testing the various methods of serum concentration. The final product realised a potency twelve and a half times as great as the original sample. Major Knowles then explained the action and properties of antivenene and nature of the venom—antivenene complex. He said that the concluding part of their work at Kasauli in August, 1914, was concerned with the immunity of the cobra to its own venom, and with the endeavour to discover some antivenomous tissue extract in a cobra, which they had only succeeded in killing after intraperitoneal injection of as much as $\frac{3}{4}$ g. of desiccated venom. The bile alone showed any antivenomous activity, but was inferior in that respect to ox-bile. The cobra's immunity to its own venom was regarded, from the result of their observations, as probably due to a deficiency of the necessary complement.

Summarising the treatment called for in a case of snake-bite the following steps were recommended by Major Knowles: 1. Instant firm ligature to the limb above the site of the wound; 2. Killing and identification of the snake—(*a*) if non-poisonous, no further steps would be required; (*b*) but if one of the small vipers, a dose of calcium lactate might be given, the ligature removed and the patient watched; (*c*) if, however, the bite had been caused by one of the six really lethal Indian snakes, on the toe or finger, amputation might be advisable, but with the bite elsewhere than on the toe or finger forcible subcutaneous injection of gold chloride solution should be made into the site of the wound in order to isolate and destroy the whole dose of venom, but previous incision was not called for; (*d*) in the case of bite from a cobra or Russell's viper, 100-200 c.cm. of antivenene should be given intravenously, but if injected hypodermically three or four times that quantity would be necessary. On removal of the ligature after 20 minutes, careful watch over the patient was most essential, with a view to injecting more antivenene, and applying artificial respiration as well as the administration of cardiac stimulants. In the case of viper bites hæmorrhages might be expected after the lapse of hours or days from the time of the bite. He concluded it should be possible to save 80 per cent. of all cases of lethal snake-bite, if those remedies were available and were used sufficiently early. The prospects of finding a safe and reliable remedy against the bite of the most poisonous colubrine snakes were encouraging. The dichloride of palladium had proved, experimentally, even more efficacious than the gold salt, and it was possible that the palladium salt, by forming a new compound of heavy metallic ion with the antivenom, suitable for solution and for intravenous injection, might provide the desired remedy.

Discussion.

Sir LEONARD ROGERS, who had been interested in the subject of snake-bite and its treatment for the past 20 years, referred to early work of his on the physiological action of different classes of snake venoms published in the Philosophical Transactions of the Royal Society in 1904. He had dealt with the venoms of the cobra, king cobra, common krait, and banded krait, which produced respiratory failure. The venom of sea snakes, or *Hydrophineæ*, was very toxic and also caused respiratory failure. In connexion with viperine venoms he mentioned the work of Weir Mitchell as having proved their hæmorrhagic action and some vasomotor paralysis. As had been shown by Lamb, intravascular clotting was caused by the venom of Russell's viper. Describing his own observations, with a M.L.D. of viperine venom a rapid fall in blood pressure had been obtained, followed by respiratory convulsions and then a rise in blood pressure. *Post-mortem* examination had shown no intravascular clotting either in animals or man, and the blood was incoagulable. The fall in blood pressure was at first difficult to explain and was found to be due to vasomotor paralysis. Moreover, there was no clotting even in the pulmonary capillaries. On division of the spinal cord in an animal experiment there followed a fall

OPERATIVE URETHROSCOPY:

AN IMPROVED URETHROSCOPE.

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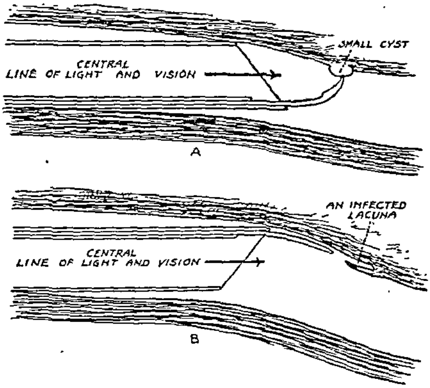
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Britain; excessive overcrowding in cities was due to unequal distribution of the population. The dissemination of the knowledge of methods of birth control dated from the time of the Bradlaugh and Besant trial in 1877.

Voluntary control might be divided into two classes, (1) criminal abortion; and (2) contraceptive methods. It was not, perhaps, quite correct in every case to use the word voluntary; the denial of the natural maternal instinct of women might be compulsory in so far as it was due to great economic and social pressure.

Criminal Abortion.

By criminal abortion was here understood all cases of artificial termination of pregnancy without the consent of the medical profession—i.e., fœticide or murder, no matter what justification might be given for its employment. It was increasing in this country and in America, was one of the prices we are paying for civilisation, and was widely used for the termination of legitimate as well as illegitimate conceptions; information of its employment was only obtained when the maternal victim had lost or was in danger of losing her life. Just punishment should be meted out to the couple who consented to the practice of abortion, as well as to the individual who procured it. There were two classes of criminal abortion from the medico-legal standpoint—those where the woman brought it about herself, and those where another individual performed the operation. In hospital practice women were constantly admitted suffering from hæmorrhage or sepsis, the result of self-induced abortion; the cause was perfectly apparent, but no action was taken beyond the giving of a moral lecture. In cases where abortion had been procured by another individual and where the patient came up for treatment of a condition which did not end fatally, was the medical attendant responsible for its notification, or must he wait until dangerous symptoms occurred and then be told in court that he was liable for imprisonment for concealing the facts from the onset of the fatal condition? It was difficult to estimate the prevalence of abortion. Until notification of all interrupted pregnancies was secured our knowledge of the loss of early ante-natal life was mere guess-work. Educate public opinion and provide facilities for adequate treatment and there would be little difficulty in estimating the prevalence of abortion.

Contraceptive Methods.

Knowledge of the use of contraceptive methods was now almost universal; books were sold broadcast in Britain, and meetings were held where sex problems were freely discussed; old-fashioned morality, like religion, was condemned as out-of-date. Societies competed in their efforts to spread information; the main arguments employed were that contraceptives formed a desirable alternative to criminal abortion, permitting of earlier marriages, and therefore diminishing venereal disease, illegitimacy, and prostitution, and the dangers of the unchecked propagation of the lower classes at the expense of the better and more prudent members of society. Malthus directed attention to the dangers of over-population and enjoined sexual abstinence as the remedy; the members of the Neo-Malthusian League supported his arguments but recommended contraceptive methods. The majority of supporters of birth control were perfectly genuine in their desire to solve the great social and economic problems of the day; but there must be danger in widespread and uncontrolled knowledge of sex matters and contraceptive methods. There must be some deep-rooted moral reason for the innate sense of modesty and reserve which only approached such subjects with reverence and which had for its purpose the preservation of the race. The traditional mystery of sex knowledge must have had some physiological basis to have withstood the length of ages. Was it not a sign of decadence that young men and women openly discuss before marriage the numbers of their future family, and when young women employ contraceptive mechanical or chemical methods as an immediate preparation for the marriage day? The medical profession were all agreed that a knowledge of sex hygiene is desirable, but it must to a certain extent be preceded by a moral and religious education. The young generation had gained much liberty, but might be losing the power of self-control. The future of the nation lay in the hands of women, properly educated, who realised what race suicide meant.

The Medical Aspect of Birth Control.

Limitation of the birth-rate should be for medical reasons only and should be considered from two points of view: (1) the possible danger of pregnancy to the individual; and (2) the undesirability of propagation of the unfit. Pregnancy might have to be prevented in the presence of some pathological condition, such as tuberculosis, toxæmia, venereal disease, or insanity, and in cases where too frequent pregnancies were undermining the health of the woman concerned. Propagation of the unfit might have to be prevented owing to the danger to the community of feeble-mindedness and increase of the criminal alcoholic classes. Surgical sterilisation for other than health reasons was absolutely to be condemned. There was no justification for the mutilation of an individual; moreover, the reproductive organs had a physiological influence upon metabolism apart from their specialised functions. The Jews condemned contraceptive measures and marriage of the unfit, with the result that their race persisted in spite of many difficulties.

It might be to the credit of the medical profession that it had hitherto avoided open discussion of such questions from a sense of morality and purity. But now the knowledge had been disseminated, and the profession must take up the question. If it is wrong to make use of contraceptive methods the profession should say so; if contraceptives are necessary, guidance should be given in their employment; they should then be sold by chemists of repute, and be obtainable on the order of any practitioner who advises their use.

The advocates of birth control quoted the approval of some of the members of the medical profession and medical journals. They spoke of the misery of the unwanted child and the worn-out mother, and at the same time they encouraged excessive sexual relationships among the married by depicting their delights and physiological necessities. How long were the medical profession to suffer the spread of such knowledge? Scientific and reliable methods must be discovered and kept under medical advice and control. Surely if the induction of abortion required the presence of two members of the profession for its justification the use of contraceptives should be controlled by similar ethical regulations. The methods employed were inseparable from the love of comfort and luxury which terminated the life of all civilised nations. They might be divided up into so-called physiological methods and the employment of chemical and mechanical appliances. Abstinence from sex relationship was possible in the unmarried state where the creative force was used in other directions, and where stimuli were avoided; it was easy for some individuals, difficult for others. In the married state it presented a different problem. Couples living in intimate affection were exposed to constant stimuli; ideals might be lived up to, but the resultant strain might be followed by evils worse than some contraceptive methods—namely, estrangement, unhappiness, infidelity, and divorce. Marriage was primarily for the controlled sexual relationships and the bearing of children. The church advised, in cases where abstinence was impossible, that sexual relationships should be restricted to the mid-menstrual period where fertilisation is at its lowest curve; but this was the period of least desire and had therefore an artificial aspect. Sexual relationships were matters of impulse and demanded satisfaction like hunger; the mutual desire of a married couple meant their happy balance. Intercourse when premeditated and when precautionary measures were taken was no longer a

Medical Societies.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THE annual general meeting of this Society was held at 11, Chandos-street on June 17th, the retiring President, Prof. W. J. R. SIMPSON, in the chair.

The PRESIDENT referred to the loss sustained in the death of Dr. A. J. Chalmers, in whose memory had been founded the Chalmers Memorial medal, as a biennial award for researches of outstanding merit contributing to the knowledge of tropical medicine or tropical hygiene.

Sir JAMES CANTLIE was unanimously elected President for the ensuing two years.

Snake-bite in India.

Major R. KNOWLES, I.M.S., read a paper on the Mechanism and Treatment of Snake-bite in India, based on work which had been carried out in conjunction with Major H. W. Acton, I.M.S., between the years 1912 and 1914 at the Pasteur Institute at Kasauli. He said that probably not more than two or three of the many species of vipers in India were fatal to man, and that even in untreated cases of true cobra bite the mortality could not be regarded as much over 40 per cent. Though the number of deaths in India from snake-bite was placed at 25,000 per annum, the cases of snake bite were likely to reach many more thousands. Hence the reputed efficacy of the many antidotal remedies which in reality failed to solve the problem of successfully neutralising a lethal dose of colubrine or viperine venom. Major Knowles described the grouping of poisonous snakes in India under three classes, types of which were represented on the screen: 1. The sea-snakes or *Hydrophinæ*, occurring in the salt marshes around the Indian coasts and at the mouth of the Shatt-el-Arab in the Persian Gulf, and characterised by their large size, fine heads, thin necks, thick bodies, and tails flattened like the blade of an oar. Little was known about their venom, but Sir Leonard Rogers had found it intensely toxic with marked paralytic action on the central nervous system. 2. Indian poisonous colubrines (the cobra, the king cobra or hamadryad, the kraits and coral snakes). The deadly nature of their venom rendered the treatment of snake-bite in India most difficult. 3. The vipers. Of this very common group in India, only two species, the Russell viper or daboia, and the *Echis carinata*, or saw-scaled viper, possessed enough venom of sufficient potency to be fatal to man, and although the small vipers frequently bit human beings, their bites very seldom, if ever, proved fatal.

The Study of Snake Venom.

The study of snake venom could be divided into four sections:—

1. *The estimation of the doses of venom usually injected.*—Experimental observations based on the hypodermic injection of 5 mgm. doses of desiccated cobra venom dissolved in normal saline into 465 rats showed that the rats died on an average 30 minutes after the injections. The minimum lethal dose (M.L.D.) of cobra venom proved by a series of further observations to be $\frac{1}{16}$th mgm. A rat did not die until one M.L.D. had been absorbed into the circulation. With massive injections of venom, the absorption period in the rat was just under 3 minutes, in the monkey it was 7 minutes, and in man probably not less, though not much more, than 10 minutes. It was ascertained experimentally that at a good bite the cobra parted with about two-thirds of the total venom content of its glands. Fresh cobras "milked" of every drop of venom had yielded a mean total of 317 mgm. of venom, two-thirds of which would be 211 mgm., or about 14 or 15 times the M.L.D. for a man. The observations resulting from experiments with the bitten rats showed that the dose of venom each received at a first bite varied between 3 and 360 mgm. of desiccated venom, a mean of 172 mgm. It was therefore concluded that the average dose injected would be somewhere between 211 and 172 mgm., although the actual figures showed extreme variation in the dose, and indeed one cobra had yielded a total of as much as 881 mgm., corresponding to 587 mgm. at one bite or 40 times the M.L.D. for man.

2. *Mechanism of the snake-bite.*—This marked variation was explained by consideration of the mechanism of the bite derived from dissection of the poison gland apparatus and musculature. Major Knowles described the anatomical parts concerned and the muscular action involved in the bite of the cobra showing that the mechanism was so complicated that the cobra might easily fail to yield a lethal dose of venom at a single bite, and where the amount of venom injected might vary from nil to as much as 587 mgm. The chances of escape were, indeed, so great that the mortality, even in untreated case of cobra bite, could not be put higher than 40 or 50 per cent. Major Knowles also gave an account of the bite and nature of attack of the vipers which differed in many respects from that of the cobras.

3. *Toxic properties and composition of snake venoms.*—Not only did the mechanisms of the bites of colubrine and viperine snakes differ, but also the poisonous action of the two classes of venom. Each contained three toxic elements. The colubrine venom included: (i.) a hæmolysin, dissolving the red corpuscles; (ii.) a cardiac stimulant; and (iii.) a neurotoxin capable of paralysing the central nervous system and causing death by its action on the respiratory centre. In man death occurred from asphyxia in 30 minutes to 30 hours from the bite. The viperine venom contained: (i.) a hæmolysin; (ii.) a coagulin, causing blood coagulation and occasionally fatal gangrene, or, in the case of small animals, sudden death by pulmonary embolism from lodgment of a detached clot; (iii.) a cytolysin or endolysin, causing destruction of the fine endothelial lining of capillaries and venules all over the body, which resulted in bleeding from all mucous membranes with both internal and external hæmorrhages, and after the onset of sepsis ended in death from cardiac failure. The fatal issue from cardiac failure might therefore, in the case of a viper bite, be due to a variety of causes and occur in from two to seven days. Major Knowles referred to the fact that the venom being a modified saliva, in addition to its lethal action, it played an important part in digestion. This accounted for the snake's habit of salivating the entire body of its prey previous to deglutition.

Experiments had been carried out to ascertain the effect of heat on venom solutions and to test the toxicity of the heated venoms. It was found that the proteids of cobra venom coagulated at 65°C. and the hæmolysin was destroyed at 80°C., although at that temperature the venom still retained 80 per cent. of its toxicity. The viperine venoms, on the other hand, proved less thermostabile and on heating lost their toxicity more rapidly, and the cytolysin was destroyed at 85°C. Chemical analysis had shown that the toxic principles of snake venoms were of complicated composition, comprising a range of proteids and non-coagulable proteoses. Major Knowles then classified the various poisonous snakes of India according to the toxicity of their venom.

4. *Treatment of snake-bite.*—Major Knowles gave the following conclusions as to the value of physical measures: (1) Excluding amputation or excision of the bitten part which to save life must be immediate and not delayed beyond a quarter of an hour, all physical measures were but supplementary to other forms of treatment. (2) Ligature of the limb after cobra bite merely locked up the venom, which flooded the circulation as soon as the obstruction was released, and eventually killed the patient. In the case of viper bites, however, ligature might save life, as the venom by giving rise to local thrombosis was not absorbed into the general circulation,

medical profession, for no one knew anything about it. With regard to Earl Russell's question as to cannon-fodder, she considered that the happiness of the entire world depended on the supremacy of the white races. She recognised the difficulty of the economic burden, but had not had space to include its consideration in her paper. It was obvious that many people would rather give one child a good education than be forced to have several children educated in a less complete way, but there were now schemes of insurance by which this difficulty might be overcome. With reference to the methods of contraception, she had no personal experience of the harmful results of quinine. The use of a cap placed over the cervix was most harmful; this means was advocated by up-to-date supporters of birth control, but the cap did not always remain in place, and when it did the discharge from the cervical glands was retained. There was no proof that the spermal fluid was absorbed by the vaginal glands; the existence of those glands was not yet certain, and in her opinion absorption took place through the cervix.

In conclusion, Prof. McIlroy described the contrast between the healthy and prolific lives of the Slav peasants in Serbia and Bulgaria with the decadence of the upper and middle-class Russians whom she had met in great numbers as refugees at Constantinople. The latter had committed race suicide and were dispossessed by the cleaner-living peasantry of their country. Sex instinct was created for one purpose only, and must have some outlet if its normal activity is interfered with. Continence in marriage would certainly be assisted by separate bedrooms and other housing facilities. In India, a country of prolific and moral people, the women were dressed properly and kept out of the public view; whatever we might call the Turk, he was one of the most moral of men in his sexual relations. Modesty must be retained for race preservation. As regards the right of the medical profession to interfere with the lives of married people, the supporters of the use of contraceptives had already interfered; the medical profession had been backward in its reply. The whole question must be brought into the open air and put on a proper basis.

MIDLAND TUBERCULOSIS OFFICERS.

Formation of a Sub-group of the Society of M.O.H.

A MEETING of Midland tuberculosis and assistant tuberculosis officers, convened by Dr. A. Ashkenny, tuberculosis officer, West Bromwich, was held in Birmingham on July 9th. Dr. G. B. Dixon, tuberculosis officer, Birmingham, was elected to the chair. After the chairman explained the object of the meeting the following resolution was adopted unanimously:—

> That this meeting of Midland tuberculosis officers and others interested in tuberculosis approve, and hereby resolve to form themselves into, a Midland Tuberculosis Sub-group of the Tuberculosis Group of the Society of Medical Officers of Health.

The chairman was elected temporary president and it was further resolved:—

> That a temporary committee of five members be formed of those employed exclusively in clinical tuberculosis work to assist the President until the next meeting of the sub-group in October.

The following members were elected to this committee: Dr. T. R. E. Elliott, Dr. A. G. Campbell, Dr. J. A. M. Clark, Dr. D. J. Peebles, Dr. H. Gordon-Smith. The following were coöpted to assist the committee and president: Dr. N. A. Coward and Dr. Edwards.

CONTROL OF MEASLES IN LONDON.—The recommendations of the Public Health Committee of the London County Council, which appeared in THE LANCET last week, were adopted by the Council without further debate. The Council will now consult the metropolitan borough councils regarding the issue of a circular to medical practitioners in London, directing attention to the facilities available through the public health services for the nursing of cases of measles in London. Representations will also be made to the Minister of Health, that in the opinion of the Council it would not be desirable to adopt the proposal to make measles compulsorily notifiable by medical practitioners throughout London.

Reviews and Notices of Books.

SYPHILIS.

Syphilis and its Treatment, with Especial Reference to Syphilis of the Skin. By WILFRED S. FOX, M.A., M.D., B.C.Cantab., M.R.C.P.Lond. London: H. K. Lewis and Co., Ltd. 1921. Pp. viii.+195. 36s.

Dr. Fox is happy in the material which he has selected to place before the reader and in the manner in which he has presented it. The emphasis on the dermatological aspects of syphilis implied in the title may help to foster a sense of proportion in respect to the diagnosis and treatment of syphilis which is in some respects lacking at the present day. When a medical man who does not possess a sound knowledge of dermatology undertakes the entire charge of a patient suffering from syphilis he is assuming dangerous responsibility, while extension of the purely empirical treatment of syphilis is deplorable. Attendance at a venereal clinic for a short time may render a practitioner sufficiently adept in the administration of intravenous medications, but it should also teach him how hard it is to become proficient in the treatment of syphilis. By the attention which Dr. Fox has devoted to the dermatological aspects of the disease he has rendered great service to the profession.

In the earlier part of the volume he deals adequately with the differential diagnosis of chancres, and figures of the various lesions of the same level of excellence in the numerous other illustrations would have been helpful. With Chapter IV. Dr. Fox enters upon an account of the secondary period. After giving a general description of the secondary cutaneous lesions he turns to the general pathogenesis of cutaneous syphilides, of which he writes admirably. Dealing with the confusing subject of secondary rashes he is certainly happy in his method of classification and description. He adopts a classification of secondary rashes based upon "the dermatological elements they exhibit," which is undoubtedly a more scientific method than that founded upon the chronological order of their appearance. A knowledge of the anatomy and physiology of the skin is assumed for the reader, and might perhaps have been added. The medical student learns little about the skin during his anatomical and physiological career, and during his hospital life, though he may see many of the lesions affecting this structure, the gap is seldom filled. Perhaps in the next edition Dr. Fox will consider this point worth his attention. Chapter VII. is devoted to a consideration of "the Wassermann Reaction," and the author utters a warning note against the empirical reliance upon the results of the test. The course to be adopted when patients with an old history of syphilis present themselves for medical examination, after a long period of uninterrupted good health without treatment, requires close consideration. When clinical investigation reveals neither signs nor symptoms, should such persons be subjected to the Wassermann test? It may easily be positive, and though the patient might have lived for the remainder of his days without exhibiting any lesions attributable to the original attack, his life is rendered one of continuous terror. The "tyranny of the Wassermann reaction" is upon him. The practitioner need never hesitate to seek special guidance when confronted with such a problem.

Another subject upon which we need information is the data on which to base an opinion as to when a patient may be allowed to marry. What are the fundamental principles which must guide to so momentous a verdict? Much may be deduced here from a careful study of Dr. Fox's work.

We recommend this work to all who deal or intend to deal with syphilis.

in blood pressure, and subsequent injection of viperine venoms produced no further dilatation of the blood vessels, and, vice versa, there was evidence of vasomotor paralysis produced by these venoms, including those of the African puff-adder, whereas the rattlesnake caused no clotting but only vasomotor paralysis. He mentioned adrenalin and pituitary extract as having a marked effect in averting vasomotor paralysis following a small dose of venom. The use of antivenene for bites of viperine snakes as employed by Lamb was important to counteract vasomotor paralysis. Antivenene against cobra bites was also active to a less extent against the venom of the *Hydrophineæ* or sea snakes. Local antidotal treatment, by means of Lauder Brunton's snake lancet and permanganate cauterising, should be immediately followed by injection of antivenene if available. He had recorded recovery in 10 out of 12 cases of snake-bite with the use of potassium permanganate and incision, and he recalled that gold chloride was found by D. D. Cunningham to be more effective than any other drug; but time was the essential factor in the treatment of snake-bite, as cases must be seen very early to give much chance of success.

Dr. **Ernest Black** stated that he had conducted experiments with snake venoms 20 years ago. There was then the widespread but mistaken view that antivenene should be used universally, whatever the snake might be. But it had since been definitely established that antivenene was not specific except for the actual species of snake venom from which it had been prepared. Its use against other snake-bites might indeed accelerate death.

Major **H. C. Brown**, I.M.S. (retired), described briefly the process of immunisation of the horse to snake venoms and drew attention to the difficulties connected with it, chiefly owing to abscess formation. He suggested that the valuable work of Major Knowles and Major Acton on the concentration of antivenene might obviate this difficulty by keeping the horse on small doses of venom and subsequently concentrating the antivenene. He said that he had had experience in controlling hæmorrhages such as epistaxis by the administration of normal horse serum, and suggested that this serum might be of value in the hæmorrhages due to viperine bites; he had treated one case of *Echis carinata* bite, showing extensive hæmorrhages, with normal horse serum with apparently much benefit to the patient. He asked Major Knowles whether he had had any experience in the use of normal horse serum or of non-specific antivenenes in cases of hæmorrhages due to viperine bites.

Major **Knowles** in replying stated that the use of permanganate crystals following incision into the wound was not to be compared in value with that of injection of the salt in solution into the site of the snake-bite, as the latter method had much better chance of reaching and destroying the venom. He regarded the beneficial effect of horse serum in arresting hæmorrhage as being due to hæmostatic action, but he had no experience of its use in the treatment of hæmorrhages due to viperine bites.

Sir **James Cantlie**, concluding the discussion, said that he had seen Calmette's work at Saigon 20 years ago and he now realised that much of what he had learnt then was incorrect as regarded the dosage of antivenene. He gave reminiscences of cases of snake-bite in China and recalled the native method of treatment, then in vogue, of applying a tourniquet above the bite for long periods, as the result of which the wounds remained unhealed for several months.

UNIVERSITY COLLEGE, LONDON.—The following awards in the Faculty of Medical Sciences have been made at University College: Cluff Memorial Prize: Katharine A. C. Gillie. Anatomy—Senior Class Gold Medal: L. Reuvid; Junior Class Silver Medal: Mary E. Tyars. Physiology—Senior Class Gold Medal: Katharine A. C. Gillie; Junior Class Silver Medal: Iris M. Harmer. Organic and Applied Chemistry—General Course Silver Medal: Marian G. Palmer.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on July 7th at 11, Chandos-street, Cavendish-square, W., the President, Lord Justice **Atkin**, being in the chair. A paper was read by Prof. **A. Louise McIlroy** on

Some Factors in the Control of the Birth-rate.

Prof. **McIlroy** said that a nation was maintained in power according to the endurance, strength, and fertility of its members; if the individual could not contend against destructive forces it must have increased fertility to compensate for the consequent mortality. When a high degree of civilisation gives capacity for self-preservation fertility is low; of animals which reproduce by spawning a large number are lost; in contrast with this type is the comparatively small multiplication of the human race. In the latter, moreover, there is low fertility in the better educated classes and high fertility in the lower or submerged classes. In Britain the birth-rate increased rapidly in the industrial period of the nineteenth century, when there was great commercial expansion and demand for both adult and child labour. Large food-supply areas were opened up and methods for the lowering of the death-rate were considered; but during the past 40 years the birth-rate in England fell steadily until it is about one-third of that of 1860; also, during the war, the best stock was sacrificed to save the Empire from destruction. The low birth-rate in France had very serious consequences for that country in 1870; to it may be attributed Germany's opportunity in 1914. The birth-rate was high in Eastern Europe, especially among the prolific but short-lived Slav races; thus Russia had always been a menace to the great Saxon and Teutonic nations.

Had the decline in the birth-rate in Britain any political significance, or was it merely nature's method of keeping an expanding population in check? The evidence given before the Birth-rate Commission went to prove that although the decline is due in part to economic and trade conditions, it mainly owes its low rate to the artificial control of conception. The normal checks by which a country's population is kept within economic limits were the death-rate and the restrictions upon fertility; the death-rate was maintained by age, disease, war, dangerous occupations and environment, and fertility was restricted by civilisation, the limited reproductive life of a woman, delayed marriage, abortions, &c. Other factors which influenced the death-rate were fœtal and infantile diseases, infanticide, illegitimacy, alcoholism, venereal diseases, and prostitution. The arguments in favour of a low birth-rate were individualistic; a small population left more room and gave better social conditions, more demand for labour, and higher wages. In China, where there is a high birth-rate and where the population might be said to have reached the point of saturation, there was a high death-rate, especially marked among infants, few means being taken for their preservation.

The arguments for a lowering of the birth-rate were put forward in justification of the ideal that a small number of useful well-cared-for healthy citizens are more beneficial to a State than a large number of unfit; there would be no danger to the British Empire if other nations also controlled their populations, but it must be remembered that Germany was not beaten, and would encourage any influences which would tend to diminish the fighting resistance of Britain and France. In the East, where reproduction is encouraged to its utmost limits, Japan and China might yet form a danger to the white races. Was the supremacy of the British Empire to be maintained over the native races in the face of a rapid fall in the birth-rate both at home and in our colonies? Such a fall had been the end of many of the great nations in history. The dangerous aspect of the question of birth control should not be ignored by the State; there was no evidence of excess of population in by Dr. M. L. Babonneix. This section contains some excellent plates illustrating the pathology of tabes. The diagnosis and pathology of nervous syphilis claim the greater part of the section, the shortness of the paragraphs on treatment serving to emphasise the intractable nature of tabes and general paralysis. The work is illustrated but not lavishly. The volume is remarkably complete, but in a work of reference we should have welcomed the inclusion of a bibliography.

THE OCTOCENTENARY OF READING ABBEY, A.D. 1121–1921.

By JAMIESON B. HURRY, M.A., M.D. London: Elliot Stock. 1921. Pp. 92. 10*s.* 6*d.*

Dr. Hurry is well known as a writer on archæology, and especially on the history of Reading Abbey. Most of his books are now out of print, and therefore, as he tells us in his preface, he has collected some scattered papers and bound them up in the volume before us as an eight hundredth "years mind" (to use the old technical expression) of the great Benedictine house at Reading. The volume is confessedly slight and sketchy, but there is more information in it than would at first appear from the size of the book, and we are glad to say there is an excellent index. Dr. Hurry gives particulars of the founder, Henry I., of the foundation itself, and of the daily round in a religious house. On p. 33 there is a statement which has somewhat puzzling features: "After chapter came the chapter Mass, followed by study or exercise, till the bell summoned to the office of Tierce; this in its turn was succeeded by the principal act of the day, the sacrifice of the Mass." In any religious house, whether monastic, collegiate, or a cathedral establishment, the principal service of the day is the chapter Mass, otherwise called capitular, or solemn, or conventual, or stational, or principal, or greater Mass. But the word Mass was anciently used to describe any office of simple praise and prayer which was concluded by the bishop with a *collectio*, or summing-up prayer, and possibly Dr. Hurry, when he refers to the Chapter Mass, means the office with which the chapter concluded. If he means the capitular Mass, the "principal act of the day" would not have followed, for the capitular Mass *is* the principal event.

We are quite at one with Dr. Hurry in his protest against the manner in which the monastic buildings and establishments were treated at the dissolution; he points out rightly that Reading Abbey Church might have been made a cathedral for the county of Berkshire, and the other buildings retained as a hospital or almshouse. The granting of the Church's lands and moneys to greedy courtiers, such as Somerset, who pulled down much of Old St. Paul's to build Somerset House and tried to pull down Westminster Abbey for the same purpose, or that wretched creature, Sir Richard Rich, to whom was granted St. Bartholomew the Great, was one of the worst features of the Reformation. It is true that the religious houses had in many cases fallen from their first estate—there could hardly be a more severe indictment than Cardinal Morton's of St. Alban's Abbey in 1489—but Cromwell and Henry VIII. had but one idea of reformation, and that was robbery accompanied by injustice. Here is Cromwell's note on the "trial" of the last Abbot of Reading: "The Abbot Redyng to be sent down to be tried and executed at Redyng with his complices."

Dr. Hurry's book contains some good illustrations, reproduced mainly from a series in the municipal Art Gallery. Plate IV. is a picture by Mr. Stephen Read, representing the Consecration of the Abbey Church by Thomas à Becket. Mr. Read's imaginary presentment of Becket represents a dreamy and delicate girl, totally unlike what that masterful personage must have been, though we believe that previous presentations have been similar in character; for an imaginary portrait of Becket we much prefer Tenniel's, as given in The Brothers of Birchington, to all readers of "The Ingoldsby Legends."

CHEMISTRY.

Dairy Chemistry. A Practical Handbook for Dairy Chemists. Third Edition. By H. D. RICHMOND. London: Charles Griffin and Co. 1920. Pp. 490. 25*s.*

THIS well-known standard work was written for dairy chemists and others having the control of dairies. The fact that it has been necessary to prepare a third edition since 1915 is sufficient testimony to its value. It is a natural and healthy indication that a voluminous and ever-increasing literature centres around one of the staple foods of mankind, and Mr. Richmond's brother chemists should be grateful that he has found time not only to bring this book up to date, but to effect considerable improvements in the treatment of the several subjects dealt with. His book, which contains a number of useful illustrations, is now divided into three parts: the constituents of milk, the analysis of milk and milk products, and technical applications. That portion dealing with biological and sanitary matters will appeal to the medical officer. The writing is good and there appear to be very few mistakes. One small point which Mr. Richmond might consider in the next edition is the substitution of clear and well-defined illustrations for those which are blurred.

Aids to Chemistry. By WILLIAM PARTRIDGE, F.I.C. London: Baillière, Tindall and Cox. 1921. Pp. 280. 6*s.*

THIS little book is intended for medical, veterinary, dental, and pharmaceutical students who have passed through a course of chemistry. One-fifth of the space is devoted to general considerations of chemistry, and the subjects dealt with include non-metallic elements, the commoner metals, carbon compounds, aliphatic compounds, cyanogen compounds, aromatic compounds, and heterocyclic compounds. The matter is judiciously selected, free from errors, and arranged in a convenient manner. Those who like to have their information in "tabloid" form will, no doubt, approve of Mr. Partridge's effort.

BOTANY

A Text-book of Botany for Medical and Pharmaceutical Students. By JAMES SMALL, D.Sc. Lond., Ph.C., F.L.S. London: J. and A. Churchill. 1921. With 1350 illustrations. Pp. x. + 681. 25*s.*

THIS text-book of Botany provides reading sufficient to cover the work required for the examinations (qualifying and major) of the Pharmaceutical Society and also for the botanical syllabus of the medical curriculum. The volume carries us even beyond these limits, giving a careful reader an all-round acquaintance with botanical science, approximating to the requirements for a pass B.Sc. degree.

The subject is developed in a way that makes the book rather difficult reading for a beginner. After an introductory chapter describing briefly the life-history of a dandelion, seeds are discussed and the germination of typical examples is described. Then follows a chapter upon the cell, including all the intricate details of nuclear structure and division. Chapters on the morphology and anatomy of stem, root, and leaf follow in succession, Plant physiology occupies the next four chapters; then buds, phyllotaxis, the flower, pollination, fruits and seed dispersal. Permeability of the protoplasm, plant movements and ecology fill the closing chapters of Part I.

Part II. is concerned with classification and includes a description of all the great groups of plants beginning with the Algæ and proceeding to the Angiosperms. Types of these groups are not considered separately in detail, but examples are used to illustrate the general vegetative and structural features of the group as a whole, and the physiological peculiarities. Methods of sexual reproduction are next considered, followed by asexual reproduction, vegetative propagation, and classification. The method of treatment adopted by spontaneous act; and the other artificial methods of birth control, were, as a rule, unreliable and offended the æsthetic sense; they led to local pathological conditions and to general neuroses. Their advocates had not unlimited faith in mechanical methods, as in most cases they advise their combination with chemical substances such as quinine.

Discussion.

Dr. **AMAND ROUTH** said that the expression "birth control" was misleading in a special sense; "conception control" was a better term for the methods of contraception under discussion. The smaller families of the present day resulted from knowledge of conception control, and every method in use was harmful to the nervous systems of those employing it; *coitus interruptus*, the method most common amongst the poor, was the most harmful of all. No means of conception control, save that of abstention from intercourse, should be used except upon medical advice. It was perfectly easy for a married couple to have a child every two years; taking into account the periods of pregnancy and lactation, for neither sex would the necessary self-control be too difficult.

The speaker then read statistics relating to the high rates of ante-natal, intra-natal, and neo-natal mortality in the British Isles, dealing in turn with prematurity, difficult labour, toxæmia, syphilis, and the significant heading "unknown causes." The facts of latent syphilis during pregnancy, he said, had recently been discovered, giving the explanation of the birth to infected parents of non-infected children; the spirochæte could be broken up into granules and rendered harmless by defensive chemical action taking place in the placenta. If every pregnant woman came under proper treatment congenital syphilis could be obliterated. The difficult position of a doctor in a case of induced abortion had been considered some time ago by the Royal College of Physicians of London, who passed resolutions to the effect that (1) a moral obligation rests upon every medical practitioner to respect the confidence of a patient, and (2) every medical man should urge his patient, particularly if there was likelihood of the latter's death, to make a statement as to the performance of the operation.

Earl **RUSSELL** wished to know the ideal behind the encouragement of an unchecked increase of population. Some people felt that it was advocated by those whose only concern was the supply of cannon-fodder for the armies. For himself the size of the British Empire mattered little; what mattered was the happiness and intellectual progress of its people. According to Prof. McIlroy and Dr. Routh the parents had apparently little to do with the matter; but medical measures of control would have to be of a nature acceptable to the laity, and many of the laity were not in an economic position to raise families except with State aid for mother and child. He totally disagreed with the idea that it was shocking for engaged couples to discuss fully the matter of children; such discussion marked a great improvement on Victorian ideas, and showed forethought not to be deprecated in the building-up of the nation. If it were true that all contraceptives were harmful, it was the duty of the medical profession to make the facts known to all. From the Parliamentary and legislative point of view, if the sale of contraceptives was made illegal, as urged by the Bishop of London, it would lead to much more serious evils, including a great increase in criminal abortion.

Dr. H. G. **SUTHERLAND** said that the economic side of the question of birth control was raised in the interest of the poor; but it was not the poor who failed in their duty—it was the well-to-do, whose motive was not economic difficulty, but selfishness.

Dr. **BERNARD O'CONNOR** considered that there was no logical difference between germicide and infanticide. The medical profession must set its face against immorality.

Dr. **HADEN GUEST** believed there was no definite solution to the very complicated sexual problem. Control of the sexual impulse was, as Prof. McIlroy had said, very necessary; but in England control was understood to mean repression. Life was happier in the Latin countries because there means were found for freer sexual expression. In India, where unfaithfulness in marriage was rare, the young people were highly trained to make love; they were taught to express themselves, not to bottle up the impulse in the manner of the Anglo-Saxon and Teutonic peoples. Sexual impulse could be trained and refined, but not repressed. Many of the methods of contraception were harmful; others, so far as he knew, were not; and what harm they might do must be counterbalanced by the harm resulting from repression. Under the present economic conditions, and in the present age of badly-adjusted nervous mechanism, few people could successfully raise a family of children born at the rate of one every two years.

Mr. **BERNARD SHAW** said that he viewed the subject without prejudice; the view of the Catholic clergy might be described as superstitious, but priests were men accustomed for long years to give good domestic advice. A priest would laugh at the idea that a life of complete abstinence in this respect was impossible; comparison of the voices of the men who sang in Westminster Cathedral with those of some who sang in music halls would suggest that such a life brought certain compensations. But he gathered that neither priest nor doctor really knew anything about the subject. As regards the view of the population as people who would fight, only 11 per cent. of British subjects were white, and only 35 per cent. of the people of the French Republic; both these countries could put enormous armies of black, brown, and yellow men into the field in time of war, and birth control amongst the whites might mean their swallowing up by those of other colours. He favoured birth control for the sake of control, which was desirable for its own sake in all human activity, and marked a step forward in civilisation and development. With reference to methods of control, he agreed largely with Dr. Guest; the harmfulness of these methods varied largely with the individual. Housing and diet had much to do with the provision of frequent stimuli. Parents naturally considered the question of expense. If women were really intelligent they would refuse to bear children unless they were well paid by the State for so doing. The income-tax form was, however, a beginning in this connexion. The reader of the paper had spoken of natural modesty, but in his opinion a great deal of modesty was not natural, but violently inculcated. The revolt against conventional modesty had resulted in immodesty. He wanted to appeal to the medical profession not to put forward claims to interfere in the private lives of married people.

Lord Justice **ATKIN**, in summing up the discussion, described as paradoxical the endowment of motherhood as a suggested cure for recourse to contraception; the necessary taxation might become so heavy that compulsory contraception would also become necessary. His experience in the criminal courts had shown him the misery caused by the professional abortionist. From all points of view birth control was a matter of the gravest importance in social and family life; married people owed a duty to the State, the stability of which rested upon the way in which children were born and bred; the use of contraceptives was undesirable because it favoured the avoidance of marriage and of the birth of children after marriage. It might come to a question of reasonable use of contraceptives; their total abolition was a counsel of perfection. The knowledge concerning them could not now be eradicated. The medical profession should make known statistics dealing with the effect of their use upon health rather than interfering with the tide of knowledge already abroad. The society was greatly indebted to Prof. McIlroy for her brave and open treatment of the subject.

Prof. **McILROY**, replying, said that the discussion had shown her that no guidance was to be had in the matter. The whole question must be taken up by the equivalent of the calcium attached to it. Calcium, combined with an organic substance at present not defined, is the essential factor in the commencement of blood coagulation; this complex probably corresponds to the thrombokinase of Morawitz.

The Oxygen Use of Muscle and the Effect of Sympathetic Nerves on it, by Hiromu Nakamura. The author's results refer to the rate of blood flow and oxygen exchange in the muscles and bones of the lower leg of the cat. The rate of flow makes no difference to the rate of oxygen use, except when the flow becomes very small. Section of the sciatic nerve when the sympathetic is intact causes in anæsthetised animals, in harmony with the experiments of others, an increase in rate of blood flow. Such section does not cause decrease in oxygen use. Stimulation of the peripheral end of the lumbar sympathetic causes great decrease both in the rate of blood flow and in oxygen use; the latter is probably a consequence of the former. The author concludes that the sympathetic does not increase the oxygen use of muscles, and, in agreement with Frank and Voit (1901), that the ordinary (extensor) muscular tone kept up by somatic nerves does not increase oxygen use. The rate of blood flow and oxygen use, both in anæsthetised and in decerebrate-curarised animals, was found to be unaffected by section of the sympathetic nerves, and by section of the sciatic after the sympathetic nerves have been cut.

Effects on the Frog's Heart of Varying the Alkalinity and Calcium Content of the Perfusing Fluid, by W. Burridge. In perfusion experiments on the frog's heart the effect of alkali depends, within certain limits, on the amount of calcium. Similarly the effect of calcium depends on the amount of alkali.

The Regulation of the Water Content of the Human Organism, by Edward F. Adolph. The experiments were undertaken to define some of the conditions which determine the amount of water in the body, and to exhibit the normal adjustments of the body fluids; they were therefore made by introducing water and other substances into the circulation from the alimentary tract, and not by intravenous injections, as these present very unusual and drastic conditions to organs of regulation—particularly to the kidneys—or by curtailment of their introduction. The addition to the body of water alone, accompanied by salts or urea, is not permanent. The solution retained for the greatest length of time is 1 per cent. sodium chloride. Water may be abstracted from the body by a large variety of methods, several of which were studied comparatively—e.g., use of nutrients having small water content, chiefly meat, bread, butter, jam, cake, and sugar, with sweating and thirsting. When no other constituent has been abstracted meanwhile, the body-weight is completely restored by drinking water. Depletion in water does not inhibit process of growth. The excretion of water, chloride, and urea during a diuresis due to any one of them is by far the most accurate indication so far studied as to whether the water of the body is normal in quantity. The water content of the whole organism is independent of every other single substance. The content may be raised by introducing a temporary store of salt or carbohydrate; this water is not a part of the essential structure of the body. Other than this, no evidence has been found for a reserve of "free" water; in thirst the excretion of water is kept up at the expense of water from the tissues themselves.

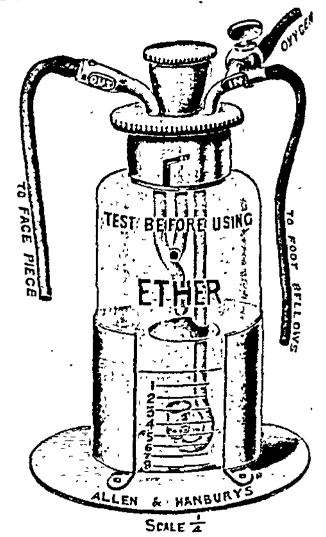
The Regulation of the Supply of Energy in Muscular Contraction, by W. Hartree and A. V. Hill. The following are a few of the conclusions arrived at by the authors. A single maximal shock produces considerably more heat at a lower temperature: a tetanic stimulus of about 0·017 second duration produces practically the same heat at all temperatures. A longer stimulus produces far more heat at a higher temperature. In a contraction the heat produced is the sum of two factors, corresponding to the two functions of a muscle of maintaining a force and of doing work. Interesting details as to the heat produced per gramme of muscle per second of stimulus, per cm. length of muscle per gramme weight of tension maintained per second of stimulus, and of the "efficiency" of muscle and other results, for which reference must be made to the paper itself.

New Inventions.

AN IMPROVED ETHER INHALER.

THE old Junker inhaler, holding an ounce, or at most two ounces, of chloroform, was a satisfactory inhaler in the days before the objection to chloroform was recognised. Ether, however, which demands a 15 per cent. vapour, needs an apparatus correspondingly larger in size. The essential requirements of such an apparatus are that is should be not only simple and portable but perfectly safe. These essentials have been very satisfactorily combined in the apparatus which I here describe.

It consists of a strong glass jar with nickelled metal cap, carrying inlet and outlet tubes with a funnel between them for the introduction of fluid ether. It is graduated to one-third of its height to hold eight ounces of ether. The inlet is bifurcated, one branch for oxygen if required, the other for connexion to a simple hand bellows or to a foot bellows. The outlet tube carries a three-foot rubber tube for attachment to a face mask, or to a mouth tube, or gag. The danger of faulty adjustment and the blowing over of fluid ether has been fully met and countered by the use of two ball valves. They admit the passage of vapour in one direction only and faulty adjustment is at once apparent, for in this case the instrument would not work. The large splasher situated below the out-going tube effectually prevents any entrance of fluid ether. Again, the impossibility of fluid ether passing over is secured by the central position of the vapour outlet above the splasher, for in whatever position the bottle may be placed, upon its side or upside down, no fluid ether can possibly pass over. The apparatus is simple, safe, and even "fool-proof."



SCALE $\frac{1}{2}$

The chilling of ether fluid by the passage of air through it may be avoided by placing the bottle in an ordinary enamelled jug, one-third filled with hot water, or by using a leaden coil immersed in boiling water, placed between the air bellows and the ether bottle.

I have fully tested this apparatus and believe it will be found perfectly satisfactory. It should appeal to many who do not take kindly to the transport and haulage of the more complicated and ponderous plants of anæsthetic machinery. The apparatus has been made for me by Messrs. Allen and Hanburys, Ltd., Wigmore-street, W.

HEDLEY C. VISICK, M.R.C.S. Eng.,
Hampstead. L.R.C.P. Lond.

Mr. Samuel Osborn, M.R.C.S. Eng., has received the King's permission to wear the Cross of Chevalier of the Order of the Crown, conferred upon him by the King of the Belgians in recognition of services to the Belgian sick and wounded in the late war.

Atlas de Syphilimétrie. Les conditions expérimentales de l'extinction de la syphilis. By Dr. ARTHUR VERNES. Paris: Libraire Félix Alcan. 1921. Pp. 121. Fr.35.

IN his "Atlas of Syphilimetry" Dr. Vernes strikes out a new line in the control and treatment of syphilis. He first establishes his diagnosis, not only whether syphilis or not, but the *degree* of syphilis; then he carries out his line of treatment; and finally puts every case to a supreme test, which he calls the "law of the three eights." He states that out of 20,000 cases no patient who has satisfied this law has ever been found to show any further sign of syphilis, nor has the offspring of any such patient shown any hereditary taint of the disease. His book is divided into five parts under the following headings: I. The Principles of Syphilimetry. II. The Law of the Three Eights. III. Arsenical Treatment. IV. Centres of Resistance and Mercury. V. Syphilitic Infection and Syphilimetry.

According to Dr. Vernes syphilis provokes a definite change in the blood serum. On adding to any human serum a substance which he calls péréthynol (a fluid containing an infinite number of ultra-microscopic granules in suspension) there occurs "flocculation"—that is, the granules congregate into masses, microscopic at first, later more and more visible. Péréthynol is prepared by extracting horse's heart with ethylene perchloride and alcohol, the details of the procedure being very elaborate. In syphilis this phenomenon of "flocculation" is much more marked in proportion to the intensity of the infection. If pig's serum is introduced into a suspension in process of "flocculation" the collections of granules disappear. On the other hand, pig serum is hæmolytic for sheep's red corpuscles. Dr. Vernes adds together péréthynol, human serum, pig serum, and, later, sheep's cells, and finds that the hæmolysing power of the pig serum varies inversely with what he calls its property of preventing flocculation, so that the degree of hæmolysis may be taken to correspond to the intensity of the syphilis, being complete with a normal serum and nil with a powerful syphilitic one. The degree of hæmolysis is compared with an artificially prepared scale of tints: T 0, T 1, T 2, T 3 . . . . T 8. (T 0 = no hæmolysis; T 8 = total hæmolysis); and in this way Dr. Vernes claims to be able to measure the intensity of the infection and to plot it as a curve.

The "law of the three eights" depends on the observation that normal serum always gives tint 8, corresponding to complete hæmolysis in the colorimetric scale. With the development of syphilis the curve rises from 8 to 0. The action of arsenical treatment shows itself by a gradual fall, which may be transitory or permanent. A return to tint 8 is considered permanent when the patient has satisfied the test of the *three eights*—tint 8 on examination once in each of eight months commencing from the last arsenical injection, and tint 8 with the cerebrospinal fluid at the end of this period.

Dr. Vernes claims that he has not seen this law broken, in spite of strict control for ten years. The patient who has fulfilled this test can contract syphilis anew, and infants born under its protection have never, according to him, shown any signs of syphilis, clinical or serological. He makes a great point of the rhythm of treatment and insists that it is much more important than the total dosage. He believes that the only permanently resistant form of syphilis is G.P.I., and says: "In any suspected case of this latter, successful treatment invalidates the diagnosis." He also contends that "the essential character of intervention to be effective is *intensity*."

Dr. Vernes is to be congratulated on the production of a lucid and interesting atlas. The excellent charts are in no way cramped and are, for the most part, to be found close to those parts of the text to which they refer, thus saving the reader the trouble of hunting for them. The author makes many bold statements, and claims, even to dogmatism, and he will find a number of people who do not agree with him. For example, he attempts to criticise and discredit the Wassermann reaction by saying that it is not a true application of the Bordet-Gengou phenomenon. His own experience is founded on a very large series of cases, and if only half of what he claims be true, his methods would warrant an exhaustive trial. We could have wished for some further explanation of how the author fixes his courses of treatment and the amounts of individual doses and their spacing; in some cases a dose is smaller in amount than the preceding or succeeding one, even when no blood examination has been done in the interval. Nor are we told what proportion of all cases or of each kind in the author's series has satisfied the "law of the three eights." The methods set forth demand considerable skill and experience and a perfectly fitted laboratory, but what man, who has any real knowledge of the ravages of syphilis, would hesitate over trouble and expense if convinced that good results could be obtained thereby? The atlas of syphilimetry and the articles by the same author which preceded it should be studied by all who have to do with the pathology and treatment of syphilis.

Syphilis. Tome I. Généralités et Syphilis de l'Adulte. By EMILE SERGENT, L. RIBADEAU-DUMAS, L. BABONNEIX. Paris: A. Maloine et Fils. 1920. Pp. 595. Fr.28.

THIS volume is the result of a collaboration of several contributors, all of whom are well known as authorities on the subject concerning which they write. The first part deals with the pathology, diagnosis, and treatment of syphilis in general; in the second part are sections dealing with syphilis of the different systems of the body, skin, mucous membrane, abdominal viscera and thorax. Each of these sections has been contributed by a different writer, and the result is the furnishing of a vast amount of information from the pens of recognised authorities on the subject. The manifestations of syphilis are so protean that it is difficult for one author to deal with all the lesions for which the *Treponema pallida* may be responsible. For this reason collaboration is essential for the production of an all-round work on the subject, if it is to aim at being authoritative,—and the book under review can be thus regarded. The treatment of the subject is comprehensive, forming a source of reference for those searching for information on some of the less familiar manifestations of the disease.

The chapter on syphilis of the alimentary system contributed by Dr. Favre is especially interesting inasmuch as it treats of lesions, the syphilitic nature of which is frequently missed. In dealing with syphilis of the stomach, Dr. Favre recognises a great variety of forms ranging from a simple catarrh of the mucous membrane to extensive infiltrations, followed by marked deformities of that viscus. So different are these syphilitic lesions that diagnosis is naturally a matter of difficulty. For this reason the author offers the same advice as that proffered by Fournier—i.e., not to search for symptoms characteristic of gastric syphilis, but to bear in mind the possibility of syphilis whenever faced with gastric trouble of obscure origin. As confirmatory evidence the result of treatment is of even greater importance than the Wassermann reaction. It is the fact of such lesions passing so frequently unrecognised, and not their refractory nature, that renders gastric syphilis a serious complaint. Perforation is fortunately, according to the author, a rare complication; the same, however, cannot be said of pyloric obstruction and hæmorrhage. The section on syphilis of the heart and blood-vessels is contributed by Dr. P. Rostaine, and shows that a great advance has been made in the knowledge of syphilitic lesions of these structures since the first observation on the subject published by Ricord in 1845. The important question of syphilis of the central nervous system is discussed

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR DECEMBER, 1920, AND JANUARY, FEBRUARY, MARCH, 1921.

December, 1920.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.			Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO3).	Chlorine (Cl).	Ammonia (NH3).
ENGLAND.										
London—										
Meteorological Office	44	0·20	2·32	4·53	1·38	1·93	9·36	0·94	1·00	0·12
Archbishop's Park	49	0·77	3·57	4·06	2·81	3·53	14·76	2·53	0·80	0·17
Finsbury Park ...	55	0·10	0·99	1·65	0·93	1·72	5·39	0·93	0·72	0·10
Ravenscourt Pk.	49	0·10	1·49	2·58	1·47	1·60	7·25	1·45	0·68	0·16
Southwark Park	47	0·87	5·89	5·37	1·77	3·01	16·91	1·61	0·83	0·20
Victoria Park ...	52	0·12	1·46	1·92	1·14	1·79	6·43	1·12	0·65	0·08
Wandsworth Com.	39	0·50	4·44	3·89	1·63	1·73	12·19	0·95	0·68	0·06
Golden Lane ...	50	0·09	3·54	4·19	2·19	4·78	14·78	2·10	1·17	0·24
Birmingham—										
Central	60	0·10	3·62	6·92	1·61	4·42	16·67	2·34	0·47	0·12
Aston	55	0·05	2·00	3·67	1·41	2·60	9·74	1·63	0·28	0·06
South-Western ...	58	0·04	0·56	1·20	0·75	2·13	4·68	0·94	0·26	0·05
Kingston-upon-Hull	66	0·17	3·08	6·95	3·01	7·03	20·24	3·39	0·93	0·14
Liverpool	60	0·26	4·26	11·59	3·74	6·17	26·03	2·72	1·03	0·17
Malvern	69	—	0·15	0·64	0·72	2·49	4·00	0·79	0·12	0·02
Newcastle-on-Tyne	92	0·28	4·51	5·27	1·84	6·45	18·35	2·12	0·98	0·28
Rochdale	90	—	—	—	—	—	13·55	—	—	—
Rothamsted	49	—	0·61	0·83	0·69	3·02	5·15	—	—	—
St. Helens...	69	0·13	2·53	2·94	1·55	5·35	12·51	1·54	1·79	0·01
Southport—										
Hesketh Park ...	61	0·13	1·33	2·01	1·48	4·29	9·24	1·29	1·28	0·05
Woodvale Moss ...	39	—	—	—	—	—	6·25	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	74	0·15	1·44	3·53	1·08	2·35	8·55	1·22	0·77	0·10
Bellahouston Pk.	89	0·17	2·40	4·30	1·53	3·06	11·46	2·06	0·64	0·11
Blythswood Sq. ..	84	0·28	4·30	5·20	2·06	2·95	14·79	1·69	0·93	0·16
Botanic Gdns. ...	88	0·14	4.29	2·88	2·12	2·52	11·95	1·94	0·76	0·13
Queen's Park ..	85	0·14	1·45	2·23	0·99	1·80	6·61	1·36	0·57	0·06
Richmond Park .	83	0·10	3·63	5·57	1·43	4·68	15·41	2·48	0·65	0·17
Ruchill Park ...	92	0·17	4·57	4·26	0·94	2·45	12·39	1·41	0·92	0·09
Tolcross Park ...	80	0·20	1·10	2·12	1·47	1·81	6·70	1·47	0·54	0·08
Victoria Park ...	94	0·15	2·38	3·54	1·14	3·19	10·40	1·76	0·76	0·16
Stirling	80	0.07	1·53	2·43	1·60	2·24	7·87	1·03	0·75	0·08

January, 1921.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.			Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO3).	Chlorine (Cl).	Ammonia (NH3).
ENGLAND.										
London—										
Meteorological Office	32	0·17	1·26	3·19	0·44	0·71	5·77	0·46	0·33	0·05
Archbishop's Park	46	0·09	1·43	1·67	1·02	1·97	6·18	1·29	0·49	0·12
Finsbury Park ...	55	0·05	1·14	1·69	1·09	1·23	5·20	0·88	0·49	0·09
Ravenscourt Pk.	54	0·05	0·83	1·65	1·01	1·15	4·69	1·03	0·43	0·08
Southwark Park	38	0·24	2·45	4·20	1·30	1·39	9·58	1·06	0·43	0·09
Victoria Park ...	48	0·14	1·17	1·94	0·95	1·55	5·75	1·51	0·47	0·07
Wandsworth Com.	38	0·07	0·82	2·19	0·69	0·93	4·70	0·54	0·41	0·08
Golden Lane ...	51	0·05	2·57	3·40	0·81	3·66	10·49	1·65	0·86	0·11
Birmingham—										
Central	58	0·12	2·12	8·43	1·28	3·62	15·57	1·85	0·35	0·12
Aston	52	0·11	1·38	4·15	0·99	2·89	9·52	1·29	0·29	0·05
South-Western ...	61	0·02	0·27	0·60	0·43	1·64	2·96	0·51	0·15	0·03
Kingston-upon-Hull	52	0·11	1·43	1·79	1·66	3·84	8·83	1·75	0·70	0·03
Liverpool	94	0·20	2·79	7·01	3·02	7·55	20·57	2·79	2·07	0·18
Malvern	72	—	0·10	0·25	0·39	1·67	2·42	0·59	0·13	0·01
Newcastle-on-Tyne	108	0·25	2·58	3·88	1·72	3·02	11·45	0·85	0·92	0·05
Rochdale	178	—	—	—	—	—	21·04	—	—	—
Rothamsted	60	—	0·37	0·43	0·71	2·84	4·35	—	—	—
St. Helens...	103	0·12	3·26	2·32	1·73	4·47	11·90	1·52	1·55	0·005
Southport—										
Hesketh Park ...	105	0·11	0·63	0·80	1·84	4·74	8·12	1·45	1·37	0·02
Woodvale Moss ...	82	—	—	—	—	—	8·34	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	134	0·08	1·17	2·46	2·39	2·80	9·90	2·67	1·49	0·27
Bellahouston Pk.	134	0·08	0·65	1·27	2·64	3·07	7·71	1·82	1·37	0·21
Blythswood Sq. ...	125	0·16	1·28	3·60	1·58	3·95	10·57	2·74	1·26	0·22
Botanic Gdns. ...	129	0·02	2·39	2·09	0·46	7·70	12·66	1·46	1·07	0·23
Queen's Park ...	133	0·09	0·68	1·14	1·92	6·97	10·80	2·13	1·09	0·23
Richmond Park...	135	0·05	1·15	2·30	1·16	6·58	11·24	2·41	1·24	0·25
Ruchill Park ...	132	0·08	0·95	1·68	1·35	5·63	9·69	2·10	0·83	0·20
Tolcross Park ...	133	0·08	0·99	2·23	1·27	7·45	12·02	2·65	1·19	0·27
Victoria Park ...	128	0·09	0·95	1·77	1·64	7·65	12·10	1·62	1·23	0·20

February, 1921.

Place.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO3).	Chlorine (Cl).	Ammonia (NH3).
ENGLAND.										
London—										
Meteorological Office	6	0·15	1·23	3·43	0·77	1·21	6·79	0·51	0·38	0·04
Archbishop's Park	5	0·03	0·19	0·48	0·79	1·63	3·12	0·93	0·22	0·02
Finsbury Park .	7	0·08	0·76	2·71	0·68	1·22	5·45	0·58	0·23	0·02
Ravenscourt Pk.	4	0·09	0·80	2·46	0·64	0·90	4·89	0·75	0·17	0·02
Southwark Park	6	0·20	1·51	1·68	0·91	1·50	5·80	0·79	0·23	0·02
Victoria Park	6	0·07	1·12	2·43	0·62	0·90	5·14	0·49	0·02	0·01
Wandsworth Com.	4	0·05	1·02	1·67	1·02	1·23	4·99	0·69	0·32	0·04
Golden Lane ...	6	0·05	2·26	2·94	0·59	2·18	8·02	0·87	0·36	0·05
Birmingham—										
Central	3	0·12	2·84	9·18	0·80	2·10	15·04	1·10	0·15	0·01
Aston	5	0·07	1·53	5·73	0·51	1·30	9·14	0·65	0·08	0·01
South-Western ...	4	0·05	0·62	2·28	0·28	0·90	4·13	0·44	0·06	0·01
Kingston-upon-Hull	8	0·08	2·22	3·82	1·12	2·98	10·22	1·32	0·38	0·03
Liverpool	8	0·14	1·84	4·60	2·34	5·06	13·98	2·61	0·67	0·05
Malvern	5	—	—	—	—	—	—	—	—	—
Newcastle-on-Tyne	3	0·25	2·27	6·61	0·52	0·93	10·58	0·52	0·15	0·01
Rochdale	16	—	—	—	—	—	11·57	—	—	—
Rothamsted	5	—	0·30	0·40	0·75	1·89	3·34	—	—	—
St. Helens	8	0·05	1·42	2·09	0·48	1·42	5·46	0·53	0·37	0·03
Southport—										
Hesketh Park ...	7	0·003	0·17	0·20	0·22	0·40	0·99	0·13	0·10	0·003
Woodvale Moss...	18	—	—	—	—	—	1·99	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	17	0·09	0·66	1·19	0·87	1·48	4·29	0·70	0·27	0·03
Bellahouston Pk.	23	0·13	0·61	1·19	0·91	1·42	4·25	0·63	0·24	0·03
Blythswood Sq. ..	21	0·10	2·19	3·57	0·94	2·06	8·86	1·20	0·27	0·08
Botanic Gdns. ...	23	0·12	1·16	2·09	1·05	1·60	6·02	0·70	0·18	0·03
Queen's Park	19	0·09	1·07	2·20	0·65	0·43	4·44	0·54	0·15	0·04
Richmond Park .	19	0·13	2·10	3·43	1·16	1·88	8·70	1·27	0·22	0·03
Ruchill Park ..	27	0·12	1·34	2·03	0·79	1·50	5·78	0·79	0·25	0·07
Tolcross Park ...	14	0·18	1·66	3·00	2·73	1·28	8·85	0·80	0·16	0·03
Victoria Park .	25	0·03	2·47	1·97	0·74	1·35	6·61	0·69	0·19	0·05

March, 1921.

Place.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO3).	Chlorine (Cl).	Ammonia (NH3).
ENGLAND.										
London—										
Meteorological Office	29	0·24	1·16	3·85	1·11	1·06	7·42	0·60	0·71	0·05
Archbishop's Park	26	0·11	3·48	4·49	1·25	2·13	11·46	1·26	0·59	0·10
Finsbury Park ...	26	0·11	1·20	3·86	0·70	0·91	6·78	0·50	0·48	0·09
Ravenscourt Pk.	28	0·18	1·93	6·61	0·89	1·41	11·02	0·74	0·43	0·09
Southwark Park	25	0·55	5·80	11·87	1·42	2·65	22·30	1·18	0·51	0·11
Victoria Park ...	25	0·17	1·85	4·36	0·94	1·20	8·52	0·66	0·44	0·07
Wandsworth Com.	21	0·85	1·79	3·72	0·89	1·03	8·28	0·46	0·60	0·07
Golden Lane ...	25	0·05	2·52	3·75	1·12	2·13	9·57	0·86	0·81	0·09
Birmingham—										
Central	27	0·14	2·46	7·90	1·29	2·88	14·67	1·19	0·32	0·08
Aston	26	0·11	1·89	9·24	0·89	2·22	14·35	1·02	0·24	0·06
South-Western ...	31	0·02	0·55	3·13	0·41	1·78	5·89	0·70	0·11	0·03
Kingston-upon-Hull	25	0·12	1·29	3·73	0·95	3·37	9·46	1·77	0·55	0·08
Liverpool	52	0·20	3·10	6·07	1·76	4·66	15·79	2·10	7·35	0·05
Malvern	51	—	0·13	0·28	0·54	1·77	2·72	—	—	—
Newcastle-on-Tyne	21	0·17	2·88	7·41	0·75	1·62	12·83	0·76	0·35	0·06
Rochdale	95	—	—	—	—	—	18·34	—	—	—
Rothamsted	25	—	0·46	0·61	1·06	2·11	4·24	—	—	—
St. Helens...	48	0·11	2·40	3·65	0·96	2·19	9·31	0·94	0·72	0·01
Southport—										
Hesketh Park ...	70	0·03	0·29	0·45	1·58	1·62	3·97	0·41	1·12	0·005
Woodvale Moss ..	59	—	—	—	—	—	3·23	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	100	0·03	1·13	2·08	2·07	2·32	7·68	1·44	0·83	0·18
Bellahouston Pk.	115	0·05	0·55	1·40	3·33	3·75	9·08	2·09	0·76	0·15
Blythswood Sq. ...	109	0·14	2·31	4·10	1·88	3·07	11·50	3·08	0·88	0·17
Botanic Gdns. ...	113	0·12	1·21	2·38	1·99	3·39	9·09	1·74	0·70	0·19
Queen's Park ...	104	0·07	0·58	1·62	1·05	2·63	5·95	1·18	0·58	0·10
Richmond Park...	121	0·12	1·85	3·13	2·26	3·52	10·89	1·82	0·79	0·15
Ruchill Park ...	107	0·09	1·58	2·48	2·28	3·44	9·87	1·48	0·77	0·15
Tolcross Park ...	105	0·07	1·61	2·70	3·61	5·15	13·14	1·83	0·65	0·11
Victoria Park ...	107	0·06	0·52	1·18	2·11	3·22	7·09	1·70	0·64	0·12

"Tar" includes all matter insoluble in water but soluble in CS2. "Carbonaceous" includes all combustible matter insoluble in water and in CS2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 9lb. per acre; (b) 2·55 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved [illegible] the same as published in previous tables.

the author results in a good general presentation of the characteristics of each group of plants, while the search for details relating to any given type is facilitated by the provision of an excellent index and by the illustrations. Plant physiology is dealt with along modern lines, special attention being directed to certain newer theories which the author regards as fundamental and therefore elementary (see Preface). We think, however, that in teaching the early stages of botany it is better to direct the attention of the student mainly to experimental methods, limiting the discussion of theoretical speculations at least to such views as have obtained a full measure of recognition. For the more advanced student the newer speculations have much interest, and these readers will welcome the useful summaries given in this text-book.

The volume is fully illustrated, the majority of the figures being good and clear. The floral diagrams of the family Liliaceæ (Figs. 1323 and 1330) are incorrectly placed with respect to the axis. Some of the diagrams seem to have only a remote connexion with the text, and one or two of them are rather overcrowded with detail. The book as a whole is a useful addition to English botanical literature and should find a place in the library of students taking a university course in this subject.

JOURNALS.

Journal of Physiology, Edited by J. N. LANGLEY, Sc.D., LL.D., F.R.S. Vol. LV. 1921. Nos. 1 and 2. Cambridge University Press. Pp. 1–158. 14*s*.—The Substances needed for the Growth of a Pure Culture of *Colpidium Colpoda*, by R. A. Peters.—The Replacement of Potassium by Uranium in Perfusion of the Heart, by H. Zwardemaker. The author has already demonstrated that uranium or any other radio-active element can be substituted for potassium in Ringer's fluid in perfusion without disturbing the automaticity of the heart of the frog and the eel, provided that the amount of the element substituted is radio-equivalent to that of potassium in the fluid. The amount of uranium required for effective substitution in the frog is not the same in summer and winter—i.e., there are factors, with which the author deals, which increase or decrease the effect of radio-activity.

The Influence of Extension and Temperature on Heat Production in the Muscle Twitch, by Y. Doi. The author confirms the statement that heat production reaches a maximum at a certain moderate extension. Before this optimal length the heat production increases, and beyond this it decreases with increasing extension. The optimal extension of a muscle is shorter at a lower temperature than at a higher. The heat production is larger at a lower temperature than at a higher, except at very extreme extensions.—The Influence of an Acute Anoxic Anoxæmia on Respiration and Circulation, by the same author. The writer's experiments were carried out on cats anæsthetised with urethane. When the cat is subjected to an oxygen-pressure lower than that of the ordinary atmospheric air the volume of blood passing through both lungs per minute is the same as that when the breathed air is normal, regarding the hæmoglobin concentration as the same. After a short exposure to a low oxygen-pressure the cat takes up the same amount of oxygen as that in normal air. On an acute anoxic anoxæmia the volume of the respiration per minute increases. When the cat is exposed to a deficiency of oxygen the frequency of respiration and pulse increases, and the output of each heart beat decreases. The decrease of the percentage saturation of oxyhæmoglobin in the arterial and venous blood is nearly parallel in the state considered, so that the difference of oxygen content of the arterial and venous blood is fairly constant.

On the Amount of Heat Liberated by *Bacillus Coli* when Grown in the Presence of Free Amino-acids, by C. Shearer. It had been found that *B. coli* grown on various culture media produced little or almost no heat when grown on tryptic broth. This and other observations led to the author's experiments, with the result that he found that when *B. coli* is supplied with abundance of free amino-acids already prepared the process of building these into the living protoplasm is an extremely economical one, in which little energy is used. The process is three to eight times more effective than the growth of the same organism on glucose-peptone broth. Tryptic broth that has been digested for a short time (one week) produces considerably more heat with *B. coli* than the same broth digested for a long time (three to eight weeks). The difference would seem to be far too great to be accounted for by the extra hydrolysis the polypeptids had undergone in the three to eight weeks' fluid. The pathological process of metabolism, either with tryptic digest or in any other culture fluid, is always accompanied by a greater liberation of heat than is given by the same amount of growth on the same medium under normal healthy conditions; pathological growth is thus less economical than normal growth.

The Physiological Changes Produced by Radium Rays and Ultra-Violet Light in the Eggs of Nereis, by Alfred C. Redfield and Elizabeth M. Bright. It is already known that the exposure of the unfertilised eggs of *Nereis limbata* to the β or γ rays of radium brings about certain very definite changes in the process of membrane formation and jelly secretion which ensues when the eggs are subsequently fertilised. The authors set out to observe the effects of other kinds of radiation on this process, and the nature of the changes thereby produced in the egg, and to explain the specific differences in the effects of different radiations. Elaborate details are given in comparison of different kinds of radiation and as to the methods of obtaining the rays. It was found that a rays and ultra-violet light resemble β and γ rays in altering the process of membrane formation and jelly secretion in nereis eggs, but the process is unaffected by wave lengths of light shorter than 3000 A.V. The changes produced are limited to one side of the egg. Radiation alters the process of jelly-secretion and membrane formation by causing a certain quantity of the jelly substance to be retained within the perivitelline space of the egg. The retention of the jelly substance is due chiefly to an alteration in its physical properties. There is no reason to believe that a change in the permeability of the membrane of the egg is an important factor in causing this retention. The differences in the effects of the radium rays and ultra-violet light on membrane-formation, on the induction of artificial parthenogenesis, and on the prevention of development are due to differences in the penetrating power of these radiations, and the failure of visible light to affect the egg is attributable to the limited absorption of those wave lengths by protoplasms. Since the change produced in the egg is simple in nature, it is justifiable to suspect that some common mechanism underlies the effects produced by these different radiations.

The Coagulation of the Blood. I. The Rôle of Calcium, by H. W. C. Vines. In all theories of coagulation the presence of calcium salts is recognised as an essential factor, and it is generally held that the activity of calcium depends on its presence in the ionised form. The author's experiments were made on normal human blood. He finds that calcium is present in normal blood in two forms, ionised and combined; the latter is transformed into the ionic state during coagulation. The addition of oxalate, citrate, or fluoride to normal blood in amount chemically equivalent to the total calcium of the blood does not inhibit coagulation; this indicates that the presence of ionised calcium is not essential to the clotting process. The anticoagulants described all inhibit clotting primarily by combining with the calcium-containing complex; the amount of anticoagulant required to neutralise the action of the complex is in each case in excess of the chemical tuberculosis for all time? It is probable that we have underestimated the numbers concerned, for in addition to the figures given, thousands of new cases would continue to be added annually to the lists of candidates for segregation.

Another calculation may be based on the opinion of no less an authority on tuberculosis than Calmette. He has recently expressed the view that everyone who reacts to the tuberculin test—even though apparently healthy—is an intermittent spreader of tubercle bacilli, the more dangerous because unsuspected. The overwhelming majority of the adult population of civilised communities being tuberculin-positive, we are faced with the comic-opera problem of locking up more than 90 out of every 100 adults. Even the most fanatical advocates of segregation must experience some diffidence when the problem is seen from this point of view. To distinguish between the various degrees of "dangerousness" among the tuberculin-positive would be an invidious task, leading to unfair discrimination as between rich and poor. For a patient's banking account must affect his classification as "dangerous" or "safe," and any legislation conferring summary powers over the tuberculous would create violent opposition from the bulk of a community. It has been facetiously, but with quite sound logic, suggested that if the "segregationist" must have his way and part the tuberculin-positive from the tuberculin-negative, it would be simpler for the majority—i.e., the tuberculin-positive to remain at home, and for the minority to be removed to some hypothetical place of safety. This suggestion may seem paradoxical and fantastic, but has not the principle of segregation of the non-tuberculous already been put into practice? Is not this the principle adopted consciously or unconsciously whenever a slum child is given a holiday in the country? It is amazing to find the success achieved by the segregation of lepers in Norway seriously cited as an argument in favour of segregating consumptives. Considerably less than 1 per cent. of the population in Norway being lepers it was comparatively easy to control this small minority. In the case of tuberculosis, however, this proportion is reversed, and the tuberculin-positive are in a majority whose exclusion from the community is impossible. In many points the comparison with leprosy is misleading, and we should temper our judgment of Koch's patronage of this analogy by the reflection that it dated from a time when tuberculosis was still regarded as a weed with comparatively short roots. Thanks to v. Pirquet, we no longer measure the disease only in terms of months and years; we think in decades. Indeed, some of the factors determining the outbreak of active tuberculosis would appear to be traceable to a "tuberculous tendency" in certain of our ancestors. Confining ourselves to the present generation we find a disease running for a long time a clinically, but not necessarily a bacteriologically, subterranean course. Sometimes, indeed, quite often, the patient lives with his disease for more than 50 years, during which he intermittently disseminates tubercle bacilli. The few months he may take to die in an isolation hospital are but a brief fraction of his sputum-positive career. Without hospital segregation he would die in the home in which he had done all the harm his disease was capable of doing long before his working capacity broke down.

Before we commit ourselves to a policy of compulsory segregation, we should do well to weigh the extent to which it would force the disease into subterranean channels, and prevent that early diagnosis which every one familiar with this disease considers the first essential to successful treatment. The subject is not one for dogmatic pronouncements, but we have a shrewd suspicion that if tuberculosis comes to be regarded by the working classes as a legalised reason for compulsory breaking up of their homes, they will take every possible step to evade early diagnosis and the treatment which may terminate in segregation. And if tuberculosis comes to earn the unenviable stigma of such hidden diseases as syphilis and gonorrhœa, we may rest assured that its conquest has been deferred for many a day. We do not know what view the Conference will take of these complicated problems, but they will do well to approach them, not in the well-meaning but primitive lock-'em-up spirit of the policeman, but with a statesmanlike grasp of the many considerations that must be taken into account.

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The Resurrection Man.[1]

Burke and Hare were murderers, of whom the former was hanged at Edinburgh on Jan. 28th, 1829, and the latter, having been called as a witness by the Crown, escaped trial. They were not body-snatchers or resurrectionists, Mr. Roughead points out, and there is nothing to show that they had ever even attempted that gruesome occupation. They had done what the body-snatcher did for the anatomist, by bringing bodies to his lecture room in days when the necessity for instruction in anatomy was recognised as part of the medical curriculum, but when the law made practically no provision for a supply of subjects. Burke and Hare, however, did not rob graves of the dead. They suffocated the living, after fuddling them with drink, packed their bodies in boxes before they were stiff, and delivered them almost before they were cold at "Dr. Knox's Rooms for Practical Anatomy," 10, Surgeons' Square. The prices paid ranged up to £10 per body, which was the usual sum, and at least 16 subjects had been supplied by these miscreants within a space of nine months before an honest labourer and his wife, lodging at Burke's, and probably destined for death themselves, found the body of old Mary Docherty lying naked under the filthy straw of the bed, and informed the police. With moderate promptitude, but with no great alacrity and no noteworthy insight into the possibilities of the case, the police began inquiries which resulted in the arrest of the right persons, Burke, Hare, and two female associates of the criminals. The full measure of the iniquity of the gang was not revealed until Hare was sure of his escape as King's Evidence, and even so may never have been wholly discovered. The trial, with its legal argument on the relevancy of an indictment charging three separate murders, and as to how far the accomplice Hare might be cross-examined at Scots law with regard to his own crimes, contains several points of interest to a historian studying the growth of the criminal law. In medical history it occupies an even more important place. The horror it aroused secured the passing of legislation to prevent, so far as possible, the recurrence of the crimes which it revealed, by stimulating into action a legislature which had been fully aware of the needs of science, and had left them to be catered for by the resurrectionist.

The Lancet had done its full share in calling attention to the requirements of the anatomical

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[1] Burke and Hare, Notable Trials Series, edited by William Roughead, author of "Twelve Scots Trials," &c. 1921. London and Edinburgh: William Hodge and Company, Ltd. Pp. 280. 10s. 6d.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Colchester.

IN Colchester the estimated population for 1920 was 43,007. The birth-rate has jumped from 16 to 22; there were 351 more infants born in Colchester in 1920 than in 1919. Dr. W. F. Corfield draws attention to two important statistical records—viz., a general death-rate of 10·3 and an infant mortality rate of 44·1. The death-rate from tuberculosis is 0·79 for pulmonary and 0·27 for other forms. Of the 47 deaths of infants under 1 year, no less than 25 were attributed to congenital debility and premature birth, showing that there is still room for improvement even with a rate of 44. Dr. Corfield suggests that the slaughter-house of the Coöperative Society should be used as a public abattoir and the other slaughter-houses closed. Food condemned in London as unfit for human consumption has recently been released for cattle or poultry feeding and sent to dealers who sold food for human consumption. "It would be more satisfactory if no dealer in human foodstuffs were allowed to receive condemned unsound food under any circumstances whatever."

The modified regulations for the notification of measles and whooping-cough came into force on April 1st, 1920, and Dr. Corfield thinks the result encouraging. Nursing assistance has been provided for severe cases. Dr. Corfield complains of patients being sent to sanatoriums under the county scheme with their teeth in a bad state. "It is wasting valuable time to send a man with a mouth full of carious teeth to a sanatorium in the hope of materially improving his health." The health visitors act as general health nurses and visit infants, school children, and cases of tuberculosis. Thus overlapping is avoided, and the health visitor has a chance of becoming a friend of the family. The antenatal clinic has made little progress as yet. "It is a definite drawback to the work that the borough council is not the supervising authority under the Midwives Act."

Five cases of ophthalmia neonatorum were notified. Four recovered without damage, but the fifth case resulted in complete loss of the sight in one eye and great diminution in the other. In 1919 it was estimated that 600 new houses were required. Under the council's scheme 28 have been completed and 50 are in course of erection. Overcrowding has to be regarded with a lenient eye. A number of old houses require renovation and some only deserve destruction, "but it is still necessary to leave such hovels standing and occupied until the time comes when house room is not so scarce as it is at the present time."

Margate.

The Registrar-General's estimate of the population for 1920 is 23,243. The death-rate is given as 12·7, the birth-rate as 24·5, the tuberculosis death-rate as 1·4, and the infant mortality rate as 68. Dr. R. McCombe estimates the ordinary population at about 30,000—increased at the height of the season to about 100,000. The principal occupation is catering for visitors, and Dr. McCombe thinks many of the children attending the elementary schools are seriously neglected during the season. A new reservoir to hold 2,000,000 gallons has been approved. The water is from the chalk and of very high bacteriological purity. A considerable extension of the sewerage system has been rendered necessary owing to the extension of the borough. Six steam wagons have lately been purchased to facilitate scavenging. A motor ambulance is needed for the isolation hospital. Tuberculosis is under the care of the county council, and it is mentioned that "the accommodation for patients in sanatoriums is most inadequate." A new infant welfare centre, adapted from an army hut, was opened in September last. Five cases of ophthalmia neonatorum were notified and recovered without permanent injury to eyesight. There are three midwives in practice, two being municipal. "The two municipal midwives are paid a stated salary by the town council and the fees received from their patients are paid back into the borough fund" . . . . "The municipal midwives occupy their spare time in antenatal visiting." They attended 227 midwifery cases during the year.

The housing scheme of the council provides for 300 houses during the next three years. Only four are completed. Dr. McCombe says: "It would seem that some considerable time must elapse before the shortage of houses can be overcome, and it would also appear that the 300 houses to be built in the borough by the housing committee will not satisfy the present demand." In the meantime, there is difficulty in getting existing houses kept in good repair, and "standards are not quite so high as in pre-war days." The total hours of sunshine registered at Margate during 1920 were 1522.

Southwark.

Dr. G. Millson states that the estimated population for 1920 was 187,142; the death-rate was 14·4 (2·0 above that of London), the birth-rate 31·8 (5·3 above that of London); the infant mortality rate was 86, the lowest on record. The death-rate from pulmonary tuberculosis was 1·3, while that for London was 1·01. As in other towns this rate went up during the war years and is now lower than before the war, Dr. Millson says: "Much poverty has existed in the borough during the year. Necessitous children and expectant mothers have received free milk to the extent of £1658 14*s*. 2*d*. The municipal nursery, which accommodates 45 infants, has been always full and four times the number accommodated have applied for admission." Southwark is usually overcrowded but has been more so than usual in 1920. "There are various large housing schemes before the council necessitating the clearance of upwards of 20 acres in the borough. These have been held up for a time partly on account of the inability to provide accommodation for the dislodged population and partly on account of the high price and the difficulty of obtaining building materials." There is no vacant land for building purposes in Southwark.

Very complete tables of statistics and of sanitary work done are submitted from which we extract a few items. The infant mortality rate among illegitimate infants was 156. There were 91 cases of ophthalmia neonatorum notified, but no mention is made of the amount of permanent damage to the eyes or loss of sight resulting therefrom. Of the 243 deaths from pulmonary tuberculosis 147, or 60·5 per cent., occurred in institutions. The hospital-treated diphtheria cases, 440 in number, had a case-fatality of 7·5 per cent., while 17 home-treated cases gave a case-fatality of 23·5 per cent. Dr. Millson advises that measles be again made notifiable. "The maternity and child welfare scheme is in full operation. Of the 14 centres existing at the present time, seven are entirely municipal, three partly municipal and partly voluntary, and four wholly voluntary."

Hove.

In 1920 the population estimated for birth-rate was 46,204 and for death-rate 45,909; the birth-rate was 15·5: "the births always exceeded the deaths until 1913: in the years 1915 to 1919 the loss by excess of deaths over births was 380; in 1920 the births exceeded the deaths by 184." The death-rate was 11·65 and the infant mortality rate 48. "The most troublesome sanitary problem in recent years—viz., the disposal of house refuse—has at last been brought to a satisfactory solution, and the crusher works are in process of erection." "The erection of houses under the council's housing scheme has not yet begun, but this is not the fault of the council." Twenty-four new houses have been erected and 51 additional tenements provided by alteration of houses into flats. "There are many houses still overcrowded, but no other accommodation can be found."

Annotations.

"Ne quid nimis."

MINISTRY OF HEALTH: ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER.

THE annual report of Sir George Newman, the Chief Medical Officer of the Ministry of Health, for the year 1920 was published this week, and, considering the importance and variety of the matter to be reviewed, its date of issue is a remarkably prompt one. The document is a less bulky one than that published last year, when the machinery of the Ministry came in for description. It deals comprehensively and in a popular manner with the state of public health during 1920, as revealed by official statistics and by the work and records of the Ministry, and a summary has been distributed to the lay press; this has proved a judicious course of procedure, for in this way the medical history of the year has been revealed in brief to all. That history reveals no alarming epidemic nor any decline from a steady improvement in general health. Sir George Newman is insistent upon two points as the basis of ministerial policy: consolidation and strict economy. Every pound expended on our medical services must be made to yield the full value of a pound. A rise in birth-rate, a fall in infant mortality, an almost negligible notification of smallpox, absence of alarming epidemics, and a decline in tuberculosis are cheering pieces of information to be found in the report.

With regard to V.D. the report recalls the fact that the policy of the Ministry is based largely on the findings of the Royal Commission of 1916; confidential registration of the cause of death has not been found possible, but the other important recommendations of the Commission have been carried out. The effect of communal action is thus stated:—

> (1) There were a total number of new cases treated in clinics (including non-venereal cases) of 103,000. The total number of attendances was 1,488,000.
>
> (2) The rapid rise of "new" cases in 1918–1919 did not continue. The number (quite untrustworthy as a basis for calculations) remained stationary.
>
> (3) The total attendances have increased greatly, the clinics being more appreciated as time passes.

The circumstances of insurance practice are explained in the report, while, though criticism is not deprecated, the fair reminder is given that the service having grown up under unpropitious circumstances has not had a fair chance of arriving at the hoped-for all-round efficiency. A new scale of medical remuneration and the use of record cards have been introduced: the latter innovation was received in certain quarters with opposition, the value of statistical information being counterpoised by the ethical difficulties, of which more, it appears, may be heard. The limitation of panel lists and the new facilities for choice of doctor must have a beneficial effect upon a service which ministers to about one-fifth of the whole population, for the number of insured persons entitled to such benefit in 1920 was, we are told, 13,873,000, while computations show that about 60 per cent. of these people actually received treatment.

The report covers a number of other important functions of the Ministry, either in integral chapters or as appendices, and we shall have constant occasion to make further reference to it.

DERMATOLOGICAL PROGRESS.

IT is no exaggeration to say that much of dermatology is still a closed book to many medical men. That this should be so is partly due to the unnecessarily complex nomenclature of skin diseases; partly to the fact that even an elementary knowledge of the subject is seldom required in the qualifying examinations; and to some extent because an "eye for skins," like an "[illegible] for music," though not precisely an innate gift, can only be acquired with perseverance and use of all opportunity. This is regrettable, since, apart from definite eruptions, changes in the texture, colour, and secreting functions of the skin are often the earliest signs of ill-health, and may unmask some abnormal condition which, if neglected in its beginning, may lead to serious disease.

In his Lumleian lectures for this year, two of which we have already published and the third of which we publish this week, Dr. Arthur Whitfield shows with admirable clearness how modern research is tending to raise dermatology to its rightful place in medical science; and in the light that is now being thrown on their causation the nomenclature and classification of skin eruptions is becoming progressively simpler. These lectures make fascinating reading, and some of the case-histories of patients with eczematous dermatitis due to external causes afford the amusement of good detective stories. The importance of focal sepsis, bacilluria, and indicanuria in the ætiology of some skin diseases is rightly insisted on, but Dr. Whitfield is not only an acute observer, he is also a very careful critic both of his own work and that of others, so that his conclusions may be accepted with confidence. Of particular interest are the cases he quotes of autosensitisation—namely, those in which a generalised eruption may follow severe bruising of the tissues, and those in which the fluid from the vesicles of an acute eczema is irritant to the patient's own skin but innocuous to that of a healthy person. The question, too, of foreign protein sensitisation, which is being exhaustively studied in America, certainly deserves the closest attention both from the dermatologist and the general physician, but it is beset with difficulties, and the interpretation of the phenomena already observed is, as Dr. Whitfield points out, by no means clear. Further research in the subject may show that it is of far greater importance than at present seems likely, and it is one of particular interest to the dermatologist, since cutaneous eruptions are some of the commonest reactions that occur as a result of protein sensitisation. Dr. Whitfield deserves credit alike for his own original work and for having shown so clearly that dermatology is now securely based on scientific investigation and reasoning.

THE COMPOSITION OF MILK.

A QUESTION was recently asked in the House of Commons on the prosecution of farmers and dairymen for supplying milk deficient in fat, and it was suggested that the basis of any prosecution should be not one or two but a series of tests to eliminate the possibility of unfairness. Sir A. Griffith-Boscawen admitted that the subject was of interest.

The value of milk as an article of food depends upon (1) its chemical composition—i.e., upon its content in protein, carbohydrate, and fat; (2) its content in the three accessory food factors or vitamins. Its food value is generally calculated from the composition of protein = 3·3 per cent., carbohydrate = 4·8 per cent., and fat = 3·6 per cent., but in reference to its sale its value is based upon a minimum of 3 per cent. fat and solids not fat of 8·5 per cent. It is well known that the chemical composition of milk varies greatly; not only does the fat vary, but also the protein and carbohydrate. The greatest variations occur in the fat content, figures having been recorded from under 2 per cent. to above 6 per cent. The variations in protein and lactose are not so well known, since these constituents are not regularly determined, but they may amount to about 1 per cent., though usually about 0·5 per cent. The variations are due to several conditions such as time of milking, morning, afternoon, or evening, period of lactation, state of nutrition, and nature of nutrition of the animal; consequently it is very difficult to set up a really satisfactory standard for milk. On the whole the standard of 3 per cent. fat is a satisfactory figure, as usually the mixed milk from a herd of cows is sold on the market. The high fat content of the milk of some animals will balance

THE LANCET.

LONDON: SATURDAY, JULY 23, 1921.

Opening of the B.M.A. Meeting.

The second annual meeting of the British Medical Association to be held under post-war conditions is drawing to a close. It has been a notable gathering in many respects, and especially in its tacit recognition of medicine as an integral part of human life and endeavour. At the opening session of the business meeting the Lord Mayor of Newcastle-on-Tyne, in welcoming the medical profession to the metropolis of the North, compared the present gathering with the previous Newcastle meeting of 1893, calling attention to the closer grip of medicine on public affairs which has come about in the intervening 30 years. And Dr. T. W. H. Garstang, in reply, foreshadowed still further and swifter change in the years immediately ahead of us. The public addresses were in the same strain, for Prof. David Drummond, President this year, devoted half of his opening address to the relation of the doctor to the public, recognising in no carping spirit how much still remains to make this relation a perfect one. "We are a scientific and progressive profession," claimed Dr. Drummond, but immediately asked, "Can we do more than we are doing, and thus progress more rapidly?" He then gave his reasons for thinking that such progress consists in increase of knowledge and its wider diffusion, and that, as these occur, the position of medicine in the State will be recognised at its true value. And finally Sir Thomas Oliver dealt with the boundless possibilities, as yet almost untouched, of industrial hygiene. Sky and street and factory revealed to the stranger in Newcastle that much satisfaction awaits the unflinching application of medical science—even the knowledge which we already possess—to the daily civic life.

The business meeting was notable for two decisions likely to have marked repercussion on affairs outside. A recent case of violation of professional secrecy in a civil court had focussed attention on a question already burning brightly at the Cambridge meeting. Representatives were all but unanimous in going far beyond the recommendations of their Council in asking the Association to use all its power to support a member who refuses to divulge, without the patient's consent, information obtained in the exercise of his professional duties. It was admitted that on occasion such refusal may result in making criminal conduct more difficult to detect—at any rate cases were cited where this might occur—but substantial benefit to the public accrues from the sense of security given by the Hippocratic oath; thousands of venereal cases might, it is alleged, forgo treatment altogether rather than run the risk of betrayal, and there was no doubt in the meeting as to the balance on the profit and loss account. Reduced to this simple proposition no difficulty is likely to occur in practice. As it is the lawyer and the priest are not protected by statute, but no one questions the lawyer as to what the prisoner has told him and the priest would be punished for divulging. Possibly the General Medical Council might assist by offering to remove from the official register the name of any practitioner who laid bare his patient's secrets on the invitation of a judge. Short of this, the medical man's disability, as it might be called, would soon become generally accepted, and instead of attempting to extract evidence from him on duress, against his regard for professional honour, the prosecution would explore other if less direct and easy channels. Medical evidence as soon as it begins to deal with clinical opinion has always proved difficult to handle in a court of law; a consultation on a case may be trying even for a medical panel. And it can hardly be to the detriment of justice if for the present the value of the Wassermann test and the differential features of the spirochæte group are ruled out of court. Another year must, however, pass before this decision of the Representative Meeting can become the considered policy of the British Medical Association, and no doubt the medical Members of Parliament will assist the Council of the Association in finding the best means of reconciling medical and legal views to the benefit of the community.

The other decision was definitely to close the door just left ajar at Cambridge last year, on the affiliation of the Association with any non-medical bodies. The value of identity and individuality was felt to be so great an asset that no weakening of these attributes could be admitted for the sake of speaking to the Minister of Health with the united voice of all the health interests. Naturally it was not intended thereby to rule out the benefit of threshing out certain mutual difficulties before presentation. Public men were regarded as being duly impressed by the large individual membership of the Association and the means taken under its present constitution of obtaining a representative opinion. Federation with any other medical bodies, apart from the overseas branches, was not ruled out, but the time was held to be inopportune for considering the matter. Both these decisions were taken, as we have indicated, after full discussion and with a strong sense of responsibility.

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Compulsory Measures against the Tuberculous.

Next week, July 26th, 27th, and 28th, a Conference of the International Union against Tuberculosis will be held in London at the Institution of Civil Engineers, Westminster. One of the subjects for discussion is the prevention of spread of infection. Of the many paths that may lead to this goal, most are still practically unexplored, and among these is compulsory segregation. This is being preached by a certain section of the medical profession as the surest means towards stamping out tuberculosis. As this proposal involves encroaching on the liberty of the individual, we should do well to scrutinise it carefully, and from every possible aspect before we commit ourselves to it. In a recently published book on tuberculosis a well-known medical author has written: "Segregation of dangerous cases must somehow be effected." Now, what are "dangerous cases," and what proportion of the whole community do they represent? An answer may be found in one or other of the following calculations. In 1919 there were 46,312 deaths in England and Wales from all forms of tuberculosis. Assuming that 10 active, living cases of tuberculosis exist for each annual death, we obtain a total of 463,120 more or less "dangerous cases." Is the nation prepared to lock up nearly half a million persons in the by no means sure hope of stamping out in the animal inoculation experiments only a small percentage (5·7 and 8 per cent. in two different series) were positive. The author concludes that the acid-fast bacilli so frequently found, microscopically, in centrifuged blood by other workers are not virulent tubercle bacilli whatever else they may be.

And at this point we must be content for the moment to leave the question. Tubercle bacilli have been sought for in many hundreds of blood specimens withdrawn from the vein in the usual way, but with the use of the guinea-pig inoculation test only rather less than 10 per cent. of positive findings have been recorded. We now require to know whether these positive cases represent a class of case separate and distinct from all other cases of tuberculosis, or whether they indicate a phase in the clinical history of all tuberculous cases—a phase during which bacilli are discharged into the blood stream and there rapidly destroyed.

DETACHMENT OF THE RETINA.

THE problem of detached retina is one of the most difficult in ophthalmology. Neither as to its pathology nor its treatment is there any general agreement, and in spite of isolated instances of cure, to which many ophthalmic surgeons can testify, the sad fact remains that in the vast majority of cases an eye in which the retina becomes detached inevitably goes blind. At any rate, cases of cure are sufficiently rare to justify the publication of any case such as that reported in another column by Mr. Foster Moore. At the same time the word " cure " can hardly be applied to a case which, apparently, has only been under observation for a few weeks since the reättachment of the retina was observed. A committee of the Ophthalmological Society, reporting on the subject in 1916,[1] decided to consider a case " cured " when the retina had gone back into position and stayed there for six months. To some of the committee even this period seemed too short, and the report expressed the opinion that it must certainly be regarded as the irreducible minimum. Cases, indeed, are common in which after rest in bed or some form of operative treatment the extent of a detachment becomes much diminished, and occasionally it may even disappear altogether, only to relapse as soon as the patient resumes a normal active life. The number of published and unpublished cases of " cures " collected by this committee was 85. It should be added, however, that not every uncured case of detached retina goes on rapidly to complete blindness. Some eyes in which there is still a demonstrable detachment retain even for years a certain amount of useful vision.

There are types of cases in which the prognosis is much less unfavourable. In cases following a blow, in which the cause of the detachment is an effusion of blood beneath the retina, the prognosis is favourable. The same is true of another class of cases to which Mr. Moore calls special attention—viz., detachment occurring with renal retinitis, and especially in pregnancy cases. In discussing the pathology and cure of detached retina these " symptomatic " cases are generally excluded, and attention is directed solely to the so-called " simple " cases, which, after all, constitute the great majority. As to their pathology two facts are known with certainty. The attachment of the retina proper to its pigmentary epithelium layer is so loose that the space between them is always a potential cavity, which in cases of detachment becomes an actual one containing fluid. The second fact is that the majority of these cases, but by no means the large majority, occur in myopic eyes—i.e., in eyes in which the retina has become abnormally stretched, and the vitreous cavity abnormally enlarged. Further, in a small proportion of these cases rents or holes in the detached retina are observed ophthalmoscopically. Again, in a few cases bands in the vitreous are seen, apparently attached to the separated part of the retina. Starting from these facts, different theories of the causation of the disease have been held. Graefe held that it was due to exudation into the inter-retinal space from diseased choroidal vessels. Deutschmann maintained that practically all cases are due to the traction of vitreous bands on the retina causing rents. Raehlmann put forward a theory of an abnormal osmotic pressure resulting in an excessive current of fluid from before backwards into the inter-retinal space. Now, none of these theories carry us much further towards a successful method of treatment. Deutschmann, indeed, himself claimed a large percentage of cures by his method of dividing the vitreous bands, but his claims entirely lack confirmation. Of the methods of treatment now generally in vogue the first place should undoubtedly be given to rest in bed. In recent cases, indeed, this by itself diminishes the extent of detachment and temporarily improves the visual acuity. In exceptional cases it appears that a detachment can be really cured by this measure alone, as in two cases reported by Mr. J. B. Lawford in 1915.[2] It must be added, however, that there are other exceptional cases in which a detachment appears to have been cured without any treatment whatever. The second place in treatment will generally be given to evacuation of the subretinal fluid, either by puncture with a Graefe knife or by the cautery. The unfavourable comment made by Mr. Moore upon this operative procedure is rather surprising. With regard to subconjunctival injections they have generally been employed as an adjunct in the way of treatment, and their action has been attributed somewhat loosely to counter-irritation. It has been found experimentally that an injection beneath the conjunctiva is followed by a marked increase in the albuminous contents of the aqueous. Whether or not Mr. Moore's case is an instance of cure from rest in bed or from subconjunctival injections, or whether it is a permanent cure at all, time and further experience will show. We are glad to report the case.

FRIENDLY SPAS.

IN the early days of the present month of fine weather, Sir Henry Lunn arranged for a group of 20 representative British medical men to visit Aix-les-Bains and a number of the Swiss watering places. France and Switzerland are justly proud of the facilities which they are able to offer for hydrotherapy and aerotherapy, under conditions of great natural beauty, and the grave depression which these spas are undergoing is due to political and economic causes, and not in any sense to individual failure. The state of the money market has deprived the spas of whole sections of their usual clientèle, while the Swiss themselves are largely seeking recreative holiday in adjacent countries where the exchange is in their favour. It is not unnatural, therefore, that Aix-les-Bains, Ragaz, and the Engadin should look to an influx of patients from English-speaking countries to retrieve their fortunes, the more so as it was English custom which set going their prosperity a generation or more ago. Of the warmth of the reception which awaits them there no doubt can exist; the hospitality lavished on the British medical visitors was evidently something more than a laudable desire to make known certain attractive therapeutic wares; it was an earnest of the valuable team-work of hotelier, spa physician, and skilled attendant which is at the command of every patient and which has brought the practice of balneology to a level behind which its scientific basis sadly lags. The immediate future is likely to see this made good, for at the principal baths in the Upper and Lower Engadin scientific work is being done by men of professorial rank in connexion with the universities of Berne and Zurich, and at Aix-les-Bains the local medical society is keenly alive to the need of showing that medicinal schools and the way in which they were being met. In a leading article,[2] published when Burke and Hare were actually committing their last murders, we commented upon a case of body-snatching then recently tried at Norwich.

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[1] Trans. Ophthal. Soc., 1916, vol. xxxvi.

[2] Trans. Ophthal. Soc., 1915, vol. xxxv.

> "Body-snatching is no doubt a disgusting offence, and not the less disgusting because rendered necessary by the state of the law regarding anatomical dissection."

We protested also against the sentence of hanging being coupled with an order that the body of the culprit should be dissected.

> "Let the legislature repeal that provision in our statute book which associates the idea of dissection with that of punishment for crime."

Within six months of these sentences being printed Burke had been hanged and his body dissected, after lying in gruesome state for thousands of visitors to inspect at the anatomical theatre to which it was consigned. Later we pointed out that either bodies must be provided in a manner acceptable to public sentiment, or dissection must be forbidden. The present laws, under which, it may be added, there is no plentiful supply of subjects, followed. The knowledge that we possess of this important epoch in the story of medical education is scattered through many books, pamphlets, and newspapers, and no better editor could have been chosen than Mr. Roughead to condense the information available within the limits of his recently published volume. The nine chapters of his introduction are convincingly lucid and judicial, and he appears to state nothing that is not well authenticated. The chapter which deals with "the body-snatchers" is medical history, not merely because the horrible trade of the professional resurrectionist provided subjects for dissection, but because medical students of that day, led away by zeal on behalf of their schools, vied with the professional, took the same risks in providing "subjects," and incurred the same odium.

The question arose of how far Dr. Robert Knox, an able teacher, but with no very high reputation outside the circle of his pupils, may have suspected the source from which his lecture room was being supplied, and may deliberately have shut his eyes and asked no questions. Only one of the three cases charged in the indictment was tried. If that of Mary Paterson, or "Daft Jamie," had been taken instead, or if there had been an acquittal in the first case, Knox would inevitably have been called as a witness and so would his three assistants, one of whom as Sir William Fergusson, Bart., F.R.S., was destined to be President of the Royal College of Surgeons of England. It is difficult not to acquiesce in the view which Mr. Roughead so temperately puts forward. Two men unconnected with the recognised resurrectionists sold to Knox in nine months 16 absolutely fresh corpses, none of which had been buried or presented any appearance of death from natural disease. They had all been killed in the same way, the murderer lying on the victim's body and compressing with his hands the nose and mouth. They were examined at once to see if they were suitable for purchase, and they were afterwards dissected. The evidence of criminal handling may not have been conspicuous. Knox would seem to have made no inquiry as to how the bodies, which arrived so opportunely and at such short intervals, were obtained. Had he no suspicion? Although no inquiry that can be called conclusive was ever held, the medical profession and the public formed their own opinion, and he found his position as a teacher gone. The boys in the street sang: "Burke's the butcher, Hare's the thief, Knox the boy that buys the beef." Knox quitted Edinburgh and died in obscurity. Those who read Mr. Roughead's book are invited to note the dates given, when they will find it difficult to realise how recent are the almost unbelievable events that he recalls. It was less than a hundred years ago that the resurrectionists carried on their horrible trade, and Burke and Hare trafficked in the corpses of their victims. The Anatomy Act of 1832, which recognised the needs of science and rendered body-snatching unprofitable, was passed by legislators who should have grandsons, at any rate, now living. Among members of the medical profession who have passed middle age must be some who lived in London when Knox was ending his days in poverty at Hackney. Any of these as a child may have had pointed out to him by his nurse in Oxford-street the sightless beggar who by repute was Hare, blinded through being thrown into a lime pit by his indignant fellow workmen.

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MEDICO-PSYCHOLOGICAL ASSOCIATION: ANNUAL DINNER.

On June 13th the annual dinner of the Medico-Psychological Association of Great Britain and Ireland was held. About 150 members and guests of both sexes were present, and the function was successful not only as a reunion of medical officers engaged in the study of psychological medicine, but as a gathering at which representatives of diverse branches of one great profession met as host and guest. Dr. Hubert Bond, the president of the Association, was in the chair, and the many distinguished guests included the Chief Medical Officer of the Ministry of Health, the secretary of the Medical Research Council, the presidents of the Medico-Legal Society, the Royal Society of Medicine, the Eugenics Education Society, the Society of Medical Officers of Health, the Medical Society of London, the Federation of Medical and Allied Societies, the Director-General of the Navy and of the Army Medical Services, the Vice-Chancellor of London University, while a large number of distinguished alienists acted as hosts. The non-medical guests included also the Lord High Chancellor and the chairman of the Shell-Shock Committee. The occasion was unique in that never before, during the 80 years existence of this Association, has its president been an active Commissioner in Lunacy, though more than one president has subsequently become a Commissioner. The occasion marks the good feeling that exists between the Board of Control and those engaged in work in mental hospitals, and Dr. Bond's year of office as president should serve to maintain and increase these friendly relations. It also, we hope, will mark that modification of the lunacy laws in the interests of recoverable cases, the need for which Dr. Bond has ably pointed out.

Mining Dangers Research Board.—Mr. W. C. Bridgeman, Secretary for Mines, has announced the appointment of a Mining Dangers Research Board to direct the research work of the Mines Department into the causes of mining dangers, and to reorganise the existing arrangements for such research at the Mines Department Experimental Station. The members of the Board are: Mr. W. Walker, Director of the Health and Safety Division, Mines Department (chairman); Mr. T. H. Mottram, Chief Inspector of Mines; Sir R. A. S. Redmayne; Mr. Thomas Richards; and Prof. R. V. Wheeler, director of the Mines Department Experimental Station. The Board will have the assistance of Sir Walter Fletcher, and Dr. C. H. Lander, assessors appointed by the Medical Research Council and the Scientific and Industrial Research Department respectively.

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[2] The Lancet, 1827–1828, vol. ii., p. 659.

of the British Red Cross Society was taken over on Oct. 20th, 1914, by the Joint War Committee, and the late Mr. Edmund Owen was appointed to coöperate with Sir Frederick Treves, who was then in charge, Sir William Bennett succeeding Mr. Owen at his death in 1915. The total number of doctors engaged by this department for service at home and abroad was about 400, and, in addition, many local appointments were made. Thirteen units, consisting of medical officers, dressers, nurses, and orderlies were sent out to France and Belgium before October, 1914, and six later in the same year. Thenceforward no further complete units were sent to France, though several were despatched to more distant countries. The provision of stores to Red Cross hospitals and additional comforts to the whole army is described year by year. A chapter on ambulance contains excellent pictures of interiors of bacteriological laboratory, dental surgery, soup kitchen, and workshop cars. The account of the development of the Voluntary Aid Department is of special interest, and will be read perhaps more widely than any other section of the report. The establishment of the King George Hospital and of the auxiliary home hospitals and convalescent homes, hospitals, and camps is described, and notes on the after-care of disabled men, the central work rooms, the Red Cross library, and miscellaneous grants to auxiliary bodies complete the section of the report dealing with headquarters work and finance. A detailed account. arranged geographically, of work abroad is then given. The next section describes the efforts made on behalf of the wounded and missing, and prisoners of war, and is followed by a brief note on the demobilisation schemes carried out by a board presided over by Sir Aurelian Ridsdale. The report, which is signed by Sir Arthur Stanley and Mr. Evelyn Cecil, M.P., concludes with a few words on the satisfactory relations maintained between the Joint War Committee and the Government, a tactful note on the question of awards of honours, and an appreciation of the work of the Committee from the Director-General of the Army Medical Service. Twelve appendices enumerate the auxiliary home hospitals, work parties, &c., and give particulars of the Geneva Convention and the Hague Conference. Various specifications and local reports are also incorporated, and an index, extending over 34 pages, completes a report of which it need only be said in praise that it is as adequate as the work it describes was wonderful.

PUBLICATION of Dr. Golla's second Croonian Lecture, delivered before the Royal College of Physicians of London, has been postponed until next week.

ON Monday, July 25th, at 5.30 P.M., Dr. M. Diamond, Chayes post-graduate instructor at the Dental Institute of New York, will deliver a lecture and give a demonstration "On Some New Phases of Old Problems in Dental Reconstruction" at the Royal Society of Medicine, 1, Wimpole-street, London, W. Admission is free to all interested.

THE thirty-sixth annual meeting of the Caledonian Medical Society will be held in the hall of the Royal College of Physicians, Edinburgh, on Friday, July 29th, at 3 P.M., under the presidency of Professor William Russell. The annual dinner will take place the same evening in the Caledonian Station Hotel.

INDEX TO "THE LANCET." VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C. 2.

BRITISH MEDICAL ASSOCIATION.

ANNUAL REPRESENTATIVE MEETING AT NEWCASTLE-ON-TYNE.

FRIDAY, JULY 15TH.

THE business meeting opened at 10 o'clock on Friday morning, July 15th, with a full attendance of representatives, in the King's Hall of the Armstrong College. Two women representatives were present. The room was simply but conveniently arranged, although the acoustics left much to be desired. Behind the platform two posters were in evidence, one tracing the increase in membership of the Association year by year throughout its history, the other an appeal of the Newcastle School of Medicine to clear its debt and enable it to pay adequate salaries, to endow professorial chairs, and to provide necessary accommodation for students. Dr. T. W. H. GARSTANG presided over the gathering, as last year. At the outset he introduced the President-elect, Prof. DAVID DRUMMOND, who extended a hearty welcome to representatives on behalf of the North of England Branch of the Association.

Representatives of the Press.

Standing orders having been adopted, a motion was brought forward by the chairman of the Agenda Committee that representatives of the press should be admitted on the understanding not to report any matters which the meeting decided to regard as private. This motion was passed nem. con., after three adherents only had been found for an amendment by Mid-Cheshire that the lay press should be excluded altogether, a précis being supplied to them for publication. Testimony was given to the fairness of the press on previous occasions in respecting the wishes of the meeting.

Future Arrangements.

The annual report of the Council, with the balance sheet for 1920 and the budget for 1921, having been received, it was unanimously agreed to elect Sir WILLIAM MACEWEN, F.R.S., Regius Professor of Surgery in the University of Glasgow, as President of the Association for 1922–23, and to hold the annual meeting of 1922 at Glasgow, and that of 1923 at Portsmouth. Sir HENRY CRAIK, M.P. for the Scottish Universities, was elected an honorary member of the Association.

State Visit from the Lord Mayor.

At this point the proceedings were interrupted to receive a state visit from the Lord Mayor of Newcastle, who recalled the previous annual meeting in the city of 1893, when medicine was by no means taking so prominent a part in public affairs. The British Medical Association he described as one of the best organisations in the world, and he congratulated the metropolis of the north on having produced not only the president-elect but the chairman of Council, Prof. R. A. BOLAM, and the medical secretary, Dr. ALFRED COX. In replying, Dr. GARSTANG admitted the very rapid changes going on in the relations between the medical profession and the public.

The Year's Finance.

On the motion by the treasurer, Dr. G. E. HASLIP, that the annual financial report be received, a lively discussion ensued. The meeting was invited to regard as a modern rake's progress the overspending of £23,000 in a single year when the total assets of the Association did not exceed £150,000; but only four representatives inclined to this view. On the other hand, a motion expressing satisfaction with the present financial position was withdrawn by common consent. Dr. Haslip pointed out that salaries had increased by £5000, and the outlay on paper by £2000; he thought that journalistic ability might condense the reports issued, and so effect some economy. Mr. E. B. TURNER voiced the general opinion that things must cost more, and there was no help for it. It came out in discussion that no part of the £1300 paid for the low fat content of the milk of others. Daily analyses of the mixed milk of a large dairy have shown that the fat content of the mixed milks is seldom below 3 per cent. A dairyman with a small herd of cows in certain states of lactation and nutrition may easily have a milk with less than 3 per cent. of fat and be liable to prosecution. It is impossible to safeguard this dairyman under the present standards. Even if his milk be tested directly, it may happen that on that particular day the milk passes the standard. Only by further analysis of the milk—i.e., by the determination of lactose and protein—can this dairyman be protected, for it is unlikely that protein, fat, and carbohydrate will all be below the standard at the same time. Protein may be high and carbohydrate low and vice versa; fat may be high and carbohydrate low. If all the constituents are below the limits of variation at the same time, the case is then more clearly one for prosecution.

Milk is one of the few foods which contain all three vitamins, its content in these accessory food factors depending entirely upon the food of the cow or other animal. The anti-scorbutic or C vitamin has been definitely shown to be more abundant in the milk of grass-fed cows than that of stall-fed cows. Summer milk is a better anti-scorbutic than winter milk. The same holds for the fat-soluble A vitamin. The amount of factor A in milk may be closely connected with the greater prevalence of rickets in spring (after winter feeding). The absence of the anti-neuritic or B factor in milk has been most clearly demonstrated in certain human milk. Children have been cured of beri-beri if the mother has been supplied with food containing B vitamin. All the three vitamins in milk are derived from the food of the animal and are not produced by the animal. Further, there is no connexion between chemical composition of milk and vitamin content. A milk of high fat content may be low in content of factor A. Milk from a cow on dried food does not contain C factor.

HUMAN REMAINS AS HISTORICAL DOCUMENTS.

THE opinion was at one time prevalent that we could learn no more of the origin of the British people than writers of antiquity had chosen to tell us. From the report on the Museum of the Royal College of Surgeons of England just issued by its conservator, Sir Arthur Keith, we learn that the prospect of a reliable history of the kind of people who have inhabited this country for many thousands of years past continues to improve. Only those who are familiar with the methods and industry of modern archæologists are aware of the exactness with which ancient graves and their contents can be dated. All the experience gathered by archæologists in Egypt, Mesopotamia, France, Italy, Germany, Scandinavia, and Britain is being pooled, with the result that the British archæologist obtains a clue to the dating of the various funereal customs which he comes across in the course of his explorations. From the present report, as from those of previous years, we note that the College of Surgeons' Museum is becoming a mausoleum "for such human remains as serve as historical documents." To be worth preserving human remains must be excavated with the skill that knows how to look for and how to preserve evidence of date. Anglo-Saxon cemeteries and graveyards of the Roman period are not uncommon, but very few have been explored with skill. From a Roman cemetery excavated on the property of Mrs. Clifford at Barnswood, near Gloucester, a large sample of west-country people, of the third century A.D., has just been obtained.

We learn further from the present report that the preservation of human remains of known date, which began from purely academic reasons, is likely to throw light on many problems—obviously on the prevalence of caries of the teeth, pyorrhœa, muscularity and stature of the people, but also on more obscure conditions, such as contraction of the palate and prevalence of conditions affecting the growth of bones. In the opinion of Sir Arthur Keith contraction of the palate, now affecting 40 per cent. of the modern population of English cities, is of comparatively recent origin. We are glad to note that the Scientific and Industrial Research Council has recognised the national value of the great collection of human skulls and other remains which has been built up by the Council of the College, and has given a grant to pay a research worker to compile a new and reasoned catalogue of this section of the Museum. Among other points of interest in the report may be mentioned the gift of the Onodi collection of nose specimens, and the further additions to the War Office collection of specimens illustrating war wounds and their sequelæ. We note, too, that the annual exhibition of recent additions to the Museum, formerly given in July, is henceforth to take place in October.

THE TUBERCLE BACILLUS IN PERIPHERAL BLOOD.

THE tubercle bacillus is always being hunted in some corner of the human body. Every channel of infection is explored and every secretion and excretion examined with much expenditure of carbol-fuchsin and counterstain; and yet there are still wide gaps in our knowledge of the march of the infecting organism from the point of entrance to the ultimate clinical focus of disease. Possibly the key to this "regional survey" is to be found in the circulating blood. Each successive era of experimentation seems to fasten the responsibility more definitely upon the blood, and thereby to bring tuberculosis more into line with the clinical pathology of other infective diseases. First bone and joint tuberculosis, then genito-urinary, and finally pulmonary tuberculosis become the field of our inquiry. But in spite of very reasonable grounds for hope bacteriological demonstration of the bacillus in the blood is hard to come by, except in those cases of miliary tuberculosis which are in a class apart. Shortly before the war mild excitement was caused in tuberculosis circles by the reports of Rosenberg Kurashiga[1] and others, who found bacilli in 100 per cent. of cases in the blood of both early and advanced cases of phthisis. Then followed disillusionment; others could not verify the results. Kahn[2] showed that numerous causes of error arose in artefacts; and Fraenkel[3] disposed of the 100 per cent. positive results by making inoculations of peripheral blood into guinea-pigs and finding only two positive cases out of 25; other workers obtained similar results. In an original article on this subject recently published by Distaso,[4] these results are summarised. Sixteen different investigations by various workers on 928 cases yielded 84 positive findings. Distaso, in addition, gives the results of an interesting series of experiments made by himself into the various stages of pulmonary and surgical tuberculosis (febrile and afebrile), most of which experiments yielded negative findings. A group of cases of afebrile pulmonary tuberculosis, however, gave a surprising number of positive results—9 out of 13. This group is difficult to reconcile with the findings in febrile groups, and it is unfortunate that Distaso was unable to go over this work again with re-inoculation experiments, especially as he seems to have been content with the demonstration of giant cells in his positive guinea-pigs and did not obtain tubercle bacilli. The latest report of the *Robert Koch-Stiftung*, recently received, contains an article by E. Rumpf,[5] of Hamburg, which is an exhaustive inquiry into the whole subject. Microscopic, cultural, and inoculation tests were carried out by the author, and a series of controls made upon normal people. Growth on media did not take place, whilst profession in active practice, either directly or through the Division organisation, the proposed scheme with a questionnaire, and the aggregate voting thereon be recorded and forwarded to the Division and Representative Body, together with the report on action taken.

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[1] Zeitschs. f. Tub., 1911, xvii., 347.

[2] Münch. med. Woch., 1913, lx., 345.

[3] Deutsch. med. Woch., 1913, xxxix., 737.

[4] Tubercle, 1921, ii., 251.

[5] Veröffentlichungen der Robert Koch-Stiftung, Bd. II., H. 3, p. 163.

A motion by East Hertfordshire similarly approved of the formation of any Consultative Committee on which the B.M.A. would be associated with all other bodies representing the various branches of the profession, for the purpose of negotiating with the Government.

SATURDAY, JULY 16TH.

Federation of Overseas Branches.

On a motion standing in the name of the chairman of the Organisation Committee to approve and adopt draft articles and by-laws to meet the circumstances of Overseas branches—Mr. **RUSSELL COOMBE** submitted that the position had been completely altered by the deliberations of a conference held on July 5th between overseas and Irish representatives and representatives of the Council on the question of possible federation facilities. At the chairman's request Dr. **R. H. TODD**, representing the Australian Federal Committee, spoke to this matter. Branches of the Association in Australia, he said, had to represent the profession in a very direct way, dealing as they did with independent States of the Commonwealth, and it was impossible to conduct business through the central office in London. The New South Wales branch, for example, was incorporated under the Companies Act "not for gain," had its own journal, library, and building, and was a compact organisation in itself. As a barrister he contended that such a body might legally remain a branch of the parent Association, its members being individually members of that Association. The branch as incorporated would not be entitled to act as agent of the Association or incur any liability on its behalf; the Association was therefore adequately safeguarded.

Accepting Dr. Todd's view, the representative meeting decided to scrap the scheme of de-federation already drawn up, and to accept two further recommendations of the special conference in the following form:—

> That, if possible, provision be made in the regulations of the Association to allow the Overseas branches to retain the character and status, the rights, powers, and duties of branches, although incorporated; such steps being taken as may be necessary to protect the Association from liability for any act of the incorporated body.
>
> That provision be made in the regulations of the Association for Federal Councils of the Association in the Dominions and India, consisting in either case of representatives of the branches concerned, to carry out in these countries, on behalf of the local branches collectively, the objects of the Association, and generally to have the powers and duties of the existing Federal Committees.

Affiliation with Medical and Non-Medical Bodies.

At the Representative Meeting of 1920 it was agreed that the Association should take steps to obtain further powers under its constitution whereby, without abandoning its present position as an association of individual members of the medical profession, it might become, in addition, a federation of medical bodies. The propriety of this course was raised in a long series of amendments on the agenda paper for 1921. Speaking to the first of these from Reigate Dr. **S. M. MACKENZIE** queried whether federation of any kind would strengthen the Association. Of four medical societies, numbering 2900 members, whose affiliation had been suggested, 1500 were already members of the Association. No other bodies, least of all the Royal Colleges, were demanding federation with the Association, whose real strength lay in increasing its own membership. Other speakers urged the value to the Association of its identity and individuality, and the impression left upon public men by a large individual membership with an ascertained opinion. Affiliation might, however, opportunity of thrashing out difficulties before presenting a case to the Ministry, and Dr. H. B. **BRACKENBURY** urged that the door should not be entirely closed.

Eventually, by unanimous decision, the policy was rescinded of admitting to affiliation with the Association any body other than a purely medical one, and for the present any medical body other than those Overseas branches alluded to in the preceding paragraph.

The Postal Vote.

A motion was brought forward by Cambridge and Huntingdon—

> That it be an instruction to the Council to make provision so that a postal vote on any question of policy or otherwise may be taken by any branch or division after the question has been discussed at a meeting of that branch or division, and if the members present at that meeting deem such a vote desirable.

It was argued on the one hand that the member uninstructed by being present at a discussion had no right to vote upon the things discussed; and on the other that, in a rural constituency with defective means of transport, no other means than the postal vote was available for obtaining the views of the large majority. A postal vote might diminish the personal attendance at meetings and result in those who attended losing the habit of making up their own minds; but it was also a method of interesting the whole constituency in medico-legal matters. Opinion was very evenly divided, both among representatives and members of the Council, the motion being rejected on a count by a small majority.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Second International Congress of the History of Medicine.

THIS congress, which was inaugurated in Antwerp last year, held its second meeting in Paris from July 1st to 6th; it was admirably organised and well attended, the number of delegates from the various countries exceeding those of last year. The opening ceremony was held on July 1st in the Council Hall of the Faculty of Medicine. In the absence of the Minister of Public Instruction, Mr. Coville, Director of Higher Instruction, gave a brief opening address. He was supported by Mr. Larnaude, dean of the Faculty, and vice-president of the Council of the University, and Mr. Royer, dean of the Faculty of Medicine. Prof. Jeanselme, president of the Society of the History of Medicine of France, and Prof. Ménétrier, joint-president of the congress, extended a cordial welcome to the various representatives from Great Britain, Belgium, Holland, Italy, Switzerland, Spain, Portugal, Denmark, Czecho-Slovakia, Roumania, Armenia, and Greece. At the first séance in the afternoon, papers were read by Dr. Charles Singer (London), on an MSS. attributed to Guy de Chauliac; Dr. Wickerscheimer (France), on the Miraculous Healings of Cardinal Pierre of Luxembourg (1387–1390); Dr. J. G. de Lint (Holland), on Anatomical Terms Used in Ancient Egyptian Literature; Dr. Fernandez d'Alcalde (Spain), on the Various Statutes and Seals of the Chief Ancient Universities and Seats of Medical Learning in Spain; Dr. Pasteur (France), on the Beginning of the Study of Urology in France; Dr. Leclerc, on L'Histoire du Pruneau; Dr. Sergent (France), on Medical and Pharmaceutical Caricatures in the Works of Dormier; Dr. Van Andel (Holland), on the Doctors of Molière and of the Classic Drama in Holland; Dr. Basmajain (Constantinople), on Ancient Armenian Medicine; and Dr. Ricardo Jorge (Lisbon), on Encephalitis Lethargica, Typhus and Influenza in the Historic Epidemics of the Sixteenth Century.

On the morning of July 2nd papers were given by Dr. Belohlavek, of Prague, on Inaugural Theses of the Faculty of Medicine of Prague in the Seventeenth waters, skilfully applied, do more than relieve distressing symptoms, leaving untouched the underlying causes. Hot springs are, of course, available at home, where the suggestion of a university chair in hydrology has already been mooted. Switzerland however, is, unique in providing resorts of different characters at altitudes of 4000 feet or more above sea-level. Alpine treatment obviously cannot deal with more than a tithe of the tuberculosis which arises in a densely populated lowland community; but the ease and precision with which the hygienic-dietetic treatment is carried out at such alpine resorts as Montana, Arosa, and Davos must be seen to be believed, and have their lessons for the denser lowland air. The visit included, besides the places named, the baths of Loèche, St. Moritz, and Tarasp, and the climatic stations of Lucerne and Pontresina. Some account of these will follow in due course.

VERMINOUS CONDITIONS IN LONDON: NEW LEGISLATIVE PROPOSALS.

FOLLOWING a conference of borough councils held recently in London, the London County Council has decided to make application to Parliament for amendments of their General Powers Act and the Public Health (London) Act, 1891. This is in order to secure that, in cases where persons are found to be infested with vermin, or a child is found by the local education authority to be so infested or to be in a foul or filthy condition, the premises, clothing, and other articles in use by such persons shall be liable to be compulsorily cleansed, purified, or destroyed. The attention of the Minister of Health is also to be drawn to the desirability of amending the Cleansing of Persons Act, 1897, so that it shall become the duty of each local sanitary authority to provide the necessary facilities for dealing with verminous persons. The Council will further suggest legislation empowering local authorities to inspect second-hand wearing apparel in the hands of dealers, making it an offence knowingly to deal in clothing in a verminous condition, and empowering the local authority to cleanse contaminated clothing at the cost of the dealer, or to destroy it without compensation to him.

NUTRITIVE NEEDS OF PROTOZOAL PARASITES.

ALTHOUGH the nutritive needs of bacteria have been carefully investigated, the protozoa have largely escaped notice in this respect, probably because it has been assumed that, if not actually bacteria, they required complicated chemical bodies for growth. In the current issue of the *Journal of Physiology* Dr. R. A. Peters has investigated the substances needed for the growth of a pure culture of *Colpidium colpoda*. The strain of ciliated organisms used in this research were reared from one individual, and were kept alive for about ten months, free, as far as can be ascertained, from other organisms. The original organism was obtained from a hay infusion. The organisms have a mean length of about 50 μ and one micronucleus. The technique employed is fully described; pure cultures in synthetic media were obtained from a single individual and studied for a year, at the end of which time conclusive evidence was brought forward to the effect that these cultures contained only the organisms in question. Upon a medium consisting of glass, distilled water, calcium, potassium and sodium chlorides, magnesium sulphate, and ammonium glycero-phosphate test-tube cultures have been kept going by frequent subculture without diminution of the size of the organisms. Rather better results were got by substituting glucose and ammonium lactate as nitrogen and carbon sources. By counts and measurements of size it has been found that the average maximum for growth under these conditions is 8000–10,000 organisms per c.cm. The growth curve shows three phases: (1) A rise to a maximum number, (2) a more gradual fall to (3) a plateau, during which life may continue for some time. Phases (1) and (2) last about 12 days. During phases (2) and (3) the organisms diminish in size. During phase (2) temporary rises in the number of organisms may take place. Experiments upon the omission separately of the medium constituents showed that ammonium phosphate and chloride could not be omitted from glass test-tube cultures without stopping growth. Phosphate deficiency in the medium led to apparent disintegration. The omission of potassium and magnesium in glass cultures was without effect, but in quartz test-tube cultures potassium deficiency led to failure of movement and death of the cultures. Magnesium deficiency also inhibited growth. No effect was produced by omitting the sodium, calcium, or sulphate (separately) from the medium, though it is not claimed that traces of Na, Ca, or S were altogether absent. Uranium salts also cannot be substituted for potassium salts in the growth process—a fact proving the biological value of potassium to be not solely a question of radio-activity. Amino-acids will serve as nitrogen source in place of ammonium salts. Growth has not been demonstrated on carbon sources containing less than three carbon atoms in the molecule. Glycerate is used by the growing protozoon, but not lactate or citrate. The work emanates from the Department of Biochemistry at Cambridge University, and its further development will be followed with interest.

THE RED CROSS REPORT.

A SOLID volume[1] containing over 800 foolscap pages of accounts, records, maps, and explanatory paragraphs will receive welcome and study in circles not usually attracted by such bulky publications. During the war there were few civilians of either sex or any age whose services were not offered to and accepted by the joint Red Cross societies in some capacity. The official military history of the war is awaited by the soldier or ex-soldier with keen interest, as is the medical history by the profession; but concealed in the pages of the report of the Joint War and Finance Committees of the British Red Cross and the Order of St. John will be found by the careful reader the epic of the women. Details of the nursing personnel, of the organisation of the central work rooms, and of registered work parties—a list of these covers 36 pages—and depôts, to give only examples drawn at random, record without unnecessary comment the extent to which the hitherto untrained contributed to the results achieved. The report is admirably balanced, consisting of four main sections and appendices. A preliminary note on the genesis of the Joint Committees leads on to an account of their general management, including the personnel in charge of separate departments. The various sources from which the colossal sum of £21,885,035, the total of the receipts between Oct. 20th, 1914, and June 30th, 1920, was amassed are set out clearly in tables showing that over 16½ millions in cash, and over a million in stores, were actually collected from the public. The Government grants, amounting to £681,257, were mostly capitation allowances in respect of sick and wounded men in Joint Committee hospitals. The expenditure on war work amounted to £17,340,428 and on after-care and other post-war schemes to £2,717,927, leaving a surplus on June 30th, 1920, of £1,826,680; while administration expenses were kept to the low figure of £741,725, or 3·39 per cent. of the income. The section on personnel is limited to the consideration of the paid staff sent out from headquarters. The Medical Personnel Department

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[1] Reports by the Joint War Committee and the Joint War Finance Committee of the British Red Cross Society and the Order of St. John of Jerusalem in England on Voluntary Aid rendered to the Sick and Wounded at Home and Abroad and to British Prisoners of War, 1914–1919, with Apendices. London, H.M. Stationery Office, 1921, pp. 823, price 12*s.* 6*d.*

CONTROL OF VENEREAL DISEASES.

The Value of Prophylaxis in Venereal Disease.

Recent laboratory and clinical research in Germany into the problems of prophylaxis of venereal disease seem largely to have centred about (1) the composition of a disinfectant which at one and the same preparation is preventive of both syphilis and gonorrhœa, (2) the length of the post-coitus interval, beyond which prophylaxis is futile, and (3) the elaboration of a fool-proof disinfectant ritual. The upshot of researches in connexion with the last problem is disappointing, although it is properly assumed that the protection of fools is desirable. Referring to his experiences in a military hospital in Roumania during the war, Dr. J. Schumacher [1] relates how soldiers initiated into the mysteries of disinfection before coitus in rooms set apart for this purpose were constantly developing gonorrhœa. He had greater success with "intelligent" persons. But even in this ill-defined class he had sometimes to register failures, and these referred to syphilis as well as gonorrhœa. This is not surprising when the elaborately detailed account of prophylactic disinfection for syphilis, as given by Dr. Schumacher, is studied. The strength of a chain is in its weakest link, and an "intelligent" pupil of Dr. Schumacher, who followed every instruction but one, developed an intra-urethral chancre because he had consistently omitted to swab out the fossa navicularis with a solution of perchloride of mercury. The gist, then, of this paper is that with suitable disinfectants and their skilled use prophylaxis is perfectly feasible, but that a disinfectant does not disinfect in the hands of an unintelligent person any more than a typewriter types in the paws of a baboon.

Reporting on their experimental studies at the bacteriological laboratory of the "Reichsgesundheitsamt," Dr. P. Manteufel and Dr. H. Zschucke[2] state that they have found mercurial salts quite as effective as silver salts in the prophylaxis of gonorrhœa, and that though an ointment containing mercurial salts may be less effective than the same strength of these salts in solution, yet by increasing the concentration of the salts in ointment form, a rapidly effective disinfectant action on gonococci can be secured. Hence their conclusion that prevention of both the principal venereal diseases can be effected by one and the same preparation, and they recommend for this purpose 0·3 per cent. sublimate in lanolin, which provides mechanical as well as chemical protection. As to the post-coitus interval, beyond which prophylaxis is futile, they stress its brevity. Siebert has shown that the Neisser-Siebert prophylactic cream may, indeed, be effective in apes six hours after infection, but Schellack has found that three minutes after intracutaneous infection with the spirochæte of recurrent fever, infection cannot be averted by washing with alcohol. Manteufel and Zschucke, experimenting with the spirochæte of recurrent fever in mice, found that within 30 minutes of infection no disinfectant was reliable. They also refer to Neisser's experiments, which showed that syphilis in apes could not be aborted when the site of infection was excised ten minutes after inoculation. Inada has also shown that five minutes after material containing Weil's spirochætes had been applied to healthy skin they had penetrated deeply enough to be beyond the control of disinfectants. These and similar experiments throw much doubt on the efficacy of late prophylaxis.

Schumacher's survey of the numerous prophylactic disinfectants which have hitherto enjoyed considerable popularity is not conducive to an easy faith in them. Metchnikoff's calomel ointment has, he says, been found quite ineffective in the prevention of syphilis by all who have tried it, and he doubts if it would ever have had much of a vogue but for the distinguished name associated with it. Probably in the rare cases in which it did achieve the desired end its success was due to the presence in the ointment of a soluble salt of mercury. As for the Neisser-Siebert ointment, it has given satisfaction in some hands, but not in others. Perhaps the failures recorded may be traced to decomposition of the constituents of this ointment, for it has been put up in metal tubes in the past, and this has meant the conversion of sublimate of mercury to metallic mercury, which is comparatively inert. Of the more complex mercury salts, hydrargyrum oxycyanatum has been extolled as being six times as potent as the sublimate, as well as being comparatively atoxic to the tissues and not being affected by contact with instruments. But Stricker has seen death follow irrigation of the urethra with this salt and, as in the case of calomel, there seems reason for the suspicion that this salt has sometimes contained impurities. Schereschewsky's quinine ointment has, in Manteufel's experience, invariably protected against syphilis, whereas he has had failures with the Neisser-Siebert ointment, and the former ranks with aqueous solutions of sublimate of mercury in efficacy. All authorities apparently agree as to the superiority of solutions over ointments as prophylactics, and the efficacy of the Neisser-Siebert ointment is enhanced if it is made up with water. Schumacher concludes that the best preventives of syphilis are a 0·1 per cent. solution of sublimate of mercury and quinine ointment: the former, in the strength indicated, is effective against gonorrhœa also, whereas the action of quinine on the gonococcus has not apparently been studied sufficiently to warrant a definite opinion on this score.

The Limitations of Wassermann's Reaction.

Two papers recently published in the Danish medical journals show again that, whether negative or positive, Wassermann's reaction should not be regarded as so infallible as to render superfluous the judgment of the skilled clinician. Under the heading "Negativ W.R.—Aktiv Syfilis," Dr. Johanne Christiansen[3] analyses the syphilis records of the Rudolph Berghs Hospital for the three-year period, 1918–1920. Of 474 patients treated in 1918, 17 gave a negative reaction, although there was clinical evidence of a secondary or tertiary outbreak. Ten of these patients had, however, undergone specific treatment at an earlier stage, but there were three who had never received specific treatment, and who, in spite of a large secondary eruption, gave a negative reaction. After giving somewhat similar figures for the two following years, Dr. Christiansen draws attention to the fact that among 12 patients, suffering from active secondary or tertiary syphilis, with no record of specific treatment, and with a negative Wassermann reaction, as many as seven were women, who were either pregnant or had just been confined.

In the second paper headed "Positiv Wassermann—Aktiv Syfilis," Dr. T. E. Hess Thaysen[4] twits the clinician for his indiscriminate faith in serological reports, and for assuming that a positive Wassermann reaction must necessarily indicate clinically active syphilis. The author recognises the great difficulties of distinguishing between latent and active syphilis, but he is convinced that there is a large proportion of cases in which, in spite of a positive Wassermann reaction and total lack of specific treatment, the disease is and remains perfectly latent. He can also establish no correlation between the intensity of this reaction and the clinical prognosis, and he justifies this view by a study of 283 cases of syphilis treated with mercury and showing a positive reaction. He gives illustrative cases to show that there may be no clinical or post-mortem evidence of syphilis in patients whose serum has presumably been capable of giving a positive Wassermann reaction for 30 years or more. He refers to Danish statistics showing that among 2598 patients attending hospital there were 57, or between 2 and 3 per cent., who gave a positive reaction, although they showed no clinical sign of syphilis and denied infection. If the patients, whose only sign of syphilis is a positive Wassermann reaction, may be contributions to the *Journal* went to the editorial staff. The appointment of an independent committee to investigate and suggest economies was turned down.

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[1] l. Woch., June 2nd, 1921.

[2] Ibid., Jan. 13th, 1921.

[3] Hospitalstidende, May 18th, 1921.

[4] Ugeskrift for Laeger, June 9th, 1921.

The "British Medical Journal."

A hardy annual motion that the general practitioners' needs and difficulties should receive more consideration in the *Journal* was promised sympathetic attention by the *Journal* Committee. Appreciation was expressed of the good work done by this Committee and by the editorial staff. Sir DAWSON WILLIAMS is to be presented at the annual general meeting with the Association's gold medal of merit for his distinguished services to the Association. A motion to publish in full the reports of division meetings was deemed impracticable and withdrawn.

Professional Secrecy.

A motion was submitted by Dr. R. LANGDON-DOWN, chairman of the Central Ethical Committee, to the effect—

(1) That when a medical practitioner refuses to divulge information which he has obtained in the exercise of his professional duties in such circumstances as the following: (*a*) in a Court of Law when the Court has ruled that information so obtained must be disclosed; (*b*) where it is already provided by Act of Parliament that he must do so, for instance in the notification of certain diseases; such action must be taken entirely on his own responsibility, and the Association cannot be expected to support him or protect him from consequences he may incur in so doing.

(2) That if attempts be made to add additional exceptions to the general rule of the profession as regards professional secrecy, the Association recognises that it will be necessary, after consideration (i.) to resist by all lawful means any such encroachment, and (ii.) where such encroachment is attempted to accord support by any means in the power of the Association to any individual practitioner who may be assailed through such new encroachment

In the discussion that followed it became at once apparent that representatives were prepared to go much further than a year ago, and that the Central Ethical Committee's motion would not suffice them. In his amendment from Birmingham Central, Dr. H. G. DAIN pointed out that it by no means necessarily served the public interest for a doctor to disclose professional secrets on the instruction of a judge. Every individual member of the public had no doubt that *his* doctor ought, under no circumstances, to tell anything about him. Statute recognised no right of refusal to give evidence, even for the lawyer and the priest, but common law admitted privilege for the lawyer, and the priest was never asked. Many States of America, France, and New Zealand protected the doctor who refused in civil cases to violate his patient's confidence. Let the doctor refuse in the English court and take the consequence with the Association behind him; no judge had yet committed a doctor for contempt under these circumstances. After prolonged and searching discussion, in which the solicitor supplied a telling illustration of the class of case in which a medical man may help the ends of justice by supplying information, the following amendment was put and carried with not more than a dozen dissentients:—

That the Association use all its power to support a member of the Association who refuses to divulge, without the patient's consent, information obtained in the exercise of his professional duties, except when it is already provided by Act of Parliament that he must do so.

Not having been presented with the statutory two months' notice, this amendment, now passed as a substantive resolution, cannot become the accepted policy of the Association until the next representative meeting, but it will appear as such on the agenda next year, and in the meantime be a recommendation to this effect to the Council.

Proposed Central Medical Committee.

On a motion standing in the name of the chairman of Council to approve the section of the annual report setting up a Central Medical Committee representative of the profession as a whole to consult with the Minister of Health on questions of policy affecting the profession, Dr. BOLAM opened by admitting that the matter was in abeyance. Action was initiated owing to some remarks of Dr. Addison, late Minister of Health, substantially as follows:—

"On several occasions I have said in public 'If you want us to consult you, get busy and set up machinery whereby you can readily be consulted.' I quite agree as to the reasonableness of consultation in the formative stages regarding regulations or conditions, or general principles, if some machinery for consultation were available, but I will not consult half a dozen different bodies, each claiming to represent the profession. No body of medical men is more competent than those before me to-day to state a case for the profession, and I should be very glad to see them in consultation. I am speaking now, of course, of consultation with an exterior body, in respect of the profession generally. I am leaving out of account for the moment the Consultative Council, which is now a part of the machinery of the Ministry. As soon as practicable, I, or an officer acting on my behalf, will be willing to discuss the general principles with some body representing the profession. I can imagine no organisation better qualified than the British Medical Association to get together a representative body, but I repeat that I am not going to make an agreement of this kind with a number of different bodies each claiming to be representative."

At the time of issue of the annual report the position was that the Society of Medical Officers of Health, the Poor-law Medical Officers' Association, and the Association of Certifying Factory Surgeons had agreed to coöperate in the formation of a central medical committee; the Medical Women's Federation was discussing the matter at its next Council meeting; and the Medico-Psychological Association had stated that it would be glad to coöperate with the British Medical Association through the Federation of Medical and Allied Societies in all matters and questions to be considered by the Ministry of Health.

A new Minister of Health was now in office, and the Association, Dr. Bolam said, was awaiting the reopening of the whole question. In the discussion which followed it was suggested that it was childish to ignore the Medico-Political Union in getting the collective medical opinion of the country. Lord DAWSON thought the best way out of a thorny path was to leave matters in the hands of the Council to explore, leaving out of account for the moment the Consultative Council of the Ministry of Health, which had not yet matured. He paid a tribute in passing to the perspicacity, foresight, and sympathy of Dr. Addison. This Committee was in the nature of a medical charter to be jealously guarded; it had been given the right to initiate advice. Maybe its methods of selection might and could be improved. Dr. H. B. BRACKENBURY described the Consultative Council as a check upon bureaucracy, and as a useful agent for the Association to uphold. "You will," he said, "never get a united representation of the medical profession at the Ministry of Health; there will always be small minorities on every question; but the Association was in and by itself sufficient to represent the medical profession."

It was finally agreed to remit the whole matter to the Council for its consideration, along with the following motions standing in the name of the divisions noted:—

Motion by Portsmouth: That the Representative Body is of opinion that the collective opinion of the medical profession can be adequately and truly expressed to the Minister of Health only through a body elected directly by the profession for that purpose, such body to have the power, if thought advisable, to coöpt for any special purpose representatives of the medical profession not exceeding one-third of the total number of the Committee.

Motion by Portsmouth: That this election should be organised and conducted by the British Medical Association.

Motion by Sheffield: That this meeting endorses the view expressed by Dr. Addison, as Minister of Health, that in taking action to bring together a body representative of the whole profession for the purpose of consultation by the Government, the British Medical Association is the most suitable body to take steps for its organisation.

Motion by Brighton: That any scheme placed before the Minister of Health by which it is considered the collective opinion of the members of the medical profession in active practice can be obtained on questions of policy should be submitted to and approved by them; that it be an instruction to the Council to submit to all members of the medical

Its first notable recommendation in this respect (par. 34) is that certain provisions of the Health Acts, 1919, which enable powers and duties of the Minister of Pensions with respect to the health of disabled officers and men to be transferred to the Minister of Health, should be reconsidered with a view to their repeal. It can hardly be wrong thus to avoid the possible overlapping of functions, and to retain the care of pensioners requiring continued treatment in the hands of the Minister primarily responsible for their welfare.

As to the new regional arrangements proposed, we note in the portion of the report devoted to this subject a recommendation that the new regional offices should be obliged to deal carefully with complaints, and that awarding and medical officers should be instructed to explain briefly, in answer to queries, the grounds of a decision given. This imposes a certain amount of additional trouble on the medical officer, but, so far as such instruction can be complied with, it may promote smoothness of working and the contented acceptance of decisions. A statement of the grounds of a decision on a medical matter will, however, always be primarily of interest to the medical advisers of the pensioner whose opinion it may overrule, and the knowledge that it will have to be given will be a valuable protection to the pensioner. Paragraphs 137–141 deal with means for rendering the medical history of a pensioner more readily available as an aid to his efficient treatment.

The Organisation of Medical Services.

Part VI. of the Report is devoted to "Medical Services," dealing, firstly, with their cost, and, secondly, with their organisation and duties. Their approximate total cost for the year ending March 31st, 1921, is given as £9,187,271; of this, however, the supply of artificial limbs and surgical appliances, and the travelling expenses of patients, account for over £1,100,000. With regard to the duties to be performed by medical officers, the performance of these by regional rather than by headquarters officers is advised, and a strong recommendation is made as to relieving medical officers of clerical duties that can be performed by a lay staff (par. 335). The consideration of the work of the medical boards occupies several pages, and suggestions are made having to a large extent the object of preventing complaints and securing the pensioner's understanding of and acquiescence in the award to be made. The reducing of the personnel of medical re-survey boards is advised as a means for securing attendance only of those necessary, with the consequent quicker despatch of business. The continued use of civil hospitals for in-patient treatment is recommended (par. 352). It is found that there has been no delay in admission to hospitals, except unavoidably in neurological cases (par. 353). With regard to the staffing of the Ministry's hospitals, recommendations are made with a view to economy, and as to details affecting the discharge and admission of patients. The establishment of a clearing-house at regional headquarters for dealing with questions of in-patient admission to hospitals (par. 359) is suggested. With reference to the treatment of pensioner out-patients, the number of clinics established by the Ministry amounts to 140. This number only has been sanctioned by the Treasury, and the proposal of the Ministry that an increase to 250 should be allowed is endorsed by the Committee, with further suggestions as to the use to be made of the clinics.

The Care of Mental Cases.

The care of certified mental cases is one of the duties of the Minister of Pensions, and among the officers appointed by him is a medical inspector (neurological), who, with a member of the Board of Control, is employed in carrying out necessary investigation as to the treatment of service patients in institutions. Less than one-fourth of the asylums made use of having up to now been visited, the Committee ma[illegible] strong recommendation that the process of i[illegible] should be expedited. The setting up of mental hospitals for certified cases by the Ministry is not recommended, for the reason that they would be few in number and often at too great a distance for the patients' relatives to visit them.

We note that a certain amount of apprehension is expressed by the Committee that the welfare of the tuberculous is not adequately cared for, and that a warning recommendation is thought necessary as to the better provision for them of sanatorium treatment (par. 378). More supervision over the provision and standard of dental treatment is also urged. The establishment of additional limb-fitting centres is also advised.

"The Officers' Friend."

In Part VII. officers' pensions and medical treatment are discussed, the general result being that the present administration at headquarters is considered satisfactory, and will, subject to suggestions as to details, the arrangements, so far as they depend upon the coöperation of the medical profession, be continued. In conclusion, it may be noted that under the heading "Special Assistance" the report testifies to the useful work done at the headquarters of the Ministry by the branch known as the "Officers' Friend." This is performed by a small staff of ex-officers, who assist officers and their relatives in regard to their claims, and explain the regulations to them. Medical officers suffering from the effects of their war service, and the widows and dependents of dead officers, if not satisfied that they have fully understood their right to pension and other assistance from the Ministry, should not fail to consult the "Officers' Friend."

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Meeting of Council.

THE quarterly Council meeting was held on July 11th, Sir Anthony Bowlby, the President, in the chair. Mr. H. J. Waring, Mr. F. F. Burghard, Mr. W. Thelwall Thomas, and Mr. C. H. Fagge were introduced, and took their seats on the Council. A report was read from the Board of Examiners in Dental Surgery respecting candidates found qualified for the Licence in Dental Surgery, and licences were granted to 53 candidates named in the report. A report was read from Mr. F. G. Hallett, secretary to the Conjoint Examining Board of England, respecting candidates found qualified for the Diploma in Public Health, and it was resolved that diplomas be granted jointly with the Royal College of Physicians of London to 23 candidates mentioned in the report. A report was read from Mr. Hallett respecting candidates found qualified for the Diploma in Psychological Medicine, and it was resolved that diplomas be granted jointly with the Royal College of Physicians to six candidates mentioned in the report. It was resolved that the best thanks of the Council be given to the President of the American Museum of Natural History, New York, for presenting a plaster cast of the Chapelle skull and models of Dr. J. H. McGregor's reconstruction of the Gibraltar skull and brain cast: and also to Lieut.-Colonel R. H. Elliot for presenting a collection of 46 specimens illustrating rare pathological conditions of the eye. A report was read from the Committee of Medical Education and Examination, and the Council expressed their general approval of the proposed course of study and examination, and referred the report to the Committee of Management to consider. A report was read from the Committee on additional examinations in Ophthalmology and Oto-Rhino-Laryngology, which recommended that candidates for the examination in ophthalmology must be Fellows of the Royal College of Surgeons, and that they must produce evidence of having devoted, after becoming qualified, at least two years to the study of ophthalmology as a clinical assistant, house surgeon, or registrar at a recognised institution. The report was referred to Mr. Burghard and Mr. R. Johnson, in consultation with Mr. J. B. Lawford, Mr. E. Treacher Collins, and Mr. J. H. Fisher, to prepare for the approval of the Council the regulations for candidates for the proposed examination in ophthalmology. The President reported that in response to an invitation to the College to nominate a member of the "Hospitals Commission" recommended in the report of Lord Cave's Committee, he had nominated Sir George Makins to act in this capacity. The Council elected Sir Anthony Bowlby as President for the ensuing year, and Sir Charles Ballance and Sir D'Arcy Power Vice-Presidents for the same period.

Century; Dr. Brunon (France), on the Catalogue of the Museum of the Hotel de Dieu at Rouen; Dr. Cabanès (France), on the History of Psycho-Pathology; Dr. Blanchet (France), on the History of Medicine—Dissection and Vivisection; Dr. Dubreuil-Chambardel (France), on the Infirmaries of the Abbeys in the Eleventh Century, and the Disease of St. Sylvain in the Eleventh Century; Dr. Le Gendre (France), on the Life of Bouchard when a student in Lyons; Prof. Ménétrier, on Medical Anecdotes of the Sixteenth Century after the Contes d'Eutrapel; Dr. Sigerist (Zurich), on Conrad Heingarter, of Zurich, and Astrological Medicine in the Fifteenth Century; and Dr. Villaret, on the Origin of Intravenous Injection. On Sunday, July 3rd, at St. Germain-en-Laye, Mr. Solomon Reinach gave an interesting address in the National Museum of Antiquities on the Gallo-Roman remains.

At the morning session on July 4th papers were read by Dr. Bérillon (France), on Le Dormeur de la Hollande; Dr. Bertrand (France), on History of the Plague in Antwerp; Mr. Buchet (France), on the History of the Druggist; Dr. Delaunay (France), on Travelling Doctors in the Marne under the ancient régime; Dr. Dorveaux (France), on the Surgeons of Metz; and Prof. Laignel-Lavastine (who with Dr. Fosseyeux was joint secretary to the congress), on Psychiatry in France in the Eighteenth Century. On July 5th, in the morning, Prof. Guiart (France) gave a paper on Obstetrics in Ancient Egypt, illustrated by lantern slides; Prof. Schrutz (Prague), on Magister Gallus and Czech Medicine in the Fourteenth Century; Mr. C. J. S. Thompson (London) and Dr. Van Gils (Holland) gave lectures, illustrated by lantern slides, on the Pomander as a Link in the History of Preventive Medicine and on Medical Iconography respectively. In the afternoon the following papers were read: Prof. Jeanselme, Dietary in the Convents and Hospitals in Byzantine Times; Dr. Semelaigne, MSS. of Hiriel; Dr. Girard, Marcel Duval and the School of Naval Medicine in Antwerp (1810–1814). On July 6th, in the morning, papers were delivered by Prof. Hervé (France), on Une Expérience d'ingestion volontaire du virus rabique; Dr. Meige (France), on Some Rites of Divining in Antiquity; Dr. Adamidi (Geneva), on a Short History of the French Hospitals in Constantinople and Cairo in connexion with the French Missions to the East; Dr. Van Schevensteen (Belgium), on the Plants used in the Treatment of Eye Diseases; Dr. Fosseyeux (France), on Medicine in Italy in the Time of Dante; Mr. Guitard (France), on the Ancient Statutes of the Apothecaries of Toulouse; Dr. Lecène (France), on a Note on Surgery in Ancient Greece; Dr. Olivier (France), on Medical Ex Libris; Dr. Raymond Neveu (France), on Recent Excavations at the Temple of Æsculapius at Epidauris; Dr. Rambaud (France), on the Organisation of the Faculty of Medicine in Poitiers in the Sixteenth and Seventeenth Centuries; Mr. Van Schoor (Belgium), on the Oath of the Apothecaries; and Dr. Bouvet (France), on Medical and Pharmaceutical Advertisements in Journals of the Seventeenth and Eighteenth Centuries.

The museum of historical medical objects, loaned by various institutions and members, was arranged in a large room in the school of medicine. It included a fine collection of medical coins, medals, and plaquettes lent by Prof. Gilbert and Dr. Desnos, and a large collection of surgical instruments of the eighteenth and nineteenth centuries was exhibited by the Faculty of Medicine of Paris. Dr. Guelliot lent some interesting Roman bronze surgical instruments and antiquities excavated at Rheims, and Dr. Harmonic lent his fine collection of medical antiquities. This comprised some interesting French microscopes of the eighteenth century; bronze mortars of the sixteenth and seventeenth centuries; Greco-Roman surgical instruments; Persian anatomical drawings, sixteenth century; some curious specula of the sixteenth and seventeenth centuries; artificial limbs of iron as figured by Ambroise Paré, sixteenth century; ancient appliances for reducing fractures, seventeenth century; two accouchement chairs, one of which was a portable contrivance for use of the "sage-femme." Prof. Laignel-Lavastine lent a medallion of the Baron Larrey, and some curious wooden urinals used for infants. An anatomical figure or mannikin of ivory and an amulet of St. Gorgan was lent by the École de Médecine of Rouen. Dr. Coulomb exhibited his interesting collection of artificial eyes, consisting of the eyes inserted in ancient Egyptian mummy cases, Utchat eyes in faience, and the artificial eye of more recent times. The Administration Générale de l'Assistance Publique exhibited a number of prints, and the seal and portrait of Baudeloque. A collection of old pharmacy jars, mortars, old drugs and books were lent by the Pharmacie Centrale de France. Dr. Guillon lent an endoscope of Desormeaux of 1852, and Dr. Berillon exhibited a large collection of charms and amulets. These, together with many other objects, formed a museum of considerable interest, and one which attracted numerous visitors. During the congress visits were paid to various hospitals, museums, and places of interest in the neighbourhood of Paris, and various receptions were given to the members, who also, by invitation of Dr. Henry de Rothschild, attended a special performance of "La Caducée."[1] At the closing session, held in the afternoon of July 6th, it was decided that the next meeting of the congress should be held in London in 1922.

Report of the Académie de Médecine upon Protection against Radiation.

The report of the Commission du Radium (sur les dangers des radiations pénétrantes et les moyens de les éviter) adopted by the Académie de Médecine contains a carefully complied résumé of the risks involved in the manipulations of radium and of the more penetrating kinds of X rays. The attitude of the Commission towards these dangers is identical with that of the committee in England whose preliminary report has recently appeared in THE LANCET; it is held that the dangers may be avoided by the adoption of well recognised precautions. Radiological practice in France is not entirely without legal restrictions, in many ways to its benefit, and the question of adequate space where work of this kind is carried out is one of great importance, not only because of the rapidity with which the radiation diminishes with the distance from the source (the inverse square law), but also because adequate ventilation in small rooms is very difficult to arrange. The law in France requires a minimum of 4 by 5 metres for radiological rooms. The report is a well balanced exposition, neither disregarding dangers which exist nor adopting an attitude tending to exaggerate them. It reminds the reader that our normal habitat is one which is not free of penetrating radiation, and by a few well-chosen examples it shows that a reliable basis of security for all radiologists is afforded by the rational and consistent use of protective devices.

Action of Bismuth Compound on Syphilis.

At a recent meeting of the Académie des Science, Mr. E. Roux, director of the Pasteur Institute, communicated the results of a series of researches made by MM. C. Levaditi and R. Sazerac at the Pasteur Institute. The researches consisted of the study of the effects of intravenous and hypodermic injections of solutions of tartrobismuthate of potassium and sodium into rabbits into which human syphilitic virus had been injected previously; the action of the same chemical compound was also tried in the case of trypanosomiasis nagana in the guinea-pig. The report points out that the results obtained have encouraged the authors to treat with this tartrobismuthate patients suffering from syphilis, and that they claim to have observed that the spirochætes disappeared from chancres and papules after one injection.

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[1] THE LANCET, 1921, ii., 28.

observed in the case of superficial lesions. Combined infections, if of sufficient importance, can simultaneously be cleared up by the use of appropriate autogenous vaccines.

Under treatment on such lines patients can be seen to exhibit rapid improvement, and can be treated in large numbers, in their own homes, at a vastly reduced cost with correspondingly enhanced chances of recovery. Many other observers at home and abroad, working on these lines, which were introduced in their original form by Dr. D. Curle of Glasgow in 1912, have attained excellent results.

I am, Sir, yours faithfully,
J. F. HALLS DALLY.
Harley-street, W., July 18th, 1921.

THE ULTRA-MICROSCOPIC VIRUSES.

To the Editor of THE LANCET.

SIR,—I should like to call some attention to the numerous papers on the so-called phénomène de d'Herelle which are creating so much interest in the French school, and which are at present being published in the French scientific journals. May I point out that the work of d'Herelle is little more than a confirmation of my work which was published in THE LANCET of Dec. 4th, 1915, under the title of "An Investigation on the Nature of Ultra-Microscopic Viruses." At the time I realised the significance of the results, as may be seen by a reference to my paper. Unfortunately, although I discussed the results in this country, and in Salonika, during the war, the civil and military authorities did not appear to appreciate their significance or the possibility of their relation to the problems of infection and immunity. As no one in this country has taken much interest in the work, it has rested with the French school to repeat the investigation and to monopolise this field of research. It is only recently that Bordet and one or two other workers have recognised the priority of my work.

I am, Sir, yours faithfully,
F. W. TWORT.
The Brown Institution, London, July 18th, 1921.

ON DEATH FROM RESPIRATORY AND NOT FROM CARDIAC FAILURE.

To the Editor of THE LANCET.

SIR,—The recent correspondence under this heading in THE LANCET of July 2nd and 9th is doubtless of interest to anyone who has had any appreciable experience in the treatment of cerebro-spinal fever. In subacute and chronic cases of this disease death from respiratory failure was more frequent than otherwise. It generally resulted soon after lumbar puncture failed to relieve the symptoms. Autopsy, when obtainable, invariably revealed acute hydrocephalus and signs of acute inflammation at the base of the brain, particularly adhesions and purulent deposits between the cerebellum and medulla. In some cases even the free passage of the cerebro-spinal fluid through the ventricles appeared to be obstructed by large purulent clots.

In the case of one patient artificial respiration was kept up for over four hours, and even then a flickering though slow and irregular pulsation could be felt at the wrist. For over two hours the pulse was quite strong and regular. In another case of tuberculous meningitis artificial respiration carried on for one and a half hours was followed by temporary recovery lasting a good part of a week. Early surgical treatment as soon as lumbar puncture fails offers the only prospect of success in the cerebro-spinal fever cases, but, unfortunately, results even then are not very promising. The pathological conditions already present are very often beyond repair.

I am, Sir, yours faithfully,
D. H. C. GIVEN, M.D., D.P.H.,
Surgeon-Commander, R.N.
1921.

THE BRUSSELS M.D. FOR BRITISH GRADUATES.

To the Editor of THE LANCET.

SIR,—I have received the following official notice: "There will be no more M.D. Brussels examinations held and diplomas for same delivered by the University of Brussels." As the privilege of proceeding to the M.D. Brux. has been enjoyed by British and Colonial candidates for the last 40 years, there is good reason for asking the authorities of the University of Brussels to reconsider their decision. I am therefore preparing a Petition to the University, and should be glad if every medical graduate of the University in all parts of the British Empire would communicate with me, so that I may send in as many names as possible.

I am, Sir, yours faithfully,
ARTHUR HAYDON, M.D. Brux.,
Hon. Sec., Brussels Medical Graduates' Association.
41, Buckland-crescent, London, N.W. 3, July 16th, 1921.

Medical News.

UNIVERSITY OF MANCHESTER.—The following appointments have been made: Senior Lecturer in Physics, Mr. E. C. S. Dickson, B.A. Camb., Ph.D. Bonn; Lecturer in Systematic Surgery and Assistant to Professor of Systematic Surgery, Mr. W. H. Hey, M.B., Ch.B. Manch., F.R.C.S., L.R.C.P.; Lecturer in Clinical Surgery and Assistant to Professor of Clinical Surgery, Mr. Charles Roberts, M.B., B.S. Lond., F.R.C.S.; Lecturer in Pathology, Mr. Arnold Renshaw, M.D., B.S. Lond., F.R.C.P.; Lecturer in Bacteriology, Mr. J. H. Dible, M.B., Ch.B. Glasg., M.R.C.P. The following awards have been made: Platt Physiological Scholarship, S. L. Mucklow; Dauntesey Medical Entrance Scholarships, F. H. Smirk (First), H. B. Kitson (Second); Dumville Surgical Prize, H. L. Sheehan; Platt Biological Exhibition, Ethel Bunting; John Dalton Natural History Prize, divided between O. D. Hunt and William Leach.

A graduation ceremonial was held on July 14th, at which most of the degrees conferred were in medicine and surgery. Sir Henry Miers, the Vice-Chancellor, in addressing the new graduates, characterised the studies of medical students as the longest and most responsible and exacting of University courses; and it seemed rather hard to the medical student that something was always being added to the course, while nothing was ever taken away. One remedy seemed to be to throw more and more of the preliminary work back upon school life. Nowhere in this country was there a larger amount of material available for clinical experience and research than in Manchester. The doctor had not only to be a skilful and a learned man, but he had also to be a wise man. Perhaps in no other profession was a man or woman called upon to exercise more responsibility and to give more help and advice outside his own work. The University aimed at equipping students for that kind of life. It encouraged the wider spirit of sympathy and interest in all that made up human life, and, above all, it cultivated the spirit of inquiry which was at the basis of all progress.

The Diploma in Public Health has been awarded to the following practitioners: Allan Barrett, K. D. Bean, Mary Boullen, G. F. Bowman, J. W. Chadwick, William Edge, Douglas Fisher, Austin Furniss, Ernest Jones, W. H. Kauntze, Emily M. Peach, A. W. Ritchie, W. R. N. Smithard, R. J. Staley, and William Stott.

At examinations held in July the folowing candidates were successful:—

FINAL M.B. AND CH.B. EXAMINATION.

S. Almond, *§G. V. Ashcroft, Martha F. Barritt, E. C. Berg, Nancy E. Bleakley, ‡Muriel Coope, T. E. Coope, Eugenia [illegible], R. A. Cooper, S. W. Drinkwater, Winifred M. Edgehill, T. M. Fisher, Kathleen M. Fullerton-Bailey, E. Gleave, W. H. Gratrix, Ruth Hill, C. D. Hough, Violet M. [illegible], R. R. Lane, Eva G. le Messurier-Kneebone, C. Nelson, L. S. Potter, W. L. Powell, Harriet R. Reid, Annie Rothwell, *§ †§H. L. Sheehan, *†‡Margaret Single, H. Stafford, S. Wand, S. Waterworth, and R. Williams.

* Awarded distinction in Medicine. † Awarded distinction in Surgery. ‡ Awarded distinction in Obstetrics. § Awarded First-Class Honours. ‖ Awarded Second-Class Honours.

DIPLOMA IN DENTISTRY.

Final Examination.—R. Ackers, D. M. Barnes, Elizabeth Benson, C. C. Breakell, P. A. Gardner, W. Garstang, H. F. Kirkbride, J. C. Knowles, H. Laslett, R. A. Lewty, J. E. Spedding, G. Stirling, R. M. Timperley, J. E. Thornton, Gracie Walker-Anderson, S. Whitworth, and W. R. Williams.

assumed to be syphilitic, the remarkable conclusion can be drawn that they represent between one quarter and one-fifth of all the syphilitic cases among the 2598 just mentioned. In a group of 120 cases of syphilis observed by Dr. Thaysen, only 46 showed clinical evidence of syphilis—i.e., 62 per cent. were in what he defines as the late stage of latency. Of this majority of 74 latent cases, as many as 59 gave a positive W.R. Dr. Thaysen gives numerous other statistics, from which he concludes that a positive W.R. in the late stage of latency does not necessarily foreshadow a recurrence of active disease. In the majority of cases in which the first infection dates back 25 years or more, and in which there has been no clinical sign of active syphilis, there is good reason for assuming that the disease will probably continue to remain clinically inactive. The moral of this paper is not that serological evidence should be ignored, but that the clinician should not allow himself to be hustled into therapeutic meddling by a serological report unsubstantiated by the patient's present state and clinical record.

The Cause of Relapses of Gonorrhœa in Children.

In two recent papers, Dr. Edith Valentin has added to our knowledge of gonorrhœa in childhood, and one important feature of her research is the demonstration of the frequency with which gonorrhœa of the female genitals in childhood is complicated by gonorrhœa of the rectum. She sees in this disease of the rectum a reservoir of infection which determines recurrence of gonorrhœa in the female genitals weeks, and even months, after they have been effectively sterilised by antiseptic treatment. In her first paper[5] she deals with the 161 girls admitted between July 15th, 1919, and Dec. 1st, 1920, to a convalescent home in Berlin for the subjects of infantile gonorrhœa. Her first task was to determine the frequency with which the parts adjoining the vulva were affected. The urethra invariably contained gonococci, and they were also found in the catheter urine of 30 out of 44 consecutive cases examined for gonorrhœal cystitis. But for lack of histological and cystoscopic examination of the bladder, it was doubtful whether the gonococci found in the urine had established themselves in the walls of the bladder or were only incidental visitors displaced from the urethra into the bladder. The cervix was also examined for gonococci, and they were found here in 7 out of 17 cases of acute gonorrhœa. In 24 cases of chronic gonorrhœa and in 13 cases of gonorrhœa which had been suppressed by local treatment, the cervix was not once found to harbour the gonococcus. The examination of the rectum for gonococci being complicated by pitfalls for the unwary, the precaution was taken first to examine the rectal flora of about 100 healthy infants. In the 8 or 10 cases in which pus cells as well as bacteria were found, some definite reason for this evidence of inflammation, such as the presence of oxyuris, was always demonstrable. In a series of 94 children, suffering from recent or chronic gonorrhœa, all, with only two exceptions, harboured the gonococcus in the rectum. The abundance of leucocytes suggested that the gonococci were not leading an innocent, saprophytic existence in the rectum, but were provoking an inflammatory reaction, although there were no symptoms referable to this region. Dr. Valentin concludes this paper with the opinion that, in the absence of oxyuris, the presence of pus cells in the rectum of a child suffering from gonorrhœa of the vulva is proof of gonorrhœa of the rectum.

In her second paper[6] she urges the extension of local treatment for gonorrhœal vulvo-vaginitis to the rectum if the physician wants to eliminate the most frequent cause of relapse. In 61 cases which relapsed 6 to 21 weeks after the vulvo-vaginitis had apparently been cured, she invariably found gonococci persisting in the rectum. In none of these cases was there any sign of bartholinitis; the catheter urine did not contain gonococci, and the cervix was also gonococcus-free. Thus the only source of reinfection seemed to be the rectum.

THE MACHINERY OF PENSION ADMINISTRATION.

THE War Pensions Bill, introduced in the House of Commons by Mr. Ian Macpherson, was read a second time without a division only three days after the publication of the Report of the Departmental Committee of Inquiry[1] upon which it is founded. This was quick work, giving no time for persons affected to consider and discuss radical changes of some importance. There will, however, no doubt be opportunity for criticism, and perhaps amendment, when the House considers the Bill in Committee. As it stands, it renders effective those portions of the Committee's report which required legislation to bring them into operation, and leaves matters which are questions of departmental administration for the Ministry of Pensions to deal with.

New War Pensions Committees.

It provides mainly for new and fewer War Pensions Committees, subject to centralised supervision, and exercising jurisdiction over rearranged and wider areas than did the numerous voluntary committees in existence hitherto, the new bodies being appointed by the Minister of Pensions from classes of interested persons specified in the Bill. It is to be hoped that the Minister will have at his disposal such information as will enable him to appoint wisely. The chief provision of the Bill directly affecting medical men engaged in the administration of war pensions is contained in Clause 3 (3) (*b*). Clause 3 provides for the making of final awards in the case of officers and men already drawing pensions, and gives a right of appeal against such awards to a Pensions Appeal Tribunal. A second medical member will take the place of the legal member of former tribunals. These, Mr. Macpherson stated, will now consist of two medical men, an ex-service man, and an officer. The strengthening of the medical element in such tribunals is obviously a sensible and natural change, when it is remembered that the chief, if not the only, question in assessing the permanent pension to be awarded will be the present and probable future extent of the incapacity in respect of which the pension is granted.

The important question of permanent pensions has received prompt attention in the new Bill, following upon a strong recommendation by the Committee that it should be considered without delay, and in particular that about 100,000 outstanding questions of "entitlement" should be finally disposed of. The Bill proposes that the case of every officer and man "shall, with a view to making a final award, be taken into consideration not later than four years after his discharge from the service or after the first award of a pension to him, as may be prescribed by regulations." Provision is made for appeal within a year by a claimant dissatisfied with such final award on the ground that it ought not to have been made or that the proper amount has not been awarded.

Economy in Administration.

The Departmental Committee was appointed "to inquire into the system and methods of administration of the Ministry of Pensions, with special reference to the working of the regional and local committee systems, and the existing arrangements for the issue of pensions." With such a reference it has naturally devoted a large part of its efforts to recommendations of reorganisation that will bring about economy in administration, always keeping in view the efficiency of the department for the performance of its functions. In the Bill referred to "pension" means "any pension, grant, gratuity or allowance in respect of disablement," under any of the warrants or orders administered by the Minister, and the efficiency of pension administration on its medical side has received full consideration in the Committee's report.

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[5] Deut. med. Woch., May 26th, 1921.

[6] Ibid., June 2nd, 1921.

[1] Report of the Departmental Committee of Inquiry into the *Machinery of Administration of the Ministry of Pensions.* London, 1921. H.M. Stationery Office. Pp. 156. Price 2s. 6d.

to the institution of a diploma in nursing, and regulations have been framed to this end. The standard of general education of the candidates required will be high, the hospital training must extend over a period of four years, and before candidates are accepted from the nursing staff of any hospital the University must be satisfied that the training given is adequate. In the first instance the candidates will be probably drawn exclusively from the nursing staff of the General Infirmary at Leeds. The regulations are, indeed, framed upon the course of training which has been in force there for some years, but it is not intended by the University to exclude candidates from elsewhere, though some residence and some attendance on lectures delivered at the University is required from all candidates. The hospital certificate of training given to nurses who have passed through their training satisfactorily will, of course, continue; the diploma carries the nurse a step further, and it is intended that it shall rank as a definite mark of distinction. The regulations for the diploma, for which a fee of £5 is required, will be furnished on application to the University.

THE LATE DR. JAMES SMART, OF ABERDEEN.—The death took place suddenly on July 13th, while on a holiday visit at Kyles Hydro, Rothesay, of Dr. James Smart, a well-known general practitioner in Aberdeen. Dr. Smart, who was 48 years of age, was a native of Oldmachar. He was educated at Elgin and Aberdeen University, where he graduated M.A. in 1894 and M.B., Ch.B. in 1899. He had been in practice in Aberdeen for 22 years. On the outbreak of war he was appointed registrar at the 1st Scottish General Hospital with the rank of captain. Soon afterwards he was promoted to the rank of major, and in 1916, when Lieut.-Colonel Mitchell, the O.C. of the hospital left for service overseas, Major Smart succeeded him in command with the rank of lieutenant-colonel. In 1918 he took over temporarily the command of Bangor War Hospital, and later proceeded to London, where he commanded the 4th General Hospital. A cheerful, courteous, and many-sided man, Dr. Smart's untimely ending has come as a shock to numerous friends.

HOSPITAL CONDITIONS IN BRISTOL.—As in other cities, so also in Bristol, the voluntary hospitals are in financial straits. The Royal Infirmary is issuing an appeal which states that there is a debt of £70,000 to be paid off, and suggests that this might very properly be regarded as a war memorial, since it was in the infirmary buildings that much of the work of the 2nd Southern General Hospital was carried on. As was recently stated in our columns Mr. H. H. Wills, the president of the hospital, has given £100,000 in securities to the infirmary, but this is intended as a permanent endowment and not as an extinction of accumulated debt. The plans for collection of payments from patients have come into operation, both at the Royal Infirmary and at the General Hospital, during the past week, and this has already called forth from one large firm—that of Messrs. J. S. Fry and Sons—a double response which may well furnish a valuable precedent not only in Bristol but elsewhere. In the first place, the directors undertook to pay the standard charge—£1 1s. per week—for any employee admitted to either hospital for in-patient treatment. Secondly, the employees have now formulated a scheme for the deduction of 2*d.* per week from their wages in the place of the present voluntary contribution of 1*d.* per week. The sum thus collected is to be devoted in part to a general contribution to the funds of the hospitals, in part to an amplification of the directors' scheme. This step on the part of the employees is entirely spontaneous, and is most encouraging in view of the fears expressed as to the probable falling-off in workpeople's contributions when a scheme of payment by patients was introduced.

GUY'S HOSPITAL: ANNUAL REPORT.—The report for the year ended Dec. 31st, 1920, shows the number of patients who received treatment in the wards during that period to be 9309, and the number of separate visits of out-patients to be 496,466. The call upon the resources of the hospital was greater than ever; no wards were closed, no facilities for treatment were withdrawn, and the whole services of the institution were fully employed, but the great costs of working, in spite of strict economy, render the future prospect very serious. The expenditure of the hospital was £166,203, against £73,574 in 1913. A reduction in the average stay in hospital from 23·6 to 22 days made it possible to pass through the wards over 500 patients more than in the previous year. The mortality-rate in the wards was 7·2 per cent. The special appeal for further support, addressed to firms and individuals having premises near the hospital, met with an encouraging response; many regular subscribers had increased their benefactions, and nearly 700 new contributors had subscribed, but the income and expenditure account showed a loss for the year of £21,791. The [illegible]rs felt that the institution of a compulsory monetary charge to patients would be at variance with the expressed desire of the Founder of the hospital and inconsistent with the spirit of the charity as hitherto maintained; but they saw little objection to asking patients to contribute voluntarily according to their means. Roughly one in three had responded to the appeal now made to each individual patient; a proportion of those who did not contribute wrote explaining that unemployment, sickness, &c., prevented them from doing so. Support in the form of endowment is now greatly needed for the medical school; further, the Governors invite subscriptions to a discretionary fund, donations to which may be used in part or in whole at their discretion for the benefit either of the hospital or of the medical school. While careful that all money contributed for hospital purposes shall be expended only in the relief of the sick poor, the Governors, recognising the importance of the medical school, have opened this fund to be allocated between the hospital and school in proportion to their respective needs.

PREVENTION OF EPIDEMIC DIARRHŒA.—A circular (No. 217, H.M. Stationery Office, price 1*d.*) has been addressed by the Ministry of Health to local authorities carrying out maternity and child-welfare schemes on the subject of the prevention of epidemic diarrhœa. Though the mortality from this disease of infancy has steadily decreased, a hot spell such as that through which we are at present passing may cause a sudden and serious rise. In view of the fact that epidemic diarrhœa is essentially a disease of urban communities, and is more liable to affect areas unprovided with satisfactory water closets, it is desirable to make sure that accumulations of dust or refuse, and the contents of privies, pail, or tub closets are removed frequently, and that foodstuffs are screened from flies. In the event of a threatened epidemic of diarrhœa local authorities are advised to suspend routine home-visiting and welfare work, and to employ the total available staff in an attempt to prevent the spread of infection and in the nursing treatment of sick infants. Mothers should be instructed to continue breast feeding during the hot months, and to apply early for medical advice. Voluntary notification of the disease to health visitors by the mothers, and to the local authority by medical practitioners, will ensure arrangements for immediate assistance in nursing. Domiciliary nursing should be provided where possible, in order that the instructions of the medical practitioner in charge of the case can be carried out, and disinfectant solutions provided for soiled clothing. Hospital accommodation should be made available for children who are seriously ill in special wards.

THE LATE DR. REYNOLDS RAY, OF DULWICH.—Dr. Ray, who practised for many years in Dulwich and afterwards in London, died at the age of 79 on July 8th. He was in busy practice to within six months of his death, retaining a vigour of mind and body unusual at his age. He was educated at Guy's Hospital, qualifying M.R.C.S. Eng. in 1863 and subsequently becoming house surgeon at Guy's. He left hospital to help in the practice of his father, whose health had begun to fail; otherwise he might have obtained some position on the staff of the hospital, since he was one of the best students of his time. He was greatly respected, trusted, and beloved by many, and held for a long time a leading position in Dulwich. Dr. Ray was a sportsman, an expert fisherman, and a good shot and whip. As a breeder of bloodhounds he took prizes with dogs which became famous, and for 50 years he was a member of the Kennel Club. He became a special constable during the war and led his section at the parade before the King. As just 60 years previously he marched in review of the newly raised Volunteers, he had a record few could surpass. While taking night duty three times a week with charge of the ambulance, Dr. Ray attended daily at the Horton Military Hospital at Epsom. Here he won the esteem and affection of patients and staff alike, and here he worked throughout the epidemic of influenza. A sound practitioner, a warm-hearted, sincere friend, a man of high ideals, and a thorough sportsman, he will be missed by a large circle of friends.

EAST SUSSEX HOSPITAL.—At the eighty-first annual meeting of the hospital on June 29th it was reported that but for extraordinary income the deficit on the year's working would have been £1096. Since November last patients had been asked to contribute a minimum of one guinea per week towards their maintenance, and while this had somewhat alleviated the financial distress the Committee felt that they must continue to look to subscribers and donors for their support in order to make way against the ever increasing difficulties. Reference was made to the report of Lord Cave's Committee. Lord Eustace Percy said in the first place they had to face this fact—that the Government, and, he thought, the majority of public opinion throughout the country, was very strongly in favour of retaining the voluntary principle; and in the second place

Correspondence.

"Audi alteram partem."

PSYCHOTHERAPY.

To the Editor of THE LANCET.

SIR,—I shall be obliged if you will insert the following short comments on Dr. S. Herbert's letter in THE LANCET of July 16th. (1) Dr. Herbert writes in reference to my letter of the previous week: "I did not confuse psychotherapy with psycho-analysis." But I did not make this charge against him, and I specially pointed out that he used the word "psychotherapist" with its proper meaning. What I emphasised was the prevalent trend towards the confusion of "psychotherapy" with "psycho-analysis," which is undeniable. (2) Dr. Herbert writes of my "bias" against psycho-analysis. By this I suppose he means my opposition to the greater part of the Freudian teaching, and, if so, I fully accept the imputation of "bias." No one can reason on any matter without some bias towards one or other method of approaching it. (3) Dr. Herbert, in referring to my use of the words "false psychology" implies that I intended to brand all Freudian views and writings with falseness. This was not my intention. When I wrote that "the importance of the sex-factor in the genesis of mental disturbances was emphasised long before this doctrine was exaggerated, transformed, and linked up with what most scientific thinkers deem to be a false psychology," I meant, of course, by "false psychology" the basic assumption of Freudians, the hypothesis of the "Unconscious Mind," and thought that my meaning was clear.

I am, Sir, yours faithfully,

London, July 16th, 1921. H. BRYAN DONKIN.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—Dr. I. Harris, in his letter in your issue of July 9th, has not accurately defined the issue of this discussion. It is not whether an increased flow per time unit can be obtained through the arterial system in the presence of lowered blood pressure. This I do not deny. In fact, I have agreed that this is possible under such circumstances, *provided* there is vaso-dilatation. Dr. Harris, on the other hand, declares the increased flow possible in the presence of lowered pressure and in the absence of vaso-dilatation. This I deny. If there is no vaso-dilatation, then the arterial passages and exits remain as before. But to urge through undilated passages a greater blood volume per time unit demands the exercise of a greater driving force to accomplish the assuredly greater work, and *there is nothing miraculous about digitalis which* suspends the operation of this physical law. The force of cardiac systole must, therefore, be increased, and concurrently a correspondingly greater pressure (the other factor determining flow) be exerted by the arterial walls on the circulating blood. The blood is driven in greater volume and with greater force into the arteries and exerts upon them a greater pressure. Effective resistance is offered to this by the (according to Dr. Harris) undilating vessels, and the intra-arterial pressure rises. In this manner is obtained the greater force required to accomplish the greater work, and in consequence of it the velocity of the blood stream rises and a greater delivery per time unit is effected. It is obvious that this is the mechanics of our problem. Dr. Harris may sneer at what he calls "empty phrases such as physical laws," but I assure him that physical laws are laws, and that a series of disconnected statements divorced from reality and loosely held together by sophistic, formal reasoning does not suspend their operation.

I regret that Dr. Harris does not see fit to support the cardinal assumption of his paper—viz., that increased pulse pressure connotes increased cardiac output, and vice versa. The fallacy in this assumption vitiates all his conclusions. I did not accept it in my first letter, but "assumed it with Dr. Harris" merely in order to erect upon it an "*argumentum ad hominem*." In conclusion, I regret that Dr. Harris should misquote me and father me with a statement which I would not make. I did not say it is impossible to get an increased flow per time unit through the veins without an increase of pressure in them. I do know something about the function of negative pressure in venous flow. What I did say was, "If the pressure in the veins is not increased, these will be unable to pass a greater amount of blood per time unit into the heart *at the increased pressure* necessary to cause the rise of intra-cardiac pressure depicted by Dr. Harris." This is quite a different statement, and its truth is so obvious that one need not labour the point. As far as I am concerned this correspondence ceases. I am, Sir, yours faithfully,

Eltham, July 9th, 1921. W. J. GRANT.

THE VALUE OF SANATORIUM TREATMENT.

To the Editor of the LANCET.

SIR,—My personal experience tallies closely with that of Dr. F. G. Caley (THE LANCET, June 18th), as to the disappointing results of sanatorium treatment, both in its individual aspect and from the economic and public health standpoints. Sanatorium medical officers are frequently unversed in knowledge of other tuberculosis therapy, and denied the opportunity of seeing the after-results of cases which have left their immediate care. The percentage of post-sanatorium relapses is comparatively high, often within a short time, making the expenditure, both public and private, out of all proportion to the private good. In sanatorium treatment *per se* there is nothing specific—i.e., capable of destroying the tubercle bacillus or the allied organisms which foster its activities.

Sanatoriums are undoubtedly of considerable value from the educational point of view, but residence therein for a term of from six weeks to three months is ineffective in doing more than in most cases temporarily to raise auto-resistance. But what of the patient with a bad family history of tuberculosis, or in whom resisting power is dangerously low, either naturally or as the result of a virulent infection or other intercurrent factors? Such cases are many and provide that failure to react which ends in a fatal issue at no remote period.

No absolute specific has yet been discovered, but the method that, during the past nine years, has given me the best all-round results in all cases except the advanced, is found in intensive nascent iodine therapy. This does not contra-indicate sanatorium treatment as well, if desired, but can readily be used apart from the latter. The treatment can be administered either orally or by ionisation, the latter procedure being by far the more rapid.[1] Iodine, evolved from iodide by a powerful reducing agent given in successive doses, or by ionisation, in my experience is of more value than administration of "intensive" drop doses of the French tincture, following the practice of Bourdreau. Although the latter procedure is simpler, the liability to gastric disturbance is greater, and a commensurate effect upon tuberculous foci is not so readily obtained. The waxy lipoid coating of the tubercle bacillus renders it at the same time hard to stain and difficult to destroy in situ, and iodine is the only effective germicide that can be introduced into the body in sufficient non-toxic concentration to dissolve this coating, to cause cell proliferation and promote catalysis, processes similar to what can be readily

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[1] Clinical Journal, August 19th, 1914, Medical Annual, 1915, p. 638.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Clinical Thermometers Bill.

THE text has been issued of the Clinical Thermometers Bill which was recently introduced by Mr. BALDWIN, President of the Board of Trade, into the House of Commons. The administration of an Order made by the Ministry of Munitions requiring that clinical thermometers should be tested and marked before sale was transferred to the Board of Trade in June, 1919, and the Order was discontinued as from April 1st, 1921, by the Ministry of Munitions (Cessation) Order, 1921. The present Bill proposes to place the requirement on a permanent statutory basis. The testing of clinical thermometers will be undertaken by the National Physical Laboratory, which performed all the testing required during the war. As the fees charged by the National Physical Laboratory for testing clinical thermometers will cover the cost, the Bill will not involve any charge upon public funds. The penalty for an offence under the Act is a fine not exceeding £10.

HOUSE OF LORDS.

TUESDAY, JULY 19TH.

Coroners (Remuneration) Bill.

The Coroners (Remuneration) Bill was read a second time.

National Health Insurance Bill.

The National Health Insurance Bill was read a third time and passed.

HOUSE OF COMMONS.

TUESDAY, JULY 12TH.

Deaths from Vaccination.

Mr. WATERSON asked the Minister of Health whether the letters addressed to medical men who had certified deaths as due to vaccination, and the visits of medical officers of the Ministry to make personal inquiries into the circumstances, had resulted in an alteration of the death certificate; and, if so, in how many cases had this occurred. —Sir A. MOND replied: The answer to the first part of the question is in the negative, and the second part does not therefore arise.

Homes for Shell-Shock Cases.

Brigadier-General SURTEES asked the Minister of Health whether there was now any prospect of the establishment of homes for those ex-Service men who were mentally afflicted owing to shell-shock, and who were now confined in company with certified lunatics.—Sir A. MOND replied: I am informed that the Board of Control is not aware of any ex-Service men in asylums or hospitals for the insane other than those who have been certified as insane. Amongst them there are cases in which insanity has supervened upon shell-shock. There are several neurological hospitals under the control of the Ministry of Pensions where ex-Service patients whose mental symptoms do not amount to confirmed insanity are being treated.

WEDNESDAY, JULY 13TH.

Treatment of Tuberculosis.

Lord HENRY CAVENDISH-BENTINCK asked the Minister of Health how much had been spent under the Insurance Act since July, 1912, in the treatment of tuberculosis.—Sir A. MOND replied: I assume that my hon. friend refers only to expenditure on the provision of sanatorium benefit for insured persons under the Insurance Acts. The amount spent in England and Wales upon the provision of sanatorium benefit for insured persons under the Insurance Acts from July, 1912, to April 30th, 1921, the date on which the benefit terminated, was approximately £6,380,000.

Government of Greater London.

Mr. JESSON asked the Minister of Health (1) when it was proposed to appoint the committee that was to inquire into the question of Greater London government; and, if the inquiry was not held this year, if it was intended to act upon its findings during the life of the present Parliament. (2) If, having regard to the importance of the fact that the ratepayers of districts that had received the honour of incorporation took a greater interest in public affairs, he proposed to withdraw his objections to the incorporation of Walthamstow in the event of the inquiry into the government of Greater London not being held this year.—Sir A. MOND replied: As has already been stated in reply to previous questions the Government are considering the question of instituting an inquiry into the local government of London and Greater London. Until a decision has been reached I am unable to add anything to the answer I gave my hon. friend on July 6th with regard to the incorporation of Walthamstow.

Poor-law Children in Sick Wards.

Mr. ANEURIN WILLIAMS asked the Minister of Health the total number of in-door Poor-law children, the number of children over and under 3 years of age who were in sick wards and other wards, respectively, of workhouses, and the number of children in receipt of out-door relief on Jan. 1st, 1921.—Sir A. MOND replied: The number of children in receipt of institutional relief on Jan. 1st, 1921, was 60,672. Of these there were: In sick wards of workhouses, over 3 years of age, 2365; under 3 years of age, 2505. In other wards of workhouses, over 3 years of age, 2553; under 3 years of age, 3365. The number of children in receipt of out-door relief (including children boarded out) on the same date was 174,097.

Dismissal of Nurses at Steyning Infirmary.

Mr. THOMAS GRIFFITHS asked the Minister of Health whether it had been brought to his notice that two nurses in the Poor-law services at Steyning Infirmary, Brighton, having passed their examinations, had been dismissed at a few hours' notice, and refused their certificates; whether he was aware that a member of the committee appointed to inquire into the matter stated that he had found the charges made against them to be without foundation; and whether, as the shortage of nurses was so great that it was a matter of public importance that suitable women should not be discouraged from entering the nursing profession, he would hold an inquiry into the matter.—Sir A. MOND replied: I am informed by the Board of Guardians that they appointed a special committee to inquire into this case, and that the committee came to the conclusion that the charges made against the nurses had been proved, and that they had been guilty of gross unkindness to a patient, and also of insubordination. I am also informed that the guardians have decided to furnish the nurses with an extract from the minutes of the Board. stating that they had passed the examination. In these circumstances I do not think that any useful purpose would be served by my directing a further inquiry into the matter.

Merchant Seamen and Venereal Disease.

Mr. MILLS asked the Minister of Health if he was aware that British seafarers still suffered under disabilities unshared by their fellow-countrymen or by foreign seamen in being penalised if they sought treatment for venereal disease, and that the British representatives at the meeting of the health section of the League of Nations were advocating international facilities for the free treatment of seafarers; and if the Government would consider the desirability of amending the Merchant Shipping Act, 1906, Section 34, subsection (1), as desired by all interests concerned.—Sir A. MOND: As regards the first part of the question I would refer the hon. Member to the reply to the same question on April 26th last. As regards the second part I understand that my right hon. friend the President of the Board of Trade proposes to include a clause for this purpose in the next general Merchant Shipping Bill.

Children in Village Communities, &c.

Mr. HASLAM asked the Minister of Health whether he would state the number of children maintained under each of the three following systems on Jan. 1st, 1921: Poor-law schools, village communities and grouped cottage homes. and scattered homes —Sir A. MOND replied: The number of children in the following classes of Poor-law establishments for children on Jan. 1st, 1921, were: schools, 7429; grouped cottage homes, 11,793; scattered homes, 7916; other separate homes and insitutions for children (including a training ship), 4224.

THURSDAY, JULY 14TH.

Medical Services in the Colonies.

The House went into Committee of Supply on a vote of £529,104 for the salaries and expenses of the Department of the Secretary of State for the Colonies, Mr. JAMES HOPE in the chair.

Sir D. MACLEAN moved that sub-head A (salaries, wages, and allowances, £145,143) be reduced by £500.

Mr. E. WOOD (Under-Secretary for the Colonies) said they ought never to forget that whether the human race was at peace or at war, the warfare that the lower creation, in its instinctive task of carrying and disseminating disease, waged upon it was perpetual and unrelenting, and that in that warfare there was no neutrality. To anybody who would investigate them the discoveries that had been made and the successful efforts that had been put forth in that field during the last 20 years formed a real romance, but quite frankly he said that as far as he had been able to form a

UNIVERSITY OF LIVERPOOL: FACULTY OF MEDICINE.—The following candidates have been successful in examinations recently held:—

DEGREE OF M.D.

N. B. Capon, R. W. Gemmell, W. E. Huff-Hewitt, W. A. Jackson, and C. V. Pearson.

DEGREE OF CH.M.

J. St. G. Wilson.

DEGREES OF M.B. AND CH.B. (HONOURS).

Class I.—*†G. W. Phillips.

Class II.—G. P. F. Allen, ‡A. V. Campbell, *S. B. Herd, *Isabel E. Imison, *M. Newman, and *S. V. Unsworth.

FINAL EXAMINATION FOR M.B. AND CH.B. DEGREES.

Part I.—B. Abelman, G. C. Bhatia, R. H. Blair, R. L. Blair, N. B. Cooke, W. H. A. Dodd, J. O. Edwards, E. H. Glynn, C. B. Lewis, I. Lloyd, J. R. Parry, G. F. G. Prideaux, and J. K. Reid.

Part II.—‖Ethel Ashton, E. W. Ashworth, Eudora V. Beatty, R. H. Blair, R. L. Blair, D. Brown, Hilda Cantrell, A. Cathcart, G. Clark, Marie B. Clarke, H. M. Cohen, §‖H. Cohen, §‖M. J. Cohen, N. B. Cooke, R. L. Corlett, V. C. Cornwall, ‖Helen M. Duvall, J. Elsohn, ‖W. C. Evans, E. Fisher, ‖R. A. Galway, H. S. Gordon, J. V. Hall, ‖S. B. Hall, T. K. Hughes, Hilda F. Jefferson, A. Kefalas, Dorothy E. Knowles, C. L. Kopeland, ‖Eleanor Lancelot, I. Lloyd, ‖N. H. H. Longton, B. L. McFarland, Lilian W. Massey, Annie Mather, ‖Vera M. Mitchell, ‖Annie R. Niven, Mary E. Nosworthy, Muriel Pickering-Jones, E. D. Pridie, ‖Gertrude E. Pugmire, ‖D. Riding, ‖Mary D. Sheridan, ‖J. E. T. Shirlaw, J. E. Sykes, ‖V. T. Thierens, Mary A. Thomas, ‖A. K. P. Tobin, C. Voigt, C. H. Walsh, Dorothy A. Williams, and Grace H. Wood.

Part III.—F. H. Alexander, G. C. Bhatia, Doris Brown, W. E. A. Burton, Doris M. Cassady, W. M. Frazer, G. L. Gatoly, Susan H. Gilchrist, J. Goldberg, Isobel K. Johnstone, R. J. Jones, A. Livingston, H. R. Madan, J. B. Oldham, T. R. Roberton, S. S. Skri-Kent, C. Voigt, and T. A. Williams.

DIPLOMA IN PUBLIC HEALTH.

W. H. Brown, M.B., Ch.B., Gladys E. Chambers, M.B., Ch.B., B.A.O., J. H. Crane, M.D., A. Hamid, M.B., B.S., Dorothea E. Hewitt, M.B., Ch.B., Mary A. McHugh, M.R.C.S., L.R.C.P., R. Nixon, M.B., Ch.B., C. M. Ram, M.B., H. Rawsthorne, M.R.C.S., L.R.C.P., and Dorothy M. Unsworth, M.B., Ch.B.

* Distinction in Obstetrics.
† Distinction in Medicine.
‡ Distinction in Surgery.
§ Distinction in Forensic Medicine and Toxicology.
‖ Distinction in Public Health.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—*John C. Earl, *James O'N. McKenna, *Paul J. Grobler, *George F. T. Saunders, *William F. Whaley, *Robert H. Micks, *Robert T. Jackson and *Matthys P. Louw (equal), Dermod H. F. Milmo, Max Wulfsohn, Douwe M. Vellema, Reginald Hegy and John Ditton Wicht (equal), Mauritius M. Viljoen, Michael Gallivan, Louis J. Coetzee and Lazarus Heyman (equal), Alice M. A. Downing, John H. J. Stuart, David L. H. Moore, Jan H. Rauch, Rupert L. Hill and Frederick W. G. Smith (equal), William S. Dixon, Cecil de Lisle Shortt, Cecil G. S. Van Heyningen and Barend Vivier (equal) and Alexander Bernstein.

Pathology and Bacteriology.—Samuel Wilfrid Russell and Herbert Hall.

Materia Medica and Therapeutics.—Robert Nelson Perrott.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene.—Joseph Harte.

Part II., Medicine.—*Margaretta T. Stevenson, Alida C. Burt and Alice E. Lawlor and Albert E. Phillips (equal), Richard V. Dowse, Constance McIlrath, Albert V. J. Russell, James Devane, John D. Thompson, Doris Holland, Emily E. G. Baillie, John C. Brennan, Michael R. Coolican, Robert R. Baker, William H. Smith, Gideon C. Malherbe, and John M. Semple.

Midwifery.—*Cyril J. U. Murphy, *Izak G. Sacks, *Cornelis D. Dijkman and *Albert V. J. Russell (equal), *Doris Holland, Gilbert M. Irvine, Beryl F. E. Cockle and Theunis de Bruijn and Daniel Hugo (equal), Emily E. G. Baillie, Charles Theodore de Mornet Villet, Cecil S. Wilson, Francis Malone-Barrett, Cecil de Lisle Shortt, Hector C. C. Deane, Francis M. Hilliard, Thomas W. Panter, Max Elion and George C. B. Robinson (equal), Margery Bouchier-Hayes, and William S. Dickson.

Surgery.—*Eric Sealy Horgan, Lionel Wigoder, Edith F. Willock, Eric R. Murray and Albert V. J. Russell (equal), Olive V. Fair, Nannette Norris, Albert S. Bradlaw, Alice E. Lawlor, Patrick M. J. Bobbett and Anthony D. Ward (equal), and John M. Semple, Michael R. Coolican, and James C. Davis.

* Passed on high marks.

DIPLOMA IN PUBLIC HEALTH.

Part I., Chemistry, Bacteriology and Pathology; Physics and Meteorology.—Edward D'A. McCrea and Richard P. Pollard (equal). Alan G. Wright, and William B. J. Pemberton.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The following have been elected to Burney Yeo Scholarships: H. A. Robertson, M.A., Balliol College, Oxford; R. Cove-Smith, B.A., Gonville and Caius College, Cambridge; L. C. Whitworth, B.A., Downing College, Cambridge. On the results of the June examination the following awards have been made: Senior Scholarship (£10), Tanner Prize (£10), Todd Prize (Medal and £4 4s.), and Class Prize in Diseases of Children, R. C. Lightwood; Class Prize in Orthopædic Surgery, J. W. Hirst; Class Prizes: Medicine, H. Moos; Forensic Medicine and Hygiene, M. W. Hubble; Psychological Medicine, E. Murgatroyd.

BELGIAN RED CROSS.—A letter has been addressed by Dr. A. Depage, the President of the Belgian Red Cross Society, to every physician in Belgium announcing the adhesion of the Society to the League of Red Cross Societies, and stating that the peace-time activities of the Red Cross cannot be put on a satisfactory basis until the membership is multiplied tenfold. In view of the important part which physicians must play in the future Red Cross activities a special appeal is made for their support in the formation of local committees. The letter appears in full in *Le Scalpel* for June 4th (p. 463.)

LEAGUE OF RED CROSS SOCIETIES.—The meetings of the Medical Advisory Board, consisting of Sir George Newman (England) in the chair, Prof. Cesare Baduel (Italy), Prof. Léon Bernard (France), Prof. Th. Madsen (Denmark), Dr. Prochaska (Czecho-Slovakia), Dr. Linsly R. Williams (United States), were held at Geneva, and lasted from July 5th to 7th. It was decided to concentrate the efforts of the League upon "public health objectives obtainable through the medium of Red Cross effort . . . coöperating as closely as possible with all official and voluntary agencies having the same purposes in view." Special attention is to be paid to the development of public health nursing, and to the problems of child welfare, tuberculosis, and venereal diseases. The *International Journal of Public Health* has given such good promise of filling a recognised need that it is to be continued substantially along its present lines The Board was so impressed with the success of the international conference on venereal diseases recently organised by the League that they recommend that similar conferences be arranged in child welfare. The continuation of regional conferences on venereal diseases is also recommended.

DIPLOMA IN NURSING AT THE UNIVERSITY OF LEEDS. The reputation of Leeds as a training centre for nurses has been for many years a high one. The General Infirmary affords opportunities for acquiring a knowledge of all branches of nursing; and especially during the last few years there has been a steadily growing desire on the part of the board to supplement the practical training by the teaching of principles. The nurses are appointed by the board on the recommendation of the lady superintendent; they may enter at the age of 20, and in some instances they have been admitted at the age of 19. For their first three months they work as "pupil nurses," and of this time six to eight weeks is spent in the preliminary training school. If at the end of this time they are found satisfactory and have passed a medical examination as to their physical fitness they are admitted to training as probationers and continue in that capacity for 12 months, the time spent as pupil nurse counting as a part of that period. If at the end of the 12 months they are still considered efficient they sign on for a further period of three years. It will, therefore, be seen that the period of training extends over four years and no nurse now gets a certificate on a shorter course of training. The institution of the preliminary training school has been a great success; under the careful and personal supervision of the special sister tutor the pupils are introduced to the alphabet of the subject, those who have no aptitude for the work are sifted out, and experience has shown that a nurse becomes of more use to the infirmary in a shorter period than during the old régime when the probationer found herself in the wards from the beginning. During the years of her training the nurse attends a carefully graduated course of instruction. Lectures are given by the members of the professorial staff of the University, many of whom are, of course, on the infirmary staff, and practical demonstrations are given in the wards and in the post-mortem room. Care is taken to secure the widest possible variety of training, but at the same time those who show special predilections for medical or surgical work are encouraged to specialise towards the end of their training. A large number of nurses who have passed through the training of the General Infirmary now occupy positions of responsibility and of trust in the nursing world, and special facilities are given to selected nurses to acquire a knowledge of housekeeping and of hospital administration. Some time ago the University of Leeds was approached with a view instructions to boards to notify the local committee in such circumstances are not obeyed. I am, however, having inquiry made into the position in the Manchester area, and will communicate the result to my hon. and gallant friend.

Men Disabled in Former Wars.

Sir **ROBERT NEWMAN** asked the Minister of Pensions whether ex-Service men, who had been totally disabled through service in His Majesty's forces prior to 1914, were receiving the same pension as men totally disabled through services under the Crown since that date; whether the widows of ex-Service men, who lost their lives through service in the forces previous to the recent war, were receiving the same pension as widows whose husbands lost their lives since 1914; and, if not, whether His Majesty's Government would consider the advisability of taking steps to place the older ex-Service men and their dependents on the same footing as the younger ex-Service men and their dependents.—Mr. **MACPHERSON** replied: Men disabled through service in former wars are now entitled to pension at the increased rates applicable to men disabled in the great war, and the pensions previously in payment to the widows of men who died in former wars have been similarly increased. If my hon. friend is referring to disability or death incurred on military service in peace-time, he should address his question to my hon. friend, the Secretary of State for War.

Production of Calf Lymph.

Mr. **MILLS** asked the Minister of Health how the carcasses of the calves used for the production of vaccine lymph at the Government lymph establishment were disposed of after the lymph had been taken from them, and the animals had been slaughtered.—Sir A. **MOND** replied: The calves used for the production of lymph at the Government lymph establishment are hired and after slaughter the carcasses are examined by the veterinary surgeon of the establishment. The carcasses sold for food are subject to further examination by officers of the local sanitary authorities. I am advised that there is no evidence whatever that the carcasses of vaccinated calves are unfit for food.

Government Housing Policy.

Replying to questions by Mr. **HOGGE**, Major **PRESCOTT**, and Mr. **TREVELYAN THOMSON**, Sir A. **MOND** (Minister of Health) said that the number of houses built, building, and contained in approved tenders under the housing scheme for local authorities and public utility societies was now about 176,000. Under the scheme of subsidy to private builders the number of houses built or to be built was estimated at about 23,000. The annual cost to the State under the local authorities and public utility societies schemes was about £10,000,000 per annum, and the amount required for payment of subsidies to private builders was about £5,000,000. The Government had decided that for the time being, at any rate, the number of houses to be constructed by local authorities and public utility societies, with Government assistance under the present scheme, would be limited to 176,000. It would appear that on a final examination of the present approved tenders some adjustments would be possible to meet cases of hardship without exceeding this total. All expenditure in connexion with the housing schemes which had already been incurred by local authorities, with the approval of the Ministry of Health, would rank for financial assistance under the present scheme, which limited the liability of local authorities to the produce of a penny rate, and where work undertaken by local authorities, with the approval of the Ministry of Health, could not, for reasons outside the control of the authorities, be completed by July, 1922, the time for completion would be extended by the Ministry as might be necessary. As regarded the scheme of subsidy, payment in full would be made for houses completed within the four months after the expiration of the present Act—i.e., by April 23rd last, and additional houses would only be subsidised if begun before July 1st under a certificate or the promise by a local authority of a certificate. In cases where commitments had been entered into, although construction had not actually been begun, in anticipation of the continuance of the subsidy, he would, in the exercise of his discretion, pay such subsidy in such cases if work was started within six weeks of the present date. The Government recognised the urgent necessity of making what improvements were possible under present financial circumstances in slum areas, and they were prepared to provide an annual contribution not exceeding £200,000 towards the deficiency on local authorities' accounts for the improvement of slum areas. This annual contribution would continue for the whole term of such loans as might have to be raised by local authorities to defray the necessary expenditure. It was the intention of the Government to keep the housing problem closely under review. They fully recognised the importance of that problem from the point of view of the health and social conditions of the people, but it was impossible to incur greater commitments than our finances would allow.

Dr. **ADDISON** (Minister without portfolio, and formerly Minister of Health, who was responsible for the Government's housing policy until recently) rose and intimated his resignation from the Government in consequence of what he described as "the precipitate abandonment of an effort which is so essential to national restoration." He regarded it as a betrayal of the Government's solemn pledges to the people and of their obligations to the local authorities and to many individual citizens, as well as being calculated to weaken the confidence of the people in the reliability of constituted authority.

Mr. **CHAMBERLAIN** (Lord Privy Seal), in the absence of the Prime Minister, expressed the gratitude of his late colleagues in the Cabinet to Dr. Addison for the help which he gave them in a difficult work and in a difficult time, and their regret that he should have felt it his duty to sever his connexion with them.

FRIDAY, JULY 15TH.

Criminal Law Amendment Bill.

Major **FARQUHARSON**, in moving the second reading of the Criminal Law Amendment Bill (which has been passed by the House of Lords), said that it was a step in the normal evolution of the law on the subject. In the Bill the limit of childhood was placed at 16, and it was right that the fullest protection of the law should be given to the period of childhood whether in regard to sexual offences or offences under the various Children's Acts. Apart from the question of sexual relationship and as an evolutionary step in legislation, speaking as a doctor, he ventured to submit certain views which he held with regard to the biological and scientific aspect of this question. In the whole range of nature there was in the human mammal an abnormally long period of dependence of the child upon the parent for parental care, and it seemed to him that it was nature's penalty or nature's price for the qualities of latent and potential excellence with which the human race was endowed and which our higher civilisation had cultivated. There was no period during the time of childhood so urgently calling for protection as the period between 13 and 16 years of age. It was that time when strangely enough the sex instinct was appearing in the blossom. That instinct gave an unconscious stimulus to the ego, a desire for independence, a seeking after individuality, a certain degree of rebellion against parental discipline. At that period there was a certain hiatus between parental care and the needs of the child, and it was time when the State should step in to exert every form of protection it could for the child during those tender years. The public health aspect of the Bill appealed very strongly to him. The very conditions in the last half century suggested to him that an enormous amount of physical disability which they found prevalent during the war was directly traceable to the conditions of life during that past half century. He was perfectly certain that an enormous amount of the venereal disease which prevailed—he would go so far as to say 80 per cent.—was transmitted by children and very young persons. From the point of view of its relations to the past, the biological point of view and in relation to public health, he seriously commended this view to the House. No measure would be more fraught with good for the prevention of not only prostitution, but that the whole thing would tend to bring home to the very young the nature of this matter and would save them from embarking on a career of vice. He spoke thus from his medical experience. This was a Bill for the protection of our race and a stepping-stone to a greater and higher physical efficiency than we had secured in the past.

Mr. **WIGNALL** seconded.

Major **CHRISTOPHER LOWTHER**, in moving the rejection of the measure, said all of them were equally keen to secure greater morality and better health among the population, and to see that young persons should not have gross offences committed against them. But he did not believe they could cure immorality by legislation; the proper way to effect that was by education and proper protection of the children by parents and guardians, rather than by legislation which was directed to take away from an accused person practically his only defence. He pointed out that it had been shown in a large number of cases in the Assize Courts that young women had not only consented but had incited men to commit offences. The age of 16 was a very arbitrary one. These questions were matters of temperament and nationality. There were in this country a large number of young Indians, Spaniards, and Jewesses who were plying the trade of prostitutes on the streets of London. They had every appearance of being 18 or 19 years of age. He was informed that if this Bill was passed there would be great difficulty in getting a jury to convict in cases of this kind. It was really an appalling thing that in this E they had to face the fact that any temporary subsidy which might be given towards the maintenance of voluntary hospitals, apart from any interference with them was practically certain to be less even than the urgent needs of these hospitals. Lord Cave's Committee had recommended a subsidy of one million pounds, but it was stated that the Government proposed to give only half a million, and that, Lord Eustace Percy thought, was the limit of what the voluntary hospitals could expect to receive. The position of the East Sussex, as of all hospitals at the present time, was a serious one. A very large increase of voluntary support was needed, especially in view of the approaching removal of the hospital. The in-patients during the year reached the record figure of 1075. The out-patients numbered 4285, a slight decline, but the number of out-patients' attendances, 51,525, showed a considerable increase. This increase was largely accounted for by the new massage and electricity department which had been installed, in addition to which the hospital was now equipped with radiant heat and ultra-violet rays. The announcement was made at the meeting that the erection of the new hospital had already been commenced.

Mr. E. Gerald Stanley, M.S.Lond., F.R.C.S.Eng., has received the Doctorate of the Faculty of Medicine of Paris with honours.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received £105 from Mr. and Mrs. Sannyer Atkin towards its nurses' home.—Under the will of the late Mr. John Boultbee Brooks, of Finstall Park, Worcester, the testator gave £1000 to the Children's Hospital, Birmingham; £500 each to the General Hospital, Birmingham; Queen's Hospital, Birmingham; the Cottage Hospital, Hinckley, and the Cottage Hospital, Bromsgrove.

BRISTOL MEDICAL COMMITTEE.—In July, 1919, the practitioners of Bristol, convened by the local division of the British Medical Association in concert with other medico-political organisations, resolved to elect a "committee, to be called the Bristol Medical Committee, which shall be representative of all sections and interests of the profession"; and authorised the committee thus formed to consider questions relating to medical practice arising within the city, and, with certain reservations, to take necessary action with regard to them. The committee elected in 1919 carries on till early in 1921, when, under its own regulations, a new committee was elected. This new committee was charged with the task of considering the Dawson Interim Report and the applicability of its proposals to Bristol. By way of preparing the ground for so considerable a task the committee decided to take stock of the various forms of medical service already at work in the city. To this end medical officers in charge of these services have been invited to address the committee, and also to furnish reports on the work of their respective departments. This invitation has been accepted very willingly, and several valuable addresses have already been delivered. It is hoped that at the end of the session a comprehensive report may be prepared so that all the possibilities of a coördinated plan of medical service within the city may be fully examined.

THE LATE DR. EDGCUMBE BURROWS.—The death of Dr. W. Edgcumbe Burrows, district surgeon of Bothaville, South Africa, and acting district surgeon of Kroonstad and district, took place in April at Kroonstad. Dr. Burrows was the eldest son of the Rev. J. Burrows, of Walsall, and was born at Dudley, Worcestershire, in 1882, receiving his education at Bath and Durham University. He took the degree of B.Sc. in 1902, and entered the Middlesex Hospital, obtaining his M.B., B.S., in 1906. He married Miss E. Clare Williams, the only daughter of the late Captain Williams, of Clifton, in the same year, and for the following eight years practised at Manor Park, London, taking the degree of M.D. London in 1913. He joined the Royal Army Medical Corps in March, 1915, and served in France until 1917, being mentioned in despatches in June, 1916, for conspicuous bravery under heavy fire. In 1917 Dr. Burrows was sent to German East Africa, and was slightly wounded and again mentioned in despatches for bravery, attention, and care of wounded under very heavy fire. Later he had charge for a time of the 19th Stationary Hospital in Portuguese East Africa. After demobilisation he joined the South African Medical Corps, being stationed at Wynberg and afterwards at Pretoria; he resigned in January, 1920, and proceeded to Bothaville to act for Dr. W. A. Carden (during the latter's absence in Europe) as district surgeon for the Bothaville area. Here he was joined by Mrs. Edgcumbe Burrows and son, who arrived from England during 1920. Dr. Burrows won the respect and affection of all sections of the community by his unselfish devotion to duty, and his untimely death is regretted in Bothaville and throughout the district.

The Services.

SHIPS' LAUNDRIES.

THE Admiralty is steadily increasing the comfort of the sailors in their ships. Laundry machinery is now to be fitted in the *Queen Elizabeth* and other large ships.

HEALTH OF THE FRENCH NAVY IN THE WAR.

The following account of the health of the French Mediterranean Fleet during the war is taken from a review in *Arch. de Méd. Militaire*, of an article by a naval medical officer. The average complement was 33,788—the sick list 1022, the deaths 5·17, and the invalidings 70, in every 1000 men. Anæmia, always prevalent amongst the engine-room staff, was more frequent during this period, as the ships were so constantly under steam. There were 12,115 cases of influenza in 1918 with 196 deaths. Antityphoid vaccination had an excellent effect, more conspicuous in the second half of the war. Prophylactic quinine diminished malaria. Tuberculosis attacked 4 per 1000, and many cases called anæmia may well have been early cases of tuberculosis. Venereal diseases were fewer than in peace, and were reduced by regulating prostitution or by compulsory prophylaxis. Arseniuretted hydrogen, given off from the accumulators of submarines, caused trouble in 1916 particularly, 26 cases in one of these craft and 27 in another in that year. Many men were invalided home because they were simply worn out. The large cruisers are healthy; the large battleships have too little light and air, and they are overcrowded. Steel decks are unsatisfactory, being often too cold or too hot; they must be sheathed in non-inflammable wood, as in England and Germany. Larger steam radiators and heavier clothing are needed in cold climates. Douche baths have been fitted in some ships; the sailors generally wash still in the bucket, long ago condemned. Disinfectors are not numerous enough; washing machines are asked for. Refrigerating chambers have made it unnecessary to carry live animals to sea, and this should be forbidden, as it causes nuisance.

ARMY MEDICAL SERVICE.

TERRITORIAL FORCE.

Capt. (Bt. Maj.) C. H. S. Frankau resigns his commn. and is granted the rank of Col.

ROYAL ARMY MEDICAL CORPS.

Capt. D. T. M. Large relinquishes the temp. rank of Maj.

Capt. H. A. Crouch is placed on the h.p. list.

Capts. W. P. Mulligan, H. Bedingfield, and W. McM. Chesney retire, receiving a gratuity.

Capt. E. J. Mannix is secd. for service under the Foreign Office.

Temp. Capt. G. W. Will to be Capt.

Temp. Capts. J. J. Clarke and D. R. Alexander relinquish their commns. and retain the rank of Capt.

ARMY DENTAL CORPS.

The undermentioned to be Capts.: Lt. (temp. Capt.) W. A. Rankin.

Flight Lts. from R.A.F. Dental Branch: G. T. Charles and D. H. W. Williamson.

The undermentioned to be Lts. with the temp. rank of Capt. but without the pay or allowances of that rank: Temp. Capt. P. E. Brown, Dental Surg. from Spec. List, and Flight Lt. A. Williams, from R.A.F. Dental Branch.

SPECIAL RESERVE OF OFFICERS.

Capt G. G. Allan relinquishes his commn. on account of ill-health caused by Mil. Service, and retains the rank of Capt.

The undermentioned Capts. relinquish their commns., and retain the rank of Capt.: S. A. Withers and A. B. Grant.

TERRITORIAL FORCE.

Lt.-Col. A. D. Moffat, having attained the age-limit, is retired, and retains the rank of Lt.-Col.

Capt. C. H. Welch to be Maj.

Capts. W Leslie and K. B. Dickson (late R.A.M.C.) to be Capts.

Capt. J. J. Scanlan, having attained the age-limit, is retired, and retains the rank of Capt.

Capt. C. H. Allen resigns his commn. and retains the rank of Capt.

5th S. Genl. Hos.—Capt. T. Holmes resigns his commn. and retains the rank of Capt.

TERRITORIAL FORCE RESERVE.

Maj. W. A. Wetwan, having attained the age-limit, is retired, and is granted the rank of Lt.-Col.

DEFENCE FORCE.

S. Midland San. Sect. (D.F.).—To be temp. Capt.: W. H. S. Dunn.

3rd (S. Midland) Fd. Amb. (D.F.).—To be temp. Capt.: B. Astley-Weston.

1st (E. Lancs.) Fd. Amb. (D.F.).—Temp. Maj. R. MacKinnon (Capt., R.A.M.C. (Spec. Res.)) relinquishes his temp. rank.

Notes, Short Comments, and Answers to Correspondents.

THE LAW OF THE HEART.[1]

By Prof. E. H. Starling, C.M.G., M.D., B.S. Lond., F.R.C.P. Lond.

The discovery by Harvey of the circulation of the blood and of the part played by the heart in carrying on this circulation is one of the few scientific discoveries which have become common knowledge. We have to think of the body as a collection of mechanisms or machines, each one of which is doing some form of work for one common end—i.e., the preservation of the body. For this work the oxidisation of the food taken in at intervals during the day provides the energy; thus each part of the body must be supplied not only with food derived from the alimentary canal, but also with the oxygen taken in with the air we breathe into the lungs. Like any other machine, each body mechanism produces, as a result of this consumption of the food, waste gases and other waste products, which have to be carried to the lungs or to the kidneys and there cleared out of the body. It is for this reason that the existence of the higher animal demands a common fluid, the blood, which can carry food, oxygen, or carbonic acid and which is maintained in continual circulation between all the organs of the body, so that the alimentary canal, for instance, may serve, for the maintenance of all parts and the lungs can supply oxygen to these parts, or collect the carbonic acid which is produced as a result of their activity.

But a uniform mechanical circulation would be of little value to the body, since the activities of all its parts vary within wide limits. Thus during muscular exercise the activity of the muscles may be increased ten-fold or more, and this increase means a corresponding augmentation in their call for oxygen and in the quantity of waste products, especially carbonic acid, that they produce. Since the oxygen is carried by the blood it follows that for the continued functioning of the muscles they must receive a blood-supply which is ten times greater during activity than during rest, if their activity is not to be brought to an end by a species of suffocation. We thus see that in any violent exercise involving the greater number of the muscles of the body, the circulation must be increased in force seven to ten times, and the heart, which is the pump maintaining the circulation, must under these conditions do from seven to ten times as much work as during rest.

The Mechanism of Adaptation.

What is the mechanism of these adaptations? How is it that the heart is able to carry on a circulation which may vary from a passage of 3 litres of blood per minute up to 30 litres of blood per minute (these figures representing the extreme limits between which the output of the heart pump may vary according to the condition of the body). It might be thought that we are dealing here simply with the influence of the central nervous system, which adapts the activity of the muscles of the body to the requirements of the environment, and that the heart being a muscle would be stimulated to contract more strongly at the same time as soon as the latter calls into activity the voluntary muscles of the body. There is no doubt that the heart is under the control of the nervous system, so that its action can be altered, increased, or diminished by the brain in accordance with the needs of economy, but in the heart we find also a wonderful power of adaptation to the varying needs of the organism which is quite independent of the central nervous system.

This can be shown quite easily either in the cold-blooded or warm-blooded animal. The heart of the frog and tortoise can be cut out and will continue beating for hours or even days. It has long been known that the heart of the mammal would beat for some minutes after being cut out of the body, but if we take pains to ensure that the muscles constituting the walls of the heart continue to receive their supply of oxygenated blood, the mammalian heart can be made to beat for 8 to 12 hours after the death of the animal from which it is taken. In order to investigate this properly we want to make such a preparation that we can control at will all the conditions which may effect the action of the heart—viz., the amount of blood flowing into the heart from the big veins, the resistance which the heart has to overcome when it drives the blood out into the arteries, and the temperature at which the heart contracts. We must be able to measure at any time the output of the heart, the arterial pressure it maintains, its changes in volume during contraction, the pressure in all its cavities during each contraction, the amount of blood flowing through the blood-vessels of its walls and its chemical exchanges as measured by the amount of oxygen which it takes up and the amount of carbonic acid which it produces. It is these chemical changes which give the energy for the work of the heart.

The Heart-Lung Preparation.

All these procedures and controls can be carried out in the heart-lung preparation. In this preparation the pulmonary circulation, from right ventricle to left auricle, is left intact, and by means of artificial respiration the lungs are blown up rhythmically so that the blood in its course may take up oxygen and get rid of carbonic acid. The whole systemic circulation is got rid of and replaced by rubber tubes. A glass tube is tied into the largest branch of the aorta, all the other branches being tied, so that the blood driven out by the left ventricle can only escape by the glass tube. From the glass tube a rubber tube passes to a thin rubber tube contained within the wide glass tube. This thin rubber tube can be compressed to any desired extent by pumping air at a known pressure into the glass tube surrounding it. We can thus vary at pleasure the resistance which has to be overcome by the left ventricle and by maintaining a normal pressure in the beginning of the aorta ensure a proper supply of oxygenated blood through the coronary arteries to the muscular tissue of the ventricles.

It is this fact which makes it possible for the warm-blooded heart to continue to beat 8 to 12 hours after removal from the body. On the other side of the artificial resistance the blood is led through a spiral immersed in warm water to keep the blood at body temperature and then passes into a reservoir from which a wide rubber tube leads to a glass glass tube placed in the big vein opening into the right auricle. By means of a screw clip on this tube the inflow of blood may be regulated to any desired extent and can be kept constant while other conditions are varied. Thus in this preparation the three chief factors, temperature, inflow of blood, resistance to the outflow of blood, can be varied separately and at the will of the operator. Any of the heart cavities or any part of the circuit can be connected to manometers so as to record the pressure of the fluid at the different parts of the circuit, and by means of a side tube placed just beyond the artificial resistance we can allow the blood to flow off into a graduated cylinder and thus measure the time taken by the left ventricle to expel 50 or 100 c.cm. of blood, thus measuring the average output of the organ.

An Experiment Described.

A typical experiment may be divided into six stages. Records of one experiment[2] show that in the first stage the heart was beating at a normal rate, 72 per minute, the blood pressure varied from 100 mm. Hg, and the output of the heart was 210 c.cm. of blood per minute. In the second stage the resistance to the flow of blood through the tube was increased to such an extent that the pressure rose to 160 to 180 mm. Hg. The heart continued to beat, and for a time put out just as much blood as it did at the lower pressure. In the third stage the artificial resistance was suddenly reduced to zero, the arterial pressure fell to about 20 mm, Hg, but the heart beat regularly and the outflow of blood was unaltered because the inflow of blood had not been altered. In the fourth stage the inflow of blood was raised suddenly to 600 c.cm. per minute. The heart became bigger, but the regularity of its contractions remained unaltered, and it drove forward all the blood that it received.

The same thing happened in the fifth stage in which the artificial resistance was raised simultaneously with the venous inflow. The reason for these phenomena is that within certain limits the heart isolated from the body can respond to all the demands made upon it; it can overcome a higher resistance, and it can pump out more fluid. In the sixth stage the inflow of blood was further increased to 1200 c.cm. per minute, and the artificial resistance was increased until the blood pressure rose to 200 mm. Hg. This was too much for the heart, which began to beat irregularly and dilated widely. It would have failed altogether if the pressure surrounding the thin rubber tube had not then been released, to allow the artificial pressure to drop to a level at which the left ventricle could empty itself.

If during this experiment the amount of oxygen taken up by the blood had been measured and also the amount of carbonic acid given off by this fluid in passing through the lungs, an increase in both these amounts would judgment it was quite impossible to rest upon their oars or to profess any satisfaction with the state of health in many parts of our Colonies, where the mortality of British subjects was what it was to-day. Indeed, he thought that those by whose efforts and self-sacrifice the results already attained had been won would be the first to acknowledge how comparatively slender was the advantage that we had hitherto gained. He expressed his thanks and the thanks of the Government to a committee presided over by Lord Chalmers, which had recently reported, and which had for its object to inquire into how best to link more closely the problems of research in the Colonies with universities and other allied institutions in this country. More and more forces in different parts of the world were being mobilised in the pursuit of disease. The London and Liverpool Schools of Tropical Medicine in one way or another were doing work in the West Indies and in West Africa. Ceylon, he was told, was in active pursuit of malaria. Mauritius had set aside 10,000,000 rupees, and had been fortunate in enlisting the services of a great medical scientist, Dr. Andrew Balfour, to advise as to how best that money might be applied. In this warfare there were neither national nor racial boundaries. It was with the keenest pleasure that the Colonial Office was able a few weeks ago to welcome the representatives of the International Health Board of the Rockefeller Foundation, who came over from the United States to confer with them as to the possibility of closer coöperation in their beneficent and valuable work, and he had every hope that from these consultations extremely important results would emerge. Wherever they began to tackle the problems of research, or of its application, they were every time confronted with the question of medical personnel. In this matter also his right hon. friend had had the assistance of another strong committee presided over by a very distinguished administrator of ripe experience, Sir Walter Egerton, and of the recommendations made by those gentlemen some had already been adopted, and he hoped as time went on they would be able to make further progress in adopting others. The problem was not an easy one. The unification of a colonial medical service was not easy. In all these matters of administration the Colonial Office was dealing with some 40 to 50 different governments, in an infinite variety of conditions, and infinitely differing in their financial resources, and in these days in nearly all reforms the depth and length of the purse was the deciding factor. He looked to a progressive improvement in the field of human life, which was one of the great fields in which great work remained to be done.

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[1] [illegible] a lecture delivered at the Royal Institution on [illegible].

[2] Prof. Starling showed on the screen a kinematographic representation of the actual experiment described.

Sir S. HOARE said he agreed with Mr. Wood that medical administration was the most important service of any of our tropical administrations. On making inquiry into medical administration in the West Indies and comparing it with what the Americans had done in Panama, or with, indeed, what they had done in a lesser degree in countries like Guatemala, he was afraid they would find that our medical administration had lagged behind. He wished to see a High Commissioner go to the West Indies.

Lieut.-Colonel FREMANTLE said that physical health was the greatest essential in the development of the Colonies of our vast Empire. Therefore he warmly welcomed the statement of the Under-Secretary as the most satisfactory that had ever been made to the House. It was full of hope, but there was need for a great deal of backing, and he did not feel at all satisfied that the good intentions would be carried into effect. It was essential to see that medical service throughout the Empire was more efficiently run. The need for this was originally put forward by Joseph Chamberlain when he was Secretary of State for the Colonies, and his grant to the School of Tropical Medicine was the first public recognition by the Government of the need of this work. The school had prospered, but he would like to bring the Committee face to face with the point of view of the non-medical men who were engaged in the Colonial Service themselves, and who saw how any deficiency in the medical service affected them. They felt a grievance that officers who joined the Service on the understanding that their medical attention was going to be provided found themselves, after many years of service, at a distance of perhaps 50, or 100, or 200, or even 300 miles in the bush away from a medical officer, not because he could not be provided, but because at the present time there was a deficiency of medical officers which was not being made good. Their aim should be to raise the somewhat out of the way colonies to such a stage by bachelor development that men could safely take out their womenfolk and their children. In order to do that they must supply proper medical attendance. The position could be best summed up in a letter from one resident to another, from which he quoted the following:—

"During the war there was an excuse for the shortage of medical officers, but now there appears to be an absolute indifference on the part of the Colonial Office, and no attempt is made to fill the vacancies. The neglect of the enormous amount of work to be done is very disheartening, and the men out there can only touch the fringe of their work. I stopped at one place and found a sufficient number of cases to keep a man going for a fortnight. I wish you would all send in a united protest. Medical attention is promised on appointment, and this should be shouted from the housetops."

The matter had been taken up by the Colonial Office, and he had asked for a definite return which the Under-Secretary supplied on July 4th as regards the deficiencies in the Service. It dealt with all the different services, and showed a deficiency of 114 vacancies on a strength of about 600. On the West African Medical Staff the total strength was 152, a deficiency of 68 on July 1st: it did not include 15 natives not attached to the medical staff and four dentists who were also excluded. That was a serious shortage, and exemplified all other countries. The complaints were even worse in some of the smaller colonies. In many cases there was held out to the medical officer the promise of private practice, and he was paid some £300 or £400 to do special Government duty. That was a misleading arrangement which had proved to be ineffective, because if there was any private practice the medical officer gave it as much time as possible and as little as possible to his Government duties. In many instances there was no real private practice, and there had been two or three cases where men, feeling that they had been misled, returned home. The official attitude was that some of the recommendations of the Departmental Committee had been granted and others might be granted. That was very vague, and he should like some more definite assurance. The pay in the West African Medical Service had been improved, but it was still glaringly insufficient. He contended that they should build up a medical service for the whole of the Colonies and that it should be under the Government. Members should have a good initial salary and a proper chance to get work. They should be entitled to pensions and gratuities, together with free passages for their families. He again protested against the way in which these things were considered in watertight compartments as different services of the Crown. The Departmental Committee had again pressed for some consideration to be given to the possibility of a United Government Medical Service, with definite terms of service. If this could be brought about it would effect an enormous saving, and it would help imperial development a thousand fold.

Mr. CHURCHILL (Secretary of State for the Colonies), replying to points raised in the debate, said that he agreed with Mr. Wood that great as had been the progress that they had seen in the last 20 years they had only just begun to assert and establish the mastery of science over the jungle of diseases. He had been told of a method of destroying the larvæ of a particular mosquito by means of cows. The mosquito laid its eggs in the protecting grasses at the very edge of the water and stretched out into the water, and in this position it was protected from the depredations of a small fish which otherwise devoured it with avidity. But on the introduction of the cow into the area the grass was cropped and nibbled close to the water's edge, and the fish immediately attacked the larvæ. He could not guarantee the exact scientific accuracy of the illustration, but it served as an example of the kind of warfare which was being waged with an increasing measure of success.

On a division the motion to reduce the vote was negatived by 123 votes to 43, and the vote was then agreed to.

Aggravated Disability Cases.

Mr. CAPE asked the Minister of Pensions what was the number of pensions originally awarded as attributable to war service which had, during the 12 months ended June 30th this year, been altered to aggravated, and the number of pensions assessed as aggravated which had been altered to aggravation passed away.—Mr. MACPHERSON replied: I regret that I am unable to give the desired figures, but my hon. friend will, perhaps, be interested to learn that a recent test made for a period of seven weeks showed that less than 2 per cent. of the cases dealt with are changed on re-boarding from "attributable" to "aggravated."

Commissioners of Medical Services and Temporary Grants.

Lieut.-Colonel HURST asked the Minister of Pensions whether he was aware that the provision in the local committee's handbook enabling committees to give temporary grants pending awards by appeals tribunals was practically a dead letter in consequence of the failure on the part of the Commissioners of Medical Services to notify the result of the medical boards to the committees, which was a condition precedent to any such grants; whether he was aware that in only 6 of the 300 Manchester cases now awaiting hearing by the appeals tribunals had such notifications been made; and whether he would take steps to redress this grievance.—Mr. MACPHERSON replied: I would remind my hon. and gallant friend that advances in these cases are only permissible if the board find in the man's favour, and I have no information to show that the dogs were employed in a lively scene of carnage, which will do much to compensate for the suggestion of education so resented by many frequenters of the kinema. Briefly, the film is a good one, carefully thought out, and cleverly staged; it should be of much value in arousing interest in the rat problem. After its termination Lord Aberconway appealed on behalf of the Vermin Repression Society for a sum of £10,000, which he described as a good investment for business men. Both he and Mr. Alfred E. Moore, hon. secretary of the Society, emphasised the need of a cordon of rat panels throughout the country, in order to prevent a "rat week" in one neighbourhood necessitating a similar task in adjacent districts shortly afterwards. Mr. Moore also strongly deprecated the action of certain local authorities in dispersing with the services of officers appointed for the destruction of rats.

A CITIZEN OF EMPIRE.

THE appointment of an assistant medical officer to the Swaffield-road Institution and Intermediate Schools was before the Wandsworth Board of Guardians last week, when Mr. Hormazd Ardeshir Topalia, an Indian, was appointed by a preponderating majority of votes. "Would you take it as an insult if I called you a foreigner?" a guardian asked, when Mr. Topalia replied: "Most certainly I should." It was the right answer, and we are glad it was given.

APPROVED SALVARSAN SUBSTITUTES.

IN THE LANCET of May 21st (p. 1112) we published a list of those drugs which are approved by the Ministry of Health as substitutes for salvarsan, and may be supplied free of charge by local authorities to medical practitioners. This list was issued in Circular 166, which is now superseded by a new official list (List 13) dated June, 1921. The new list includes the five drugs noted by us on May 21st at the same price and dosage, and in addition:—

Arsenobenzol (Cerbiere, Modern Pharmacals, Ltd.), in doses of 0·1–0·6 g. (costing *1s.* to *5s.*). Novarsenobenzol (Cerbiere, Modern Pharmacals, Ltd.), in doses of 0·15–0·90 g. (costing *9d.* to *4s. 6d.*).

GLASS-BLOWING.

THE ability to make one's own apparatus for use in the laboratory is an accomplishment of the utmost utility. Early instruction is needed from a teacher, but with care and patient application there is little difficulty in acquiring, at any rate for the construction of the more commonly used appliances, the necessary skill by means of a text-book, and a little treatise by Mr. Bernard D. Bolas entitled "Glass-Blowing"[1] is well adapted to the purpose. The various operations are clearly described, and the reasons for failure in producing satisfactory results are indicated, while instructions are also given in drilling, grinding, filing, and other necessary manipulations connected with the use of working in glass. Notes on various kinds of blow-pipes and lamps, and the utilisation of glass scraps add to the value of a very practical little manual.

A COLLEGE FOR BLIND GIRLS.

To the Editor of THE LANCET.

SIR,—May I be allowed through your columns to draw attention to the new college for the higher education of blind girls which has recently been opened under the auspices of the National Institute for the Blind. The college is situated at Chorley Wood, on the foothills of the Chilterns, some 20 miles from London by road and rail. The building is a fine old mansion, standing on high ground on the south border of the wide and beautiful heath which tops that piece of country. The spaciousness of the house, the spread of the grounds, with the splendid trees therein, and the sense of openness which the position affords, together make it a place of exceptional interest for a school of this order. It would be difficult to find a place where other senses than sight received so many and such happy impressions.

The college is for the higher education of girls who are totally blind or have no useful degree of sight. The education will be as liberal as in the best public schools for girls, and the physical and mental development afforded will enable blind girls to live full and active lives at school, at home, and in professions. The principal is Miss Phyllis Monk, M.A., formerly of Girton College, Cambridge, and latterly a mistress of Roedean School, Brighton; with her is associated an efficient teaching and house staff.

I have visited the school myself, and can speak of the excellence of the arrangements for teaching and for the comfort of the girls; also on my visit there accompanied me a lady experienced in domestic affairs, and she was greatly impressed with the domestic arrangements and the evident happiness of the resident pupils. The fees for a place of this order are moderate, and there are some scholarships for girls of promise. There are, happily, not many blind girls of our class, but for these few there can be no better place of education and training than this new college. Saturday, July 23rd, will be visitors' day. Miss Monk will be pleased to receive doctors and others interested during the afternoon of that day. The address is "The Cedars," Chorley Wood, Herts. The school is about ten minutes' walk from the station across the heath; the London-road passes within a hundred yards of the school.

I am, Sir, yours faithfully,

London, W., July 16th, 1921. N. BISHOP HARMAN.

CHOLERA IN ASSAM.

THE Secretary for India was recently asked in the House of Commons whether he was aware that large numbers of coolies engaged in tea-gardens in Assam were lately induced by agitators to desert to their homes, and whether many of these deserting coolies died on their way to their homes from disease and privation. Mr. Montagu circulated in reply a full summary of two communiqués published by the Governments of Assam and Bengal. From these communiqués it appeared that the coolies struck work on May 22nd; disaffection spread, and by the middle of the month between 6000 and 7000 coolies had left the gardens. Food was provided by the Government for those who needed it, and one issue of rice was accepted; but the coolies were then led to believe that acceptance of food thus supplied entailed their being sent back to the gardens. Government provision was made for the sick and destitute women, children, and aged. By May 19th about 3000 coolies had collected in and around the station yard at Chandpur; these premises rapidly became grossly insanitary, and cholera broke out amongst the coolies themselves and also amongst the station staff. Persuasion having failed to move the coolies they were dispersed by force; apparently many of them scattered through the town, remaining there as a great source of danger to the population. Dr. Batra, of the Health Department, made full arrangements for dealing with the sanitary and medical situation, but was much hampered by the non-coöperation of the men's leaders, who professed their inability to transfer some 500 of the men left in Chandpur to certain disused jute godowns, where about a thousand had been collected. Dr. Batra was unable to buy milk, vegetables, and other necessaries without the signature of the local leaders; finally he was compelled to withdraw with his assistants from his extemporised hospital, but remained in the town in readiness to render any assistance in his power. His estimate of the deaths from cholera during the latter part of May was 160 at the lowest figure.

A CONGRESS is shortly to be held in Vienna at which the international aspect of child welfare will be discussed by a number of distinguished men and women from various countries, including Prof. Pirquet, Mrs. Jane Adams, Miss Edith Pye, Miss Kathleen Courtney, and Dr. Hilda Clark.

B. Burjorjee.—Our correspondent does not give his complete address. The only translation of Prof. I. Boas's Diagnostik und Therapie der Magenkrankheiten of which we know is one by A. Bernheim, published by F. A. Davis Company, Philadelphia, in 1907, at 25s. The latest German edition was reviewed in THE LANCET of May 21st, 1921.

Professional Advertisement.—Our correspondent, who does not entrust us with his name, is reflecting on the professional standards of foreigners, and cannot be certain that the institutions from which they derive their degrees and diplomas will have no objection to the advertisement. This might not be the case with British practitioners.

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Special Terms for Position Pages.

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[1] Glass-Blowing. A Laboratory Handbook. By Bernard D. Bolas. With numerous diagrams in the text by Naomi Bolas. London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co. 1921. Pp. 106. 3s. 6d.

no difference was made between a girl who fell for the first time through the dastardly act of a designing man and a girl who had already adopted the life of a prostitute, and who probably herself deceived. Prostitution led to other forms of crime, and it was easy for a girl to make money by blackmail.

Captain LOSEBY seconded the motion for rejection, on the ground that certain clauses of the measure struck at the root of the principle upon which the criminal law of the country was based.

Mr. SHORTT (Home Secretary) supported the Bill, and pointed out that every single provision of it had been approved by a Joint Committee of the House of Lords and the House of Commons. It did not seek to make people moral by legislation, but to prevent them carrying out immoral purposes just at their own will.

After further discussion the Bill was read a second time without a division.

MONDAY, JULY 18TH.

Anthrax-infected Brushes.

Major KELLEY asked the President of the Board of Trade whether, in consultation with the Ministry of Health, he had safeguarded the country against the importation of anthrax-infected brushes.—Sir A. MOND (Minister of Health) replied: Samples of imported brushes from various sources have been examined from time to time, but so far only shaving brushes of Japanese origin have been definitely found to be anthrax-infected and capable of conveying infection to human beings. The further importation of Japanese shaving brushes into this country was prohibited in February, 1920, by an Order in Council which is still in force.

The Heat Wave and Rabies.

Major KELLEY asked the Minister of Agriculture whether, in view of the exceptionally hot summer, the public had any reason to apprehend a spread of rabies in dogs.—Sir A. GRIFFITH-BOSCAWEN replied: I am advised that inasmuch as rabies is a contagious disease which is only transmitted by means of the bite of an infected dog there is no reason to apprehend an increase in the number of cases of rabies on account of the hot weather.

Vaccination and Small-pox.

Mr. ROBERT YOUNG asked the Secretary for Scotland whether any of the cases classified as unvaccinated of those occurring in the Glasgow outbreak of small-pox in 1920 had been vaccinated at any time in their lives: and if so, what were the ages of such cases, and what was the interval between vaccination and the development of small-pox.—Mr. MUNRO replied: No case in the list of unvaccinated persons had been vaccinated *before* exposure to infection. Of the 128 cases classified as unvaccinated, 19, who were contacts with previous cases, were vaccinated during the outbreak, but *after* exposure to infection. The ages of the 19 cases were:—

Under 5	8 cases.	10–15	4 cases.
5–10	6 ,,	Over 15	1 case.

The intervals between date of vaccination and commencement of attack were:—

Days	4	5	6	7	8	9	10	11
Cases	1	3	3	2	5	2	1	2

Mr. YOUNG also asked the Secretary for Scotland whether the medical officer for Glasgow would be requested to inquire into those cases of small-pox classified by him in 1920 as unvaccinated, as he did in the small-pox outbreak in Glasgow in 1903–4, when he discovered that a number of the alleged unvaccinated cases had been vaccinated in infancy.—Mr. MUNRO replied: The answer is in the negative. The inquiry suggested would not affect the validity of the statistics, nor afford any information commensurate with the trouble and expense involved to the local authority.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 25th.—2 P.M., Mr. D. Armour: Operations.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Addison: Operations.

THURSDAY.—2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.

FRIDAY.—2.30 P.M., Dr. Pritchard: Visit to Medical Wards. Mr. Baldwin: Operations.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient Clinics and Operations.

Appointments.

PEARSON, W. J., D.M. Oxon., has been appointed Physician-in-Charge of the Children's Department at Charing Cross Hospital.

Certifying Surgeons under the Factory and Workshop Acts: ROBERTS, J. C. L., M.D. Camb. (Ruabon); EVANS, J. (West Drayton).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—H.S. £200.

Ayr County Hospital.—Lady Supt.

Bedford County Hospital.—H.S. £200. Asst. H.S. £150.

Bethlem Hospital.—Res. H.P. £25 per quarter.

Birmingham General Hospital.—Two H.P's. £100. H.S's. to Special Depts. £125. H.S. £100.

Birmingham, Queen's Hospital.—Surg. Registrar. £100.

Bootle Borough Hospital, Derby-road.—Junior H.S. £150.

Bradford Royal Infirmary.—H.S. £200.

Brighton, Royal Sussex County Hospital.—Casualty H.S. £120.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £200.

Bristol Royal Infirmary.—Cas. and Ophth. H.S.'s £120.

British Honduras.—Asst. M.O. $2430.

Cardiff, King Edward VII. Hospital.—Cas. H.S. £200.

Carlisle Non-Provident Dispensary.—Res. M.O. £300.

Doncaster Royal Infirmary and Dispensary.—Sen. H.S. £225. Jun. H.S. £200.

Downpatrick, Down District Asylum.—Sen. and Jun. Asst. M.O's. £350 and £300 respectively.

Evelina Hospital, Southwark, S.E.—H.P. H.S. Each £160.

Glasgow, Bellahouston Hospital.—Visiting M.O. to Ear, Nose and Throat Dept. £450.

Gloucester County Asylum.—Jun. Asst. M.O. £350.

Great Yarmouth Hospital.—H.S. £200.

Jersey Poor House Infirmary.—M.O. £750.

Lancashire County Asylum, Winwick, Warrington.—Second Asst. M.O. £300.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

Leith Hospital.—Res. P. Res. M.O. Each 50 guineas.

Manchester, Ancoats Hospital.—H.S. £150.

Manchester University.—Demonstrator of Pathology. £350.

Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Res. M.O. £150.

Middleton-in-Wharfedale Sanatorium.—Asst. M.O. £500.

Newcastle-upon-Tyne Hospital for Diseases of the Skin.—Hon. Clin. Asst.

Newport (Mon.), Royal Gwent Hospital.—H.S. £200.

Northamptonshire County Council.—Asst. Tuberculosis Officer. £500.

Nottingham General Hospital.—Res. Cas. O. £250.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £150.

Reading, Royal Berkshire Hospital.—H.P. Second H.S. Each £200.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. £100.

St. George's Hospital, S.W.—Res. H.S. £50.

Salford Royal Hospital.—H.S. Cas. H.S. Each £150.

Salisbury General Infirmary.—Asst. H.S. £150.

Seamen's Hospital Society, Greenwich, S.E.—H.P. H.S. Each £150.

Torquay, Torbay Hospital.—H.S. £200.

Union of South Africa (Natal Provincial Administration).—House Surgeons, Grey's Hospital, Pietermaritzburg. £400.

West London Hospital, Hammersmith-road, W.—H.P. £100.

Wigan County Borough.—Tuberculosis Officer and Asst. M.O.H. £550.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

Births, Marriages, and Deaths.

BIRTHS.

GRAY.—On July 12th, at Oporto, Portugal, the wife of St. George B. D. Gray, M.B., B.S., M.R.C.S., L.R.C.P., of a daughter.

HOLMES.—On July 11th, at Eldon House, Harrogate, the wife of Geoffrey Holmes, M.B., B.Ch. Cantab, of a son.

MOORE.—On July 12th, at St. Paul's-road, Clifton, Bristol, the wife of Clifford A. Moore, M.S., F.R.C.S., of a son.

MARRIAGES.

ALEXANDER—JACKSON.—On July 14th, at Ballycastle, co. Antrim, John Alexander, M.B., Sefton Park, Liverpool, to Florence, daughter of the Rev. J. Jackson, D.D., Ballycastle.

DEATHS.

EVANS.—On July 15th, at Bournemouth, Lieut.-Colonel J. W. Evans, I.M.S., of Trevaughan, Carmarthen, after a long illness.

MORRIS.—On July 17th, at Belmont-road, Wallington, Surrey, Graham Morris, M.D. Brux., M.R.C.S., L.R.C.P. Lond., Hon. Capt. R.A.M.C., aged 60.

with all the other mechanisms which take part in the general bodily reaction to nocuous stimuli, the galvanic reaction is conditioned by the response of the thalamic system. That changes in the peripheral blood-supply have nothing to do with the response was shown by the experiment of Veraguth, who obtained normal responses from a limb exsanguinated by an Esmarch bandage.

I now propose to deal with some of the aspects of the galvanic reflex that will prove of service in the objective study of the bodily response to cerebral activity. Before doing so, I will indicate briefly the technique that can be usefully employed for this purpose. In my own experiments I have been in the habit of measuring the bodily resistance to a current of a couple of Leclanché cells which is passed through the body from two liquid electrodes of normal saline into which zinc terminals dip. The subject is seated with the hands immersed one in either electrode, and forms the fourth arm of the familiar Wheatstone bridge circuit. I prefer the liquid electrodes to the solid zinc electrodes strapped on to the back and front of a single hand, because slight shifting of the electrodes due to movements occurs rather easily when the latter procedure is adopted; further, the low resistance measured allows its easy demonstration to the uninitiated without having to multiply up the results by using unequal ratio arms in the resistance box. The point is, of course, of no importance. For experimental work I have abandoned the moving coil galvanometer for the Einthoven instrument, since with this type of galvanometer it is alone possible to measure time relations with any degree of accuracy, and an additional interest is given to the records by the appearance of the heart beats in the curves. Further, with the double-string instrument which I owe to the generosity of Mr. Alfred Teniers it is possible to obtain either simultaneous records of the galvanic response of two parts of the body or of muscular or respiratory variations accompanying the galvanic reflex.

NATURE OF STIMULUS EVOKING GALVANIC RESPONSE.

The first subject for inquiry is as to the nature of the stimulus that evokes the galvanic response. Practically all those who have concerned themselves with this reflex agree that stimuli adequate for the galvanic reflex are capable of causing an affective state. We are in no way entitled to draw the inference that the occurrence of an affective state is necessary to the exhibition of the reflex, and still less that the occurrence of the reflex conditions an affective state. While the examination of the relation between bodily activity and states of feeling may be reserved at this stage for later discussion, it must here be pointed out that an affective state, to exist at all, must be experienced by the subject. Now, a galvanic response may occur without the subjective experience of an affective state. I have frequently observed a response to be elicited by a stimulus when the subject affirms that the stimulus has for him no feeling tone. This may be best observed in the performance of word association experiments. The response to a certain word may be marked and yet when the subject is interrogated he is at first unable to discover any association of emotional significance in the word, and, moreover, he assures me that the word left him absolutely indifferent. It is true that further examination generally succeeds in recalling a hidden emotional significance, and thus reveals that the stimulus activated a specific reflex system that at one time had a nexus with the mechanism of feeling; but that is not the point. If we accept the assurance of the subject, we must believe that the reflex occurred without his experiencing any feeling connected with the word. To talk of a subconscious feeling is, of course, to talk nonsense. The same point may be verified by purely introspective investigation. When a painful or presumably painful stimulus is applied to the hand, such as touching it for a moment with a flaming match, a well-marked reaction will be obtained.

If, however, the experiment be repeated a number of times in succession without the injury inflicted corresponding to that which was anticipated at the first stimulation, the subject becomes indifferent and possibly bored with the performance, and yet with each application of the stimulus there is still a galvanic reaction though the subject is well assured that he feels no apprehension. To appreciate the cogency of the experiment one must oneself serve as a subject, and there is no mistaking the genuine surprise with which one observes a reaction to a stimulus that has become a matter of indifference. I shall refer to this experiment again when we come to discuss conditioned reflexes. Here its importance lies in the fact that the reaction takes place in the absence of an affective state. Many observers have maintained that the galvanic reflex accompanies mental effort as well as states of feeling. We have just now discussed the sensory concomitants of effort and I hope to have succeeded in demonstrating that they constitute what we know as an affective state; but I do not consider that they are normally accompanied by a galvanic reaction. When, however, an intense effort results in one or other of its sensory factors assuming overwhelming proportions, we have said that it is presented as a distinct disagreeable sensation and may as such arouse the same system of reflexes as it would were it a sensation caused by a specific stimulus. In this connexion I instanced the feeling of suffocation during a cell count. In the performance of word association tests I have generally found that the first three or four word reactions in the examination of a a new and nervous subject are accompanied by a galvanometric deflection, even though they be essentially neutral words. This is simply an expression of the state of anxiety on the part of the subject, who soon settles down and responds electrically only to words having an emotional significance.

PARTIAL CLEARING UP OF CONFUSION BETWEEN SUBJECTIVE AND OBJECTIVE STANDARDS.

These considerations indicate some of the difficulties to be encountered in any attempt to elucidate the meaning of a physical response by an appeal to subjective evidence; a similar confusion of subjective with objective standards has proved to be such a stumbling-block in the physiology of the afferent nervous system. In that case the problem for the physiologist is not what is the presentation to consciousness following on the stimulation of an afferent nerve-ending, but what are the reflexes that such stimulation evokes, and by what form of stimulus is the receptor organ excited. Thanks to the introduction of the idea of the existence of a system for the transmission of nocuous stimuli by Sherrington, and its correlation with the thalamic reflex system by Head and Holmes, the physiology of the nociceptoral nervous system has been made relatively clear, and we have eliminated many of the obscurities that were so perplexing when the subjective sensations of the patient were our only guide. Likewise, in considering the galvanic reflex the first question to be considered is what are the objective characteristics of the stimuli that evoke this increase of conductivity on the part of the skin—an increase which we have reason to consider to be an index of a general increase of functional activity and to be correlated to certain states of feeling. The answer is that in the first place any type of stimulus that tends to cause damage to the body, or that threatens such a change in the environment as is likely to result in bodily damage, will prove to be an adequate stimulus. In the second place we must recognise not only actual bodily damage but the disturbance of the smooth working of bodily activities as the characteristic of another class of stimuli which will evoke the generalised bodily reaction of which the galvanic reflex is a sign. The first class of these stimuli is represented by such physical disturbances as may result from a blow, a burn, a prick or pinch; or those acting from a distance, such as loud sounds, blinding lights, or noxious smells; or, again, endogenous stimuli, such as colic or neuralgia.

have been found during the stage at which greater demands were being made on the heart. That is to say, the greater the work done by the heart the greater the chemical changes necessary to supply energy. A motor-car may be running steadily with an even beat of its engines along a level road. When it comes to a hill it will slow up and finally stop unless the chauffeur increases the chemical changes and the energy of each explosion within the cylinder by opening the throttle and letting in more mixture of petrol and air. In the case of the heart there is no chauffeur, but there is some automatic regulation by which the heart increases its chemical changes and therefore the energy of each beat in exact proportion to the work which is demanded of it. It is the nature of this automatic regulation which concerns us now.

The Nature of the Automatic Regulation of the Heart.

By a careful observation of the changes in the heart in the experiment described above we may arrive at some clue to the nature of the pressure, but more accurate methods are necessary if we are to be certain of the correctness of our guess. We must under these varying conditions measure: (1) the pressure in the heart cavities produced at each contraction; (2) the volume of the heart cavities—i.e., the length of the muscle fibres of their walls. The first we measured in the experiment described by connecting the interior of each cavity in turn with a quickly acting manometer, the excursions of which are registered by an optical method so as to avoid the instrumental vibrations of a lever. The curve of pressure obtained under two conditions—i.e., low and high artificial resistance—could then be plotted. It must be remembered that the heart was sending on in each case all the blood that it received, though the work necessary under the high pressure was two or three times as great as that necessary to send on the blood at the low pressure. To measure the volume of the heart the ventricles are enclosed in an instrument known as a cardiometer. This communicates with a piston recorder so that the change of the volume of the ventricles at each beat can be registered on a moving surface.

The question we have to decide is, how does the heart know when it is relaxed that at the next contraction it will have to exert more force than it did previously, when the arterial resistance to be overcome was lower? If we measure the pressure in the ventricles in the manner just described we find that during the period of relaxation of the ventricles the pressure in its cavities is approximately zero, whether the artificial pressure which it has to overcome at its next beat is 50 or 150 mm. Hg. It is not, therefore, the tension on the walls of the heart which determines the strength of its contraction at its next beat. When, however, we come to measure the volume of the heart, we find that in the isolated heart this is directly proportioned to the work which the heart has to accomplish. Thus we find that the larger the heart—i.e., the more it is dilated during diastole, the greater is the pressure that it will get up at the succeeding contraction or systole.

We may put this in another form, as is shown by continuing our experiment over several hours, when we find that the worse the condition of the heart muscle, the more it must dilate in order to get up an adequate pressure. Other things remaining equal we thus see that the volume of the heart during diastole is a measure of its physiological condition, and we are not surprised that a failing heart means a dilated heart. Of course, there is a limit to this power of adaptation. As the heart dilates it is working at an ever-increasing mechanical disadvantage, and a point will finally arise at which this disadvantage more than counterbalances the physiological effect of dilatation. The heart then dilates widely and fails to empty its contents. Dilatation of the heart means elongation of the muscular fibres composing its walls, so that we may put the law of the heart in another way and say that the longer its muscle fibres the greater is the energy developed at each contraction. But in this form this wonderful power of adaptation possessed by the heart becomes part of the general properties of all muscular tissues, since the same rule applies to the fibres composing our voluntary muscles. Can we obtain any more precise and physiological conception of what is involved in this relationship between length of fibre and strength of contraction? Microscopic examination of the fibres, either of the heart or of voluntary muscles, show that these are composed of innumerable fibrils, so that internally the muscle fibre is made up of structures presenting an enormous extension of longitudinal surfaces. The more the muscle is stretched the greater will be the extent of these surfaces. A large amount of evidence, based on the electrical and chemical changes occurring in muscle as a result of excitation, points to the contraction as being essentially a surface phenomenon—a molecular change over the whole of the longitudinal surface which may result in a polarisation or depolarisation of its service and an increase of its surface tension, so that the muscle is a surface tension machine in which there is on excitation a direct conversion of chemical into surface energy. The greater the surface the greater will be the number of molecules involved, so that increased length of muscle must increase at the same time the total chemical changes and the total tension produced by the summation of the surface tension of each fibril.

It is only by such a change of molecular dimensions that we can explain the rapidity of events in a muscle (the insect wing muscle can contract and relax 300 times per second), or the high efficiency of the machine, an efficiency which A. V. Hill has shown may amount to 100 per cent. for each isolated contraction and over a length of time to 50 per cent. As directly measured in the heart-lung preparation we find a mechanical efficiency of about 30 per cent.

Conclusion.

It is impossible here to enter into the application of this law of the heart, but so far it has not failed in accounting for the behaviour of this organ under all manner of conditions either in health or disease. It is important to remember, however, that we are dealing here with the isolated heart. In the natural body the mechanisms which we have studied are fenced round, protected and aided by the complex activity of the central nervous system, which is always acting on the heart, balancing its activity against that of the blood-vessels, and coördinating it with the events which are occurring in every other part of the body. All these factors must be taken into account when we are endeavouring to form a conception of the total behaviour of this organ under the varying activities of the intact animal.

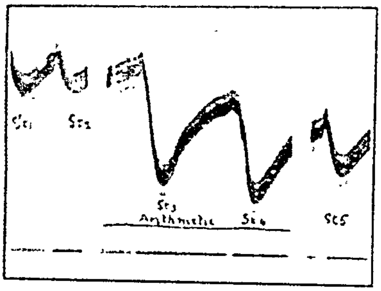
EARLY BOOKS ON MEDICINE AND ANATOMY.

ON the afternoon of to-day, Friday, July 22nd, Messrs. Hodgson, at their premises in Chancery-lane, are disposing of an important collection of early books on anatomy and medical science formed by Prof. John Cleland, M.D., F.R.S., Emeritus Professor of Anatomy in Glasgow University. There are three incunabula (books printed before 1500 A.D.), and well over 100 other early books. Berengarius Carpus, the first to describe the vermiform appendix; Highmore, with his own account of the "antrum"; Thomas Vicary; Harvey; Spigelius; G. Asellius, discoverer of the "lacteal veins"; Bartholinus (four separate volumes); Meibomius; Eustachius; Stenson; Valsalva; Morgagni; Cowper; Malpighi; Boerhaave; Vesalius; Falloppius (sic); Willis; Cheselden—these are but a selection of the eponymous sixteenth and seventeenth century worthies whose original works are catalogued in this sale. The oldest book of the whole collection is the Natural Theology of Raimond de Sebondi printed at Daventry in 1480, and dignified by the mystic parentheses [H.C. 14067], which mean that the two great authorities on fifteenth century printing, Hain and Copinger, have collated, described, and numbered it. The other two, both of 1481, are mentioned by Hain alone, apparently; one is a translation of Galen, published at Ulm, and the second Articella's encyclopædia of ancient text-books of medicine, published with a commentary at Venice.

RATS AND THE FILM.

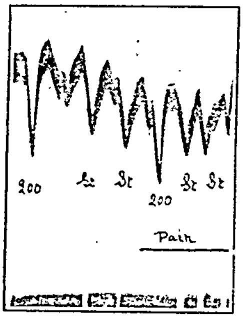
ON July 15th an important weapon was released for use against the rat, in the shape of an excellent two-reel film prepared for the Incorporated Vermin Repression Society, by the Industrial Film Association, and exhibited to members of the Society and press representatives at the premises of the American Company in Wardour-street, London, W. The film occupied nearly half an hour, the first reel setting forth the ravages of the rat, and the second the means of prevention. A solitary rat was first thrown on the screen like any other kinema villain; there followed quayside glimpses with vessels at anchor, and rats skipping across lowered gangways and sliding down unguarded mooring-cables to disappear ashore. The scene shifted inland; a poultry-enclosure appeared, and was subjected to a grisly raid. Another scene was set in a larder; rats climbed the shelves and fouled the food, which later was borne away by an unobservant maid and deposited on the dinner-table with dramatic results. But all was not lost; in the gloom of his laboratory a scientist held a test-tube to the light; *Trichina spiralis* sprawled enormous across the screen, and then gave place to welcome methods of rat destruction. A harassed shopkeeper laid a large spring trap by his plundered goods, and we were privileged to see justice done on a raider. Varnish and open-air wire and "run" traps were shown in use, and the film concluded with a comparison of rat repression 20 years ago and to-day. The system of the old-style rat-catcher seemed to consist of drinking deeply from a pint mug; contrasted with his method was that of the Vermin Repression Society's experts shown at work in a warehouse. Guns, nets, ferrets, and stimulus. The work performed, be it noted, was not responsible for any diminution of resistance per se. I have, however, constantly obtained this modification of the reaction to moderate stimuli, slight though it be, so long as the work on which the subject is engaged does not prove unduly irksome. When the resentment or the discomfort of strenuous work reaches such a pitch as in itself to produce a bodily reaction in the shape of a diminution of resistance, the response to the initial stimulus is diminished, just as we see occurred in this record when the subject was undergoing painful stimulation. When, however, the stimulus is a maximal one, such as is produced by the firing of a pistol close behind the subject, it ceases to be possible to modify the response either by work or by any moderate degree of pain. Fig. 5 is the record of what is apparently a fatigue effect in the galvanic response to a series of uniform auditory stimuli. This apparent fatigue cannot be attributed to exhaustion of the effector mechanism of the response, that is either to the skin, the centrifugal nerves going thereto, or the nerve cells governing them, for if an adequate stimulus of a different nature to that of the series be administered at the beginning and at the end of the series it will be found to evoke approximately the same degree of response. Under the conditions of the experiment, which consists in the production of a short series of sounds of equal and moderate intensity, the effect cannot be due to fatigue either of the peripheral receptor mechanism or of the cortical receptor centres. We may therefore ascribe the progressive diminution of the response to some change occurring in the nervous mechanism connecting the receptor system with the effector system of the galvanic reflex. The term "progressive indifference" probably describes this change better than fatigue; for if in the middle of the series of moderate stimuli we intercalate one of greater magnitude we obtain a response approximately equal to that aroused by a stimulus of the same magnitude administered before the beginning of the series. It is noteworthy that after the intercalation of the powerful stimulus the descending series of responses is interrupted for the next two stimuli which show some degree of augmentation.

FIG. 3.



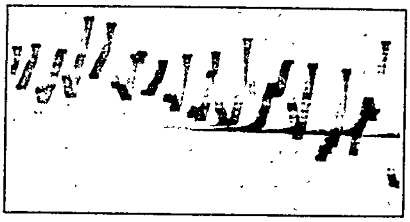
Reaction to uniform stimuli (prick). 1 and 2 before, 3 and 4 during, and 5 after mental arithmetic.

FIG. 4.



Reaction to uniform stimuli (prick) before and during painful faradisation. Graduation of 200 ohms.

FIG. 5.



Fatigue effect of galvanic reflex to uniform series of sound stimuli.

VARIATION OF RESPONSE WITH STIMULUS.

When the patient is subjected to a brief examination not lasting over ten minutes or so the magnitude of the response can be shown to vary directly with the strength of the stimulus. Fig. 6 shows the response to a series of break induction shots of increasing strength. This relation between the strength of the stimulus and the response is obviously a fact of some importance, but we must hesitate before we pronounce on the relative efficiency of any two verbal stimuli or stimuli evoked by the subject's own representations on the strength of an examination of the galvanic responses elicited. Even with simple and easily controlled physical stimuli two such stimulations of different strengths can only be counted upon to give proportionate responses when they are not separated at too great an interval and the general attitude and condition of the subject is approximately the same. After an initial intense stimulus with its concomitant response the resistance does not immediately rise to the old level, and so long as the slight general diminution in resistance continues the response to subsequent stimuli, of whatever their nature, will be somewhat greater than formerly. In the study of the galvanic reactions of neurotics undergoing a prolonged examination this tendency must not be overlooked. If a painful stimulus be repeatedly administered, and its administration be accompanied by some sound or movement on the part of the observer, after a time the repetition of this sound or movement will be in itself sufficient to produce a response equal to that caused by the stimulus. We shall, in fact, have established what Bechterew calls a conditioned reflex. Fig. 7 shows such a conditioned reflex. A painful stimulus was administered to a subject who was instructed to press a key which completed the circuit of an electric signal every time that he felt the stimulus. In addition to the motor reaction the galvanic reaction to the stimulus, was recorded. Every time that the painful stimulus which was an induction shock, was administered, the subject who sat with his eyes closed heard the click of the key that opened the circuit for the break induction shock. After the reaction had been repeated a sufficient number of times the key was clicked as usual, but the current was prevented from reaching the subject by a previous disconnexion of the circuit. On hearing the accustomed click the subject reacted in the accustomed fashion both by the signal and by a galvanic response, which will be seen to have been of no less magnitude than that responding to the last two occasions of the series when the induction shock was really administered. We shall see in the next lecture what light a consideration of these conditioned reflexes throws on the relation between the bodily response and the affective state.

PROBLEM OF SKIN RESISTANCE.

The relation of the initial resistance of the skin to the magnitude of the galvanic response is a very difficult point to determine. Waller has shown that the skin resistance undergoes a diurnal variation following closely the diurnal variation of temperature. I took advantage of this observation to determine the relation of the galvanic responses evoked by uniform stimuli to the initial skin resistance. Maximal stimuli were used, and for this purpose I found a pistol shot most convenient. A rough correspondence between the resistance of the skin and the galvanic reflex throughout the day is shown by Fig. 8. This chart represents the mean of observations conducted on three successive days, but the difficulties in obtaining the subject at any one time under approximately the same conditions are very great. For what it is worth, it seems to indicate clearly that the maximum response occurs round about mid-day when the

Croonian Lectures

ON

THE OBJECTIVE STUDY OF NEUROSIS.

Delivered on June 14th before the Royal College of Physicians of London,

BY F. L. GOLLA, M.B. OXON., F.R.C.P. LOND.,
PHYSICIAN TO ST. GEORGE'S HOSPITAL.

LECTURE II.[1]

In the preceding lecture we reviewed some of the objective aspects of effort. Before proceeding to study the other bodily concomitants of cerebral activity, I wish to summarise what objective study has taught us of the state of activity that we designate as effort. In the first place, all the phenomena recorded were in the nature of increased bodily activity and not of the inhibition of activity, that it might be thought would permit the more readily the uninterrupted response of the specific mechanism to the stimulus. We found that the generalised bodily reaction of effort bore a direct relation to the difficulty—that is, to the chance of failure of the specific mechanism in performing its appropriate action and we noted that when this bodily response experienced any diminution, the accuracy of the specific performance was likewise diminished. Lastly, we found that the net result of such of the bodily changes observed in effort was to increase the general efficiency of the body, whether by accelerating and increasing the simpler motor reflexes or by influencing the blood-supply of the nervous system by an increase of the intrathoracic pressure and vasomotor changes.

Now let us interrogate our consciousness as to the feeling that we experience during effort. As in the case of other affective states that we shall study later, we find that to attend to a feeling is, to a great extent, to lose it. We are aware of certain respiratory sensations, a certain sense of increased cardiac action, of intracranial pressure, and of postural tension. Sometimes one, sometimes another of the constituents of this feeling of effort becomes so dominant that the vague feeling is swamped by a distinct sensation such as I instanced in the case of the respiratory symptoms experienced in performing a count of the particles ingested by phagocytes. The general sum-total of the sensory presentation of the bodily changes of effort is a disagreeable one. The sooner that we can cease from effort and find our specific task performed the better pleased we are.

Ribot has emphasised the fact that nobody really has pleasure in work itself, it is to its accomplishment that we really look forward with pleasure. Now whether we regard effort from a purely mechanical point of view, or whether we take cognisance of its affective aspect, the conclusions that will be drawn are much the same. A stimulus is presented, the specific response to which is inadequate, or else the task would be accomplished with mathematical certainty. When such a stimulus fails to arouse an adequate response on account of its own feeble nature, nothing further happens except that the response will itself be a feeble one. When, however, the stimulus is powerful and insistent and the mechanism of response is inadequate another and more diffuse constellation of reflexes is aroused. Various bodily activities are brought into action, all of which tend to increase the efficiency of the specific mechanism. The sensory presentation of these bodily activities is a disagreeable feeling which we do our best to allay by accomplishing the specific action demanded. Viewed from this angle we shall see that the mechanism of effort resembles that of the affective states that we are about to consider, and further, that no distinction can be drawn between effort and the conception of attention as propounded by Locke and in a less incisive fashion by Hamilton. It will be obvious that when through either innate or acquired disability the specific mechanisms are everywhere inadequate to respond to the tasks that they are called upon to perform, the never-ceasing activity of the mechanism of effort will prove exhausting to the body, and in its sensory aspects a most distressing form of neurotic disturbance.

REACTION MANIFESTED BY CHANGE IN ELECTRICAL PROPERTIES OF THE SKIN.

Hitherto the reactions that we have studied have been occasioned by the activity of striated or non-striated muscular tissue. I now propose to deal with a reaction that is manifested by change in the electrical properties of the skin. This reaction was first described by Féré in 1888 as an emotional response, manifesting itself by a diminution of the resistance of the body to the passage of an electric current. Galvanometric deflections occurring when the skin was explored by a pair of electrodes were independently described by Tarchanow in 1890, and found by him to occur as responses to physical and psychical stimulation. He considered them to be due to secretory currents of the skin glands.

The investigations of both of these observers were to a great extent ignored, and the same fate befell Stricker's confirmation of Tarchanow's experiments in 1902. It was not till 1904 that the subject was reinvestigated, when Veraguth, stimulated by some preliminary observations on bodily resistance by E. K. Müller, confirmed the observations of Féré and gave the first systematic exposition of what he termed the "physico-psycho-galvanic reflex." He described this reflex as a diminution of the resistance of the skin to the passage of a constant current occurring as a response to stimuli which caused an alteration of the affective state. It is not possible in the course of these lectures to deal with the mass of observations that have since accumulated from the work of the many experimenters who, subsequently to Féré and Veraguth, have investigated this phenomenon. Nor are we concerned for the moment with the physical nature of the response. It is sufficient to state that the galvanometric effect is beyond all doubt due to a diminution of the electrical resistance offered to the passage of a constant current by the skin, and that this diminution is exhibited as a maximum effect in the palms of the hands, a little less obviously in the sole of the foot, and scarcely at all in other parts of the skin. This statement, which is founded on the careful exploration of all parts of the body surfac by Gildermeister, has been confirmed by every observer who has worked on the subject.

The work of Crile and his pupils has shown that a increase of electrical conductivity, or conversely a diminution of resistance, is associated in all tissues, with an increase of their metabolic activity; we may tentatively regard the galvanic response as a sign of the increased activity of the gland-bearing area of the skin. If it be to the activity of the cutaneous glands themselves that we must ascribe the galvanic reflex it is certainly not due to the gross manifestations of that activity by the excretion of sweat. In 1918 I had a neurotic patient who suffered from hyperidrosis of both hands, the sweat falling off from the tips of the fingers in drops. I found that this patient exhibited the galvanic response to all adequate stimuli in a marked degree, although the palms were covered by a thin layer of sweat, and it was unthinkable that any actual increase in the amount of fluid excreted should have an influence on the conductivity of the sodden skin. I showed the case to Prof. Waller, and he also remarked on the magnitude of the galvanic response given by this patient. It is further obvious that the galvanic response, if it be associated with glandular activity, can only be governed by the centrifugal nerve impulses that travel through the fibres of the sympathetic, and we shall later see reason to believe that, in common manifested by a forward movement of the head. A painful stimulus is responded to by a retraction of the head. This might appear to be an example of a purposive movement, the subject endeavouring to withdraw from the vicinity of the painful stimulus, but on applying the stimulus to the back instead of in front the same retraction of the head occurs, though in this case the subject is moving in the direction of the stimulus. It cannot, therefore, be compared to the type of reflex that occurs when a spinal animal withdraws the foot from a nocuous stimulus. Disagreeable and offensive verbal stimuli will also elicit this retraction reflex (Fig. 11), which—in contradistinction to the forward movement accompanying effort—appears, therefore, to have some of the specificity to nocuous stimuli that characterises the galvanic reflex. The respiratory changes do not differ, so far as I have been able to observe them, from those associated with effort. Fig. 12 is the record of two interesting tracings obtained, one as the reaction to a painful thought and the other to anger. The response in both cases is manifested as a flattening of the respiratory curve that we have seen reason to associate with increased muscular tonus. I am aware that many observers have attempted to demonstrate the existence of special forms of the respiratory curve associated with specific affective states, but the lack of uniformity in their results, which depend on measurement of the expiratory and inspiratory excursions, have failed to convince me that they are dealing with any specific reflex changes. The heart rhythm is accelerated in response to nocuous stimuli, but such acceleration, when it occurs, is of very short duration in response to a short-lived stimulus. With prolonged stimulation the cardiac rhythm is accelerated for the whole duration of the stimulus. Again, if the inferences drawn from measurement of the time relations of the cardiac cycle are to be trusted, it appears that the acceleration is due to depression of the vagal inhibitory and not to stimulation of the accelerator mechanism.

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[1] Lecture I. appeared in THE LANCET of July 16th. Lectures III. and IV. will follow.

FIG. 9.

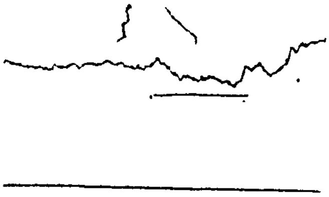
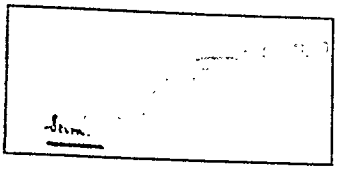


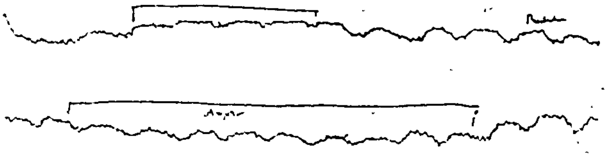
FIG. 10.



Photographic record of the increase in tonus of the arm muscles to a nocuous physical stimulus, recorded by the optical lever.

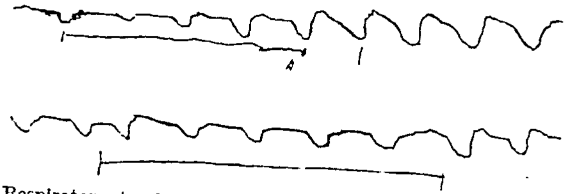
The evidence furnished by plethysmographic tracings of the vaso-motor reactions occurring in the limbs must be accepted with a certain amount of reserve. In the well-known Mosso plethysmograph as modified by Lehmann there are two possible sources of error which it is practically impossible to eliminate. First, a very small amount of displacement of the arm will cause a very marked effect on the plethysmographic curve and will be interpreted as an increase of volume if the arm be moved forward and as a decrease of volume if the arm be withdrawn ever so slightly from the plethysmograph. That such slight movements do occur and cannot be consciously guarded against is shown by the old experiments with an apparatus known as the "automatograph." In these experiments the partially flexed forearm is suspended in a cradle hung from a support. The movements of the cradle are recorded on an underlying drum and it is claimed that by this method it is possible to show that a disagreeable stimulus is responded to by retraction of the arm and an agreeable stimulus by its advancement. I have not adopted this method in my investigations, because I consider that it harbours many fallacies; but whatever the interpretation we may place on them, results thus obtained show that such movements certainly do occur. Another source of fallacy in the use of the plethysmograph becomes obvious from the evidence that I have submitted as to the diffuse increase in muscular tonus occurring as a bodily reaction in certain states of cerebral activity. Such an increase in muscular tonus must occasion an alteration of muscle volume simulating a vaso-constriction. I have dwelt on the shortcomings of the plethysmograph because we shall see later that results obtained from this instrument are the chief support for the assumption of a bodily response occurring in exactly the opposite direction to that elicited by nocuous stimuli. In order to avoid one source of error—that arising from slight movements of withdrawal or propulsion of the limb—I have designed a form of plethysmograph that has yielded fairly satisfactory results in these experiments. It is in essence a light metal drum covered at either end by a stout rubber diaphragm. There is a circular hole in each diaphragm, large enough to allow the passage of the arm whilst permitting a firm gripping of the limb by the thick rubber. The arm is thrust through both diaphragms so that the hand and wrist project beyond the further one, whilst the proximal end is a couple of inches below the elbow-joint. The drum is connected to a type of Brodie bellows recorder in which the bellows is replaced by a thin rubber "condom." The plethysmograph hangs freely on the arm, which is supported by two blocks at the wrist and elbow. Using an instrument of this type, which cannot be affected by any slight movements of the arm, in the direction of withdrawal or propulsion, I have obtained records of diminution of limb volume that are in accordance with those obtained by previous observers. It will be noted, however, that this arrangement of the plethysmograph cannot altogether neutralise, though it sensibly reduced, the error that arises from changes in muscle volume as a result of

FIG. 11.



Opposite movements of head. Forward with effort (recitation). Backward in response to offensive (verbal) stimulus. Respiratory and circulatory movements shown.

FIG. 12.

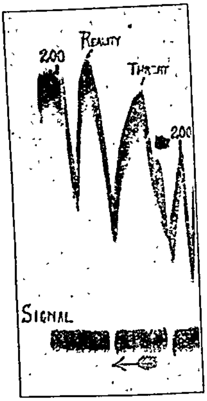


Respiratory tracings. The upper tracing shows effect of anger. The lower that of grief. The period during which the subject was indulging in the thought of the vexations and the painful experiences is indicated by the straight line below the tracing. (To be read from right to left.)

Fig. 1 shows a typical reaction as registered by the string galvanometer to a prick, the initial muscular start of which we shall have more to say is clearly seen. If now we proceed to use verbal stimuli instead of actual physical procedures we are using a type of stimulus belonging to the second category of our classification. The simplest form of verbal stimulus will be the threat of the application of a nocuous physical stimulus. Fig. 2 shows the responses to the threat of a prick and to an actual prick. Here we might hope to obtain some light on the relations of the two nervous mechanisms aroused. In this particular case you will note that the response is as great to the threat as it is to the act. I should like to be able to say that it was possible to correlate the mentality of my subjects with the relative efficiency of the two stimuli, but the results obtained from a large number of observations have been too inconstant. There are probably too many factors involved in the experiment—the degree of dramatic conviction with which the threat is performed, the attention of the patient, and the relative severity of the actual physical stimulus, must all be variables.

The threat to cause bodily discomfort is the simplest form of verbal stimulus. From this point onwards the stimuli may be elaborated by the representation of circumstances either past or present that are opposed to the well-being of the subject or are in conflict with the general tendency of his conduct—that is, stimuli such as will on the affective side evoke the feelings of grief or anger. So much for the galvanic response to external stimuli, but even more important is the galvanic response to stimuli whose immediate origin is in the autogenous neural processes of the subject. The spontaneous representation of some disagreeable or painful circumstance will serve equally well to elicit the galvanic reflex. Whether the subject recalls silently some past experience of a painful nature or whether he communicates it verbally to the observer the representation will in both cases evoke a diminution of skin resistance. We can now determine objectively the nature of the stimuli that will evoke the reflex without any further appeal to the evidence furnished by subjective inquiry. We note that one and all the stimuli have this property in common—their continuance is inimical to the well-being of the subject. Obvious as this is for the physical stimuli, it is no less clear when we consider the stimuli derived from outside verbal suggestion or from the representations evolved by the subject's own activities. The representation of an old pain must, if it be sufficiently vivid, involve all those reactions that occurred with the original stimulus. In so far as it falls short of representing them it falls short of being a vivid impression. I need hardly remind you that a representation must call into activity those nervous mechanisms that were aroused in the first instance, and that their necessary modification by subsequent neural associations constitutes the difference between the actual and the revived experience. In so far as the bodily response is concerned, the stimulus will in both cases be of the same nature as the initial physical stimulus, and from the objective point of view the reflex increase of conductivity evidences the same type of nervous activity. Fortunately for ourselves the representation can never or very seldom occur in anything approaching its first intensity. In many instances it cannot recur at all in a normally constituted organism.

FIG. 2.

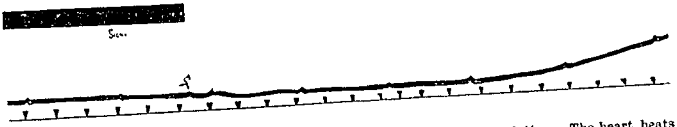


Galvanic response to burn and threat of burn. Graduations of diminution of resistance by 200 ohms.

THE GALVANIC REFLEX NOT UNDER VOLUNTARY CONTROL.

The completeness of representation is the test of the degree in which the activities of the organism as a whole have been modified by the original experience.

FIG. 1.



Galvanic response to a prick. Observe start (S) at the moment of stimulation. The heart beats are clearly shown. Time interval one-fifth of a second.

I try to recall an old toothache and I succeed in recalling concomitant experiences, but not a twinge of the original toothache. I recall a profound grief, and I shall feel much of my pristine pain and sorrow. Now the galvanic reflex distinguishes between these two types of representation, and this is what makes it so valuable for the objective study of cerebral activity; in our inner lives we are not always quite sure ourselves as to whether we have really any feeling about a subject—that is, whether it evokes a bodily resonance or whether it is merely a subject about which we think that we ought to feel strongly, whereas, in fact, it fails to arouse any bodily response. It is the objective demonstration of these two states that is furnished by the galvanometer. Anyone who cares to sit quietly by himself and recall past experiences whilst connected with the galvanometer circuit will learn much about matters that he has hitherto taken for granted. The resistance reaction is not under voluntary control; it is impossible to evoke it by simulation of affective states, such as a fictitious rage, nor can the mere recitation of emotional poetry, no matter with what emphasis it be declaimed, produce a reaction unless by some chance a phrase acts as a stimulus to evoke some association with a personal experience of affective import.

I will now pass on to consider some of the other aspects of this reflex that are of importance in affording information as to the relations of the mechanism of bodily reaction accompanying affective states to other nervous mechanisms. The reflex cannot be inhibited by any voluntary effort on the part of the subject. I have sought for evidence of inhibition of either of the response to physical or verbal stimuli in over a hundred subjects, but have never met with evidence of any direct voluntary power to either inhibit or modify the reflex. When the stimulus is not a maximal one the response may be modified to some extent by the activities of the subject at the time of stimulation. Fig. 3 shows the response to a moderately loud auditory stimulus, first, when the subject was expecting the stimulus; next, when he was engaged in mental arithmetic; and lastly (Fig. 4), when he was subjecting himself to a very painful faradisation applied to the sole of the foot. When I first obtained this result it seemed strange to me that the response to an irrevelant stimulus should be greater during the performance of arduous work than when the nervous system was keyed up to expect the

AN INSTRUMENT WHICH IS SET IN MOTION BY VISION

OR BY PROXIMITY OF THE HUMAN BODY.[1]

BY CHARLES RUSS, M.B. LOND., M.R.C.S. ENG.,
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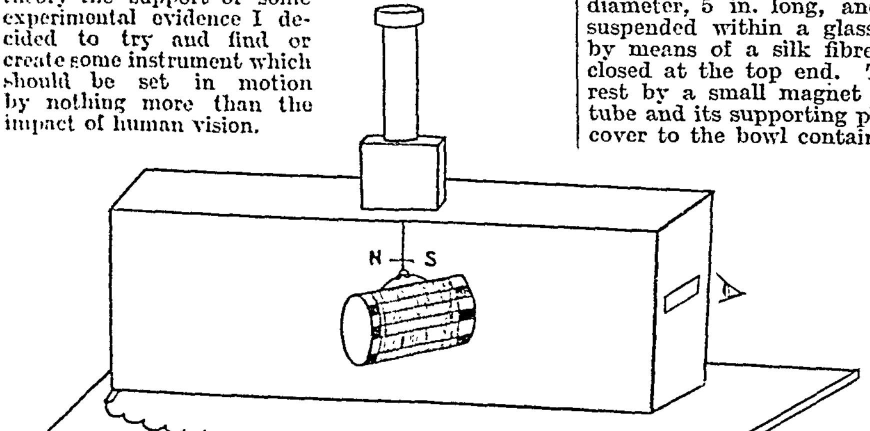
ALTHOUGH the force or ray I am about to describe emerges from the human eye, and is therefore physiological, the means I employ for its demonstration involve the use of electrical and magnetic instruments. The need for the scrutiny of experts in the science of physics was therefore obvious. I have had the great advantage of giving successful demonstrations of the work to experts in physics, including five Fellows of the Royal Society, besides Doctors and Bachelors of Science. None of these physicists found any mechanical or electrical fallacy which could account for the effects which I demonstrate as due to human vision. They do not so far identify the ray or force as being of a known or unknown type.

The fact that the direct gaze or vision of one person soon becomes intolerable to another person suggested to me that there might be a ray or radiation issuing from the human eye. If there is such a ray it may produce an uncomfortable effect on the other person's retina or by collision with the other person's ray; it is a fact that after a few seconds the vision of one or the other will have to be turned away at least for a short time. Numerous everyday observations and experiences seem to support the possibility of the existence of a ray or force emitted by the human eye, and in order to give my theory the support of some experimental evidence I decided to try and find or create some instrument which should be set in motion by nothing more than the impact of human vision.

FIG. 1.



The horizontal strips are of paper, to fix the coil wires on the celluloid of the cylinder.

Description of Apparatus.

Within a metal box (Fig. 1) I suspended a delicate solenoid made of fine copper wire. This solenoid was wound upon a cylinder of celluloid and suspended by a silk fibre (unspun silk) 14 in. long; the silk fibre was contained within a long glass tube mounted in the roof of the metal box. Its upper end was attached to a cork stopper and its lower end was furnished with a small metal stirrup into which the solenoid could be hooked. Attached to the stirrup was a small magnet consisting of a short length of steel wire magnetised by a steel magnet.

The box was 3 ft. by 8½ in. by 7 in., and lined with sheet aluminium. The far end of the box was closed by a sheet of window glass, and the near, or observer's end, was furnished with a thin glass or celluloid window which was also screened by a sheet of aluminium with a slot 3 in. long and 1 in. wide. A conducting wire connected the silk fibre with the aluminium of the box, which was earthed.

Method of Demonstration.

The solenoid was held steady by the magnet which naturally came to rest in the magnetic meridian (Fig. 1). If the human eye looks through the slot in the observing window and maintains a steady gaze at one end of the solenoid the latter will be seen to start into motion, which is usually away from the observing eye. If the gaze be now transferred to the true centre of the solenoid the latter stops, and if the vision is now applied to the opposite end of the solenoid the latter moves in a reverse direction to the motion first induced. This manœuvre may be repeated several times, each subsequent attempt being made only after the magnet has brought the solenoid to complete rest. Motion of the solenoid, though much reduced, was also obtained after interposing a column of water between the eye and the solenoid.

In view of later work it is possible that the solenoid is acting as one element of a condenser system—the air in the box being the dielectric.

Early in 1918 I had been impressed by the rapid induction of motion of the solenoid immediately after its replacement in its box or case. This activity soon fades to a minimal value which can always be obtained. Thinking that such activity might be due to some electrically charged state, I constructed some light condensers and tested the effect of vision on them. The form of condenser used was a celluloid cylinder having strips of lead or aluminium foil adhesively fixed to its inner and outer surfaces in symmetrical arrangement.

A large condenser of this type was made, 5 in. in diameter, 5 in. long, and weighing 10 g. It was suspended within a glass bowl 10 in. in diameter by means of a silk fibre enclosed by a glass tube closed at the top end. The condenser was kept at rest by a small magnet fixed above it. The glass tube and its supporting platform formed an airtight cover to the bowl containing the condenser (Fig. 2). The bowl was lined by aluminium foil except for small inspection areas at four diameter positions. For certain tests glass plates were also detachably mounted in a frame around the bowl with an air space between.

Although such a large condenser is only slowly set in motion by the human gaze, I decided to test the effect upon it of the body generally, and placed my hands on the glass case. I found the effect was much enhanced, for within about 20 seconds the condenser was set in rotation, and such motion might amount to 45° or even 90°. I noticed also that after producing this effect it only slowly returned to the zero position, in fact the return might require half an hour.

Time and Degree of Reaction.

The latent period and the degree of rotation obtained depend on the presence or absence of the extra glass plates which latter are also covered with foil. While producing this effect the operator's vision is assisting the rotation and also appears to determine the direction of the movement obtained—i.e., whether clockwise or counter-clockwise. To produce a rapidly acting model I suspended a sheet of celluloid 2½ in. by 4 in. inside a glass beaker. The celluloid was covered with gold leaf over an area of 2 sq. in. on each surface, and was suspended by a silk fibre and furnished with a control magnet. The glass beaker was covered inside and outside by aluminium foil except for inspection windows. If two fingers are placed on the vessel for two to three seconds and then removed the card is resistance of the skin is at its lowest. How far we are justified in assuming that cerebral activity is at its maximum at this time is very doubtful. Most people have the impression that their work is better performed either in the early morning or late at night, but this opinion is perhaps of little value. We judge of our work after all by much the same standards as those by which the world at large assesses our personal value. Everyone knows that the chief conditions of worldly success are great industry combined with a fair amount of stupidity, or—to put it less bluntly—with an absence of that self-criticism that so often destroys the power to accomplish things by leading us to inquire as to whether they are really worth doing. Similarly, the greater facility with which work is conducted at hours remote from the mid-day interval may simply be an expression of the abeyance of similar critical and inhibitory processes.

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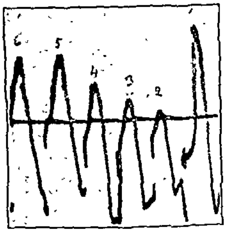
[1] A paper on this work and the instruments and effects were demonstrated by the author at the Ophthalmological Congress at Oxford on July 8th.

I have been unable, in spite of the large amount of material investigated, to secure any data as to a correlation between intelligence and the galvanic response that would appear to be sufficiently trustworthy to justify its inclusion in this review. In this connexion the work of Miss Waller appears to be highly important. She examined the galvanic responses of a class of 70 students to a series of standardised stimuli. The students shortly afterwards underwent an examination in physics. Correlating the marks obtained and the magnitude of the galvanic responses Miss Waller found that the average response of the higher placed half of the class in the results of the examination was greater than that of the lower half of the class. A further investigation on these lines is at present urgently needed.

IMPORTANCE OF LATENT REACTION TIME.

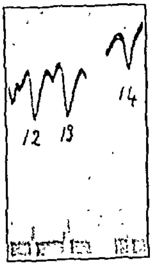
The latent time that occurs between the stimulus and the galvanic response is, as we shall see later, a matter of great importance in the elucidation of the significance of the bodily reactions. I have a large number of records, taken with the Einthoven galvanometer, which show the latent period in response to a variety of stimuli. To a physical stimulus, such as sound, the reaction time may be as long as 2·5 seconds, when the stimulus is a single loud tap on the table, whereas it may be as short as 0·8 second to a pistol shot; the latter figure was given by a young man with very large galvanic responses who was suffering from diabetes, a condition which we are accustomed to associate with hyper-excitability of the sympathetic system. *The duration of the response* is, in the case of a physical stimulus, conditioned primarily by its initial magnitude. As we have already noted, a response of great magnitude may be followed by an after-effect lasting for a considerable period, often three or four minutes. When we are dealing with verbal stimuli the latent period may be very long, the association processes necessary to evoke the response may be complex, and the duration of the response may be greatly lengthened owing to perseveration.

FIG. 6.



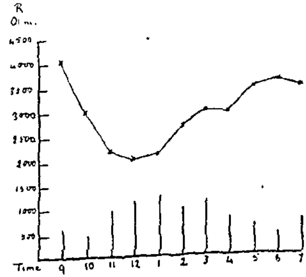
Response to series of break induction shocks. 2 coil at 10; 3 coil at 8; 4 coil at 6; 5 coil at 4; 6 coil at 2; 1 graduation 400 ohms. Final graduation omitted.

FIG. 7.



A conditioned reflex.—Upper line, the galvanometer, lower broad line the signal response. 12 and 13 are the last in a series of painful stimuli. For 14 the stimulus is short-circuited, but patient still responds on hearing the click of the key.

FIG. 8.



Graph showing rough correspondence through the day between skin resistance and galvanic reflex.

SPECIFICITY OF THE GALVANIC REFLEX TO NOCUOUS STIMULI.

I have now dealt with some of the main facts that have so far presented themselves from the study of the galvanic reflex, and I have especially dwelt on the nature of the stimuli that evoke this reflex. We have seen that to divide them into physical and psychical stimuli is from the objective point of view unjustifiable, since all these forms of stimulus have in common the property of injuring or inhibiting the normal course of vital activity. In future, in speaking of such stimuli, it will be convenient to assign to them collectively the same name that Sherrington has bestowed on those belonging to the physical class, and to refer to them as nocuous stimuli. The galvanic response is not the only type of response to nocuous stimuli that we know of. We have seen that it is an inevitable response incapable of any great degree of modification by other forms of activity, but this characteristic it shares with a number of other responses that we may study objectively. It has, however, one characteristic that at once makes its study of paramount importance in any objective investigation of neurosis, and that is that, alone of all the forms of bodily response that we shall study, it is specific to nocuous stimuli. It does not primarily occur as a bodily sign of the state of cerebral activity that we have considered already as effort.

OTHER OBJECTIVE SIGNS OF RESPONSE TO NOCUOUS STIMULI.

Now, in investigating further objective signs of the response to nocuous stimuli we shall find that we have met with all these signs in the study of effort. The diffuse increase of muscular tonus that we have already seen to be manifested both by movements of the extremities and by induration of the muscle occurs also as a response to nocuous stimuli of sufficient intensity. Fig. 9 shows a record of the movement of the foot caused by increased tonus of the quadriceps as a response to a painful stimulus. Fig. 10 is the photographic record of the increase in tonus of the arm muscles to a nocuous physical stimulus recorded by the optical lever. The movements of the head recorded by the method described in the previous lecture are, however, of a nature different from that of those elicited by effort. You may remember that the tonic response to effort was machine giving several thousand volts. At the moment of applying this electrical pressure to the plates the condenser goes into active rotation. After a moderate charge from the Leyden jar this swing subsides and the condenser comes to rest in the magnetic meridian position. If, however, the charge is large the condenser will be held for some minutes with its axis at right angles to the meridian. In this case the electric stress overpowers the magnetic pull. If the operator now looks into the open end of the condenser he will see its movement through 20–30°; when the eyes are closed it returns to its former position. Note must be made of the direction it takes. We know that left to itself the south end of the magnet will slowly turn towards the earth's south pole as the electric stress fades. If vision of the operator causes the south end of the magnet to go towards the earth's north pole I call it an anti-magnetic effect. If, however, his vision causes the reverse motion it has the same value as an effect provided it is found on removing the force (closing the eyes) that the condenser (and of course its attached magnet) returns to the stressed position at right angles to the meridian.

An important point must be made of the primary swing. It is vital to the production of the sensitiveness to vision of the condenser. If for any reason there is no swing then there will be no movement after vision is applied. In case the swing was operating by making in its passage through the air in the vessel a frictional charge on the condenser, I tested the matter another way. Taking a bar magnet and moving it round the glass case one makes the control magnet in the stirrup swing, and of course its attached condenser also swings. In this way no electric batteries or rods are used to set up the primary swing. The effect of sensitiveness to vision is still observable, though I think less actively than when using the Leyden jar method; but the experiment serves to emphasise the need of the swing and perhaps to throw light on the true nature of the vision effects. If repeated observations are made involving frequent charging of the plates the motion of the condenser becomes lazy under the static charge, but recovers after a little rest.

The electric charge will only hold for a few minutes on the jar and plates in damp weather. If dry conditions exist many vision effects may be obtained from only one charge. If, after charging, the condenser having come to rest, one discharges the jar by the insulated tongs, the condenser will show a rapid swing at the moment of electric discharge from the jar. By means of an accumulator and coil and spark gap I have tried to maintain the charge on the jar, so far with moderate success. As yet it is not easy to keep the condenser quite still, but when the apparatus is improved it will become independent of the humidity factor.

Controls and Precautions.—This system of the stressed plates is an extremely sensitive indicator of an electrostatic change. The operator must be still and seated behind a glass or celluloid screen so that no water vapour from nose or mouth can reach the glass case. His eyes are closed and no movements of limbs or other objects must disturb the vicinity of the electric field. When told by the assistant (or seeing by the spot of light) that the condenser is at rest, he will look at it and perceive that his vision has set it in motion, which can be measured on the scale. If the eyes are not opened or only the hand has been kept in the operating position there will be no effect. There must, of course, be no vibration of the room by traffic, or any mechanical disturbance of the supporting bench.

Darkness Tests.—I did four tests which seemed to give a positive result, but many more such tests would be required before a decision could be made on this point.

Probable Nature of the Effect.—There is an electrical change in the retina accompanying vision. There are also the electric changes in muscles when in action, and these will have associated electric fields. The eye muscles include the ciliary and iris and the oculomotor group. Whether the fields from these sources are adequate to account for the effects cannot be answered at present.

Heat.—Besides the evidence in the table the arrangements in Fig. 3 probably exclude this agency as a cause of the movement obtained.

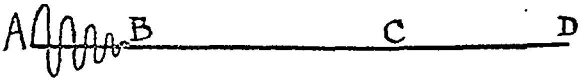
Electrostatic Force.—A force of this type cannot pass a fine metallic grid, and may therefore be considered unlikely to produce the activity observed.

Electromagnetic Force.—This group of vibrations includes a large number of rays ranging from the X ray to the wireless waves. The influence of light from the lamp seems suggestive of an influence of this type, but no critical tests have been done on these lines.

Summary.

Human vision can disturb the electrostatic state of an enclosed system. After the condenser has come to rest there must still exist a turbulence of the medium in all the types of experiment described. This turbulence appears to be reinforced or amplified by the applied vision, and is shown by (1) the activity shown by opening and closing the container; (2) the activity after rotating the condenser by the bar magnet; (3) the activity following the slight heating of the medium by the fingers on the guard plates; (4) the activity shown during the fading of the electric charges between the plates. Of course, at the time of operating these instruments by any of the above methods the turbulence is not sufficient to cause motion—i.e., the condenser has come to rest. Since the particles of any gas are always in motion it is probable that the effects of vision are only produceable when the turbulence of the medium is critical—i.e., of a certain intensity. If the turbulence has fallen below this degree the activity to vision is lost. This latter point is shown by the fact that activity to vision is lost long before the sparking power has disappeared from the Leyden jar (Fig. 4).

FIG. 4.



At point A the charge is applied causing the condenser's motion which has ceased at point B (1–2 minutes). Period B–C = the period for demonstration that the condenser is now sensitive to vision. This period lasts from three to fifteen minutes or more depending on the magnitude of the initial motion imparted to it at A and upon the dryness or humidity of the air. Sensitiveness to vision is lost at point C, and period C–D represents the further period during which a spark is still obtainable from the Leyden jar.

I do not propose to say more at present as to the probable nature of the force accompanying the act of human vision of which these experiments are the evidence. Instead I restrict the claim of my work to our possession of the instrument which affords the evidence of the force, and which is the limit of the title of this article. The only reference in the literature I have met was mentioned to me by a friend in 1919. It is a destructive criticism by Lord Kelvin of the work by a French physicist on the "Supposed New Force." After reading Lord Kelvin's paper one must, I think, endorse his view that the author failed to establish his views, as he would not even enclose his instruments to meet the objections of air or heat currents.[2]

During the course of this work, which has occupied spare time since December, 1917, I have had the advantage of criticism and suggestions by my brother Prof. Sidney Russ, Prof. A. Porter, F.R.S., Prof. Rankine, and others as to the physical aspects of my experimental arrangements.

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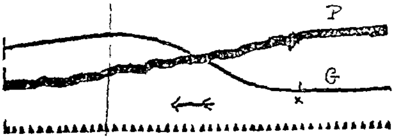
[2] On the Supposed New Force of M. J. Thore. By Lord Kelvin. (Phil. Trans., 1887, vol. clxxviii., p. 451.)

increase of tonus. The only method of plethysmographic recording that would be free from both these errors is that adopted by Weber who used an ear plethysmograph. I confess that the extremely disagreeable features of this method, which involves the working of large amounts of vaseline into the hair, have prevented me from proposing its use to the subjects of my experiments. *Fig. 13* shows a photographic record of the plethysmographic and the galvanometric responses to a nocuous stimulus. It will be observed that the latent period is identical in the two forms of response.

RESPONSES TO BENIGN STIMULI.

Now so far we have considered the bodily response to nocuous stimuli, that as to stimuli that tend to disturb and destroy life, and we have, moreover, noted that the sensory concomitant of such responses has been a feeling of an unpleasant nature. We may now fairly envisage the question as to what are the responses to stimuli that tend to further and perfect life—what we will call benign stimuli—which so far as they have any sensory reaction affect us pleasantly. Since the galvanic reflex is the only response that we have so far been able to study that is specific to nocuous stimuli and is not elicited by effort, it is to this reflex that I shall first turn for an answer. I have found that to stimuli of a benign nature there is either no response at all or else a slow increase in resistance occurs; but this slow alteration of resistance is only to be noted when the preceding state is one of the low resistance that we consider to be indicative of general bodily activity. If, after a series of painful or vexatious stimuli the attention of the subject be diverted to more pleasurable matters, the lowered resistance rises gradually until a point above the initial neutral state has been reached. If a hungry subject be given a satisfying drink and appetising food the resistance will show a slow increase. If a subject who has taken up his position, rather dreading a series of irksome experiments with painful electrical shocks, be told that for that séance the observer only purposes to take some simple pulse records this welcome news is followed by a slowly developing increase of resistance. The response with which we are dealing has none of the brusque and decided characteristics of the galvanic response to nocuous stimuli; its slow and variable onset and the indefinite nature of the stimuli that tend to arouse it do not allow of any formulation of the latent period of this increase of resistance. I have never seen it occur under five seconds with the type of stimulus that I have been considering. This indefiniteness may partly be attributed to the method of experiment—to attempt to produce such a violent reaction as that which we characterise as joy is, under the conditions of the somewhat dreary experiments conducted in the laboratory, a practical impossibility. The muscular tonus response that has been found to be evoked by both effort and nocuous stimuli cannot, of course, give the same clear-cut answer as the specific galvanic reflex, but the tendency is in the same direction. When the painful stimulus is removed the muscular hypertonus relaxes slowly, and ultimately relief from pain is characterised by a far higher degree of relaxation than that found at the onset of the stimulus. This relaxation is well shown in Fig. 10. The pulse-rate becomes slower after the nocuous stimulus, and this slowing may be observed in the galvanometer curve of reaction to a pistol shot (Fig. 1). In this case, before the stimulus was administered, the pulse-rate had been more rapid than normal, and immediately after the stimulus was still further increased for a couple of beats and then becomes slower. We have here, therefore, a complex result of two different forms of excitation—the suggestion that a disagreeable experience is to be undergone, and the stimulus itself. It is characteristic of the cardiac response that its duration is almost confined to that of the stimulus itself; hence the slowing that occurs after relief from the stimulus may be actually present while the other forms of response, such as the galvanic reflex, are still in progress. The response, therefore, to a benign stimulus is a diminution of organic activity. Philosophers of all ages have frequently drawn attention to the superior efficacy of pain as a vital stimulus. So far as an objective study of these reactions has taken us the reaction to a benign stimulus is only presented as a relief from the previous activity occasioned by a nocuous stimulus. It is not possible here to follow the line of thought suggested by these experimental results and to inquire whether benign stimuli with their pleasurable sensory aspects should not be considered merely as an interruption of the stream of nocuous impulses that spur the organism to activity. Theophrastes, quoting Anaxagoras, tells us that to feel is to suffer *ἄπασαν αἴσθησιν μετὰ λύπης.* If we substitute for the definite presentation of the specific sensation the vague affective state that accompanies a nocuous stimulus, the dictum of the early Greek philosopher holds true. Pain is the fundamental fact and pleasure nothing but relief from pain. It will be objected that moments of great joy are certainly accompanied by the exhibition of bodily activity—the winning side cheer and clap their hands—the dog will bound with pleasure when he recovers his lost master. This difficulty is easily dealt with. Such exhibitions of activity are not specific responses to the benign stimulus. They are not directed to the prolongation or the curtailment of the bodily reaction to the stimulus. They appear to be a compound of at least two factors, the discharge of certain reflex activities that have been inhibited by the tension of the muscular system, and the appearance of a specific type of nervous activity—the instinct to communicate with others.

FIG. 13.



Simultaneous record of galvanic (G) and plethysmographic (P) responses to a prick, x.

A great deal of confusion has been occasioned by statements to the effect that the vasomotor reactions studied by the plethysmograph show an active dilator response to pleasurable stimuli which is in every sense the antithesis of the constrictor response to disagreeable stimuli. This statement, which is unfortunately copied from text-book to text-book, is based, as Shepherd has shown, on a very few experiments of Lehmann, which have not been confirmed by other observers. Using my own modification of the plethysmograph I have only succeeded in demonstrating the same type of slow return to the normal state from a vasoconstriction due to a nocuous stimulus that we have seen to occur with the galvanic response.

The objective study of these bodily responses to stimuli possessing feeling tone lends some support to the tridimensional theory of feeling of Wundt and the later somewhat similar view advocated by Royce. Without entering into any discussion of these questions it is still important for the understanding of neurotic disturbances to realise the plurality of the bodily responses that go to the make up of an affective state.

DONATIONS AND BEQUESTS.—By will the late Mr. Frederick Ernest Muntz, of Umberslade Hall, Warwick, has given among other bequests, £2000 to the Birmingham and Midland Free Hospital for Children; £1000 each to the Home for Incurables, Leamington, the Institution for Deaf and Dumb Children, the Royal Institution for the Blind, Birmingham University, and the Institution for the Feeble Minded, Knowle; and £500 to the Birmingham Y.M.C.A.

all-important, and must be adjusted with scrupulous care. Phenolphthalein was used as indicator in the titration, which was carried out at boiling point. The plates having been incubated for 24 hours, suspicious colonies were transferred to Russell's double sugar agar, in which Andrade's reduced fuchsin was used as indicator. On this medium it is usually possible to observe gas formation after 12 hours' incubation, and so to weed out the non-dysentery organisms.

The growth obtained on Russell's medium was then agglutinated macroscopically on a slide with Dreyer's Oxford Flexner serum, the reaction, if positive, appearing in about 15 seconds. If agglutination appeared thus the case was treated as a positive. It was therefore possible to send out a laboratory report on the specimens of fæces well within 48 houss. This rapidity of diagnosis is extremely important from an epidemiological point of view. As a confirmatory test the organisms were subcultured and grown on the "sugars," and, in addition, were agglutinated macroscopically with Dreyer's Oxford serum to full titre. It was found in practice that no organism which passed the rough test failed to pass the more detailed and delicate one.

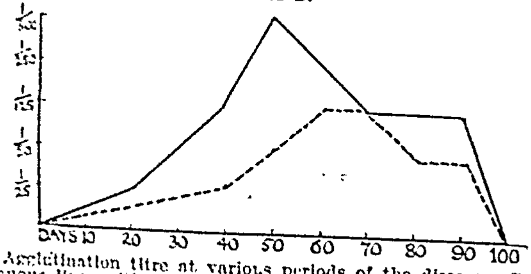
The bacillus was non-motile and Gram-negative, and, while producing acid without gas on glucose and mannite, it left lactose and saccharose unchanged. It is interesting to note that from two of the cases of diarrhœa from which the Flexner type bacillus was not isolated, *B. pyocyaneus* was obtained in almost pure culture. In the case of one patient who died, although there was extensive ulceration of the intestine reaching practically as high up as the duodenum, only cultivations from the rectal contents yielded the Flexner type bacillus, none being present in cultures taken from the higher parts of the intestine or the internal organs.

Agglutination Tests.

Frequent agglutination tests were carried out on the serum of all those patients whose fæces had been proved positive bacteriologically, and also on some cases whose fæces did not yield positive results. Dreyer's standard Oxford antigen was used in all cases, and latterly another Flexner type antigen, kindly supplied to us by Prof. Dudgeon, of St. Thomas's Hospital, was used in addition.

Several facts of fundamental interest were collected. It was found that, with Oxford antigen, the first trace of agglutinins appeared at the end of the sixth week, and that agglutinins had disappeared at the end of the fourteenth week; while with Prof. Dudgeon's antigen agglutination began to appear about the beginning of the fourth week, and had disappeared at the end of the fourteenth week also. Maximum agglutination was obtained with Oxford antigen between the eight and tenth week, and with Prof. Dudgeon's antigen in the seventh week (Chart 2). No case in which the fæces were negative bacteriologically gave a positive agglutination with either antigen. Many agglutination tests were performed; using the organisms isolated from the cases themselves as antigen. The curves thus obtained conformed roughly with those given by Oxford antigen and that of Prof. Dudgeon.

CHART 2.



Agglutination titre at various periods of the disease. Continuous line, with Dudgeon's antigen. Interrupted line, with Dreyer's antigen.

Shaw Bolton and Nabarro[2] have carried out extensive investigations on the agglutinins in dysentery. They state that a positive reaction occurs early in the disease, and that many apparently healthy persons, who are not known to have suffered from dysentery, give a positive reaction, thus raising the question of the possibility of unsuspected carriers. Our results are not in accordance with their findings.

Conclusions.

1. It is of paramount importance that the fæces of all cases of clinical dysentery and diarrhœa be examined in the laboratory. 2. Having regard to the fact that primary attacks and relapses may be so slight as to pass unnoticed, and the possibility of every case remaining a chronic carrier, very strict observation and a system of permanent isolation are necessary in order to prevent the spread of the disease. 3. Agglutinins are present in the blood of affected patients only after the fourth week of the disease, and therefore agglutination tests are of little diagnostic value.

SEROLOGICAL TYPES OF PNEUMOCOCCI IN LOBAR PNEUMONIA.

A STUDY OF 100 CASES.

BY FRED. GRIFFITH, M.B., CH.B. VICT., D.P.H.

(From the Pathological Laboratory of the Ministry of Health.)

THE study of the immunological types of pneumococci has been shown by the workers of the Rockefeller Institute in America and by Lister in South Africa to be of great importance in the prevention and treatment of lobar pneumonia. The existence in this country of the types defined by the American workers had been established, but the information which has been published in respect to their distribution is still somewhat scanty.[1] I therefore propose to contribute my observations on the serological characters of strains from 100 cases of lobar pneumonia which I have classified according to the American method. The standard type strains upon which the classification is based were presented by Prof. Flexner to Sir George Newman, who made them available for the purposes of this inquiry.

Preparation of Monovalent Agglutinating Serums in Rabbits.

Adult rabbits were used, being immunised by the intravenous inoculation of pneumococci in ascending doses. The suspensions of pneumococci were obtained by centrifuging broth cultures, the deposits from which were generally diluted with some uncentrifuged broth culture. The inoculations were made on three consecutive days and were followed by a rest of from five to seven days. For the first three series of inoculations the culture used was killed by heating to 60°C. for half an hour, and was prepared freshly for each series. The immunisation was continued with living culture, beginning with a fraction of a cubic centimetre of broth culture and gradually rising until the whole of the deposit of 20 c.cm. of broth culture was administered at a dose. The total period of treatment was 10 weeks; the animals were bled within 10 days after the last inoculation. The serums were tested upon pneumococci from broth culture suspended in salt solution, and gave for types 1 and 2 a titre of 1:320 and for type 3 1:640. These serums were re-tested after being preserved in a sterile condition in the ice-chest for 10 months; they showed no appreciable diminution in potency. No reaction with heterologous strains—e.g., type 1 serum against types 2 and 3, &c.—was obtained in dilutions of 1 in 20.

In a second series of rabbits some observations were made on the progress of immunisation. Treatment commenced with suspensions of heated broth culture, preserved with 0·5 per cent. carbolic acid, and continued for five weeks, inoculations being made on three successive days, followed by an interval of rest. The serums then showed titres ranging from 1:20 to 1:40 for the four type 1 rabbits, and 1:4 only for the three type 2 animals. The treatment was continued, but with a fresh heated suspension of each type;

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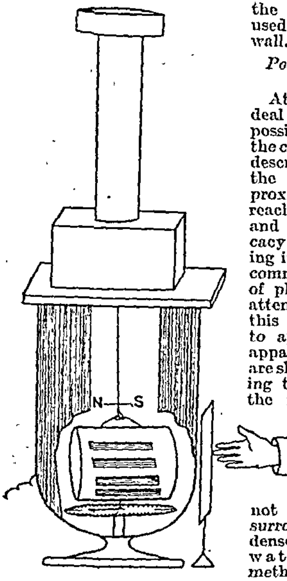
[1] A report on this subject has been published by R. R. Armstrong, Brit. Med. Jour., Feb. 10th, 1921.

FIG. 2.



The shaded portions represent metal.

seen to rotate towards the side of the hand used to touch the vessel wall.

Possible Influence of Heat.

At this point I will deal with the obvious possibility of heat being the cause of the motions described. Heat from the hands and body proximity is, of course, reaching the apparatus, and we know the delicacy of the heat-recording instruments at the command of the science of physics. I did not attempt to measure this heat, but decided to apply heat to my apparatus. The results are shown in the following table, and I think the inference is that heat is inadequate to explain the effects observed. I found the effects much reduced, though not abolished, after *surrounding the condenser by a jacket of water, paraffin, or methylated spirit.*

Heating experiments of the cases containing the condensers were undertaken in two ways: (1) Radiant heat from one or two candles 3 inches from the glass plates surrounding the large condenser (Fig. 2) were almost entirely negative up to periods of six minutes; (2) water heated to the temperatures shown in the table was placed in metal vessels against the glass plates, which were covered also with metal strips and the areas of contact arranged were several times as large as the contact area of the human fingers.

After placing the hands on the metal area of the guard plates the condenser moves after 30 seconds and usually travels through from 10° to 15° within two minutes. In the hot-water experiments there was no vision applied.

Hot Water in Metal Vessels on Sides of Case.

Glass guard plates covered with metal and paper.

		Min.				Min.	
1	Water at 40° and 42° C.	1–6	Zero.	1	Boiling water.	1–6	Zero.
		6–12	3° A.			6–12	2°–10° A.
2	Water at 45·2° and 44·8° C.	1–2	Zero.	2	Boiling water.*	2	Zero.
		2½	2° A.			2½	2° A.
		3	Zero.			3	3°.
		5	Zero.			5	2°.
3	Water at 45° C.	1	2° A.	3	Boiling water.	1½	Zero.
		1½–3½	Zero.			2½	2° A.
		4–5	2°.			4	2°.
						5	1°.

* Temp. at end of experiment = water 77° and 73° C.; hot sides of bowl, 17·2°; cold sides of bowl, 13·3°. A = Anti-clock.

Effects of Vision Alone.

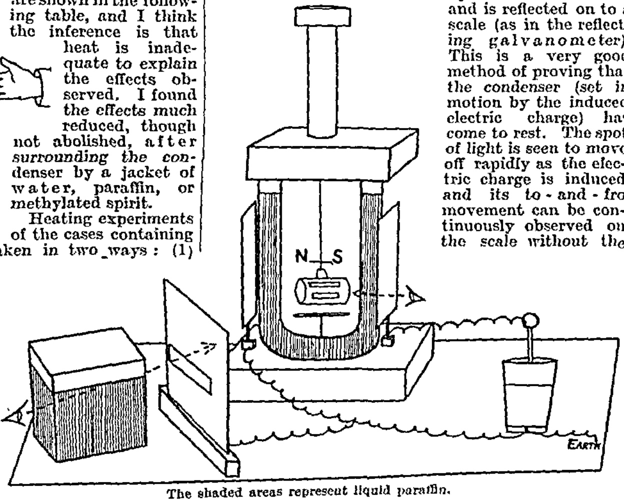
Glass Rod Method.—Remembering the activity referred to when replacing the coils and condensers in their cases, I decided to try the effects of charging them *electrically by induction. If a glass* rod rubbed with silk approaches the glass case (Fig. 3) the condenser goes into rotary motion, and when this has ceased it comes to rest in the magnetic meridian.

It is now sensitive to vision, and may, therefore, not be looked at until it has come to rest. This moment may be ascertained by a glance at its reflected image in a mirror 10 feet away. When at rest its sensitiveness to vision only lasts about 30 seconds, depending on the force of the initial swing given by the rod's approach. If the eye looks through the fluid and slot at the optimum period it will see the condenser go into active rotation which may amount to 30° or 45°. The sensitiveness is brief and can only be renewed by re-charging with glass rods.

This method is one I used at first, but it is difficult and not quite satisfactory when demonstrating to others; I have therefore improved upon it.

Spot of Light Method.—A small mirror is fixed to the stirrup on the end of the silk fibre. This mirror moves with the stirrup and its attached condenser. Light from a lamp near by falls on the mirror and is reflected on to a scale (as in the reflecting galvanometer). This is a very good method of proving that the condenser (set in motion by the induced electric charge) has come to rest. The spot of light is seen to move off rapidly as the electric charge is induced and its to-and-fro movement can be continuously observed on the scale without the eyes being directed at the condenser. When the spot of light has been seen to come to rest it will be found that human vision now directed at the condenser sets it, together with the spot of light, into rapid motion, which may be so large as to take the latter quickly off the scale. Special caution is, however, needed in connexion with this method, for I failed repeatedly in trying to use it until I had noticed that no light from the lamp must be allowed to fall on the condenser. This is easily managed by interposing a screen of black paper or the equivalent between the lamp and the condenser. The little mirror in the stirrup is above the level of the condenser, and the small beam needed to give the spot of light is easily provided and focussed by means of a lens if desired.

FIG. 3.



The shaded areas represent liquid paraffin.

Charge Plates Method.—In Fig. 3 the method is shown. Two metal plates are embedded in blocks of sulphur and mounted by the sides of the instrument. One is connected to the outer coating of a Leyden jar and is also connected to earth. The other plate embedded in the insulating sulphur is connected to the inner coating of the jar by a spring or chain and cap contact with the knob of the jar. The Leyden jar is charged by contact with an electrical friction

This work has been made possible by the kindness of the medical officers and pathologists of various Poor-law institutions in providing material, and I wish to express my indebtedness to Dr. J. R. Perdrau, Dr. R. C. Harkness, Dr. W. Brander, and many others. I am also indebted to Prof. E. E. Glynn, who has kindly sent me specimens of each of the three American "fixed" types which he has isolated from cases of pneumonia. These I have found to conform to my own standards.

THE DIAGNOSIS AND TREATMENT OF STERILITY IN THE MALE.

By KENNETH M. WALKER, M.A. Camb., F.R.C.S. Eng.,

IN CHARGE OF VENEREAL DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL; SURGEON WITH CHARGE OF GENITO-URINARY CASES, MILLER HOSPITAL FOR S.E. LONDON.

Although the subject of sterility has long attracted the attention of the medical profession, and although much has been written on its causes and treatment, it cannot be claimed that the practical results obtained up to the present are satisfactory, or that when consulted for sterility the medical man of to-day can hold out to his patient much more hope of successful treatment than the medical man of 50 years ago. Our failure in this respect is in the main due to our ignorance of the physiology of reproduction. Attention has been focussed almost entirely on questions of anatomy. The discovery of a contracted cervix or of a retroverted uterus is hailed with delight by the medical man consulted for sterility. Even although he can recall innumerable cases of conception in women suffering from similar disabilities he feels that retroversion is an abnormality, and that, as it is a condition capable of correction, the first essential to treatment is the remedying of the retroversion. So also is it in the case of the male. The husband of a sterile wife is examined for gross abnormalities. If the external genitalia appear well formed and spermatozoa are discovered in the semen he is passed as normal.

In text-books dealing with sterility in the male, hypospadias, epispadias, cryptorchism, exstrophy of the bladder, stricture, and impotence are given as causes of sterility. In actual practice such conditions, with the exception of the last-named, are seldom encountered, and therefore as causes of sterility their importance is trifling. Yet, as all modern statistics show, the male is frequently the partner responsible for a sterile marriage. If, therefore, the possibility of male sterility is to be excluded something more than a search for gross abnormalities must be undertaken. The examination must be as exact and as thorough as modern methods will permit. It is with an idea of indicating the lines along which such an examination should be made that the following has been written.

Method of Investigation.

The investigation of the male suspected of sterility resolves itself into two parts: a careful overhauling of the genital tract, and an analysis of the seminal fluid. At the preliminary visit an inquiry is made into the past history, special regard being paid to infection, venereal or otherwise, and to the existence or not of any abnormalities or difficulties in the sexual life of the individual. Although it cannot be claimed that the examination of a condom specimen is an ideal method of investigation it nevertheless furnishes information of great value. In connexion with this examination the following points should be borne in mind:—

1. The specimen should be as fresh as possible. Although mobile spermatozoa may occasionally be found ten hours after emission little reliance can be placed on an examination in which so long an interval has been allowed to elapse. It must also be remembered that the optimum temperature for the conservation of mobility is comparatively low. If active spermatozoa be placed in an incubator at 37° C. movement will, as a rule, have disappeared at the end of two hours. At 27° C. mobility is more likely to be retained.
2. A period of abstinence from sexual relations of a week's duration must be prescribed previous to the examination.
3. In the event of the first specimen proving abnormal at least two subsequent examinations must be made before an adverse report is issued. It not infrequently happens that after failing to find spermatozoa on two occasions an investigator will discover their presence in the third specimen submitted for examination.

The semen to be regarded as satisfactory must contain a plentiful supply of well-formed and mobile spermatozoa, and must reveal no abnormal elements such as pus cells, indicative of an unhealthy condition of the genital tract. In considering the character of the spermatozoa and estimating the fertilising efficiency of the semen the following points must be noted:—

1. The number of spermatozoa seen in an average field.
2. The percentage of spermatozoa perfect, imperfect, or deformed.
3. The percentage of spermatozoa that are mobile, their degree of mobility, and the time during which mobility persists.

Oligozoöspermia.

Lode has estimated that about 260,000,000 spermatozoa are emitted in one ejaculation. The faintly acid reaction of the vaginal secretions and its abundant flora are not conducive to the long life of the spermatozoa, so that but few reach the cervical canal. It is easy to see, therefore, that a diminution in the number of spermatozoa in the semen lessens the chance of fertility. The number of spermatozoa found in the semen is reduced in extreme youth and in old age. It is, moreover, subject to variation in the same individual according to fluctuation of general health, and in all probability to seasonal changes. Although man has escaped from the rigid œstral cycle, to which the majority of the lower animals are bound, it seems probable that his freedom is not absolute. When one recalls the enormous increase that takes place during the breeding season in the size of the testes and accessory glands of the sparrow and the hedgehog, it would appear anything but surprising that the sexual activity and fertility of man should also show some tendency to a seasonal fluctuation.

Amongst the causes of a pathological oligozoöspermia are inflammatory conditions of the genital tract and their sequelæ, sexual excesses, certain diseases of the nervous system (both functional and organic), chronic alcoholism, and, indeed, any condition causing a marked impairment of the general health.

Azoöspermia.

The consistent absence of spermatozoa from the semen may be due to one of two causes: (*a*) the existence of a mechanical obstruction in the genital tract; (*b*) the absence of spermatogenesis in the testes.

Diagnosis.

Before any prognosis can be given or any treatment suggested it is essential than an exact diagnosis should be arrived at, and the case allocated to one of the above two classes. For this purpose the genital tract must be carefully overhauled. The situations at which obstructions are usually found are at the lower pole of the epididymis and in the course of the ejaculatory ducts. These obstructions are almost invariably the sequelæ of old inflammatory reactions, and in 60 per cent. of cases are due to gonorrhœa. Next in importance to gonorrhœa as a cause of obstructive sterility comes tuberculosis. Even when one epididymis alone has been attacked azoöspermia is likely to result, owing to involvement of the prostate and vesicles. Out of 22 cases of genital tuberculosis examined by the author, 20 gave indications of prostatitis or vesiculitis, and were therefore liable to obstruction of the ejaculatory duct. It is not claimed that these prostate lesions were necessarily tuberculous in nature, but merely that the prostate or vesicles gave evidence of chronic inflammation, and were, therefore, capable of exercising an unfavourable influence on the fertility of the patient. Syphilis as a

THE ÆTIOLOGY OF BACILLARY DYSENTERY IN ASYLUMS.

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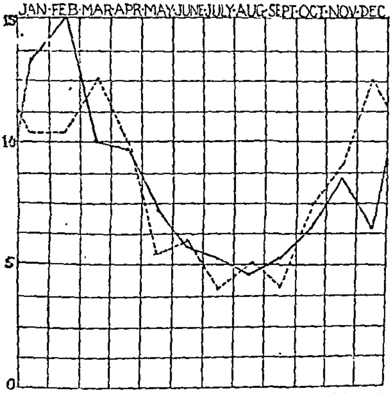
The question of asylum dysentery is of such interest to those concerned with the care of the insane that from time to time much useful investigation has been undertaken in the hope of establishing its ætiology. The present state of our knowledge may be summed up in the words of Tidy, who says, in his "Synopsis of Medicine," "No specific organism is present, but bacteriological and serological investigations have indicated bacilli of the Flexner group." The study of a small series of cases which occurred in Claybury Mental Hospital during the earlier months of this year has yielded such definite results that it appears worthy of special note.

In 1900 Mott and Durham made a comprehensive study of dysentery in Claybury, and, although they were unable to isolate any specific organism, they showed clinically and post mortem that it resembled the bacillary type of the disease rather than the amœbic. Many observers have from time to time claimed to have discovered amœbæ in the stools of patients, but their results require confirmation.[1] In spite of all efforts to control it, dysentery has in the past been the cause of a large amount of the sickness in asylums, as well as a considerable percentage of the mortality. Thus, during the year 1919, in 80 county and borough asylums 1722 cases of dysentery were notified, and of these 384, or 20 per cent., died, forming 3 per cent. of the total number of deaths.

CHART 1.



Continuous line shows monthly incidence of cases of dysentery in 80 county and borough asylums expressed as percentages of the total for 1919. Interrupted line shows monthly incidence of cases of dysentery in Claybury female wards, 1909–1920.

Contrary to the accepted view that dysentery is a disease of hot weather and is generally spread by flies, the highest incidence of cases in Claybury occurs during the winter months. Chart 1 is constructed from a monthly average of cases occurring in the female wards during the years 1909 to 1920. The published statistics of the Board of Control for all the asylums of England and Wales show roughly a similar incidence.[2] Figures from the Ministry of Pensions and the Army for 1920, kindly supplied to us by the Ministry of Health, show a remarkable similarity to our own, over 50 per cent. of the total number of cases being reported during the period of January to April. It would therefore appear that asylum dysentery spreads not so much through flies as through some more direct method from patient to patient, especially during the winter months, when the patients are confined within doors for a greater number of hours per day on account of climatic conditions.

Carriers.

It is usually taken for granted that certain patients who have suffered from dysentery become carriers, and are therefore capable of disseminating the disease for a more or less protracted period after the acute stage has passed. One of our patients, who has relapsed seven times in eight years, is probably a carrier. She has been free from acute symptoms for several months, and examination of her fæces at the present time fails to reveal the presence of an organism of dysentery. On the other hand, slight transient attacks, which may pass unnoticed in a previously healthy patient, may yet be of great danger as a source of infection. For example, a patient who was confined to bed for mental reasons on one occasion passed a loose motion in which a small quantity of blood was noticed. This was kept for examination, and produced a Flexner type bacillus on culture. The serum of this patient, at the end of the eighth week, agglutinated Prof. L. S. Dudgeon's antigen in a dilution of 1 in 125.

The question of relapsing cases who are probably carriers has been raised, and it is interesting to note in this connexion that of 590 patients who suffered from dysentery in Claybury during the past 12 years, 18 per cent. relapsed once, 6 per cent. twice, and 3 per cent. three times. In mild cases the dysentery bacillus disappears from the fæces in a few days, and the patient has apparently made a rapid recovery. We have, however, noted that not infrequently a relapse has occurred within a few weeks after the fæces had been reported negative on several occasions. A patient who has had an attack of dysentery thus remains a possible source of infection to others, especially as mild, transient relapses may pass unnoticed in patients who are too demented to appreciate slight irregularities in their bodily functions.

To ensure the complete eradication of the disease from asylums, it would therefore appear necessary to carry out a very complete scheme of permanent isolation, and to treat every dysentery case as a potential permanent carrier. This principle is at present applied in Claybury, and all cases in the epidemic here reported occurred in wards where patients known to have previously suffered from dysentery were housed.

Bacteriology.

Seven cases occurred during the first four days of the outbreak, and from the fæces of all of these a bacillus of the Flexner type was cultivated. The patients affected were isolated in single rooms, and a strict watch was kept for any suspicious cases of diarrhœa, several of which occurred during the subsequent two months, and were investigated. During that time an identical bacillus was found in five more cases. The system of isolation of positive cases was persisted in, and, at the time of writing, no case of clinical or bacteriological dysentery has occurred for over a month.

The method employed in examining the fæces was as follows:—The specimen was taken from the motion and sent to the laboratory on a swab similar to a throat swab. This was found to be a very handy, clean, and efficient method of collecting specimens. If preferred, the swab may be introduced into the rectum of the patient, and the mucus from the wall of the rectum thus obtained directly. The latter method was employed extensively during the war, and was found to be excellent. It also has obvious practical advantages.

MacConkey's medium was used for plating, of a reaction of + 4 acid. The reaction of the medium is

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[1] Archives of Neurology, vols. ii. and iii.

[2] Report of the Board of Control for 1919, Part I.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

EXTRUSION OF A RENAL CALCULUS

CAUSING A SINUS IN THE LOIN.

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THE following case is recorded as unusual, and presenting special features of interest:—

History.—N. G., a native Arab village woman, aged about 30, came to hospital from Nablous on Oct. 18th. She stated that she was suffering from a wound in her back, which had been discharging for a year. She said that she knew of no cause for this "wound"; no history was obtainable of injury, acute illness, pain, or disability of any kind. In the Moslem idiom, she stated that it was "Min Allah"—in other words, it had developed spontaneously; apart from the wound she felt very well.

On examination she proved to be a fine, apparently healthy woman, who had all her life been accustomed to the hardest manual labour in a country where all the heavy work is done by women. Nothing abnormal was discovered in chest or abdomen; the spine showed no tenderness, deformity, or rigidity; the urine was quite normal, specific gravity 1015, slightly acid, no albumin, no blood, no casts, no deposits of any kind visible to the naked eye. Over the left loin, about 2 in. from the middle line, at the level of the first lumbar vertebra, was a wound, or sinus, discharging yellow pus of a thin consistency; there was no urinary element in the discharge. The sinus passed downwards and outwards; a probe was inserted and a foreign body was discovered lying 1 to 1½ in. from the surface. This body felt like dead bone. A provisional diagnosis of tuberculous abscess was made. The difficulty lay in the origin of the "dead bone"; the wound was above the crest of the ilium, quite a distance from the vertebra, and the twelfth rib could be traced intact above. The patient was admitted to hospital, where her temperature for three days remained subnormal and her pulse-rate 70–80.

Treatment.—On the 22nd she was anæsthetised and a transverse incision was made with a view to enlarging the opening of the sinus. A probe was now passed beyond the foreign body, and the sinus found to go directly in the direction of the left kidney. The supposed bone was grasped by necrosis forceps and pulled out through the enlarged exit wound. It was found to be a large renal calculus, roughly circular in circumference, and somewhat loaf-shaped. It was encrusted thickly with what was presumably uratic substance, and the interior, I imagine, was uric acid (I did not cut it up owing to the patient's desire to possess the trophy); the diameter of the stone would be about five-eighths of an inch. The sinus was then thoroughly cleared, packed with iodoform and drained, the remainder of the wound being sutured. She has made a good recovery: in no way affected by a temperature of 101° F. the night after the operation, and 103·5° the next night; this proved upon blood examination to be due to the ubiquitous malarial parasite, and speedily yielded to appropriate treatment. The sinus is healing up from the bottom, and although once in the daily dressing I washed out of the wound some gravelly material, there has not been the slightest urinary odour, nor any evidence of the presence of urinary matter in the discharge.

Remarks.—The woman, who was carefully questioned in view of the findings above, still denied any history of pain such as renal colic, and stated that she never had any pain during micturition. never suffered from frequency, nor had she had any passage of gravel. Her obstetric history had been uneventful. The history in these cases is notoriously inaccurate, but there seems no reason to suspect deception. The patient is an exceptionally intelligent woman for her class and race. In these days such cases must be fairly rare; even in Palestine the native usually seeks medical advice comparatively early. Nothing either in the history, symptoms, or urinary investigation led us to suspect the renal cause of the trouble; true, there were difficulties in the spinal caries diagnosis, but tuberculosis, especially of bones and joints, is very prevalent amongst the Fellaheen and Bedouin Arabs, and to suspect renal calculus in the absence of any indications of an affection of the kidney seemed to be uncalled for.

I have no access to the literature of similar cases, but I seem to remember that most, if not all, of the recorded cases have given rise to suspicions as to their causation, by some, at any rate, of the symptoms and signs so conspicuously lacking in this case. It was quite a minute before I realised that I was looking at a renal calculus, and not at the possible result of an attack with a slung stone from the rear.

A FURTHER NOTE ON THE

LYMPHOIDOCYTE AND ITS CLINICAL SIGNIFICANCE.

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IN a previous communication to THE LANCET of July 19th, 1919, I recorded the finding of lymphoidocytes—which are regarded as the parents not only of leucocytes and lymphocytes but of red cells also—in the circulating blood in fatal illnesses other than primary anæmia. I have since extended these observations, and give a brief summary of the results.

Twenty-six patients were selected, who were described as moribund, and who certainly appeared to be in extremis. Lymphoidocytes were found in 24, associated in every case with a marked leucopenia and the presence of leucoblasts—the parent both of leucocytes and lymphocytes—and in six cases with a few myelocytes also. The diagnosis is as follows: Diabetic gangrene 3, carcinoma with generalised metastases 3, senile decay 2, advanced tuberculosis 6, cardiac valvular disease with broken-down compensation 7, severe malaria 1, relapsing fever (with presence of the characteristic parasites) 2. All of these subsequently died. The two remaining somewhat unexpectedly recovered, and the lymphoidocytes could no longer be found. One was suffering from alcoholic pneumonia and cirrhosis of the liver, and the other from influenzal pneumonia.

In addition, I have observed 15 cases of primary disease of the hæmopoietic organs—namely, lymphatic leukæmia 6, "pernicious" anæmia 3, secondary carcinoma of the bone-marrow 2, myeloid leukæmia 2, Banti's disease 2, in all of which death took place, and lymphoidocytes were present in the circulating blood. The proportion of lymphoidocytes in the films varied in the first series from 3 to 11 per cent., and in the second from 5 to 20 per cent. I do not, however, suggest any correlation between these proportions and the severity of the disease, as it is by no means certain that the proportion of primitive cells of various types does not vary from time to time when they are present.

These observations show that the appearance of the primordial cell in the circulation is not confined to disease of the hæmopoietic organs, though I have been unable to find any record of their presence in man except in the leukæmias. So far as this goes, it serves, I think, to emphasise the importance of studying the histological features of the blood cells instead of merely relying on their numerical proportions as found in a mechanical count where they are classified under rigid types. It is frequently possible not only to trace in the same film gradations between the recognised mature cells and their progenitors, but also to observe a shift towards one or the other end as the patient improves or gets worse, and it is therefore probable that as our knowledge of the biology of the blood cells deepens, the opinion of the pathologist on the extent of the patient's resistance to disease in general will become of increasing service to the clinician. The value of a mechanical count with the hæmocytometer is but small, unless it be supplemented by a histological study of the cells themselves in properly stained films. For this purpose I have found Leishman's stain useful for a general survey of the film, but for the finer details Pappenheim's panoptic stain is preferable and less liable to variation. Latterly I have come across no fewer than five different samples of alleged Leishman stain which were quite useless for hæmatological work, and could not be made to give the characteristic reactions by any manipulation whatsoever.

a series of four successive daily inoculations was given, each rabbit receiving the deposit of 300 c.cm. of broth culture. A week later the serums were re-tested. The type 1 rabbits showed little improvement but the three type 2 serums now agglutinated the homologous culture in 1:10, 1:20 and 1:40 dilutions respectively. Then immunisation was continued with living culture, and at the end of a further six weeks the serums were re-tested. Two type 2 serums agglutinated to 1:80 and 1:160 and one type 1 serum to 1:160. The other three type 1 rabbits died 58, 82, and 83 days after the beginning of immunisation. They had tolerated doses consisting of the deposit of 10 to 30 c.cm. of living broth culture and up to a few days before death appeared to be in good health. In each case, however, advanced pneumococcal endocarditis of the left auriculo-ventricular valves was found. Type 1 pneumococci were recovered from the vegetations and were found to be highly virulent for mice. Serum derived from the heart blood of one of the rabbits after death protected mice against infection with the above strain. Thus the injected pneumococci set up disease in spite of the presence of protective substances in the blood.

It would not be safe to generalise from these few experiments in immunisation, because so much depends upon the idiosyncrasies of the individual rabbits; they suggest, however, the necessity of using considerable amounts of culture and the probability that more active and more permanent agglutinating serums can be prepared by the use of living culture than with culture killed by heat.

Isolation of Pneumococci.

In 88 out of the 100 cases of lobar pneumonia which I have investigated the pneumococci were isolated from sputum; in 10 they were obtained from consolidated lung, and in 2 from both lung and sputum. The specimens were generally at least 24 hours old before examination, and were often sent to the laboratory through the post. The material was inoculated intraperitoneally into a mouse, which was usually found dead or dying the next morning. Cultures were made from the heart blood on blood agar plates and into blood broth. If the blood of the mouse was found to contain bacteria in addition to pneumococci, a pure culture was made from single colonies from the plate. Where the mouse died from uncomplicated pneumococcal septicæmia the strain was carried on from the blood broth culture. After incubation at 37°C. over night, the blood broth cultures were placed in the ice-chest and were subcultured every two or three weeks, so long as the strain was required. In order to preserve the strain without loss of virulence, the mouse's spleen was removed and placed in a sealed tube after being dried in vacuo according to Heim's method.

Determination of Type.

The agglutination tests were made with the rabbit serums prepared, as described above, from the standard strains of types 1, 2, and 3. For the purpose of rapid identification of type the American method was followed, with a slight modification.

The peritoneal cavity of the mouse which had died after inoculation with sputum, &c., was washed out with about 5 c.cm. of salt solution. The washings were centrifuged at a low speed to throw down the fibrin and cells. The supernatant fluid was mixed with an equal quantity of a 1 in 10 dilution of each of the three type serums. This differs from the American procedure, in which either the pneumococci from the washings are re-suspended in salt solution and used for an agglutination test, or the perfectly clear supernatant fluid is used for a precipitin test. The modification, which was adopted on account of the lack of a sufficiently high centrifugal speed, appears to be quite satisfactory. If the pneumococcus belonged to one of the three types a reaction occurred almost immediately. The fluid became more turbid and clumps rapidly formed, the process being hastened by incubation. The readings were taken after the lapse of an hour only, as often a precipitate of fibrin occurred in all the tubes after more prolonged incubation. In the case of a type 3 infection the peritoneal washings were generally mucinous, but this condition was also found on a single occasion in both a type 1 and a type 2 infection.

The result of the test of the peritoneal washings has always been confirmed by an agglutination test with a whole broth culture of the strain. Where the reaction was negative with all three serums after repeated tests and the culture was bile-soluble, the strain was classed provisionally as belonging to the American type 4 pneumococcus—i.e., the heterogeneous collection of strains not conforming to any of the three "fixed" types.

Incidence of the Types.

As a result of the tests described above, my classification of the pneumococci obtained from an unselected series of 100 consecutive cases of lobar pneumonia is as follows:—

Type	1	2	3	4
No. of cases ..	24	35	10	31

Discussion of Results.

For the purpose of comparison with the above classification, the following table gives the American results. It is taken from the monograph of the Rockefeller Institute, 1917, and shows the percentage occurrence of the various types of pneumococcus in 454 cases of lobar pneumonia.

Pneumococcus type.	Incidence.	Pneumococcus type.	Incidence.
1	33·3	3	13·0
2	29·3	4	20·3
2 (atypical)* ..	4·2		

* The incidence of atypical type 2 pneumococci has been determined only during the last two years.

In the American series types 1 and 2 taken together account for 62·6 per cent. of the cases; in the English series which forms the subject of this report the corresponding percentage is 59. The incidence of cases of lobar pneumonia attributable to type 4 pneumococci appears to be higher in this country than in America. One has to consider the possibility, since the great majority of the specimens consisted of sputum, that some of the strains isolated may be accidental oral contaminations and not the organism to which the pneumonia was due. This is most likely to be the case where type 4 pneumococci have been obtained, since this type has been shown to be a common inhabitant of the normal mouth. At the same time I do not regard this as a probable event, as the sputum was not cultured directly but was inoculated into mice. The pneumococci obtained after passage through this animal may reasonably be considered the most important as regards virulence and predominance in the sputum.

Specificity of the Types.

The following is my experience as regards the validity of the American classification. The two serological groups of pneumococci which have been designated types 1 and 2 respectively by the American observers are equally well defined. Type 3 differs from the first two not only serologically, but generally shows also distinctive morphological and cultural characteristics. The simple agglutination test is sufficient for identification of each of these three types and it is unnecessary to apply the method of absorption of agglutinins. I have not done many experiments to determine whether this latter method would reveal individual differences between members of the same group. In an absorption experiment made with five type 2 strains upon types 1 and 2 serums, the type 2 serum was exhausted of agglutinins and the type 1 serum remained unaffected.

The unclassified strains in my series, designated type 4, did not react with any of the three type serums, 1, 2, and 3, in a dilution of 1:20. This group of strains contains many types, as Olmstead[2] has shown. Six types, including the American atypical types 2 A and 2 B, have so far been defined in the present investigation, but the classification has not been completed.

It is quite clear that there are three main antigenic components in the pneumococcus group; these three components appear to exist in a relatively pure condition in the three standard American types of the Rockefeller Institute. It is possible that if serums from unselected strains are used cross-agglutination between the three chief types and their respective serums may occur. Agglutinating serums prepared from horses appear to be less selective than rabbit serums.

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[2] Journ. Immunology, ii., p. 125, 1917.

A Text-book of General Pathology.

Second edition. By J. Martin Beattie, M.A. N.Z., M.D. Edin., M.R.C.S., L.R.C.P. Lond., and W. E. Carnegie Dickson, M.D., B.Sc., F.R.C.P. Edin. London: William Heinemann. 1921. Pp. 496 + xlv. 31*s.* 6*d.*

The second edition of this text-book has been carefully revised and considerably enlarged, both in the size and the number of the pages, and fresh chapters have been added on the granulomata and on fever. The features which assured success on first appearance have been preserved, and the additions can only enhance the popularity. The early chapters on the cell in health and disease and the degenerations are well done, though the section on jaundice is scarcely worthy of the rest. The section on the disturbances of the circulation is equally satisfactory, and the discussion on the pathology of infarction is particularly good. The chapters on inflammation and repair are original and up to date, and are enriched by some fine plates and figures from a thesis by Dr. J. W. Dawson. The treatment of neoplasms, though not inspiring, is adequate, and the chapter on animal parasites is unusually elaborate.

So far we have nothing but praise for an excellent text-book, but we must enter a word of protest against the illustrations. The numerous coloured plates are beautiful, and the drawings from Dr. Dawson's thesis leave nothing to be desired, but of the rest of the couple of hundred illustrations it may be said that they are immeasurably inferior to the text; they serve to point the moral that photographs can never be anything but sorry substitutes for skilled drawings. And though the liberal use of varied type may be appreciated by the student reading for examinations, for others it has a stop-press suggestion which is distinctly irritating.

Electro-Therapeutics for Practitioners.

Second edition. By Francis Howard Humphris, M.D. Brux., F.R.C.P. Edin. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 300. 21*s.*

The second edition of this work has been considerably enlarged. Four new chapters have been added, which deal with the uses of electricity in the treatment of diseases of the nervous system and the organs of special sense; a chapter is devoted to the galvanic, faradic, and sinusoidal currents, and another to radio-therapy. The other chapters have been enlarged to a greater or less extent. The chapter in the first edition dealing with Incandescent Light now includes an account of the Tungsten Arc Ultra-Violet Light and its indications. The uses of electricity for the treatment of diseases of the genito-urinary system are described in the chapter on enlargement of the prostate. The plan of the book has not been altered; it is a series of essays on some of the uses of electricity in medicine, describing the various methods which the author employs and the results which he has obtained.

Workers in electro-therapeutics will find much of interest in the work. The use of the high candle-power lamp for hastening recovery in cases of disease of the antrum and accessory sinuses after drainage has been established is a very practical piece of information; common colds, can, according to Dr. Humphris, often be aborted by the same treatment. Those who are in charge of the electrical departments of large hospitals and have to treat the chronic obstinate cases which have resisted the efforts of other departments are not likely to obtain so much success as is claimed for electrical measures by the author of this book; and after all, it is by the results obtained in cases that resist simple methods of treatment that the powers of electricity must be judged, especially when elaborate and costly apparatus is required. There is, however, not the least doubt that electrical treatment can procure results in the treatment of the kinds of case above mentioned when other methods cannot, and Dr. Humphris's work provides a useful guide to the maladies for which this treatment should be applied, particularly those, such as dermatological and gynæcological cases, which are seldom sent to the electrical department. The author, who was formerly President of the American Electro-Therapeutic Association, makes frequent reference to the work of American specialists. The book concludes with a useful appendix on the melted paraffin wax bath, and a glossary of electrical and electro-medical terms.

The Stomach and Abdomen from the Physician's Standpoint.

By William Russell, M.D., LL.D., ex-President Royal College of Physicians, Edinburgh; Professor-Emeritus of Clinical Medicine, Edinburgh University. London: Baillière, Tindall and Cox. 1921. Pp. 329. 15*s.*

The chief value of this book lies in the clinical descriptions of cases, 99 of which are included, giving a series of clear pictures of many of the more important diseases of the abdominal viscera. Dr. Russell is able to select from a wide experience, and his survey of the evolution of clinical teaching on such subjects as appendicitis should be of great interest to the present-day student. In the early portion of his book, which deals with gastric disorders, no mention is made of the recent developments in clinical methods for the examination of gastric secretion, though a closer acquaintance with such methods cannot but modify to an appreciable degree our views on the disorders of the chemical functions of the stomach. In particular Dr. Russell leaves uncertain what figures he takes as an index of hypochlorhydria, while his teaching that this condition is associated with delay in gastric emptying is contrary to the views of the majority of modern gastro-enterologists.

We have found no references in this book to such important subjects as nephritis, pancreatitis, or colitis; on the other hand, the author devotes whole chapters to the Cirrhoses of the Liver, Diseases of the Œsophagus, and Coli Infections of the Urinary Tract. A series of instructive X ray photographs illustrates the volume.

Diagnostic and Therapeutic Technic.

Third edition. By Albert S. Morrow, A.B., M.D., F.A.C.S. London and Philadelphia: W. B. Saunders Company. 1921. Pp. 894. 40*s.*

In this volume are set forth detailed descriptions of many of the various diagnostic and therapeutic procedures which often receive only cursory reference in general text-books. The fact that a third edition has been called for is sufficient proof of its appreciation by the profession, and there can be no question that such a book must be of service to members of any branch of medical practice. The author is eclectic in his choice of methods, fair in his judgments, and clear in his descriptions. There is an excellent and concise account of all possible methods of anæsthesia, whilst transfusion of blood is adequately described and illustrated. The Carrel-Dakin method of disinfection of wounds is given a chapter to itself. The latter part of the book deals with the technique of examination of the various regions of the body.

Though most of the information and teaching can be relied on some of Dr. Morrow's statements will not find general acceptance. Thus on p. 80 he writes: "For strangulated hernia of any variety local anæsthesia should always be the choice." Most surgeons would not assent to this statement.

There are some surprising omissions. We can find no mention of Janet's method of irrigation for gonorrhœa, and in describing the urethroscope no reference is made to the inflation of the urethra by air. The term sigmoidoscope is not found in the book, and the long form of proctoscope described is of a more clumsy pattern than many sigmoidoscopes in common use. The illustrations—nearly 900 in number—serve well to indicate the methods described, but it seems unnecessary to insert 12 illustrations cause of azoöspermia is of less importance on account of its tendency to be unilateral, to involve the testis rather than the epididymis, and to clear up with treatment.

The examination of the genital tract should include a posterior urethroscopy in order that the opening of the ejaculatory ducts may be inspected. If there is any doubt about their patency methylene-blue may be injected into the vas on each side and its passage into the urethra observed. Should no signs of obstruction be detected the absence of spermatozoa in the semen probably indicates lack of spermatogenesis. To confirm this the testis may be punctured with a hypodermic needle and a search made for spermatozoa in the fluid drawn off. The operation is a painful one and a fine needle should be employed. If repeated examinations of the testicular fluid fail to reveal the presence of spermatozoa, aspermatogenesis must be diagnosed. This occurs when the tubules have atrophied as the result of a severe orchitis—e.g., mumps. It is also found, as shown by Mott, in association with various mental conditions, in some cases of cryptorchism, in advanced malignant disease anywhere in the body, and occasionally in chronic alcoholism. Old age, although productive of oligospermia, is not as a rule a cause of aspermatogenesis. I have examined the testes of a large number of old men dying of prostatic enlargement or its sequelæ and have been surprised how rarely spermatogenesis entirely fails, even in senile cases.

Necrospermia and Oligonecrospermia.

A certain degree of oligospermia is usually associated with the necrospermia, as is also the appearance of abnormal types of spermatozoa. Amongst these are large-headed and small-headed forms, spermatozoa without heads or double-headed monsters. The condition is generally associated with inflammation in the genital tract, and pus cells are discovered in the semen. Statements to the effect that spermatozoa become motionless in the presence of pus or blood are erroneous; but as inflammation is often accompanied by an acidity of the secretions pus is inimical to the activity of the spermatozoa. Necrospermia calls for careful examination of the genital tract for signs of prostatitis and vesiculitis. The appearance of an excess of crystals and amyloid bodies in the semen is not uncommon in this condition. Of the exact significance of this I am doubtful.

The Accessory Sexual Glands.

The rôle of the accessory glands, and notably that of the prostate and vesicles, is unknown. G. Walker showed that excision of both prostate and vesicles rendered rats sterile, whereas their breeding power was apparently unaltered by removal of only one of the glands. Ivanoff succeeded, however, in impregnating rodents by means of spermatozoa drawn directly from the testes. But even although the secretions of the prostate and vesicles may not be essential to fertility they are undoubtedly of considerable importance.

It is probable that there is some overlapping in the function of the two glands, as their degree of development is subject to enormous variations throughout the animal kingdom, absence of the one gland being compensated for by a considerable degree of development of the other. Although in man the prostate and vesicles may appear very different in structure, in other animals, notably the rhinoceros, the vesicles and prostate are so similar in appearance that it is difficult to say where one ends and the other begins. Whatever may be their exact function it is certain that the accessory glands have a very considerable bearing on fertility, and that their secretions, as well as adding bulk to the semen, provide a fluid favourable to the survival of the spermatozoa subsequent to emission. For this reason the condition of the prostate and vesicles should be carefully investigated in any potential case of sterility. Further investigations will be required before the true significance of the accessory vesical glands is understood.

Prognosis and Treatment.

As a result of a conscientious examination it is possible to arrive at a much more precise prognosis in the case of the male than is possible with the female; for whereas nature plays the chief rôle in producing sterility amongst women, disease is the chief factor amongst men. The fertility of a man can, indeed, be expressed as a percentage according to the number of active well-formed spermatozoa found in the semen, and the case returned as 80 per cent., 60 per cent., 50 per cent., &c., efficient. If this system be adopted it will soon become apparent to the observer how many husbands show a diminished number of healthy spermatozoa in the semen, or else give evidence of chronic inflammatory lesions of the genital tract, and consequently, although not absolutely sterile, are relatively so.

In a series of 87 childless marriages in which the wife had been declared normal, Wolbarst found the following incidence of trouble amongst the husbands: 57 per cent. suffered from azoöspermia, 35 per cent. from oligonecrospermia, and 13·5 per cent. from oligospermia. It must also be borne in mind that the mere fact that a normal number of healthy spermatozoa have been found in the semen, and that these retain their mobility for several hours after emission, affords no guarantee that the same mobility will be retained when the semen becomes mixed with the female secretions. To determine this specimens must be taken from the cervix or fundus uteri three or four hours after coitus and examined according to the method advocated by Hühner. As, however, such interesting questions as the action of the female secretions on the spermatozoa and the possibility of agglutination and incompatibility, &c., belong to the subject of female sterility they will not be discussed here. Suffice it to say that the well-known hostility of the vaginal secretion to the life of the spermatozoa appears to be the result of its bacteriological content rather than of its acid reaction.

The treatment of sterility in the male will depend on the category in which the case has been placed. An azoöspermia due to the occlusion of the ejaculatory ducts is generally associated with a chronic prostatitis for which the appropriate therapeutic measures must be adopted, including, if necessary, catheterisation of the ducts through a posterior urethroscope. The latter may be a simple or an extremely difficult, if not impossible, operation, the determining factor being the situation of the openings. If the obstruction is the result of bilateral epididymitis the operation of vaso-epididymostomy, devised by Martin and modified by Lespinasse, may be undertaken, provided that the existence of spermatogenesis has been proved by means of direct puncture of the testes. For the condition of oligo- or necrospermia due to vesiculitis a prolonged course of massage and dilatation must be carried out.

When spermatogenesis is defective or lacking, treatment is of less avail. Attention may be paid to the habits, mode of life, and general health of the patient, and a course of orchitic or lymphatic gland extract given in the hopes of exerting an influence on the defective action of the testis. Occasionally aspermatogenesis will be found in men who otherwise appear to be perfectly normal.

Although at the present moment it may be impossible to find an explanation for such a puzzling condition of affairs, it is not unlikely that the key to the riddle will be provided by an increased knowledge of the relationship of the testes to the endocrine glands. But as yet little is known of the influence exerted on the testis by the hierarchy of the ductless glands, and the suggestion that certain cases of aspermatogenesis may be explained in terms of endocrinology must be regarded as purely speculative. Whether the suggestion be right or wrong there can be little doubt that if progress is to be made in the treatment of sterility less attention must be paid to the anatomy of reproduction and more to its physiology.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County of Norfolk.

Dr. J. T. C. Nash has recently issued his annual report which is chiefly a record for the year 1919, but also embraces features common to 1920. The population of the administrative County of Norfolk at the last Census (1911) was 321,733; the birth-rate for 1919 on the estimated population was 17·3, and the death-rate 14·3. The death-rates of pregnant and parturient women were somewhat in excess in Norfolk during a series of years as compared with England and Wales as a whole, except in the years 1916 and 1917, when they were lower. Dr. Nash considers that this was due in part to the following factors: (1) lack of a sufficient number of qualified midwives; (2) lack of special hospital provision for difficult cases in scattered and sparsely populated villages; (3) inadequacy of some cottages for even a normal confinement; and (4) deficient nutrition of pregnant women.

To deal with the first three factors Dr. Nash suggests that the county council should make arrangements with available hospitals or hostels for the reception of cases for which adequate provision at home is impossible, and should circularise midwives and practitioners as to such provision. One cannot help thinking that if the stigma of the Poor-law was removed, ample accommodation for such cases could be secured in the numerous Poor-law infirmaries in the county, where there is usually a qualified midwife in charge, whose maternity duties are almost entirely restricted to attending at illegitimate births. The fourth factor is largely met now by the Administration of the Milk (Mothers and Children) Order, 1919. The fact that maternal mortality was lower in 1916 and 1917, when income was better and rationing of food was in force, enabling all, even the labouring class, to get a proper share, is suggestive that deficient nutrition is an important factor.

During a series of five years the average infantile mortality for the 12 urban districts (all under 6000 population, except King's Lynn, 20,205) was 90·4, and for the 20 rural districts 81·6. Total average for the county 83·2. These figures, though lower than those of England and Wales as a whole, are too high for a rural area, seeing that the England and Wales figures include all the large towns with conditions which favour a high diarrhœa mortality in years favourable to fly-life and germ-life. Dr. Nash considers that the chief causes of infantile mortality in Norfolk are prematurity and immaturity, which indicates that special attention should be given to ante-natal conditions, especially to the proper nutrition of pregnant women. He lays particular stress upon oral sepsis, associated with carious teeth and anæmia, as conditions inimical to the nutrition of the unborn fœtus, and is convinced that efficient dentistry would be a factor of great value in reducing the death-rate from prematurity. Traditional fallacies as to the feeding of infants are also responsible for a certain number of infant deaths, but recent researches as to the value of the vitamins in food should tend to lessen so-called "deficiency diseases." In 1919 the Norfolk County Council employed three whole-time health visitors, in addition to Miss Fowler (inspector of midwives and supervising county health visitor); 62 midwives and nurses of the Norfolk Nursing Federation were also employed, when possible, as part-time health visitors, at a fixed sum per child visited. During the year 1937 infants under one were followed up by health visitors, out of 4365 live births notified; that is, less than half the number of infants were visited. Dr. Nash advises the appointment of three more whole-time health visitors, to ensure that nearly the notified births, at least, should be followed up every three or four months. Several infant welfare clinics have been established throughout the county, in both rural and urban districts. In this connexion Dr. H. H. Back, medical officer of health for Aylsham and Blofield Districts, reports: "Doubts have often been expressed as to whether infant welfare clinics could be carried on with advantage in a rural district. The undoubted success of the Blofield clinic will go far to show that under efficient management they can be of great value both directly to those attending them and indirectly through their educational influence."

With reference to infectious diseases, three cases of a mild and unusual type of small-pox occurred in the Loddon Rural District; they were part of an outbreak which more seriously affected the neighbouring districts of East Suffolk; no deaths occurred in Norfolk. Of scarlet fever, 896 cases were notified in the county, with 17 deaths, giving a case-rate mortality of 1·9 per cent., the zymotic death-rate for the county being 0·057. Diphtheria was also in excess; 462 cases were notified, with 47 deaths—a case-rate mortality of 10·17, and a zymotic death-rate of 0·15. Of enteric fever 35 cases were notified, with four deaths, a case-mortality of 11·49 per cent. This comparatively low figure is to be accounted for by the fact that a considerable number of the cases notified were of the "paratyphoid" variety.

There were only five deaths in Norfolk attributable to measles in 1919. This disease has ceased to be notifiable, and Dr. Nash considers that the method of notification through the schools, which has been in vogue in Norfolk since 1908, is much more effective, and still more so is the recent provision of the Ministry of Health of grants in aid of the salaries of health visitors for home visiting and home nursing of cases of measles, and for the provision of hospital or convalescent beds for cases of measles occurring in children under 5 years of age. Whooping-cough accounted for the deaths of 45 children under 5 in 1919. There were 255 deaths from influenza, against 749 deaths in 1918, besides a large increase in deaths from bronchitis, pneumonia, and pulmonary tuberculosis, many of which were, no doubt, attributable to the influenza epidemic of that year. There were four notifications of encephalitis lethargica disease in 1919, one of which was not confirmed in hospital. Dr. Nash states that he ranks himself with Dr. W. H. Hamer and Dr. F. H. Crookshank, of London, in supporting the view that the syndrome encephalitis lethargica is but a manifestation of the protean epidemic disease called influenza, though the more commonly accepted view is that it is a well-defined disease.

With regard to the isolation of infectious diseases the county of Norfolk is at a great disadvantage, from the fact that it possesses no county isolation hospital, a fact which Dr. Nash reported on to the Public Health Committee in December, 1917.

In July, 1919, the County Public Health Committee reported that they had received an offer of a site near East Dereham, which is a very central situation, for the purposes of a county isolation hospital. It was later decided to purchase the site as from October, 1921, so that it is to be hoped that Norfolk will not much longer have to bear the reproach of a lack of accommodation for infectious diseases.

A considerable section of Dr. Nash's report deals with tuberculosis. A comprehensive scheme has now been adopted by the Public Health Committee, which includes as a commencement: (1) The appointment of a tuberculosis officer and resident nurses in defined areas, acting under the supervision of the county medical officer of health; (2) contracts with existing institutions in the county for beds for cases needing institutional treatment; (3) suitable cases, after institutional treatment, to be transferred to the farm colony. The scheme was approved by the Ministry of Health, and Dr. W. B. Christopherson was appointed tuberculosis officer for the county and began duty on August 7th, 1920. A tuberculosis dis-

Reviews and Notices of Books.

MEDICAL ANNUAL, 1921.

Bristol: John Wright and Co.; London: Simpkin, Marshall, Hamilton, Kent and Co. Pp. 616. 20s.

THIS volume, the thirty-ninth of the series, embodies a summary of the published records of progress in surgery and medicine during the past year by a number of distinguished authors. The reviews under each heading are clear, supported by full references to original papers, and the amount of space allotted to each disease is well proportioned. Amongst articles of special interest may be mentioned that on encephalitis lethargica. We are glad to note that autoserum therapy has been practised in this disease—the experimental results obtained with rhesus monkeys in the homologous condition polio-encephalitis afford strong indications as to its probable value. The treatment of ankylostomiasis by oil of chenopodium administered by duodenal tube is advocated and the results as regards the anæmia are apparently highly encouraging. Recent work on deficiency diseases is reviewed and consideration of the subject is brought up to date. An excellent summary of work on the kidney is included under the heading nephritis; Dr. Mackenzie Wallis's recent observations on functional albuminuria are discussed and reference is made to Barach's work on the relation of albuminuria to prolonged violent muscular exertion. The differences between chronic parenchymatous and chronic interstitial nephritis are indicated, and the dietetic treatment appropriate to each variety of the disease is fully described.

The cognate problems of the chemistry of the blood are succinctly reviewed by Dr. O. C. Gruner. His article on the cytology of the blood, beautifully illustrated by original coloured plates, presents a theory so novel in its conception and apparently subversive of our most cherished ideas, not only on the origin of blood cells but on the whole subject of body metabolism and the part played by enzymes in vital processes, as to read like a fairy tale. We regret that he could not even outline the experimental results on which his far-reaching generalisations are based, but his message is fascinating and suggestive, and many will doubtless avail themselves of the extensive bibliography on which he has based his sketch to follow up the subject for themselves. On the surgical side, Dr. Robert Hutchison reviews the latest medical and surgical treatment of gastric and duodenal ulcer. The relationship of ulcer to carcinoma is dealt with in an article on the surgery of the stomach. An article on the surgery of the thorax emphasises the satisfactory progress which has been made in the treatment of empyema, bronchiectasis, and abscess of the lung; perhaps a larger section might have been devoted to the newer aspects of this important branch of surgery. A special section on orthopædic surgery from an American source is devoted to a review of all that is most recent in a branch of work which is highly progressive, both in this country and abroad.

The book is attractively produced, clearly printed, and provided with a useful index, supplemented by ample cross-references under corresponding headings in the text.

DISEASES OF THE EAR, NOSE, AND THROAT.

Intrinsic Cancer of the Larynx and the Operation of Laryngo-Fissure. By IRWIN MOORE, M.B., C.M. Edin., Surgeon to the Hospital for Diseases of the Throat, Golden-square. London: Hodder and Stoughton. 1921. (University of London Press.) Pp. 147. 20s.

MR. Irwin Moore seems to have read nearly everything that has been written on his subject, and has produced a monograph which is crammed with references; indeed, one might almost complain that the author lays so much stress on the work of others and so little on the results of his own clinical experience. He devotes comparatively little space to the clinical aspects and diagnosis of the disease, and he makes no mention of that form of senile tuberculous infiltration of the vocal cord which is so readily mistaken for epithelioma. But he rightly emphasises the fact, which cannot be too widely made known, that the majority of cases of intralaryngeal cancer remain undiagnosed until the disease has advanced too far for removal by the relatively safe and simple operation of laryngo-fissure. Not sufficient notice is taken of the early symptom of hoarseness; everyone in whom hoarseness persists for more than a few weeks should have the vocal cords thoroughly inspected. More than half the book is occupied by a careful account of the technique of the operation of thyrotomy, or laryngo-fissure, and this section is beautifully illustrated and full of valuable detail, including descriptions of several instruments designed by the author.

This monograph cannot fail to be most useful to any surgeon about to perform the operation of laryngo-fissure.

Diseases of the Ear, Nose, and Throat in Childhood. By DOUGLAS GUTHRIE, M.D., F.R.C.S., Surgeon to the Ear and Throat Department, Royal Hospital for Sick Children, Edinburgh. London: A. and C. Black. 1921. Pp. 88. 5s.

THIS is a very short epitome of diseases of the ear, nose, and throat as they affect children, and is too brief to be of great practical value. Some diseases, very rare in children, such as nasal polypus and Vincent's angina, receive mention, while only four lines are devoted to retropharyngeal abscess, which is an important affection of infancy. The volume is not likely to be useful to medical men, as they are already possessed of the elementary knowledge it contains; but it should prove helpful to nurses and child-welfare workers, and will serve a good cause if it stimulates their interest in the treatment of common and important diseases of childhood.

A Guide to Diseases of the Nose and Throat, and their Treatment. Second edition. By CHARLES A. PARKER, F.R.C.S. Edin., Consulting Surgeon to the Throat Hospital, Golden Square; and LIONEL COLLEDGE, M.B., F.R.C.S., Surgeon to the Ear and Throat Department, St. George's Hospital. London: Edward Arnold. 1921. Pp. 583. 25s.

THIS text-book, intended especially for post-graduate students, has been considerably altered and in parts entirely re-written. The work suffers somewhat from a lack of orderly arrangement. A few operations on the larynx and trachea are described in the preliminary section under general methods, while others are discussed under the headings of the affections for which they are designed. Thus, thyrotomy is found on p. 74 and Lack's modification thereof on p. 547; laryngostomy for stenosis is mentioned on p. 76, while other methods of treating this disease are described under syphilis on p. 139 and under perichondritis on p. 482; but laryngeal stenosis is nowhere discussed as a separate entity. The second section deals with the complications of general diseases, including tubercle and syphilis; such difficult subjects as the diagnosis of tuberculous laryngitis have therefore to be discussed before the student has reached an account of simple laryngitis, and the action of nervous diseases in producing paralyses of the vocal cords is considered early in the book, while the paralyses themselves are described in the end. In spite of these comparatively minor defects, the book is a most useful one; of medium size, it contains a great quantity of accurate information, is eminently sane and free from fads, and has been brought thoroughly up to date. A notable feature is the completeness of the description of such affections as usually receive but scant attention in text-books. The book should prove of great value to post-graduate students and practitioners.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1921.

(*Specially compiled for* THE LANCET.)

Cities and Boroughs.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	36	2	—	2620	1215	157	4	10	5	19	4068	9·4	6	—	18	33	37	63	52	209	0·5	4082	9·4
West:																								
Paddington ..	149,673	1	—	—	80	27	8	—	—	—	—	116	8·1	—	—	—	—	2	1	4	7	0·5	94	6·5
Kensington... ..	161,177	3	—	—	53	29	7	—	—	—	2	94	6·0	—	—	—	2	2	2	1	7	0·4	169	10·7
Hammersmith.	136,200	2	1	—	161	35	5	—	—	—	2	206	15·8	1	—	—	3	1	3	3	11	0·8	123	9·4
Fulham	158,621	—	—	—	75	59	6	—	—	—	—	140	9·2	—	—	—	1	2	6	1	10	0·7	146	9·6
Chelsea	62,987	—	—	—	24	6	3	—	—	—	—	33	5·5	—	—	—	—	—	—	1	1	0·2	44	7·3
City of Westmin'r.	132,615	1	1	—	48	14	6	—	—	—	2	72	5·7	—	—	—	—	2	—	2	4	0·3	114	9·0
North:																								
St. Marylebone ..	101,856	3	—	—	46	15	5	—	1	1	—	71	7·3	1	—	—	—	—	1	—	2	0·2	109	11·2
Hampstead ..	91,519	1	—	—	35	21	1	—	1	—	—	59	6·7	—	—	—	—	1	—	1	2	0·2	73	8·3
St. Pancras... ...	228,178	3	—	—	113	57	6	1	—	—	2	182	8·3	—	—	1	2	6	1	3	13	0·6	204	9·3
Islington	335,907	1	—	—	168	97	10	1	—	2	2	281	8·7	—	—	2	1	3	3	4	13	0·4	293	9·1
Stoke Newington	52,931	—	—	—	36	5	—	—	—	—	1	42	8·3	—	—	—	—	—	—	—	—	—	48	9·4
Hackney	225,372	1	—	—	155	109	3	—	1	—	—	269	12·4	—	—	1	—	2	5	2	10	0·5	187	8·7
Central:																								
Holborn	39,676	1	—	—	6	18	2	—	—	—	—	27	7·1	—	—	—	1	—	1	1	3	0·8	48	12·6
Finsbury	78,291	—	—	—	35	34	3	1	1	—	1	75	10·0	—	—	—	1	1	5	1	8	1·1	90	12·0
City of London....	14,417	—	—	—	18	8	—	—	—	—	—	26	18·8	—	—	—	—	—	—	—	—	—	11	7·9
East:																								
Shoreditch... ...	102,014	1	—	—	105	48	5	—	—	—	1	161	16·5	—	—	1	2	—	2	2	7	0·7	98	10·0
Bethnal Green...	114,471	—	—	—	61	50	5	—	—	—	—	116	10·6	—	—	1	1	1	—	3	6	0·5	100	9·1
Stepney	241,770	3	—	—	188	74	7	—	—	—	—	272	11·7	—	—	6	2	1	3	1	13	0·6	227	9·8
Poplar	159,766	1	—	—	117	41	5	—	—	1	2	167	10·9	1	—	—	6	1	3	3	14	0·9	158	10·3
South:																								
Southwark... ...	187,142	1	—	—	105	42	14	—	1	—	—	163	9·1	1	—	—	1	4	2	4	12	0·7	216	12·0
Bermondsey ...	129,189	2	—	—	105	35	4	—	—	—	—	146	11·8	1	—	—	1	—	1	—	3	0·2	109	8·8
Lambeth	293,572	—	—	—	158	59	9	—	2	1	—	229	8·1	—	—	2	2	—	1	3	8	0·3	271	9·6
Battersea	165,664	2	—	—	77	51	8	—	—	—	2	140	8·8	—	—	—	2	—	8	6	16	1·0	163	10·3
Wandsworth ...	346,990	3	—	—	109	89	8	1	2	—	—	212	6·4	—	—	1	3	2	5	3	14	0·4	288	8·7
Camberwell ...	284,712	3	—	—	114	58	11	—	—	—	2	188	6·9	—	—	2	1	2	7	1	13	0·5	261	9·6
Deptford	115,636	1	—	—	76	25	6	—	—	—	—	108	9·7	1	—	—	1	1	1	2	6	0·5	101	9·1
Greenwich... ...	102,408	—	—	—	90	24	5	—	—	—	—	119	12·1	—	—	—	—	—	1	—	1	0·1	83	8·5
Lewisham	174,438	1	—	—	98	35	4	—	1	—	—	139	8·3	—	—	—	—	2	1	—	3	0·2	147	8·8
Woolwich	141,666	1	—	—	163	50	1	—	—	—	—	215	15·8	—	—	1	—	1	—	—	2	0·1	107	7·9

* Including membranous croup.

Kensington, Chelsea, the City of Westminster, Hampstead, Wandsworth, and Camberwell; and the highest in Hammersmith, Hackney, the City of London, Shoreditch, Greenwich, and Woolwich. The prevalence of enteric fever was somewhat greater than in the preceding month; of the 36 cases notified during the five weeks ended July 2nd 3 cases belonged to each of the boroughs of Kensington, St. Marylebone, St. Pancras, Stepney, Wandsworth, and Camberwell. There were 23 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 10, 10, and 18, at the end of the three preceding months; the weekly admissions averaged 4, against 3, 2, and 5 in the three preceding months. The prevalence of scarlet fever was about equal to that in the preceding month; this disease was proportionally most prevalent in Hammersmith, the City of London, Shoreditch, Stepney, Bermondsey, Greenwich, and Woolwich. The Metropolitan Asylums Hospitals contained 3621 scarlet fever patients at the end of the month, against 3187, 3217, and 3375 at the end of the three preceding months; the weekly admissions averaged 506, against 469, 441, and 507 in the three preceding months. The prevalence of diphtheria was also about equal to that in May; the greatest proportional prevalence of this disease was recorded in Hackney, Holborn, Finsbury, the City of London, Shoreditch, and Bethnal Green, a group of adjoining areas. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2652, 2429, and 2121 at the end of the three preceding months, further fell to 1896 at the end of June; the weekly admissions averaged 235, against 290, 261, and 241 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, St. Marylebone, Holborn, Shoreditch, Southwark, Battersea, Deptford, and Greenwich. Ten cases of encephalitis lethargica were notified during the month, against 77, 56, 24, 14, and 18 in the five preceding months; of these, 2 belonged to Lambeth and 2 to Wandsworth. The notified cases of cerebro-spinal fever numbered 5, against 14, 12, and 11 in the three preceding months; of these, 2 belonged to Islington. Nineteen cases of puerperal fever were notified during the month, against 33, 30, and 32 in the three preceding months. The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended July 2nd the deaths of 4082 London residents were registered, equal to an annual rate of 9·4 per 1000; in the three preceding months the rates had been 13·6, 12·6, and 11·2 per 1000. The death-rates ranged from 6·5 in Paddington, 7·3 in Chelsea, 7·9 in the City of London and in Woolwich, 8·3 in Hampstead, and 8·5 in Greenwich, to 10·7 in Kensington, 11·2 in St. Marylebone, 12·0 in Finsbury and in Southwark, and 12·6 in Holborn. The 4082 deaths from all causes included 209, which were referred to the principal infectious diseases; of these 6 resulted from enteric fever, 18 from measles, 33 from scarlet fever, 37 from whooping-cough, 63 from diphtheria, and 52 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Stoke Newington or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, St. Marylebone, Hampstead, Bermondsey, Greenwich, Lewisham, and Woolwich; and the highest in Hammersmith, Holborn, Finsbury, Poplar, and Battersea. The 6 fatal cases of enteric fever were one fewer than the average in the corresponding period of the five preceding years. The 18 deaths from measles were less than one-sixth of the average; of these, 6 belonged to Stepney, 2 to Islington, 2 to Lambeth, and 2 to Camberwell. The 33 fatal cases of scarlet fever exceeded the average by 25; of these, 6 belonged to Poplar, 3 to Hammersmith, and 3 to Wandsworth. The 37 deaths from whooping-cough showed a decline of 27 from the average; of these, 6 belonged to St. Pancras, 4 to Southwark, and 3 to Islington. The 63 fatal cases of diphtheria were 16 in excess of the average; the greatest proportional mortality from this disease occurred in Fulham, Finsbury, Battersea, and Camberwell. The 52 deaths from infantile diarrhœa were 9 below the average; of these, 6 belonged to Battersea, and 4 to each of the boroughs of Paddington, Islington, and Southwark. In conclusion, it may be stated that the aggregate mortality in London during June from these principal infectious diseases was 31·7 per cent. below the average in the corresponding period of the five preceding years.

showing how to pass a urethral sound. In Fig. 298 the line of the lung in relation to the ribs is inaccurate. The style of writing is easy and clear, though split infinitives have no terrors for Dr. Morrow, and his words are occasionally ill-chosen.

The book deserves to be in the library of every practitioner.

PRIESTLEY IN AMERICA, 1794-1804.

By EDGAR F. SMITH. Philadelphia: P. Blakiston's Son and Co. 1920. Pp. 173. $1.50.

THE average Englishman's knowledge of Priestley consists in the impression that he was an unpopular and heretical Radical who discovered oxygen and whose house was burned down by a mob. These facts are true, but few know that Priestley was also a learned natural philosopher, a man of letters, and a citizen of the French Republic, to which last circumstance the burning of his house in 1791 was due. He left Birmingham and was for a short time in charge of a chapel at Hackney, but finding that his opinions rendered life in England unendurable removed to America in 1794. It is at this date that Mr. Smith's little book begins, and he has produced a very readable account of Priestley's life in America by collecting various incidents reported in contemporary newspapers and books. No doubt Priestley was glad to arrive in a land which was Republican in government and where religious liberty existed in theory, if not, as is apparent here and there from Mr. Smith's extracts, altogether in fact; but our sympathy goes out to him on account of the numerous addresses of welcome to which he had to listen and respond. He was invited to the post of Professor of Chemistry at Philadelphia, but he declined to accept it. For some reason or other Philadelphia did not appeal to him, a dislike which was shared by John Adams, second President of the United States, for, as Priestley says in a delightful letter, "John Adams, when he first came down to Philadelphia fresh from Boston, stood aghast at this life into which he was suddenly thrown and thought it must be sin. But he rose to the occasion, and after describing in his diary some of the 'mighty feasts' and 'sinful feasts,' says he drank Madeira 'at a great rate and found no inconvenience.'" Priestley, however, does not seem to have conquered his aversion, for he remained at Northumberland, Pennsylvania, where he had a house and where he died in 1804.

We congratulate Mr. Smith, who we gather from his preface is a chemist, upon a very interesting little book, although we wish that he had given the references for the various excerpts which he has quoted.

JOURNALS.

School Hygiene. No. 2, Vol. XII. London: Adlard and Son. 1*s.* 6*d.*—It is gratifying to note the revival of this journal. The present number contains some interesting material, including a full report of the Conference of Educationists on Punishment in Schools. The Conference supported the resolution of the Medical Officers of Schools Association deprecating caning on the hand, which seems to be confined entirely to the public elementary schools. There are two interesting papers from the Edinburgh Conference of Scottish Medical Officers of Schools. Dr. A. MacGillivray, in his survey of the educationally blind child, favours full correction of myopes, and is of the comforting opinion that the vision of the race has probably not deteriorated at all in the last 7000 years. The skin diseases of school children have been very thoroughly investigated and treated in Edinburgh, and Dr. Norman Walker gives his experience of the last dozen years, adding some observations on the general medical outlook. Dr. C. J. Thomas, who has had more experience than anyone in this direction, draws attention to many points in connexion with the employment of children in theatres. An article on the public health aspect of physical exercises, by Dr. James Kerr, shows how the Ling system, while still necessary, has failed in popular attraction. He asks for a system having emotional content, and having regard to the herd instinct innate in man, wishes to socialise exercise so as to make it desirable and desired throughout life. Dr. Octavia Lewin describes the work of her "nasal hygiene" clinic, and several reviews conclude the 66 pages of this excellent journal.

King's College Hospital Gazette. June, 1921. Vol. I., No. 1.—This is the first number of the Gazette to be published since the war. It will now be issued quarterly at one shilling. In a foreword the editor traces the development of the hospital and medical school since their removal to Denmark Hill in 1913, and more especially since peace was declared. To the first number a historical and critical review of encephalitis lethargica is communicated by Dr. S. A. Kinnier Wilson; Dr. A. C. D. Firth gives a short account of Ambroise Paré as surgeon, and there are several other prose and verse contributions of a literary nature, some serious and others humorous. The present intention of the Editorial Committee responsible for the publication of the Gazette is that it shall contain clinical articles of practical value to students and practitioners, together with literary matter, reviews, and articles dealing with the social life and athletic activities of the hospital.

The Fight Against Disease.—This publication of the Research Defence Society is the quarterly report of the Society's activities, which during the years from 1913 to 1920 was issued only to members and associates, but is now sent to the chief public libraries and may be obtained from any bookseller or agent. A summary is given of Sir John Rose Bradford's address on "The Place of Experiment in the Science and Art of Medicine," delivered at a meeting of the Oxford branch of the Research Defence Society in March; the annual report of the Lister Institute of Preventive Medicine is described in outline, and mention is made of the Dogs Bill talked out on June 3rd on the occasion of its second reading in the House of Commons. The Government report for 1919 on experiments performed on animals during that year is made the basis of a short exposition of the point of view of those who realise the necessity of animal experiments and the care taken to prevent infliction of unnecessary pain during their performance. The names are given of late presidents and vice-presidents, with the striking list of vice-presidents as it stood in 1916. It is hoped in future to publish the report six times a year.

Transactions of the American Association of Genito-Urinary Surgeons. Vol. XIII. 1920. Baltimore: Williams and Wilkins Co. Pp. 280.—In this volume are published the papers read by members of the Association at the Mayo Clinic in 1920, together with the discussions which followed them. The most important item in this publication is a communication from Dr. H. H. Young, explaining his views on the pathology of tuberculosis of the seminal tract, and giving the details of the operation which he prefers to employ for its removal. He considers that the primary focus of genital tuberculosis is in the seminal vesicles, and that from here the disease spreads to the epididymis and elsewhere. The operation which he advises he calls "excision of the tuberculous seminal tract." The vesicles are exposed from the perineum and brought into the wound by the author's prostatic tractor. The diseased vesicle, and perhaps part of the prostate, are thus removed, the vas being divided and a clamp left on its upper end. In the final stage of the operation the epididymis and all that remains of the vas belonging to it are removed through an inguinal incision, the process of removal being helped by to-and-fro traction between the operator and an assistant pulling upon the clamp left in the perineum. Fifteen cases which have been operated upon are here reported, and the results seem good; the paper is very well illustrated. Thirteen other papers are published, one of the most interesting being a description by J. W. Caulk of a method of producing local anæsthesia suitable for operations in cases of obstruction at the neck of the bladder.

being substituted for it, which entirely contradicted its essential purpose, but as sufficient notice of this amendment had not been given it could not be immediately adopted as the policy of the Association, but must be regarded as a strong expression of the opinion of the Representatives. The original recommendation was to the effect that the Association could not protect a medical man from the consequences of refusing to divulge information obtained professionally (1) in a court of law where the court has ruled that information so obtained must be divulged, (2) when it is provided by an Act of Parliament that he must do so, as in the case of notification of disease. In other words, any refusal to divulge at a trial professional confidences must be at the risk of the individual practitioner. The resolution further stated that resistance would be given by the Association to any "further encroachments" on professional secrecy. The amendment, which was moved by Dr. H. G. DAIN, recommended "that the Association use all its power to support a member who refuses to divulge, without the patient's consent, information obtained in the course of his professional duties," to which was afterwards added the sentence "except where it is already provided by Act of Parliament that he must do so." Thus as to obedience to statements to be made in accordance with a statute agreement seems to have been arrived at, subject to the observation that the nature of the encroachments to be resisted in the future is left obscure. Notifications under Acts of Parliament are a form of revelation of professionally acquired knowledge, which are usually introduced on public grounds and in the interest of preventive measures against disease. They are also frequently the result of the advice of the medical profession, or of an important section of it.

As to the main issue debated at the meeting, the giving of medical evidence without the consent of the patient concerned on the order of the judge, it will be difficult to support unreservedly and logically either the Council's original recommendation or the amendment provisionally adopted; each is of too general a character. The Council's recommendation denies support in any case of resistance to any judicial decision of the kind indicated, whatever the nature of the trial in question, and whatever may be the means by which the required information has been obtained by the medical man. The discussion was induced by a recent judicial decision to the effect that knowledge acquired in a clinic for venereal disease might be ordered to be published in a court of law. Now the fact that the particular patient had no objection to the doctor giving evidence does not affect the principle involved, for the judge could know nothing about the patient's wishes. A judge's ruling is a common factor in all cases where the witness is unwilling to testify. One way, at any rate, of meeting such a ruling is a test case. The Council's recommendation appears to be that all judges' rulings must be acquiesced in without resistance, and this we hold to be a wrong view. But Dr. DAIN's amendment may prove too sweeping to be practicable in operation, and we are strengthened rather than shaken in our opinion by some of the arguments used in its support. Dr. DAIN treated his amendment as embodying the ascertained views of the public, who would support the proposition that the doctor should never tell what his patient told him, including, we presume, such important matters of fact as he has observed for himself. He made reference especially to civil cases, but his amendment would cover both civil and criminal trials. As to this we point out that in the trial of crime a doctor's evidence withheld might conceivably lead to the escape of a criminal from the consequences of his crime, or the conviction of an innocent man for a crime which he never committed. To give examples of what the doctor's silence might involve in civil causes, it might constitute him as a silent abettor in a fraud attempted on a life assurance company, in a case of the wrongful substitution of an infant, or in the effort of a guilty husband or wife to deceive the divorce court. We do not multiply instances of the kind of trial in which the medical man may be asked to give evidence as to a patient without the patient's consent. It is enough to say that they are rare compared with the innumerable other occasions when medical evidence is sought. They are, however, often of importance when they do occur, and it is difficult to assent to the proposition that the public, or any section of it whose opinion would carry weight, would view with satisfaction the miscarriage of justice rather than see the medical profession assist in its due administration. The arguments founded on the privilege of solicitors lose sight of the fact that with the withdrawal of the privilege the administration of justice could hardly be carried on. A supposed privilege of priests was also invoked by a speaker on Dr. DAIN's amendment. We are aware of no right or power of the clergy of any denomination to refuse to give evidence when ordered to do so by the court. An account given by Dr. R. J. ROWLETTE at the meeting of the refusal of certain hospitals to give information to the military authorities in Ireland had no bearing that we can see on the question of resisting the order of a judge in the actual course of a trial. We should be the last to support any effort to convert medical men into detectives of crime. In contact with a suspected criminal a doctor may have a duty as a citizen to consider, but his wisest course will be to confine his attention to his patient's physical needs, and to divert it as far as possible from everything else concerning him. It is well not to prejudice the case for professional secrecy by overstating it, or by asking too much.

The refusal, however, of the Council of the British Medical Association to countenance or support any idea of resistance to judicial authority in any circumstances, and the amendment which advises support to all such resistance, appear alike inadequate to meet the new conditions which have arisen. These are the outcome of Mr. Justice HORRIDGE's decision as to information acquired at a venereal clinic, coupled with that of Lord MERSEY in another divorce case with regard to records in the custody of a medical officer of health. The possible use in personal litigation of medical history cards, compiled under the Insurance Act, has also to be considered. Both the Council's recommendation and that contained in the amendment appear to contemplate the possibility of test cases, undertaken with the support of the British Medical Association, or with that of the profession generally, in order to ascertain the exact position of the medical witness in certain circumstances with a view to future action. The one, however, refuses the consideration of any test case, and the other proposes to make a test case out of any refusal to give evidence. It is suggested that the better course would be to reserve a discretion to give all support possible in a case in which the principle involved might deserve the support of the profession at large, and of that section of the public whose opinion carries weight. The case of the venereal clinic is a good example of our meaning. The idea that anything passing within the walls of the clinic would be secret was promoted and fostered by the medical profession and by laymen alike on grounds pensary with laboratory and office accommodation has been provided in Norwich. The *farm colony is* now in working order. A short account of it was published in THE LANCET of May 21st, p. 1096.

Urban District of Swinton and Pendlebury.

IN many respects the report for 1920 submitted by Dr. W. *Stewart Stalker is interesting and satisfactory.* The report is valedictory and contains a short review of the districts' health during a period of transition and reform. *In 1900 the death-rate for Swinton and* Pendlebury was 20·2; to-day it is 12·4. The lives spared have amounted to over 2000. At the beginning of the century *80 infants of every 100 born survived* the first year of life; to-day the number is 90. Then, too, 90 persons per 30,000 population contracted typhoid fever *against 2 last year. At the corresponding* periods 60 and 4 persons respectively died of diarrhœa. A saving of public money has been secured which outweighs by *far* the expenditure incurred in effecting these improvements. Dr. Stalker is inclined to believe that the older methods of reducing death-rates have *nearly* attained what within their limit is an irreducible minimum. To reduce death-rates further, what must be aimed at is the pursuit of a higher standard of life on the part of the individual; this higher standard once attained, the slums, the *infant mortality, ravages of alcohol and syphilis,* and of the unhealthy industry will automatically cease to contribute to a tragic procession toward preventable death. This ideal *demands education of* the broadest type, and administering authorities possessed of vision and imagination. There are 6680 houses in the district, with *5378 water-closets, but* there still *remain 1322 privies,* and unless some scheme for rapid conversion, regardless of structural conditions, is adopted, privies *will be handed on from council to council* as a relic of barbarism; problems of economy and expediency have absolutely no claim to consideration in this connexion. *A contribution* to good legislation would be the exaction of penalties from districts which failed to furnish schemes for the conversion of all privies within a definite period.

There are some interesting and pertinent remarks on the milk question. An American Commission on Milk Standards has recommended classification of milk into three grades according to the number of contained organisms. Grade A milk may have a bacterial content which should not exceed 10,000 organisms per cubic centimetre at time of delivery to the consumer. In grade B milk the number should not exceed 1,000,000. Grade C milk, the lowest grade, is milk in which the number of organisms exceeds 1,000,000 per cubic centimetre *at the time of delivery* to the consumer. The Commission, moreover, says that whenever any community finds it necessary to allow the sale of grade C milk, *its sale should be surrounded* by safeguards such as to ensure the restriction of its use to cooking and manufacturing purposes. No sample out of 13 taken in the district of Pendlebury attained the American grade A; 7 were graded B and 6 graded C. Probably the greater portion of milk delivered in towns is grade C milk at the time of consumption. If this contention be true, then it is manifest that unattractive as is the story connected with milk supplies, there is no evidence that there are any grave pathological results. Unfortunately there is overwhelming evidence that a grade A milk inevitably and speedily becomes a grade C milk under the conditions of household storage, which obtain in this district. The vast majority of the *organisms* found in the milk are perfectly harmless, some are beneficial, and any pathogenic organisms can be rendered harmless by the simple expedient of heat sterilisation.

The staff of the School Medical Service consists of the school medical officer (Dr. Stalker), a part-time clerk, two school nurses, and an ophthalmic surgeon who attends the clinic once a fortnight and *prescribes* for cases of defective vision. The School Medical Service is still without a dentist. The need is perhaps best demonstrated in the number of young people *in the district* who are possessed of dentures. The disfigurement is apparent in a journey through the streets when the factories are releasing their operatives. *This disfigurement* will continue so long as the School Medical Service by education, prevention, and conservation fails to bring about conditions whereby the youth of the district may preserve healthy mouths with natural teeth.

Torquay.

Dr. T. Dunlop's report for 1920 gives the Registrar-General's estimate of the population as 34,703 for death-rate and 35,156 for birth-rate. The death-rate in 1920 was 14·7, compared with an average of 17·5 for the previous five years. The infant mortality rate was 53 *compared* with 73, and the birth-rate was 18·6 compared with 13. The death-rate from pulmonary tubercle was 1·2 in 1920 and 1·3 in 1919. The general death-rate corrected for age and sex was 12·8. The population of Torquay is, of course, exceptional. The chief occupation of the inhabitants is catering for visitors and villa residents. There is a large excess of females over males, and an unusual proportion of spinsters and females above the child-bearing age. The birth-rate is very low. Before the war births slightly exceeded deaths, from 1915 to 1918 there were more deaths than births. During 1919 there were 27 more births than deaths and during 1920 147 more births than *deaths. Of the 34 deaths* of infants under 1 year, no less than 16 are attributed to premature birth and congenital defects. In addition 24 *stillbirths* were *registered.* As regards "sanitary circumstances," there is a good supply of soft water which does not act on lead. The sewage is *discharged into the sea without* giving trouble, but attention is drawn to the need for the provision of proper sanitary bins for house refuse. A register is compiled of dairies and cowsheds satisfactory to the sanitary authority situated both within and without the borough. This seems to be a scheme worthy of imitation, as cowsheds outside a borough frequently receive very little attention in the way of inspection from the authority in whose district they are situated. "The question of the provision of an up-to-date abattoir, owing to money stringency and the high cost of building, has been deferred." Dr. Dunlop devotes a good deal of attention to discussing the dirty methods adopted in the transportation of meat and the inadequacy of *our powers of inspection* of places where food is handled and prepared.

About 45 per cent. of the children born in Torquay are unprotected by *vaccination.* The Devon County Council is the supervising authority for midwives, whilst the infant welfare scheme is under the town council. *This does not seem a* satisfactory arrangement for towns of the size of Torquay. Ten cases of ophthalmia neonatorum were notified, and as a result one of these children "has one eye in which there is apparently little vision." In last year's report Dr. Dunlop expressed the opinion that "there was a shortage of about 600 houses for persons of the working classes." The housing committee expect to complete the first 86 during the present *summer.* In the meantime "there is no doubt that there is overcrowding due to the want of housing and the high rents demanded." There were 1595 hours of bright sunshine recorded and a total rainfall of 33·50 inches.

VITAL STATISTICS OF LONDON DURING JUNE, 1921.

IN the accompanying table will be found summarised statistics *relating to* sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the *notified cases of infectious disease it appears* that the number of persons reported to be suffering from one or other of the ten diseases notified in the *table* was equal to an annual rate of 9·1 per 1000 of the population estimated at 4,531,071 persons in the middle of 1920; in the three preceding months the rates had been 9·7, 8·7, and 9·6 per 1000. Among the metropolitan boroughs the lowest *rates from these diseases* were recorded in for the birth of a child than the parental home, however squalid, would have been resented. It is difficult to say whether a change of attitude is due to the house shortage or to appreciation of the fact that labour is more likely to be a simple physiological act if it is carried on in a surgically clean environment: but it is certain that more and more mothers are showing avidity to place themselves in a home, and have to be discouraged for lack of accommodation.

There is still some prejudice among general practitioners against the infant and antenatal welfare centres. The Representative Body of the British Medical Association rejected its Committee's report under circumstances which we detail elsewhere; but this prejudice is dying a natural death now that the objects of these centres are avowedly becoming educational, advisory, and preventive rather than curative or philanthropic. No one will deny that a severe test of the existing machinery for preserving the health of infants is the present hot weather, especially since it coincides with a depreciation of the standard of living following on trade depression. The instructions issued by the Ministry of Health last week (THE LANCET, July 23rd, p. 206), on the adaptation of child welfare organisation to prophylaxis and treatment in the case of a threatened epidemic of infantile diarrhœa, are timely, and if no marked increase in infant mortality in 1921 follows on this most unusual spell of hot weather, it will be to some extent because the mothers have, owing chiefly to the welfare centres, become more learned in the art of nurture. On this one point we venture to dogmatise.

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THE COMPOSITION OF THE URINE DURING HUNGER.

MANY investigations have been made on the composition of the urine during hunger, but perhaps the most complete is that one carried out on two of their countrymen by Dr. N. Suzuki and Dr. N. Hasui,[1] of Kyoto. One of the subjects fasted 21·5 days and the other 14 days. A complete analysis of the urine was made daily during the hunger period, and the results compared with those obtained immediately before and after this period. Other clinical observations were also made, and the following summary represents the chief results obtained. The body weight in both cases fell very rapidly during the first six hunger days; in the second week more slowly and somewhat irregularly, and in the third week (1 case) the fall was slight and fairly regular. After resumption of feeding the increase in weight during seven days in one case was 4·1 kg., and in the other 4·15 kg. With the exception of a feeling of hunger and slight vertigo, during the whole hunger period there were no troubles complained of. The most marked decrease in the circumference of the body occurred around the level of the umbilicus, especially in the first week. The pulse beat, body temperature, and number of respirations fell, but rose again a few days after taking food. A fall of blood pressure was first observable after two weeks, and the normal pressure was restored within a week of the end of the starvation period. The tendon reflexes during the first week were normal or increased, and then became gradually weaker. In both cases the patellar reflex had noticeably decreased on the fifteenth day, and the Achilles tendon reflex had disappeared. Both gradually returned with the taking of food.

As to the urine itself, the total nitrogen in both cases from 2–6 days was just over 10 g., and gradually fell with the hunger period. The maximum, in one case (0·25 g.) and in the other (0·37 g.) per kilo of body-weight, was reached on the fourth day. At the beginning of the after-hunger period the nitrogen excretion fell distinctly, rose steeply from the fifth day, and in one case reached normal on the seventh day. The excretion of ammonia-nitrogen showed a quite regular curve. From the second day to the fifth or eighth day there was a steady rise, and then a progressive fall to the end of the experiment. After food had been taken for a week the normal value was restored. The excretion of urea in both cases ran parallel with the total nitrogen output. The amino-acid excretion showed a gradual fall till the end of the experiment. In the food period in both cases there was a sudden rise in the excretion (the food from the fifth day onwards contained albumin). The variations of uric acid are quite different from those of the total nitrogen. In one case it diminished from the first to the third day, and then rose until the end; in the second case the maximum (0·107 g.) was reached on the fifth day, and the excretion then fell to a minimum of 0·06 g. at the end of the experiment. There was a sudden rise when food was resumed. There was no marked variation in the amount of the purin-bases nitrogen. The purins in the food seem to be almost entirely excreted as uric acid in the urine. The kreatinin at first showed a fall, then a rise, followed by a fall. Kreatin was present in small amount on the first day, then it increased and remained between 0·08 and 0·11 g. On the second day, after food was taken, it fell abruptly. The fall of chlorine was very regular from the fifth to the last day of starvation, and the normal was restored on the fifth to the sixth day after the fast had been broken. The relation of the amount of chlorine to the freezing point rose gradually with the progressive hunger, while that of the total nitrogen to the freezing point showed no marked variations during the whole hunger period. The amount of phosphorus fell on the first day; from the second day it rose, and reached a maximum on the fourth; from the fifth day it gradually fell, and fell even more in the after-period, owing to the retention of compounds of phosphorus. The total sulphur fell on the first day; then followed a steady increase to the fourth or fifth day, and then a fall. On the resumption of food there was a second considerable fall in the sulphur excreted; but it rose with a diet rich in protein. The secretion of inorganic sulphates ran parallel to that of the total sulphur. The ethereal sulphates fell distinctly on the first or second day, rose on the second or third day, and then steadily fell until food was taken, when the amount gradually rose again. The neutral sulphur showed no obvious variation during hunger or the after-period. Acetone appeared on the first day and aceto-acetic acid on the second. Phenol excretion fell on the first three days; from the fourth to the seventh days the value was nearly normal. Cystin (1·0–2·0 g.) taken during the hunger period was totally oxidised and excreted in the urine as inorganic sulphate. Tyrosin given by the mouth caused on the day of its introduction in pre- and post-hunger period a distinct increase in the excretion of phenol, while if given during the hunger period the increase was first noted on the second following day. Phenylacetic acid introduced subcutaneously was excreted partly as phenylacetylglutamin and partly as phenylacetylglutaminurea; the amount of both in the pre-hunger period being about equal. In the hunger period the amount of the latter was about double that of the former.

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[1] Acta Scholæ Medicinalis Universitatis Imperialis in Kioto, vol. iv., 1921.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C.2.

THE LANCET.

LONDON: SATURDAY, JULY 30, 1921.

The Bearings of the Staff Fund.

A COLOSSAL effort is being made to save what is known as the voluntary hospital system in this country. The Cave Committee, reporting on May 31st, said: "Is the voluntary system worth saving? We are convinced that it is." Writing to Lord SOMERLEYTON, hon. sec. of King Edward's Fund for London, on July 12th, the Prince of WALES spoke of the injury to the welfare of the sick and the enormous expense to the State which would follow if the voluntary hospital system fell to the ground. And on July 18th the annual business meeting at Newcastle of the British Medical Association affirmed with practical unanimity its belief that the voluntary method of administration is to the advantage alike of the public, medical science, and the medical profession, and should be maintained. Now such distinguished and congruous support should be sufficient to ensure the success of any system, were its principle accurately defined or indeed capable of exact definition. Probably all or nearly all of us would like to see the hospitals of the country run on the generous lines and easy finance of the first decade of the present century. Those times, alas, are gone; most honest people would add, never to return. And therefore, to be quite frank, we cannot maintain the voluntary hospital system, in which most of us have been brought up, unmodified, with all its splendid ideals and occasional defaults. And it may be useful to inquire exactly what is the essential part or principle of the system which is to be saved; to demand in fact an exact definition from those who use the term what it is of which they are speaking or thinking.

Unanimity disappears at once when we do this. A piquant contrast was afforded by the views of the first two speakers at the Newcastle meeting. Dr. F. REES, representing West Cornwall, said that anyone could see, if he chose to see, that the voluntary system was no longer capable of efficiently meeting the situation; half a million pounds of public money had just been voted by Parliament for the support of hospitals. That was the epitaph of the system. Dr. S. NOY SCOTT, representing the neighbouring constituency of Plymouth, declared that rather than have hospitals handed over to the control of the State he would see many of them closed until such time as voluntary subscriptions enabled them to be reopened. And later in the debate the B.M.A. Representative Meeting, on the invitation of its Council, differed with emphasis from the Cave Committee on one principle, that of honorary medical service, which has hitherto been regarded as a fundamental point in the system. Paragraph 50 of the Cave Report, which we print in full on p. 246, refers to the practice obtaining in some hospitals of carrying a proportion of any grants from public authorities to a fund placed at the absolute disposal of the honorary medical staff. If this practice is confined to cases where the full cost of maintenance and treatment is paid by or on behalf of the patient, not much objection, the Cave Committee thinks, can be taken to it; but any extension of the practice beyond those limits appeared to the Committee to endanger the future of voluntary hospitals. The B.M.A. proposes to extend the practice greatly beyond those limits, maintaining that the essence of the voluntary hospital system is the independent and voluntary management, this being in no way related (these four words are quoted literatim) to the conditions of service of the medical staff. As an illustration it was pointed out that the B.M.A. remains a voluntary association, although its staff is salaried. The staff fund, it might be argued, being at the absolute disposal of the staff, might be returned by them to the maintenance account, wherever this might seem equitable; in practice, however, hospital officers, like Members of Parliament, would find it invidious to return their salaries.

Here is a discrepancy which requires to be faced in order to be cleared up. We have no doubt that there are many members of the medical staffs of general hospitals who regard their honorary position as entitling them to speak with freedom and independence for the nature of the control to which they submit, and voluntary hospital committees are regarded as more prompt to act in the interests of medical education and research than committees which administer public money. No doubt the honorary staff are aware, in the words of the Cave Report, that they obtain a valuable return in the form of medical and surgical experience and the enhanced reputation which accrues to a member of the visiting staff of a great hospital. But we believe that many of them would hesitate to take the suggested tithe from patients who contribute individually or collectively to their maintenance, unless that contribution exceeds the cost of maintenance, and includes a quota for treatment. This feeling, which may or may not be well founded, rests on the tacit acceptance of the right on the part of those who pay the doctor to call the tune, and the distrust by the medical man of any sort of bureaucratic control. This has been the position in the past. The new definition, if accepted by the public, would enable the medical man to draw his income directly from his hospital work without admitting the interference or coöperation, whichever is the term preferred, of representatives of county or district councils, labour committees, Approved Societies, the Ministry of Health, or what not other trustees of funds. But will the public acquiesce in the new definition? It might be well to find out. If the professional view should prove untenable—and it would be prudent to consider the possibility of this—then, or even earlier, it might not be amiss for a few enterprising voluntary hospital committees to admit to their board certain of these representatives, and to test their ability to act in the same whole-hearted way for the public weal as their colleagues.

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Professional Secrecy.

ON the first day of the Annual Representative Meeting of the British Medical Association the important subject of the preservation of professional secrecy in the witness-box was discussed at length, and the proceedings were reported in our columns last week. The subject is of such profound public and medical interest that we return to its discussion at greater length. The result of the debate of Representatives was that a recommendation of the Council on the subject failed to secure support, an amendment resulting deformity and stiffness may remain indefinitely. Usually only three or four vertebræ are affected, but sometimes the whole dorsal region may be attacked. Hypotonicity of the ligaments and muscles of the sacro-iliac joints and the hips is a predominating symptom.

SNAKE POISONS AND THEIR TREATMENT.

THE cobra by reason of its wide distribution in India and the potency of its venom renders the problem of remedial treatment an extremely difficult one. It is rather surprising to learn from Major R. Knowles's address to the Royal Society of Tropical Medicine, which we reported in our issue of July 23rd, that even in untreated cases of cobra bite the mortality is not computed at a higher rate than 40 to 50 per cent.; but Major Knowles explains that the amount of venom injected may fail to reach a lethal dose through some fault in the mechanism controlling the ejection of venom, failure of the poison fangs to penetrate, or the protection of clothing. In contrast to the cobra, however, the viper, with the lightning rapidity of its stroke, greater certainty, and deadly earnestness, seldom if ever fails in its intention, and therefore allows far less chance of escape from its attack. The results of the numerous experiments carried out by Major Knowles and his colleague yield valuable information as to the minimum lethal dose (M.L.D.) and absorption period of cobra venom for the rat and the monkey (*M. rhesus*), and thus also for man, by calculation from the charted dose and death-time curve. Whereas the estimated M.L.D. for man is about 14–15 mg. of the desiccated venom and the absorption time probably not less than 10 minutes, the average yield of venom at a bite is computed at 14 or 15 times the amount required for a M.L.D. Indeed, the variation in the dose of cobra venom which may be yielded at a single bite, ranging from nil to 587 mg., is remarkable; however, provided one lethal dose is absorbed, the severity of the symptoms would not seem proportionate to the amount injected. Of the constituents and behaviour of the active principles contained in the colubrine and viperine venoms much has yet to be learnt. Their complex composition, is at present vaguely defined as comprising a "range of proteids and non-coagulable proteoses." Their toxic properties are, however, well recognised, and, for the cobra, include a hæmolysin, a cardiac stimulant, and a neurotoxin capable of paralysing the respiratory centre; whereas viperine venoms, in addition to a hæmolysin, possess a coagulin and a cytolysin or endolysin, which is rendered a most formidable lethal poison by its destructive action on the endothelial lining of capillaries and venules throughout the body. Future research by qualitative and quantitative analysis will doubtless throw light on the chemistry and relative amounts of these various toxic components of colubrine and viperine venoms, as well as on their neutralisation by antivenene—the venom-antivenom complex. We commented recently[1] on a series of investigations by Houssay, Negrette, and Sorrelli into snake venoms. Among the varieties of American, Australian, and Asiatic snake venoms studied, those of the cobra and Russell's viper were included. They were found to possess no amylolytic action, but were capable of splitting up lecithin, and gave evidence of proteolytic and strong hæmolytic power. These properties would explain the effect of neurotoxin on the respiratory centre, and of endolysin on the capillary endothelium, in colubrine and viperine venoms respectively. The specific proteolytic action of the venoms on the blood, as tested in vivo on the dog, showed that the coagulant or anticoagulant properties varied. In the early, or "positive," phase clotting by the coagulant venoms was due to precipitation of fibrinogen, but in consequence of this complete precipitation there followed a "negative" phase in which the blood was incoagulable. The action of the anticoagulant venoms, on the other hand, was due not to precipitation of fibrinogen or any formation of antithrombin, but to direct destruction of thrombokinase. Such changes may partly account for the apparently conflicting behaviour of the viperine venoms in causing both thrombosis and hæmorrhage.

The absorption period of a lethal dose of cobra venom being limited to so short a time as 10 to 20 minutes, it is obvious that remedial treatment to be effective must be extremely prompt. Of the many local remedies, apart from ligature or amputation, which have been advocated in time past, the Lauder Brunton technique of incising the bite and rubbing in crystals of potassium permanganate was for long regarded as a valuable remedy, whatever the nature of the venom. Its value depended entirely on promptness of application and on the uncertain chance that the oxidising power of the salt would be sufficient to destroy all the venom injected; in this respect its action was limited by failure to penetrate deeply enough for complete contact. Hypodermic injection of the zinc permanganate is now claimed to be far more effective in reaching the venom; better hopes even are entertained of the use of salts of the heavy metals—gold, platinum, &c.—and in particular palladium dichloride, which has such a destructive action on snake venom as to be the most successful of all local remedies yet tested. These measures are, however, but subsidiary compared with the invaluable neutralising action offered by prompt use of antivenene, particularly if given intravenously. The promise held forth by Calmette's introduction of this remedy was not fulfilled to the extent at first anticipated. There is, however, considerable hope that the process of immunisation now carried out at the Pasteur Institute at Kasauli may attain a high degree of perfection, and that the serum, improved, as Major Knowles has suggested, on the lines of concentration followed in the preparation of antidiphtheritic serum, may yield antivenene of assured potency and capable of neutralising the most lethal of venoms. Antivenene, as at present prepared, is essentially and purely a specific remedy. Whether it is possible, by a process of consecutive immunisation of the same animal against more than one type of venom, to arrive at a compound or polyvalent antivenene for universal use is at least open to doubt. The idea is, of course, no new one. Polyvalent power was claimed by Calmette for his original antivenene and was long the aim of the late Major Lamb. If proved practicable, it might solve the problems arising out of the specific nature of the various venoms. The present situation calls for coöperation with the biochemist; and we hope that the suggested trial of colloidal suspensions of the heavy metals, or the combination of concentrated antivenene with palladium dichloride, may lead to the discovery of the sure remedy of the future.

TESTS OF APTITUDE FOR A TRADE.

ATTENTION has been drawn in THE LANCET to the economic cost of labour turnover in industry and to the need for greater care in the selection of workers, not only in order to promote efficiency, but also to lighten the strain upon health caused by uncongenial employment. The problem is double: the first part is concerned with choosing juveniles possessing special aptitudes for different kinds of work, whether for engineering, for mining, or weaving; the second is concerned with ascertaining whether any particular adult applicant for work possesses the requisite knowledge and skill. The latter, although not a simple matter, is the easier task, and it is characteristic of the practical trend of American thought that while others are considering the more difficult side, they seize upon and to some extent solve the simpler. In a book recently published[1] Mr. J. Crossby of public policy. If the steps taken by a public department to procure such secrecy are insufficient without the sanction of an Act of Parliament, the legislature should intervene. By a test case we mean one in which there might be a strong combined protest on the part of the medical profession in which representative members of the public could join. At present it appears that the judge exercises a discretion against which there is no appeal and as to which there is no consistent judicial practice. It is not known, for example, how far Mr. Justice HORRIDGE would have the approval of his brother judges in the case referred to, or what the attitude of informed laymen generally may be. What is needed is certainty in order that proper constitutional action may be taken. Such, in broad outline, are the considerations which we commend to the Council of the British Medical Association in the time that remains to it before it decides to confirm as the policy of the Association the downright attitude taken up by the Representative Body—much depends upon its wise statesmanship.

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[1] THE LANCET, Sept. 25th, 1920.

[1] Trade Tests. By J. Crossby Chapman. Geo. G. Harrap and Co., Ltd., London. 1920. Pp. 435. 15s.

Infant Mortality and the Practitioner.

IT is sometimes contended that no popular movement ever succeeds quickly and uniformly throughout a country unless the people are already uneasily groping for a lead which is overdue. Enthusiastic leaders, however, usually claim that the public awakening is not only coincident with but actually due to the crusade, and that any slackening of effort in propaganda will lead to a reversion to former indolence. The gratification caused to the zealous by the conviction that they have actually achieved a reform is a powerful stimulant to further effort; voluntary workers especially tend to regard themselves as a driving force, and would derive little satisfaction from the humbler conception of their office as that of planning the railroad on which the engine of progress can most advantageously travel. In such an important national question as that of infant mortality, however, it is surely not unprofitable to try to estimate what factor or factors have contributed to the gratifying national reduction reported by Sir GEORGE NEWMAN for 1920 in order that no effort should be wasted or misdirected. The Medico-Sociological Committee of the British Medical Association, appointed in October, 1920, chose the value of Maternity and Child Welfare Work in Relation to the Reduction of Infant Mortality as the first subject for consideration, and it is a happy coincidence that their report[1] should have been issued at a time when conferences on infant welfare, such as those held in London,[2] Brussels, and the one announced for Vienna, are claiming public attention. The Committee coöpted well-tried representatives of general public health activities and of special branches of the work under discussion to aid them in their arduous task, and a questionnaire was circulated, to which most of the answers were supplied verbally. We print on p. 248 the summarised recommendations of this Committee. The proper estimation of the influence exercised by maternity and child welfare work apart from that of other health agencies taxed its acumen. For example, one London district, the poorest and most thickly populated in the area, showed the greatest improvement in the infant mortality rate, and it was in this district that centres had been established earliest and most actively developed; again, certain other figures seemed to show that the curves of infant mortality follow practically the same course in towns where centres are active as in those where they are not. However, after considering the evidence laid before them the Committee record their opinion that "maternity and child welfare work has contributed to an appreciable extent to the reduction of infant mortality that has taken place, but . . . it is too early yet to determine what that extent has been."

Among the many tables set forth in the annual report just issued by the Chief Medical Officer of the Ministry of Health, the most arresting are certainly those showing the infant mortality rate for England and Wales since 1881. The highest figure is 156, for the five years 1896-1900, and the lowest is 80, for 1920. In 1919 the figure was 89; in 1916, the next lowest year, 91. An interesting drop from 130 in 1911 to 95 in 1912 is followed by a rise to 108 in 1913, and the average of the two subsequent years remains at this figure. Analysis of this and other tables shows that the incidence of infant mortality is heaviest in the first three months of life, especially in the first week, and that various social, domestic, and industrial conditions, notably illegitimacy, influence the infantile death-rate. Sir GEORGE NEWMAN classifies the three chief causes of death as developmental conditions, respiratory disease, and diarrhœal disease. The decrease in infant mortality recorded in recent years is referable mainly to fewer deaths from diarrhœa, partially to deaths from respiratory diseases, and, to a much less degree, from developmental conditions. Sir GEORGE NEWMAN interprets the fact that about 30 to 35 per cent. of infantile deaths are due to developmental and 40 to 45 per cent. to infective conditions as meaning that approximately half of the infant death-roll is directly preventable. In this connexion Dr. W. A. BREND's deductions from a statistical review presented to the Medical Research Council in 1917, supported by the recent investigations of Prof. ARTHUR ROBINSON,[3] are of interest. Dr. Brend considers that there is a non-preventable infant mortality of from 25 to 30 per 1000, and that these deaths, due to antenatal biological causes, occur almost entirely in the first month after birth. Undue insistence on some estimated figure as a minimum below which infant mortality could hardly be reduced would be unwise. It should be noted, however, that the attention being directed in various parts of the country to post-mortem histological examination of the tissues of stillborn fœtuses may not yield such clear results as was at one time hoped; and Prof. ROBINSON's suggestion that many deaths in utero may be attributable to biological rather than to pathological causes may well influence the lines into which research may profitably be directed in the future. But the child stillborn for lack of antenatal care, of skill in delivery, or of convenient surroundings during labour is a disgrace which calls for remedy. We hope that the schemes of the Ministry of Health for the provision of maternity hospitals and homes for normal confinements, outlined by Dr. JANET CAMPBELL in our issue of July 16th, will be prosecuted with vigour. Those who have worked as medical officers of antenatal clinics, without residential provision, did not perhaps feel the need of such provision when the centres were first opened. The mothers had to be coaxed thither with the utmost tact, and any suggestion that a residential institution could be a more fitting place to any opinion irreconcilable with the most generally accepted teachings of the day is remarkable, and he has achieved this result without resorting to the safe but dull device of stringing together platitudes. There is, however, one point on which we might join issue with him. Discussing precautions against infection, his advice to the consumptive is that "…. he should never, under any circumstances, swallow his sputum." This is a counsel of perfection. It is fairly certain that more than 50 per cent. of a consumptive's tubercle bacilli are swallowed, and this process is so continuous that were Dr. Thomson's advice to be strictly followed, the consumptive would outspit the irate llama and become an intolerable nuisance to himself as well as to his surroundings. Of course, the wholesale swallowing of nummular sputum is to be deprecated, but there are circumstances in the consumptive's career under which the expectoration of sputum into a bottle may have tragic consequences.

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[1] Price 3d., from the British Medical Association, 429, Strand, London, W.C. 2.

[2] THE LANCET, July 16th, 1921, p. 148.

[3] THE LANCET, May 14th, 1921, p. 1030.

THE EFFECTS OF ULTRA-VIOLET RAYS ON THE EYE.

The best known dangers to the eyes from ultra-violet rays, or rather from light rich in ultra-violet rays, are inflammations of the lids and conjunctiva, such as occur in so-called snow-blindness and in "electric ophthalmia." How far and in what way the deeper structures of the eye are liable to be affected is a matter of some uncertainty. It is generally admitted that the bulk of these rays do not get through the cornea, but it has been shown that a certain proportion of them penetrate as far as the lens. According to the observations of Hallauer, Schanz, Birch-Hirschfeld and others, the transmission of ultra-violet rays through the lens is individually very different, so that some lenses scatter the bulk of the rays that reach them towards the ciliary body or elsewhere, whilst others allow them to pass through to the retina. In the former case the effect may be an interference with the nutrition of the lens and so be a factor in the production of cataract. In the latter case it is suggested by van der Hoeve that in time the injurious effect on the retina may culminate in the disease known as senile degeneration of the macula, a progressive form of partial blindness to which old people are subject. The apparent fact that there is some antagonism between this disease and cataract is looked upon by van der Hoeve as a confirmation of his view.[1] On the other hand, as no one can maintain that ultra-violet rays are the main cause of cataract, it is obvious that this argument must not be pushed too far.

In an address delivered last May to a joint sitting of the Berlin Ophthalmological Society and the German Society of Illuminating Engineers, F. Schanz, the Dresden oculist who has long interested himself in the subject of ultra-violet rays, carries the indictment against them a step farther.[2] Cases have been recorded where the onset of a colour scotoma was proved to be the result of light from a mercury vapour lamp, the affection disappearing on the light being screened by protective glass. Behr, investigating 50 patients operated on for cataract, found that the sensibility of the retina, as shown by the increased difficulty in dark adaptation, was diminished in all cases. The number of ultra-violet rays reaching the retina must have been increased by the absence of the lens, but similar increased difficulty in dark adaptation followed exposure to the rays in eyes which were intact. Schanz argues that this species of disturbance of retinal function is far commoner than is generally supposed. He suggests that the well-known prevalence of night-blindness during the war may be partly accounted for on the supposition that many of these patients had had the sensitiveness of their retinæ injured by industrial employment involving exposure to ultra-violet rays, leaving them more ready victims to fatigue. The subject does not appear to have been sufficiently investigated as yet to warrant dogmatism. Senile degeneration of the macula, however, is a not uncommon disease and any clue to its pathology and possible prevention should certainly be followed up.

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[1] American Journal of Ophthalmology, March, 1920.

[2] Supplement to Deutsche Optische Wochenschrift, 1921, No. 23.

ABDOMINAL PREGNANCY WITH LIVING CHILD.

Dr. E. C. Moore,[1] of Los Angeles, California, remarks that the number of recorded cases of abdominal pregnancy with delivery of a living child are uncommon, while those where the mother survived and the child lived a year or more are exceedingly rare. Of 77 cases collected by Kelly in 1898 of ectopic viable fœtus delivered by cœliotomy, 35 died within 50 hours of birth and only 7 lived for one year or more. Dr. Moore, who is of opinion that many others could be included if it were possible to obtain the necessary information, has collected 21 authentic cases of abdominal pregnancy with survival of mother and child, including Kelly's cases, and one of his own whose history is as follows: The patient was a woman aged 29, who was pregnant for the first time, although she had been married for more than five years. For about six weeks the pregnancy seemed to progress normally, and then she began to have some cramp-like pains in the lower abdomen. Operation was recommended but refused, and she remained in bed for ten days with occasional severe pain, which gradually diminished. Between the second and third months there was a slight bloody vaginal discharge. During the sixth month she had very little pain, but from that time onwards she vomited a great deal, and the fœtal movements caused much pain. At an operation performed in the eighth month the omentum and small intestine were found adherent to the anterior abdominal wall and covering a large mass which constituted the placenta, and was attached to the posterior surface of the right broad ligament and the lateral pelvic wall, and also extended up towards the liver, being attached to the omentum in this region. The uterus was about the size of an organ three months pregnant, and was pushed to the left by the placenta. The umbilical cord extended upwards to the left under the spleen, where the child was found lying free among the intestines, not surrounded by any sac. The entire broad ligament with the placenta was removed en masse. The child was a girl weighing 5 lb. 9 oz, and had no deformities. Information received from the mother about a year after the operation stated that both she and the infant were well.

Dr. Frederick Langmead, Director of the Medical Clinical Unit at St. Mary's Hospital, Paddington, has been appointed Professor of Medicine in the University of London.

The House and library of the Royal Society of Medicine, 1, Wimpole-street, London, W., will be closed during August for repairs and cleaning.

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[1] Surgery, Gynecology, and Obstetrics, July, 1921.

The Council of Allied Professions.—The monthly regular meeting of the Council of Allied Professions was held at 11, Chandos-street, London, W., on July 19th. In the unavoidable absence of Dame Sidney Browne, G.B.E., R.R.C., the chairman, the meeting was presided over by Miss Rosalind Paget. Among other matters under consideration was the question of nurses and midwives being called away from their patients for jury service. It was unanimously resolved, "That it is in the interest of the community that nurses and midwives actually in the practice of their professions be exempted from jury service." It was decided to obtain the fullest possible support in the Federation of Medical and Allied Societies for this resolution and make the necessary representations. The means of utilising to the utmost extent the forthcoming journal of the Federation was also discussed, and proposals were submitted and unanimously approved whereby it would become the official organ of the societies.

Annotations.

"Ne quid nimis."

FRENCH SENATE AND TEMPERANCE LEGISLATION.

THE proposal last week in Parliament to suspend the activities of our Liquor Control Board leads to an instructive comparison with the very different conditions ruling on the other side of the Channel. A frequent correspondent writes: The French Senate has refused to confirm the proposal accepted by the Chamber of Deputies to reduce the tax on wine. This involves an important social question which should be of special interest to the advocates of temperance. Of course, there is no reckoning with the contradictions or inconsistencies that may result from the financial stress due to the war; but, in its present decision, the Senate has acted against tradition and expectation, and against what some consider wise policy. When, some 40 years ago, the vineyards of France and Switzerland were devastated by the phylloxera, the increase of drunkenness, insanity, and crime was so marked that the Senate appointed a special commission to inquire into the cause of this evil. We explained at the time, and on several subsequent occasions,[1] the conclusions arrived at by the Commission, which were endorsed by many Congresses of Hygiene and similar scientific gatherings, both national and international. It was generally agreed that the evils of drunkenness were almost unknown in those countries where natural wines were plentiful and cheap, for the desire and need for drinking spirits did not arise. It was because this happy condition was destroyed by the phylloxera that a rapid increase of intemperance and its attendant evils caused the Senate to take action. The vineyards were saved by grafting French vines on American roots. Grapes became abundant again, real and cheap wines took the place of imitations made with dried currants, bad alcohols, and other unwholesome ingredients, and drunkenness abated. This wholesale object-lesson gave rise to a widespread view that if populations were contented to drink clean water and light and pure wine and beer, the demand for strong spirits would die down, and there would be little drunkenness. Cider, perry, and hydromel are accepted also by the French definition as hygienic drinks. Light wines are, of course, the strongest, for they may contain as much as 12 or 13 per cent. per volume of alcohol. But then if drunk in large quantities, as for instance, in very hot weather, they are generally mixed with at least half as much again of water. In course of time practical action followed theoretical discussion, and a law was enacted by which towns and communes were allowed local option in carrying out temperance legislation. Paris led the way by a heroic resolution to abolish altogether every tax on hygienic drinks. In 1897 the municipal income of Paris amounted to £6,200,000. The abolition of the tax (octroi duty) on hygienic drinks would have reduced these receipts to £4,400,000. Nevertheless, Paris was so determined to do away with drunkenness and the disease of alcoholism, that it consented to lose this source of revenue, thus sacrificing more than £2,000,000 annually. The results were satisfactory. In good vintage years wholesome natural wines could be purchased retail and within the walls of Paris at from 1½*d.* to 2*d.* the pint, or 15 to 30 centimes the litre. So there was no excuse for drinking spirits.

The war shattered all these temperance measures. Wine became dear, and taxes had to be re-imposed. In the course of time, however, the Chamber of Deputies thought it might venture on a small and first step towards restoring the former position, which had conduced to temperance. A Bill was recently introduced and adopted by the Chamber of Deputies to reduce the taxes that had been re-enforced upon hygienic drinks. Thus the tax on wine was to be reduced from 19 fr. to 12 fr. per hectolitre; on cider from 9 fr. to 6 fr., and on beer from 2 fr. 60 c. to 1 fr. 65 c. per hectolitre. But in the Senate it was objected that this would mean a loss of revenue of 461,000,000 fr. for the State and 51,000,000 fr. for the communes. Though the Senate had in former days been the means of initiating such measures in favour of hygienic drinks, it now declared that, temperance or no temperance, neither the State nor the local authorities could afford these financial sacrifices. Thus the Senate on July 9th threw out the Bill, but only by a majority of 155 votes against 136. We may, therefore, anticipate that the matter will come up again at no very distant date. In the meanwhile, it is very desirable that further reliable informations and statistics should be forthcoming. All countries will be interested to know to what extent the more recent increase in the cost of wine has produced results similar to what was noticed when the phylloxera destroyed the vineyards.

SYPHILITIC BACKACHE.

BACKACHE when it occurs in syphilitic infection is apt to be persistent and intractable. Dr. Joseph Victor Klauder,[1] assistant professor of dermatology and syphilology at the Graduate School of the University of Pennsylvania, who records four illustrative cases, discusses the nature of syphilitic backache according as it is a symptom of specific involvement of the spinal cord, lumbar muscles, or vertebræ. In most instances it is a symptom of involvement of the spinal cord, the condition being meningeal in origin and due to irritation of the posterior sensory roots. The posterior surface of the cord is more frequently involved than the anterior surface, and the meningitis is more extensive and more intense in this region. It is usually most severe in the dorsal segment, where the spinal cord offers least resistance. Syphilitic spinal meningitis may be acute, subacute, or chronic, and may persist from the early secondary period until many years later. In addition to backache, other sensory symptoms of meningitis may be present, such as girdle-pain, hyperæsthesia, and paræsthesia. The tendon and skin reflexes are increased. Motor irritation is manifested by tension in the muscles. Clinically there is rigidity of the back combined with localised or diffuse tenderness on percussion of the vertebral column. The spinal fluid always shows a positive Wassermann reaction and a more or less marked pleocytosis according to the severity of the meningeal involvement. In backache due to syphilis of the lumbar muscles the underlying condition is rather an acute spirochætal infection than a syphilitic myositis, which chiefly affects the flexors of the arms and legs. Backache due to syphilis of the vertebræ is rare, the cervical region being most frequently affected. Of 55 cases collected by Neumann in 1904, the cervical region was affected in 65 per cent., and the dorsal and lumbar region in 31 per cent. In syphilis, in contrast with tuberculosis, the spinous and transverse processes are more apt to be affected than the bodies of the vertebræ. The pathological conditions are periostitis and osteitis, which may lead to necrosis and the production of sequestra. There is less likelihood of the formation of a cord abscess than in tuberculosis of the vertebræ. Syphilis, however, as in one of Dr. Klauder's cases, may rouse dormant tuberculosis into activity, so that this possibility should be borne in mind in the presence of vertebral involvement in a syphilitic patient. Synovitis of the spinal joints, which Dr. Klauder regards as perhaps the commonest lesion in syphilis of the spine, may also give rise to backache. Syphilitic synovitis occurs early in the disease, although the

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[1] See "Temperance Legislation in France," a series of articles commenced in THE LANCET on March 10th, 1906.

[1] Archives of Dermatology and Syphilology, June, 1921.

Journal once a month, and for dealing with medical matters from the students' point of view took no definite form, the following resolution being put and lost:—

That, in order to stimulate the interests of senior students of medicine in the work of the Association, and so tend to secure their adherence at the outset of their careers as practitioners, the B.M.A. institute a student class of members at a reduced fee, with the privilege of attending scientific meetings.

Expenses of Representatives.

A proposal to pay the out-of-pocket expenses of representatives who attend meetings of the Representative Body was withdrawn on the Treasurer pointing out that the minimum cost would be £2000.

State Reward for Scientific Research.

On the invitation of Newcastle-on-Tyne the meeting put on record its regret that the British Empire, with its world-wide possessions, cannot suitably reward the men who have done so much to render life supportable in its many climates, and instructed the Council to take all possible steps to induce H.M. Government to provide efficient reward for scientific work carried out in the interest of the State.

The Voluntary Hospital Principle.

A long debate on hospital administration was opened by the passing with practical unanimity of a motion proposed by Mr. N. BISHOP HARMAN, Chairman of the Hospitals Committee, to the effect:—

That the Representative Body desires to record its belief that the voluntary method of administration of the voluntary hospitals of the country is to the advantage of the public, medical science, and the medical profession, and that it should be maintained.

Only a single voice was raised to point out that the actual Government grant of half a million pounds shows the voluntary system to be incapable of keeping hospital administration efficient. Mr. Harman stated that the principle of voluntary administration would not be impaired in any way by payment of the medical staff. Freedom and elasticity were inherent in the voluntary system, which was more under the influence of the medical profession, and more appreciative of scientific work and research.

A second motion, that necessitous persons should continue to be treated free, was amended and passed in the form:—

That inability to pay for adequate treatment shall be the consideration for the admission of all patients for hospital treatment—

after it had been pointed out that the word "necessitous" is now generally accepted in a special sense in regard to the Poor-law, whereas numbers of the "new poor" are unable to afford adequate treatment outside the hospital. A rider to the effect that hospital treatment should not be given gratuitously to patients maintained in whole or in part by public funds was lost by a considerable majority, after an appeal by Dr. A. C. Farquharson, M.P., to enunciate the voluntary hospital principle, and leave the details for their voluntary committees to define.

Municipal and State Grants.

The third motion by the Chairman of the Hospitals Committee was as follows:—

That it is undesirable that the voluntary hospitals should be subsidised by the local rating authorities, except in so far as payment is made for the examination and the care of patients for whom these authorities are responsible.

The motion was accepted by the meeting in this uncompromising form, after refusing the qualification: "unless it be understood that such subsidy does not give the rating authority the right to interfere with the administration of the hospital."

In view of the materialisation of the grant to hospitals by the Ministry of Health the following motion and amendment were not dealt with, but were referred back to the Council:—

Motion: That in times of financial difficulty it is desirable that the voluntary hospitals should be subsidised by the central Government, and that such subsidy in the case of any individual hospital should take the form of a contribution proportional to the income received by the hospital from voluntary and other contributions. The subsidies here proposed should be made through some central hospital fund.

Amendment (by Brighton): That, at the present time of financial difficulty, it is desirable that the central Government should subsidise voluntary hospitals. The subsidies here proposed should be made through some central hospital fund, and should not carry the right of any control in the management beyond that allowed to an ordinary private subscriber.

A fifth recommendation of the Hospitals Committee, expressing the view—

That greatly extended support for voluntary hospitals should be sought from employers and insurance companies, seeing that they benefit largely both directly and indirectly by the services of the voluntary hospitals

was adopted after discussion, in which it was pointed out that the provenance of hospital funds was a matter more for the general public than the medical profession to decide.

Recommendations six and seven of the Hospitals Committee were then passed in the following form:—

That every patient of a voluntary hospital who is able should make a contribution, during treatment, towards the cost of maintenance, unless the contributory method of subscription is adopted as essential in industrial areas. In view, however, of the increased cost of maintenance, &c., the Representative Body considers that the contributory rates paid by workmen should be materially increased.

That, where voluntary hospitals provide accommodation for paying patients, no fixed rate of payment for professional services rendered to such patients should be established; the fees so payable to remain, as at present, a matter of arrangement between patient, family physician, and consultant.

An amendment to fix a maximum fee was decidedly rejected.

Formation of Medical Staff Fund.

Much time was given to a discussion of the allocation of funds to the medical staff in connexion with any contributory scheme, and the eighth recommendation of the Hospitals Committee was finally agreed to in the following revised and extended form:—

That in the event of decisions being taken which would lead to patients (other than paying patients referred to in foregoing Minutes) paying, in part or in whole, the hospital maintenance fees, either individually or by some contributory method, or with the addition of rate aid or State aid, or by a combination of two or more of these methods, a percentage of all such payments should be passed into a fund which can be allocated in any manner which such honorary medical staff may determine.

That when the board of management of a voluntary hospital enters into a financial arrangement with a public authority, an employer of labour, approved society, insurance company, or under a contributory scheme, for the reception of patients, such arrangement should be taken to cover the cost of maintenance and treatment, and a percentage of all such receipts should be passed into a fund which is at the disposal of the honorary medical staff of that hospital.

That it be an instruction to the Council to bring this resolution to the notice of the secretary and the senior honorary medical officer of each voluntary hospital, with a request that the policy therein outlined be adopted by the board.

There were about 15 dissentients to this resolution, some members feeling strongly on the one hand that it was impolitic to take a tithe of small payments from prospective patients, but that hospital boards in making any arrangement with paying bodies might reasonably contract for treatment as well as for maintenance. The medical profession, it was alleged, was willing to do philanthropic work in at least an equal proportion to that of other sections of the community.

Staff Fund and Voluntary Principle.

At this point a resolution proposed by Chairman of Council was taken, disagreeing with para. 50 of the Cave Report, which runs thus:—

"In connexion with the grants by public authorities it appears desirable to refer to the practice which obtains in some hospitals of carrying a proportion (from 10 per cent. to 20 per cent.) of these grants to a staff fund which is placed at the absolute disposal of the honorary staff. In some of

Chapman sets forth how, during the war, the recruiting authorities in the United States tackled the question of selection. There were many recruits to see and to classify, but few to act as assessors. Methods were devised by which the interviewing and classification could be carried out by persons who did not need to possess knowledge of the multifarious crafts concerned. Definite tests were devised:—An oral test in which clearly thought-out questions had to be answered in a definite way and were marked accordingly. A picture trade test was used in which the names and use of tools pictorially presented had to be given. Another group included performance tests in which work had to be performed not only in a definite way but in a definite time. A written group test was also employed in which the right answer to a question out of four alternatives had to be selected. The claim is put forward that the Army authorities succeeded, by the use of these tests, in grouping recruits according to their abilities in a way which saved sending overseas as mechanics or skilled craftsmen those who had no real knowledge of the work they claimed to know about and would be required to do; and, further, after testing the methods used against the somewhat haphazard methods in vogue in industry, that unskilled examiners, following out these methods, obtained far better results than skilled foremen and the like who usually undertake the duty of engaging labour. Mr. Chapman's application of these conclusions to labour selection should be studied in this country by those controlling its industries, and also by members of the profession interested in industrial hygiene.

THE SUBCUTANEOUS INJECTION OF VACCINE LYMPH.

THE possibility has often been discussed of obtaining protection against small-pox by injecting vaccine lymph subcutaneously instead of the present method of superficial scarification of the skin and rubbing in the lymph. It is contended that if there were no vesicles on the skin septic germs would be unable to find a point of entrance into the patient's system. Dr. S. A. M. Copeman, in 1898, discussed this question in his Milroy lectures and described experiments he had made by injecting subcutaneously vaccine lymph, diluted with normal saline solution, into monkeys, the result being that "some degree of protection was obtained against vaccinia" and presumably therefore against small-pox. Other investigators on the continent by injecting vaccine lymph into bovines and horses found that "by means of a generalised influence over the system, although unaccompanied by production of local results, it is possible to obtain immunity from subsequent vaccinia." These experiments, however, do not seem to have been very convincing and the subject was allowed to drop. It has now been raised again, this time in India, by Lieut.-Colonel C. F. Fearnside, I.M.S. (retired), Medical Superintendent, Central Jail, District Medical Officer and Sanitary Officer, Coimbatore, who contributes a paper "On the Injection of Lymph Subcutaneously as a Protection against Small-pox," to the recent Special Indian Science Congress Number of the *Indian Journal of Medical Research*. This observer has long been dissatisfied with vaccination by scarification, especially in view of the opportunities in India for acquiring septic infection. It is common, he says, for ignorant Indian mothers, as soon as the vaccinator's back is turned, to try to prevent the vaccination taking effect, and for this purpose the wet lymph is wiped off the child's arm with the mother's dirty fingers. All sorts of objectionable materials are applied to the vaccinated places, after the vesicles have formed, including the ever-blessed cow-dung poultice. The lanolated calf lymph in use in the Madras Presidency is prepared at the King Institute, Guindy, where it is put up in leaden tubes with a cap. To a spare cap Colonel Fearnside soldered on an ordinary hypodermic needle which, after being sterilised, was screwed on to a tube of lymph from which the protecting cap had been removed. The patient's arm was touched with a drop of tincture of iodine and the needle inserted beneath the skin. By pressure on the leaden tube a small quantity of lymph was forced through the needle beneath the skin. Four injections were made in each case. On withdrawing the needle, the point of exit was touched with tincture of iodine. This rough instrument does not allow of the amount of lymph injected being measured. The effect of these injections is the production of knotty swellings under the skin varying in size from that of a pea to that of a small almond, and they may persist for some time. During the last few years more than 800 prisoners in Coimbatore jail have been vaccinated in this manner. There was some focal reaction in 82 per cent. of these cases but no superficial vesiculation except where the needle had scratched the skin; all cases showing this reaction were classed as successful. Recently 12 of the prisoners were revaccinated in the usual way by scarification of the skin, but in no instance did any of them "take." This was regarded as a proof that they were protected by the previous hypodermic injections. At Colonel Fearnside's suggestion, Dr. F. M. Gibson, Director of the Guindy Institute, carried out some experiments with the subcutaneous injection of lymph on calves, but the results on the whole were not very satisfactory, though Dr. Gibson admits that such injections do confer a certain amount of immunity against vaccinia. This immunity, which is likely to be only of a temporary character, is in proportion to the amount of lymph injected. The knotty swellings are inflammatory nodules formed round the injected foreign matter, and are not due to growth of the injected lymph since material taken from the nodules early (in 86 hours) and late (in 168 hours), failed in every instance to produce vaccinia when rubbed into the scarified skin of calves. Colonel Fearnside states that he is not altogether satisfied with these experiments at the Guindy Institute, and suggests that further investigations should be undertaken in view of the great benefits that might be expected to follow the employment in India of a method of performing vaccination which would be free from the danger of septic infection.

MEDICAL BOOKS FOR LAY READERS.

CHRONIC diseases may be roughly classified according as they do, or do not, excite medical writers to publish books for the perusal of the patient. Pulmonary tuberculosis and neurasthenia belong to the first class, syphilis and diabetes to the second. It seems a little unfair that the benefits of this class of popular instruction should be so unevenly distributed, and to the medical writer aspiring to issue yet another book full of advice to consumptives, we suggest a preliminary study of a standard work such as Lawrason Brown's "Rules for Recovery from Tuberculosis," followed by consideration of the question: "Can I excel this book in matter, manner, or both?"

In his handbook[1] on the prevention and home treatment of tuberculosis, Dr. H. Hyslop Thomson has shown a sufficiently intimate knowledge of his subject, and discriminating appreciation of the factors which ultimately determine the fate of the patient to make his book worth writing and reading. With wisdom not always shared by other members of the tuberculosis service he writes: "Once the acute stage of the disease has been passed, the patient who relies upon his thermometer and knows how to use it intelligently, is the one who is least likely to relapse and who has the best prospects of recovery and of permanent arrest of the disease." Considering that the problem of tuberculosis bristles with controversial points, the manner in which Dr. Thomson threads his way through his book without committing himself

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[1] Tuberculosis: Its Prevention and Home Treatment. Second edition. By H. Hyslop Thomson, M.D., D.P.H., County Medical Officer of Health and County Tuberculosis Officer for Hertfordshire. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 99. 4s.

This was withdrawn when it became clear that its enforcement would require a bond in the agreement, instituting the appointment, as well as legal enactment, to give effect to it.

Fee for Notification of Infectious Disease.

The Representative Body once again authorised its Council to press for the restoration of the 2*s.* 6*d.* notification fee "forthwith and without delay."

Report on Maternity and Child Welfare.

A weighty report on the value of maternity and child welfare work, in relation to the reduction of infant mortality, was brought in by the Medico-Sociological Committee. Dr. E. R. Fothergill acted as chairman of this committee, and Dr. Alfred Cox as secretary, and a number of members were coöpted representing voluntary child welfare associations. The report, issued in the supplement of the *British Medical Journal* for July 2nd, has been reprinted in pamphlet form at 3*d.*, obtainable from the offices of the Association. Its conclusions, signed by every member of the committee, run as follows:—

1. Maternity and child welfare work has contributed in an appreciable degree to the reduction of infant mortality that has taken place, but it is too early to determine to what extent it has been effective.

2. The effect of many of the causes of infant mortality can be lessened by the education of women at centres and in their homes.

3. The educational work amongst the mothers on the racial poisons (alcohol, syphilis, and tubercle) and on the influence on infant mortality of pollution of the air by smoke and other impurities with the consequent deprivation of sunlight, should be encouraged and extended.

4. The instruction of the elder girls at school in homecraft and mothercraft should be developed and encouraged.

5. Every effort should be made to improve the economic position and prospects of midwives and midwifery nurses; and encouragement should be given to them by local authorities wherever there is difficulty in securing a sufficient supply.

6. The provision of sufficient hospital accommodation for diseases of pregnancy and difficult confinements, and maternity homes for normal confinements which cannot conveniently be conducted in the patients' homes, should be made general as soon as possible.

7. The primary and main object of maternity and child welfare centres should be educational, preventive, and advisory; no treatment should be given for conditions which, in the absence of the centre, would be recognised as calling for the attendance of a medical practitioner; it is against the best interests of the centres to encourage women to go to the centre for what they can *get* rather than for what they can *learn*.

8. There are advantages to the work in associating with the centres a body of voluntary workers, but the whole of the work should be under the control of the medical officer of health in order that all the preventive agencies may be coördinated.

9. The support of the local doctors, nurses, and midwives can and ought to be secured. This can be done if (*a*) it is made clear that the sphere of the centres is restricted as recommended above, and (*b*) if members of these professions are represented on the statutory committee and the committees controlling the centres, these representatives being nominated by the local organisations of these professions wherever such exist.

10. The experience of the "family doctor" would be useful in the work at the centres; but that practitioners accepting the appointments must have knowledge of and a real interest in the work; the appointment should be for a long enough time to be administratively convenient; and those appointed should clearly realise that in accepting the post they must undertake to carry on the work irrespective of other claims on their time.

11. For every mother and child up to 5 years of age there should be available domiciliary attendance by a family doctor.

12. In order that medical practitioners should be fully equipped for maternity and child welfare work it is desirable that the medical student should be educated in and be encouraged in the practice of duties in relation to (1) personal and domestic hygiene, and (2) industrial hygiene and other spheres of preventive medicine.

There was no opportunity at this late hour in the meeting of considering the bearings of so far-reaching a document, and after some dissent had been expressed it was decided to take no attitude towards the report at present.

Election of Officers.

Voting took place on Saturday, July 16th, for the four members of the Representative Body chosen by them to serve on the Council for 1921–22. The members elected were Dr. H. G. Dain, Dr. R. Langdon Down, Dr. J. A. Macdonald, LL.D., and Mr. E. B. Turner. On Monday, July 18th, Sir Clifford Allbutt was elected a vice-president of the Association in recognition of his services as president from 1916–21.

THE ANNUAL GENERAL MEETING.

The annual general meeting opened in the King's Hall, at 2 P.M., on Tuesday, July 19th, when the retiring President, Sir **CLIFFORD ALLBUTT**, gave a brief valedictory address in which he set out the reward of his long service already received in new friendships, and an intimate knowledge of the working of the Association from the inside. He then inducted his successor, Prof. **DAVID DRUMMOND**, who felicitously compared the annual gatherings of the Association at different centres to the passage of the soul through life, changing its body but retaining the spirit of its being. Newcastle had ploughed its own furrow and attempted to make the Association meeting a success on its own lines. After approval of the minutes, and appointment of auditors, the President introduced Sir **WILLIAM MACEWEN** as President-elect for 1922–23. Prof. **R. A. BOLAM**, as Chairman of Council, then tendered hearty thanks to the retiring President, which were carried by acclamation.

At the adjourned meeting in the evening Prof. **DRUMMOND** delivered his presidential address, entitled "The Medical Profession: a Horizon of Hope," an abstract of which appeared in last week's issue. Prior to the address Mr. **R. J. WILLAN**, hon. local secretary, introduced to the President the foreign guests of the Association, Prof. **MURK JANSEN** of Leiden, and Prof. **H. BROOKER MILLS** of Philadelphia. A vote of thanks for the address was proposed by Sir **JAMES BARR**, who veiled under a playful guise a serious criticism of the emphasis laid by the President on the end-results of disease rather than on earlier remediable changes. This done, the Association's gold medal of merit was handed to Sir **DAWSON WILLIAMS** for his distinguished services to the Association and the medical profession as Editor of the *British Medical Journal*. A substantial cheque was handed to Dr. **J. A. MACDONALD**, past Chairman of Council and a former chairman of the Representative Meeting, as a token of friendship and appreciation. Dr. Macdonald, in returning thanks, referred to the growth of influence of the Association since its reconstruction in 1900.

The reception at the Assembly Rooms, which followed the address, was noteworthy for the number of medical women who attended in doctors' gowns.

Honorary Degrees Conferred at Durham.

At a special Convocation held in the Castle Hall, Durham, on the afternoon of Thursday, July 21st, honorary degrees were conferred upon a number of distinguished medical men. Prof. **DAVID DRUMMOND**, Vice-Chancellor of the University, occupied the chair, and was supported by members of the Senate. Sir William Macewen, Sir Thomas Oliver, and Sir Humphry Rolleston received the D.C.L., while the D.Hy. was conferred upon Dr. T. Eustace Hill and Dr. J. Wilkie Smith, the D.Sc. upon Sir Arthur Keith, the D.Litt. upon Sir Dawson Williams, and the M.A. upon Dr. Alfred Cox.

The Durham visit coincided with that of a group of overseas professors attending the Oxford Conference of the Universities of the British Empire. The presidents or deans of the universities of Alberta, McGill, Toronto, Bombay, and Madras were present, the two latter being the guests of Dean Welldon.

The Annual Dinner.

At the annual dinner held at the Assembly Rooms Club on Thursday evening, July 21st, Prof. **DRUMMOND** presided, and it fell to Dean **WELLDON** to propose

ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

NEWCASTLE AS A PLACE OF MEETING.

NEWCASTLE-ON-TYNE is an interesting place for a medical gathering, and Prof. Drummond was right in suggesting that the local setting would give a characteristic tone to the meeting as a whole. The city and county of Newcastle has an estimated population of 286,000, not including the twin city on the other side of the Tyne, which is separate in sanitary and every other kind of administration, although everything except the actual houses pass freely across the bridges and make the health problems identical on the two sides. The birth-rate of Newcastle in 1920 was 28·0, and the death-rate 14·0, an exact half, a portent in itself to the southerner. The infant mortality rate in the same year was 101, the zymotic death-rate actually under 1. 837 cases of tuberculosis were notified during 1920, 593 of phthisis, 244 of other forms, being an attack-rate of 3·0 per 1000, with a death-rate of 1·64 per 1000; evidently the latter figure is the nearer the truth. Cancer was credited with 244 deaths, measles with 42, puerperal septicæmia with 5.

The housing problem in central Newcastle is complicated by the remarkable feature of the Town Moor, an immense open space belonging to the city which thrusts its nose to within half-a-mile of the river, and produces much the same problem as arises in New York. Water-carriage of drainage has, however, been introduced throughout the congested isthmus, some 5000 privies remaining for the present in two more distant areas lately taken over by the city. The town itself is full of relics of Tudor and Norman times, mixed up with the less noble mid-Victorian architecture, and along the Carlisle-road there soon appear traces of the great Roman Wall, the stones of which have been appropriated for domestic purposes in the section from Newcastle to Wallsend. Along the Tyne the amount of shipping, notable in ordinary times, is immensely enhanced at the moment by the number of huge cargo boats of many nations hung up by the coal crisis, and the many unfinished hulks of liners the despatch of which has been delayed for various reasons. A fleet of the new concrete boats was much in evidence.

The present is an anxious time for the sanitary administration of the city. The Corporation in a very natural spirit of economy has seen fit to reduce the actual estimate of the Sanitary Committee by £19,000, which has necessitated the release of 8 out of 20 health visitors and of a tuberculosis nurse. Visiting of pre-school children has been discontinued, and a number of infectious cases are treated at home on account of the reduction of fever beds. Fortunately hygienic indiscretion rarely brings immediate disaster, and it may be hoped that, after the stimulating visit of the British Medical Association, the city fathers may see their way to square the municipal balance-sheet by economies on less essential industries than those of public health. Dr. Harold Kerr, the medical officer of health, is keenly alive to the value of friendly coöperation, and, we believe, has introduced the principle of a weekly round table for discussion of health questions by the five full-time medical officers.

Figures given at the annual meeting of the Newcastle Insurance Committee, held during the medical week, show that there are 110 practitioners and 48 chemists on the panel, with 62 shops supplying drugs to insured persons, and somewhere about 118,000 insured persons. Councillor David Adams, vice-chairman of the Committee, is a convinced believer in the National Insurance Act as the proper basis upon which to build up a unified medical service in this country.

The city is happy in possessing so excellent a hospital as the Royal Victoria Infirmary, rebuilt on modern lines through the generosity of Lord Armstrong, and admirable alike in position and arrangement. But with a total of 160,000 out-patient attendances and nearly 10,000 in-patients in 1919, the city is considered gravely under-hospitaled, in spite of the fact that the adjoining Ministry of Pensions War Hospital, with its well-arranged bathing and massage department, will be handed over to the civil authority within a year or two.

Visitors to Gateshead were also aware of the urgency of local politics. The Guardians, having incurred a large outlay in relieving distress among miners' wives and children during the recent crisis, had levied a special rate of 1s. in the £ for immediate payment, with the result that a large number of ratepayers are making a strong protest, and an open-air meeting at Low Fell was largely attended.

ANNUAL REPRESENTATIVE MEETING.

(Concluded from p. 198.)

MONDAY, JULY 18TH.

Admission of Non-Members to Sectional Meetings.

ON a motion proposed by Dr. F. C. MARTLEY (Kensington) the question was raised of the exclusion of all but members of the Association from the scientific meetings. It was pointed out, however, that certain civil servants or members of the General Medical Council might be thus debarred from attending, and there was, of course, no wish to eliminate Americans. In the past even presidents had joined the Association on nomination. The motion was finally passed with a few dissentients in the following form:—

> That it be an instruction to the Council to provide that no member of the medical profession who is eligible for membership of the Association, but who is a non-member of the Association, shall take part in the sections of the annual meeting, unless in such circumstances as the Arrangements Committee may consider exceptional.

Subscription to the Association.

After the Treasurer had pointed out that the balance-sheet for the past year showed the necessity of raising the subscription to the Association, the followed revised rate was unanimously adopted, to come into force on Jan. 1st, 1922:—

A.—As to members resident in the United Kingdom.
- (i.) For a member of the Association of not less than 10 years' standing as such who has definitely and permanently retired from the active practice of the medical profession, and has signed and transmitted to the treasurer a declaration to that effect—2 guineas.
- (ii.) For any member of not less than 10 years' standing—2 guineas.
- (iii.) For a member admitted to membership before the expiration of two years from the date of his registration under the Medical Acts—1¼ guineas until the 31st December next occurring after the expiration of four years from the date of such registration.
- (iv.) For two members being a husband and his wife residing together—1½ guineas.
- (v.) Except as otherwise herein provided—3 guineas.

B.—As to members resident outside the United Kingdom.
- (i.) For any officer of the Royal Naval Medical Service, the Royal Air Force Medical Service, the Army Medical Service, or the Indian Medical Service—2 guineas.
- (ii.) For any other member—1¼ guineas.

But in view of the difficulty of determining in any particular year the place of residence of a member of the Services, it was remitted to the Council to consider the advisability of a flat rate of £2 2s. for all active service members.

Student Class of Membership.

Various suggestions were made for making the Association more attractive to medical students. Unfortunately the annual meeting can only be held at a teaching centre when the school is not in session. Proposals for issuing a students' number of the

Concurrent Meetings.

The Temperance Breakfast.—A large number of delegates attended a breakfast on Thursday, July 21st, given in the Grand Assembly Rooms by Sir George Hunter, D.Sc., Vice-President of the National Temperance League. Sir A. Pearce Gould, who made a special journey from London to attend, said that it was a matter of common knowledge how rapid had been the decline of alcohol as a therapeutic agent during the last 30 years. Pharmacologists now agreed that alcholol was of value only as a narcotic, and not as a stimulant. He submitted that the medical profession had not yet shouldered its full responsibility in regarding the alcohol question as a problem in biology. We now had useful scientific knowledge of the effect of alcohol in medical, social, and economic aspects, and a simple, clear, and faithful witness to scientific truth on the part of medical men would, he was assured, meet with a great response. Rev. Courtenay Weeks, M.R.C.S., who submitted a resolution, desired that the fullest advantage should be taken in schools of the syllabus on the hygiene of food and drink recently issued by the Board of Education. Lady Barrett and Captain W. E. Elliot, M.P., also spoke briefly and effectively.

Irish Graduates' Association.—The forty-first summer meeting of the Irish Medical Schools' and Graduates' Association was held at the County Hall, Newcastle, on Wednesday, July 20th, the chair being occupied by Dr. J. A. Macdonald, in the absence of the president, Major-General W. W. Kenny, A.M.S. The best way, Dr. Macdonald said, to promote good fellowship between Irishmen was to give them opportunities of meeting socially. The Association wished to break down the barriers still preventing the highest diplomates of Irish Royal Colleges from candidature for honorary appointments at English general hospitals, and was determined to go on until successful.

Conference on Cripples.—During the Association's meeting an important conference took place in the library of the Royal Victoria Infirmary on the treatment and education of physically defective children, under the joint auspices of the Newcastle Invalid Children's Aid Association and the Central Committee for the Care of Cripples. Lady Parsons presided, and the morning session was devoted to the curative, the afternoon to the administrative, aspect of the question. Some account of this conference will be given later.

Local News Items.

Newcastle medical men and other local residents placed their motor-cars at the disposal of the representatives all day on Sunday, July 17th. Lunch was taken at Rothbury after a walk along the rocky bed of the Coquet. Lord and Lady Armstrong personally conducted the party over their house at Cragside, with its wonderful rock garden. In the afternoon the route was by Alwinton and Elsdon Common, over the lower slopes of Cheviot, with tea at Otterburn, hard by the famous mill of soft woollen shawls. Trout streams, herons, black-faced sheep, and remains of extensive Canadian tree-felling were among the natural objects shown. The occasion was one of happy comradeship, which had its effect on the resumed Monday meeting.

The Medical Institute, at 7, Windsor-terrace, generously placed at the disposal of visitors during the medical meeting, was formally opened on Tuesday, July 19th, by Sir Clifford Allbutt, Prof. David Drummond presiding. The Institute is the gift of Dr. J. Wilkie Smith, to the memory of his son killed in the war, and is arranged as a club for local medical men, with billiard and luncheon rooms, lounge, a meeting room capable of seating 40 or more, and several bedrooms reserved for short period visitors.

The opportunity was utilised by members of seeing the scientific study being given in Newcastle to rescue work in mines. On several afternoons Mr. F. P. Mills, chief officer of the Northumberland and Durham Colleries Fire and Rescue Brigade, gave a demonstration at the Scotswood Road Station. The fire brigade responded to a call in 20 seconds. An imitation pit shaft is being sunk where prospective colliers can go through a preliminary training in darkness and exposure to gases, learning there the confidence which is a chief safeguard against avoidable accident. Sir James Cantlie's suggestion to found a college of ambulance in Newcastle met with a warm reception locally. The secret of success in first-aid lay, he said, in improvisation.

Sir James Cantlie's exhibit of the Thomson machine, being a table designed to enable an armless man to perform all the ordinary occupations of life, attracted a large amount of local interest. Designed by a gasfitter, this marvellous table was shown in action, a man bereft completely of both upper limbs eating an egg, lighting and smoking a cigarette, writing a letter and sealing it in an envelope. The demonstrator had in fact taught himself to write on the machine, having previously been illiterate.

During the gathering was held the annual meeting of the Newcastle Industrial School, of which Mr. J. Alaric Richardson is chairman. The Committee is happy in having acquired a country mansion, Axwell Hall, eminently suitable for the proper segregation and education of truant boys, and surrounded by ample grounds. Officially truancy is on the decrease in Newcastle, although the streets and parks do not quite confirm this impression.

Members of the general press attending the representative meeting admitted that they found the discussions hard to follow, the motions and amendments not always bringing out clearly the points on which the meeting wished to express its opinion. In concerning itself with the sources of hospital revenue it was suggested that the matter was actually outside the province of the medical profession, although to take an interest in it was praiseworthy. Elocution was felt to be at a low ebb as compared with other professional gatherings, but the brevity of spokesmen was highly commended. Favourable comment was made upon the plan of numbering representatives' desks with a large figure, thus making identification easy.

Where so many contributed to the success of the meeting and to the happiness of the guests it would be invidious to mention names other than those of certain members of the General Executive Committee who were sectional chiefs. Dr. W. J. Durant organised the excursions, Dr. N. MacLay the annual dinner and catering generally, Dr. E. Farquhar Murray the hotel accommodation, Dr. F. J. Nattrass the evening functions, and Mr. G. Grey Turner the pathological museum. As chairman of the Ladies' Executive Mrs. R. A. Bolam was responsible for the well-organised ladies' club.

During the week an exhibition of surgical instruments, drugs, foods, &c., was held in St. George's Drill Hall, St. Mary's Place. There were 82 exhibitors, and the whole was representative in a high degree of the best commercial enterprise in the medical and allied sciences. Some account of the exhibits will follow.

MANCHESTER ROYAL INFIRMARY.—During the past year 57,200 persons received treatment. The annual cost of each bed was £170, and each patient cost £3 8s. 6*d.* a week.

UNIVERSITY OF BRISTOL: POST-GRADUATE COURSES IN MEDICINE.—During the past session a series of weekly clinical demonstrations was given to post-graduate students at the hospitals which constitute the clinical school of the University of Bristol. The number of medical men who attended showed an encouraging advance on last year, and the attendances remained consistently high throughout the course. The committee in charge of post-graduate organisation is now making arrangements for courses of lectures and demonstrations which have been asked for by practitioners in Wiltshire through their British Medical Association divisions. So far it has been decided to hold these courses at Trowbridge and at Swindon, and to these centres others in the counties round Bristol will doubtless be added. Inquiries should be addressed to the Director of Post-Graduate Studies, University of Bristol.

these hospitals, as at St. Bartholomew's, at the Royal Infirmary, Manchester, and at the Radcliffe Infirmary, Oxford, the fund has hitherto been applied by the staff to such purposes as the purchase of expensive apparatus or books, and the support of young practitioners taking up special branches of work; but in other cases the fund has been divided among the staff. The practice is supported by the British Medical Association on the ground that patients sent by a public authority are in the position of paying patients and that in the fees paid for such patient the medical practitioner is entitled to share. On the other hand, the honorary staffs of some hospitals are unwilling to share in such a fund; and two distinguished physicians expressed the view that if the medical staffs came to be subsidised to any substantial extent 'the bottom would drop out of the voluntary system.' It should be remembered also that, although the services of the staff are honorary, they obtain a valuable return in the form of medical and surgical experience and the enhanced reputation which accrues to a member of the visiting staff of a great hospital. If the system of carrying a percentage to a staff fund is confined to cases where the full cost of maintenance and treatment is paid by or on behalf of the patient, not much objection can (we think) be taken to it; but any extension of the practice beyond those limits appears to us to endanger the future of the voluntary hospitals."

The disagreement was unanimous, the meeting maintaining its conviction "that the essence of the voluntary hospital system is the independent and voluntary management, and that this is in no way related to the conditions of service of the medical staff."

Paying Patients in Poor-law Hospitals.

The report on the future of Poor-law hospitals came in for both general and detailed criticism, a motion to refer back the whole question for further consideration receiving influential support. The argument to await the decision of the new health authority was countered by the urgent need for the competent medical authority to lay down a considered scheme of procedure, in view of the fact that boards of guardians all over the country, and especially in Middlesex and Lancashire, were experimenting in various degrees with a combination of infirmary and private paying hospital. The "administrative control" of the medical superintendent was accepted without too precise definition of its interpretation, boards of guardians to be educated in accepting the principle of treatment by general practitioners. The selection of district medical officer by the practitioners of the area was regarded as desirable. Finally the recommendations of the Hospitals Committee were accepted in the following form:—

1. That in those Poor-law infirmaries where there is spare accommodation and when the needs of the Poor-law patients have been met, it would be desirable that certain beds should be set aside for private patients paying a fee to be settled by the guardians; that where a general practitioner wishes to continue to treat therein patients of his own, he should be allowed to do so under the general administrative supervision of the medical superintendent, and that any of these patients should be allowed to call in a consultant from outside, the patient bearing the cost thereof.

2. That for "paying" patients admitted to infirmaries there should be an inclusive charge to cover the cost of medical supervision, maintenance, nursing, food, and medicines, within the ordinary tariff and pharmacopœia of the infirmary, the patient paying his medical attendant independently.

3. That any extra nursing and any food or medicine ordered over and above those allowed under the ordinary tariff and pharmacopœia of the infirmaries should be charged as extras to the patient.

4. That all medical attendance by private practitioners on "paying" patients in infirmaries should be under the administrative supervision of the medical superintendent of the infirmary.

5. That infirmaries, so far as practicable, should be utilised for medical education.

6. That in any hospital maintained by a local authority (including the board of guardians) for general cases, provision should be made for wards for the reception on the lines of the suggested primary health centre as outlined in the Dawson Report of private patients admitted on the recommendation of their own practitioner who should be able to attend these patients in such wards.

7. That municipal hospitals should be controlled by an ad hoc committee on which there should be a small but definite representation of the medical profession, nominated by members of the local profession.

8. It is desirable in the interests of the patients that the medical superintendent should have power in special cases (including cases of urgency) to admit or retain patients from other parishes, the guardians being empowered to recover the cost of maintenance thereof from the parish or borough in which the patient resides.

9. That to meet the need of accommodation for senile and chronic cases a part of the Poor-law institution be separated from it whenever possible, which should be formed into an infirmary dependence under the control of the medical superintendent of the infirmary.

10. That certain classes of cases—e.g., tuberculosis and certain infectious fevers not already provided for—should not be accommodated in general infirmaries, but in special hospitals arranged for this purpose.

11. That the normal method of admission to an infirmary should be on the recommendation of a general practitioner.

12. That district medical officers be selected from the private practitioners of the neighbourhood.

13. That, except for the treatment of private patients, the normal medical staff of an infirmary should be a combination of the whole-time resident staff or a part-time selected staff with part-time specialists, the last being called in by the medical superintendent as and when necessary.

Criticism of the scheme as impracticable in rural areas was met by an assurance that it was only intended as a guide to general principles, modifications to be introduced to meet local needs and requirements.

TUESDAY, JULY 19TH.

Hospital Provident Scheme for London.

On behalf of the Metropolitan Counties Branch Council Mr. W. McADAM ECCLES brought forward a motion asking for approval of the national provident scheme, drawn up by the Branch Council, for hospital and additional medical services. This scheme was described in detail by Mr. Eccles in THE LANCET of May 14th last, p. 1057. Mr. H. S. SOUTTAR said that the scheme had been called revolutionary, but it was absolutely necessary in view of the bankruptcy of the London Hospital, for example, which simply could not be carried on without some such assistance. It was the business of a nation to provide its own hospital treatment. After some discussion the meeting decided to take no attitude to the scheme for the present.

Salaries of Non-professorial Teaching Staff.

On a motion to fix minimum salaries in three grades for the medical teaching staff other than professors and their assistants, it was agreed that many teaching institutions at present had the desire, although they lacked the ability to pay adequate salaries. The case was not quite parallel with that of municipal authorities who had the rates to draw upon. There was strong pressure put on the meeting not to be too tender with college authorities, which had for years sweated their teachers, but the meeting decided that the time was not opportune for taking action.

Medico-Political Committee.

Mr. E. B. TURNER, Chairman of the Medico-Political Committee, in moving the adoption of the relevant part of the report, outlined the directions in which his committee was fighting for the interests of the practitioner. It was still the aim to obtain taxation of the doctor's motor-car on the basis not of horse-power but of annual consumption of spirit, and to get a concession for the second car. Post office medical officers were receiving the full support of the Association. The Dangerous Acts Regulations, in so far as they interfered with the practitioner's work would, he thought, fizzle out in a short time. The principle of the Whitley Council was being watched in regard to its effect in weakening the authority of the Association.

Whole-time Medical Officers and Private Practice.

A motion by Portsmouth was brought forward to the effect:—

> That the Representative Body is of opinion that men practising as whole-time officials of public [illegible] should be precluded from practice for private [illegible] same district (i.) while holding their [illegible] (ii.) for a period of five years subsequently [illegible] consent of the local medical profession.

officer next day. The method of prophylaxis is as follows: The entire penis is scrubbed with liquid soap and water for several minutes, and then washed with perchloride of mercury solution, 1–2000. If any abrasions are present, these are sprayed with peroxide of hydrogen. Two urethral injections of protargol 10 per cent.) are then given and retained for five minutes. The whole penis is then rubbed with 33 per cent. calomel ointment, which is kept on for several hours. It is stated that these measures have greatly reduced the percentage of venereal disease in the service, and that if the men report for treatment within 12 hours of contact, the danger of infection is "practically nil." Protargol is preferred to argyrol for injection as being much less irritant.

Investigations in the Planting of Medicinal Herbs.

The Bureau of Plant Industry section of the Ministry of Agriculture has for a number of years experimented in cultivation and utilisation of drug plants, and noteworthy results have recently been recorded. About 80 species of drugs and herbs are now under experimental culture on heavy clay at the Government farm, where permanent plantings are being made which will furnish material now badly needed for standardising crude drugs. One important line of inquiry is the relation of special forms of culture to the development of the active principles in medicinal plants. New strains of *Atropa belladonna* and *Digitalis purpurea* have been obtained by the bureau through breeding and selection, with greatly increased alkaloidal content and this points the way to a notable improvement in the quality of certain drugs now on the market.

Quintuplets.

The *Ellenzek* describes in its issue of April 27th a case of quintuplets. Prof. Barsony, of Budapest, gives the ratio as 1 in 700,000. The case was that of a woman, aged 41, who had previously given birth to 10 children, among them being stillborn twins. She jumped from a tramcar after the latter had started, and felt something "ruptured" inside her. Typical labour-pains developed within two hours: the woman was taken from her home to the obstetrical clinic; she was four months pregnant, and had noticed that she was unusually large, but otherwise had had no discomfort; the abdomen was greatly distended, the uterus almost reaching the ensiform process. Neither the small nor the large parts of the fœtus were palpable. The os had disappeared at the time of the examination; two fœtuses were delivered within two hours. The woman had very severe pains, so that narcosis was considered, but the fœtuses were born before its induction could be begun; they weighed something over 1000 grammes together. After two weeks three other children were born, weighing about 2300 grammes. The placenta of the first two fœtuses was quite separate from the second: after the first delivery there was little hæmorrhage. After the second delivery the woman bled freely, and for two hours auto-transfusion and other life-saving measures had to be adopted. Nevertheless the puerperium was undisturbed and after three weeks the woman left the clinic as healthy as ever.

A Case of Cantharides Poisoning.

A spinster, aged 33 years, previously healthy, was taken suddenly ill with sickness and faintness, pain in the stomach, back, and intestines, and intense thirst, after taking powder made from the dried skin of cantharides, to produce miscarriage. She also confessed to having passed a catheter into the uterus and having taken very strong aperient pills containing aloes. The miscarriage took place two days afterwards, and the patient died on the fourth day of the illness. The symptoms, observed by the attending physician in the hospital, were as follows: The whole surface of the body was reddish-bronze coloured, with a dark, almost black, patch extending across the bridge of the nose on to both cheeks. The finger-tips were blue, as also the mucous surfaces of the mouth. The urine was retained, pulse 116–128, conjunctivæ tinted yellowish-brown, pupils contracted to a needle-point. From the urine, taken post-mortem, cantharidin was obtained. On her deathbed the patient confessed that she made her living by selling cantharides to women who wanted to produce miscarriage. Knowing its danger she supplied very small doses; but she herself took five times as much as she was in the habit of giving to her clients.

July 12th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Revision of French Sanitary Law.

AT a recent meeting of the Académie de Médecine Mr. Léon Bernard, the chairman of the committee appointed to advise on the revision of the French Medical Act of 1902, read the conclusions arrived at by this committee. The report proposed that public health administration should no longer remain under the supervision of local authorities, but that sanitary regulations should be under the direct management of medical officers of health under the immediate control of the Ministry of Health. To this end it is proposed that French territory should be divided into sanitary districts under medical officers of health, these districts being grouped in sanitary regions under the control of medical sanitary inspectors. The districts are to be of small radius, so that medical officers of health should remain in close contact with the people, and, on the other hand, there are to be only a few sanitary regions, of which the heads should be medical officers of health with extensive knowledge and great technical capacity. Paris and a few large cities would retain a municipal sanitary organisation, but it would be under the control of a regional inspector. The report also recommends that communicable diseases should be reported to medical officers of health directly, this declaration being made compulsory and applying to the heads of all families concerned and to the management of various establishments. It is also proposed that revaccination against small-pox should be compulsory in the course of the seventh, thirteenth, and twentieth years. Other sanitary problems, such as the disposal of sewage and the water-supply, are dealt with; with regard to shellfish, it is pointed out that further powers are required to prevent danger to health from the consumption of shellfish which have been grown and fattened in polluted water. All the conclusions of the committee were adopted by the Academy, and it was decided that the documents should be presented to the Government, at whose request the committee was formed.

Removal and Disposal of Dry Refuse.

The removal and disposal of domestic dry refuse is one of the sanitary problems recently discussed at the Société de Médecine et de Génie Sanitaire. Mr. M. Mazerolle discussed the possibility of burning the greater part of dry refuse in destructor furnaces which could be erected in houses in the future. He pointed out the advantages of compulsory sorting of the refuse in all houses, and said that at Charlottenburg there are three receptacles in every home to collect dry refuse. Two are galvanised iron receptacles with well-fitting metallic covers, the third is a cloth bag. In the latter are placed waste paper, pieces of cardboard, broken parts of crockery; in one of the metallic receptacles are thrown kitchen refuse, and in the other ashes are placed. As far as the removal of dry refuse is concerned, Mr. Mazerolle pointed out the advantages of night collection. This would be possible in Paris where most houses consist of flats, and porters have to carry out the dustbins. He also emphasised the desirability of using covered lorries; this reform is hindered in Paris by the contracts existing between the municipal authorities and syndicates of hand-sort workers who are privileged to collect dry refuse in the several quarters.

the toast of the British Medical Association, which he did in a speech of weighty content with an amusing setting. The medical man, he indicated, wrested Nature's secrets from her and made them known to the whole world, but his patient's confidences should be inviolable. Whatever sanctity attached to the confessional attached also to the consulting room, and greater even than the attainment of justice he held to be the maintenance of confidence between man and man.

Dr. BOLAM, in responding, said there was a feeling throughout the land that the time had come when the common law, based as it was on precedent and custom, must stand aside, or the medical man could not carry on his work with the true and complete confidence of the community. Dr. T. W. H. GARSTANG proposed the health of the guests, Sir THEODORE MORISON replying, and Sir HUMPHRY ROLLESTON toasted the President, Prof. Drummond, who in his reply paid a well-earned tribute to the labours of Mr. Willan, F.R.C.S., the local medical secretary of the gathering. During the dinner the wives and daughters of members were entertained by the Ladies' Executive Committee, of which Mrs. Bolam was chairman.

The dinner was followed by a dance in the King's Hall of the Armstrong College, a beautiful room for a social function, and some 250 guests worked through a serious programme of valses, fox-trots, and one-steps.

Civic and other Receptions.

The Lord Mayor entertained the President and a number of office-bearers of the Association to dinner at the Mansion House on Monday, July 18th. Sir CLIFFORD ALLBUTT, who replied to the toast of the Association, recalled that it was Newcastle, in 1870, which first offered civic hospitality to the Association. Medical men, he said, living more or less separated, were apt to get a little angular and individualistic. The Association had done much to bring them together, to compromise their various views, and to work together in mutual coöperation.

On Wednesday afternoon, July 20th, Councillor T. W. Rowe, Lord Mayor of Newcastle, entertained more than 1000 guests in the beautiful municipal gardens of Jesmond Dene. The Sheriff, Councillor Anthony Cates, was also entertaining, and the local dignitaries included the Bishop of Newcastle and the Spanish Consul. The weather, as throughout the meeting, left nothing to be desired, and the occasion was one of unaffected gaiety, to which St. Hilda's Band and the Folk Dancing Society materially added.

Dr. and Mrs. Eustace Hill welcomed 700 guests on behalf of the North of England Branch of the Association at the Hancock Natural History Museum on the same evening. The entertainment included the Elswick Works orchestra and admirable part singing by the Wallsend Male Voice Choir. The evening was reminiscent of the famous reception at the South Kensington Natural History Museum on the occasion of the last International Congress of Medicine. The Hancock Museum is renowned for the skill and artistic sense with which its birds are mounted, and in this respect, as well as in the possession of a Great Auk fledgling, the collection is unrivalled. Its able curator, Mr. Leonard Gill, was there to demonstrate the attractions.

Dr. and Mrs. R. P. Ranken Lyle gave a garden party to the ladies accompanying the representatives on Saturday afternoon, July 16th, when many tennis courts and croquet lawns were placed at the disposal of the guests.

Religious Services.

On Tuesday, July 19th, at 5 P.M., officers and members of the Association, in academic dress, attended divine service at St. Nicholas's Cathedral. Canon G. E. Newsom, vicar of Newcastle. conducted the service, the lesson being read by Rev. W. J. Jack, hon. secretary of the Free Church Council, an address being given by Dr. H. L. Wild, Bishop of Newcastle, who outlined the history of medical science from the middle of the sixteenth century on. So far, he said, as profitable knowledge went, large sections of our population, not especially of any one class, might as well be living in the dark ages. He would like to see the removal of prevailing ignorance become the concern of the whole medical profession, and he would particularly welcome addresses to the young by medical men and women of faith and vision on the use and abuse of body and mind.

Members of the Guild of St. Luke, St. Cosmas and St. Damian attended special mass at St. Mary's Cathedral, Newcastle, on the morning of Thursday. July 21st, when Father Elrington, D.Sc., set out in his address how a doctor can be a minister to the spiritual as well as to the physical needs of humanity.

Sunday Addresses on Temperance and Public Health.

A number of medical men attending the meeting took the opportunity on Sunday, July 17th, of dealing in public with various aspects of the alcohol question. At the West End Brotherhood Dr. E. R. Fothergill, of Brighton, gave an address on "Alcohol as a Beverage in Relation to Present Social Problems." Public opinion needed to be Christianised and then concentrated on social problems, when a solution for national alcoholic vice would be found. Dr. Mary Sturge, of Birmingham, spoke to a P.S.A. gathering at the Central Hall of the danger to offspring of alcoholism in the parents. It should, she thought, be part of the education of young men and women contemplating matrimony to go round the idiot asylums and see the large amount of mental deficiency attributable to parental excess. At the Byker Brotherhood Dr. Horace Rose, of Aylesbury, warned his hearers that the excesses of youth were a draft upon middle age. Speaking from 25 years' medical experience he had never known alcohol to be of any use to anyone at any time. Dr. F. C. Coley, of Newcastle, addressed the Felling Brotherhood on "Delusions about Drink." To stop the manufacture of alcohol for beverages would, he believed, do more to combat tuberculosis than the work of all the sanatoriums. At the Bentham Brotherhood Dr. W. L. Reid, of Glasgow, referred to medicated wines as an insidious and dangerous form of alcohol.

Sir Thomas Oliver, at the Chester-le-Street Brotherhood, speaking on "Success *v.* Failure," suggested that the avoidance of the wine cup tended to the creation of reliable citizens. Mr. W. McAdam Eccles at the Friends' School, Pilgrim-street, reminded his hearers that all human beings were born teetotallers, and Dr. F. B. Rutter. of Mere, Wilts, exhibited instructive diagrams and charts. Mr. Eccles gave another address later in the day at the Brunswick Chapel entitled "Great Facts concerning Alcohol." Dr. Courtenay Weeks gave an address on "Alcohol and National Efficiency" at St. Nicholas's Cathedral to a congregation which included the annual church parade of ambulance and nursing units of the St. John Brigade, and dealt with the immeasurable amount of damaged child-life directly due to drink. Dr. George Morgan, of Brighton, also spoke on "Alcohol and the Child" at the Willington Quay Brotherhood. The cumulative effect of all this teaching from medical men, with intimate first-hand knowledge of what they were speaking about must have been considerable.

Dr. George Jessel, of Southport, gave two addresses on Sunday, July 17th.; in the morning at the Church of the Divine Unity, in the evening at the Unitarian Church. Ignorance was at the bottom of much ill-health, and there was a great need for a well-organised and persistent campaign to inculcate the laws of health. The rich, he said, were as ignorant in this respect as the poor, but whereas the former could afford to pay for their mistakes, the latter not only suffered grievously themselves, but became a charge upon the rest of the community. Organised religious bodies had a direct interest in supporting health measures, especially on the educational and moral side. We needed, however, to get away from the idea that there was a monopoly in spiritual insight.

Correspondence.

"Audi alteram partem."

SMALL-POX IN NOTTINGHAM.

To the Editor of The Lancet.

Sir,—Our first case of small-pox this year occurred in February (R., Feb. 16th), and here, I think, the infection was imported from a Northern town. There was no causal relation between this case and those of the current outbreak. I am now endeavouring to construct, historically, the relation of the earlier cases of this local outbreak to one another, but the task is laborious and difficult, because at least seven of them were dealt with by their medical attendants as cases of varicella; and even now, notwithstanding fairly palpable evidence of recent small-pox in the pitted and pigmented scars on face, wrists, and hands of several of these, I have not been able to obtain much assistance in my search for them. I am inclined to think that this last outbreak of ours had origin either in the Long Eaton cases or in the sources from which these latter derived their infection—i.e., I believe, cases imported from abroad. The dates of onset in the two groups appear to fit; Long Eaton, like Nottingham, is a lace and hosiery centre; the towns are only seven miles apart and do much business together; and the communication by road and rail between the two places is very free.

The earliest cases of the current outbreak which I have been able to discover up to the present date from the first week of May. The total number of earlier cases hitherto brought to light which ran their course without a correct diagnosis is seven, but there are many reasons for thinking we have not found them all. There are 15 cases of recent origin (7 commencing last week and 5 the week before) now in the City Small-pox Hospital on Bulwell Forest. Most of the patients (all but 3) are unvaccinated, most of them have fairly severe, unmodified small-pox, but two have the milder attenuated form of which we have lately heard so much. There has been no fatality up to the present, nor, I think, is a fatal issue to be anticipated in any of those at present in our charge.

There are many cases of chicken-pox in this district, and some of these are exceptionally severe. One case which I saw with Dr. R. Heelis (of Lenton) on July 21st had an early temperature, I believe, of above 105·5° F., and although there is no difficulty for medical people with much experience of small-pox in distinguishing between severe typical examples of the two diseases, I think the severity of many of the local varicella cases explains in some measure the large number of mistakes which have recently been made by practitioners who are lacking in knowledge of the former disease.—I am, Sir, yours faithfully,

Philip Boobbyer,
Medical Officer of Health.

Health Department, Guildhall, Nottingham,
July 25th, 1921.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of The Lancet.

Sir,—I cannot agree with Dr. W. J. Grant that I have not accurately defined the issue of this discussion. It is more correct, I think, to say that he has shifted his ground, though this is of little import.

He agrees "that an increased flow per time unit can be obtained through the arterial system in the presence of lowered blood pressure, *provided there is vaso-dilatation.*" If there is no vaso-dilatation then "the arterial passages and exits *remain as before.*" The result is that "effective *resistance* is offered . . . by the . . . undilating vessels and the intra-arterial pressure rises." Is dilatation of the vessels the only method of lowering the resistance, as your correspondent asserts? Does not a diminution of the total quantity of fluid in an "undilatable" vessel have the same effect in regard to lowering resistance as dilatation? That is precisely what takes place under digitalis. We have seen during diastole the quantity of blood is less than normal; indeed, the main conclusion of my paper is that in the whole peripheral circulation the quantity of fluid is less than normal. The statement that if there is no dilatation "the arterial passages and exits remain as before" is not correct. Your correspondent is not able to discern such a simple truth staring him in the face. We may have an increased flow per time unit in the vessels under a lower systolic pressure if the resistance is diminished. The main conclusion of my paper is that the resistance cannot be otherwise than diminished in the circumstances. It is not necessary to suspend the physical laws from operating to make my conclusions possible. All that is necessary is to suspend the blunders of your correspondent and the whole matter becomes quite plain. Had Dr. Grant thought out the problem, I do not think the controversy would have arisen, and I regret that he did not state his reasons why an increased pressure in the veins is necessary in order to obtain a rise in the intra-arterial pressure.

Once it is admitted that digitalis effects an increased output, apart from other considerations (and there are few who will dispute this) the main conclusion arrived at in my paper follows from it with mathematical certainty. The total volume of blood in the circulation is fixed; a greater output per given time means increased velocity through the peripheral circulation; since during the systole the flow of blood takes place at much greater speed than the diastole, hence the more powerful the systole the greater the velocity of the total volume of fluid. This is as obvious as the fact that an augmented output of the heart entails an increased intake. The elucidation of this fact ought to be of considerable practical value. A quicker turnover of a medium such as blood, whose function it is to provide nutriment and remove the waste products of the tissues, would not only effect an improvement in turn of the heart muscle, but also of any other organ which suffers from malnutrition, brought about by no matter what cause.

Even if the systolic pressure is not increased by digitalis, the increase in pulse pressure cannot be indifferent in cases of high degree of arterio-sclerosis. It is held by some that arterio-sclerosis, which often manifests itself at an early age in cases of aortic regurgitation (even without a history of syphilis) is due to the strain the vessels have to bear, owing to the high pulse pressure which is a usual feature of this disease. I am, Sir, yours faithfully,

Liverpool, July 25th, 1921. I. Harris.

THE USE OF RHUBARB IN ACUTE BACILLARY DYSENTERY.

To the Editor of The Lancet.

Sir,—For the last three years we in Nairobi have been treating acute bacillary dysentery with powdered Turkey rhubarb root (pulv. rhei rad.). The dose is, roughly, half a teaspoonful every one, two, or three hours until the rhubarb appears in the stools. Then slacken off (the use of cachets is handy as there is less chance of vomiting). The stools will then become copious, the bad smell, mucus, and blood will disappear, so also will the colic, straining, tenderness on pressure, fever, rigors, dry tongue, fast pulse, and all the other signs and symptoms of the acute general poisoning of this disease. In children give small doses often, mixed with treacle (say, in a child of 5, give gr. v. every two hours for six hours). In them stop, after about half a dozen small doses, without waiting for the rhubarb to appear in the stools, as in some children there is apparently a sudden accumulative effect and then the most obstinate diarrhœa may follow, although the dysentery is cured. In adults the rhubarb will usually appear in the stools within six hours—in children very much longer—so

KING GEORGE'S SANATORIUM FOR SEAMEN.

THE Seamen's Hospital Society has, during its century of existence, done great things for the sick sailor, and to its other benefits, helped by the enterprise of Lord Inchcape, has now added a splendid sanatorium for the tuberculous, well planned and situated in lovely grounds at Bramshott in Hampshire. The menace of tubercle to the merchant marine is dire. In the last statistics on the deaths of seamen published by the Board of Trade, covering the year ending June 30th, 1914, there are shown deaths by tuberculosis as under:—

1913-1914.	Lascars.	Foreigners.	British.	Total.
	45,571	29,699	170,439	245,619
Deaths from tubercle				
General	3	1	2	6
Pulmonary ..	26	16	22	64
Total	29	17	24	70
Death-rate per 1000	*0·64*	*0·57*	*0·14*	*0·28*

These figures give us death-rates only; there are no statistics of illness. The only other statistics of illness in the merchant marine available are those so valuable presented to the Royal Society of Medicine by Dr. Arnold Chaplin from his 16 years' experience in the Eastern trade, in which the Lascar death-rate from tubercle was stated as 0·47, and the European death-rate as 0·14 per 1000, figures very similar to those given above. Dr. Chaplin gave the attack-rate as 5 per 1000 for Lascars, 2 per 1000 for Europeans; and those figures suggest that for each death shown about 12 cases occur (10 Lascar, 14 European). The statistics of health of the Royal Navy suggest a very similar position.

We may assume, then, that for 70 deaths from tuberculosis in the merchant marine there are probably upwards of 700 cases of the disease afloat in the ships. How far it will be possible to deal with these patients under the National Health Insurance we cannot yet say. Complaints are being made in certain quarters that the seamen's contributions are at present being in great measure lost. But, at any rate, a start has been made towards coping with the problem by the Seamen's Hospital Society. The new sanatorium at Bramshott, which was opened on July 12th by the Duke of York, is called King George's Sanatorium for Sailors; it is built on a property of 100 acres, some of which is at present let. A house already on the property has been made into a nurses' home, and in the sanatorium itself accommodation is now available for 80 cases and is arranged in a crescent facing south, in two stories, with two ten-bed wards at each end; single and double cubicles fill in the space between these wards. Furniture is reduced to a minimum; all corners are rounded, the floors are "jointless," the southern side of the cubicles is all glass, and the casements open conveniently. Certainly the patients are fortunate in their surroundings; an extensive lawn, magnificent trees, and a dry soil, with shelter from all violent winds, give them every opportunity for recovery. As money increases further crescentic sections will be opened on the ground already owned. At present two more are in prospect, which will make it possible to receive 240 patients. The few cases already transferred are being treated by a physician who is in practice near by, but it is intended shortly to appoint a resident physician and superintendent; the matron and nurses are already in occupation. A recreation room for the patients is to be constructed; gardening and other trades will be taught, a carpenter's shop being already prepared. It will be seen that the sanatorium is being directed on wise lines, and, as the Duke of York said in his opening address, any who feel gratitude to sailors for their work in the war may well give that gratitude expression by sending a subscription to King George's Sanatorium for Seamen, Bramshott Manor, Hants.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Children and Milk-borne Diseases.

THE statistical bureau of Budapest has just issued its annual report for 1920, in which it is stated that notwithstanding unusually prolonged periods of intensely hot weather, there were fewer deaths of children under 5 years than in any preceding summer; for the first time in the history of the city the summer mortality fell below 50 per 1000 per annum. The Committee for Distribution and Supply of Pure Milk to Babies undertook the supply of pasteurised milk in 1906; 2112 children under 5 years died in the summer of that year. In 1920 there were only 1710 deaths in a population of children larger by 45,000 than that of 1906. The Committee are convinced that pasteurisation of milk supplies of the cities and towns, under careful supervision of medical officers, would still further reduce the death-rate.

Myopia in School-children.

Dr. Bogdan, in his account of the examination of 200 text-books from a hygienic point of view, draws particular attention to the fact, already established by many prominent investigators, that myopia in children either originates from or develops in the schoolroom. The chief cause is the too prolonged reading, writing, and drawing; undue strain of the muscles of accommodation causes an active hyperæmia; the venous circulation is hindered, there is an increase in intra-ocular pressure, and the sclerotic is gradually stretched. Too strong convergence works even greater harm. It is, of course, understood that in some children near-sightedness is hereditary, and, as a result they become affected more quickly than their healthier comrades. Near-sightedness may also be the result of insufficient light and improper equipment in desks and other school furniture. Dr. Bogdan insists that paper used in text-books should not have a glossy surface. Under artificial light a glossy surface causes improper focussing of the eye and necessitates frequent changes in the position of the book as well as of the head. The paper should be thick enough to prevent the print on one page from penetrating to another. A few authorities have recommended yellow paper, but the majority favour white paper, which gives a sharper contrast between the printed matter and the background.

Simultaneous Occurrence of Syphilis and Tabes.

Dr. Frey, lecturer on nervous diseases, stated his conclusion from a large number of recorded cases, that with pronounced tabes the syphilitic virus may still continue active within the body, hence a combination of manifest syphilis of the skin or internal organs with typical tabes is not a very rare occurrence. It seems that syphilitic spinal meningitis is particularly common. With later occurrence of tabetic symptoms, active syphilis is less common, as observed by Adrian in Germany. The combination is more frequent in the male sex, in which syphilis is oftener encountered and the disposition to posterior degeneration greater. Tabes appears later in the majority of cases than tertiary lues; thus a somewhat more favourable prognosis may be made where both conditions are combined, since the process may often be arrested by active antisyphilitic treatment.

Venereal Prophylaxis.

Dr. Lükö has reported the results of venereal prophylaxis, as carried out in the Hungarian Army. All men who have exposed themselves to the risk of venereal infection have to report to the medical

H. M. Gordon, Oliver Gray, Helen Gregory, Adele Haggart, Arnold A. Hamilton, Mary I. Hemingway, Henry Hodgson, Noel R. H. Holmes, Helen R. T. Hood, Richard Howarth, John W. A. Hunter (second-class honours), Jean François van Iddekinge, Frederick T. Ingram, Victor W. Jack, Edward S. Jackson, John Dorrens Johnston (second-class honours), Philip R. Kemp, Frans Krone, John R. Larson, Laura M. Ligertwood, James Ireland M'Can (second-class honours), Alexander G. M'Clellan, Eliza W. M'Crae, Angus Macdonald, Agnes B. MacGregor, Robert G. M'Intyre (first-class honours), Arthur G. Mackay, Donald E. Malone, Dorothea J. Mann, Margaret B. Martin (second-class honours), Nancy Martland, Aymer D. Maxwell, Isabella M. Mears (second-class honours), Paul S. Meiring, Charles E. Meryon, Mary Middlemass, Catherine A. J. Mitchell, Ruth M. Monro (second-class honours), David M. Morison, Helen S. E. Murray, Jean Murray, Priya Nath Nag, Charles S. Nimmo, Marjorie Norris, Owolabi Anifoshe Omololu, Carrick G. Payton, Chepad Sangar Govinda Pillai, Janetta J. Powrie, Mary E. Price, Margaret M. Proudfoot, Margaret T. Rutherford, Marjorie E. F. Sanders, Charles E. Scott, Hilda D. Scott, James Sharp, Louis Siff, Gysbertus Johannes Smit, Moray Taylor Smith, Horatio W. J. Steen, Charles Stewart, James D. Stewart, Jenny R. Tait, Richard J. O. Taylor, Evan K. R. Thomas, Hugh B. Thomson, Sophia M. R. Thomson, Philip H. J. Turton, John Veitch, John H. Verwey, Thomas J. M. Walker, David C. Wilson, Edward A. Wilson, Isabel G. H. Wilson, and Hassan Zaifol (in absentiâ).

Diploma in Public Health.

Harry Alexander, Alexander F. Campbell, Marjorie H. King (in absentiâ), Anne L. MacDonald, Jane C. MacDonald, Annie S. MacLeod, Henry J. Parish, Austin Priestman, Annie M. Roxburgh, George M. S. Smith, and Mabel Thomson.

The following awards were also made:—*Faculty of Medicine.*—Thesis Gold Medal: Joseph G. Greenfield. Cameron Prize in Practical Therapeutics: Jules Jean Baptiste Vincent Bordet. Goodsir Memorial Fellowship: Robert Kho Seng Lim. Straits Settlements Gold Medal: Francis H. Stewart. Gunning Victoria Jubilee Prize in Medicine: Robert L. Impey. Gunning Victoria Jubilee Prize in Anatomy: Claude W. Stump. Ettles Scholarship and Leslie Gold Medal: Alexander L. M'Gregor. Allan Fellowship in Clinical Medicine and Clinical Surgery: James I. M'Can. Murchison Memorial Scholarship in Clinical Medicine: Jessie M'Cririe Craig. M'Cosh Graduate's and Medical Bursaries: Edward A. Wilson. Beaney Prize in Anatomy and Surgery: Alexander L. M'Gregor. Mouat Scholarship in the Practice of Physic: Robert G. M'Intyre. Conan Doyle Prize: Alexander L. M'Gregor. Annandale Gold Medal in Clinical Surgery: Edward A. Carmichael. Buchanan Scholarship in Gynecology: George J. Alexander. James Scott Scholarship in Midwifery: Isobel M. Finlayson. Scottish Association for Medical Education of Women Prize: Isobel M. Finlayson. Dorothy Gilfillan Memorial Prize: Jessie M'Cririe Craig. Wellcome Medals in the History of Medicine: Gold Medal, James M. Anderson; Silver Medal, Thomas Ferguson. Pattison Prize in Clinical Surgery: Donald S. Middleton and Arthur J. Wilson (equal). Wightman Prize in Clinical Medicine: Arthur J. Wilson. Cunningham Memorial Medal and Prize in Anatomy: Donald G. S. M'Lachlan. Whiteside Bruce Bursary: Donald Mainland.

University of Aberdeen.—The summer graduation ceremony was held on July 14th, when the following degrees were conferred:—

Doctor of Medicine.

*John Kirton, *George F. Mitchell, and Alexander J. Will.

*Commendation for Thesis.

Bachelor of Medicine and Bachelor of Surgery.

*Cuthbert A. Allan, Allan B. Clark, Robert Dawson, Douglas R. Dugan, Frances M. Duguid, Lewis I. Duncan, Margaret F. Fraser, Barbara M. Geddes, James W. Gill, Ethel E. Gray, Charles Joiner, Patricia Henderson Low or Cassie, *Elsie J. Mann (second-class honours), *Max Mindé, Frederic H. Mollière, Ronald M. Savege, Elsie J. Scorgie, Jenny H. A. Simpson, Frances M. G. Sinclair, †Annie Thain (first-class honours), *George Otto Thornton (second-class honours), Elizabeth M. Walker, Nora I. Wattie, and Fred Wilson.

* Completed Final Professional Examination with distinction.
† Completed Final Professional Examination with much distinction.

The John Murray Medal and Scholarship and the Lyon Prize were awarded to Annie Thain.

Diploma in Public Health.

Emily M. Badenoch, Charles A. Harvey, Frederic D. R. Keyt, Winifred M. A. Kindness, Mathilda F. Menzies, and Daniel I. Walker.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates have passed the Triple Qualification Examination:—

Third Examination.

James M. Crombie, Matthew Burn, Andrew A. Dewar, Helen J. Hamilton, John J. Mann, George F. Maher, Robert P. Anderson, Thomas P. Bremner, William Paris, Thomas E. Mathias, Charles W. de Villiers-Pritchard, William H. Griffith, Israel Rostowsky, Albert R. Rellum, Richard F. Kerr, and Elizabeth Clark.

Pathology.—David R. Paterson, Wilhelmina C. Storrie, Herbert Chorley, Johannes Jacobus Malan, and Owain ap Vychan Jones.

Materia Medica.—Montague A. Watson, Leonard A. Watson, Donald Jack, Jemima M. McKendrick, Charles C. Robson, George H. Tarras, Edward T. Hale, David Isaacs, Douglas M. Beaton, Samuel I. T. Wills, James H. Murrell, and Alexander L. Tinto.

Final Examination.

William B. Stott, Edward S. Godlieb, Otho P. Fox, John H. Bain, Vincent H. L. Anthonisz, Robert E. O'Keeffe, James S. A. Rogers, Ram Nath Nanda, Abdus Shakur, Hubert E. C. Cezair, James Pedris, Alexander G. Thom, Aflatun Yacub Khan, Emanuel J. Swirsky, James McNie Campbell, David M. Scrimgeour, Reuben Abramsky, Jane Copes, Eric W. Johnson, John Connal, John K. Holmes, Herbert Brown, Alan W. Hart, Hugh McKerlie, Gwilym ap Vychan Jones, and Elliot P. Dewar.

Medicine.—Lionel R. Bergson, Frank Walwyn, Herbert W. Amyes, Robert R. Waters, Albert R. Rellum, Henry P. Samuel, and Vadakath Padmanabha Menon.

Surgery.—Jatindra Kumar Sen, Herbert W. Amyes, Leo H. Peries, John Hagard, and Vadakath Padmanabha Menon.

Midwifery.—John G. Collee, Frank Walwyn, Robert R. Waters, Henry P. Samuel, and John Hagard.

Medical Jurisprudence.—Robert W. P. Hall, Gabriel G. King, Ian B. Cummings, Alexander W. Buchan, James B. Hendry, James S. Allan, John M. Cockburn, William L. Murray, Henry G. F. Cubitt, Herbert W. Amyes, Andrus M. Samarasinghe, Salomon Asam Ho Asjoe, Arthur S. Wickremesinghe, Frederick P. Lisboa-Pinto, Albert R. Rellum, and Jemima M. McKechnie Calder.

Royal College of Surgeons of Edinburgh.—*Presentation of Portrait of Lord Lister.*—At an extraordinary meeting of the College, Dr. George Mackay, the President, presented to the College a portrait of the late Lord Lister. The picture is a full-sized copy made by Mr. Dorfield Hardy of the portrait painted by W. W. Ouless, R. A., in the possession of the Royal College of Surgeons of England. In accepting the portrait on behalf of the College, Dr. McKenzie Johnston, the Vice-President, expressed the satisfaction the College had in acquiring this memorial of its most distinguished Fellow through the generosity of their President. Lord Lister entered upon his great surgical career as house surgeon to Prof. Syme in the old Royal Infirmary of Edinburgh. Later he acted as a lecturer on surgery in the extra-mural school in connexion with the Surgeons' Hall and as assistant surgeon to the Royal Infirmary, and subsequently he succeeded Syme in the chair of Clinical Surgery in the University. He became a Fellow of the College in 1855, and on the occasion of the celebration of the fourth centenary of the College in 1905 was elected an Honorary Fellow.

At a meeting of the College held on July 19th the following successful candidates, who passed the requisite examinations between March 21st and 25th, were admitted Fellows:

Alfred D. E. Bayliss, Keith P. Brown, Robert S. J. Fitzgerald, Andrew Fowler, William J. Grant, Daniel F. Hegarty, Archibald Langwill, John J. Liston, James S. Robinson, John J. McIntosh Shaw, Richard W. Smith, Quintin Stewart, William R. Stewart, and Peter P. Wright.

General Infirmary at Leeds.—Changes in the chairmanship of the infirmary have not been of frequent occurrence. Mr. Benson Jowitt held this office for 20 years, and his successor, Mr. Charles Lupton, has just retired also at the end of 20 years' service. Mr. Lupton's term of office will long be remembered by the public of Leeds and especially by the members of the honorary staff of the institution. Under his care and direction many improvements have been carried out. Among these may be mentioned the extension which has just been completed, in memory of the late King Edward. The Prince of Wales had expressed his intention of spending some time during his visit to the Yorkshire Agricultural Show in inspecting the infirmary, and had consented to open the extension; the postponement of his visit is only a less reason for regret than its cause. The extension comprised a new out-patient department, a new suite of general and of special operating theatres, and a new ward-pavilion, which have for some months been in full occupation. The question of accommodation for children had to be considered; there has never been any separate hospital for children in Leeds, and three of the large wards are to be allocated for the reception of children. Apart from the cots for children in these wards and in the semi-open-air ward which is to be provided on the terrace—which will together provide accommodation for about 120 children—it was found that there would be in the infirmary 432 beds for adults. The numbers allotted to the various departments will be as follows:—Medical, 113 (66 male and 47 female); surgical, 206 (135 male and 71 female); ophthalmic, 44 (27 male and 17 female); aural, 26 (14 male and 12 female); gynæcological, 23; isolation

A NEW INCOME-TAX RULE.

AT a late stage in the proceedings on the Finance Bill the Chancellor of the Exchequer moved a new clause which may be of special importance to many members of the medical profession. It relates to the proportion of the rent or annual value of the dwelling house which may be charged as a deduction in bringing out annual profits. At present the rule is that, when the same premises are used for both residential and professional purposes, there shall be charged as expenses of the practice only such part of the rent (if the doctor is a tenant) or annual value (if he is proprietor) as corresponds to the part of the premises used for professional purposes, and then the present rule proceeds —

Provided that where any such part is so used, the sum so deducted shall be such as may be determined by the Commissioners of Inland Revenue, *and shall not exceed two-thirds of the annual value or of the rent bona fide paid for the said dwelling house or offices.*

The change now made for the current year, as from April 6th last, is that the above restriction of a maximum of two-thirds is qualified as follows :—

Unless in any particular case the Commissioners are of opinion that, having regard to all the circumstances, some greater sum ought to be deducted.

It was strongly argued that many medical men were very hardly and unfairly hit by the two-thirds limit, when they were practically compelled by the nature of their practices to reside in expensive neighbourhoods, where they would never have installed themselves except for professional reasons. Thus it might easily result that to leave them domestically burdened with even one-third of the rent or annual value and rates was excessive and unfair. It is not quite clear, but it is at least maintainable, that such cases will obtain relief under the new rule. It may be said that unless the part of the house which is used for the practice represents more than two-thirds of the total annual value, no more than two-thirds can even now be passed as a deduction. But cases such as we have referred to are at least within the spirit of the new rule, and our readers would be well advised to act on that view in any case where the circumstances afford a basis for it.

Apart from these considerations two other points may be noted: 1. Where the house really serves three purposes—residence, practice, and private nursing home—the new rule will apply in terms. 2. The part devoted to the practice may not be two-thirds of the size of the house, and yet more than two-thirds of its annual value.

MEDICAL AND DENTAL TREATMENT OF SCHOOL CHILDREN.

HAVING ascertained that the total amount collected from parents during the year 1919–20 for medical and dental treatment of school children was only £4344, against a total expenditure on this work of £103,140, the London County Council has decided to vary its scale of charges. The unsatisfactoriness of the present position is accentuated by the fact that, quite apart from the actual cost of administering treatment, the mere collection of the £4344 cost the Council no less than £6225. The Education Committee of the Council is of opinion that if parents can afford to pay the full cost of treatment at the Council's centres there is no justification for charging less. At present parents are not permitted to pay the full cost, and any voluntary offer to do so has been refused. Henceforward those parents who, though unable to pay the fees of a private practitioner, are willing to pay to the Council the full cost of medical or dental treatment of their children, shall be enabled to do so.

The charges hitherto in force were 1s. for each period of six months for dental treatment and medical treatment of major ailments, and 3*d.* instead of 1s. for minor ailments. The new scale of charges to parents who do not pay the full cost is as follows :—

(1) *Minor Ailments.*—No charge for the first period of a fortnight; thereafter 1s. for the first period of six months, and 1s. for each subsequent period of six months.

(2) *All other cases, including dental cases*, a charge of 1s., so long as the index figure of the cost of living is more than 100 per cent. above the pre-war cost of living; when the said index figure falls to 100 per cent., or less, above the pre-war cost, the charge of 1s. shall be increased to 2s. as from the first day of the month following the publication by the Ministry of Labour of the fact that the index figure has so fallen; provided that any of the above charges may be remitted in full in respect of children whose parents have been ascertained to the satisfaction of the Children's Care (School) Committees to be necessitous.

The reason for allowing a fortnight's treatment without charge in the case of minor ailments is to ensure that small matters—trivial accidents, &c.—shall not be neglected, and that parents shall not be deterred from allowing their children to be treated. The Education Committee urges that prompt attention to minor ailments is essential, since a child's trivial complaint is frequently a symptom of something more serious.

In the course of a long debate on the Committee's proposals an attempt was made to refer the Recommendation dealing with the new scale of charges back to the Committee, on the ground that it was unreasonable to increase the charge from 1s. to 2s. when the index figure of the cost of living fell below 100 per cent. When this point was reached the wages of the workers, it was argued, would also fall, and parents would find it still more difficult to pay even the shilling now exacted. The motion was defeated.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. La T. Darley is placed on the Retd. List at own request.

Surg. Comdr. W. B. Macleod is placed on the Retd. List with the rank of Surg. Capt.

Surg. Lieut.-Comdr. F. C. Alton withdraws with gratuity.

Surg. Lieuts. to be Surg. Lieut.-Comdrs.: J. F. M. Campbell, R. J. Inman, and R. Lyon.

ROYAL ARMY MEDICAL CORPS.

Maj. W. E. Marshall is secd. for Foreign Office service.

Capt. W. W. MacNaught retires, receiving a gratuity.

Capt. W. V. Corbett retires, receiving a gratuity, and is granted the rank of Maj.

Temp. Capt. B. H. Woodyatt relinquishes his commn. and is granted the rank of Maj.

The undermentioned relinquish their commns. and retain the rank of Capt.: Capt. S. P. Snook, on account of ill-health; Temp. Capts. J. B. Morrison and J. MacRae.

I. Ridge-Jones, late temp. Capt., to be temp. Capt.

ARMY DENTAL CORPS.

Temp. Capt. W. M. Ferguson, Dental Surg., from Spec. List, to be Capt.

Temp. Capt. J. Marron, Dental Surg., from Spec. List, to be Lt.

Flight Lt. Lawrence Somerville-Woodiwis, from R.A.F., Dental Branch, to be Lt.

TERRITORIAL FORCE.

Maj. J. Taylor (late R.A.M.C.) to be Capt., and relinquishes the rank of Maj.

Maj. G. Dalziel (late R.A.M.C., Spec. Res.) to be Capt., and relinquishes the rank of Maj.

Capts. (late Capts., R.A.M.C.) to be Capts.: F. L. Napier, R. F. Young, J. K. Rennie, and J. O. Thomas.

Capt. M. D. Mackenzie (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

TERRITORIAL FORCE RESERVE.

Col. Sir H. A. Ballance resigns his commn. and retains the rank of Col.

MESOPOTAMIA HONOURS.

The King has given orders for the following appointments to the Most Excellent Order of the British Empire for services in Mesopotamia:—To be Officers of the Civil Division: Mr. G. N. Braham, Surgeon Specialist, Baghdad, and Mr. A. H. Hall, Civil Surgeon, Diwaniyah. To be Members of the Civil Division: Asst. Surg. H. C. Berlie, Medical Officer, Bandar Abbas, and Miss Elizabeth Alice Emuss, Matron, Civil Officers Hospital.

not be possible at present without an amendment of the law. He could not believe that when the changed conditions of medical and surgical treatment were considered the Ministry of Health would be satisfied to leave the hospitals without a large contribution from the great surpluses now being accumulated, and which had already been accumulated by the Societies. During the war the vast bulk of the people, and especially those who enlisted in the forces, came to demand a higher standard of medical treatment, and received it. They were not willing to revert to the old order, and were not satisfied now merely with the panel doctor, not at his best, but at his worst. They frequented the out-patient departments of the hospitals in greater numbers than they did, and even though in some cases they had to pay a small fee the insurance fund had benefited materially by the lessons of the war.

Hospitals as Training Schools.

It was forgotten sometimes that at least the 12 general hospitals in the London area, which had schools attached, were doing a great deal of work which was in no sense confined to the sick poor either in their own area or even within the bounds of the metropolis. They were the training schools for the medical profession of the whole Empire. At Cambridge University, for example, they could not in the medical school there fully equip a man for the practice of medicine, because although theory could be taught, it was obvious that they had not the pathological material for the purpose. It was left to the hospitals to take upon themselves the whole of the medical research, which was increasing in importance every day. That was a matter not only of national but of imperial importance. It was freely stated and claimed that the voluntary system of our hospitals had enabled medical skill and genius to be developed so far and so fast that in those matters we were ahead of the rest of the world. If that was true it was mainly because the 12 great general hospitals of London, with others in Edinburgh and one or two of the great cities, had carried out this urgent research and experiment, and they were doing it, of course, at the expense and by the goodwill of those who subscribed to their funds. The equipment of the general practitioner throughout the country was being raised year by year by the experience of what was being done in the hospitals and by the knowledge that was imparted to him, directly thus or indirectly through the medical journals, and there was a clear case on that ground—that the hospitals should receive fair payment out of the great surpluses of the Approved Societies.

Relation of Poor-law to Voluntary Hospitals.

The second point on which he asked for further investigation was the relation of the Poor-law institutions to the voluntary hospitals. If nothing more was done, and things were left until there could be a general reform of the Poor-law system—a revolution of our local administration, for that was what it meant—he thought they would have to wait a long day before any proper system of connexion or relation between the Poor-law institution and the voluntary hospital was brought about. A good deal of money for building and development might not be required if they were able to put the Poor-law infirmaries in their proper place as part of the general system of medical relief, not only in London, but elsewhere. There were 90,000 beds in the Poor-law infirmaries of the country and 20,000 in London alone. In 1920 the total number of beds in the voluntary hospitals in Great Britain was 32,191. Half of the beds in the Poor-law infirmaries were not full; half of them were never used in the year. Even when they were used there were not the consultants or the experts available as there used to be in the old days when the pauper cases were dealt with in the general hospitals. They were not available for the graver sorts of disease and major operations. The equipment was often quite inadequate for the general range of hospital work. He was sure that there could be such a coördination of activities and of capacities in regard to the care and cure of the sick poor as would set the whole system in order and prevent a large waste of public money, such as was inevitable now. If the law were so amended that they could concentrate the cases of paupers (if the Poor-law still continued its nomenclature) in a certain number of Poor-law institutions, and made the others available for the general purposes of treatment and relief, that in itself would be a great gain.

Administration of the Government Grant.

The Earl of **Onslow** (Parliamentary Secretary of the Ministry of Health) expressed the thanks of the Government to Lord Cave and his Committee for the useful and valuable suggestions contained in their Report. The British Medical Association, meeting in Newcastle, had just endorsed the recommendation that the voluntary system should be maintained. The Government most cordially agreed with that view. The noble earl went on to describe the Government scheme for carrying out the recommendations of Lord Cave's Committee, as set forth in a White Paper recently issued by the Ministry of Health. The Minister he said, had adhered to the recommendations of the Committee with regard to the constitution of the Commission appointed to administer the Government grant of £500,000 with one exception—namely, that he had added one more member to represent Wales, and he was glad to say that Lord Clwyd had accepted the position of representative of Wales on the Commission. They were hoping to get the most representative local committees they possibly could, representative of those in touch with the voluntary hospitals in any way, of the medical profession, of the hospital boards of management, of employers, of employed, of local authorities, and of women. The Government had decided that they ought not to contribute towards building schemes at present, when the hospitals were not paying their way, and the cost of building was steadily falling. In the present financial condition of the country the Government must be content to contribute only £500,000 in aid of the deficit, and rely upon the public to provide the rest. The duties of the Commission would be to deal with the situation at once, and make such advances from the fund as would enable hospitals to carry on, at any rate for the present, and relieve their most immediate wants. It was proposed that King Edward's Fund should take the place occupied by local committees in the provinces, and act as the local committee for London. The Commission and the local committees were in no way intended to exercise control over the hospitals. They were there rather to help the hospitals to rise on their legs again. The sole intention was to administer the Government grant so that the necessity for it should disappear quickly. The whole question of hospital areas and the sufficiency of beds in those areas would be a matter for the Commission and the local committees. With regard to Poor-law infirmaries there were 92,000 beds in those institutions, but they were not all in separate infirmaries; many of them were attached to workhouses. An average of 20,000 beds in them were vacant during the winter, and 30,000 in the summer. There were 36,607 beds in separate infirmaries, and on January 1st last 9150 were vacant. He did not know that they were all suitable beds, but, at any rate, they were there, and it was quite possible that the accommodation in these infirmaries might be of very great value and assistance in relieving the hospitals. The matter would be carefully investigated, and he would be disinclined to press the Commission to ask the local committees to submit proposals until they had had every opportunity of considering the matter fully and adequately, and with special regard to the resources of their areas. With regard to the question of contributions by the approved societies, it would be premature for him to say anything definite at the present moment. But the point would receive the most careful consideration, as would all matters which would tend to relieve the situation and to assist the hospitals.

Lord **Somerleyton**, as one connected with the Central Fund for Hospitals in London, said it was quite clear that the central authority for London would obviously have to take into consideration the fact that the Poor-law infirmaries were now more available for the use of hospitals than they were at the time when plans for extensions and alterations were originally put forward. This consideration would therefore require, and would no doubt receive, the most careful attention of the central authority for London.

A Wider View of Hospital Needs.

Lord **Dawson** of **Penn** said that when the Committee's recommendation of a grant of £1,000,000 for the hospitals was reduced by half they all realised that the Government had only made that reduction under the cogent pressure of financial difficulties. But, in view of that fact, he asked whether it would not be wise to reconsider the basis of its distribution. The sum of £500,000 when divided amounted to very little in an individual case. It was an important matter to put the teaching hospitals of the country into an entirely different schedule. If anything interfered with the efficiency of the teaching hospitals the whole nation suffered, because they provided not only the doctors and the nurses for the coming generation, but they set the standard of work. As a consequence the standard of work throughout the whole country could easily be so lowered in a short space of time as to deteriorate medicine in this country for 20 years. The question of the Poor-law infirmaries should not be allowed to rest longer. While they were waiting for that spare time which never came to Governments, in order to solve the Poor-law question, the country was prevented from utilising to the extent that it could the resources of Poor-law institutions. Lord Burnham had referred to the sick poor. That was not a wide enough view to take. The public were all poor now, and many of them were sick. The number who required institutional treatment steadily increased year by year, and much so that I often give some other drug afterwards to carry it along quickly. In both adults and children give lots of sod. bicarb. and potass. citrat., alternately, in plenty of water. This is most important, especially in children, as there is always great acidosis. I know of no remedy in medicine which has such a magical effect. No one who has ever used rhubarb would dream of using anything else. I hope others will try it in this dreadful tropical scourge.

I am, Sir, yours faithfully,
Nairobi, B.E.A., June 24th, 1921. R. W. BURKITT.

Obituary.

ARTHUR CHARLES OLDHAM, F.R.C.S. EDIN.,

MAJOR, R.A.M.C. (T.).

To those who knew him the news that Arthur Charles Oldham had died of sunstroke on July 21st in the neighbourhood of the Persian Gulf came as a real blow. About a year and a half ago he accepted a medical appointment at Baghdad under the War Office, and despite his having passed the age of 50, he seemed to be standing well the trial of his patriotic action. "'A.C.O.,' as he was affectionately known to his friends," writes one of them, "came of a distinguished family which is honoured in science in this country and many parts of the world. In early youth he had none of the usual advantages and was compelled to rely entirely on his own resources and efforts. Happily he was blessed with an excellent memory and a capacity to take pains with everything he undertook. He studied at Owens College, Manchester, and at the Royal College of Surgeons, Ireland, and at the latter institution in 1894 he was awarded the medals for medicine and surgery. Eventually settling in Kidderminster he obtained a large and widely extended practice. Possessing marked surgical ability and skill in diagnosis, he endeared himself to his patients of all classes. No trouble was too much for him to take, be the sufferer well-to-do or the poorest of the poor. Could any testimony be higher! As in his work so in leisure moments Oldham was a keen sportsman, a golfer above the average, and an enthusiastic student of good music and fine arts. As a Territorial officer of some standing he went on active service in August, 1914, and served throughout the war in England and France, latterly as specialist in venereal diseases.

"Being over 50 many friends regretted his decision to go out to the East, but all that knew him were certain that no risk would deter him from doing his duty. He has played his last round for his country, and it is certain he played it well to the end. Though he lies at rest 'somewhere East of Suez' the memory of an affectionate brother and kind-hearted friend will be kept green for many a long day in the hearts of those he was loved by."

ST. THOMAS'S HOSPITAL ANNUAL DINNER.—The annual Old Students' Dinner will be held on Friday, Oct. 28th, at the Wharncliffe Rooms, Hotel Great Central, Dr. H. W. G. Mackenzie in the chair. The usual notices will be sent out early in October.

UNIVERSITY OF BRISTOL APPEAL.—The University of Bristol has at length issued the appeal for adequate endowment, long deferred on account of the coal strike, in the form of a pamphlet, backed by posters displayed throughout the city. The argument of the pamphlet is that Bristol has been generous in the provision of University buildings, and that to make these effective a large increase of capital is necessary to provide for the expenses of maintenance. There is a debt of £70,000 on which interest is being paid. The sum asked for is £1,000,000, which in the opinion of the financial advisers of the University is by no means unattainable. In a list of chairs as yet without endowment are included those of Anatomy, Pathology, Medicine, Surgery, and Obstetric Medicine (the three last, indeed, are not only without endowment but almost without stipend), while that of Physiology is only partially endowed. It is clear, therefore, that if it is to continue to exist the Faculty of Medicine alone must absorb a large portion of the sum now being asked for.

Medical News.

UNIVERSITY OF LONDON.—A meeting of the Senate of the University was held on July 20th, the Vice-Chancellor, Sir Sydney Russell-Wells, in the chair. Dr. F. S. Langmead was appointed, as from August 31st, 1921, to the University Chair of Medicine tenable at St. Mary's Hospital Medical School. The Rogers Prize of £100 for 1921 was awarded to Mr. Lambert Rogers, M.R.C.S., L.R.C.P., for an essay entitled "The Surgical Treatment of Hyperthyroidism." The committee of the medical members of the Senate have elected Mr. H. J. Waring to be their chairman for the year 1921–22.

At examinations held recently the following candidates were successful in the subjects indicated:—

M.D. EXAMINATION.

Branch I., Medicine.—Simon C. de Silva Wijeyeratne, Univ. Coll. Hosp.; Geoffrey B. Dowling, Guy's Hosp.; William Feldman, Philip Hudson, and William A. E. Karunaratne, Univ. Coll. Hosp.; Gerald M. J. Slot (University Medal), St. Bart.'s Hosp.; John Heatly Spencer (obtained the number of marks qualifying for the University Medal), Charing Cross Hosp.; John G. Wardrop, Univ. Coll. Hosp.; Alfred Williams-Walker, Birmingham University; and Alfred Wills, Guy's Hosp.

Branch IV., Midwifery and Diseases of Women.—Kathleen M. Cogan, London Sch. of Med. for Women and St. Mary's Hosp.; Maud Gazdar, London Sch. of Med. for Women; Dennis H. Geffen, Univ. Coll. Hosp.; and Hilda G. Johnson and Muriel E. Landau, London Sch. of Med. for Women.

Branch V., State Medicine.—Lena C. Adam, London Sch. of Med. for Women and Univ. Coll. Hosp.; Hugh M. C. Macaulay, St. Bart.'s and Univ. Coll. Hosps.; Arthur B. Porteous, St. Mary's Hosp.; Rowan W. Revell, Middlesex and Univ. Coll. Hosps.; and Percy S. Selwyn-Clarke, St. Bart.'s Hosp.

Branch VI., Tropical Medicine.—James Fanstone, London Hosp. and London Sch. of Trop. Med.; and Clement H. Heppenstall, Leeds University.

M.S. EXAMINATION.

Branch I., Surgery.—Arthur L. Abel, Univ. Coll. Hosp.; Arthur W. Adams, Bristol University and London Hosp.; John A. W. Ebden, Westminster and London Hosps.; Claude H. S. Frankau (University Medal), St. George's Hosp.; Robert J. McNeill Love, London Hosp.; and Henry W. S. Wright, Univ. Coll. Hosp.

UNIVERSITY OF WALES: NEW PROFESSOR OF MEDICINE.—Dr. A. M. Kennedy, of the University of Glasgow, has been appointed Professor of Medicine in the Welsh National School of Medicine, Cardiff (University of Wales). Dr. Kennedy, who is at present senior assistant to the Muirhead Professor of Medicine in Glasgow University and one of the assistant physicians to the Glasgow Royal Infirmary, acts as Director of the Research Department at the Glasgow Royal Maternity and Women's Hospital on behalf of the Medical Research Council. He is the joint author of a monograph on cerebro-spinal fever and has contributed numerous papers to medical journals. He takes up his duties as Professor of Medicine and Director of the Medical Unit at Cardiff on Oct. 1st.

UNIVERSITY OF EDINBURGH.—At the graduation ceremonial in medicine, held in the M'Ewan Hall, Edinburgh, on July 15th, the following degrees were awarded:—

DOCTOR OF MEDICINE.

George A. Borthwick, Thomas L. Clark, *Thomas M. Davie (in absentiâ), Alfred V. Dill (first-class honours), †François P. Fouché, ‡Joseph G. Greenfield (first-class honours), *Robert L. Impey, James P. P. Inglis, Norman S. R. Lorraine, †Henry M. Moir, Bangalore Pasupulati Balakrishna Naidu, *Robert H. H. Newton, Pieter Johannes Olivier, Alexander C. Renwick (in absentiâ), William Gwernwy Richards, †William Stobie (in absentiâ), †John J. Thomson (first-class honours), and †Gerald G. Wray.

* Highly commended for thesis. † Commended for thesis.
‡ Awarded Gold Medal for thesis.

MASTER IN SURGERY.

David Holmes.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

James B. Aitken (second-class honours), George J. Alexander, Sydney E. Ammon, Thomas F. Andrew (in absentiâ), Flora T. F. Angier, Gilbert R. A. Armstrong, Charles W. Badger, Frederick E. L. Beck, Rosa M. Bickerton, John M. Black, Jacobus M. Bosman, William H. S. Boyd, Maeve Cluna Brereton, Andrew S. Burns, Donald Ian Cameron, John Campbell, Eric E. Candlish, Edward A. Carmichael, Edith K. Chandler, James H. Clarke, Jessie M'Cririe Craig (second-class honours), Nicholas S. Craig, Edward J. Craver, Grace Cumming, Edward Douglas Dingle (second-class honours), William Douglas, Alexander Dower, Stephanos J. Eapen, Geoffrey D. English, Harry D. Epstein, Isobel M. Finlayson (first-class honours), Edward M. Fraser, John S. Fulton, Katharine M'Laren Gifford, Elspeth L. Gilmour, Mary

that in future no member of a medical board whose decision was being appealed against should sit on the appeal tribunal. —Mr. MACPHERSON replied: The personnel of a medical appeal board should be entirely different from that of the board whose assessment is challenged. I am having inquiries made into the position in the area mentioned, and will communicate the result to my hon. friend.

Unemployment and Health Insurance Payments.

Mr. JESSON asked the Minister of Health if any consideration was given to insured persons under the Health Insurance Act, who, being out of employment through no fault of their own, were unable to continue their contributions, and were consequently greatly in arrears; and whether it was possible for them to be kept in benefit by deducting a small percentage from their sick pay, when it was allowable, until such arrears were paid up.—Sir A. MOND replied: Insured persons who have fallen into arrears through unemployment are given an opportunity of making a comparatively small payment in order to avoid any reduction or suspension of benefits. In view of the great amount of unemployment during the past 12 months, time during which such payment may be made has been extended to Nov. 30th next, and Approved Societies have been empowered to make a special concession in the case of members who have been unemployed for more than 26 weeks in the year. Any method such as that suggested by the hon. Member which involved the collection of the arrears only from members who fell ill would not be fair to the Approved Societies, as they would not be adequately recouped for the loss sustained by them in unpaid contributions.

THURSDAY, JULY 21ST.

Government's Housing Policy.

On the Report stage of a vote for the Salaries and Expenses of the Ministry of Health,

Mr. ASQUITH moved to reduce the vote by £100 in order to review the Government's policy in relation to the vital question of housing.

Mr. CLYNES urged that any other kind of building operations should have been prohibited until the pressing human needs of large masses of the population had been met.

Sir A. MOND, Minister of Health, denied that the Government was giving up the whole of the housing programme. The fact remained that the country had now a permanent burden for 60 years of £10,000,000 a year on the taxes in order to provide houses. We had incurred a commitment of over £600,000,000, an unprecedented contribution for the Exchequer to make, and the Government were trying to review the situation at a time when there were sufficient contracts and tenders approved to occupy for at least 12 or 18 months the whole building facilities of the country. He protested against being represented as indifferent or hard-hearted. Dealing with the question of slums, the right hon. gentleman said possibly it might have been better if they had begun at that end rather than undertaking so much new construction.

Dr. ADDISON defended his housing policy at the Ministry of Health, and urged that that policy was not his alone, but was that of the Government, of the House, and even of the country. He claimed that private enterprise would not meet the need, and the Government had no right to cut down expenditure on the removal of slums while they were spending £900,000 a month on Assyrian refugees.

Mr. LLOYD GEORGE said no country in the world had made such sacrifices as this country since the war. We had found more money for housing the working classes than the United States or any other country. Let Britain get credit for what she had done. They were only crying a halt; there would not be a single house the less built. The policy of the Government was not to stop housing, but to put it on a better and more business-like footing.

The amendment to reduce the vote was rejected by 251 votes to 67, and the vote was then agreed to.

Medical Research Awards.

Mr. BRIANT asked the Prime Minister whether, in view of the vital importance of medical research to the health of the nation, the prevention or cure of disease and the alleviation of pain, there could be provided a fund from which could be paid awards for discoveries or inventions which contributed to the general health of the community and which were placed gratuitously at the service of the public, pensions to those who had become totally or partially incapacitated in the course of research, and pensions to dependents of those who had died directly or indirectly as a result of their devotion to research.—Mr. BALFOUR (Lord President of the Council) replied: I see no ground for differentiating medical from other forms of scientific research, which may be of equal value to the community, and I doubt whether any system of pecuniary awards would in the long run be beneficial to science or medicine. The difficulty of apportioning merit for even the greatest of discoveries is often overwhelming; monetary awards would lead to jealousy instead of coöperation among research workers, and might prove to be an incentive to work for results that are sensational rather than for the advancement of scientific knowledge. The question was fully discussed at a deputation which I received on March 7th, 1920, at the Privy Council Office.—Mr. BRIANT: Does the right hon. gentleman recognise that in one branch alone, the research into the value of X rays, a great number of medical men have lost their lives, and their dependents get no recognition from the nation?—Mr. BALFOUR: I believe there were in the early days of X ray investigation very serious results to some medical men who lost their lives. Of course, their dependents are eligible for pensions. The Royal Bounty Fund is available for this purpose. Whether the Royal Bounty Fund is large enough is a question on which I am not competent to give an answer.

Unemployment and National Health.

Sir BURTON CHADWICK asked the Minister of Health whether, in view of the official report of his chief medical officer calling attention to the already apparent traces of the lowering of vitality in the health both of mothers and little children due mainly to unemployment and its effects, he was taking any special precautions to ensure assistance so far as it could be given in the coming winter to these victims of industrial unrest.—Sir A. MOND replied: I am having this matter carefully watched, and will give whatever assistance is possible within the limits of my financial resources.

FRIDAY, JULY 22ND.

New Licensing Bill.

Sir G. HEWART, Attorney General, moved the second reading of the Licensing (No. 2) Bill, which was agreed to.

Haslar Naval Hospital.

Commander BELLAIRS asked the Financial Secretary to the Admiralty the total possible number of beds in Haslar Royal Naval Hospital, and the maximum and minimum number occupied in the first six months of 1921.—Mr. AMERY replied: The total possible number of beds in Haslar Hospital is 1118. During the period Jan. 1st to June 30th, 1921, the maximum number occupied was 549 and the minimum 370.

Cosham Military Hospital.

Commander BELLAIRS asked the Secretary of State for War the total possible number of beds in Cosham Military Hospital and the maximum and minimum number occupied in the first six months of 1921; and whether he could state the distance of the hospital from the great naval hospital at Haslar.—Sir L. WORTHINGTON EVANS replied: There are 200 beds in Cosham Military Hospital; the maximum number occupied during the first six months of 1921 was 101, and the minimum number was 39 (on one day only). The approximate distance from the Naval Hospital at Haslar is 12½ miles by road and 7 miles by road and ferry.

MONDAY, JULY 25TH.

Whipps Cross Infirmary.

Mr. JOHN JONES asked the Minister of Health if he was aware that the West Ham board of guardians had offered to place shelters at Whipps Cross Infirmary for the accommodation of insured persons suffering from tuberculosis, and that these shelters were well adapted for the purpose of dealing with phthisis cases; and whether he could now give reasons why the offer of the board had been refused, in view of the great shortage of accommodation for this class of patient.—Sir A. MOND replied: A medical officer of the Ministry has now been instructed to visit this institution with a view to investigating the proposal of the guardians.

Illegitimacy Bill.

Mr. WIGNALL introduced a Bill "to extend and amend enactments relating to bastardy and to affiliation and certain other orders, and to provide for the legitimation of illegitimate persons by the marriage of their parents, and to amend the law relating to the rate of legacy duty and succession duty in the case of illegitimate persons, and otherwise to make further provision with respect to illegitimacy and illegitimate persons and their parents, &c." The Bill was read a first time.

TUESDAY, JULY 26TH.

Unemployment Benefit and Hospital Treatment.

Lieut.-Commander KENWORTHY asked the Minister of Labour whether a woman, the wife of a disabled ex-soldier, who was an insured woman and would otherwise be entitled to unemployed benefit, was not entitled to the benefit because her husband was receiving hospital treatment allowance, both living together.—Sir MONTAGUE BARLOW (Parliamentary Secretary to the Ministry of Labour) replied: A woman who is otherwise entitled to receive unemployment benefit is not disqualified by reason of the fact that her husband is a disabled ex-soldier receiving hospital treatment allowance.

cases, 16 (8 of each sex), and four emergency beds, which will be used for the temporary detention of those who come in under the influence of drink; this allotment of beds expresses in part the proportion which has existed in the past, in part the endeavour to provide a greater number of medical beds, and in part the consideration given to proper segregation of medical and surgical cases, convenience of nursing, and relation to the operating departments. The growth of the honorary staff since the infirmary was opened in 1868 by King Edward the Seventh (then Prince of Wales) is of some interest. At that time there were three honorary physicians and four honorary surgeons. The staff now numbers three physicians, three assistant physicians, four surgeons, four assistant surgeons, two ophthalmic and two aural surgeons, an obstetric surgeon and the honorary pathologist who is appointed by the special election committee, but who has to have the qualification that he is the professor of pathology in the University. In addition to these 20, there are the two officers in charge of the radiological department and the officer in charge of the venereal department, all of whom are appointed by the board on the recommendation of the faculty for a period of five years, and who are all eligible for re-election. In 1883 the resident staff numbered 7; there are now 14. The re-allocation of beds and cots above detailed is already being given effect to, but until the end of this year it will not have been fully carried out, and it will be some time before the open-air accommodation for children can be provided; when the process is completed the infirmary will have within its walls at least 552 beds and cots. In addition to these, the 86 beds at the two semi-convalescent hospitals at Cookridge really form an extension of the ward accommodation; to them are sent patients who require more nursing and attention than can be given at ordinary convalescent institutions. The maintenance of this great hospital makes heavy demands on the generosity of the public of Leeds and the surrounding district, and its finances are a source of anxiety to the board of management, but it is clear that the reputation of the infirmary has never stood higher than at present. Though Mr. Lupton has retired from the position of chairman he retains his seat on the board. He is succeeded by Mr. T. L. Taylor, who is not only a large employer of labour and a well-known business man, but a well-known cricketer, and will command the respect and confidence of all classes of the community.

St. George's Hospital Medical School.—The annual dinner will be held on Oct. 1st at Oddenino's Restaurant with Dr. H. A. Des Vœux in the chair. The usual notices will be sent during August.

British Hospitals Association Luncheon.—On July 30th, at the Royal Automobile Club, Lord Cave and the members of the Voluntary Hospitals Committee were entertained to luncheon by the British Hospitals Association. The Chairman (Sir Arthur Stanley) proposed the health of the guests, and expressed the gratitude of the Association to the Committee for the work done on behalf of the voluntary hospitals. Their double duty—the inquiry into the nature and extent of the difficulties with which the hospitals were faced and the suggestion of a way out of those difficulties—had been performed in a remarkably efficient way. Given a little time, the voluntary system could reassert itself and become as successful as it was in the past. Mr. Wade Deacon, supporting the toast, said that everyone connected with the voluntary hospitals appreciated the great trouble taken by the Committee in their work; as one who gave evidence before it he knew the shrewd interest and kindness displayed by its members. Viscount Hambledon spoke on behalf of the London hospitals; the latter, he said, had a problem of their own to solve; he hoped that before long increased receipts would remedy the urgent need now evident, and permit action along the lines recommended by Lord Cave's Committee. Lord Cave, responding, referred to the cordial support the Committee had received from all those interested in and connected with hospital work and from the Ministry of Health. With reference to the Government's grant of half a million pounds in answer to the Committee's urgent recommendation of a grant of a million this year and a possible million next year, if the hospitals had again to appeal for help in a year's time it would not be the fault of the Committee. If 1 per cent. of business profits in the country were applied to hospital purposes there would be no hospital problem. It was necessary that some fund for provincial hospitals, similar to King Edward's Hospital Fund for London, be established; and if hospitals were to prosper they must work more together than they had done in the past. The Marquess of Linlithgow then proposed the health of the Chairman; Sir Arthur Stanley, replying, made special mention of the valuable services rendered to Lord Cave's Committee by its secretary, Mr. L. G. Brock, who was now secretary of Lord Onslow's Commission.

Parliamentary Intelligence.

HOUSE OF LORDS.

Wednesday, July 20th.

Hospital Finance.

Viscount Burnham asked His Majesty's Government whether they had fully considered the Report of Lord Cave's Committee on hospital finance, and, if so, what further steps they would take to put the system of voluntary hospitals on a more satisfactory footing, particularly in relation to the Poor-law infirmaries. He said he asked the question not in antagonism to the Committee presided over by Lord Cave, to whom the whole hospital world was much indebted for the care that he had taken in the preparation of the Report. But that Report was of necessity provisional, and the remedies suggested were in the nature of a stop-gap. The London Hospital had closed down 200 beds and King's College Hospital 100 beds. On the other hand, this was only one phase of what had been called the national health problem, and the hospitals were only part of the national health policy. That things were not as they might be they could see well enough when in the Report of the Chief Medical Officer of the Ministry of Health it was stated that in England and Wales there was lost to the nation every year among the insured population only, and excluding losses due to sickness for which sickness and disablement payment was not payable, the equivalent of the work of 270,000 persons. There was a clear case for the renewal of the mandate of this Committee and for the extension of its reference. What had been done now would not do much more than cover the year's deficit; and yet the causes lay so deep that unless the problem was considered as a whole, and now, the waste of public money would be great, and the results were not likely to be satisfactory. All who were connected with the administration of voluntary hospitals were pleased that the Committee emphatically affirmed and approved the voluntary principle. Experts speaking at various conferences believed that it created a free and expansive atmosphere for medical research and medical treatment, and that if State or even municipal control were substituted it would crab and stereotype the methods of administration and be fatal to scientific advance as well as to expert treatment.

Hospitals and National Health Insurance.

There was, Lord Burnham went on to say, a clear case for asking the Committee to report on two great subjects long overdue. He meant the relation that the system of national health insurance bore to the rest of the problem of national health, and particularly to the provision of hospitals, both general and special; and secondly, the relation of the Poor-law infirmaries to the voluntary hospitals. In regard to insurance, he thought that the Committee had much understated the case. It was recognised in the Act of 1911 that hospital treatment was necessary as part of the general relief given to insured persons, many of whom were well within the category of the sick poor. The Committee did not appreciate the degree to which the obligations and the burdens of hospitals had been increased by the National Insurance Act. Hospital treatment was absolutely necessary to the obtaining of satisfactory results under that Act. It was not the case that the general practitioners had given all that the Act demanded, or all that they might have given, if it had not been for the goodwill and the zealous assistance of the hospital authorities. Before the Act was passed a vast amount of sickness and distress was hidden in the back streets of the great cities and never brought to light. Much of it in the country villages never obtained proper attendance, still less remedial treatment. When the panel practitioners began to appreciate the extent of their duties they found ready to their hand, and especially in the metropolitan area, a great system of voluntary hospitals to which they could turn if they were in the least difficulty; and there grew up the practice of sending their patients to hospital with letters of recommendation, which, as a rule, insured the cases being dealt with, even when they were not of great urgency. The whole system of prophylactic treatment was only slowly appreciated. The Exchequer was getting indirectly the benefit of a vast amount of hospital expenditure which would have been unnecessary if the National Insurance Act had not been passed. The calls upon the hospitals were increasing. The expert consultants were now going into a sphere of treatment which was formerly left to the general practitioner, and as disease was diagnosed with greater fullness and accuracy so the demand for skilled treatment was always increasing. A clear case existed under the Act for obtaining a contribution ut of the surpluses of the Approved Societies such as might

Notes, Short Comments, and Answers to Correspondents.

INDUSTRIAL HYGIENE: ITS RISE, PROGRESS, AND OPPORTUNITIES.[1]

BY SIR THOMAS OLIVER, M.D. GLASG., F.R.C.P.

IT is just over a century ago since the British Parliament turned its attention to the fate of children employed in the mines and factories of this country, and little more than half a century ago since diseases due to occupation received similar recognition. Great Britain was the pioneer of industrial legislation. The utilisation of water power and steam led to the rise of the factory system and to the growth of large towns. The "Industrial Revolution," which began about 1740, and the inventions which preceded and followed it, not only placed us as a nation in a high position in the world of commerce and made us wealthy, but it created new methods of employment associated with the subdivision of labour, as well as a new class of workers to meet the requirements. It also initiated problems towards the solution of which, as the statesmen of the time had no experience to guide them, the laws which they framed could at the best be but only tentative and a makeshift. While the introduction of machinery made labour in the factories in one sense less irksome, it led to the employment of women and children, many of whom, owing to the long hours and low wages, rapidly broke down in health. with no financial assistance from the State or from the industry to fall back upon, so that to ill-health were added the distressing circumstances of poverty and starvation with only the workhouse to look forward to. In order to prevent physical degeneration of the working classes it became necessary to improve the conditions under which labour was carried on in mine and factory by shortening the hours of labour for women and children, and by raising the age of child workers. The employment of children of seven years of age in our coal-mines and factories, and the harsh treatment extended by overseers to them, since they were frequently beaten or handled roughly when they were found asleep at work, form unpleasant reading in the pages of the industrial legislation of this country.

Industrial Legislation.

From the first decade of last century onwards to the Victorian period Parliament time and again shortened the hours of labour, restricted the employment of children, and improved conditions within the factories. but even as late as 60 years ago little had been done to instil into the mind of the people the association of certain diseases with particular occupations, and how these diseases might be prevented. Thackrah, in 1831, had written upon the subject, and J. T. Arlidge, in 1892, had published his monumental work, but occupational diseases as a class had not yet caught on with the medical profession, and so matters drifted. Sir John Simon, at the dawn of the public health movement in this country, recognised how closely identical was the health of workers with the object sought to be secured by a public health service, and that in the prevention of disease lay one of the most important duties of the medical profession. To-day the preventive side of industrial medicine is regarded as even more important than the curative. Industrial hygiene may be said to have merged out of, or to have been a continuation of, Parliamentary interference with the claims of employers to utilise labour almost to its breaking point. Occupation was never meant to cripple workmen, cause ill-health, or induce early death. It was thus that medicine was drawn into the social movement in which it plays an honoured part to-day. In few fields of human activity has the call for preventive medicine been greater than the various industries of this country, with their former high mortality and sickness rates. Society, in the past, kept itself too far aloof from knowledge of the conditions under which certain trades were carried on, and even the workers themselves were not always aware of the dangers to which their employment exposed them. Ignorance is responsible for many of the calamities which overtake us. It became necessary to instruct workers and employers in regard to occupation and health, for to have knowledge is to be forearmed. Regulations drawn up by the Home Office, and meant for the welfare of workers, have from time to time been challenged by both employers and employed, and there is no objection to this, since at a conference of the parties concerned conflicting opinions may be modified, or, failing this, a compromise is effected, and work allowed to continue, during which fresh regulations can be given a trial.

The Widened Scope of Industrial Hygiene.

Within the last few years the scope of industrial hygiene has widened. It includes not only consideration of the conditions under which work is carried on, the hours of labour and diseases incidental to occupation, but it deals with the physical effects of work as seen in fatigue and how hours of work and rest may be correlated so that there may be obtained the maximum of production with the minimum of effort, also that the hours of respite from labour may be made sufficiently long for recovery from exhaustion to take place. The tendency has been to remove from labour any serfage element which may have clung to it as a remnant of bygone days, and to recognise that men and women are not mere machines, but that they are entitled to the opportunities of improving themselves mentally and physically. To-day industrial hygiene is no longer the affair of one nation but of all the advanced nations. The creation of the International Labour Bureau under the ægis of the League of Nations has raised industrial medicine to a higher platform, so that while the health of the workers is one of the main objects, and production is regulated by the physical fitness of the worker and by the hygienic conditions under which labour is carried on, the fact that industrial medicine has become international will incite backward nations to aim at securing a higher standard of health for their workpeople, as well as more efficient means of increasing production. Arising out of legislation passed for improving conditions of labour and shortening of the hours of work, and proceeding through medical supervision of workers and the elimination of the unfit as well as the substitution of comparatively harmless for harmful methods of production, of industrial medicine it may be said that although it has made such rapid strides that many of the results obtained have become fresh energising influences in the life of nations, yet many opportunities for good still lie in front of it.

Medical examination of workers before commencing their industrial career would no doubt create hardships, but the ultimate gain would transcend all these. Even with the ordinary precautions taken there would still be found a certain number of persons who would break down in health earlier than others, either as the result of diminished vital resistance or of idiosyncrasy.

Sir Thomas Oliver then gave an account of the transformation from dangerous into comparatively safe industries those of lead-mining and match-making, and discussed briefly the pathology and prevention of carbon-monoxide poisoning, adding a short survey of the preventable hazards to which coal-miners were formerly subjected. He continued:—

Fatigue.

There is one side issue of industrial hygiene which has recently attracted attention—the subject of fatigue. A hundred years ago the world moved, as the saying is, more slowly than it does to-day. Men took things more quietly; there was neither the strain nor the competition characteristic of modern times. Hard work was followed by fatigue then as now, but it affected principally the muscular system; to-day it falls more upon the nervous system. Collective work is carried on in over-heated factories amid the din of machinery and it demands close attention. The reality of fatigue was brought home to us by the large number of men and women who broke down in munition work during and after the war. There is a limit beyond which the human machine cannot produce satisfactorily. Fatigue as subjectively experienced is a series of ill-defined sensations not always localisable, attended by disinclination for work and by a desire to rest. Professor Drever[2] thinks that the word "weariness" pretty accurately describes the subjective state in the individual, and that objectively fatigue can best be defined in terms of output, as shown by a lowered efficiency in the organism, and revealed by impairment of the quality, and diminution of the quantity, of work done. The delicate nerve cells and nerve endings of the human body become readily fatigued, but if we take fatigue to mean an inability to carry on as previously, then fatigue is not confined to living tissue alone, for a similar event occurs in the inorganic world. Steel wires when over-strained play out and behave as tired nerves. It would be of the greatest assistance if we could with a certain degree of definiteness ascertain just to what number of hours a man can work before his energy begins to fail, for once this takes place, if work is continued, it is unprofitable. Clearly the number of hours of work cannot be the same for all individuals or for all trades. As regards fatigue, much will depend upon the previous health and upbringing of the worker, how he is fed and housed, and how he spends his leisure hours.

The recent war has been followed by disastrous consequences in the case of many of the discharged soldiers.

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[1] Abridged from a Special Address delivered at the Eighty-Ninth Annual Meeting of the British Medical Association.

[2] Drever: The Psychology of Industry, p. 61. Methuen.

was going to increase, and any estimates which the noble earl might make as to the necessity of institutional treatment would be very much under the mark. The whole tendency of modern life was to increase the need of institutional treatment. The diagnosis of disease was no longer the work of a single individual; it was done by the coöperation of several individuals; and coöperation required equipment and organisation, and these required provision. That was the scientific reason; the next was the economic reason. Every time they increased complexity in the investigation of illness they increased the cost. Every new invention cost an institution an increase in expenditure. This meant that the number of people who could defray the whole cost of their illness went steadily down. The only solution was an increased provision of institutional treatment. The third was the social reason. Homes were now much more difficult to manage than they were, and the more narrow and restricted the income the greater the difficulty. In some parts of the country, if the lady of the house ventured to wish to have a baby, the servants very often desired to leave. They must take a wider view of hospital needs than that represented by the case of the sick poor.

The Place of Poor-law Hospitals.

One way by which the Poor-law infirmaries could be used in certain districts was by supplementing the work of the general hospitals by arrangement; but they should not start business on their own, as had been done at Bradford. The medical talent of a district nearly always centred round the voluntary hospital, which enabled that hospital to give a lead in treatment and medical policy. Another way in which Poor-law infirmaries could by voluntary means assist the community was by setting aside wings or blocks of beds for paying patients or supported by paying patients. But it was necessary that the boards of guardians, or the body that had charge of these infirmaries, should make no provision for the medical care of these people. All they should do was to provide the hotel part of the business, and the nursing equipment and machinery. The patient's own doctor should follow the patient into that institution, and in that way they would support the central principle of all medical progress in this country, and that was the provision of the fabric side by side with freedom of relations between doctor and patient. If once they allowed the guardians to provide medical aid for these patients they were on the slippery slope of municipalisation of medicine. Although the country was in dire need and straitened financial circumstances it would be helpful if the Ministry of Health could lay down the outlines of a health policy. What was the policy that was going to guide these services, and especially the curative services, during these lean years when it was admitted that expenditure must be cut down to the minimum? He suggested that there were two lines of policy—first, to maintain all essential services now, not more than that; and then this further line of policy: they could utilise these lean years to lay down the foundations of a constructive policy which could be commenced when the finances of the country permitted an advance in that direction.

Viscount CAVE said that the House had been more than interested in Lord Dawson's speech. He was sure that the insurance societies owed a great deal both pecuniarily and otherwise to the hospitals, and he hoped they would recognise that help by making larger contributions to their funds. If it were necessary, as he thought it might be, to modify the law, in order to enable full coöperation to take place between the Poor-law infirmaries and the voluntary hospitals, he hoped the Government would introduce a Bill for that purpose without waiting for the introduction of the general measure which had been foreshadowed.

HOUSE OF COMMONS.

TUESDAY, JULY 19TH.

Death Certificates.

Mr. WATERSON asked the Minister of Health how many deaths were certified by registered practitioners in each year during the past ten years; how many deaths were uncertified, and how many of the latter deaths were reported to coroners. —Sir A. MOND replied: It is not possible to state the number of deaths which were certified by a registered medical practitioner or the number of those which were not so certified. The available statistics are derived from death registration; and a death which is the subject of an inquest is registered on the certificate of the coroner, whether it had or had not been previously certified by a registered medical practitioner. The figures of deaths registered respectively on the certificate of a registered medical practitioner, on the certificate of a coroner, and without either a medical certificate or an inquest are as shown in the table. With regard to the last part of the question, registrars of births and deaths have been required since March 2nd, 1914, to report all cases of uncertified deaths to a coroner, but complete information as to the number reported in the previous years is not available.

—	Registered on certificate of registered practitioner.	Registered on coroner's certificate after inquest.	Uncertified deaths on which no inquest was held.
1911 ..	483,944	37,200	6,666
1912 ..	443,938	36,668	6,333
1913 ..	462,396	36,419	6,160
1914 ..	472,768	37,695	6,279
1915 ..	515,441	39,128	7,684
1916 ..	463,929	36,760	7,528
1917 ..	456,666	34,704	7,552
1918 ..	570,605	33,012	8,244
1919 ..	466,017	31,488	6,698
1920 ..	429,426	30,995	5,709

WEDNESDAY, JULY 20TH.

Optical Glass and Medical Research.

The House went into Committee on the Safeguarding of Industries Bill, Mr. J. HOPE in the chair. The Committee stage of the Bill was completed.

Public Representation and Hospital Grants.

Mr. BRIANT asked the Minister of Health if grants out of public funds were made to hospitals if provision would be made for representatives of the public on the governing bodies.—Sir A. MOND replied: I will bring my hon. friend's suggestion to the notice of the Hospitals Commission, but I am disposed to doubt whether a non-recurrent grant would justify requiring hospitals to make a permanent change of this kind in the constitution of their governing bodies.

Effect of Summer Time on Children.

Sir ROBERT THOMAS asked the President of the Board of Education whether he had requested the educational authorities to ascertain the views of head teachers, school medical officers, and others on the effect of summer time on the children; if so, whether he had yet received this information; and whether such information would be published before the Summer Time Bill now before Parliament became law.—Mr. FISHER replied: I will send the hon. baronet a copy of a Circular (No. 1215) which was addressed by the Board to local education authorities in England and Wales in May last. The answers to the Circular have not yet been received.—Colonel FREMANTLE: Will any such information be balanced by the opinion of medical officers of health on adults: will the one view be balanced against the other?—Colonel ASHLEY: May we have the information before the Summer Time Bill comes up again for discussion?—Mr. FISHER: If possible.

Dangers of Lead Paints.

Captain BOWYER asked the Secretary for the Colonies whether he was aware that the International Labour Conference, sitting at Geneva in October next, would have before it a proposal for the prohibition of the use of white lead in painting; that this proposal was viewed with alarm by the Government of the Commonwealth of Australia because such a prohibition would cause the closing down of the Broken Hill lead mines of New South Wales, which were of primary importance to Australia; that such a prohibition would have a similar effect upon the lead mines of Burma and Rhodesia; and whether he would cause instructions to be given to the representatives of His Majesty's Government at the International Labour Conference to ensure that careful consideration might be given to the possibility of dealing effectively by precautionary regulations with such dangers of poisoning as were incidental to the use of paint rather than by a method which would have such serious consequences for imperial interests.—Mr. CHURCHILL replied: The answer to the first part of the question is in the affirmative. As to the second part, I have received no representations as regards Rhodesia. The Commonwealth of Australia and India are both original members of the International Labour organisation under Article 387 of the Treaty of Versailles, and provision is made for their direct representation at International Labour Conferences under Article 389. As to the third part, I understand that the instruction to be given to the representatives of His Majesty's Government will be settled later.

Medical Board Appeals in Durham.

Mr. HEYWARD asked the Minister of Pensions whether in the Easington district, county Durham, appeals against decisions of the medical board were heard before another tribunal having the same chairman as the medical board whose decisions were being appealed against; if this was so, whether he was aware that thereby a sense of grievance and injustice was caused in the minds of appellants; and whether he will give the necessary instructions to ensure

Green, M.P. 75, Lamb's Conduit-street, W.C.1, or to the London County Westminster and Parr's Bank, Hatton Garden, E.C.1. We are, Sir, yours faithfully,

JOHN KENSINGTON, J. H. HERTZ (Chief Rabbi),
ALBERTA SANDWICH, ROBERT F. HORTON,
LOUISE CREIGHTON, FRANK LLOYD,
MARY ST. HELIER, J. F. GREEN (Chairman).

July 19th, 1921.

TRIFOLIUM STELLATUM AT SHOREHAM.

To the Editor of THE LANCET.

SIR,—In the obituary notice of the late Sir George Savage, appearing in your issue of July 16th, a personal friend mentions an unsuccessful search for the star clover at Shoreham, and adds that it is still there. I should be glad to hear if this is really so. Over 30 years ago I can remember Mr. G. C. Druce showing me a pocket-case full of the stellate fruits he had gathered on the beach. During the decade 1902–11 I searched every year for the plant, but only found it (and then very sparingly) on two or three occasions. The erection of bungalows, formation of roads, and other human activities resulted in its practical extinction, so far as my limited observation went. As Shoreham beach is the only British habitat for a rather striking plant, I should be very glad indeed to hear that it was still holding its own. Perhaps some of your South Coast readers have some recent information on the point? I may add that from seeds obtained at Shoreham I have grown specimens of the plant in my garden for many years past.

I am, Sir, yours faithfully, J. E. SAUL.

Analytical and Bacteriological Department, Savory and
Moore, Ltd., 143, New Bond-street, London. W.,
July 19th, 1921.

PUBLIC HEALTH AT COLOMBO, 1919.

IN his report on the conditions of public health at Colombo during 1919, Dr. W. Marshall Philip, the medical officer of health, commences by stating that the birth-rate, 21·7 per 1000, was the lowest recorded for 15 years, whilst the death-rate, after falling from 39·8 in 1906 to 24·3 in 1917, had risen to 28·0 in 1918 and 28·8 in 1919; the infant mortality, having fallen from 419 per 1000 births in 1903 to 231 in 1916, had risen to 251, 266, and 271 per 1000 in the three years 1917–1919 respectively. The population is estimated to have been 271,616 in the middle of 1919, but the correctness of this is open to doubt, especially in certain wards, where a large number of new buildings have been erected. Among the various races included in this total, the native Sinhalese naturally form the majority (121,848), after whom come Tamils from Southern India (65,797), Moors (47,854), Burghers (Dutch or Portuguese, 17,812), and Europeans (3795), the remainder consisting of Malays and others. The birth-rate varied from 12·1 amongst Tamils to 32·0 amongst Malays; for Europeans it was 17·1, for Moors 17·6, and for Sinhalese 27·9. The general crude death-rate of 28·8 is to be compared with the decennial average (1909–18) of 28·2; if corrected for deaths in hospital of non-residents, and for age and sex constitution, the ratio becomes 29·7, "which is the nearest approach to the true death-rate of Colombo which can at present be obtained." The corresponding ratio for 1918 was 29·4 per 1000. As regards the different races making up the total (crude) ratio of 28·8, for Sinhalese the ratio was 34·3, for Moors 21·2, for Tamils 23·1, and for Europeans 17·1 per 1000; if corrected for deaths in institutions, this last figure becomes 9·8, practically the same as in 1918, when it was 9·5 per 1000. The infantile mortality ratio (271 per 1000 births) was higher than in any year since 1913, when it had been 286. Dr. Philip discusses this matter and "is forced to the conclusion that one of the principal causes, if not the chief cause, is lack of proper nourishment for the pregnant women and their infants," probably owing to increased cost of living since the war broke out. Owing to failure of the monsoon in 1918, the Indian Government restricted the export of rice. The normal monthly import into Ceylon of 30,000 tons fell to less than half in May, and less than a quarter in June; food control was initiated on May 9th, and rationing of rice on June 10th. The cost of living has been increased in Ceylon, as elsewhere, but Dr. Philip clearly shows that there was no "starvation," though there was a good deal of "privation" and anxiety. The daily crowding together of the people entailed by the introduction of the rice depôt system was apparently responsible for an increase in enteric fever and measles; and the storage of grain in buildings not rat-proof resulted in a number of cases of plague in the last three months of the year. The proportion of septicæmic cases (57·1 per cent.), and the very high case-mortality (91·3 per cent.) showed that there had been no material reduction in virulence. No cases of cholera occurred in Colombo, but ten were admitted to hospital from the port, and one from outside the town. There were only three cases of small-pox, two having acquired infection in India. Primary vaccination was performed in 6637 children, the number of births in Colombo during the year having been 5907. This is very satisfactory, and should be an example to that unfortunately large number of persons in the United Kingdom, who are either unable or unwilling to realise their responsibilities in regard to this matter. Dr. Philip's is a most comprehensive report, fully illustrated with plans and diagrams, and contains much other matter of interest.

ACTION OF THE HEART AFTER DEATH.

SOME interest has been evinced in our correspondence columns by Sir Dyce Duckworth (July 2nd), Sir William Milligan (July 9th), and Surgeon Commander D. H. C. Given (July 23rd) in the circumstances of the death of a man at Willesden whose heart continued beating long after respiration had ceased. At the inquest on June 20th a verdict of "Death from natural causes" was given, the circumstances of the case being as follows. The man became drowsy about Whitsuntide with severe pains in the head, but continued to work until a fortnight before his death, when he became worse. On admission to the hospital he was suffering from drowsiness, stiffness of the muscles of the back, and headache. It was considered advisable to obtain a sample of his cerebro-spinal fluid, and to this end he was anæthetised with a mixture of ether and chloroform at 11.20 A.M. on June 16th. Some fluid was drawn off—the whole operation took only half a minute, but the man ceased to breathe, though his heart continued to beat well. Artificial respiration was continued up to 7.30 P.M., when the heart ceased beating. The post mortem revealed a tumour on the right side of the brain, which proved to be a sarcoma. A tracing of the heart was taken at 5.30 P.M.

As is well known, in chloroform anæsthesia the respiratory movements may suddenly cease, and after a time be resumed. The heart beats, however, unlike the respiratory movements, do not essentially depend on the integrity of a nerve centre in the medulla oblongata. In fact the heart contains in its own walls and perhaps in its own muscular fibres the secret of its own rhythm. The fact that an excised heart in some animals will beat for days proves this. Those who are not acquainted with the marvellous powers of endurance of the heart muscle regard the heart itself as a singularly vulnerable organ. The very opposite is the case, and it will go on beating for quite a long time, even under seemingly very unfavourable conditions. Its demands are small but specific. In the present case artificial respiration, it appears, was kept up for about seven hours, the heart only ceasing to beat at the close. With the artificial movements of the chest wall the blood would be aerated to a certain extent, and as the heart still retained its automatic rhythmical movements, this partly aerated blood was sufficient to maintain the heart beat, but would not appear to have had the properties necessary for the excitation of the respiratory centre on the one hand, and the maintenance of consciousness on the other. We know how sensitive cerebral tissue is to the lack of oxygen and other conditions.

Prof. C. Richet some years ago obtained a film of the beating of a dog's heart with the chest opened, artificial respiration being kept up or arrested at the will of the operator. With cessation of the artificial respiratory movements, after a time the heart—engorged with blood—ceased to beat. On resumption of the artificial respiration, after a time the congested condition of the heart was relieved, and it slowly but surely resumed its beat. This could be done time after time. In the case recorded above the steady artificial maintenance of the respiratory movements, no doubt, kept the blood sufficiently aerated to ensure the long-continued beating of the heart. At what hour did "death" in the eye of the law take place? With the cessation of normal unaided respiration and loss of consciousness, while the heart still continued to beat; or only when normal respiratory movements and consciousness had long ceased; or when the heart itself ceased to beat?

The law presumably would regard the question as one of fact, depending upon the evidence of the medical witnesses. It would probably ask that the time should be fixed when all symptoms of life ceased, and suggest that this should be treated as the time of "death." It would be difficult to maintain otherwise. In the above case artificial respiration was kept up in the not unreasonable hope that natural respiration and consciousness might eventually be restored, and a medical witness could hardly say that a person was beyond doubt "dead" at a time when he himself, guided by the experience of his profession in other cases and by the observed action of the heart, was treating him as though he were, or might be alive. The question of the exact moment at which life ceases is not often of importance, but it may affect the devolution of property. In the case of the subject of the inquest referred to, if someone had died at 1 P.M. on June 16th leaving to him a sum of money or land in fee simple, the hour of his death might become of extreme interest to his children and to others affected by the same will.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

TUESDAY, *August 2nd.—Opening of Vacation Course.* 10 A.M., Surgical Registrar: Demonstration of Cases (Surgical Wards). 2 P.M., Dr. Burnford: Medical Out-patients. 2.30 P.M., Mr. Addison: Demonstration of Cases (Surgical Wards). 4.30 P.M., Lecture:—Dr. Pritchard: Intravenous Therapy.

WEDNESDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. 4.30 P.M., Lecture:—Mr. Addison: Carcinoma of the Breast.

THURSDAY.—11.30 A.M., Obstetrical Registrar: Gynæcological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. MacDonald: Surgical Out-patients. 4.30 P.M., Lecture:—Dr. A. Saunders: Rickets.

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 12.15 P.M., Dr. Burnford: Applied Pathology. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 4.30 P.M., Clinical Lecture:—Mr. Banks Davis: Throat, Nose, and Ear.

SATURDAY.—10 A.M., Medical Registrar: Demonstration of Cases (Medical Wards). 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

Appointments.

BELLWOOD, K., F.R.C.S. Eng., has been appointed Surgeon to the Albert Dock Hospital of the Seamen's Hospital Society.

HAUXWELL, FRANK, M.B., Ch.B. Glasg., D.P.H. Camb., Medical Officer of Health and School Medical Officer, County Borough of St. Helens.

MCILROY, J. HAMILTON, D.Sc., M.B., Ch.B. Glasg., Lecturer on Diseases of the Eye in the Lady Hardinge College, Delhi.

PINNOCK, D. DENHAM, M.B., B.S. Melb., F.R.C.S. Eng., Assistant Surgeon to the London Temperance Hospital.

SLOT, GERALD M., M.D. Lond., Medical Registrar to Charing Cross Hospital.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. M.O. £500.
Bedford County Hospital.—H.S. £200. Asst. H.S. £150.
Bethlem Hospital.—Res. H.P. £25 per quarter.
Birkenhead Borough Hospital.—Jun. H.S. £200.
Birmingham General Hospital.—Res. M.O. £155.
Birmingham, Queen's Hospital.—Surg. Registrar. £100.
Bradford Royal Eye and Ear Hospital.—Hon. Asst. Ophth. Surg.
Bradford Royal Infirmary.—H.S. £200.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
Devonport, Royal Albert Hospital.—H.S. £200.
Downpatrick, Down District Asylum.—Sen. and Jun. Asst. M.O.'s. £350 and £300 respectively.
East Suffolk County Education Committee.—Female Asst. Sch. M.O. £500.
Evelina Hospital for Children, Southwark, S.E.—H.P., H.S. Each £160.
Freemasons Hospital and Nursing Home, 237, Fulham-road, S.W.—Res. M.O. £250.
Glasgow, Woodilee Mental Hospital, Lenzie.—Asst. M.O. £350.
Gloucester County Asylum.—Jun. Asst. M.O. £350.
Great Northern Central Hospital, Holloway, N.—Dental Surg.
Halifax Royal Infirmary.—Second H.S. £250. Third H.S. £200.
Hull Royal Infirmary.—V.D. and Cas. O. £250. Asst. H.S. £150.
Jersey Poor House Infirmary.—M.O. £750.
Kent County Council, Lenham Sanatorium.—Asst. M.O. £400.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Leicester Royal Infirmary.—H.P. £200.
London University.—University Readership in Pathological Chemistry. £700.
Loughborough and District General Hospital and Dispensary.—Res. H.S. £200.
Manchester, Ancoats Hospital.—H.S. £150.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. £350.
Middleton-in-Wharfedale Sanatorium.—Asst. M.O. £500.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £200.
Newport (Mon.) Royal Gwent Hospital.—H.S. £200.
Nottingham City Asylum.—Med. Supt. £700.
Oxford, Radcliffe Infirmary and County Hospital.—Cas. H.S. £200.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £150.
Preston County Asylum, Whittingham.—Asst. M.O. £572 18s.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.
Royal Dental Hospital of London, Leicester-square, W.C.—Whole-time Officer. £800.
Royal Naval Medical Service.—Surg.-Lieuts. 26s. 6d. per diem.
Seamen's Hospital Society, Greenwich, S.E.—H.P. H.S. Each £150.
Singapore Municipality.—Bacteriologist. 9000 dollars.
Stockport General Infirmary.—Sen. Res. M.O. £300.
Swansea County Borough.—Asst. M.O. £500.
Torquay, Torbay Hospital.—H.S. £200.
Union of South Africa (Natal Provincial Administration).—House Surgeons, Grey's Hospital, Pietermaritsburg. £400.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. Sorting Officer and Anæsthetist. £100.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Clin. Asst.
Westminster Hospital, Broad Sanctuary, S.W.—H.P.
Wigan County Borough.—Tuberculosis Officer and Asst. M.O.H. £550.
Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of the following vacant appointment: Tisbury (Wilts).

Births, Marriages, and Deaths.

BIRTHS.

FINNY.—On July 22nd, at "Tamesa," Kingston-hill, Surrey, the wife of William Evelyn St. Lawrence Finny, M.D., J.P., Barrister-at-Law, Mayor of Kingston-upon-Thames, of a daughter.

GOOD.—On July 13th, at Moorland-road, Leeds, the wife of John Good, M.R.C.S., L.R.C.P., of a daughter.

HOFFMAN.—On July 15th, the wife of H. Drummond Hoffman, M.B., B.Sc. Camb., Tatsfield, Surrey, of a son.

HORSBURGH.—On July 12th, at Eastmount, Dover-street, Ryde, the wife of E. Leslie Horsburgh, M.D., of a son.

OVEREND.—On July 17th, at Lynton Lodge, Cadishead, Lancs., to the wife of H. F. Overend, M.R.C.S., L.R.C.P.—a daughter.

PURSER.—On July 22nd, at Inkerman Barracks, Woking, the wife of Lieut.-Colonel L. M Purser, D.S.O., R.A.M.C., of a son.

SELBY.—On July 20th, at S. Ealing-road, W., the wife of E. J. Selby, M.R.C.S., L.R.C.P., of a son.

SLADDEN.—On July 24th, at Cheltenham House, Eaton Grove, Swansea, to Dr. and Mrs. Arthur Sladden—a son (Robert Arthur).

STEPHENS.—On July 19th, at Crouch-hill, the wife of Capt. H. F. Stephens, R.A.M.C., of a son.

WAKEFORD.—On July 23rd, at Fulham-road, S.W., the wife of V. D. C. Wakeford, M.B., B.S., of a son.

MARRIAGES.

CLARKE—BLAKE.—On July 23rd, at St. Marylebone Parish Church, James Kilian Clarke, M.B., Ch.B., D.P.H., Lecturer in Pathology and Bacteriology at the School of Medicine, Cairo, to Evelyn Muriel, daughter of Mr. and Mrs. A. H. Blake, of Brondesbury, N.W.

DEATHS.

DOWNIE.—On July 21st, at Cragmohr, Shandon, James Walker Downie, M.B., C.M., F.R.F.P.S. Glasg.

REYNOLDS RAY.—On July 8th, at 4, Coventry House Chambers, Haymarket, after a long illness, Edward Reynolds Ray, M.R.C.S. Eng., L.S.A., formerly of Dulwich Village, S.E., aged 79.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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stimuli is sufficient to substantiate the acceptance of the popular psychology of "mixed feelings." We have seen that movements common to other states of activity may occur as concomitants of different affective states.

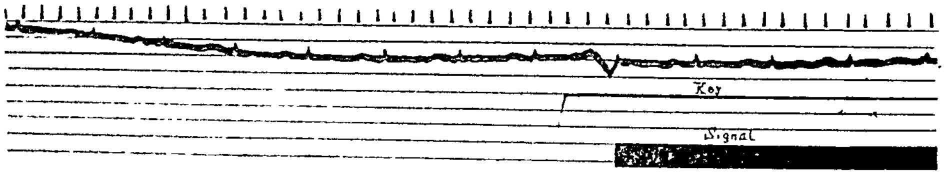
PROBLEM OF ORIGIN OF AFFECTIVE STATES.

However much we may wish to confine our study of the neuroses to a purely objective basis we are unable to evade the question as to whether an affective state is to be regarded as conditioned by the physiological changes of bodily activity, or whether such changes occur as the organic resonance to a preceding affective state. Our whole system of the interpretation of the emotional aspects of the neuroses must be influenced by our answer to this problem. Ancient writers answered it in no uncertain fashion:

> "Cor ardet, pulmo loquitur, fel commovet iras,
> Splen ridere facit, cogit amare jecur."

Aristotle and his school of course recognised no other bodily mechanism for mental processes than that of the thoracic viscera. The Stoics, for the most part, rejected the brain as the seat of mind, and Zeno, Chrysippes, Diogenes, and Apollidorus were unanimous in proclaiming the heart to be the seat of the emotions. It would be too lengthy a task to follow the causal attribution of the affections to visceral changes throughout the Middle Ages. In recent times it has been revived in the James-Lange theory of emotion. I cannot do better than give the theory as propounded in James's original words: "Common sense says we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by rivals, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect: that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble because we are sorry, angry, or fearful, as the case may be." This view has apparently been held in different forms by Sergi, Richet, Ribot, Münsterberg, and others, and has provoked a storm of controversy.

FIG. 1.



Galvanic reflex to prick stimulus. Record shows heart beats. Below is the record of the Deprez signal marked "key." Time above in fifths of a second.

I shall not attempt to follow the arguments based on introspective considerations, but will turn to those furnished by objective methods. Sherrington attempted a physiological solution of the problem by depriving a dog, so far as possible, of all afferent paths of somatic sensation. He transected the spinal cord in the cervical region and subsequently performed double vagotomy. In spite of the deprivation of organic sensation that was occasioned by these measures the animal showed unmistakable signs of emotion when angered or menaced. The experiment is, as Sherrington recognises, by no means conclusive; all that it entitles us to say is that for the dog in this condition emotional manifestations were confined to the head and neck area, and we have already adduced evidence that changes in muscle tonus are just as much one of the factors of the organic emotional response as visceral and vaso-motor changes. Ward has urged that James's theory is a flagrant ὕστερον [illegible]—a putting of the cart before the horse. [illegible]tion is always the expression of feeling; and feeling, for the subject that feels, has always some objective ground. Emotion is never the reception of impressions, but is always the response to them. Let us see how far a purely objective inquiry as determined by observations of the bodily reactions will help us to settle the question. Fig. 1 is the record of a reaction to a nocuous stimulus, manifested by the galvanic reflex, of a motor voluntary reaction and of an involuntary motor reaction or start. About the last-named reaction—the start—I have little to say; its latent period is very short, about 0·08 of a second. It can be, as Sherrington has shown, elicited as a purely mesencephalic reaction to auditory stimuli in decerebrate animals, when its latent period is about 50 σ. In this case the stimulus was a fainter one, and the latent period is appreciably longer than that found by Sherrington in animals— and this is the rule for any type of start reflex as elicited in man; it is therefore by no means certain that it has the same bulbar origin as the reflex in decerebrate animals. It is not an invariable accompaniment of affective states determined by nocuous stimuli, and for our present purpose we may disregard it. The next event recorded on the photograph is the voluntary motor reaction: the subject was instructed to press a key as soon as he perceived a prick. The latent period is here a normal one of 0·2 second. The third event is the movement of the galvanometer fibre at the beginning of the galvanic reflex. The latent period of this reflex is here 2 seconds. If the galvanic reflex be taken to indicate one of the many bodily responses that go to make up the general state of bodily activity whose sensory equivalent is an affective state then this affective or emotional state is arrived at quite 1·8 seconds after the initial stimulus has been perceived and acted upon.

It might be urged that the galvanic reflex is a response sui generis with a remarkably long latent period, and that the other responses take place more rapidly. The analogy between the galvanic reflex and the time relations of the "cat pad" phenomenon of Luchsinger might prima facie lead us to the same conclusion. The experiment of Luchsinger, it will be remembered, consisted in observing a secretory current from the pad of a cat's foot when the sciatic nerve was stimulated electrically and the latent time of this reaction, measured by Waller in the human subject, is about 2 seconds. The latent period of the plethysmographic response can be measured with a fair degree of accuracy, and in the previous lecture we have seen that its time relations are the same as those of the galvanic reflex. The latency of the alterations of pulse rhythm cannot obviously be determined accurately, but by collation of a large number of tracings I have never found it to be a shorter period than 2 seconds. We have seen reason to believe that the acceleration of the cardiac rhythm is due to removal of the inhibitory action of the vagus, and physiological experiments assign a latency of about 1 second to the vagal reflex.

The latent period of the respiratory changes is similarly incapable of accurate determination, but I have never found it to be less than 1 second. The muscular tonic response in the majority of my determinations had a latent period of about 2 seconds. I have no data as to the latent period of visceral and

The long weary vigil in the first line of trenches and the hardships endured, also the comparatively idle months spent away from the firing-line, have made many of the men unwilling or unable physically to return to their previous employment. Some of them have lost their taste for work, and they clamour, like those who remained at home, for shorter hours of labour. Shortening of the shifts and a change in the hours of work are notable facts of the times. Men no longer go fasting to work at 6 o'clock in the morning and breakfast in the factory at 8 o'clock. They leave home, or ought to, after a comfortable breakfast in time to reach the factory by 7.30 A.M., and this has been to the advantage of employer and employed. Better time-keeping has been the result and there has been less sickness. Shortening of the hours has, in most industries, been followed not by diminished but by increased production and by a rise in wages, but as there is a limit to which hours can be shortened and productive efficiency retained, it is a question whether, in some trades, this limit has not now been reached. It is unwise to work men and women to the last unit of their energy, for not only is work under these circumstances never so good, but fatigue—although the contention is not supported by Dr. Vernon—may become a cause of accident. It is now generally admitted that fatigue is the result of the action upon the tissues of such poisonous substances as carbon dioxide and lactic acid formed by the chemical dissolution of the glycogen of overworked muscles. These bodies act, not only upon the muscular tissue itself and the nerve endings in the muscles, but since they find their way into the blood stream they poison the higher nerve centres in the brain, thus converting fatigue, the outcome primarily of localised changes in the neuro-muscular apparatus, into a general state of the organism, and of these two forms of fatigue, central and local, the central or general fatigue is the more important.

Sir Thomas Oliver then alluded briefly to the effect of fatigue on the blood, demonstrated by Dr. Otto Burkard, of Graz, and after commenting on the problems arising out of compensation for industrial disease, concluded with a few words on

The Industrial Medicine of the Future.

Since industrial medicine has come to stay, facilities will in the future have to be provided to medical students and young graduates to become familiar in a practical manner with its objects. Never were the times more opportune than to-day. The prosperity of a nation is intimately bound up with the health of the people who compose it. Preventive medicine has, practically speaking, swept these islands clear of typhoid fever and considerably reduced the mortality of diphtheria. What it has accomplished on the side of public health it can also accomplish in regard to occupational disease. The die has been cast. There is a psychology of industry just as there is a physiology. Psychology is no longer simply "the science of mind or soul," but "the science of the facts of human nature and behaviour," and there is no department of human activity which offers greater scope for its study and application than industry. Employers no longer regard "industrial hygiene" as something to be turned down on the ground of its interference with labour and the conditions under which it is carried on. They recognise that it introduces into industry just that something with a touch of humanity in it which softens the asperities of labour, makes occupation more healthful, and tends to bring employers and employed into closer touch with each other. Had it not been for "welfare work" carried on during the years 1914 to 1918 the enormous productions of munitions could hardly have taken place, and without it we would have lost the war. Industrial medicine and welfare work go hand in hand. Invention and chemical research tend to make industrial processes, if not more complicated, sometimes more dangerous, as was the case in the early days of the war with the handling of certain high explosives, but the same inventive skill which created temporary dangers showed itself equal to supplying an antidote to them or of finding a substitute. In the ever-enlarging sphere of industrial enterprise, to which the various sciences are contributing, and the needs of the world are calling for, lies the opportunity of Industrial Hygiene.

A MINE MEDICAL OFFICERS' ASSOCIATION ON THE RAND.

MEDICAL service to white workers in most of the gold mines on the Rand is secured by the appointment of one, two, or more whole-time or part-time medical officers by a Mine Benefit Society, to which each worker contributes, and the funds of which are administered by a committee elected by the men themselves. Recreation rooms, library, billiard rooms and facilities for outdoor games are also provided by the Benefit Society, and a hospital is run for the employees of one mine alone or for those of two or three neighbouring mines. The native employees as a rule are under the care of doctors appointed by the proprietors of the mine, and besides staffing the native hospitals these doctors are responsible for supervising the sanitation of the compounds and the hygienic conditions of the native worker. In order to stimulate discussion on the important problems involved in the care of the native, a Mine Medical Officers' Association has recently been formed, its objects being: (1) To study and discuss all problems of special interest appertaining to the work of mine medical officers. (2) To promote and foster friendly intercourse and consequent exchange of views among mine medical officers. (3) To bring to the attention of members matters of interest to them in their special work, by means of periodical publications, &c., as may from time to time seem most advisable. (4) To coöperate in solving administrative and other problems confronting members. Those eligible for membership are medical officers holding whole or part-time appointments in connexion with mine native hospitals in the Transvaal, and such other medical practitioners as the Executive Committee may from time to time invite. The special liability to pneumonia of certain tribes of natives, their protection from scurvy, and the management of epidemics such as that of tropical ulcer which has recently attacked the native workers at one of the mines, are a few of the problems to which the new Association may be expected to give attention.

In the *Medical Journal of South Africa* of March and April 1921, an account of the first meeting of the new Association is given. Dr. A. J. Orenstein reviewed the theories as to the ætiology of scurvy, and spoke of its special interest to medical officers of mines dealing with native employees. In the early days of large scale mining operations scurvy, he states, was prevalent, and though in recent years it had decreased enormously, there had occurred in 1920 in on of the important groups of mines over half the number of cases recorded in that group during the last six years. The figures he gave were as follows:—

—	Cases.	Repatriated.	Deaths.
1915	69	51	2
1916	116	55	1
1917	52	56	2
1918	51	69	3
1919	106	38	5
1920	403	102	16
Total ..	797	371	29

Dr. Orenstein said that the vitamin theory was substantiated by the experiences of medical officers in the Rand. In every instance which had come under his own observation in the last six years an outbreak of scurvy was associated with a diminution of the vegetable ration, or gross overcooking of the same, and in every instance an increase in the vegetable ration, or an improvement in the cooking of same, resulted in the prompt checking of the outbreak. Dr. Marion Delf was continuing work started at the Lister Institute on the effect of cooking on the anti-scorbutic vitamin at the South African Institute for Medical Research.

At the same meeting Dr. S. Donaldson read a paper on the Clinical Side of Scurvy in the Mine Native Labourers; he described two types of case, one of which was much more amenable to treatment by anti-scorbutic remedies than the other. In the course of the discussion Dr. Orenstein expressed his conviction that the condition found in mine natives was not scurvy alone, but was due to a deficiency in all three vitamins. Certain cases had improved rapidly after receiving vitamin B., and others after fat soluble A. had been increased in their diet.

FACTORY GIRLS' COUNTRY HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—Will you allow us to make a very urgent appeal for funds to send working girls and women away for a short holiday? Many of those who are hoping to go during the next few weeks have never slept out of London for a single night. We are almost at the end of our resources, and the need for our help is probably more urgent than ever before. Trade depression has resulted in the girls being the main support of thousands of families, which but for their earnings would be on the verge of starvation. The general standard of comfort in the average home is lower than it has been for many years, and the health of the community in the crowded and airless factory districts of London has deteriorated considerably. Nor has it been possible for the girls to save for a holiday as they have done in former years. Good food, rest, and fresh air for a short time will make it possible for many to continue their work through the winter, who would otherwise break down under the strain and privation they have had to bear for so many months, and the short holiday will give them fresh hope and courage. We earnestly ask for subscriptions and donations to be sent to the Chairman of the Executive Committee, Mr. J. F.

glands have a direct influence on the affective responses it is difficult in the present state of our knowledge to bring forward any incontrovertible proofs of this hypothesis. It must never be forgotten that a glandular structure in the normal body is not inert so far as the furnishing of afferent impulses to the central nervous system is concerned.

It may well be that these afferent impulses and not the internal secretions evoked by their activity are the determining influences of the glands on any particular mechanism of response. I was able to obtain records of the secretion of saliva from my own parotid gland by applying a small catheter tube maintained in position by a suction ring over the orifice of the duct. This procedure has been adopted by other observers for the recording of conditioned reflexes produced by the sight of food; I found that nocuous stimuli, if of sufficient intensity, tended to produce inhibition of the saliva flow. The fall of the drops was recorded by allowing them to tilt a tipover key that closed a Desprez signal circuit and thereby recorded on a smoked drum. There is not wanting evidence of the disturbances of the gastric, intestinal, and renal secretions as a response to nocuous stimuli. We have so far seen that the mechanism of all forms of cerebral activity is capable of being recorded in terms of muscular and glandular activity; before attempting to transfer this knowledge to the investigation of neuroses we must consider the constitution of some of the more complicated nervous mechanisms in their barest outlines. In the last lecture I showed a slide (Fig. 7) illustrating a conditioned reflex; you may perhaps remember that the subject was taught by means of a painful stimulus to perform a certain movement and that we noted that when the stimulus was intermitted, whilst the audible sign that had hitherto accompanied it was made, the subject responded precisely as if he had perceived the stimulus. We also noted that the signs of an affective response, as evidenced by the galvanometer, were present when the click of the electric key occurred in the absence of the stimulus. In the language of popular psychology the subject had formed a habit, or in that of physiology a pattern reflex had been conditioned. Now supposing the stimulus had been repeated a requisite number of times, the subject would, at any rate for the first few occasions on which the click of the key was alone given, have found himself utterly unable to control the movement of pressing the signal key. But this movement was in the first instance one that had been acquired as a result of the activity of the discriminatory mechanism of the cortex. It has now ceased to be discriminatory and become independent of the first process of nice adjustment of a specific mechanism to a specific response by the inhibition and coördination of other forms of cortical activity. There is, however, no evidence that the response has ceased to be controlled by the same cortical mechanism which started it. I found in this particular instance that after the first few times the voluntary muscular reaction settled down to a constant latent period of 0·18 second and that later when the conditioned reflex was elicited by a click alone the latent period remained unchanged. Owing to the slow rate at which these particular records were taken the latent periods could not be read closer than to 0·02 second, but the accuracy is sufficient to justify our assumption that the reaction continued to be performed by the same cortical mechanism that had been responsible for its initial manifestation.

Now this statement embodies a very important fact of which the psychotherapist endeavours to make full use. It means that when the reaction had become part of a conditioned reflex and had ceased to be the centre of conflicts between various alternative reflex paths, which conflicts we generally associate with conscious perception, the conditioned reflex still made use of the same cortical mechanism. That is, it still had a direct nexus with all those processes with which it had been originally connected. Therefore by the use of appropriate methods of observation it should be possible to determine what the original associations were when they are no longer objects for the subject's own consciousness.

CONDITIONED REFLEXES IN DAILY LIFE.

Now the greater part of our daily conduct is made up of such conditioned reflexes or habits, and the more effectively they have been established by constant repetition the more difficult it is to interrupt the reflex pattern by some fresh stimulus. We defined one of the attributes of a nocuous stimulus as a tendency to interfere with and impede the normal tendencies of vital activity. There is no more fixed or powerful activity than that of a well-established habit mechanism. A verbal or physical stimulus that impedes the activity of a habit reflex pattern will therefore act as an intense nocuous stimulus, and through the inevitable thalamic mobilisation of the bodily activities to resist such interruptions an intense affective state will be the sensory result. Not only stimuli from outside may tend to impede the activity of the habit mechanisms. Attempts on the part of the subject to interfere with them will equally evoke the generalised bodily response with the corresponding unpleasant feelings. Lastly, the constant occurrence of these reactions, whenever the habit mechanism is interfered with, may in itself condition a new reflex pattern—an active opposition to all attempts to cause the feeling of discomfort by interfering with the primary habit. Such, I believe, is a restatement in the language of objective psychology of the rather clumsy symbolism which the psycho-analyst makes use of; such terms as "the censor" would appear to be unnecessary in this connexion. There is another type of pattern reflex even more potent and more dissociated from the discriminatory mechanism of the cerebral cortex. Unlike the conditioned reflex it has never arisen in the life of the individual from a discriminatory response to a stimulus. This mechanism is an inherited one, and is unchained by some one specific type of stimulus and by no other. Such innate reflexes of a specific type are in greater or less degree common to all the individuals of the same species; these inherited reflex patterns are known as instincts.

INSTINCT REFLEXES.

Now by definition an instinct is an inherited pattern reflex. It is evoked by a specific stimulus and in response to this stimulus the pattern is unfolded. The end-result of the reflex is implicitly determined by the nature of its innate mechanism, and it is a mere matter of chance whether this end-result is ever presented to the subject who owns the reflex. Though by observation we may sometimes learn what the end-result really is, it by no means follows that we shall necessarily do so, and in the case of the lower animals—as when an insect, after laying its eggs, prepares food for larvæ that it will never live to see—it is quite certain that it can never know the end-result towards which the instinct reflex is orientated. Now it is of great importance to the understanding and treatment of the neuroses that we should know whether an instinct reflex has any such relation with other discriminatory mechanisms as may allow us by association methods to determine its true orientation. We may recognise that a certain line of conduct is not substantially in harmony with the environment, that attempts to impede it cause great emotional disturbance, that its origin is obscure and its end-result opposed to the interests of the patient. It is, however, only by tracing some affinity between its mechanism and the nervous system as a whole that we can hope to understand or influence it. In the case of a habit or conditioned reflex this is relatively easy. It arose as a discriminatory response to a certain stimulus—that is, it was once an object of experience and may again be recalled by appropriate methods. But if the instinct be an inherited mechanism, how can its origin be with any certainty deduced from its relation to other mechanisms accessible to consciousness? The problem is a fundamental one, and has presented itself in many forms.

Croonian Lectures

THE OBJECTIVE STUDY OF NEUROSIS.

Delivered on June 16th before the Royal College of Physicians of London.

BY F. L. GOLLA, M.B. OXON., F.R.C.P. LOND.,
PHYSICIAN TO ST. GEORGE'S HOSPITAL.

LECTURE III.[1]

IN the preceding lecture I dealt with some of the forms of response to nocuous stimuli from a physiological point of view. We cannot, however, content ourselves with purely physiological observations. Our patients come to us complaining of certain definite subjective symptoms and our object is to detect the defects of bodily mechanism of which they are the signs. It therefore becomes a matter of urgent importance to determine so far as we can the relation between bodily responses to stimuli and affective states. It is true that we have learnt physiologically to observe only an infinitesimal part of the bodily changes that are associated with affective states; but that small part is, as we have seen, susceptible of quantitative as well as qualitative observation. As a first step we must consider briefly what we mean by an affective state and what relation it bears to sensation.

SENSATION AND AFFECTIVE STATES.

Sensation is defined as an elementary mental process which is possessed of the attributes of quality, intensity, clearness, and duration. Affection is similarly an elementary mental process, but though possessed of the attributes of quality, intensity, and duration it has been denied that it possesses the attribute of clearness. It is said to be impossible to attend to an affection. If we attempt to do so the quality of pleasantness or unpleasantness disappears and we find ourselves contemplating some obtrusive sensation that we have no desire to observe. If we want to get pleasure from a concert or a picture we must attend to what we hear and what we see. As soon as we try to attend to the pleasure itself the pleasure is gone. (Titchener.) Herein lies the pith of the argument for dissociating affection or feeling from sensation. The subsidiary argument that the opposition of the qualities of affective pleasantness and unpleasantness is not paralleled by any of the facts of sensation appears to me to be untrue, or at best unprovable, because we know no more about pure sensation than we do about pure feeling or affection.

It is at this point that objective psychology comes to the rescue. The reason for the apparent difference between affection and sensation has been made clear by neurological investigations, especially by the work of Head and Holmes. Two systems of afferent function exist—the one system reacts to stimuli of a nocuous nature, and the effector organs which manifest its activity are either organs not under the power of conscious effort or else certain combinations of reflexes which cannot be voluntarily activated. The great terminal ganglions for this mechanism are in the thalamus. This system is phylogenetically older than the cortical system. It originates the defensive reflexes by which the body reacts as a whole to nocuous stimuli, whether by glandular, visceral, vascular, or muscular pattern reflexes. There is another system of nervous mechanisms by which appropriately adjusted reflex patterns are combined in response to stimuli not in themselves possessing either nocuous or benign characteristics, and the terminal coördinating centre of this mechanism is in the cortex. Its function is, to borrow the language of Head and Holmes, discriminatory, and this discriminatory adjustment of certain reflex mechanisms to various stimuli is correlated with consciousness.

The two systems are not, however, independent. When the activity of the cortical processes is impeded, by inhibition arising from either external or internal stimuli, an activation of the thalamic system may occur; in other words, the resources of the body as a whole are mobilised to overcome the resistance. Conversely changes of the activity of the thalamic affector organs when they reach a certain degree of intensity stimulate the cortical receptors and we become aware of a change in the common sensation of the body. The consciousness of such a disturbance constitutes what we term an affective state. This reciprocity between the effector organs of the thalamic system and the cortical discriminatory system was already clearly appreciated by Hobbes—"adeo inter se motus cordis et cerebri sunt reciproci." The function of the cerebral cortex has been said to be discriminatory, a certain stimulus or group of stimuli being integrated with a specific reflex pattern activity, but when stimuli arising from the activity of the thalamic system reach the cortex they represent changes taking place in every part of the body. No one elementary group of sensations will be prepotent; we are only aware of a diffuse sensory disturbance. Such appears to be the objective explanation of the origin of the attempt made by psychologists to differentiate between feeling and sensation. When the thalamic activity is of great intensity in response to a maximal stimulus, such as intense fear, certain of its elements may be so intense that they dwarf the remainder and are attended to as an ordinary sensation when their afferent impulses reach the cortex. Thus an absolutely definite sensation of nausea is experienced by some men when under fire, others complain of a burning sensation in the throat, others of palpitation; and it is a peculiarity of the predominant sensations that they may so dwarf those arising from other forms of organic resonance that a man who is not conscious of any great degree of fear simply becomes aware of a sensation of nausea when under fire for the first time. It may not be till after he has gone through the experience on subsequent occasions that he recognises a connexion between his nausea and exposure to danger.

It is in the preponderance of some one such type of reaction, due either to innate or acquired anatomical abnormalities, that we find the explanation of so many of the visceral types of neuroses. In many cases the actual movement of the effector organ rather than its sensory concomitant holds the attention, as in the case of the well-known occurrence of vomiting, micturition, or defæcation as a response to nocuous stimuli. In the last lecture we have seen that the organic response to nocuous stimuli is manifested as activity, and the response to benign stimuli as quiescence, and we are therefore justified in associating activity of the thalamic system with unpleasantness and quiescence with pleasantness. So far as it has been necessary to speak of these sensory concomitants of the bodily reactions I have spoken of them as states of affection or of feeling. From the physiological standpoint I can see no difference between an affective state and an emotion, and I am perfectly willing to use either term indifferently. From what can be gathered from the writings of psychologists it would appear that when certain sensory elements of an affective state sufficiently predominate so as to direct the attention overwhelmingly to their presentation the state is said to be one of emotion; the difference is therefore one of quantity and not quality. I do not propose to enter into any attempt to differentiate the various types of emotions or affective states. Much of the psychological literature on this subject is characterised by that peculiar naïveté with which the scientific specialist too frequently tends to regard life. Our preceding short review of some of the objective changes verifiable as bodily responses to affective which an instinct cannot be recognised as such. Thus to account for the compelling power of the instinctive mechanism that will drive a man into courses of conduct that are directly at variance with his interests in society as at present constituted, we are invited to divest the instinct of its compelling power and to lay it at the feet of an entity termed the "self regarding sentiment" for whose satisfaction we yield to the unprofitable enterprise. There is a flavour of mid-Victorian self-righteousness about this sentiment; it may possibly have been of great usefulness in strengthening the resolutions of conscientious objectors, but the men who sacrificed their interests in the war because they felt that they could not do otherwise had little use for it. The modifications that will be imposed on a primary instinctive mechanism by the pressure of the environment will be incalculable. It is for this reason that in the elucidation of both instinctive reflexes and conditioned habit reflexes their affinities to the affective states are likely to afford a truer if less detailed insight into their nature than any attempt to range them in a tentative scheme of classification.

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[1] Lectures I. and II. appeared in THE LANCET of July 16th and 30th respectively. The final lecture will appear in a coming issue.

From what has been said of the relations of bodily response to nocuous and benign stimuli it is obvious that I must consistently range the processes of activity that are distinguished as appetites as being nothing other than responses to nocuous stimuli. From the objective point of view such activities are the response to the present situation of pain and not the pursuit of pleasure. The satisfied man can have no appetites. The nocuous stimulus that arouses our activities is not that conditioned by the desired object itself, but by the limitations imposed by the environment that impede the possibility of our satisfaction by its possession. What is true of appetite is true cf desire. As Spinoza remarks, there is no difference between appetite and desire except in so far as the latter implies consciousness. Desire is self-conscious appetite.

SOME NOTES ON

ORIENTAL SORES.

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Mesopotamia may be described as a land rich in mosques, sand, and oriental sores; as regards oriental sores, a better ground for research could hardly be found than that opened up during the conquest of Irak. Few people left the country without having had an introduction to the sore: many regarded the condition as an unavoidable and trifling evil; some even went so far as to be inoculated on one or other limb in the popular belief that one sore confers immunity. Multiplicity of sores was, however, the rule in cases seen. The incubation period varied from three to six months; cases were more numerous during the cold period—i.e., September to April. The causative agent, the L.-D. bodies, could only be distinguished in the earlier sores—the macular and recent ulcerative type, while the veldt diplococcus could be found in most of the older sores. From the position of the majority of sores various biting insects have been cited as carriers—amongst them the ubiquitous sand-fly and the stomoxys—but definite proof on this point has yet to be established.

The type of sore seen varied from the small bluish-red macule, to the large, irregular, thick-margined ulcers, having scabs dotted with pus puncture holes. The sites, in order of frequency were: wrists, hands, forearms, knees, and feet.

Complications.

In most cases oriental sores run a straightforward course, but complications sometimes arise. One of these is of interest, and was observed in some five cases —i.e., about 0·7 per cent. This was a thrombosis of the vein draining the area in which the ulcer was situated. A peculiarity of the thrombosis was its resistance to medicinal treatment. In one case where the sore was situated on the dorsum of the foot, near the outer two toes, the whole of the short saphenous was represented by a hard thickened cord, a section of which showed successive fibrous laminæ within a thickened vein wall. In two other cases the upper reach of the internal saphenous vein was affected, the sore being on the inner side of the knee; of the remaining cases, one was in the right upper abdomen and the other in the right wrist. In all cases the sore was of some months' duration, and in two cases had apparently healed. The thrombosis refused to clear up under prolonged palliative treatment, and surgical interference, which consisted of complete or partial removal of the affected vein, was required.

Treatment Employed.

The following modes of treatment were tried:—

For early sores—macular and early ulceration stage: (1) X ray applications, one Sabouraud's pastille, once weekly—one to four applications; (2) potassium permanganate crystals: the scab was removed, the base of the ulcer cleaned, and the edges packed with the crystals; (3) methylene-blue; (4) crystals of hyd. perchlor. applied as in 2; (5) injections of tartar emetic: intravenous, starting with $\frac{1}{2}$ gr. doses, and increasing by $\frac{1}{2}$ gr. at intervals of four days. A week's interval, when $\frac{1}{2}$ gr. had been given. Maximum dose 4 gr.; (6) ung. ant. tartrate.

Conclusions.

The results of the various modes of treatment led to the following conclusions: (1) For early sores X ray curative, especially of small sores, with slight, early ulceration; (2) for older sores: potassium permanganate, effective in about 50 per cent. of cases. Methylene-blue of doubtful value; hyd. perchlor. crystals fairly efficacious, but too painful; injections of tartar emetic effective in about 90 per cent. These were picked cases—fairly recent sores and situated usually on the face.

The old sore was the least amenable to treatment of the above type, and the large, thickened scab-forming purulent type of ulcerative sore seldom yielded to medicinal measures. In these cases thorough scraping under $CHCl_3$ and ol. ricini dressing, later replaced by a stimulative ointment dressing, gave the best results.

One's conclusions might, in fact, be tabulated as follows:—

(*a*) For the sore in the early stages: (1) X ray applications; (2) crystals of pot. permang.

(*b*) For the sore in the fairly advanced stage: (1) crystals of pot. permang.; (2) intravenous tartar emetic.

(*c*) For the sore in the more advanced stage: (1) thorough scraping under $CHCl_3$, and application of ol. ricini dressing.

(*d*) For sores in the face, other than those in a very early stage: intravenous tartar emetic.

Under thorough treatment most sores healed within a month. A marked improvement was usually observed after the second injection of tartar emetic.

The scar left was of the tissue-paper variety, with radiating lines of pigment from the periphery. The scar tissue rapidly became darker, especially in the oriental.

London.

St. Andrews Institute for Clinical Research.—A three weeks' course of post-graduate study for general practitioners will be given at the St. Andrews Institute for Clinical Research, Fife, commencing Tuesday, Oct. 4th. The course will consist of lecture demonstrations dealing with methods for the investigation of disease in its early stages, and will be supplemented by demonstrations on matters of clinical interest in anatomy, physiology, chemistry, bacteriology, ophthalmology, and radiology. Graduates desirous of attending this course should communicate as early as possible with the Secretary of the Institute, who will send them full particulars, and will be glad to advise them with regard to securing rooms in St. Andrews.

glandular activity, but indirect evidence would point to their being at least equally long. Thus the objective evidence is unequivocal—the stimulus is perceived, differentiated, and acted upon a considerable time before the presentation of the sensory concomitants of the bodily reactions could be experienced as an affective state. In my own case introspection seems to confirm the objective data. Experiences in the line in France were perhaps a little too complex for analysis, but in the streets of London my absence of mind has frequently nearly involved me in a motor accident. In such cases after successfully avoiding the oncoming vehicle I have experienced some 2 seconds later the feeling that we used to call as children "going hot all over." Had the stimulus been less transitory and the motor pursued me instead of avoiding me the continued organic response would on the sensory side have amounted to what we know as a state of fear.

POSSIBILITY OF EXISTENCE OF AN OBJECTLESS AFFECTIVE STATE.

It is of great importance for the understanding of the nature of neuroses that we should determine whether a reversal of this normal sequence of events can take place; that is, can a pre-existing state of bodily activity, which is the physical aspect of an affective state, determine the orientation of cortical activity so that the state of emotion arises first, and then an object is assigned to it? It may be disputed whether an objectless affective state can exist, but there is ample evidence that the existence of the bodily concomitants of an affective state will facilitate the representation of some situation which will then be assigned as its object. Marañon injected a small dose of adrenalin into a sensitive patient, and obtained various subjective sensations which as a rule constitute the syndrome of terror. At times this was noted by the patient himself, who declared: "I feel as if I were afraid, but I am calm." When, however, he supplied an appropriate verbal stimulus by mentioning some source of anxiety to the patient, although such a stimulus would naturally have caused but little reaction under normal conditions, the patient would break down completely in a fit of emotion.

Hitherto I have not dealt with the influence that may be exercised on the response of the nervous system through the agency of the internal secretions.

DISTURBANCE OF ENDOCRINE SECRETIONS IN RESPONSE TO NOCUOUS STIMULI.

The classical experiments of Cannon seem to have demonstrated that states of excitement are accompanied by a hypersecretion of adrenalin, as evidenced both by direct serum tests for its presence and by the occurrence of glycosuria. His brilliant demonstration has been received with great enthusiasm and a far greater rôle has been assigned by the uncritical to the part played by the hormones in the activity of the nervous system than can be justified by observation. It is too readily forgotten that the effector organs of the vegetative nervous system respond to the internal secretions of the adrenals in precisely the same way as they would if acted upon by the vegetative system directly. It is therefore no proof that a reaction is due to the stimulation by an internal secretion, and not to the autogenous activity of the nervous system, to say that the reaction resembles that which is experimentally produced by the injection of the hormone. Swale Vincent has pointed out that there is no evidence whatsoever that adrenalin, for example, is a normal constituent of the blood; indeed, there is much cogent evidence against such an argument.

That under certain conditions of great excitement adrenalin may be present in the blood seems to be fairly well established from the work of Cannon, but were it secreted as a response to stimuli of a less intense and prolonged nature it could only be present in the blood in such minute amounts as to be incapable of initiating the bodily emotional responses. I have conducted a series of observations on my own blood taken before and after the experience of ten minutes' faradisation. In no case was I able to detect any hyperglycæmia as a reaction to the pain stimulus. It is obvious that the painful stimulus was inadequate inasmuch as it neither increased the blood sugar nor produced glycosuria, but the pain was certainly more severe than is likely to occur in the normal experience of healthy life, and it seems legitimate to assume that the ordinary nocuous stimuli of daily life are unlikely to affect the secretion of adrenalin. This criticism applies even more strongly to the internal secretions of the other endocrine organs as a direct response to nocuous stimuli. When we turn to the evidence in support of the direct influence of the internal secretions on the threshold excitability of the thalamic system, we are on surer ground. There is ample clinical evidence of the state of hyperexcitability of patients suffering from hyperthyroidism to stimuli adequate to arouse an affective response. Experimental observations show that the hormone of the thyroid has a marked influence on bodily activity. This hormone has been isolated and identified by Kendal as an indoxyl iodine compound and found by him to raise the rate of basal metabolism 2 per cent. in a man weighing 70 kilos. when administered in a dose of 5 mg.

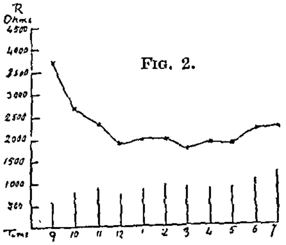

FIG. 2.

Above, curve of diurnal resistance as altered by ingestion of thyroid extract—compare Fig. 8, Lecture II. Below, responses ×2 to maximal stimulus (pistol shot).

I have in a previous lecture dealt with the diurnal variation of the bodily resistance described by Waller, and I showed that there was evidence of a rough correspondence between the magnitude of the galvanic response and the diurnal resistance variation. In order to test the action of ingested thyroid gland on the galvanic response I again made use of this diurnal variation. By taking large doses of thyroid in the early morning I was able both to diminish the mean value of the skin resistance and to mask its diurnal variation. At the same time the galvanic response to uniform sound stimuli of moderate intensity was markedly increased. Fig. 2 may be compared with the record of the diurnal variation of resistance and the magnitude of the galvanic response represented by Fig. 8, in the second lecture. Each diagram represents the mean observations of three successive days. Subjectively, whilst under the influence of thyroid in large doses, I was aware of a marked degree of irritability which lasted throughout the time of the thyroid ingestion experiments, but which appeared to be accompanied by a rather increased power of doing work. I give these subjective observations for what they are worth. That a diminished skin resistance occurs in cases of exophthalmic goitre was shown long ago by Vigouroux. The action of adrenalin in producing effective states has already been considered; but in the absence of any proof of its normal presence in the blood stream we have no right to consider that the normal activity of the affective thalamic mechanism is influenced thereby. There is some direct evidence that the internal secretions of the gonads facilitates the specific affective response to sexual stimuli as shown by the results obtained with implantation of testicular grafts in man and animals suffering from loss of sexual desire. Although there is every reason to believe that the internal secretions of other thrice daily had been tolerated with advantage for a considerable period, the dose had been increased to 15 minims to see if further benefit would accrue. The giving of acid was found to produce, in those cases which showed a rise of blood pressure after its administration, an increase in the concentration of the urine just as the giving of alkalies tends to diminish it.

Definite Divisions of Daily Urine.

At the beginning of our observations the urine examined was taken from an ordinary 24-hour collection, but as we soon realised that as the urinary output for 24 hours is composed of three definite parts, the separate investigation of which offered a greater possibility of discovering how the stress of acid increase fell than the examination of a mere daily average. The three parts into which the daily excretion of urine may be divided are:—

1. *Urine passed on waking in the morning.*—This urine, excreted during the night—that is to say, during a period of mental and physical rest in which neither food nor drink are taken, and whilst the body is maintained at an equable temperature—is the most uniform of the three, and may be called the "rest urine."

2. *Urine excreted during the first waking period after rising in the morning.*—This is normally a dilute urine of low acidity, usually called the "alkaline tide urine," and varying considerably according as the balance of acid and alkali excreted by the organism is well maintained. If the quantity of acid eliminated during the night has not been sufficient to maintain the usual balance of acid and alkali in the tissues this urine will show a degree of acidity in excess of the normal.

3. *Urine excreted during the hours of active life.*—The degree of acidity of this urine, which we may call the "functional urine," is largely controlled by the amount of exercise taken, the quantity and quality of the food and drink ingested, and also by variations in temperature.

Of these three urines the most constant as to quantity, specific gravity, and acidity is, as one would expect, that excreted during the night and passed on waking. The acidity of this urine is a valuable indication of the capacity for excretion of the body at rest, and its acidity should be tested in two directions—for ordinary free acidity, and for the concealed acidity as disclosed by neutralising the buffer reaction of ammonia by the neutralised formalin method.[1] The indicator used is preferably phenol red in a 0·02 per cent. solution. Litmus is far too insensitive in the acid direction to be of any use as a real indicator of the acidity, and phenolphthalein, which was used in much of the earlier work, is found to be just too insensitive on the alkaline side—the kidney is never able to produce a urine alkaline to phenolphthalein. To those desirous of complete accuracy the pH used is 7; the comparator being the standard one sold by Baird and Tatlock for the Medical Research Council for the making of culture media. When the urine is neutralised to pH 7 it is recorded as alkaline. There will still, of course, be the concealed acidity released by neutralising the ammonia by formalin. These details are given as, though they are customary in bio-chemistry, they have not yet become the practice in clinical medicine.

Pathological Effects of Acid Administration.

The first pathological effect of acid administration apparent is a failure on the part of the kidneys to excrete the acid accumulated during the day's activities. This incapacity may be due either to a temporary failure in function, or to a real damage to the renal tissues, which is usually permanent. The first effect of functional failure will naturally be to diminish the "alkaline tide" and bring the urine to a higher and more uniform acidity, so that the three samples will be found to differ much less than usual during the 24 hours. The "alkaline tide" will approach the "rest urine" in acidity and specific gravity or, perhaps more usually, the "functional urine," which generally occupies, on account of the balance of activity by the taking of fluid and certain foods, an intermediate place as regards acidity.

The first indication of a permanent interference with the capacity of the kidneys to excrete acid will be a fall in the acidity of the "rest urine." This has long been recognised as one of the prodromal symptoms of Bright's disease, and is often suggested, in the first place, by the disappearance of previously persistent lithates from the urine, indicating an inability on the part of the organism to excrete excess of acid owing to a structural damage to the acid-excreting mechanism of the kidney. A rise in blood pressure may be observed both in cases of functional failure and of structural damage to the renal tissues. A third indication is the constant passing of a urine of low acidity, especially at night, with a marked increase above normal of the quantity passed in the day, due to a high pressure blood flow combined with diminished capacity to excrete acid. In such cases the three types of urine differ little or not at all in character. The whole 24 hours' urinary output is at a constant "injured maximum."

These conditions are due to an injury to the kidney in respect of its capacity to eliminate acid and are natural enough whether the hypothesis held is the theory of direct excretion or of reabsorption. They are always associated with a urine of constantly low specific gravity. Cases whose renal function is so crippled are curiously "acid sensitive," and a very small dose of dilute hydrochloric acid will raise their blood pressure and induce unpleasant symptoms.

Conclusions.

We recognise that these notes are not by any means complete, as this investigation is really only commencing and is a side issue of a larger investigation on which we hope to report at a later date. We felt, however, in view of Prof. Haldane's lecture confirming our observations of the extreme importance of the acidity of the urine in the regulation of the kidney system, that the importance of the estimation of the renal functions in this direction should be emphasised from a clinical point of view, while the material importance of estimating the blood pressure in all cases where acid was being administered should be reported. In this connexion, had the value of this estimation been known in the two cases in which acid was being given by one of us, in which much injury resulted, the error would have been avoided.

So far, experience has taught us that dilute hydrochloric acid is not, in acid sensitive cases at least, the harmless tonic the books would have us believe it to be, and we are sure that when acid is being administered the blood pressure should always be estimated from time to time, and the urine be occasionally tested for its acid and ammonia relations. We also feel that in cases where an early condition of renal insufficiency is suspected, the "rest urine" should be compared with the "alkaline tide urine" in respect of their relative acidity.

The conclusions arrived at are:—1. That acid largely regulates the amount and character of the urine excreted, by its action on the renal tissue. 2. That this is largely controlled by the increasing acidity of the blood (acidæmia) tending to raise the blood pressure; otherwise the kidneys would not be able to maintain the necessary balance between acid and alkali. This regulation is so delicate that in health the normal variation of blood pressure is not apparent, other causes of increased pressure contributing to its concealment. 3. That when impairment takes place owing to the breakdown of the chemical balance, general acid sensitiveness occurs, and this condition is accompanied by a rise in blood pressure. If the structure of the renal cells is not injured this is not maintained unless the acidæmia continues. If the structure of the cells is injured, the rise of the blood pressure is more or less permanent until other forms of compensation are established. When this structural alteration has occurred acid administration and acid feeding are contra-indicated. Where acid is being administered in doubtful cases the blood pressure should always be observed, to avoid the

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[1] Formalin should, of course, be neutralised, using indicator phenol red to pH 7.

To the Atomists, to Heraclitus, and to the Pythagoreans (who never drew a distinction between animal and human intelligence) the problem was never presented, nor do we see any trace of it in the anthropomorphic animal psychology of Plutarch. The conception of a divergence between abstract thought and animal life is implicit in Plato, and the distinction became more definite in the writings of Aristotle and the Stoics. In scholastic thought we find instinct formally recognised as comprehending the totality of animal behaviour and the baser part of human conduct, whilst in Neo-Platonism there is a reversion to the standpoint of the Epicureans. With the wane of scholastic thought the tendency to the anthropomorphic view of animal behaviour has persisted till the present day. Darwin formulated our present knowledge of instinctive behaviour and gave full recognition to its recurrence in man and its evolutionary significance.

The problem as to the relation of instinct and intelligence now becomes a biological one. Those who hold the Neo-Lamarckian doctrine as to the hereditary of acquired characters may consider that instinct is nothing else than a hereditary conditioned reflex—that somewhere in the past a discriminatory action became a conditioned reflex, and by the aid of natural selection such a conditioned reflex has been handed down as an innate part of the nervous mechanism. If an instinct in its earliest stages originated as an act of conscious discrimination its later hereditary form will still show some affinity to the conscious mechanism that first started it, and we might hope that by learning something of its cortical connexions we would arrive at its origin. On the other hand, if an instinct be regarded as a variation preserved by process of natural selection, it is clear that to seek its early cerebral connexion is futile, and if we disbelieve in the heredity of acquired characters the instinct reflex pattern must be unfolded de novo in each generation, and the associations that it may possess will only be such as may have been acquired during the life of the individual. Men of such different schools of thought as Ziegler, Haeckel, Spencer, Wundt, Semon, Ward, MacDougall, and Preyer, adopt the Lamarckian standpoint; Driesch and notably Bergson represent a return to the scholastic view of instinct. For Bergson instinctive behaviour represents a form of activity to which there can never be a psychical correlation in the terms of human practical intelligence. Human intelligence is so developed and so limited as to enable us to adopt mechanical aids to life, and therefore postulates at the beginning of any action a more or less clearly defined conception of what its end is to be. Instinctive behaviour knows nothing of ends; it can only reply to introspection in the words of Luther, "Ich kann nicht anders."

I venture to think that all speculations about the psychical aspects of instinctive behaviour founded on animal observation are of very doubtful value. The supreme act of faith is the attribution of consciousness to our fellow beings, for knowledge of consciousness is never immediately given; but to proceed to speculate about the psychical correlations of instinctive behaviour in insects can hardly be helpful to objective psychology. We must turn to human instincts, and we must obviously select for study of instinctive behaviour an act performed for the first time and from which mimicry and verbal suggestion are excluded.

Expression of the Animal Nest-making Instinct in Human Beings.

Some years ago I observed what has always seemed to me to be a singularly interesting and beautiful instance of instinctive behaviour that fulfils these postulates. If it has been already noted by others I must apologise for presenting it under the guise of a new observation. A primapara about two days before the birth of her child worked very hard at tidying not only all the drawers of her bedroom and boudoir but also her husband's desk. Asked why she did this she said that as she was going to be ill for a long time she wished to have all her own and her husband's things in perfect order. The answer seemed to me to be somewhat inadequate, since as a rule the husband's desk was never interfered with. Some time later the father of several children remarked to me that he always knew when a birth was due, since for a couple of days before it his wife in an excess of energy would tidy every drawer she could find including all his private papers. When I asked him why she did so he said that she gave him the same explanation as I had received in the first case. Now I knew this lady sufficiently well to feel sure that on the occasion of her long absences at her country house, where she spent many months every year, the last thing that would occur to her would be to prepare for her absence by such a minute ransacking of drawers that are as a rule outside her province. I then asked a midwife if this procedure was a usual precursor of childbirth. She said that she had observed it in quite the majority of her cases, and inasmuch as her practice lay among some of the wealthiest people of the country in whose houses such duties as the arrangement of drawers and cupboards are seldom performed by the mistress the phenomenon was all the more striking. Later on when observing the behaviour of a doe rabbit in a breeding hutch I noted that for three or four days before delivery the doe spent her time in a state of frantic activity collecting bits of hay, tossing them up to unravel them, and finally carrying them to the dark compartment at the end of the cage. She was making a warm nest for the expected young. When we find that this nest-making behaviour is universal among the higher apes I think that we are entitled to assume that the drawer-cleaning, sorting, and tidying are the expressions of the animal nest-making instinct.

We have here an instinct untainted by any possibility of mimicry, and since its existence is apparently unknown, free from any complication due to suggestion. The purpose of the reflex instinct mechanism is unknown to the expectant mother, and when her attention is directed to it, and she is asked what she is doing, she casts about for an explanation and evolves one that is not only false but shows no associational nexus to the true purpose of her activity. The distinguishing feature of an instinctive reflex is its compelling urgency. The least delay or opposition to its accomplishment, once it has been aroused by the appropriate stimulus, evokes an intense bodily reaction, and it would appear to be of the imminence of such an explosion of feeling that we speak of as a feeling of compulsion. This feeling of compulsion is the real equivalent of what Bergson terms intuition in respect to instinctive activity. Like the Bergsonian intuition, it cannot be translated into the language of practical thought, nor has it association of a direct nature with aught other than the immediate instinct mechanism. These innate pattern reflexes that we term instincts undoubtedly play an enormous part in the mechanism of conduct. Their recognition in all but such simple cases as I have just now narrated is a matter of great difficulty. They can as a rule be only distinguished from the conditioned habit reflexes by a minute knowledge of the subject's past history such as neither he nor the observer can hope to possess. Much of the vast output of writings on the subject of the instincts that has been characteristic of the last few years loses considerably in value on this account. As I am concerned only with an attempt to show what fundamental knowledge concerning organic disturbances of mechanism can be gained from an objective study of bodily responses and of conduct, I will make no attempt to deal with any system of classification of the different forms of instinctive mechanism. There appears to be a tendency to over elaboration in this direction—Essentia non sunt multiplicanda praeter necessitatem—the "razor" the "doctor invincibilis" has its application in psychological medicine as well as in philosophy. One particularly deplorable move in this direction has been the invention of states or attitudes to take over the very attributes without needling done by native physicians in the veins for the purpose of letting out the "toxic blood," the vein passing over the internal malleolus on the inner side of the foot could always be found.)

Secondly, that relapses were the rule; sometimes even before the completion of the injection of a second patient was completed the first patient, through excessive diarrhœa and vomiting, might be urgently requiring more fluid.

Thirdly, that cases which could be supported until the acute diarrhœa and vomiting had passed, were still in grave danger from suppression of urine. This persisted in some of the cases for six days. The only remedy seemed to be the use of almost continuous "cupping," usually by means of a de Bier's suction glass over both kidneys.

During the epidemic in Foochow in the summer of 1919 kaolin was used by myself with considerable success, but there was difficulty in obtaining a good supply. On my return to Hing Hwa, where cholera was raging, I had no difficulty in obtaining kaolin, as the famous Blanc de Chine clay beds are situated near this district.

The method of administration was somewhat different from Stump's methods. A large supply of half-and-half suspension was placed near the patient and the nurse was told to encourage the patient to take as much as possible. At the commencement large quantities could be tolerated, but as the vomiting and diarrhœa ceased the liquid was refused. In all cases food was withheld for 18 to 24 hours, then rice water was allowed, and later milk and rice water. In all cases rectal lavage was done with kaolin solution thickened until it would comfortably pass through the rectal tube. At first none was returned. Later on much was retained. If the condition of the patient was precarious on arrival at hospital, it was found that subcutaneous bilateral infusion usually restored the patient sufficiently to take kaolin by the mouth. In desperate cases hypertonic salt solution was given intravenously (Rogers), but no such large quantities as we used before the introduction of the kaolin treatment (2 litres). This is shown to be of value by the results obtained by Braafladt with hypertonic saline and kaolin, which were not so good as those obtained with kaolin alone.

Advantages of Kaolin Treatment.

After the introduction of the kaolin method the following differences were noted: if the patient's condition was "fair"—that is to say, that the pulse was perceptible and the patient conscious—the introduction of large quantities of kaolin suspension by the mouth and per rectum would ensure the patient's continued recovery. After two hours all vomiting ceased, a sense of safety had been reached, and the patient usually slept.

In the lighter cases 12 hours saw the cessation of diarrhœa and 24 to 36 hours the passage of urine. In the most critical cases, which required the introduction of saline to bring about an improvement of the pulse, rectal introduction of heavy suspensions of kaolin were commenced at once and had a marked effect in preventing the further loss of fluid. On return of consciousness and during the introduction of the saline kaolin was given by the mouth and was usually retained, while in those cases which vomited it was felt that some kaolin had been deposited on the walls of the stomach which began to absorb the toxic products of the cholera vibrio; the second administration of the kaolin suspension by the mouth was frequently retained or only partially returned.

So the most marked advantages of the kaolin treatment were: (1) simplicity of method; (2) absence of relapse; (3) cessation of loss of fluid; (4) great improvement in the condition of the patient from the absorption of toxins, the patient becoming rapidly free from a general "toxic condition"; (5) early return of the passage of urine; (6) early and rapid convalescence.

In cases treated in St. Luke's Hospital, Hing Hwa, we had a series of 75 cases from one village, situated two hours' journey from hospital, with no fatal results, and this result was obtained in spite of the fact that many of the patients arrived at hospital in a condition of extreme collapse. The mortality of untreated cases at this village was stated by the village headman to be exceedingly high, though I was unable to obtain exact figures owing to the absence in China of any registration of deaths.

Laboratory Experimental Work on the Action and Effect of Kaolin.

In a rabbit fed with 20 c.cm. of a 50 per cent. kaolin suspension, on chloroforming 18 hours later, well-marked traces of kaolin were found over the walls of the stomach, duodenum, and upper small intestine, increasing in amount down the lower small intestine to the cæcum, which was full of liquid contents mixed with kaolin. The colon was full of dry masses of dark brown fæces, which on opening showed white kaolin inside.

In a rabbit fed with 20 c.cm. of a 50 per cent kaolin suspension, and also 20 c.cm. of a 50 per cent. kaolin suspension rectally, chloroformed 42 hours later, the stomach and duodenum distended by a new vegetable meal showed no signs of kaolin, but there were traces on the walls of the upper small intestine which increased in amount to the cæcum, while the transverse and descending colon were full of dry masses of kaolin and fæces mixed.

A further experiment was done to show the microscopical appearance and position of the kaolin in the intestinal tract. A rabbit was fed at 9 A.M. with 20 c.cm. of a 30 per cent. kaolin and water mixture; at 12 mid-day this was repeated, and the rabbit killed at 2 P.M. Sections of the stomach, upper and lower small intestine and large intestine were taken, the gut being stretched on cork rings to prevent retraction on hardening. These were fixed, hardened, cut, and stained with eosin and methylene-blue.

Under a low power the kaolin could be seen lying in a thin line in close apposition to the mouths of the glands. Much of the kaolin had fallen away in the course of preparation. Under a high power it was possible to make out the kaolin, sticking closely to the cells, and in some cases the cells had torn away, adherent to the kaolin layer in process of preparation.

Cultures of cholera vibrios from Guy's Hospital bacteriological laboratory and the Lister Institute were used throughout the following experiments in duplicate. Intraperitoneal inoculations were made through three series of guinea-pigs to raise the virulence. The resulting cultures gave typical pure cholera reactions and were those used in the following experiments. To broth cultures of *V. choleræ* varying strengths of kaolin were added. Later, agar plates were planted from this mixture, and the results given in Table I. were obtained, thus showing that the presence of kaolin in cultures of *V. choleræ* had no bactericidal effect.

TABLE I.

Kaolin suspension strength.	Agar plate after 24 hours' growth.	Result.
1·8 per cent.	–	+ +
2·5 ,, ,,	–	+ +
5·0 ,, ,,	–	+ +
10·0 ,, ,,	–	+ +
20·0 ,, ,,	–	+ +

TABLE II.

V. choleræ through silk.	Filtrate grown on agar.	Result.
1·0 c.cm. of 5% kaolin suspension	–	+ +
2·5 c.cm. ,, ,, ,,	–	+ +
5·0 c.cm. ,, ,, ,,	–	+ +
7·5 c.cm. ,, ,, ,,	–	+ +
10·0 c.cm. ,, ,, ,,	–	+ +
20·0 c.cm. ,, ,, ,,	–	+ +

NOTES ON THE ADMINISTRATION OF HYDROCHLORIC ACID.

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THE address that Prof. Haldane delivered in Edinburgh on March 4th, on Recent Advances in the Physiology of Respiration, Renal Secretions, and Circulation, has rendered it advisable that we should publish certain observations and deductions made in the course of another investigation which is not yet completed. In this we have arrived clinically at similar conclusions to those recently enunciated by Prof. Haldane—namely, that the regulation of the alkaline balance of the blood, and through it of the tissue fluids, is probably one of the most important functions of the kidneys; and that through this regulation the reaction of the tissue metabolism is largely ultimately controlled. During the other investigation referred to it became necessary to administer dilute hydrochloric acid as a routine procedure in a large series of cases, and we did so under the opinion, apparently generally held, that dilute hydrochloric acid was a more or less harmless drug of tonic properties, though we hardly went to the extent of the following statement, published in "The United States Dispensatory," twentieth edition, 1918, p. 37:—

> *Acid Hydrochloricum dilutum.*—The doses which are sometimes employed are absurdly small. When we remember that the normal acidity of the stomach during gastric digestion ranges from 0·2 to 0·3 per cent. of hydrochloric acid—which would necessitate nearly 2 g. of absolute hydrochloric acid for an ordinary meal—the futility of administering 5 to 10 drops of a 10 per cent. solution of this acid is evident. Dose 10 to 60 minims (0·6–3·75 mils.) well diluted.

We soon had reason, however, to alter these ideas, and we found that we were dealing with a remedy which, although frequently taken without much apparent effect, sometimes produced intense and unmistakable results, and we came to the conclusion that the effect was principally renal in its incidence. Through these observations we arrived at the opinion that the kidneys, equally with the lungs, were occupied in maintaining the alkaline, or what is really the almost neutral, balance of the blood.

This kidney regulation appears to us to be a procedure not entirely simple, but depending on a mechanism under the control of influences both chemical and nervous. Under normal conditions, it would seem that the chemical influence is largely predominant, and that the acid factor is the chief controlling force regulating the general proportions of the output of urine.

Adjustment Effected by Acidity of Urine.

The adjustment effected by the acidity of the urine is much finer than is generally supposed. The variation of the renal functions in health is so sufficient and elastic that the regulator is not apparent, but where there are alterations in the normal condition of the kidneys, not sufficient to be considered pathological, but still sufficient to allow it to be disturbed by moderate excess of the acid factor, the effects may be studied with considerable accuracy. So far as our observations go at present these tend to show that the control of the normal excretion of water by the kidneys is largely a question of acidity. That is to say, where the acidity of the blood is increased, the actual quantity of the urinary flow is diminished, as would naturally be surmised, for the body would desire to retain as much fluid as possible to dilute the acid retained in excess of normal. On the other hand, the attempt to get rid of the excess of acid apparently demands a rise of blood pressure (whether directly or through some intermediary is not known), and this rise of blood pressure, by its compensatory action, tends to increase again the fluid excretion of the kidneys. Where dilute hydrochloric acid is administered this result is apparent, because, as Prof. Haldane says, "The kidney alone cannot deal with this acid at all completely," and the blood pressure is raised, by no inconsiderable amount, where renal inability to excrete acid is at all marked. If acid continues to accumulate against the rising blood pressure the symptoms of acidosis manifest themselves, and the whole organism is materially affected, but this is really a late pathological condition.

Acid Sensitives.

The necessity for taking the blood pressure during our administration of dilute hydrochloric acid soon became apparent, on account of our meeting with a series of cases to which we have given the name of "acid sensitives." The more marked cases of acid sensitiveness show such an intolerance of acid that even a dose of five minims thrice daily is keenly resented. This sensitiveness is sometimes manifested in persons who are apparently perfectly healthy. Intolerance of dilute hydrochloric acid (so far we have not completed the observation by giving other mineral acids) is manifested in two ways: (1) by nausea and vomiting, following rapidly on a dose of the acid—apparently a local intolerance; and (2) by the gradual development of circulatory difficulties accompanied by a rise in the blood pressure—a condition which we have been led to believe is of renal origin. We have had four cases in which local intolerance has been sufficiently marked to make us discontinue the use of hydrochloric acid, and ten cases in which the circulatory disturbance compelled us to interrupt its administration. Among the latter class four cases are worthy of particular mention.

In one, where we had the opportunity for continued close observation, a single dose of 20 minims of dilute hydrochloric acid raised the blood pressure in a few hours, on separate occasions, by 20 mm. of mercury. The other effects noted were flushing of the face, increased rapidity and irritability of the pulse, and before long a sensation of slight giddiness as described by Prof. Haldane in his cylinder experiments, when the acidosis was produced by diminished atmospheric pressure. Incidental to the rise in blood pressure there was, in this case, a considerable diminution in the urinary output, with a rise in the specific gravity and in the acid ratio. It has not been considered advisable up to date to repeat the series of experiments as the injury produced lasted for some days.

In another case the effect was most dramatic. Five minims of dilute hydrochloric acid were given three times in 24 hours and the blood pressure rose from 140 to 240. Subsequent administration of alkalies was followed by a fall in the blood pressure to its original reading after three days. The third and fourth cases were very similar. In each 10 minims of dilute hydrochloric acid had been given for some weeks thrice daily with apparent benefit, but when the dose was increased to 15 minims the patients displayed severe constitutional disturbance with at first a rise of blood pressure much above the normal. The pulse became small and incompressible, while the general appearance of the patients was shrunken and sallow-looking, as in extreme old age. The acid was discontinued and at the same time the blood pressure fell and œdema of the legs appeared.

Where small doses, 5 minims of dilute hydrochloric acid, are administered—following our present usual practice—and continued for some time, there is usually a slight primary rise of blood pressure followed in a few days by a fall, as if compensation had taken place. This condition, however, is not usually reversible. A subsequent rise is not easily produced by a slight increase in the dose, though in the two last-mentioned cases acute symptoms of acidosis with high blood pressure appeared when, after a dose of 10 minims

TABLE V.—*Culture Medium—Alkaline Peptone Water.*

(2 c.cm. injected intravenously in each case as recorded below.)

—	Days' growth of culture.	Peptone medium filtered through porcelain candle.		Bacillary deposit of last column ground in bacillary mill, picked up in saline, and refiltered through candle.		Fatal fluids of above experiments filtered through kaolin filter-beds and filtrate injected.	Above fluids shaken with kaolin, centrifugalised and injected.	2 oz. kaolin placed in ½-litre flask of peptone culture medium.	Control without kaolin.
		Filtrate.	Bacillary deposit.	Filtrate.	Deposit.				
A. Toxins grown from V.C., no passage.	4	—	+ 24 hrs.	..	..	—	—	..	..
B. Toxins grown from V.C., 3 passage.	4	—	+ 12 hrs.	—	+ 12 hrs.	—	—	..	..
	6	..	+ 12 hrs.	—	+ 12 hrs.	..	..	..	..
	11	..	—	—	—	..	..	..	..
C. Toxins grown from V.C., 5 passage.	1	—	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	—	—	..	..
	6	..	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	—	—	..	..
	11	..	—	—	—	..	..	..	..
D. Toxins from 6 passage (being 5 passage V.C. injected with four-day-old toxins added).	4	—	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	—	—	—	+
	6	..	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	—	—	..	..
	11	..	—	—	—	..	..	..	..

+ Fatal. — Not fatal.

2. The deposit was scraped from the hollow tube of the candle, mixed with a small quantity of 0·8 per cent. salt solution, and then "killed" by one of three methods: (*a*) heat at 60° C. for an hour; (*b*) Finsen light, one hour exposure; (*c*) chloroform added to the solution in sufficient amount to leave a clear layer of chloroform showing. After shaking the mixture, five minutes killed the *V. choleræ*. (The method of killing the *V. choleræ* appeared to have no marked effect on the results obtained—the "toxins" could be heated at 60° C. to dryness and yet retain their virulence.)

This killed deposit was then injected intravenously into rabbits; 2 c.cm. was fatal, the time varying with the strength of the toxin.

3. The above deposit was then ground in a bacillary mill to break up the bacilli, and after mixing with 0·8 per cent. saline, was again filtered through the porcelain candle.

4. The filtrate was found fatal to rabbits if 2 c.cm. were injected intravenously.

5. The deposit was also fatal to rabbits, being more rapid in its action than the filtrate.

I am greatly indebted to Prof. J. W. H. Eyre, of Guy's Hospital, for his kind assistance in the above experiments.

General Conclusions.

The action of kaolin is two-fold: (1) Mechanical; (2) adsorptive.

1. *Mechanical.*—The administration of such large quantities of kaolin as are used in the treatment of cholera almost fill the bowel, and the passage of this mass through the bowel must enclose and carry with it a very large number of bacilli. It has, however, no bactericidal effect, and this fact calls for energetic action in the destruction of fæces in all cholera cases treated by this method. The fact that the kaolin forms an adherent coating to the walls of the bowel point to its usefulness in ulcerative forms of colitis, though in these cases the rectal method of administration in the form of enemata and long-tube lavage would be preferable owing to the possibilities of errors of digestion arising, after long administration, due to the adsorptive properties of kaolin for ferments.

2. *Adsorptive.*—This, the chief function of kaolin, is very marked: its extremely fine state of division lends itself to that end. From the above experiments it is clear that, at least in the case of cholera, and probably in diphtheria, ptomaine poisoning, bacillary diarrhœa, and general toxic conditions, kaolin has a wide range of use. In cholera, the first result of its administration is the cessation of vomiting. This seems to be due to the adsorption of toxic bodies in the upper alimentary tract. This is followed by cessation of diarrhœa and consequent loss of fluid which is caused by the presence in the bowel of irritant substances of a toxic nature. These being adsorbed by the kaolin cease to act as an irritant, and consequently the improvement of the patient is rapid and maintained. The presence of a layer of kaolin on the walls of the intestinal tract would appear to act partly as a filter-bed and prevent the transmission of toxins to the patient. The adsorptive action of kaolin does not appear to be chemical.

Professor Bayliss has pointed out that kaolin is an electro-negative colloid, which sign may become changed by allowing it to adsorb ions of opposite sign to itself (Bayliss, p. 72); this, I take it, occurs in the small intestine.

I am indebted to Professor Russ and Mr. Clark (of Middlesex Hospital Cancer Research Department) for the following fact (experiments were made after Hardy's method, *Journal of Physiol.*, xxxiii., p. 289): Cultures of cholera vibrio in an alkaline medium gave a definite electro-negative sign. So the adsorption of cholera toxins by the kaolin may be explained by the electrical reaction between the two, and the failure of the toxin to reach the circulation may be explained by the electro-static attraction of the suspensoid kaolin for the cholera toxin, which thus forms one component of a Helmholtz double layer. Professor Bayliss has pointed out that sodium chloride diminishes electro-negative charge, in accordance with Gibbs's principle; this may be the explanation of the marked difference in treatment of cases of cholera which have had saline injections preceding the kaolin treatment, to those treated only by kaolin.

THE LATE DR. VICTOR DONALD ORR LOGAN.—Dr. Logan died at St. Mary's Hospital, London, last week from injuries received through being knocked down by a motor cycle in Bayswater-road. He graduated M.B., Ch.B. Edin. in 1909, and was a temporary Captain, R.A.M.C. Formerly he was resident medical officer at St. Mary's Hospital, Plaistow, to the Sussex County Hospital, Brighton, and to the Prince of Wales Hospital, Tottenham. At the time of his death he was in practice at Liverpool.

danger of overdose. Overdose is also indicated by the "alkaline tide urine" approaching the "rest urine" in character.

Since hearing Sir Almroth Wright's lecture on Acidosis delivered at St. Mary's Hospital subsequent to these notes being compiled, we have come to the opinion that the reason why, during treatment with acid, a rise in the blood pressure is reversible—i.e., followed by a more or less similar fall, while this subsequent fall in blood pressure is not easily reversible—is because an acidosis may be transferred to the tissues, the acidæmia thus being changed into a histo-acidosis, and this causes a fall in the blood pressure. If a histo-acidosis be established it is not easy to raise the blood pressure again, because of the difficulty either of raising the acid content of the blood above that of the tissues or of reducing the acidity of the tissues below that of the blood, the fluid pressure thus persisting towards the tissues, while the balance is against the blood. Such a hypothesis would explain what occurred in the two cases referred to above, in which acidæmia took place.

In these cases œdema and a very considerable fall of blood pressure occurred after the discontinuance of the acid and the condition was not readily reversible. The administration of the alkalies did not remove the œdema, although following on very small infrequent doses of acid the œdema disappeared, and there was a slight rise in blood pressure. This sequence of events would seem to support the idea that an acidæmia had developed into a histo-acidosis.

THE ACTION AND USES OF KAOLIN IN THE TREATMENT OF ASIATIC CHOLERA.[1]

BY RONALD R. WALKER, M.D., B.CH. CAMB.

POSSIBLY the earliest mention of cholera is in the time of the Yellow Emperor of China, circa 1500 B.C., when five general "body conditions" were described. The Ganges bed in India is, however, generally regarded as the home of the disease, and in late historical times, epidemics in 1500 and 1700 A.D. are on record. In 1817 and 1837 there were world-wide epidemics. In every case the infection followed lines of travel—e.g., caravan routes, pilgrimages, lines of ships, &c. Between 1817 and 1823 this plague spread from India through China and as far west as Egypt. During 1826–27 Europe became infected, and thence, via England, Canada and the U.S.A. From 1837–93 Europe has had successive visitations resulting in a death-rate in Russia in one year of 800,000, and in Hamburg of 8600.

In the year 1883 Koch discovered the cholera organism, which he called the comma bacillus or cholera spirillum. This spirillum is a small organism 1·5–2 μ in length, curved on one axis and provided with a single flagellum which causes it to be highly mobile. The bacillus grows freely in alkaline broth or on alkaline agar. It stains readily with weak carbol-fuchsin, and solutions of the culture give a rose-pink colour reaction on the addition of pure sulphuric acid; according to Grieg, true cholera vibrios are non-hæmolytic. Agglutination tests against a high titre anti-cholera serum will differentiate between the true cholera and paracholera or El Tor vibrios.

The disease in man is characterised by general systemic disturbance. Vomiting, profuse watery diarrhœa, muscular cramps, cold clammy condition of the surface, suppression of urine, are the general characteristics. The onset is sudden as a rule, and in the most virulent infections a condition of cholera sicca occurs, where the patient dies before the diarrhœa has set in.

Bolus or Kaolin Treatment.

Treatment has been directed to meet all conditions which occur. Potassium permanganate, opium, saline injections, subcutaneously and intravenously, hypertonic solutions of saline (Rogers) have been used with considerable effect. It was, however, during the Balkan epidemic at the close of the Balkan War, 1913, that Stump's bolus treatment (bolus alba) was tried at Nish by Dr. Victor Kulme[2] with remarkable results. Bolus alba, or kaolin (China clay), is aluminium silicate, $H_4Al_2Si_2O_9$, a salt insoluble in water, with crystals of 1 μ in length in a fine state of division. This salt was in use in early Roman times, and was also used by the natives of the Orinoco. It has also been employed in diphtheria in Germany, as a powder insufflated on the fauces and tonsils, and also a mixture internally. It has also been used in ptomaine poisoning with success (Mutch), also in dysenteries, summer diarrhœa of children, and its use is indicated in the treatment of sprue and toxic conditions. The general effect of the salt seems to point to the absorption of toxins. By the use of this salt Kulme claims that the mortality in the cases treated was reduced from 60 per cent. to 3 per cent. The method of preparation was as follows: A suspension was made of equal amounts of water and kaolin, the kaolin being stirred into the cold water—i.e., 100 g. kaolin to 250 c.cm. aq. Half-pint doses of this suspension were taken half-hourly for the first 12 hours, the second 12 hours several glasses were taken, according to the patient's condition. Vomiting soon ceased, the pulse improved, and the patient slept.

During the summer of 1919 China was visited by a severe epidemic of cholera, and Dr. Louis Braafladt,[3] of Tsinanfu, has given the result of the use of kaolin The method of administration was somewhat different from Kulme's; and his treatments and results are as follows:—

1. Hypertonic saline treatment, after Sir Leonard Rogers—mortality 22 per cent. Convalescents discharged on eighth day.
2. Kaolin and hypertonic treatment—mortality 29 per cent. Convalescent patients discharged on the sixth day.
3. Kaolin treatment only—mortality in 35 cases one patient (this patient died of gangrene of uterus after miscarriage). Convalescent patients discharged after four days.

All these patients had true cholera vibrios isolated during their stay in hospital. In cases of the Asiatic cholera treated in Foochow at the American Red Cross hospital when first opened no definite hard-and-fast line of treatment was maintained. Cases were treated by continuous subcutaneous injection of normal saline, with administration of potassium permanganate by the mouth until the motions became green. Hypertonic intravenous saline injections (Rogers) were given in amounts up to three litres or until the blood pressure became normal. Dextrose was added in some cases to the intravenous solutions.

Whatever method was used, some features of the disease remained constant:—

First, that although the patient on arrival might appear moribund, being cold, rigid, and with imperceptible pulse, the introduction of saline could usually be relied on to produce return of consciousness and a greatly improved pulse. With the hypertonic intravenous solutions a rigor of great intensity could be looked for before the end of the introduction of the second litre. This, however, was disregarded and the saline was continued until the blood pressure had attained the normal. (A point of interest was noted in the treatment of these cases—namely, that when no superficial vein of the body could be demonstrated suitable for the introduction of the saline, through the extreme loss of fluid, or through the

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[1] A paper read at the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, April 19th, 1921.

[2] Revue Médicale de la Suisse Romande, September, 1918.

[3] China Medical Journal, May, 1920.

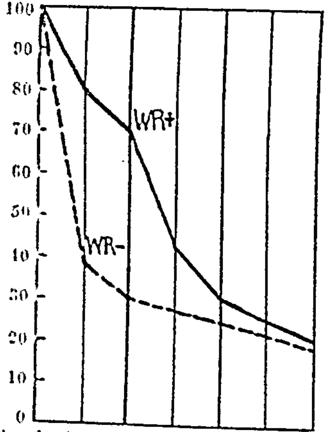
TABLE I.—*New Cases Admitted during Twelve Months beginning July 1st, 1918.*

—	Stage of disease on admission.						
	Prim. syph.	Prim. and second.	Sec. syph.	Tert. syph.	Latent syph.		Neuro-syph.
					*W.R. +	W.R. –	
Total number admitted	263	109	145	68	139	64	13
Number who attended for—							
No intrav. injections	36	13	15	10	21	27	2
1 injection only	25	6	17	7	5	2	1
2 injections	18	13	9	6	3	11	1
3 "	22	6	9	6	9	1	0
4 "	21	8	13	7	2	3	0
5 "	13	9	9	4	2	1	2
6 "	54	21	29	14	38	2	3
1½ course only	26	6	12	6	17	1	2
2 courses	8	3	5	2	6	1	0
2½ "	6	5	6	2	7	3	0
3 "	5	5	1	1	3	1	0
More than 3 courses	29	14	20	3	26	11	2

* Wassermann reaction positive (+) or negative (–) on admission.

ship between the attendance of 203 cases of latent syphilis and their Wassermann reaction was analysed; in 139 cases the Wassermann reaction was positive on admission, in 64 it was negative. (See Chart 4 and Table II., cols. 6 and 7.) As a remedy an attempt has recently been made at the infirmary clinic to keep the patients in ignorance of the result of the Wassermann test by using symbols instead of words. Sooner or later, however, they learn, directly or indirectly, the meaning of the symbols. It is therefore absolutely essential that patients should be taught to realise the necessity of attending for blood tests regularly for a long period after cessation of active treatment.

CHART 4.



The chart shows 203 cases of latent syphilis, demonstrating that cessation of attendances is much greater in patients with a negative Wassermann reaction on admission than in those with a positive. (See Table II., cols. 6 and 7.)

4. *Other Factors Influencing Attendance.*—Various other possible factors were considered, but as their influence was not studied statistically, mention only will be made of them; they include the following: 1. Ignorance or callousness—the type of patient who states that he ceased to attend because, his symptoms having disappeared, he "didn't feel anything from it," so he "thought he was all right." 2. Patient's lack of financial interest in his treatment or cure. In my opinion this factor is of considerable importance, but it is acknowledged that there is much to be said for free treatment.

The Letter Card as a Remedy for Absenteeism.

The deplorable state of affairs as regard attendances revealed above has to a great extent been remedied by the adoption of a system of sending letter cards to recall absentee patients. The results have been very satisfactory from the medical officer's point of view. One must admit that in certain instances the employment of letter cards is resented by patients and tends to drive them to other clinics where they are not used. On the other hand, the fear of receipt of a letter card has a very salutary effect in maintaining the regularity of attendances of others. The effect of these letter cards and the relative value of sending one, two, or three cards is seen in Table III. It will be observed that 44 per cent. of the absentees attended on receipt of one letter card; a further 9 per cent. on receipt of a second letter card; and a further 1·5 per cent. on receipt of a third letter card. Thus the attendance of over 50 per cent. of the absentees was secured by this means. It would appear that the majority of the remainder, who had either given the wrong address on registering (8 per cent.), or who had apparently quietly ignored the letter cards (35 per cent.), could only be reached by legislative means. While they "play the game" by

TABLE II.—*Attendances in Percentages.*

—	Stage of disease on admission.							Abode.	
	Prim syph.	Prim. and sec.	Sec. syph.	Tert. syph.	Neuro-syph.	Latent syph.		Wanderers.	Fixtures.
						W.R. +	W.R. –		
Number admitted	263	109	145	68	13	139	64	121	197
Percentage of number admitted	100	100	100	100	100	100	100	100	100
Percentage who attended for—									
1 injection only	86·2	88·0	90·3	85·2	84·6	84·8	57·8	82·6	93·4
2 injections	76·8	82·5	77·9	75·0	76·9	81·2	54·7	71·9	83·7
3 "	69·9	70·6	71·7	66·1	69·2	79·0	37·5	63·6	76·6
4 "	61·5	65·1	65·5	57·3	69·2	72·6	35·9	55·3	70·0
5 "	53·6	57·7	56·5	47·0	69·2	71·2	31·2	44·6	59·9
6 "	48·6	49·5	50·3	41·1	53·8	69·8	29·7	41·3	53·3
1½ course only	28·0	30·2	30·3	20·6	30·7	42·5	26·6	16·5	36·0
2 courses	18·2	24·7	22·0	11·8	15·3	30·2	25·0	12·3	26·4
2½ "	15·2	22·0	18·6	8·8	15·3	25·9	23·4	8·2	21·8
3 " or more	12·9	17·4	14·4	5·9	15·3	20·9	18·7	7·4	16·7
Column	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*

Filtration of suspensions of *V. choleræ* were then made through varying thicknesses of kaolin deposited on silk, as given in Table II., thus showing that cholera bacilli can pass through kaolin.

Agar tubes were prepared with kaolin mixed in the agar in varying amounts. It was found that the presence of kaolin had no effect on the growth of the cholera bacillus.

As far as the above experiments go, it is clear that the presence of kaolin in the bowel can have no other than a merely mechanical effect on the cholera vibrio itself. This mechanical effect, however, may be instrumental in sweeping out a very large quantity of active cholera vibrios, and it should be remembered in using this treatment that the disinfection of the stools is essential; also that it is quite possible that many of the patients return home as cholera carriers.

Preparation of Toxins.

Half-litre flasks of alkaline peptone water were used, incubated at 37° C. for periods of 4, 6, or 14 days. The above medium was filtered by means of an exhaust pump through a porcelain candle. The filtrate was sterile, shown by planting on culture media. The hollow tube of the candle was scraped to remove the deposited bacilli, which, mixed with normal saline, were heated at 60° C. for an hour. Both the filtrate and the saline emulsion containing the dead bacilli were tested as follows:—

Pulp was spread thinly over a perforated plate and 100 c.cm. of a 10 per cent. kaolin suspension poured over this bed. The above liquids were filtered through by means of a vacuum pump. It was found that no indol reaction was obtainable with the filtrates obtained. Commercial indol, on the other hand, filtered through this bed. Tests were made as shown in Table III.

TABLE III.

1. Formalin and strong sulphuric acid	No colour with filtrate.
Filtered commercial indol solution and above reagent	Blue colour.
With unfiltered toxin solutions ..	Blue colour.
2. Glyoxalic acid, Strong sulphuric } and filtrate ..	No reaction.
" " and indol solution	Red.
" " and toxin solution	Red.
3. Nitric acid and filtrate	No reaction.
" " " indol solution ..	Red.
" " " toxin solution ..	Red.
4. Sod. nitro-prusside (fresh sol.) and filtrate ..	No colour.
" " " (fresh sol.) and indol solution	Violet, changing to green-blue.
" " " (fresh sol.) and toxins	Violet on addition of acetic acid.
5. Filtrate extracted with benzol and No. 4 test applied	No colour.
Toxin extracted as above gave characteristic indol reactions.	
6. Paradimethylamido-benzaldehyde, Alcohol, HCl., Potass. persulph. (equal parts) } and filtrate..	No colour.
" " and indol sol.	Pink.
" " and toxin ..	Pink.

The above series of tests were made as the fact of the "toxin" being held back by the filter bed while indol solution came through pointed to the possibility that the toxin giving indol reactions is not a true indol, but a larger molecule which is held back by the China clay filter, while the commercial indol, which has a small molecule and is in solution, can get through.

A further series of experiments was made to test the absorptive power of kaolin for "indol," as found in the *V. choleræ* toxin-peptone water culture fluid. Week-old *V. choleræ* toxin was taken and well mixed with equal weights of kaolin. Of this mixture 1 c.cm. was withdrawn every five minutes for an hour and a half and tested with Ehrlich's indol reagents. A standard colour series was made with commercial indol solutions of dilutions up to 0·0001 g. per c.cm. added to Ehrlich's reagents, and it was found that after centrifugalising 1 c.cm. of kaolin and toxin suspensions at five minute intervals no variation in the indol colour index was obtained, thus showing that the suspension of kaolin in *V. choleræ* toxin cultures had *no absorptive action on the indol in the culture.*

A further series of experiments was made to test the action of kaolin on ferments. Rennet and trypsin were used. (Table IV.)

TABLE IV.

	Result.
Rennet and milk	Coagulation.
Rennet centrifugalised and milk ..	Coagulation.
Rennet shaken with kaolin and milk..	Some delay in action.
Rennet and kaolin shaken at intervals *for half an hour.* Centrifugalised: clear liquid added to milk.	Considerable delay in action.
Rennet filtered through kaolin bed and filtrate added to milk.	No action.

The same experiments were performed with trypsin, and the digest of gelatin plates used as indication of action of ferment. The same results as above were obtained and it was found that trypsin filtered through kaolin beds had no digestive action on the gelatin plate. It was found that 3 c.cm. of a 10 per cent. kaolin suspension caused rapid death in a rabbit if injected intravenously. Death was caused by deposit of kaolin on valves and walls of the heart and subsequent clotting of the blood. Six c.cm. of a 1 per cent. suspension had no apparent effect on the rabbit. On post-mortem examination 24 hours later no kaolin could be detected in the blood. Intraperitoneal injections of 10 c.cm. of a 20 per cent. kaolin suspension in a guinea-pig caused death in 20 hours. Post mortem: signs of peritonitis. Masses of kaolin were present everywhere in the abdomen. The lower surface of the diaphragm and the omentum were thickly plastered with kaolin. Slide preparations were made of the mesentery and omentum, but it could not be demonstrated that the lymphatics were packed with the salt, though its presence, adherent to the cells, was obvious everywhere.

Toxins.

The culture used in the experiments given in Table V. was one from a fatal case of cholera in India. The vibrio was non-hæmolytic, agglutinated well, and gave typical reactions of a cholera vibrio. Half-litre flasks of alkaline peptone water were used. These were sterilised three times with an interval between sterilisation to remove all spore-bearing bacilli. The resulting toxins were examined at 4, 6, and 14-day growths. It was found advantageous to have wide-necked flasks so that as large a surface area as possible might be presented to the air. The resulting bacillary growth was moved each day by shaking, when it fell to the bottom of the flask and a new growth appeared. To obtain a virulent culture for growing the following method was adopted.

A rabbit was inoculated intra-peritoneally with one tube of 24 hours' growth of the strain mentioned above. On chloroforming in three hours' time it was found that all signs of the cholera vibrio had disappeared, and no growth was obtainable. Therefore passaging was then done through a series of five rabbits, each being killed two hours after infection, the growth cultivated on agar for 24 hours and the whole culture injected again. By this method a more virulent organism was obtained, a tube culture of which would kill a rabbit in 20 hours. One loop of culture killed in five days with progressive wasting.

A. Toxins were grown from cholera vibrio ..	No passage.
B. " " " " " ..	3 passages.
C. " " " " " ..	5 "

Finally:

D. Toxins were grown from the five passages *V. choleræ* injected into a rabbit, with *the addition of some of the four-day* toxins grown *from the five passages V. choleræ.*

The four strengths of "toxic fluids" were then investigated as follows:—

1. The toxic fluid was filtered through a porcelain candle by means of an exhaust pump. The filtrate, which was clear, was injected intravenously and intraperitoneally into two rabbits with no fatal results. Amounts up to 4 c.cm. were used.

stage of the disease, and, if necessary, treatment should be by intrathecal as well as intravenous injection.

In general paralysis the vessels are affected long before the appearance of symptoms. The nervous system is involved in 40 per cent. of congenital syphilitics, and signs usually appear before adolescence. In all diseases of the spinal cord the cerebro-spinal fluid should be tested for the Wassermann reaction. The speaker expressed the view that it is very likely syphilised arteries recover if treatment is begun early.

Discussion.

Prof. E. S. **REYNOLDS** (Manchester) approached the subject from the clinical standpoint, and commented on the protean character of the symptoms of visceral syphilis; in any condition which does not run a course typical of a recognised organic disease syphilis should be suspected. In a doubtful case examination of the eye and skin not infrequently reveals signs of old syphilitic disease. Syphilitic lesions are more often multiple than single. In the speaker's opinion the majority of cord diseases are not syphilitic. Too much reliance must not be placed on the Wassermann reaction; a positive result in the cerebro-spinal fluid does not necessarily mean nerve syphilis, and not 10 per cent. of all cases of syphilis develop either tabes or G.P.I. Spasticity is always very marked when it occurs in syphilitic disease. The chief syphilitic affections of the spinal cord are pachymeningitis, meningo-myelitis, acute myelitis, gumma, and Erb's spinal myelitis.

Dr. **JOHN COWAN** (Glasgow) showed lantern slides illustrating syphilitic disease of the heart and aorta. The diffuse myocardial fibrosis occurring in the early stages, gumma, diffuse fibrosis resulting from coronary disease, or the occlusion of a coronary orifice by syphilitic aortitis and early syphilitic disease of the aortic valve, are quite characteristic, but in many chronic diseases the cause is not recognisable. Any cardiac affection may be syphilitic in origin, he said, but its recognition in a particular case often depends on finding evidence of syphilitic infection, old or recent, in other organs. The Wassermann reaction is a good servant but a bad master, and should be used only as an aid to diagnosis. It is not a specific test from a serological point of view; a positive result is of value, but a negative is useless. Cardiac manifestations as a rule appear late, and only about 75 per cent. give a positive blood Wassermann. A case of aortic disease without mitral involvement arising in a patient between 30 and 50 years of age is most likely syphilitic, whereas aortic disease associated with a mitral lesion in a man between 20 and 40 years old is probably rheumatic. The majority of cases of heart block, myocardial disease and auricular fibrillation are not syphilitic in origin. Though too much must not be expected from anti-syphilitic treatment in cardio-vascular syphilitic disease, it is urgently required. Large doses of salvarsan are contra-indicated; moderate doses combined with long courses of mercury and iodide give the best results. No amount of treatment will remove thrombus from a vessel or restore dead tissue, but it is possible to improve the endarteritis.

Dr. **A. G. GIBSON** (Oxford) considered the diagnosis of syphilitic aortitis. Cases may be quite latent, an unsuspected patch being discovered post mortem. The "effort syndrome" may induce substernal pain and tenderness on pressure due to stretching of the aorta, an X-ray examination of which shows a wide shadow with an indefinite outline. Anginal pain may be due to coronary obstruction. Paroxysmal tachycardia may be the condition to attract attention. Aortic regurgitation is the best known sign and the easiest to recognise. Aortitis may cause a variety of abdominal symptoms, but in each group pain is induced when the blood pressure is raised, there is tenderness on deep pressure over the aorta and an increased width of shadow; the atheromatous aorta shows no such enlargement. Some cases do well on a solution of mercury and potassium iodide, and small doses of salvarsan repeated over a long period; salvarsan in ordinary doses is contra-indicated.

Dr. **IVY MCKENZIE** (Glasgow) stated that he had seen two cases of syphilitic nephritis amongst 1500 cases of syphilis during the last eight years. Both occurred during the "secondary" stage, and in each the albumin and blood cleared up with the disappearance of the rash. In the "outdoor treatment centre" vascular symptoms are rare, whilst nervous complications are relatively common—in the last 500 cases treated 40 returned with symptoms referable to the nervous system. He related a case which post mortem showed gummatous infiltration of the right ventricle, death having taken place six weeks after the onset of symptoms. He considers angina is due to aortic disease irritating the vagus and sympathetic nerve endings in the arterial wall.

Dr. **ISAAC HARRIS** (Liverpool) showed electrocardiograms from two cases of syphilitic myocarditis. In the case of a man aged 41, who was admitted to hospital with symptoms suggestive of gastric ulcer, the electrocardiograph revealed a want of conduction in the right branch of the bundle of His. His blood Wassermann was positive, and there was a history of syphilis contracted 20 years previously. Potassium iodide removed his symptoms and restored the cardiograph to normal in three weeks. He maintains that syphilitic and non-syphilitic disease of the heart may give rise to the same symptoms and signs, that iodide is very effective in localised disease of the myocardium, but mercury is more efficacious in generalised arterial disease.

Dr. **JOHN EASON** (Edinburgh) dealt with the anæmias of syphilis. The blood picture of "pernicious anæmia" was found in an infant 14 months of age, whose blood Wassermann was positive; the mother's serum also gave a positive reaction. He advocated the Wassermann test in all cases of anæmia in infancy both on the mother and the child. The blood picture of "pernicious anæmia" may also occur in the "secondary stage" of the acquired disease. He quoted three cases seen during the war, two of which recovered completely; in the fatal case, a man aged 36, mercury was of no benefit in treatment, and at the post-mortem the liver contained no free iron and no spirochætes were found in the spleen or bone-marrow. In the "tertiary stage" an anæmia with enlarged spleen simulating Banti's disease may occur. In one case resembling "pernicious anæmia" hæmosiderin was found in the liver and spleen.

Sir **CLIFFORD ALLBUTT**, in reply, briefly referred to angina pectoris. It is a very important symptom of aortitis, he said, whether syphilitic or not, and indicates disease of the tunica adventitia. The pain is often very trifling, and may be only a sense of oppression across the upper chest, with or without pain referred down the arm.

THURSDAY, JULY 21ST.

Asthma and Allied Conditions.

The opening paper was read by Sir **HUMPHRY ROLLESTON**, who stated that the diseases in the group of "toxic idiopathies" are hay fever, asthma, urticaria, angio-neurotic œdema, Henoch's purpura (or purpura with abdominal symptoms), eczema, and some other forms of acute dermatitis, some cases of acute gastro-intestinal disturbance, and some forms of croup. Doubtful examples are migraine, epilepsy, cyclic vomiting, and possibly gout. The various theories as to the causation of asthma were passed in review, and the evidence in favour of these diseases being anaphylactic phenomena considered; when this subject was discussed at the Birmingham meeting ten years ago the accepted view was that asthma was a "reflex neurosis," only the opener of the debate, the late Dr. G. A. Gibson, suggesting that "modern theories of anaphylaxis may in the future aid us in our understanding."

Do we now attach too much importance to hypersensitiveness in asthma to the neglect of a reflex side? In discussing ætiology, the predisposing factor of heredity was emphasised; with a strong family history a sensitiveness to several different proteins often appears. Whether hypersensitiveness may be

THE INADEQUATE ATTENDANCE OF THE MALE SYPHILITIC OUT-PATIENT.

BY R. E. ROBERTS, M.D. LIVERP., B.Sc., D.M.R.E., D.P.H.,

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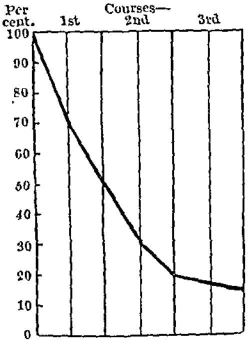
DURING an investigation at the Liverpool Royal Infirmary venereal diseases clinic, begun in 1918, on the effect of various forms of anti-syphilitic treatment upon the Wassermann reaction (which investigation has been continued since 1920 for the Medical Research Council), it was observed that the great majority of patients failed to complete their treatment, or even part of their treatment; in fact, only about 25 per cent. attended sufficiently regularly, even for a short period, to render their records of the slightest value for the investigation in hand.

An attempt has therefore been made to analyse carefully the attendances of new patients during the year beginning July 1st, 1918, in the hope of ascertaining the factors governing non-attendance and also of discovering remedies.

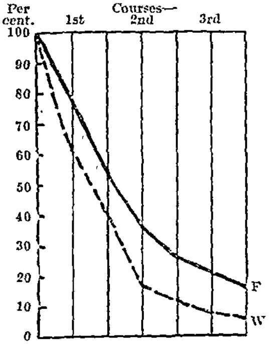
In Table I., and in the other tables and charts, the "first course," extending over three months, consisted of 6 intravenous arsenic injections and 8 intramuscular mercury injections, followed by 1 month's rest. The "second" and subsequent courses varied according to the patient's condition, but extended in each case over a period of 3 to 4 months.

CHART 1.



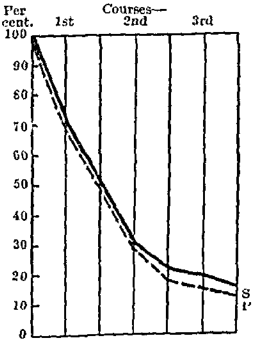
The chart shows attendances of 517 new cases of primary and secondary syphilis, demonstrating the rapid falling-off in attendances after admission.

CHART 2.



The chart shows the attendance of 197 patients with fixed local abode and 121 "wandering" patients, demonstrating that their fixity or otherwise of abode has a moderate influence upon subsequent attendance. (See Table II., cols. 8 and 9.) F, "Fixtures"; W, "Wanderers."

CHART 3.



The chart shows attendances of 109 cases of pure primary and 145 cases of pure secondary syphilis, demonstrating that the severity of the disease has very little influence upon the patient's subsequent attendance. (See Table II., cols. 1 and 3.) P, Primary; S, Secondary.

It will be seen from Table I. that 801 new patients suffering from syphilis were admitted during the 12 months. (Patients who were subsequently "transferred" to other hospitals or clinics have been omitted from the table as their inclusion would vitiate the results of this inquiry.)

Attendance of New Patients for Treatment and Observation.

In Table II. the attendances of the various classes of patients have been expressed in percentages. A glance at the table will reveal the rapid falling-off in attendances of every type of patient.

The patients who ought to attend for the longest period are those admitted in the primary and secondary stages; for they have, as a rule, received little or no previous treatment, and should attend for treatment or observation for periods varying from two to four years before they can safely be struck off the register as "cured." Their attendances are recorded graphically in Chart 1. We see that of these cases only 50 per cent. reached the end of their first course, 20 per cent. reached the end of their second course, 14 per cent. reached the end of their third course.

Consideration of Some Factors Influencing Attendances.

1. *Influence of Fixity of Abode upon Attendances.*—In a port such as Liverpool it is too readily assumed that those who fail to attend are chiefly seafarers, and their absence is therefore unavoidable. To ascertain if this were so new patients were divided into two groups: (*a*) "Fixtures"—those having an occupation which allowed of a permanent abode in the district; (*b*) "Wanderers"—those, such as seafaring men, bargemen, commercial travellers, variety artistes, &c.—whose occupation entailed a more or less wandering existence. The attendance of the two groups are given in Chart 2. The curves show that the nature of a man's occupation does not play the large part in his attendance behaviour one might anticipate. They incidentally demonstrate that less than 20 per cent. of patients with fixed local abode reached the end of their third course—a very discouraging discovery.

2. *Influence of Severity of Syphilitic Symptoms on Admission upon Attendance.*—It was expected that a man admitted suffering from generalised (secondary) symptoms would be more alive to the possibilities of the disease than one suffering from localised (primary) symptoms only, and consequently attend better. The attendances of patients admitted (*a*) in the primary stage, (*b*) in the secondary stage were therefore ascertained. (See Chart 3 and Table II., cols. 1 and 3.) It is seen from the chart that one's expectations were not realised, for there is very little difference between the attendances of the two groups of cases.

3. *The Influence of a Negative Wassermann Reaction upon Attendances.*—It was discovered that one of the commonest causes for the cessation of attendance was the patient's belief that a negative Wassermann reaction indicated recovery. When absentee patients who had been recalled by letter cards were interrogated, the majority replied, "My blood test was negative, so I thought I was cured." The relation-

micturition; muscular pains may be very misleading. One man had severe pain in the hand for four days, and a week later typical symptoms developed. The onset may simulate apoplexy. Few diseases have such a variety of symptoms; some only are of value in differential diagnosis. It is an infective process with the symptoms of such, but in addition there are those referable to infiltration of the central nervous system with lymphocytes, the perivascular dilatation, œdema, neuroglial proliferation and infarction. These pathological changes are situate more especially in the mid-brain, extending into the crura or pons, and often to a wider area, including the cord. All ages and both sexes are attacked, but especially middle-aged adults in the colder months of the year when influenza is common. There are very few instances of contagion. The disease has been produced experimentally and transmitted in rabbits and monkeys. The organism, which probably resembles that of poliomyelitis, has been cultivated. There is no direct relationship between acute poliomyelitis and encephalitis lethargica, but the question of the connexion, if any, between influenza and lethargic encephalitis is undecided.

The laboratory is at present of little help in diagnosis. The type of the disease seen in 1918 having altered considerably, the French symptom-complex of lethargy, fever, and ocular paralysis is seldom seen now. In diagnosis the following points should be considered: mode of onset, presence of prodromal symptoms, and fever. Of special symptoms the most important are ophthalmoplegia of central origin and acute onset, which may appear when the acute stage of the disease is passed; diplopia lasting a few days only is seldom met with in other conditions; nystagmus, varying in amplitude and rapidity, and not necessarily occurring in the direction in which the eyes are moved; blurring of vision, due to paralysis of accommodation; conjugate paralysis of upward movement of the eyes; lethargy or drowsiness; the mask-like face is only seen in this disease and in paralysis agitans; Korsakow's psychosis may be met with and various forms of involuntary muscular movement. In treatment very little advance has been made. Netter's method of producing a fixation abscess with turpentine has sometimes a striking result.

Dr. **DA FANO** (London) showed lantern-slides illustrating granules surrounded by a halo in nerve cells which he and Dr. Helen Ingleby have described in the central nervous system in fatal cases of the disease. The occurrence of these haloed granules has been confirmed by Dr. Bernard Shaw, and similar bodies have been found in rabies—a disease in some respects resembling encephalitis lethargica. He referred to a correspondence with Dr. A. H. Booth, of Victoria, who has seen actively motile granules in the blood and gland juices in cases of encephalitis lethargica, but Dr. Da Fano had been unable to stain these bodies in slides submitted for the purpose. Details of an acute case of encephalitis which died in three days, diagnosed during life as cerebral hæmorrhage, were given.

Dr. C. H. **MELLAND** (Manchester) said encephalitis lethargica was not the cerebral type of poliomyelitis, though the two infections were probably closely related. The majority of cases not being lethargic now he suggested "epidemic encephalitis" as a better name, or on account of the protean nature of the symptoms "encephalitis polymorphica." The study of the epidemiology of the disease is very imperfect, as many of the slighter cases are not recognised, and it is possible that these mild cases play an important part in the spread of infection. They show very few symptoms, and lethargy is as a rule conspicuous by its absence. He related a series of cases in which the first diagnosis proved incorrect—a woman of 26 whose illness began suddenly with ptosis and vertigo and drowsiness. She was thought at first to be syphilitic. One year later slight weakness of the internal recti alone remained. In a young boy whose illness began with severe headache a diagnosis of typhoid fever was suggested. He developed paralysis of the internal recti and double optic neuritis. It was three months before there was any improvement in the paralysis or neuritis, and a boy of 16 whose illness began with headache and weakness of the legs walked with a limp three months later. The importance of minor symptoms was insisted on, and a series of slight cases of the disease was briefly referred to.

At the termination of Dr. Melland's remarks Lord **DAWSON** declared the discussion closed, and the consideration of Renal Efficiency Tests (see report of Section of Pathology and Bacteriology) was proceeded with.

SECTION OF SURGERY.

WEDNESDAY, JULY 20TH.

This section, over which Prof. **RUTHERFORD MORISON** presided, opened with a discussion on

Acute Pleural Empyema.

Mr. **HENRY WADE** (Edinburgh), in introducing the discussion, said that so great was the incidence of this condition, and so wide was the experience in its treatment, that our practice was tending to become standardised; nevertheless, he felt confident that many new lines of thought might be brought up at that meeting.

In dealing with the pathology of acute pleural empyema, there were two factors to be considered—viz., "the seed and the soil." The commoner infecting organisms were the pneumococcus and the streptococci, and there were three paths of infection: (1) the blood stream; (2) the lymph stream; (3) direct extension. In his opinion by far the commonest of the three was the direct mass infection from a focus in the lung spreading outwards till it lay beneath the visceral layer of the pleura. He considered that in this respect the process was exactly similar to the mode of causation of peritonitis following acute appendicitis. If the condition was untreated, a natural cure might result by the localisation of the infection by pleural adhesions, and the dissection of the pus either outwards toward the skin, inwards toward the bronchi, downwards through the diaphragm, and the eventual spontaneous evacuation of the pus either through the skin of the chest wall, through a bronchus, or through the skin at a greater distance—e.g., as a psoas abscess. There was another rarer result—viz., calcification may occur in the empyema cavity, giving rise to a large calcareous plate beneath the ribs.

But inasmuch as the patient is only too frequently overwhelmed by toxæmia before such a natural cure, and because such a cure takes a long time, leaving, perhaps, endless troublesome complications in its train, we find abundant justification for surgical intervention in every case. In the past the usual procedure, notwithstanding local differences in technique, has been incision and drainage, but Mr. Wade was not satisfied with the present technique, which he considers has the following dangers: (1) the operative danger, which is largely an anæsthetic risk; (2) the dressing danger, which is that of mixing the infection; (3) the convalescent home danger, which is the failure to obtain full expansion of the lung.

In thinking over the subject in the search for an ideal operative technique, he was led to compare the treatment of acute infective processes in two serous and one synovial cavity—viz., the peritoneum, the pleura, and the knee-joint. He considered that the analogy between the three was so striking that the principles of treatment for the peritoneum and the knee-joint should be applicable to the pleura also. During recent years there has been a revolution in the treatment of sepsis. He would point two examples of this:—

A.—*The peritoneum.*—The following are the phases through which technique had passed: (1) the use of strong antiseptics to destroy the infection; (2) flushing out the whole cavity with saline; (3) gentle clearing up of infected material, with multiple tubes; (4) the removal of the primary focus, with drainage by one tube or possibly without drainage at all. This evolution in treatment has been brought about by three factors. In the first place, the clinical surgeon attending, let secrecy be the rule; but when they cease to attend and resist all efforts to reclaim them, let the law step in.

TABLE III.—*Illustrating the Effect of sending* 1, 2, *or* 3 *Letter Cards to recall Absentee Patients for Treatment or for Wassermann Test.*

In the early part of 1920, 219 absentee cases were written for; of these:

			%
No. of absentees written for once	133		—
„ „ „ „ „ „ twice	46		—
„ „ „ „ „ „ thrice	40		—
	219	=	100
No. who attended on receipt of 1st letter card ..	96	=	43·9
„ „ „ „ „ „ 2nd „ „ ..	20	=	9·1
„ „ „ „ „ „ 3rd „ „ ..	3	=	1·4
Letter cards returned:	119	=	54·4
(*a*) Wrong address given when registering ..	18	=	8·2
(*b*) Removed from address given when registering	5	=	2·3
No. who ignored letter cards	77	=	35·1
	100	=	45·6

Summary and Conclusions.

1. An analysis of the attendances of 801 new cases of syphilis admitted to the Liverpool Royal Infirmary venereal clinic during one year beginning July 1st, 1918, demonstrated that the attendance of these patients was extremely unsatisfactory. Of new cases of primary and secondary syphilis 50 per cent. reached the end of their first course, 20 per cent. the end of their second course, and 14 per cent. the end of their third course. If this state of affairs were allowed to continue it would be a menace to the public health and a waste of the public money.

2. Apart from failure to attend through ignorance, callousness, and lack of financial interest in treatment, the effect of three factors upon attendance has been specially considered by statistical methods. (*a*) Fixity of abode: This has a moderate influence; for absenteeism of seafaring men and other "wanderers" was only about 10 per cent. to 20 per cent. greater than that of the "fixtures." (*b*) Severity of symptoms on admission: This has very little influence; for the absenteeism of patients with primary syphilis was only about 2–3 per cent. greater than that of those suffering from the constitutional symptoms of secondary syphilis. (*c*) Positive or negative Wassermann reaction: This has a great influence upon absenteeism; of 203 cases of latent syphilis the attendances during the first three months were roughly twice as good in those admitted with a positive Wassermann reaction as in those admitted with a negative reaction. Obviously great stress should be laid in the instruction to patients that a negative Wassermann reaction does not mean a cure.

3. The sending of letter cards is a partial but valuable remedy for absenteeism, resulting in the recall of half the absentees. Thus 19 absentees were written for, 43·9 per cent. attended on receipt of the first card, 9·1 per cent. on receipt of the second, but only 1·4 per cent. on receipt of the third. 8·2 per cent. gave the wrong address when registering.

I am indebted to Dr. Ernest Glynn, Professor of Pathology, to whom this investigation was indirectly due, for much helpful criticism; and to Mr. F. P. Wilson, surgeon in charge of the Venereal Department, Royal Infirmary, for allowing me free access to the records employed.

HOSPITAL SUNDAY FUND.—On July 28th at the Mansion House, the Council of the Hospital Sunday Fund met to make their awards for the year, Mr. R. Holland Martin occupying the chair. The Fund amounted to £101,920, and the Council decided to distribute £100,170 to hospitals and dispensaries, the chief awards being as follows: Charing Cross Hospital, £2460; Great Northern Central Hospital, £2515; Guy's Hospital, £4655; King's College Hospital, £1320; London Hospital, £12,300; Middlesex and Convalescent Home, £1130; Royal Free Hospital, £2735; St. George's Hospital, £3710; St. Mary's Hospital, £2715; St. Thomas's Hospital, £3520; University College Hospital, £2115; West London Hospital, £2200; Westminster Hospital, £2220. Several other institutions received sums of over £1000; the Fund was smaller by £10,000 than last year.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF MEDICINE.

WEDNESDAY, JULY 20TH.

THE first session was given up to a discussion on

Visceral Syphilis,

with especial reference to the cardio-vascular and central nervous systems.

Prof. THOMAS BEATTIE (Newcastle), the President, in his introductory remarks recalled the last discussion of this subject in 1893. In those days syphilis was largely untreated, and in this town—seaport, military depôt, and industrial centre—they saw a large number of cases. In the army a man with venereal disease was either in hospital or in the ranks; if he had syphilis he was only treated in hospital until the primary and secondary stages were passed. When he became a reservist the strain of physical labour, added to the imperfect treatment of his syphilis, led to the frequent development of aneurysm, general paralysis, tabes, transverse myelitis, and peripheral neuritis, and more rarely syphilitic disease of the pleura, lung, liver, and pancreas. At the present time syphilis is detected by the blood test in many cases in which it was not previously recognised because there was no history of previous disease. Modern treatment can eradicate the disease. In the future the incidence of these conditions will be diminished and fewer cases of visceral syphilis will be seen, as there is less chance of these complications occurring in treated cases.

Sir T. CLIFFORD ALLBUTT, who opened the discussion, first dealt with the histology of syphilis, insisting upon the importance of the vascular changes, which are strictly comparable in "primary" and "tertiary" lesions—the disease is a disseminate lympharteritis. The rapidity of generalisation of the virus via the lymphatics was emphasised—a syphilitic septicæmia is soon established, characterised by fever, rashes, and anæmia; some of the rapid deaths reported in early syphilis after the injection of salvarsan may be due rather to syphilitic than arsenical poisoning. He said that the disease when it attacks the arteries begins in the adventitia, and the change is quite different from that seen in athero-sclerosis. It arises in the aorta as a periaortitic lympharteritis, which tracks through to the intima, in which it may spread upwards or downwards to the aortic valve and coronary orifices. If a valve cusp is affected it may be severed from its attachment. Atheroma rarely ends in aortic regurgitation, syphilitic aortitis frequently does, and is often combined with coronary disease. In 70 per cent. of cases of syphilis microscopical examination shows that the aorta is affected, and it may be at a very early stage. Angina pectoris may be an early symptom of this involvement. Syphilitic disease of the ventricles is not common; there is no direct evidence of a diffuse fibrosis save as a consequence of coronary disease. Certain cases of pulmonary fibrosis and bronchiectasis may be syphilitic; a diffuse induration of the lung either at the root or at an apex may simulate pulmonary tuberculosis, and the two infections may exist together. Bronchitis in a syphilitic subject should be carefully watched; gumma of the lung is rare. Syphilitic lesions of the alimentary canal below the œsophagus are seldom met with except in the rectum. Gumma of the kidney is rare, and it is doubtful if there is a true syphilitic nephritis. The central nervous system may be infected very early in the disease, long before any clinical symptoms arise, and this especially in those cases which show little "secondary" manifestation. Here the essential change is also a panarteritis. The Wassermann reaction in the cerebro-spinal fluid may be positive while that in the blood is negative, and a positive test may be found in the cerebro-spinal fluid in the absence of symptoms. Sir Clifford Allbutt urged that lumbar puncture should be performed at every the prognosis was good. He was glad to note that the general trend of opinion was toward early closure.

Method of Approach in Appendicitis.

Sir HAMILTON BALLANCE (Norwich) read a paper on the best method of approach in cases of acute appendicitis. The method described was used in those cases where the diagnosis was clear, for if there was any doubt a mid-line subumbilical incision was imperative. He considered that there were the following fundamental factors to be observed: (1) The shortest possible route must be ensured; (2) fullest possible view to be obtained; (3) surrounding viscera to be disturbed as little as possible; (4) removal of appendix in every case with very few exceptions. He showed a series of slides illustrating the steps of the operation which were as follows: (*a*) skin incision, well outside rectus, parallel to Poupart's ligament; (*b*) division of external oblique, half muscle and half aponeurosis; (*c*) division (in line of incision) through internal oblique and transversalis; (*d*) division of peritoneum; (*e*) search for appendix to inner side of cæcum, then to outer side, and then behind; (*f*) pelvis always explored for pus. He claimed that the pelvis could be easily drained through such an incision, and that he did not find ventral herniæ resulting.

In the discussion which followed Mr. HAMILTON RUSSELL, Mr. RUSSELL COOMBS, Mr. E. W. G. MASTERMAN, Mr. SOUTTAR, Mr. MCADAM ECCLES, and Mr. MAMOURIAN spoke, and in nearly every case disagreed on the grounds that the incision would weaken the abdominal wall and herniæ result.

Sir HAMILTON BALLANCE, in reply, said that even if ventral herniæ should follow they were very easily closed.

Intussusception.

Mr. EDINGTON submitted an analysis of cases of intussusception under his care during the years 1908–14:—

Sex.

Male, 27. Female, 8. (Male 77 per cent.)

Age.

Under 1 year ..	24	4 to 5 years ..	1
1 to 2 years ..	5	10 years	2
2 to 3 years ..	1	70 years	1
3 to 4 years ..	1		

Types.

Ileo-cæcal ..	7	Colic	5
Cæcal	6	Ileo-colic	4

Combined.

Ileo-colic Ileo-cæcal	3	Enteric Ileo-colic	3	Enteric Ileo-colic Ileo-cæcal	3

Gangrene .. 6.

Ætiology.

Meckel's diverticulum	2	Mobile colon ..	2
Enlarged glands ..	4	Nothing abnormal ..	27

Results.

Recoveries, 21 = 60 per cent. Death, 14 = 40 per cent.

Prognosis.

Enteric far the worst.

THURSDAY, JULY 21ST.

Mr. A. M. MARTIN (Newcastle) was in the chair, when a discussion on

Compound Fracture of the Thigh and Leg

was opened by Mr. NAUGHTON DUNN (Birmingham), who reviewed the treatment of compound fracture of the femur before the war. He recalled the gradual adoption of operative treatment in place of manipulation and splintage. The commission instituted by the British Medical Association before the war laid down as one of its findings that operation afforded the best means of obtaining a perfect functional result. The war soon caused an alteration of opinion, largely because of the gross sepsis present in war wounds. Many types of old splints were tried and many condemned, and it was left to the Thomas knee-splint to dominate the whole situation. It became installed as a part of the medical equipment of the most forward units, and its use saved many a life from shock. He quoted a series of 500 cases of fractured femur in his experience, of which only 11 cases had as much as half an inch shortening, and these were considered a disgrace.

Now the results of compound fracture were: (1) shock; (2) infection; (3) want of primary union; (4) secondary bone infection.

Bearing in mind these results, he had laid down regulations for the treatment of compound fractures as follows:—

1. Immediate fixation in a Thomas splint, as in the war.
2. Suspension of the splint in transport.
3. Treat shock, which according to Gray was aggravated by hæmorrhage, cold and pain, loss of fluids, particularly alkaline ones. He always used intravenous gum acacia or blood transfusions in all cases in which the blood pressure had fallen below 85 mm. For acidosis, alkalies intravenously and by mouth.
4. Operative treatment. Under gas and oxygen anæsthesia he opened up the wound, excised all damaged tissues, and closed with drainage wherever possible. If badly infected he left wide open and did a secondary suture later. He then set the fracture, ensuring correct alignment, immobility, and lack of compression of the limb.

He maintained that all these factors were fulfilled by using a Thomas knee-splint for all fractures of the femur excepting those in the upper third. These resulted in flexion and abduction of the upper fragment, and should be treated in a Robert Jones abduction frame or in a Sinclair net-bed.

In fractures of the shaft he pointed out that the position of deformity likely to occur was outward angulation and sagging at the site of fracture, and internal rotation of the lower fragment. He avoided these by putting up in a Thomas splint bent to 160°, with extension, the foot being held in a Sinclair foot-piece fixed on with glue. He suspended the splint by a weight and pulley to a Balkan frame. He advised early movement at the knee-joint with frequent X ray examinations. Usually union was sound by the tenth week and massage could be started, and then he got them up in a caliper splint, but he did not allow the bone to take the weight until X rays showed trabeculation of the new bone at the seat of fracture.

Fracture of the Tibia and Fibula.

Mr. Dunn said that in these cases the deformity was a valgus one, combined with failure of restoration of the normal tibial curve leading to flat-foot and genu recurvatum. If the fracture was of such a nature that it could not be replaced, and especially if there was a fracture involving a joint, operation must be undertaken. Other complications which might occur were limitation of movement due either to extra-articular fibrous changes or intra-articular adhesions. All these troubles may be avoided by early fixation in a Thomas knee-splint with early elimination of sepsis. In addition, a flexion frame must be fixed to the splint to allow of a range of movement in the knee. If stiffness occurred he insisted that graduated splintage was far superior to forcing rapid movements, and he emphasised the teaching of Sir Robert Jones—viz., that if ankylosis is inevitable each joint has its most favourable position.

In dealing with the sequelæ of these compound fractures of the lower extremity, he pointed out that the persistent sinus may be the most troublesome. These were due to: (1) the retention of a foreign body; (2) a septic bone cavity; (3) potential sequestrum not yet separated.

In these cases it was most difficult to decide the most favourable time for interference. He personally considered that it was essential that the patient should be in good general health, have no local reaction, no temperature, and no history of a severe reaction after previous operations. Even then he gave a prophylactic dose of sensitised streptococcal vaccine. He then proceeded to define the extent of the septic acquired, or whether its appearance for the first time in adult life is merely a "delayed action," was considered; constant contact, as in bakers with flour proteins, does appear to induce hypersensitiveness, but it is improbable that the condition arises de novo from absorption of foreign protein via the subcutaneous tissues or a damaged mucous membrane. Hypersensitiveness may first appear after an acute infection, and serum sickness may occur only in patients who have a transmitted natural hypersensitiveness to horse serum. Asthma begins in the majority of cases before the age of 45; sensitiveness to some protein is more likely to be revealed by a positive skin test in cases arising in the young than in later life, and when the attacks begin in infancy multiple sensitisation, particularly to food proteins, is not infrequent. The value of positive skin tests in the diagnosis of hypersensitiveness to protein is shown by the success of treatment—desensitisation by injection of the offending protein, avoidance of a food protein, or vaccines—based on the information thus provided. What significance should be attached to a negative reaction when symptoms suggest a specific sensitisation? The known forms of protein causing hypersensitiveness are very numerous—130 are employed at the New York Hospital, and there are probably still many unrecognised. In some cases giving a negative skin test bacteria play a prominent part.

The importance of prophylaxis and treatment by specific desensitisation by the hypodermic or oral administration of the offending protein was considered; a proportion of cases is improved by autogenous vaccine prepared from the sputum. The importance of the elimination of all septic foci was insisted on. On non-specific lines treatment by intramuscular or intravenous injection of peptone was referred to, and finally treatment by drugs.

Discussion.

Dr. JOHN FREEMAN (London) maintained that asthma is a product of hypersensitiveness and a nervous reflex; foreign protein is but one link in the chain. In hay fever the protein factor is the more important, but some nervous reflex is often the immediate exciting cause. An attack may be induced in susceptible persons by suggestion, bad news, strong light, emotion, &c. Reflex, protein, hereditary taint are all factors, and there are probably others. Bronchial asthma is in the same category as other "toxic idiopathies." Asthma and hay fever tend to run in families, but a summation of stimuli is sometimes required to induce an attack—e.g., horse asthma and hay fever may be combined—and such a patient only has asthma during the pollen season if he approaches a horse. The skin reaction given by grass pollens is enormously greater than the food protein skin tests. Infections play a very important part in the production of asthma, the focus may be anywhere in the body, and the exciting protein may be the bacterium, its toxin, or derived from tissue destruction. In testing the skin reactions it is found that the pollen of each kind of flower is different, whereas that of grass is common to all. Dr. Freeman described the technique of the skin reaction, and demonstrated various proteins dried on filter paper. In performing the test a small abrasion of the skin is produced as in Jennerian vaccination, the skin wetted with saline or weak alkali, and the protein-containing filter paper applied for 15 minutes.

At a later stage of the discussion, at the request of the PRESIDENT, Dr. Freeman added that he considered the ophthalmo-reaction to be very valuable as a means of detecting hay fever cases. There is no sensitiveness to grass pollen unless the patient gives a positive skin or conjunctival reaction. In treatment the dose of pollen injected must be cut down during the season.

Dr. MACKENZIE WALLIS (London) had found that a patient with intermittent hydrarthrosis and psoriasis which showed a definite periodicity was sensitive to her own synovial fluid. The fact that many cases of asthma showed a definite periodicity induced him to investigate the disease on similar lines. A case of periodic tobacco-smoke sensitiveness was described, and one due to egg albumin, in which an attack was induced by the application to the hands of an egg-containing embrocation. He had tested the skin reaction of 500 cases of asthma. About 40 per cent. show a positive reaction; the majority react to the pollens, followed by meat and fish proteins. A positive protein skin test is obtained in some cases of epilepsy—one case was mentioned in which a patient had a fit after eating white of egg in confectionery. The proteins for test purposes do not keep well in solution. In patients sensitive to food protein the omission of the offending article from the diet was the best treatment.

Mr. FRANK COKE (London) considered asthma an anaphylactic phenomenon. Many gastro-intestinal symptoms unsuccessfully treated by surgery are in reality due to hypersensitiveness to food proteins, and illustrative cases were quoted. It is possible the symptoms are due to shock produced by protein split products; histamine shock is very like anaphylactic, and the symptoms of anaphylactic and histamine shock vary in different animals. It may be that histamine is concerned in the production of asthma, and he would say that asthma is the result of poisoning by protein or protein derivatives. A short course of some food may be a cause of sensitisation to it; prolonged contact is another—e.g., bakers to flour—asthma in such cases may be due to the action of a specific ferment elaborated by the organism as a defence against the particular foreign protein.

Dr. A. E. GOW (London) stated the majority of patients with bronchial asthma that he had tested gave a positive intradermal test with Witte peptone, but not all individuals in whom the test is positive are asthmatic. While the best results of peptone treatment are obtained in those cases which do show a well-marked intradermal reaction, some of the others may be benefited; the stronger the reaction the smaller should be the initial dose for intravenous injection. Some cases of asthma and hay fever are extremely sensitive to intravenous injection of Witte peptone; transient urticaria and angioneurotic œdema occasionally follow. Peptone to many of these "toxic idiopathies" is a dangerous drug, it should not be given during a paroxysm, and its indiscriminate use is likely to bring discredit on what is, in certain cases, a valuable remedy.

At a later stage in the discussion Dr. Gow, at the PRESIDENT'S request, replied to certain questions raised relative to peptone therapy, and outlined a course of treatment.

Dr. JOHN F. WALKER (Southend-on-Sea) expressed the opinion that information obtained by general practitioners in these conditions should be collected in some way for examination by experts.

Dr. WARREN CROWE, Dr. JAMES CHALMERS, Dr. JOHN STENHOUSE (Toronto), Dr. D. G. HAMILTON, and Dr. GREENFIELD also spoke before Sir HUMPHRY ROLLESTON replied.

In the afternoon a demonstration of the Skin Tests in Asthma was given by Dr. MACKENZIE WALLIS in the Pathological Department.

FRIDAY, JULY 22ND.

Encephalitis Lethargica.

A joint discussion with the Section of Pathology and Bacteriology occupied the first part of the third session. Lord DAWSON OF PENN presided.

Dr. EDWIN BRAMWELL (Edinburgh), in the opening paper, gave a brief summary of the present state of knowledge of the condition. It was a disease new to living man, with widespread incidence and serious mortality. As the lesion is not confined to the brain, and lethargy is not a constant symptom, the nomenclature was criticised, but there seemed to be grave objections to "epidemic encephalitis." The onset varies; more commonly it is gradual with well-marked prodromal symptoms, less frequently is it abrupt. Common prodromata are lethargy, drowsiness, headache, tremors, diplopia, insomnia, difficulty in frame over pulley A then down to pulley B, thence to C, back to D, and thence over the bed-end to the weight (B and D are pulleys on the same axle-pin). The foot end is blocked up, and the leg rests in pillows.

Pulley A is attached to the crossbar of the Balkan, and B and D to the upright. Diagram B shows the lines of forces acting in a parallelogram, the resulting force being in the direction of the femur (the longitudinal force being twice that of the uplift).

Mr. Russell claimed that perfect alignment was obtained and maintained, however much the patient moved. So convincing was it, that if at the end of 24 hours the shortening had not been overcome, he was very much on the "qui vive," and any imperfection in position after 48 hours was an absolute indication for operation. He believed the Thomas knee-splint to be invaluable for transportation, but once the patient was in bed, it was unsound in principle, lacking in comfort, and unsuccessful in functional results. He showed conclusively that there is no injury to the ligaments of the knee-joint in extension via the tibia, for the extension does not affect them but only the long muscles reaching from tibia to pelvis. Heavy weights were not necessary, a fact proved by the fractures of the humerus, in which the weight of the forearm, &c., was more than sufficient, and if uncontrolled would cause appreciable separation of the fragments.

Sir HAMILTON BALLANCE thought the idea an excellent one, but personally favoured the Thomas splint; but he was of opinion that the factor of the greatest importance was the extension; the splint was of little import. He was in agreement with Mr. Russell that extension through the knee-joint had no deleterious influence on the joint structures. The amount of extension was greater in civil work than military because of the destruction of muscle in the latter. He used 15 lb. in wounds, 20-25 lb. in civil cases, and he preferred weight extension to fixed extension, and his experience of glue was unsatisfactory, owing to skin irritation. Calipers were efficient but quite unnecessary in civil practice.

Mr. ECCLES called for a definite ruling on the treatment of open fractures and on the value of antiseptics. He asked how Mr. Russell prevented external rotation of the lower fragment, and if he had any pressure complications from the sling.

Mr. DUNN, in reply, said that he was encouraged by the large majority in favour of the Thomas splint. He disagreed with Mr. Tubby, whose cases might have left Egypt in a satisfactory condition, but they did not stand transportation well. He personally found no difference between fixed and weight extensions.

Mr. RUSSELL, in reply, could not agree to the use of splints. With his apparatus nursing was easier than with a Thomas splint. External rotation was perfectly controlled. He quoted a case of his own with both femora fractured and treated by his method, which was up in ten weeks, away to convalescent home 12 weeks, rejoined at end of fourth month, and went through three more years of active service. The Thomas splint may be good for fractured tibiæ, but for the femur it was unsound in principle, as it added weight to the limb and depended for its efficiency upon pressure on the tuber ischii, and, therefore, if efficient, it was uncomfortable, and if comfortable it was inefficient.

The Bone Graft.

Mr. MARCUS MAMOURIAN (Ashton-under Lyne) read a short paper on bone-grafting. He said that although bone-grafting was now recognised as a most important advance in surgery, yet the fate of the graft was unknown or disputed. Ollier and Macewen were still the exponents of the two lines of thought. He was of opinion that the graft acted merely as a stimulus to bone formation, and agreed with Murphy that the graft was eventually absorbed. Bone growth was mainly subperiosteal and the graft atrophied. He agreed that transplanted bone could grow and the truth of Wolff's law of reaction to stress and strain was unquestionable. But a sense of proportion had to be observed in applying this law to grafts. It was well recognised that immobilisation of a part in plaster caused disuse-atrophy in the bones of that part. It was therefore absurd in graft cases, which are always immobilised, to expect the graft to grow while the recipient bones were atrophying. The good results obtained by Albee were admitted, but his conclusions were not acceptable. The speaker did not use intramedullary grafts as they caused pressure-atrophy of the recipient, and also blocked the medulla. Sclerosed bone was usually considered as quite unsuited to taking a graft, but in his opinion it received grafts very well. As was well understood there were two simultaneous processes going on, osteoblastic and osteoclastic; if the former was in excess, the new shaft was completed before the grafted was absorbed, but if the latter, then the graft was absorbed before new bone had appeared in any quantity.

In remarking upon Albee's contention that some spinal grafts of compact bone had become cancellous, Mr. Mamourian pointed out that there had been no such metamorphosis, but that the cancellous bone originated from the spine. He contended that grafts simply stimulated the osteogenetic cells of the recipient bone and periosteum to new growth. He went further in pointing out how much new bone formation there was in cases of chronic bone infections, and he contended that slight infection is a stimulus also to bone growth. This led him to present a new aspect of bone-graft surgery—viz., that it was not necessary to wait for all sepsis to subside before operating, but rather would he lay down this important fact—viz., that an infection of low virulence was of assistance to the success of bone-grafting, the truth of which he had proved in many cases.

In concluding, Mr. Mamourian showed a collection of most interesting X ray photographs, illustrating the points of his paper.

FRIDAY, JULY 22ND.

The third session, Mr. ARTHUR COOKE (Cambridge) being in the chair, was devoted to a discussion on the

Diagnosis and Treatment of Injuries of the Intestines.

Mr. G. GORDON TAYLOR (London) in his opening address alluded to two classes of injured intestines—namely, those caused by a severe, or even by a slight contusion of the abdominal wall, and those associated with perforating wounds. It was the former which presented such difficulties of diagnosis. He quoted the series of 132 cases recorded in 1908 by James Berry and Paul Giuseppi, and Zachary Cope's series of 44 additional cases up to 1912. The symptoms laid down at that time were: abdominal pain, local tenderness, rigidity, vomiting, rising pulse, marked shock, bruising of abdominal wall, diminution or loss of liver dullness. He maintained that "the prognosis is so intimately related to early diagnosis and to early operation that the case should be kept under observation, and the pulse counted every half hour; and I would submit that, whenever there exists the slightest suspicion of intestinal injury, the abdomen should be explored forthwith." He went on to say that retroperitoneal injury to the duodenum was sufficiently common to demand investigation in all cases. The toilet of the peritoneum varied with the amount of soiling, which, if limited, should be mopped up, and the abdomen closed without drainage. In cases of wide contamination the peritoneum must be drained, usually by a tube in the pelvis.

When dealing with perforating wounds of the abdomen the diagnosis was not nearly so difficult, nor was the line of treatment at all doubtful, for the results of expectant treatment were appalling, and the war results of early operation were encouraging. Signs and symptoms were often self-evident—e.g., the passage of fæces and flatus through the wound, persistent bleeding, or protrusion of omentum, or other abdominal contents; and again hæmatemesis, passage of blood per rectum, and very marked shock.

has realised by operative experience that the primary focus is the acute appendicitis, the acute cholecystitis or ruptured ulcer, &c., and has impressed upon the general practitioner the importance of early treatment. Secondly, the pathologist has clearly shown that the adhesions are defensive in nature, and that to break them down and irrigate the whole cavity is not only of no value, but of great danger. Lastly, a cytological examination has been of great assistance both in diagnosis and prognosis; for in his opinion the only true guide to a knowledge of the patient's reaction to the infection is the number of the large mononuclear leucocytes.

B.—*The knee-joint.*—In the same way the treatment of joint infections went through the following phases during the war: (1) the use of powerful antiseptics, which led to amputation; (2) the use of saline dressings on an open joint, which had the same ending; (3) drainage-tubes, which inevitably led to disaster; (4) excision of damaged tissues; (5) lastly, opening, evacuating, and immediate closing of the joint.

Mr. Wade, bearing in mind the close analogy between the peritoneum and the knee and the pleura, has modelled his treatment of acute pleural empyema on the same lines. He recommended that the pleura should be freely opened, all pus evacuated, care being taken that all loculations were broken down, and then the wound closed as early as possible. The opening in the pleura was a matter of some controversy as physiologists condemned the wide openings as practised during the war. Personally he made an opening just large enough to permit of a thorough examination of the cavity, and so planned that it would fall together when the tube was removed. He used a short tube and led away the discharge into a receptacle containing a disinfectant, but he took out his tube as early as possible, usually at the end of 48 hours. He realised that some cases could be aspirated satisfactorily, but the value of aspiration needed thoroughly reviewing. He also thought that the value of disinfection of the cavity should be fully tested. But he was convinced that the method he had suggested was the most satisfactory. The technique was exactly as laid down by Prof. Rutherford Morison during the war and could be summed up as (1) opening; (2) drainage; (3) early closure.

Discussion.

Colonel A. FULLERTON (Belfast) said that he and his colleagues in France would have agreed most heartily with Mr. Wade. He laid stress on the danger of drainage-tubes which, while allowing the escape of septic material, invariably introduced other organisms. It was due to this that so many knee cases were lost in the early part of the war. In gunshot wounds of the chest, he opened the pleural cavity, removed the foreign body, and closed the chest. If infection followed, he gave a fair trial to aspiration, which in many cases was successful; but if it failed then the chest had to be opened, disinfected with bipp or flavine, and then drained, but he dispensed with the tube as early as possible.

Mr. T. P. DUNHILL (London) raised three small points: 1. The possibility of immediate suture was always to be borne in mind. He evacuated the contents of the cavity not by swabbing, but by means of a Sprengel's suction pump, which he considered much more efficient. His cases in France usually healed after removal of the foreign body and primary suture, but he pointed out that, when aspiration was necessary, it should be done every day. 2. Some cases in hospital practice were of a doubtful diagnosis, in which pus was suspected, but not found with a needle. Here he strongly recommended an exploration of the pleural cavity just as one did an exploratory laparotomy. The chest should be carefully explored, and it was surprising how often pus was found in quite unexpected places—e.g., around the apex of the lung instead of at the base as had been diagnosed. 3. He considered that the most valuable anæsthetic was intratracheal ether, except in the most acute cases.

Mr. PURVIS said that his experience of wounds of the knee-joint in the East, which had been treated by the Rutherford Morison technique, was so uniformly good that he felt convinced that the application of the same principles to the chest could only have the most brilliant results.

Mr. G. H. EDINGTON (Glasgow) remarked that he would have been glad to have had more data concerning the infecting organism, because in his opinion the course of the case varied with the nature of the infection, those due to the pneumococcus clearing up the most rapidly. Again, those cases in which thick pus and fibrinous masses were present were of much better prognosis than those having thin watery fluid. He never had used antiseptics, but always drained; and in his opinion drainage-tubes were not the bogey that they are made out. He retained his tubes for 14 days, cut them flush with the skin, and strongly deprecated the use of tubing draining into a bottle. He did not agree to the analogy between the pleura and the peritoneum, for in the latter the contents were adaptable to the local condition, but in the chest only the lung was adaptable.

Mr. JAMES BERRY (London) raised two points of practical importance: 1. The technique in dealing with very ill patients with large collections. He had seen cases die because of movement during the anæsthetic. The patient was so placed that the affected side projected over the side of the table, and he operated from below. 2. After-treatment. He always covered over the whole wound with oiled silk, which acted in a valvular manner, and allowed discharges to be expelled during inspiration, but sealed the wound in expiration.

Mr. F. C. PYBUS (Newcastle) had been impressed by the high mortality in children, and advised the following steps in the treatment—viz., early diagnosis, large incisions with flavine irrigations, very careful examination of chest each day, much earlier treatment to expand the lung. For this condition he urged getting the children up sooner and letting them run about. He mentioned a recent communication from America, in which puncture and Carrel-Dakin irrigation had reduced the mortality to 2 per cent. He maintained that thoracotomy was much more dangerous than a laparotomy.

Mr. A. LUCAS (Birmingham) thought that treatment and prognosis largely depended upon the infecting organisms. He advised aspiration when possible, otherwise incision, but he objected to tubes. He used a local anæsthesia, and got his patient up early.

Mr. C. P. CHILDE (Southsea) mentioned a case in which the condition persisted because of a tube which had fallen into the chest.

Mr. H. S. SOUTTAR (London) insisted that attention to small details was of greatest importance. In reality these cases were favourable for treatment and he advised: (1) Patient to be placed in position before starting and not moved afterwards; (2) regional anæsthesia; (3) patient to be on the face almost in the supine position; (4) incision not far back, but its centre to be in the mid-axillary line; (5) drainage quite unnecessary; (6) incision will close, being a valvular one.

Prof. MORISON congratulated Mr. Wade on his paper, and was delighted at the comparison drawn between the peritoneum, pleura, and joints. It was one which he frequently made, but had not heard any speaker take such a line before.

Sir WILLIAM MACEWEN, Mr. A. M. MARTIN, Mr. W. J. HADLEY, Mr. MCADAM ECCLES, Mr. C. F. CUTHBERT, Colonel CONNOR, Mr. W. S. DICKIE, and Mr. A. COOKE also contributed to the discussion.

Mr. WADE, in reply, said that Mr. Berry and Mr. Souttar had taught him a great deal. He did not agree that the outlook of a case depended upon the nature of the infecting organism. The feature of the greatest import was the nature of the reaction of the soil to the seed. If a blood film showed that the organisms were being infested by the polymorphonuclear leucocytes and they in their turn were being destroyed by an excess of large mononuclear leucocytes, then that every injury to the abdomen must be treated as if it were a penetrating wound.

Mr. F. J. S. **HEANEY** (Liverpool) was greatly struck by Prof. Morison's remarks, and quoted a case of his own where a slight kick in the abdomen had resulted in a great rent in the jejunum. He remarked that obstruction from adhesions not infrequently followed.

Mr. D. **WILKIE** (Edinburgh) emphasised the attitude of the surgeon, who should always open the abdomen whenever any doubt existed.

Mr. E. F. **FINCH** (Sheffield) commented on a class of case not previously mentioned—viz., perforation of the intestine by foreign bodies within it. He quoted two cases of such injury by fish bones in the transverse colon.

Mr. **SOUTTAR** said that before operation was undertaken four conditions must be present—viz., first-class assistance, theatre arrangements, anæsthetist, and proper control afterwards. He mentioned cases in which fæcal fistulæ followed operation, and advised that short circuit held the only hope of cure.

Mr. **CHILDE** asked for information upon the greatest length of small intestine that could be removed compatible with the life of the patient afterwards.

Mr. **TAYLOR**, in reply, said that he believed the longest recorded resection was 18 feet, but his longest resection for contusions was 6 feet 6 inches. The lesson to be learnt was that all injuries should be immediately sent to hospital.

Mr. **CHILDE** demonstrated a method of resection of the stomach and intestines by means of heavy crushing clamps and the Paquelin cautery.

Demonstrations.

Mr. G. **GREY TURNER** (Newcastle) showed:—

(*a*) *Cleft Palates* (20 cases).—These cases were all well healed, and Mr. Turner demonstrated that some of them spoke quite well, others indifferently. One girl especially, who was operated upon quite late, spoke exceedingly well, and it was obvious that the functional result depended largely upon the intellectual standard of the patient.

(*b*) *Implantation of Ureters* (6 cases).—A full table of results is appended. It will be seen that the cases were those of complete ectopia or of epispadias with incontinence of urine. His operations were always done in two stages—first the left ureter, then the right. He considered that by leaving one ureter the patient is able to combat any pyelonephritis that may arise in the kidney of which the ureter has been transplanted. The infection having subsided and immunity established, the other ureter is transplanted. He divides the ureter about 1 to 2 inches from the bladder, and puts on the proximal end a Crile's clamp to avoid leakage. The distal end is ligatured, carbolised, and dropped back. The left ureter is implanted into the sigmoid flexure by a method similar to Witzel's gastrostomy. The right is inserted into the neighbourhood of the recto-sigmoid junction. His results are most striking when one considers that out of 8 cases 5 have complete continence, and 1 is incontinent at night only.

(*c*) *Liver Tumour.*—Mr. Turner then showed a boy who was admitted last February with a tumour in the upper part of the right abdomen. It was found to be a tumour in the right lobe of the liver and Mr. Turner proceeded to remove it. A wedge-shaped resection was done, including the gall-bladder, All that was left was the left lobe, the structures of the portal fissure, and the vena cava. The only bleeding of importance was from branches of the hepatic artery, and these were clamped as cut. The tumour proved to be a rare one, resembling a pure adenoma, but containing no ducts, and has been called a hepatoma. The boy, five months afterwards, appeared in the best of health.

Prof. **MORISON** demonstrated on cases of septic wounds, amongst them one of tuberculous disease in and around the tendon sheaths of the wrist. These had been treated with bipp and had healed well. He showed a series of cases of bone cavities treated as he has laid down and then filled with fat grafts. It was interesting to find fat grafts succeeding so admirably. Another series of cases was shown illustrating bone-grafting.

Cases of Intraperitoneal Implantation of Ureter into Pelvic Colon.

No.	Init.	Sex.	Before operation.		Date of opern.	Stages and time between.	Complication.	Result.	Period since opern.	Present condition.	Remarks.
			Age.	Condition.							
1	F.B.	M.	8/12	Total epispadias: incontinence.	Dec., 1912.	Two, 6 mths.	Whooping-cough.	C	8½ yrs.	In excellent health; no incontinence.	Never consulted doctor since operation.
2	E.T.	F.	22	Epispadias; incontinence.	Dec., 1914.	Two, 3 mths.	None.	C	6½ yrs.	Perfectly well.	Now Mrs. A. W. S. Has one child.
3	W.K.	M.	19	Ectopia vesicæ.	March, 1917.	Two, 3 wks.	Intestinal Obstruction.	C	4 yrs. & 3 mths.	Very well; has some incontinence at night.	Works regularly on a farm.
4	E.L.	F.	20	Epispadias.	May, 1917.	One.	Peritonitis & pyelonephritis.	Death.	—	—	—
5	V.K.	F.	6	Ectopia vesicæ.	Nov., 1917.	Two, 3 mths.	Extra-peritoneal abscess.	C	3 yrs. & 8 mths.	Very well.	Healthy schoolgirl.
6	J.T.	M.	13	,,	May, 1919.	Two, 2 mths.	Peritonitis from leaking ureter.	Death.	—	—	—
7	W.P.	M.	5	Epispadias; incontinence.	May, 1920.	Two, 1 yr. & 9 mths.	Extra-peritoneal abscess; urinary fistula.	C	1 yr. & 2 mths.	Very well.	Urinary fistula healed spontaneously.
8	N.B.	M.	13	,,	Jan., 1921.	Two.		C	6 mths.	Some suspicion pulmonary tubercle.	Second stage deferred on account of chest.

SECTION OF NEUROLOGY AND PSYCHIATRY.

WEDNESDAY, JULY 20TH.

At a meeting of this section, Prof. **ASHLEY MACKINTOSH** being in the chair, a paper on the

Diagnosis and Treatment of Borderland Cases

was read by Prof. G. M. **ROBERTSON** (Morningside Mental Hospital). Discussing the nature of the borderland, Prof. Robertson stated that on one side of the boundary was the region of the neuroses consisting of disorders presenting such symptoms as spasm, paralysis and sensory disturbances; while on the other side was the territory of the psychoses, which included such disorders as mania, melancholia, and dementia præcox. Between these no hard-and-fast boundary existed. The neuroses and psychoses cavity, and to do so took two X rays, one before and one after the injection of bipp under pressure. He showed lantern slides to demonstrate how far the lesions in the soft parts might extend, and he insisted that the removal of the whole septic tract was essential to the success of the operation. The steps in his operative procedure included: (1) excision of the sinus and tracts in soft tissues; (2) free subperiosteal exposure; (3) location of the bone cavity and converting it into a groove; (4) treatment of this bony groove with spirit and bipp; (5) soft tissues allowed to fall in and wound sutured up.

Discussion.

Mr. A. H. TUBBY (London) said that his war experience was confined to base hospitals, and he must admit to having had considerable difficulties with these fractures. Taken all round, the Thomas knee-splint was not favourable for all cases, the great drawback being that so much education in its application was needed before it was properly handled. They had favoured the Hey Groves technique, and had very good results. He had been much struck by the amount of traction necessary for the lower limb, and how well the limb stood it. Ten pounds had been used at the beginning and later 30–40 lb. Sinclair's glue was the best adhesive, and calipers were most useful in difficult cases. He had started using calipers with the gravest apprehension, but had been converted.

Mr. HAMILTON RUSSELL (Melbourne) remarked that the aspects of the case were so many, and that he would later deal with the mechanics of extension; therefore he would confine his remarks to the soft tissues. He agreed with Mr. Tubby's remarks on the Thomas splint, except that it was invaluable for transport. But did not share his liking for Hey Groves's work, and would particularly condemn calipers; and further he considered such heavy weights as quite unnecessary. He felt that we needed great discrimination in dealing with war experience and its lessons, especially with regard to adopting them into civil practice. The point of most vital importance was to avoid further damage to the tissues or weakening the natural resistance of the patient. For these reasons he deprecated the use of strong antiseptics.

Mr. MAX PAGE (London) would insist on the adoption of the new nomenclature—viz., "open fractures," not "compound fractures." He recognised three distinct cases of open fracture: (1) direct, in which the skin, muscle, and bone are all damaged at the site of injury; (2) indirect, in which the sharp fragments pierce the skin; (3) secondary, where skin sloughs over a fracture. He maintained that contamination and treatment varied widely in each. In the direct variety the infection was marked and liable to become a fulminating one, and in these cases it was necessary to excise the whole wound tract, including the infected bone ends. This was not always practicable because of shortening and the presence of main vessels and nerves in the wound. In the indirect variety the infection was superficial and the deep structures could only be infected by reposition of the bones. These cases should be fixed on a splint exactly as they were, until operation could be undertaken. Then the skin should be thoroughly cleansed, the protruding bone cleanly sawn off, fracture reduced, wound excised, and wound sewn up. He also added that primary amputation must always be considered in all direct fractures, and that internal splinting in these cases was undesirable. Tourniquets were condemned. He advocated much earlier physio-therapy than Mr. Dunn. Calipers and transfixion called for great care, and he considered that bad fractures of the tibia were most suitably dealt with in a plaster case with convenient interruptions.

Mr. WADE said that they were attempting to establish a routine for all these fractures—viz., immediate fixation in a Thomas splint without a tourniquet. The administration of anti-tetanic serum depended entirely upon the district the accident occurred in. He regarded splints as an occasional unfortunate necessity preferring support of the limb on pillows with a direct weight extension, with counter extension by the body weight. Massage and movement were of the utmost importance.

Mr. EDINGTON operated in every case, cleaned up the limb, irrigated the wound with carbolic lotion, and did not excise the wound. He used a half-box wooden splint for the tibial fractures. If results were not satisfactory in a week he never hesitated to use a plate, which he removed after four weeks. He disliked transfixion pins.

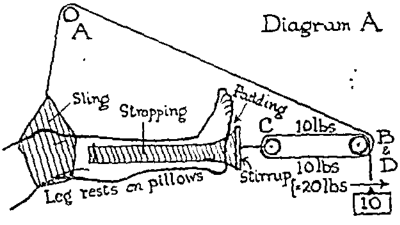
Colonel FULLERTON had seen so much of Major Sinclair's work that he was entirely convinced of its efficacy. He had difficulty with both glue and adhesive plaster, and had never hesitated to use calipers or pins, and as he had not seen injury to result from extension through the ligaments of the knee-joint, he put his calipers into the head of the tibia. Patients who had had glue and plaster and calipers unanimously preferred the last. He thought excision of wounds had come to stay, but he did not use antiseptics.

Prof. MORISON insisted on every case being opened up, and in support quoted a case of his own. A sergeant was admitted with a clean in-and-out bullet wound of the thigh with a fractured femur. The wounds were scabbed over, the temperature was normal, and the man felt fit. For ten days this continued, and on the eleventh he had a rigor and nearly died from acute osteitis of the femur.

Mr. RUSSELL then read his paper on the closely allied subject of

Theory and Method in Extension of the Thigh.

The speaker said that his interest in this subject was brought about years ago by seeing the son of a great friend, who had had a fractured femur, well treated by a practitioner. In spite of this the boy, after ten weeks, had non-union and 3½ inches of shortening. Why was there this shortening? He explained that shortening of the limb in fractures of the femur was due to the tone of the long muscles going from the pelvis to the upper end of the tibia. This tone or "physiological stretch," was maintained by the femur, and when once it was broken shortening occurred and, moreover, became progressive as time went on. Our aim, therefore, should be to pull out these muscles to their normal length. This was quite easy but for two factors: (1) active muscular contraction, due to fear, pain, &c; (2) weight of the limb and gravity. He had therefore devised a method of extension which, in his opinion, gave perfect results. It avoided splints and was most convenient for nursing purposes, and was absolutely comfortable for the patient.



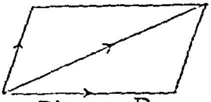


Diagram B

The procedure was as follows: A wide sling is placed around the knee, and a strapping extension placed on the leg (*not the thigh*) ending in a stirrup, the cord of which is attached to pulley C (see diagram A) A cord attached to the knee-sling passes to a Balkan

The close supervision sometimes deemed necessary for patients in whom suicidal tendencies might be suspected might be definitely hurtful and delay recovery. The choice lay between taking risks and a harmful measure of supervision, and risks sometimes had to be taken in the patient's best interests. The recognition of early cases was often difficult and early means of diagnosis was badly needed.

Dr. A. E. Carver (Birmingham) did not deal specifically with borderland cases. He believed that in the case of neuroses in pensioners the financial element retarded recovery, and was unfavourable to treatment. He thought that prolonged separation in an institution from the patient's home surroundings was undesirable and that as early as possible a return to work was essential. Cases of the kind described by Dr. Ivy McKenzie could not be classified, as they were all too complex in origin.

Dr. W. L. Ruxton (Newcastle) dealt with the difficulties of the general practitioner in dealing with early mental cases. The indications for certification constituted one of these. He thought that in early melancholics the presence of hallucinations of hearing was an imperative indication for control in a mental hospital. Often the machinery of certification, even the emergency certificate, was too cumbrous and slow, and the practitioner was not seldom compelled to send his patient to the workhouse infirmary to avoid the risks of delay.

Dr. Mary Sturge (Birmingham) expressed the view that physical factors were very important, and were apt to be overlooked in dealing with such cases. She quoted cases of depressed and discontented women who had been relieved and altered in disposition by the adoption of such simple measures as the use of a kidney belt, a pessary, or a vaccine.

Dr. J. Middlemass (Ryhope) pleaded for a modification of the existing law in respect of mental hospital treatment. For patients of the poorer classes voluntary treatment apart from certification was urgently required.

Dr. Mackie White said that legislation in the State of South Africa was far more enlightened than our own. There, a patient could voluntarily seek treatment in a mental hospital, and during the necessary period of stay in hospital could be maintained at the public expense.

Dr. W. R. Dawson (Dublin) said that in considering a borderland case, every aspect of the patient's life must be taken into account. Psychiatrists had long realised this, and it was now being discovered anew by non-psychiatrists. He agreed with Prof. Robertson that the dangers of suicide were greatest at the later stage of convalescence.

Dr. W. H. Bryce believed that an open mind was essential in dealing with early mental cases from the point of view of treatment. There was too little fusion of ideas, and treatment was carried out by disciples of different schools of thought along narrow lines. Physical and psychical symptoms might co-exist, and both had to be taken into account, while their relationship was often difficult to determine.

Prof. Ashley Mackintosh (Aberdeen), in concluding the discussion, said that errors of diagnosis in respect of borderland cases were too frequently made by neurologists, and many obvious melancholics were treated as simple neuroses with unhappy results.

Prof. Robertson, in reply to the discussion, defined melancholia as a periodic functional psychosis, and emphasised again its dangerous character. In such cases suicide was not impulsive, but it was long premeditated. The patient's friends should always be told of the possible dangers, and thus be made to share in the responsibility of deciding for or against supervision in a mental hospital.

Thursday, July 21st.

Dr. Harry Campbell (London) read a paper on

The Nervous Diathesis and the Blood.

The growth, structure, and functioning of the neurone depended upon its heredity and its environment. The environmental factors were plasmic and non-plasmic. The blood and the perineuronal lymph constituted the plasmic environment, the non-plasmic being synaptic and inter-neuronal. The state of the plasmic environment was responsible for whatever disease might occur to the neurone, the progressive deterioration of which during adult life depended entirely upon changes in the plasmic medium. Senility was thrust upon the nervous system by the plasma, and if this were to remain adolescent in its qualities senility could not occur. Plasmic defects might be inborn or acquired. Functional and organic nervous diseases were due more to inborn plasmic defects than to primary neuronal defects. Substances having a drug-like action were carried in the plasma and bathed the nerve cell. Two great groups of substances were present, nerve stimulants and nerve depressants. He thought that a congenital craving for alcohol depended upon the lack of these nerve stimulants, which the organism sought to make up from outside. The feelings and the emotional temperament were all determined by the blood. The endocrine organs all poured their secretions into the blood and thus influenced the nervous system. The various symptoms associated with abnormal blood states were briefly described.

Dr. George Riddoch (London) spoke of

Some Points in the Management and Treatment of Paraplegia.

The management of paraplegics consisted principally in the care of the bladder, rectum, and skin. The usual cause of death in such cases was urinary sepsis with toxæmia. After an acute spinal lesion, the bladder passed through an initial stage of paralysis with retention of urine, and then under favourable conditions, entered upon a phase of automatic activity. During the stage of retention, it was important to avoid both infection and distension of the bladder. With this in view the method of manual expression had been recommended, but it was not free from danger and did not completely empty the bladder. The safest and most effective method was to tie in a catheter, which need be changed only every three days. In this way repeated introduction of the catheter was avoided and the bladder was never allowed to distend. An essential preliminary to each introduction of a catheter was the washing out of the urethra, in order that organisms in its walls might not be pushed up into the bladder. Irrigation twice in the 24 hours with normal saline solution was recommended. In all such procedures the strictest aseptic precautions were necessary. When the bladder began to evacuate itself, it should be encouraged to do so, and when on irrigation signs of back-flow were seen, the bladder should be allowed to discharge its contents. The urine should be kept acid, and for this purpose acid sodium phosphate was used. If cystitis supervened, it might be necessary to perform suprapubic cystotomy. The rectum passed through the same two stages as the bladder. In the first, distension should be avoided by the use of paraffin, aperients, and enemata. The skin, while sound, should have a daily washing and friction with soap and water. The excessive sweating which often rendered its care difficult in cases of total transection, could be minimised by careful attention to bladder and rectum, distension of which was a fruitful cause of hyperidrosis. In the general management of cases, fresh air and the use of wheel chairs, as soon as the local surgical condition of the spine allowed, were important.

The Physiology of Symptom Production.

Dr. F. M. R. Walshe (London) read a paper on the Physiology of Symptom Production in Disease and Injury of the Nervous System. In spite of many notable recent advances in neurology, very little was known of the physiological processes underlying the manifestations of disordered function in the nervous system. As neurologists they had somewhat rigid views as to the principles underlying the dissolution of function in nervous disease. The hypotheses dominating neurological thought had ceased to be favourable to progress in some respects and were

He emphasised the danger of being misled by the site of origin of the wound, for he had known cases in which the wound was in the thorax, supraclavicular fossa, even the thigh, and yet the most serious lesion was intestinal. In this respect buttock wounds were very dangerous. Doubtful cases must be approached on the same lines as non-perforating injuries. He insisted that "In the abdomen there are no insignificant wounds. Every wound, whether penetrating or not, should be thoroughly explored, excised, and disinfected. In these days of improved resuscitation and operative technique the patient will suffer no detriment; nay, rather, with the excision of his parietal wound, his convalescence will be more sure, his wound will heal more kindly, and the surgeon will have that comfort which comes of assurance that no intraperitoneal injury has been overlooked."

Treatment of Injured Intestine.

Mr. TAYLOR brought forward an overwhelming array of war statistics to prove that suture was infinitely preferable to resection; at the same time it was necessary to look sanely on the subject, for it was obviously useless to cobble a crushed and lifeless piece of bowel, or one which had been widely detached from its mesentery. This specially held true for large intestine, where suture nearly always sufficed, but where resection was necessary occasionally for infarcted gut, &c. In dealing with the large intestine the surgeon must remember how frequently wounds were of a perforating type, and must be quite sure that no retroperitoneal infection of the cellular tissues had taken place. These were very sinister cases, for these tissues responded badly to infection, they were difficult of access, and the gut held sutures badly. Colostomy or cæcostomy, if done early enough, was of great assistance in these cases. He mentioned one other type of case, in which there is gangrene of the mucous membrane, with laceration of the muscle coat; and here nothing sufficed but a resection.

He then proceeded to deal with multiple resections. Previous to the war, if the gut were badly damaged in two places, the whole area of gut was resected, thereby sacrificing the intervening healthy portion; or one area was resected and the other cobbled up as well as might be. The war results, too, did not favour multiple resections; but in civil practice, double, treble, quadruple, and even quintuple resections were recorded. In his opinion the fatality of multiple resections was due not to the operative shock, but to the severity of the injury. He drew attention to the extreme fatality of duodenal injuries, and particularly wounds of small intestine combined with a lesion of the pancreas. Wounds of the jejunum were of better prognosis than those of the ileum. Wounds of the urinary bladder associated with intestinal injuries were also of bad prognosis.

In conclusion he asked that the lessons of those resuscitation wards of the casualty clearing stations should not be forgotten. Anoci-association and blood transfusion were invaluable methods of saving life, and had revolutionised the standards by which the operability of a patient was judged. It had been laid down that operations on patients with a pulse-rate of 120 were of very bad prognosis, and later on that no patient of a pulse-rate of 140 should be touched. But blood transfusion recalled many a man to a stage when operation afforded the means of saving his life.

Discussion.

Mr. BERRY said that he would confine himself to traumatic ruptures without external wounds. Much had been written on the three alleged causes of these injuries—viz., the crush, tear, and burst; the crush was far the most common, the burst being a pathological curiosity. The table shown was of interest.

He considered that diagnosis could and should be made earlier. The history was important, and one symptom was extremely important—viz., a point of intense continuous pain—and when this was combined with local tenderness and rigidity an immediate laparotomy should be done. The shock was not due to the perforation per se, but to some associated injury—e.g., to cœliac plexus, or the flooding of the peritoneum with intestinal contents. The reason for the absence of peritoneal flooding in so many cases was that the intestine became spasmodically contracted just above the perforation. This was impressed upon him in the case of a Russian soldier who had sustained an injury 14 hours previous to operation. On exploration no soiling of the peritoneum was found, and the gut was contracted above, but handling during the examination caused relaxation, and a great gush of fæcal contents. He considered absence of liver dullness a sign of fatal prognosis.

	Ten London hospitals.		The Zeidler clinic.	
	1893–1907.	1908–1912.	1897–1910	Total.
Numbers	132	41	52	
Operations	81	30	40	
Operative recovery	17	9	8	
Duodenum	23	5	1	29
Jejunum and ileum	92	37	48	177
Colon	10	2	3	15
				231

Clinically he recognised three types of case: (1) Rupture of all coats at the time of injury; (2) secondary rupture, where the peritoneum was intact and the patient would walk into hospital; (3) rupture of gut and other injuries. In treatment he advocated a sufficiently long incision to enable a thorough examination of the abdominal contents, repair by simple suture, local sponging of peritoneum if necessary, and drainage if much soiling. He considered the after-treatment most important. He propped his patients up and gave nothing by the mouth for four days, along with continuous drop-saline per rectum.

Mr. V. Z. COPE (London) associated himself with Mr. Gordon Taylor's dictum that all wounds of the abdominal wall must be treated with the gravest suspicion. He laid down that probing of a wound in the parietal wall should almost constitute malpraxis. He recommended a laparotomy of every case, combined with excision of the wound. In cases with contusions of the abdominal wall he considered that there were only two signs of real assistance (hæmorrhage and spinal and thoracic injuries excluded): (1) pain, (2) alteration in pulse. The pain is of a fourfold nature—viz., that complained of by the patient, that seen in the face, that elicited on pressure on abdomen, and that elicited by rectal examination. He did not agree with Mr. Berry's pessimism over absence of liver dullness, and quoted a case of Mr. C. A. Pannett that survived operation 30 hours after rupture. Vomiting, too, may be a guide to peritoneal injury. He drew attention to primary meteorism as a complication to be guarded against. He considered that results had shown marked improvement; of the last five cases at St. Mary's Hospital all had recovered.

Mr. HAMILTON BARCLAY (Newcastle) confined his remarks to gunshot wounds. He advised a mid-line or paramedian incision, with systematic search of the whole abdominal cavity. He quoted a case of a bullet wound, in which the wound of entry was over the right hip-joint. There were two wounds of the cæcum, four holes in the first inch of the jejunum, and the bullet was in the spleen. Hæmorrhage should always be dealt with first, and evisceration was to be avoided as far as possible.

Prof. MORISON considered that one very essential factor had been missed—viz., the education of the general practitioner. He quoted cases of trivial injuries accompanied by transient shock with a stage of apparent complete recovery followed later by collapse. He insisted that the sequence of events was as follows: (1) There was always shock at the time, however slight and transient; (2) a reaction stage always followed; (3) stage of peritonitis or hæmorrhage. He laid down that it must be a general rule

Reviews and Notices of Books.

Mental Hospital Manual.

By John Macarthur, M.R.C.S., L.R.C.P., Senior Assistant Medical Officer, London County Mental Hospital, Colney Hatch. London: Oxford Medical Publications. 1921. Pp. 215. 15s.

In his preface Dr. Macarthur says that his book is an endeavour to place before a newly joined medical officer in a mental hospital those methods of treating the insane which experience has proved to be satisfactory. This purpose is successfully accomplished, provided it be remembered that the hospital is a large public institution in which careful organisation and elaborate routine are absolutely necessary. In an institution with some 2500 patients of all kinds, with authority centralised in a single medical superintendent, measures must be taken to safeguard the patients, prevent accidents, and fix responsibility should anything go wrong that would be unnecessary in a small hospital. The book contains, printed in full, the wording of no less than 20 notices and charts, and all these in addition to the multifarious statutory notices required by Act of Parliament and the Board of Control. Among these are forms dealing with diet, medicine, seclusion, weights, struggles, sleep, suicide, escapes, fits, visitors, tuberculosis, dysentery—by which it is seen that much reliance is placed on written instruction and reports. But before sympathising with the young medical officer inclined to rebel against so much routine, the nature of the work and the size of the institution must not be forgotten.

The first paragraph of the book quotes the late Dr. Charles Mercier as saying that a mental hospital exists "for the detention under care and treatment of persons who are inclined to be melancholy or turbulent, have tendencies to injure themselves or others, and are unable to protect themselves from ordinary sources of danger." Dr. Mercier used the word "asylum," and his definition is sound, but when Dr. Macarthur misquotes him by using the term "mental hospital" he fails to notice an important distinction which affects the whole point of view. The central thought of the one is protection and detention, and of the other treatment. This is no pedantic refinement, for evidently Dr. Macarthur means asylum throughout and not hospital. Nowhere in his book does he mention voluntary patients. It is never imagined that persons disturbed in mind should themselves apply for treatment and remain of their own free will. It is of course true that the law is so interpreted that voluntary patients cannot be received into our county and borough institutions, but a medical man writing such a manual as this should have a wide outlook, and not accept the existing procedure as satisfactory. Would there not be less prejudice against these most efficient institutions if there were a constant stream of voluntary patients passing through them? They could then rightly be called hospitals. The critical reader cannot but wish that there was less asylum and more hospital throughout the book. The impression is given that the new patient is engulfed in an inexorable machine, magnificently designed, perfect in its organisation, but lacking in soul and sentiment. Speaking of the admission of new cases, we are told, "in the case of a female the patient is stripped, weighed, measured, and put to bed in the presence of the head nurse, the charge nurse of the ward, and the relieving officer's female officer, in order that all marks, bruises, etc. . . . may also be seen by the representative of the guardians." This is not a hospital method of receiving a new patient, and cannot be helpful in treatment. One wonders what a sensitive depressed patient would think of her reception, and whether many do not resent this routine as a needless indignity. Again, the printed rules say that a patient cannot be visited until a month has elapsed after admission. Surely this may sometimes be a real hardship, whilst fixed rules of this kind create much prejudice against asylums. In two places the author recommends the "thorough and sudden searching" of all the patients in the ward on account of the tendency to collect rubbish and contraband articles. Whilst realising this may be necessary sometimes in certain wards, an impression is given of an arbitrary interference with personal freedom that seems unnecessary. Indeed, it almost seems that the guiding principle throughout the book is "safety first." Because once an ingenious and misguided patient made a screw-driver out of a stay-busk, surely the peace of mind of generations of patients should not be disturbed in order to prevent a repetition. Safety first is a comfortable formula for officers and staff, but is often positively hurtful to patients. How often it happens that convalescence begins when patients are trusted. There is good reason to believe that maniacal states may continue indefinitely under irritating surroundings, and similarly depressed states continue until rigid supervision is relaxed.

These criticisms are directed perhaps more against the existing system of great county asylums than against the subject matter of this book. If Dr. Macarthur had not strictly limited himself he could no doubt have said much on the wider subject. It would have been interesting to hear what he thinks of centralised management, which places all authority in the hands of one person, and more, what of the system by which several of these asylums are grouped together, with the result that liberty of action is curtailed by standardised routine. There is, moreover, no reference to research or the coördinated study of mental disease, nor is the subject of study leave mentioned. The importance of the diploma of psychological medicine and its indirect value in arousing interest in the scientific aspect of the asylum officer's work is ignored.

The administrative duties are excellently dealt with, and the volume is full of sound practical advice. Straightforward dealing with the insane is advocated whole-heartily—e.g., any attempt to give drugs by subterfuge or in food is condemned—medicines should only be given openly, and if refused in serious cases, instead of deception, the stomach tube should be used. He urges the value of good food, and suggests that it is both wiser and more economical to spend money on suitable diet than on drugs. As a practical guide to the treatment of the insane the book is valuable, and we advise all who undertake the treatment of mental cases in private to read it, so that they may learn the high standard of treatment that is given in our public hospitals. But in dealing with excitement and sleeplessness too much reliance seems to be placed on drugs. Nearly all newly admitted patients have been already overdosed with sedatives, and yet the use of paraldehyde and hyoscine is discussed on the day of admission "if it be necessary to quieten the patient." When advocating the use of 2 minims of croton oil in half an ounce of castor oil in acute mania with constipation, the author adds, "it need hardly be pointed out that this drug (croton oil) should be used as medicine, and no idea of punitive treatment should ever be suggested with regard to its use." And in speaking of cold baths a similar remark is made. It should be unnecessary to say these things, but the painful impression is given in another column that such episodes have happened.

It is to be hoped that Dr. Macarthur will soon be asked to prepare a new and revised edition, for the book is a valuable contribution to medical literature.

Experiences of an Asylum Doctor.

With suggestions for Asylum and Lunacy Law Reform. By Montagu Lomax, M.R.C.S. London: George Allen and Unwin. 1921. Pp. 256. 12s. 6d.

Dr. Lomax's book is dedicated to the insane poor in sympathy with their sufferings and in the hope of alleviating their hardships. Since it is an attack both passed gradually from one to the other, though not all neuroses developed into psychoses. Further, this borderland was not a negligible strip of territory but a broad and extensive domain, which from its influence upon human life was a most important one. By the term borderland cases was meant those in which some form of disorder of the mind played an important if not an essential part. In some of these the symptoms themselves were clearly mental; such symptoms were phobias, anxiety states, and compulsive obsessions. Serious cases presenting mental symptoms amounting to legal insanity were excluded from the group, being definitely across the border. Even those cases which presented symptoms of an apparently purely physical character, when studied more carefully from within, were often found to be mental in origin and capable of cure by purely mental agencies. Therefore the borderland group included all cases presenting symptoms of a mental order, except those of certifiable insanity. It might be desirable to limit this large group by the exclusion of cases in which the symptoms were slight and evanescent. Three considerations arose from these conclusions. All symptoms of ill-health apart from those arising from structural alterations in the tissues might be considered as mental in origin. Pain was a purely mental symptom, and even when due to organic disease might be removed by purely mental means. Further, organic changes might depend primarily upon mental or emotional factors. Therefore all symptoms must be looked at from a mental point of view. Secondly, the value of psychotherapy had been found to be almost unlimited. This most primitive form of treatment had always been successful when applied with discrimination; it was the only form mentioned in the Bible, and was instinctively administered by every mother to her child. The psychiatrist had systematically practised it for over a century. Pinel, Tuke, Conolly, and Clouston had all employed it in their work, though they had never systematised their methods, designated them by any particular name, nor had they bound themselves by any single method of approach. Their psycho-therapy was mental healing pure and simple, was followed by excellent results and was not based upon abstract speculations. Finally, the number of nervous cases now regarded as functional had enormously increased. The neurologist had formerly been inclined to reproach the psychiatrist because the latter was unable to demonstrate by histological methods the physical basis of delusions, but the neurologist now recognised that many of his own cases were purely functional and mainly mental.

The Rôle of the Psychiatrist.

These considerations led with a convincing directness to the important part the psychiatrist should play in the treatment of functional nervous disorders and borderland cases. Yet it could not be said that he occupied the position he ought in this respect. How many of our great hospitals had a psychiatrist on their staff? Undoubtedly the neurologist suffered as much from this divorce as did the psychiatrist.

There were three points of particular interest in the study of borderland cases from the psychiatric point of view. The first of these dealt with the possibility of suicide in patients with mental depression. Practically every melancholic was at some period of his illness a potential suicide. Moreover, the risk was greatest during the later stages of convalescence when the patient was least carefully watched, and had the best opportunities of committing suicide. Melancholia was the commonest form of psychosis and the least obvious departure from the normal. The melancholic patient was usually quiet, had some insight into his condition, and could talk sensibly on subjects unrelated to his depressive ideas. A patient suffering from melancholia was, therefore, a typical borderland case, and was also the most dangerous form of case, as far as danger to life was concerned, which a medical man could be called upon to treat. Therefore, the help of a psychiatrist should be called for in all doubtful cases of depression. Prof. Robertson suggested that were his audience to forget all that he said with the exception of the one statement that practically every patient suffering from melancholia was a potential suicide, even then his lecture would not have been given in vain. What added to the distress of the suicide of a melancholic patient was the fact that all healthy melancholics made good recoveries.

His second point was that of certification when a case ceased to belong to the borderland group. The law was not concerned with disease, but with conduct, and when this was so affected by disease of the mind that the patient was not fit to enjoy full liberty, then we had the medico-legal condition known as insanity. In melancholia the refusal to take food or remarks to the effect that life was not worth living might be valid reasons for certification.

The Emancipation of the Mental Hospital.

Finally, he entered a plea for the emancipation of the mental hospital and for the introduction of a new status for it. The Acts regulating the admission of patients into mental hospitals both in Scotland and England were antiquated in spirit and had outgrown their usefulness. They were now a curse which weighed heaviest on the poor. Why should not borderland cases, cases of mental disorders in their early and most curable stages, receive all the advantages of accommodation and treatment given in our modern mental hospitals, from which they were at present debarred by the necessity of preliminary certification and legal commission? Private patients were seeking admission voluntarily to such hospitals as Craig House in increasing numbers and exceeded the certified patients. They came at an earlier and more curable stage, one corresponding to the borderland case. If the lunacy laws were amended so that patients of small means could also enter mental hospitals for appropriate treatment, a new era of progress would be entered. Simple notification would provide all the legal security such patients needed. Then the borderland, which after all was merely an artificial legal distinction, would disappear, and our mental patients would be able to seek treatment without fear of the reproach which they now believed to attach to them.

Discussion.

Dr. IVY MCKENZIE (Glasgow), referring particularly to military cases, stated that the 1200 cases which had passed through observation wards under his charge might be divided into three categories: those in whom toxic factors predominated, those who were mentally defective, and a group of amnesic cases. The first two groups did not respond to any form of psycho-therapeutic treatment, and although they often expressed themselves as feeling better after it they did not return to work, which, after all, was the only test of value. In the toxic cases there was a history of some infection, the results of which needed treatment on ordinary general lines as a preliminary measure. The amnesic group responded to psychotherapy.

Dr. HELEN BOYLE (Brighton) emphasised the importance of unhappiness as a factor in the production of neuroses and psychoses. Unhappiness should be regarded as an abnormal condition and treated accordingly. If a patient's occupation in life was uncongenial and a source of discontent, he or she should be advised to change it for some more pleasant mode of life. General hospitals should contain special wards for borderland cases. The patients should not be subjected to the ordinary inelastic discipline, but should be kept amused and allowed considerable freedom in the matter of seeking occupation and amusement, and should have ample and special nursing care. No case was simple in its origin, but arose from numerous factors, hence no single method of treatment could be infallible. Rest in bed was an important factor in treatment.

Dr. BEDFORD PIERCE (York) said that such treatment as was suggested by the previous speaker was commonly impossible on the grounds of expense, and was certainly not accessible to the poorer classes.

taking the bite; the strength and rigidity of dentures; and the general methods of their retention. The author insists that dentures must be designed and constructed to avoid as far as possible injury to the gum margins, and we are pleased to see that he does not ignore springs as a useful method for retaining them. The work should prove of value to the practising dentist, who will find information therein which will help him to smooth away most of the difficulties he meets with in the adaptation of dentures.

Local Anæsthesia. Its Theory and Practice in Dental Surgery. First edition. By NORMAN BLACK, L.D.S. Eng., Lecturer on Dental Surgery and Pathology, Dundee Dental School. London: John Bale, Sons and Danielsson. 1921. Pp. 73.

COCAINE as an anæsthetic in dental surgery first came into prominence about the year 1887. The general use of the drug, however, fell into abeyance owing to the extreme toxic effects which at times followed its use. With the introduction of drugs with less toxic properties and improvement in the technique of administration, local anæsthesia has slowly gained in favour with dental practitioners. In this useful little book the author describes concisely the technique for the production of local anæsthesia by the infiltration or nerve-blocking methods. To the dental practitioner anxious to acquire a knowledge of local anæsthesia we can cordially recommend Mr. Black's excellent little book.

JOURNALS.

Journal of Pathology and Bacteriology, Vol. XXIV., No. 3, July, 1921.—Studies in Heterophile Antigen and Antibody, by T. Taniguchi. Tissues from a variety of animals will, when injected into rabbits, cause the production of hæmolytic immune body for sheep corpuscles. These heterogenic antigens occur in the guinea-pig, horse, dog, tortoise, &c., but not in the ox, pig, man, goose, frog, &c. Organs may contain them while the blood corpuscles of the same animal may not. The heterophile antibodies thus generated react with the lipoids of the tissues, especially the lecithin fraction, but these lipoids will not act as antigens nor will the proteid residue which remains after extraction of the lipoids, the natural proteid-lipoid complex being required.—On Acute Yellow Atrophy of the Liver and the Fatty Infiltration of the Liver and Kidneys which Results from the Action of Certain Poisons on the Liver, by A. G. R. Foulerton. The author describes material from three cases of poisoning by trinitrotoluene, seven cases by arsenobenzol compounds, and single examples poisoned by diphenylchlorasine, antimony tartrate, and corrosive sublimate. Analyses of fat are given, also estimations of the distribution of arsenic in the tissues where its high concentration in the suprarenals is noticeable.—The Development of the Female Phase of the *Leucocytozoon Syphilidis*, by J. E. R. MacDonagh. The author gives further details of the appearances which he interprets as being phases in the life-history of the parasite of syphilis.—On the Pathology and Pathogenesis of Spirochætosis Icterohæmorrhagica, by C. Basile. The author gives an account of the disease in guinea-pigs which adds little to the description in Martin and Pettit's monograph. He thinks the hæmorrhages are more important than others have supposed and that they largely account for the jaundice.—A New Method for the Staining of Bacterial Flagella, by the late H. G. Plimmer and S. G. Paine. The original must be consulted for the details of what appears to be an easy and successful method.—Notes on the Histopathology of Typhus Fever, by A. C. Stevenson and A. Balfour. A study of sections from five cases of fatal typhus in the Caucasus obtained by F. E. Reynolds, with a useful summary of the observations of others. Special attention is drawn to the single layer of mononuclear cells in the perivascular spaces in the brain. With regard to the discovery of Rickettsia-like bodies, the authors note that they have found small diplococcal forms which might well be the parasite only in the nerve cells of the cerebrum, the vessels of the brain and lung, the cells and vessels of the splenic pulp, and the Kupffer cells of the liver.—The Effect on the Guinea-pig of Deprivation of Vitamine A and of the Antiscorbutic Factor with Special Reference to the Condition of the Costochondral Junctions of the Ribs, by F. M. Tozer. An extensive histological investigation of the material used by Dr. Chick and her colleagues in their nutritional inquiries at the Lister Institute. Deprivation of fat-soluble or antiscurvy vitamin leads to marked changes in the bones, growth stopping, and the whole structure becoming depauperated. There is no definite difference in the mild cases; in scurvy, however, the changes proceed to complete disorganisation of the costochondral junction with much secondary fibrosis.—The Sizes of the Red Blood Cells in Emphysema, by C. Price Jones. Examining 20 normal persons, 22 cases of emphysema, and 15 cases of cardiac failure, the author finds by precise methods that the mean diameters of the red corpuscles are 7·2, 7·7, and 7·2 μ respectively. Statistical analysis shows that the difference is far beyond any error of the method. The cardiac cases show that the large size in emphysema is not due to increased acidity due to circulatory failure. In one case studied in detail it was found that the size fluctuated with bodily activity as it does in normal people.—The Lesions Produced in Rabbits by the Inoculation of Streptococci Isolated from Rheumatic and Other Lesions in the Human Subject, by W. W. C. Topley and H. B. Weir. The authors show that it is possible to produce in rabbits, by inoculation with streptococci derived from cases of acute rheumatism, lesions which reproduce many of the features of the disease in man, and that similar lesions may be produced by the inoculation of streptococci obtained from sources which there is no reason to associate with rheumatic infection. The authors discuss, but do not solve, the doubts which these observations raise with reference to the existence of a specific *Streptococcus rheumaticus* and a specific disease acute rheumatism.—A Rabbit's Kidney Affected with a Parasitic Mould, by F. J. F. Barrington.—Observations on the Wassermann Test, Using a Method of Prolonged Fixation at Ice-chest Temperature, by E. J. Wyler. The method is more sensitive, but there is apt to be a weak non-specific fixation.—On Heterophile Anaphylaxis, by T. Taniguchi. Symptoms apparently anaphylactic in character may be produced by injecting into guinea-pigs the serum of rabbits containing heterophile antibodies. The serum of some animals contains heterophile antibodies, hence it is possible that some cases of anaphylaxis may be due to the inoculation of antigens of which the individual has had no previous experience.—The Syphilis Precipitation Test of Sachs-Georgi, by N. Yoshinare. In 1575 parallel tests the answers coincided in 90 per cent., discrepancies are more numerous in treated (19 per cent.) than in untreated (7 per cent.) cases.—Differentiation of the Streptococci, by H. W. Crowe. Further examples to show the value of chocolate blood agar for which the recipe is given. The streptococci isolated from the roots of more or less healthy teeth are usually of several different kinds.—Diffuse Carcinomatosis of the Stomach with Metastases, by G. M. Findlay.—Aldehydes as Mordants in the Staining of Fats and Lipins, by J. Lorain Smith and T. Rittie. Formaldehyde, acetaldehyde, and benzaldehyde act as mordants in staining fats and myelin by Weigert's method. Pure solutions have no action, the presence of some polymerised aldehyde is necessary.—The Production of Purpura in Birds and Amphibia by Inoculation with Thrombocyte Antisera, by J. C. G. Ledingham and H. M. Woodcock. Sera prepared in rabbits by repeated doses of thrombocytes from pigeon blood cause local purpura when inoculated into pigeons and a great diminution in the number of thrombocytes in the circulating blood; this affords further evidence that these elements of the blood are homologous with mammalian platelets.

becoming traditions. Among the most fruitful of guiding principles was undoubtedly Jackson's theory of the dissolution of function in the nervous system. According to this, every case presented a dual symptomatology—negative or defect symptoms, and positive or release symptoms. These two groups, with a third small group of irritative symptoms, were commonly considered to include all manifestations of disease. Head and Rivers had added a phylogenetic factor to this hypothesis. They believed that the "lower levels of evolution" remaining after some destructive lesion represented what had been normal activities of the nervous system at an early stage of its phylogenetic development. Thus "protopathic sensibility" and the "mass reflex" were to be regarded as approximating to the normal sensori-motor reactions of some hypothetical primitive animal. In general, phylogenetic hypotheses were entirely speculative, and the view prevalent among continental neurologists that abnormal reflex reactions were reversions to arboreal activities of pre-human ancestors met with a not unexpected reply in Prof. Karl Pearson's view that our forebears were never arboreal in habit. The view that almost all bodily ailments were psychical in origin vied with the phylogenetic school of thought in present popularity. The confusion of psychological and physiological categories by those who sought to establish psychogenesis as the solution of all our difficulties often led to grotesque conclusions, such as that of Jelliffe who stated that the overflow of psychical "energy" into the "somatic pathways" of the nervous system led immediately to the lesions of disseminated sclerosis. In general, it might be urged that before we had recourse to the exclusively verbal resources of the psychologist in the attempt to determine the causes of disordered function in the nervous system, physiological factors should first be excluded.

As an example of the importance of physiological factors, the psychical and neurological symptomatology of anoxæmia were described. The sensitiveness of the nerve cell and synapse to oxygen deprivation had long been known, but had never been seriously considered by the neurologist as an important factor in the production of disordered nervous activity. Physiological experiment, confirmed by clinical experience, showed that the initial reaction of the nervous system to minimal grades of anoxæmia was the development of an increased excitability. Clinically, so-called "irritative" symptoms were often manifestations of this condition. A symptom-complex closely resembling that of tetany was readily produced in the normal individual by a short period of forced breathing, which resulted in a relative anoxæmia. The mass reflex of spinal man was considered as a phenomenon possibly dependent upon this cause, and it was pointed out that reflex responses could be obtained in the spinal animal under suitable grades of anoxæmia, which appeared identical with the mass reflex of man. In conclusion, it was urged that neurologists, despite the clamant exhortations of the psychogenetic school, could not afford to neglect physiological factors when attempting to determine the causes underlying disease of the nervous system, in favour of the allegories and verbal researches of clinical psychology.

Dr. CARVER read a paper on

Epilepsy from the Psychological Standpoint.

Our views on epilepsy had within recent years undergone considerable widening. Epilepsy was a syndrome rather than a disease, and the convulsion of epilepsy was no longer allowed to dominate our conception of the condition. The study of the epileptic personality had afforded much new and important knowledge and had shown that the epileptic might be recognised at an early stage of his malady before any convulsion had occurred. In the causation of epilepsy, psychological, physiological, anatomical, and other factors had all to be considered. The views of Pierce Clark were then discussed. The personality of the epileptic was characteristic. He was egocentric, selfish, erratic, and moody. It was impossible to predict his behaviour from day to day. The fit was a regressive phenomenon. In the treatment of epilepsy it was of the first importance to study the personality of the patient, who was essentially a mal-adjusted individual, and to help him to adjust himself to his environment. Treatment on these lines was full of possibilities, while the customary routine bromide treatment had little to be said in its favour.

Dr. DOUGLAS ADAMS (Glasgow) read a paper on

The Early Diagnosis and Treatment of Disseminated Sclerosis.

The colloidal gold reaction in the cerebro-spinal fluid was a test of early organic nervous disease of the greatest value. Disseminated sclerosis gave constantly a "paretic" curve. In the treatment of the disease he had obtained favourable results in some cases by the administration of novarsenobillon and by mercurial inunction, though as the observations were of less than a year's duration the possibility of remission apart from treatment could not be excluded. No ill-effects followed this antisyphilitic treatment. He had conducted some successful inoculation experiments in the sense that animals inoculated with material from human cases of disseminated sclerosis developed paralytic symptoms. However, no histological investigation of the lesions underlying the paralyses in the experimental animals had so far been conducted.

In a short discussion following this paper, Dr. FARQUHAR BUZZARD stated that he favoured antisyphilitic lines of treatment, especially in respect of arsenical compounds, for disseminated sclerosis. It was important that treatment should be long persisted in. In the matter of experimentally produced paralyses in inoculation animals, he thought that unless the specific lesion of disseminated sclerosis could be demonstrated no conclusions could be drawn from the clinical observation alone.—Dr. J. CRUICKSHANK (Aberdeen) stated that in a somewhat extensive experience of the colloidal gold reaction he had never found a positive result except in neuro-syphilis and disseminated sclerosis. To differentiate the two a Wassermann test must also be carried out.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee held on July 12th 20 cases were considered, and £244 voted to 16 of the applicants. The following is a summary of some of the cases relieved :—

Widow, aged 70, of L.R.C.P. Edin. who practised in Somerset and died in 1917. Applicant was left quite unprovided for on the death of her husband, and was helped by a brother-in-law, but he is now dead. She has been living on her savings, and they are now exhausted. Two sisters allow her £36 per annum, and board and lodging cost 25s. per week. Voted £18 in 12 instalments.

Daughter, aged 61, of L.R.C.P. & S. Edin. who practised in Filey and died in 1895. Applicant lost all her belongings through a fraudulent solicitor. She used to earn a little as a journalist, but cannot get work now and appeals to the Fund to help her. Rent and rates £33 per annum. Voted £18 in 12 instalments.

L.R.C.P. & S. Edin., aged 70, who practised in London and Cheshire, but now unable to work owing to paralysis agitans. He is dependent on his wife, who earns £3 5s. per week as a clerk. They are living with applicant's father-in-law, who has a pension and who is also helpless, and pay £2 per week for their board and lodgings. Voted £26 in 12 instalments.

Widow, aged 68, of M.R.C.S. Eng. who practised at Southam and died in 1882. Owing to chest and heart trouble applicant has not been able to earn anything for the last five years. For the past two years she has been living on proceeds of the sale of the furniture; these have now gone, and applicant asks the Fund to help her. She has been living with a married daughter, but cannot do so any longer, and her son allows her £12 per annum. Voted £26 in 12 instalments.

Widow, aged 41, of M.B. Irel. who practised at Enfield and died in 1920. Applicant left with four children, ages 5 to 16. The second boy, aged 14, provided for by uncle. The eldest son, aged 16, is consumptive, and has just returned home from a sanatorium. Applicant has sold her furniture, and is now living in rooms. Since September, 1920, she has received £114 from investments. Voted £18 in three instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

not explained, while the plumber and sanitary engineer and the medical officer of health have all to be considered here. There is no reference to any hygienic activity directed towards school habits, hours, and environment, the hygiene of learning and the effects of fatigue. But all the vast mass of knowledge which we are now acquiring ought to have its outlet, with practical results of greater importance than many things which will be catalogued in the school reports. For, at very large cost, much useful work has been started, and the inquisition of the Board of Education should mean that during the next five years an enormous advance will be made in the provision of such preventive measures as feeding, open-air schools, nursery schools, school baths, provision for the crippled, epileptic, and special scholars, as well as extension of curative measures in medical, surgical, and dental treatment, almost everywhere reported as being insufficient. The school nurse has proved herself, and should become, the general bond between the school and the home. And during the coming period of activity we may look for greater help from the public. Some may ask—Is all the official louse-catching worth the cost? Is ringworm the deadly thing some of the reports suggest? The answer is that only by making these preventable conditions prominent can the medical profession teach the public to help themselves. Doctors and parents should establish ideals and help each other to set up standards of reference and comparison. The standard of hearing, by the way, adopted in these reports seems to be hearing the forced whisper at 20 feet. This looks like a confusion between feet and metres. We do not want, however, to pick small holes in the official work, but rather to urge the Board of Education to think of large policies. We look to the Medical Department of the Board to establish standards and to plan work of permanent benefit to humanity.

Medical service for the growing child can be far too strictly confined by medical inspection and treatment, subordinate to officials. These will have other interests and be wanting in the expert knowledge required for the appreciation of the relations between modern medicine and hygiene and the education of the growing child. Generally speaking, the reports of the local medical officers of health show too little expenditure on real school hygiene, want of method in estimation and comparison, and too much outlay on the trivialities of administration, often, indeed, a mere cataloguing. Health of the people is a commodity which can be had if we pay for it. It can be bought cheapest in childhood. It is of more value than any other commodity to the people of these islands, who, on the average, pay so heavily in health and years of life for their industrial supremacy. The medical staff of the Board of Education have an enormous opportunity before them.

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The Proper Place of Embryology.

It may be said in a broad way that human embryologists differ from general embryologists in that the former deal mainly with organogeny, whereas the latter are concerned largely with questions of more general and evolutionary interest. In this way, and also because they have undergone medical training, human embryologists are ready to see the connexions between their observations and those of the clinician or pathologist. Sir Arthur Keith, in his popular lecture at Newcastle-upon-Tyne, delivered at the recent meeting of the British Medical Association, showed that the healing of wounds is not a manifestation of a power acquired during life, but of one that is inherent in us from the beginning, and inherited by us from the lowest forms. So he terms "evolutionary wounds" those clefts and hollows which are closed in and covered over during embryonic life—a bold terminology at first sight, but one of which the essential justness becomes apparent after very little reflection. Embryologists must be struck by the similarity between the processes they are watching and those which, occurring at a later period in life, are termed pathological; but, as a rule, the matter ends there. For, owing to our ignorance of the causes which underlie growth and development, the observations are worth little save perhaps for the bolstering up of some theory. The phenomena of growth are dependent on much beside mere contiguity and mechanical processes, and we know practically nothing of these other factors. They appear to have some relation to those of regeneration, such as we see in lower vertebrates, and this faculty seems to be merely a modification of the more generalised power of complete regeneration which is found in certain invertebrates and among plants; it is, therefore, a very old property of living organisms, and one which, traced back, is apparently connected with the foundations of development of the whole body. Perhaps, then, this power, which Prof. Keith so admirably describes in a suggestive address, may be a modern representative of the force making the double embryo of the divided echinoderm egg; or we may even come to look on the scar of the amputation line as the equivalent of the regenerated limb of the dismembered newt.

But such pleasant fantasies do not help us very much in the day's work, nor have they (as yet) any practical bearing on the consideration of disease or injury by the pathologist. It is not so, however, with the matters of fact and observation which formed the basis of Prof. Keith's lecture, and they make a strong plea for closer coöperation between the embryologist and the pathologist. The student, or the work-a-day doctor, has little idea of the value of embryology among the foundations of pathological anatomy; it is fairly safe to say that, with the exception of such things as hare-lip and cleft palate, spina bifida, or certain malformations of the external genitals or of the heart, he does not trouble to recognise the existence of any connexion between developmental and pathological processes and conditions. He may, if pressed on the matter, go so far as to admit the possibility of a "developmental failure" or something of that sort, but he has no clear idea of what he means or implies by the phrase. Yet it might be said with some justification that embryology has at least as much to do with a comprehension of pathological anatomy as any other single science. It would be good for pathologist and embryologist to work together for the advancement of both; the pathologist might have some light thrown on dark places, and the embryologist would be encouraged to proceed with his elucidation of detail to definite purpose. Thus between the two the inquiry could be pushed back a step or two, even though there would remain for solution the innumerable mysteries of life and its reactions.

A necessary preliminary to this is that the teaching of embryology in the schools should undergo a change, and the dreary subject which goes by that name in examinations be altered to some purpose and made into a live study. Practical courses in embryology must go further than casual investigation of the segmentation of a frog's egg and the early stages of the private life of a chicken, and the student in general and in detail on the whole of present-day asylum administration, it is relevant to inquire with what equipment the author addresses himself to his task. Dr. Lomax is not a regular member of the asylum medical service; he tells us himself in his preface how he came to be interested in asylum work. A life-long student of psychology, and having retired from general practice, he applied when war broke out for employment in a large county asylum, at which he remained for two months, being transferred later at his own wish to a second asylum, one of the largest in the country, where he remained for nearly two years, his fellow officers being a Dutchman, an Australian, and an Irishman. It was therefore as a medical man of mature age and without special experience that he approached asylum life. The book is addressed to the general public, and would, he says, have been very differently written had it been addressed to the medical profession.

Dr. Lomax freely admits that those concerned in asylum administration have themselves regretted the grave defects and abuses which have crept in, but which cannot now be rectified without far-reaching administrative and legislative reforms; and he mentions especially the valued work of the Medico-Psychological Association. The delay in carrying out reform he attributes to lack of cognisance of the facts on the part of the public, and to their ignorance of the reasons for its necessity. The author divides his book into ten chapters, dealing first with asylum administration in general and the problem of insanity, going on to describe in detail the wards and general asylum routine, the various forms of restraint, the system of workshops and outdoor labour, the dietary of the inmates, the position and duties of the medical superintendent, the status of the assistant medical staff, the attendants and other officials, concluding with two chapters of a constructive character in which he sets out the legislative reforms which he desires to see and the ideal asylum as it might exist when these reforms have been carried out. When the book was written, shortly after the conclusion of the war, the author hoped that these reforms were within the range of practical politics, but he now fears they must perforce be relegated to more peaceful and prosperous times.

We need not quote in detail the author's indictment. He simply describes in plain terms what he saw and heard during his office, and assumes it to be typical of asylum practice. If this is so, asylum patients in winter are allowed to get wet in the airing courts, they have no overcoats, and the increase of bronchial and rheumatic affections is due to preventable exposure. Patients are isolated for punitive purposes by the attendants. Croton oil in 2-minim doses is the recognised method of taming troublesome or refractory cases. To the author, in fact, the whole system of pauper asylum administration in this country—he admits exceptions in the case of individual asylums—exists to detain and restrain demented paupers, never, except accidentally, to treat and, where possible, cure them. Dr. Lomax apparently overlooks the fact that the Board of Control exists primarily for protecting the liberties of the insane patient and not to deal with his treatment. Suggestions in regard to the latter can be made to the visiting committees, but it rests with them whether they are followed or not.

Dr. Lomax's proposals for legislative reform include the abolition of the word "lunatic," the provision of treatment for the early stages of insanity without certification, the revision of the constitution and power of visiting committees, drastic curtailment of the authority vested in the medical superintendent. The administrative reforms recommended include the gradual conversion of the barrack into the villa or cottage system, the appointment of a visiting medical staff, a more comprehensive and varied dietary, provision of open-air and isolation treatment of consumptive cases, revision of the rules for keeping case-books, and a more comprehensive use of parole in suitable cases.

Dr. Lomax's indictment of asylum administration is severe in the extreme. We should hesitate to accept much of it as an uncoloured statement of personal observation did it not agree in important respects with the contents of a pamphlet entitled "Life in a Madhouse" (National Labour Press, price 3*d.*) from the pen of a war-time male attendant. Allowance must be made for the painful impression made on untutored minds by continued contact with the saddest forms of human experience. We can hardly doubt either that inquiry will follow or that it will be welcomed by asylum superintendents, many of whom know the value of public interest and are anxious that all the facts of asylum life shall be properly appreciated. Some of the author's statements may prove to be unfounded except as isolated occurrences. Others may rest on false deductions, but enough remains to justify a searching inquiry, which cannot fail to benefit both the medical staff and the sick poor under their care.

AMŒBOID MOVEMENT.

By A. A. SCHAEFFER, Ph.D., Professor of Zoology, University of Tennessee. Princeton: University Press. 1920. Pp. 156. 10*s.* 6*d.*

IN this readable volume the author has collected together a great number of observations, mostly made by himself, on the mode of locomotion in the different kinds of amœbæ. The streaming of the endoplasm is regarded as essentially the same phenomenon as the streaming which is familiar in plant cells. A special result of this streaming is the formation of a temporarily differentiated ectoplasm which, while not necessarily resulting from streaming, is essential for locomotion. Outside the ectoplasm is a third layer, functionally if not morphologically distinct from ectoplasm, whose existence is best studied by watching the movements of extraneous particles that have stuck to it; this "surface layer" moves independently of the ectoplasm and of the animal as a whole, and is activated by changes in surface-tension. From a very large experience in observing their behaviour the author seems loth to believe that the amœba is an automaton whose activities are demonstrably due to external stimuli, and he appears to be inclined to give it credit for a tolerable amount of intelligence and free will. Interesting observations, illustrated with good diagrams, lead Prof. Schaeffer to the conclusion that the wavy path of the amœba's progress represents a projection of a helical spiral on a plane surface. He extends this by observations on ciliates, spermatozoa, flagellates, blindfolded swimmers and walkers, to the generalisation that moving organisms in which orientating organs are absent or not functioning always move in orderly helical or true spiral paths. The route of the amœba is made up of segments of circles, and is strikingly similar to the tracks which men make in their attempts to regenerate footpaths straight across newly ploughed fields.

DENTISTRY.

Prosthetic Dentistry. A Text-book on the Chair-side Work for Producing Plate Dentures. First edition. By DOUGLAS GABELL, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon to the Royal Dental and Charing Cross Hospitals. London: Henry Frowde and Hodder and Stoughton. 1921. With 58 illustrations. Pp. 237. 12*s.* 6*d.*

THIS book "deals with the chair-side work for fitting ordinary dentures in the natural order for such work, discussing each step as it is taken," and it is the outcome of the author's many years' experience as a practitioner and teacher. The book opens with an excellent account of the indications for and against removable and fixed appliances. There are chapters on the methods of obtaining impressions of the mouth;

at operations in the Mayo Clinic between January, 1910, and July, 1920. During this time 4189 fibromyomatous uteri were removed, of which 332, or 7·9 per cent., contained adenomyomata. Dr. Mahle regards von Recklinghausen's theory of the origin of tubal adenomyomata from the Wolffian and Müllerian ducts as untenable, and considers that these tumours are the end-product of an inflammatory process. Of the 23 cases, 5 were associated with acute salpingitis, 6 with tuberculous salpingitis, 1 with hæmatosalpinx, 1 with ectopic pregnancy, and 1 with papillary carcinoma of the ovary. All the cases showed some evidence of pelvic inflammation, such as cystic ovaries or pelvic adhesions. The tumours were situated in the proximal end of the tube and isthmus, and appeared as small swellings ranging from a slight thickening of the wall of the tube to a mass 1 to 2 cm. in diameter. The process as a rule was circumscribed, though in one case it extended throughout the whole length of the tube. Twelve, or 52 per cent., of the tumours were bilateral, 7, or 30·4 per cent., were on the right side, and 4, or 17·4 per cent., were on the left. The average age of the patients was 37½ years, the eldest being 64 and the youngest 17 years. 34·7 per cent. gave a history of previous pelvic inflammation. The relation between sterility and the presence of these tumours was shown by the fact that 15 of the 23 patients had never been pregnant, 18 had never given birth to a living child, and of the 5 who had borne children only 2 had had normal pregnancies.

ARABIAN MEDICINE.

THERE are few periods of medical history more interesting or about which less is known, save by professed students, than the Arabian period or body of Arabian Medicine, by which is meant, as Dr. Edward G. Browne says in his book on this subject,[1] "that body of scientific or medical doctrine which is enshrined in books written in the Arabic language, but which is for the most part Greek in its origin, though with Indian, Persian, and Syrian accretions, and only in a very small degree the product of the Arabian mind." It is to Arabian medicine that we owe the keeping alight of the flame of scientific and medical knowledge during the interval between the decay of Greek learning—i.e., about the seventh century—and the Renaissance; for though Hippocrates and Galen had been translated into Latin as early as the sixth century, the translations disappeared, and European knowledge of Greek medicine was, during the period A.D. 700 to the fall of Constantinople, entirely derived from Latin translations of Arabic or Syrian translations from the Greek. Hence the importance of the period with which Dr. Browne's lectures deal. The golden age of Arabian learning culminated in the century between A.D. 750 and 850, under the Abbasid Caliphate at Baghdad, and about the same time the great school of Gondisapor in Persia attained its highest glory. From Gondisapor came the great translators Hunayn and Hubaish, and there, too, flourished the well-known medical family of the Bactishuas. By the labours of these translators, Hippocrates, Galen, Oribasius, Rufus of Ephesus, and Paul of Ægina were made known to the Moslem world.

In his second lecture Dr. Browne devotes himself mainly to an account of four great Persian medical men—namely, Ali ibn Rabban, Rhazes, Haly Abbas, and Avicenna. Ali ibn Rabban was the author of the Paradise of Medicine, a book which the author says contains "the greater part of what the young graduate needs of the Science of Medicine." Dr. Browne explains his use of the term "graduate" as a translation of the Arabic word *mutakharrig* by telling us that a qualifying examination in medicine did exist in the year A.D. 931, even if it did not in A.D. 850, when Ali ibn Rabban wrote. The examination was not particularly searching, as may be seen by Dr. Browne's account thereof; but after all it was but slightly easier than Mr. Roderick Random's examination for a surgeon some 800 years later. Of Rhazes and his works and writings Dr. Browne gives a most interesting account, though we are rather surprised to see that in mentioning Rhazes' well-known monograph upon small-pox and measles, and the translations thereof, he makes no mention of what we believe is the earliest English translation—namely, that by Dr. Mead, translated from the Latin in 1747. The Arabic version was sent to Mead by Boerhaave transcribed from a MS. in the University of Leyden. Mead gave this transcription to "two gentlemen of character," who produced two Latin versions, which, however, differed so much that Mead applied to Dr. Thomas Hunt, Professor of Arabic in the University of Oxford, who collated the two Latin versions with the Arabic and supplied Mead with the version which he translated. In his notice of Haly Abbas Dr. Browne quotes some excellent remarks of that physician on the importance for a medical man of regular attendance at the hospital, whereby he will reach a high degree in the art of medicine. Haly Abbas's great work was the Maliki or Liber Regius, which enjoyed great popularity, until the appearance of Avicenna's Canon, which overshadowed it. Avicenna is still, or was at least so late as 1888, held in great reverence by Persian physicians, as we know by personal experience.

Dr. Browne's third and fourth lectures are devoted to a consideration of Arabian popular medicine, medical anecdotes in Arabic and Persian literature, together with various delightful stories about Rhazes and Avicenna and the use of psycho-therapeusis. There is also a story about two court physicians whose rivalry reached to such a pitch that they agreed to a duel in which each was to take a poison supplied by his rival, the effects of which he should counteract if he could by an antidote. Accordingly, physician A gave physician B a powerful poison, which B swallowed and immediately afterwards took an antidote which he had prepared which rendered the poison innocuous. Physician B then picked a rose, breathed an incantation over it, and gave it to physician A to smell, which he did and at once fell down dead, as the poet who relates the tale says: "Fear overmastered the foe, and he gave up the ghost." Had Pope heard this tale when he wrote in the Essay on Man:

> "Or quick effluvia darting through the brain
> Die of a rose in aromatic pain"?

Lecture IV. gives an all too short account, as Dr. Browne confesses, of the brilliant civilisation in Spain and the West under Moorish domination, and of the many and admirable hospitals established throughout Moslem lands during the Middle Ages, the greatest of which was perhaps that built at Tabriz in the thirteenth century by Rashidu'd-Din-Fadlu'llah, born A.D. 1247. Many of his letters about the hospital are quoted, and the book ends with a description of the principles of Arabic medicine.

We have read the lectures with very great pleasure, and can only express a wish that Dr. Browne will follow them with an account of Moorish medicine in Spain, for the Moorish domination there during the twelfth and thirteenth centuries was marked by extraordinary intellectual brilliancy, by fostering of learning, and by a toleration of religions other than that of Islam which puts Christianity to shame.

PHYSIOLOGY AND PATHOLOGY OF THE KIDNEY IN SUCKLINGS.

IN the *Wiener Medizinische Wochenschrift* of June 18th Fritz Wengraf makes a contribution to this subject. He recalls first the observations of Aschenheim and Ohlmann that in the first four months of an infant's life there obtains a peculiar metabolism as regards the salts and water—viz., that the water taken

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[1] Arabian Medicine: being the FitzPatrick Lectures for 1919 and 1920. By Edward G. Browne, M.B., F.R.C.P., Sir Thomas Adams Professor of Arabic in the University of Cambridge. Cambridge: At the University Press. 1921. Pp. 138. 12s.

THE LANCET.

LONDON: SATURDAY, AUGUST 6, 1921.

The Prevention of Tubercle.

A NOTEWORTHY feature of the important Conference of the International Union against Tuberculosis, held in London last week and briefly reported on p. 301, was the comparatively little attention paid to treatment by those who contributed to the discussions. Questions of racial incidence and immunity and measures of prevention occupied pride of place. The views of Colonel G. E. Bushnell, Prof. S. Lyle Cummins, and others, who see in tuberculosis "a disease of civilisation," as Prof. Calmette expressed it, are well known, though, for our part, we prefer Sir Robert Philip's description of tuberculosis as "a vicious by-product of an incomplete and ill-formed civilisation"; for a by-product of civilisation is by no means the same thing as civilisation itself. The art of modern medicine consists, as does the art of the chemist, in the elimination of superfluous and harmful by-products, and if the worker in tuberculosis could only determine experimentally the exact conditions upon which results depend, and eliminate or control those which give rise to useless by-products, civilisation might still be allowed to pursue its tranquil path. Great interest attached to Dr. Armand Delille's exposition of the "boarding-out" system of Grancher. All speakers were agreed that infection with the tubercle bacillus takes place in the majority of instances in childhood, and that the clinical recognition of such infection is frequently impossible. But, given the manifestation of certain stigmata associated from time immemorial with tuberculosis, reinforced by a more or less definite sensitiveness of the skin to tuberculin, we may presume the presence in the child of a focus of active disease—it may be insignificant and occult—and take measures accordingly to prevent further development. Grancher boarded these children out with families in the country, paid for their maintenance and education till they reached adult age, and trained them for occupations which they could afterwards follow. Under these favouring circumstances no one would question the likelihood of good results. The doubt alone is how far such a system can be made applicable to an infantile population, the great majority of whom are infected, and the great majority of whom, it must be added, are, even under unfavourable circumstances, not going to develop tuberculosis in an active and clinically recognisable form. The separation of children for long periods from their parents, apart altogether from the difficulties of inducing the latter to bear their part of the expense involved, raises questions of moral and legal import demanding careful consideration ere such a scheme were to be embarked upon in this country on a scale commensurate with its importance. An extended application of the open-air school system would probably do much to tide children over the danger zone between occult infection and florid disease, and it is obvious that the Grancher system must, if it is to succeed, be a matter for the State, since those whom it involves are all or nearly all of school age.

In his lucid summary of State action in the prevention of tuberculosis, made at the Conference, Sir George Newman laid great stress on the necessity of after-care. We incline to think the prefix "after" might now be omitted, for the problem involves not only the care of the patient after completion of his institutional treatment, but the care of the family and dependents during or even preceding the treatment, as reference to the records of the admirable Care Associations in existence will readily demonstrate. How far the State should intervene in this matter is an open question. The principle of administering voluntary funds through the medium of the tuberculosis officer and his nurse, without the stigma of charity and the inevitable catechism of officialdom, is working smoothly enough in practice, and so long as the grants are considered only as supplementary to those already given under the Insurance Act by the county councils, and by the Poor-law and other authorities, the distribution might well be left to the voluntary associations as at present constituted. But this subject, important though it is, was but an interlude in the Conference, the key-note of which was the prevention of tuberculosis, wherein lies the great hope for progress in the future. Treatment remains at best merely palliative, an attempt to limit and circumscribe the damage which the horse may be expected to inflict when it escapes from the stable before we have had a chance to lock the door. It is true that some of the most eminent investigators in tuberculosis seem to have reached the point of gloomily surveying the prospect and propounding questions to which they are only able to answer, "We do not know." None the less, whether we know the reason or not, a study of the death-rate from tuberculosis during the last thirty years suggests that it is a moribund disease.

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School Hygiene.

THE annual reports of the officers of the School Medical Service are now being issued, and show the increasing interest and effort being manifested on behalf of the children. The reports are appearing in all sorts of shape and size, and once again we must point out how much convenience would be served if a uniform format could be adopted. This should be the easier because the Board of Education have lately issued instructions to school medical officers regarding the contents of their annual reports, showing that information is sought which can be compared and collated. If such information arrived in a shape which allowed of filing or binding, it would be available as long as it was pertinent. In the words of one of the officers, "these instructions of the Board constitute in effect a species of school medical catechism, and I find it particularly difficult to answer this catechism to the satisfaction of the Board, and at the same time to write a report which shall be readable and instructive to the Education Committee and the public." We sympathise with the obvious difficulty, but the issue of the questionnaire is an excellent move on the part of the Medical Department of the Board, for the answers show up lacunæ in the service, and also help us to become aware of much ignorance not only in remote villages but also in high places.

The first important heading asks for a general report on "school hygiene," the scope of which is of the total non-protein nitrogen constituents of the blood in 55 patients with arterial hypertension in whom there was no clinical evidence of nephritis. He comes to the conclusion that there is a disease, arterial hypertension, which when uncomplicated by nephritis or cardiac decompensation gives no functional evidence of kidney insufficiency, and that the height of the blood pressure bears no relation to the amount of non-protein nitrogen substances in the blood. In short, the application of micro-chemical methods of blood examination to certain cases of arterial hypertension fails to convict these cases of chronic nephritis, and in the meantime they may be properly classed under the rubric of hyperpiesia. In any serious attempt to investigate the non-protein nitrogen content of the blood in hyperpiesia, such conditions as chronic nephritis, heart failure, gout, diabetes, and malignant disease must be excluded, since these diseases are known to influence the non-protein nitrogen in the blood. Yet the 55 patients examined by Dr. Williams had only one clinical feature in common—namely, hypertension—and in other respects form a motley group. Though it is stated at the outset that his patients had no clinical evidence of nephritis, in a later paragraph he speaks of evidence in some of the cases of renal impairment, and a significant proportion were clinically diagnosed as chronic nephritis; there are also included cardio-renal cases, patients with heart failure, arteriosclerosis, tertiary syphilis, diabetes, cirrhosis of the liver, gout, and chronic arthritis. The subject is one of considerable difficulty. Arterial hypertension is not a disease, though it may be a sign of disease, and for the elucidation of the problems it presents uncomplicated cases should be selected for investigation. Further, it is not statistics of 50 or 100 cases that are required so much as detailed clinical records of single cases combined with adequate records of renal function tests and blood analyses, followed, if possible, over a period of years, and finally completed by post-mortem examination with the application of modern histological methods.

X RAY TREATMENT OF ENLARGED TONSILS.

Chronic hypertrophy of the tonsils is a condition which has excited little interest in medical circles except among the few, and has been the subject of active interference rather than pathological study. Probably this is because the disease is so common and the material available for investigation so abundant, for it is always the minor malady which is regarded as inevitable and as offering but a limited field for research. We should hesitate to hazard a guess as to the proportion of tonsils removed by operation which are submitted to microscopic examination, but it must be surprisingly small, among quite the minor decimals. Nevertheless, the condition seems to merit more careful consideration. In the *Archives of Internal Medicine* for June, Dr. Carl Vernon Weller records the results of the routine histological examination of tonsils removed by operation from patients of either sex and varying age. Nearly 9000 consecutive cases were examined, and of these 2·35 per cent. were found to be tuberculous. The incidence of tuberculosis in the tonsil is about equal in the two sexes, but it is particularly high in institutions for the care of children, and among nurses, students, and interns in hospitals. In children the organism is usually of the bovine type, and this probably explains the type of tissue reaction found, for this is essentially chronic, and caseation is rare. In adults the infection is more commonly of the human variety, as anyone would suppose who has examined his nasal secretion after a morning spent in the routine clinical investigation of phthisical patients.

Another aspect of the subject is dealt with by Dr. James Murphy and his collaborators in the *Journal of Experimental Medicine* for the same month. It is established that X rays have a selective destructive action on lymphoid tissue, and the authors have utilised this knowledge in the treatment of enlarged tonsils. With carefully graduated doses of rays they have brought about shrinkage of the tonsils and eversion of the crypts, with emptying of their septic contents. The cure thus brought about is apparently permanent, and the treatment may safely be applied to the ordinary chronic septic tonsil, since the infection is limited to the crypts which, on account of the shrinkage of the lymphadenoid tissue, appear to be mechanically everted and drained. Whether this treatment is equally suitable for tuberculosis of the tonsil is another matter. It is true that, according to Dr. Weller, some 60 per cent. of tuberculous infections of the tonsil are crypt infections, with no involvement of the lymph follicles themselves, but inasmuch as the lymphocyte appears to be particularly concerned in the tissue reaction to the tubercle bacillus, the wisdom of destroying it may be open to question. This point will, no doubt, be settled by further work, and in the meantime it is satisfactory to learn of a method of treatment which appears to have considerable advantage over the usual surgical procedures.

THE MODE OF ACTION OF KAOLIN.

The successful use of kaolin in the treatment of cases of Asiatic cholera, described by Dr. R. R. Walker in our present issue, is of great interest, although, as Sir Leonard Rogers pointed out at the meeting when the paper was read, the results cannot be regarded as quite conclusive in view of the comparatively small number of cases treated. Dr. Walker explained at the time that when administered by mouth kaolin was inert and insoluble and did not pass into the circulation. He attributes great importance to the action of kaolin in removing toxins, and the possible value of the drug in bacillary dysentery is not escaping attention. It is necessary to consider the fundamental chemical details concerned in Dr. Walker's experiments to arrive at a tentative explanation of the action of kaolin. Proteins, which consist of a "mixture" of 18 to 20 amino acids, are acted upon by bacteria in various ways; in the case of putrefaction, amines may be produced by the loss of carbon dioxide from the amino acid. Except histamine from histidine, tyramine from tyrosine, and indol-ethylamine from tryptophane these amines are not very toxic. The toxicity of histamine and the rest is not comparable with the toxicity of the real bacterial toxins, and it is probable that these are more complex protein derivatives of the nature of a polypeptide or simple peptone, containing in its molecule one of the toxic amines, in cholera perhaps indol-ethylamine. Cholera vibrios are identified amongst other tests by the "indol" reaction—i.e., by the production of indol itself or some simple indol derivative from tryptophane. Indol and its simple derivatives, such as indol-acetic acid, which have a slight toxic action, are not absorbed by kaolin, but the complex toxin is absorbed. The absorption probably occurs by the mutual precipitation of oppositely charged colloids, the kaolin and polypeptide. The actual effect of the kaolin in the intestine is thus most likely to be one of adsorption. For a mechanical action it would be necessary to conceive the whole of the absorbing mucous membrane of the intestine being covered by the kaolin so as to prevent the passage of the poison.

Sir Ernest Hodder-Williams, C.V.O., has been appointed a Knight of Grace of the Order of St. John of Jerusalem in England, and Dr. James Woodward Riley has been appointed an Esquire of the Order.

INDEX TO "THE LANCET," Vol. I., 1921.

The Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of The Lancet, 1 and 2, Bedford-street, Strand, W.C.2.

ought to be seriously examined on actual developmental detail. The arid statements of embryologists—mainly German—of the last generation but two, once they have been shown to be wrong in part or altogether, ought to be scrapped remorselessly, and a student who brings out some developmental statement which is known to be untrue ought to be dealt with on the lines which would be apportioned to one who maintained some pre-Harveian view of the circulation. At present, the teacher who is a competent embryologist hesitates to put his information before his students, partly because it would almost be a waste of precious time, things being as they are, and the "embryology" of the syllabus being mostly a farce; and partly because he knows that his students may at any time run up against an examiner whose antediluvian views on the subject may lead to their confusion. Thus the standard of embryological teaching is practically set by those who are not embryologists and do not recognise the differences between the embryology of to-day and that of their youth. Many examiners would be glad to see the semblance of embryology removed from the examinations if the subject cannot be properly and systematically dealt with. We imagine that few of the general run of medical students could form a mental surface-picture of the very simple developmental processes so clearly and shortly described by Prof. KEITH, although they will be expected, at a later stage in their studies, to talk with some appearance of knowledge about the developmental affections of the regions concerned. This is not as it should be, and the fault can only be met by giving embryology its proper value in the curriculum. General embryology ought to be an important part of the biology course through which each student must go, and human embryology should be an equally—or more—important part of his anatomy course; then his pathology would be firmly based on physiology, anatomy, and embryology, with bacteriology, and thus a good foundation would be laid on which to erect a clinical superstructure.

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FACTORY HYGIENE IN 1920.

No evidence of the rapid progress which is taking place in the human side of British industry is more direct than that afforded year by year in the Reports of the Chief Inspector of Factories. These reports in recent years have not only told of important progress made, but have been presented in a more interesting and readable form than formerly. Even the size of the report now before us (H.M. Stationery Office. Cmd. 1403. Price 1*s.* 6*d.*) is changed; it is no longer a cumbrous blue book, but a pamphlet of which brevity, clearness, and human interest are the distinguishing features. The reader cannot fail to be amazed at the complicated code of legal requirements, orders, and regulations which have to be administered, and at the intricate knowledge of multifarious industrial processes needed for carrying on the work. Mr. R. E. Graves tells how the feverish boom in trade which followed the great war extended into 1920, only to give way to a remarkable depression before the year was over. The tendency for small workshops to disappear before large factories has been marked; there were 3766 fewer workshops and 4610 more factories than in 1919. New developments are referred to: the village van and cart builder is converting himself into a motor repairer; a dead meat industry on American lines is appearing at Drogheda; improved utilisation of water power for a woollen mill near Edinburgh marks an interesting advance; and in the Midlands there has started an engineering works managed and staffed solely by women. To the hygienic aspect of these remarkable developments we shall have occasion to return.

Annotations.

"Ne quid nimis."

LOCAL VOLUNTARY HOSPITALS COMMITTEES.

THE *Voluntary Hospitals Commission* has shown no delay in getting to work. Letters have been addressed to the clerks of county councils and county boroughs in England requesting the assistance of the councils in the constitution of Local Voluntary Hospitals Committees, as recommended by the Cave Committee. As a general rule the county, with those county boroughs situated within it, will be taken as a unit; but the larger county boroughs will be constituted units by themselves, and some of the counties containing but few hospitals will be combined into one area. Should there be a general consensus of local opinion that local circumstances are such as to call for variation of this scheme, alternative suggestions emanating from the area will be considered. Separate arrangements on analogous lines are being framed for Scotland and Wales.

As a rule the Local Committees will consist of two members nominated by the county councils, and one by each county borough within the county. There will be two medical practitioners nominated by the local medical committees in the area, one to be on the staff of a voluntary hospital and the other a general practitioner; and two hospital representatives not medical practitioners, one for the larger general hospitals and one for the smaller and cottage hospitals in the area. The Commission will nominate not more than five additional members from among those resident in the area, one at least of whom will be a woman, and the Local Committee will select its own chairman from among its members or from outside. The functions of the Local Committees will include the following:—

(*a*) To act as local advisers to the Commission.
(*b*) To collect information as to the needs of their areas.
(*c*) To further coöperation between hospitals.
(*d*) To coördinate appeals.
(*e*) To consider the possibility of arranging the transfer of patients where this can advantageously be done.
(*f*) To prepare, where practicable, schemes of coöperative purchase.
(*g*) To advise as to the adoption of a uniform system of hospital accounts throughout their area.
(*h*) To organise systematic contributions both from employers and by employees in areas where no such systems at present exist.
(*i*) To undertake the distribution of any contributions made by an approved society in cases where the society is purely local in character.
(*j*) Generally to take every possible step to assist the hospitals in their area to maintain the present voluntary system.

Local Committees will also consider generally the existing provision of hospital accommodation in their area. For this purpose the Commission has adopted the following definition of a voluntary hospital:—

> An institution (other than an out-patient dispensary) managed by a responsible committee, and wholly or mainly supported from voluntary sources (including income derived from endowments or investments), the object of which is to provide medical or surgical treatment of a curative character; an auxiliary institution (such as a convalescent home) being eligible for assistance only in so far as it increases the facilities of hospitals from which it receives patients.

In the metropolitan area the King Edward's Fund will act as the Local Committee, and will be responsible for advising the Commission on applications from voluntary hospitals within the nine-mile limit, which is the area now covered by the operation of the King Edward's Fund.

ADENOMYOMA OF THE FALLOPIAN TUBE.

DR. Arthur E. Mahle,[1] of the Section of Surgical Pathology of the Mayo Clinic, reports 23 cases of adenomyoma of the Fallopian tube which were found

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[1] Surgery, Gynecology, Obstetrics, July, 1921.

20 branches, and it was hoped to have one in each of the 89 Departments, as the Government gave a large grant to the work.

A Hastings delegate said the system had been tried in his district with great success for some years. He did not know of a single failure.

Sir **ROBERT PHILIP** said the system was sound.

In the evening a reception was held by the LORD MAYOR of LONDON at the Mansion House.

WEDNESDAY, JULY 27TH.

On Wednesday morning the Conference discussed the subject

The Modes of Diffusion of Tuberculosis throughout the Races of the World.

Prof. J. **CALMETTE** (Pasteur Institute, Paris) read a paper in introducing the discussion, in which he said that since 1908 certain diagnostic methods had enabled the bacillus of tubercle to be detected in the human body even in the absence of clinically ascertainable lesions, and this had made possible a general survey of populations and the ascertaining of what proportion were infected with the disease. The most practical method to date was that of von Pirquet, of Vienna—i.e., two slight skin abrasions over the deltoid and the introduction of a small drop of tuberculin, either pure or in a 1-in-10 dilution. The postitive indication was the occurrence of a papule at the site of scarification in 10 to 24 hours. After remaining 5 or 6 days it completely disappeared. Before the war it was found that in certain countries tuberculosis was either absent or very rare, such as in Equatorial Africa among tribes where civilisation had not been introduced. But in cities and civilised communities of all climates the disease was very prevalent. Statistics showed that tuberculosis among the civilised nations of the world gave an average of 12 per cent. of deaths, and in the most favoured countries—Belgium, Italy, Portugal, Spain—the figure was 7·4 per cent. of deaths. As to the proportion of people in very large cities who showed a positive infection, as contrasted with having the established disease, 20 per cent. of the children were found to be infected at 2 years of age, 55 per cent. at 5 years, 90 per cent. above 15 years, while 97 per cent. of adults gave a positive reaction to tuberculin! In the country districts tested the figures were very much lower. In countries possessing many races there were marked differences in attack-rates, probably due to the length of time the disease had been implanted in them, and to some extent referable to the habits of life. Peoples who had been longest isolated from the disease proved to be the most susceptible to it when brought into infected communities. Civilised races, on the other hand, were more resistant owing to the comparative immunisation due to long infection. "In man, therefore, tuberculosis results from his civilisation." The same was true of cattle. The spread of tuberculous infection throughout the world was due to disseminators of virulent bacilli, who were often apparently healthy carriers. It had been shown by the author that bacilli injected into the blood stream were eliminated through the bile passages. The author quoted a number of independent investigations by other workers which established the same fact. Titze had shown that when tubercle bacilli were injected intravenously into a lactating cow they began to appear in the milk towards the third week. Carriers of tuberculosis who were apparently healthy might have lesions limited to a few glands, and from these be continually infecting new subjects. Protection of children and the general population in countries comparatively free from the disease could only be contemplated on the condition of reorganising a system of detection based on the judicious use of tuberculin tests and a clinical examination of the glandular system, based mainly on radioscopy.

Bovine Form of Infection.

Sir G. **SIMS WOODHEAD** (Cambridge) spoke on the diffusion of tuberculosis in the human subject through infection with the bovine form of the bacillus. It was clear that geographical considerations had much to do with the arguments brought forward with regard to the spread of tuberculosis. In Japan, for instance, the bacillus of the human type played a much more important part in the process of infection than it did in Edinburgh. At an early stage of the inquiry 30 per cent. of the cattle in Edinburgh dairies were found to be tuberculous, and in 16 per cent. of the samples of milk being distributed to certain areas tubercle bacilli were found, often in considerable numbers. A large number of the children who died from tuberculosis had the disease in the mesenteric glands or the meninges. He spoke of the means by which the tubercle bacilli could pass from the general circulation of the cow to the mammary gland, and so infect the milk. From 6½ to 10 per cent. of the fatal cases of tuberculosis were the result of bovine infection, and this form showed a predilection for lymphatic glands. He concluded by an appeal to continue the campaign against tuberculosis, urging his hearers not to allow this matter to be brought within the ambit of the present desire for financial economy.

Dr. **GERALD B. WEBB** (Colorado Springs) emphasised the family factor, and the importance of close family contact as a disseminator. In many cases a parent, before he manifested signs of the disease, had been a carrier sufficiently long to spread millions of bacilli to those in his immediate surroundings.

Experience Abroad.

Prof. F. **HARBITZ** (Christiania) spoke of the different racial incidence in the Norwegian territory. In the northern part the mortality from the disease which in 1871 was 2·2 per 1000, rose in 1901 to 4·2. In another part lupus increased from 3 to 5 per 1000. The high incidence rate among the Lapps was due to their being an inferior race.

Prof. L. T. R. **HUTCHINSON** (Bombay) said tuberculosis was very widely spread in India. In one of the divisions of the country, with a population of 20 millions the death-rate was 89 per 100,000 of the population. In rural areas it was 63, in urban areas 223, in certain towns mounting as high as 700. The figures for a few towns showed 84 per cent. of the deaths were due to the pulmonary form of the disease, 16 per cent. to other forms. He had seen very little evidence of bovine tuberculosis in that country; and the slaughter-house returns with which he was acquainted showed only one case of advanced bovine tuberculosis. In India the family factor was of very great importance. The common type of building for the very poor was the one-room tenement, which was so dark that an artificial light was required in the day-time. The whole family lived in one room, and expectoration was universal. The emigration from the villages to factory towns to work and the return to the home life at intervals was a very important factor in the rapid spread of tuberculosis in that country, and the zenana system was responsible for the greater prevalence among women.

Colonel **BUSHNELL** averred that if tuberculin were appealed to to say whether a person had the disease it gave a very dubious answer; but it gave much more reliable information if used undiluted. There were cases, however, which did not react to even pure tuberculin. In one instance 100 men in the American Army were examined with tuberculin, and, ultimately, all reacted to tuberculin, though one required as much as 20 mg. of tuberculin subcutaneously to react, which simply meant he had acquired the most effective immunisation. Generally, the fewer the cases of the disease in a community the higher the death-rate among the attacked. A question which ought to be settled as soon as possible was whether a people who did not react readily to tuberculin was likely to die quickly from the disease when they did fall victims to it. He urged that concentration should be bestowed on recent cases of the disease, giving them every care and attention, and see what happened to them in six months. More would be done towards eradicating the disease by in in four hours is only partly excreted by the kidneys, and the amount of water retained is larger when common salt is given in physiological concentration in the water. These observers concluded that there is an extra-renal delay in the transport of the salts and water. Wengraf's observations dealt with the output of all the water including the insensible perspiration, which latter was determined by repeated hourly weighings. The insensible perspiration corresponded to that of the kidneys. Breast-fed infants in general excrete in excess, whilst healthy bottle-fed infants excrete only the water (120 to 160 cm.) taken in four hours. Diuresis in breast-fed babies begins in the first hour and reaches its maximum in the second hour, while during the last two hours there is only a moderate addition to the amount excreted. In bottle-fed infants there is a steep diuretic rise usually in the second hour which reaches its maximum in three hours. The diuresis seems to be determined by the course of the hydræmia and not by the wants of the tissues. The water-excretory apparatus of a slightly dyspeptic suckling has not such control over the ingested water; the excretion curve follows the normal type, but the amount excreted is less, 30 per cent. being retained. In severe dyspeptic cases the excretion is irregular and the retention greater. In alimentary toxæmia only the insensible perspiration responds to the diuretic stimulus. The kidneys excrete no water and the retention amounts to 50 per cent., due to some renal cause. In experiments, combining common salt with the water ingested in naturally-fed children, it was found that in one-half of the cases the water taken in was excreted in four hours, in the other half 40 per cent. of the intake was retained. The urine in the former cases contained very little common salt—only 0·2 to 0·4 per cent.—a concentration greater than obtains in experiments with water alone. It is evident that the kidneys can alter the concentration. These two groups show marked variations, the one excretes the water in four hours, but retains the greater part of the sodium chloride, while the other retains both salt and water. In this latter group there is perhaps a retention of water due to extra-renal causes.

The author discusses the functional compass of the kidneys in early infancy. To determine this, experiments were made by adding common salt or urea to the food. The condition of the urine as well as the NaCl of the blood were determined. It was found that by increasing the common salt by giving one large dose of salt the percentage of salt in the blood is considerably increased, without the NaCl in the urine being in greater concentration than that in the blood. Even when large doses of urea were given, in some cases there was no corresponding urea-diuresis, and even after 24 hours the excretion of urea was not complete. Dr. Wengraf concludes that the kidneys in early infancy are capable of secreting a urine of variable concentration, but their functional compass is somewhat limited in the sense of an iso- or hyposthenuria. In the condition of hyposthenuria, in addition to an extra-renal component, there is also a renal factor. This limited functional capacity of the kidney, when the available water is diminished, as in acute dyspeptic disturbances, may play a not unimportant part in the pathology of infantile disorders of nutrition.

SHELL-FISH AND ENTERIC FEVER.

Dr. J. T. C. Nash, Medical Officer of Health for the County of Norfolk, has stated in his annual report for 1919–20 his belief that one of the main factors in the marked and continued reduction in the incidence of enteric fever in England during the present century has been the persistent warfare on "boiled" cockles from polluted layings which he initiated in the opening years of the century when medical officer of health for Southend.[1] At that time, although raw shell-fish were already under suspicion, it was thought that the boiling of cockles rendered them harmless; but he demonstrated that "boiled" cockles from polluted layings gave rise to many cases of typhoid fever, and that the so-called boiling was not real boiling, the heat employed only being sufficient to kill the cockles and open the shells. He found on cutting into "boiled" cockles riddled through a sieve that the interior contents were uncooked and barely warm, the internal temperature being below the thermal death-point of typhoid bacteria. It was a remarkable fact that from the time the "cocklers" could be prevailed upon to cease from laying the cockles in grossly polluted creeks, and, further, to sterilise them by prolonged steaming,[2] the incidence of typhoid fever fell extremely rapidly, not only in Southend, but also in London and other large towns to which the so-called "boiled" cockles were sent in large numbers. A certain number of cases of enteric fever have also been traced to the contamination of small flat fish, such as dabs, which are often caught near sewers, and being too small to be gutted, are eaten entire after cooking insufficient to sterilise the gut contents. Dr. Nash also formulated a theory that infection might be conveyed from shell-fish gathered in polluted waters to other fish on the same stall by the hands of the fishmonger. He noted several instances of infection amongst cooks under circumstances where no other member of the household contracted typhoid; in each case the cook had handled and gutted the raw fish, which other persons ate after it had been boiled or fried in oil or grease. Although emphasising the rarity of such means of infection, he believed that this was undoubtedly one way by which not only typhoid but cholera and other allied diseases were spread.[3] Their diminished incidence affords satisfactory evidence of the safeguarding of a popular foodstuff.

ARTERIAL HYPERTENSION AND CHRONIC NEPHRITIS.

ARTERIAL hypertension is a manifestation of chronic nephritis, and at the same time persistent hypertension may occur without the presence or subsequent development of chronic nephritis. This fact has been recognised clinically by the adoption of the term hyperpiesia, a term introduced by Sir Clifford Allbutt for those cases of maintained high blood pressure in which there is no evidence of kidney disease. Clinical evidence of kidney disease is not always easy to obtain in the earlier stages of chronic nephritis, and it is sometimes absent during irregular intervals in the later course of this disease. In recent years clinical evidence has been supplemented by certain functional tests of renal efficiency, and also by the micro-chemical examination of the blood. It has been shown by a number of workers, particularly in France, America, and in this country, that a retention of sugar and non-protein nitrogen occurs in many cases of severe nephritis, and in some forms of kidney disease an increase of non-protein nitrogen in the blood may be apparent at a relatively early stage. It would appear that uric acid retention makes its appearance before urea retention, while creatinine retention does not occur until the later stages of the disease. It might be expected that the application of these methods of blood examination to cases of arterial hypertension would throw a sure light on the question of coincident nephritis, but unfortunately other conditions than kidney disease lead to uric acid and urea retention in the blood. Heart failure with passive congestion in the kidneys is the most important cause of urea retention that is not due to nephritis, while gout is a cause of uric acid retention though it is uncertain as yet how far the commonly associated nephritis is here responsible for the increase of uric acid in this disease. J. Lisle Williams[4] has recently reported his results from the examination the doctor was important, too, as leader or adviser of the general public on these matters, and particularly hygiene. The bad effect of syphilis in reducing the resistance to tuberculosis could not be too much emphasised, and fuller statistics on this point must be very useful. Alcohol likewise favoured the onset of the disease, and prohibition of alcohol would greatly diminish the death-rate and the incidence rate of tuberculosis. Lastly, he counselled active propaganda work among the public, without whose aid very material progress was not to be expected.

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[1] THE LANCET, 1903, ii., 1533, and 1906, ii., 836.

[2] Ibid., 1905, ii., 369.

[3] Ibid., 1910, ii., 1306.

[4] Archives of Internal Medicine, June 15th, 1921.

State Action in Preventing the Disease.

Sir **GEORGE NEWMAN** said the magnitude and character of the tuberculosis problem was such that it affected not the sick man only, but the well-being of the nation as a whole. Tuberculosis cut off human life in its adolescence and adult prime, and before death there was an average of three years of sickness and incapacitation, and it was responsible for a large body of pauperism. Its ravages were worst among the poor and in congested areas. He emphasised the hygienic factors. There was need for coördination by the State in the anti-tuberculosis campaign; for without this sporadic efforts were without their due effect. Especially did the State need to see that the public were educated on the question, and this instruction should begin early in life. This intervention by the State must be both central and local, and nothing must be left to chance; all the verities of science must be utilised in the campaign, but there must be willing coöperation on the part of the people. In 1847 there died from phthisis (excluding miliary tuberculosis) 3189 persons per million of the living. In 1872 it had fallen to 1356, and in 1913 to 916. In 1920 there was a further fall to 842 per million, a reduction on the 1847 figure of 74 per cent. In that period there had been great progress in both sanitary reform and the education of the people in health matters. Together these pointed the way to future conquests. It was a great fallacy to believe that such a protean disease could be conquered by any single method. He spoke very highly of Mr. Lloyd George's National Health Insurance Act of 1911, which he regarded as one of the most epoch-making Acts ever passed by any Government. He mentioned with approval, too, the housing and public health and factory legislation; also those concerning measles, influenza, and lobar pneumonia and child welfare. And Governments could do very much in the prevention of tuberculosis by the hygienic control of food and drink, especially by restricting the excessive consumption of alcoholic beverages. He had no doubt that sobriety in a nation tended to engender a non-tuberculous people. There was particular need to attack this problem at its source—i.e., the patient's home—and he referred to the President's effort in Edinburgh in 1887, and the Departmental Committee of 1912, under the chairmanship of Viscount Astor. Sanatorium benefit came into force in July, 1912. Notification of the disease was now an established measure in most countries, also prohibition of spitting in public places, and many nations were carrying on propaganda work. The Departmental Committee to which Sir George Newman had referred, said the tuberculosis dispensary should serve as (1) receiving house and centre for diagnosis; (2) clearing house and centre of observation; (3) centre for curative treatment; (4) centre for the examination of contacts; (5) centre for "after-care"; (6) information bureau and education centre. One dispensary was suggested for every 150,000 of the population in urban areas, and the Committee laid stress on the importance in the success of such that they should have the hearty coöperation of general practitioners, who had intimate personal relations with patients and much influence in the homes of the people, forces which were very valuable in this campaign. Wherever research work had been pursued, the crucial issue of immunisation remained the supreme objective. In conclusion, he said that only by surveying this complex problem in the spirit of preventive medicine, and coördinating the respective factors concerned, and finding the hidden secrets of immunisation, would the disease at last be conquered.

The Responsibility of the Practitioner.

Prof. C. E. A. **WINSLOW** (Yale) said that in America only 25 per cent. of the cases were cured in the sanatoriums; but the average practitioner, especially in country districts, was not always a successful diagnostician. There was need for expert consultants to act in conjuction with private physicians.

Dr. **CAWADIA** (Athens) urged that medical men, not political authorities, should have questions of this sort under control, that the medical services needed control, and that special courses on tuberculosis should be given at the universities.

Dr. **RIST** said the first duty of the practitioner of medicine was to be a good diagnostician. The need for that was seriously felt in the war, when large numbers of men wrongly said to be tuberculous were sent to the base or to their own homes, when the need of men in the fighting areas was urgent. He referred with satisfaction to the inquiry by the London County Council, who found that 75 per cent. of so-called cases of tuberculosis had not that disease at all.

Colonel **BUSHNELL** agreed that the mass of medical men must be interested in this subject. He feared there was a decline of keenness in making physical diagnoses, and that the medical student wished to specialise too soon. More attention ought to be devoted to the normal chest, and the recognition of early tuberculosis should not be relegated to the expert.

Dr. **ANTONIO ESPINA Y CAPO** (Spain) said the social work in this crusade should include medical participation in the drawing up of an international anti-tuberculosis law, measures of prophylaxis directed against germ-carriers, a study of the married state in this relation, and international forms of notification.

Prof. G. E. **GASK** (London) considered that the medical profession as a whole had failed in its duties in regard to the prevention of tuberculosis. It was known that it was a preventable disease, and how it could be prevented, but doctors were not by any means sufficiently insisting on all possible occasions that the necessary steps should be taken. His own view was that ten times as much as at present could be done.

Dr. M. **JAQUEROD** (Leysin) spoke specially of the danger of promiscuous spitting, and the need for a more enlightened hygiene.

Prof. **HARBITZ** pleaded for exact information concerning the use of tuberculin and its results, and that the profession should suggest laws aimed at preventing the spread of the disease, and bringing a general knowledge on the laws of hygiene into the people's homes.

Dr. C. L. **MINOR** (Asheville, N.C.) advocated a more thorough and intimate study of the disease in medical schools, enabling clear and practical conclusions to be drawn. Doctors should be ready and prepared to apply the *verified* new discoveries.

Prof. J. C. **MEAKINS** (Canada) also emphasised the function of the general practitioner in this work, and urged a careful study of the effects of fatigue and general conditions on the sensitiveness of the individual to tuberculin, and therefore to the disease. He did not think the present-day eight hours leisure was utilised sufficiently for recreation: too large a proportion of it was given to the cinema.

Beginning with the Baby.

Dr. **ERIC PRITCHARD** said that in order to get a population resistant to tubercle, the baby should be commenced with. During the last ten years he had been trying to secure immunity in children who otherwise must inevitably have been contaminated, and of 30 children so treated there had so far been no deaths. If a child was born of a tuberculous mother he did his best to get the mother to nurse the

SECOND CONFERENCE OF THE INTERNATIONAL UNION AGAINST TUBERCULOSIS.

On the initiative of the National Association for the Prevention of Tuberculosis, a large and representative gathering assembled at the Second International Congress, held in the large hall of the Institution of Civil Engineers, Westminster, on July 26th, 27th, and 28th, under the presidency of Sir Robert Philip. Delegates were present from 39 countries, including France, the United States, Japan, Sweden, Denmark, China, Australia, New Zealand, Canada, Finland, Poland, South Africa, Switzerland, and Czecko-Slovakia. Lord Curzon and Sir Alfred Mond welcomed the delegates on behalf of His Majesty's Government.

Tuesday, July 26th.

Official Welcome.

Lord Curzon said it had been shown that where tuberculosis could be scientifically assailed it could be systematically defeated. The coördination of all the present sporadic efforts at dealing with the scourge was a condition essential to success on a large scale. Much might still be expected from the prosecution of scientific research. Lastly, it was imperative to conduct a vigorous educational propaganda among the people.

Sir Alfred Mond epitomised the steps taken in this country to combat tuberculosis in recent years. The national scheme for prevention and treatment of tuberculosis inaugurated in 1912 provided for sanatorium benefit for insured sufferers, including domiciliary and institutional treatment. This represented the beginning of a great national effort to deal with a disease, to which, owing to our peculiar climate, we seemed especially liable. Since the armistice progress in the campaign had been resumed. We had three main elements in the scheme of institutional treatment: (1) the tuberculosis officer, (2) the dispensary, (3) the sanatorium, which was intended for residential accommodation. There were 341 tuberculosis officers, 412 tuberculosis dispensaries, and 18,050 beds for tuberculous patients, an increase in the last two years of 4000 beds. There were now in progress additional buildings which would provide 3500 more beds in the next two years. The question of the ultimate value of the sanatorium was still a discussable one among experts. Five hundred places were being provided by the Government at selected sanatoriums for the training of ex-Service men. A village settlement was in course of development at Tetworth, in Cambridgeshire, where a certain number of patients would be able to take up their residence with their families, and 20 men were already in occupation. At Preston Hall, Kent, a similar effort would be made. The idea was to put and keep these men in such surroundings as would safeguard against a relapse, or a reinfection of the disease. Probably in every country the aftermath of war would keep purse-strings tight, but it was satisfactory to note the striking progress made since 1914. In 1914 there were 90,000 notified cases of tuberculosis and 50,000 deaths. In the following year 90,000 cases were notified and 54,000 deaths; but 1919 showed a reduction to 77,000 cases and 46,000 deaths, the corresponding figures for 1920 being 73,000 and 42,000. Bearing in mind the interruption brought about by the war, those figures were very striking.

Short speeches promising support to the crusade in their respective countries followed from 20 delegates, mostly delivered in excellent English.

Senator André Honnorat, representing France, read a contribution, in French, in which he said that, next to the war, tuberculosis proved the most drastic decimating agency among the young men of his country. He outlined the measures already taken and in contemplation for combating the disease.

Fundamentals of Pathology.

Colonel G. E. Bushnell (U.S.M.C.) submitted a paper containing a general review of the subject. Both diagnosis and the measures to be adopted depended on a correct interpretation of the disease processes at work. At present, despite all the advances which had been made, there was still lacking a general agreement as to fundamentals in regard to the pathology. Tuberculosis was pre-eminently an insidious disease, and as in most disease conditions, treatment was most hopeful in the early stages, hence the von Pirquet reaction ranked, in his opinion, second in importance only to Koch's discovery of the bacillus. Tuberculous infection was not necessarily identical with tuberculous disease. Very few people escaped the invasion of so widespread a contamination, but only a proportion failed to throw it off—i.e., they did not manifest the disease. Physical diagnosis gave the key to infection which had overcome the body resistance. The lesion found in the tuberculous patient was seldom his initial lesion. We did not yet know how far tuberculisation of the race was accompanied by lung lesions; 86,000 French soldiers fell victims to tuberculosis while under military service. There must, he contended, be a closer study of the nature of the thickening often found in the upper lobes of the lungs. Epidemiological questions could only be solved by a long process of research, and this the physician could not be expected to undertake unaided. Especially should investigation be made among people who were apparently well. Tuberculosis alone among common diseases received but scant consideration at the hands of most of the population, and in many cases even inflammatory reactions passed unnoticed. Some people, however much exposed to the disease and however bad the conditions they lived in, did not get the disease. The difference was not due to bad air, or bad food, or bad hygiene, or overwork, or race or climate. To say it was a matter of predisposition was only to confess our ignorance. The study of this disease should be prolonged beyond the period usual with investigators, and beyond what was possible to any single body. It must be in the hands of a governing body which could initiate a universal campaign, which should have no limitations, and should have the power to loosen the purse-strings. In other words, there must be coöperative activity in combating this disease, but every effort should be made to come to an agreement on fundamentals.

Sir Arthur Stanley intimated that the Prince of Wales had signified his acceptance of the post of President of the National Council for the Prevention of Tuberculosis, rendered vacant by the death of Lord Balfour of Burleigh.

On Tuesday afternoon the business meeting of the National Council was held. Sir Arthur Stanley occupied the chair, and in a short speech said he felt that in this campaign they were on the winning side.

The "Œuvre Grancher" System.

Dr. P. F. Armand-Delille (Paris) read a paper on this system, which had now been in operation 17 years. The gravity of infection by tubercle depended on the dosage of bacilli received. If a guinea-pig received 10 tubercle bacilli at a time it developed the disease, but not if there were only 2 or 3. A child might have a slight tuberculous contamination from the dust of cities and present a positive von Pirquet, but might not develop tuberculous lesions; but if kept in close proximity to a tuberculous parent was found to have a primary ganglionic focus of the disease. The Grancher system consisted in placing out in healthy rural families children whose lives were in jeopardy through living with tuberculous members of the family. The children must previously have been vaccinated against small-pox, and be free from adenoids. Of 2300 children of Paris so placed, only 7 developed tuberculosis, and there were 2 deaths from meningitis three weeks after being transferred. This meant practically the extermination of the disease among children. There were now more than not been included in this Act, but will appear in the proposed reform of the medical curriculum. The title of "Arzt" (equivalent to doctor) will be protected by law and will be applicable only to persons qualified as above. The practitioner will not be permitted to have more than one office, nor may he practise or dispense medicine concurrently in several places. The doctor will not be allowed to follow an accessory occupation inconsistent with the dignity of the profession. His duties towards patients are defined in a series of regulations, amongst which the following are important. The doctor must use all his knowledge and conscience, according to the latest acknowledged achievements of his profession, in the treatment of those entrusted to his care. In urgent cases he is bound to give aid, and a refusal to act may bring him into conflict with the law, unless there are obvious reasons—e.g., personal disability—for his refusal. The doctor may claim compensation for first aid from the local authorities, but is entitled to refuse to treat the patient regularly unless the latter is in danger, and unless the disease is urgent. Professional secrecy is not as absolute as might be deemed wise in the new Act, for it is stated that every doctor is bound to treat as secret all disclosures by his patients made known to him during the course of or pertaining to the illness "unless higher interests intervene." This ruling will, no doubt, encounter severe opposition, as we have hitherto been used to maintenance of absolute secrecy. In future, moreover, the doctor giving an incorrect testimonial "to oblige a patient," as is sometimes done, will be punishable by severe fines. The Medical Council, or representative body of the medical profession, which has hitherto had little or no means of imposing a sentence passed on an accused member of the profession, will in future be entitled to impose a fine up to 10,000 kronen, or, if deemed necessary, to strike the name of the culprit off the medical register permanently or for a certain period. The Medical Council will, however, be required to apply the methods of regular law courts in dealing with an offence demanding such a strict punishment. The further details of the new Act are not very different from those now in force, but the profession will strive for the embodiment of all its demands for a modern perception of its rights and duties.

Protection of the Title of Specialist.

Some time ago the Vienna medical organisation undertook the disagreeable task of defining for limited use the term "specialist." A committee consisting of representatives of all medical corporations, universities, and hospitals evolved a scheme, the propositions of which Prof. Strausky has set out as follows. Only fully qualified doctors of medicine, having special training beyond the general instruction of medical men, should be entitled to call themselves specialists. At present only the following specialties are recognised: internal medicine, surgery and orthopædics, pædiatrics, neurology and mental diseases, ophthalmology, rhino-laryngology, otology, dermatology, venereal diseases, gynæcology and obstetrics, electro-pathology and radiology, and dentistry. Doctors should not be permitted to specialise in more than one branch of the above specialties, except in those which are naturally allied—e.g., otorhino-laryngology, mental and nervous diseases, &c. The title of specialist should be protected by law, equally with the degree of M.D., and should be granted by a special body or commission, consisting of members appointed by Government, the medical organisation, and the Medical Council. The applicant for the title would have to prove before this body that he has worked for a period of not less than two years in operative specialties, not less than three years in a special ward or clinic as assistant to the chief, or for four years if only as a member of the staff of such a ward or clinic. An examination of the candidate in the theory and practice of his selected specialty will be held. All professors of universities and others already recognised as specialists by the fact of their present occupation of posts as heads of special departments or as teachers (privat-docents) are exempt from such examination, and doctors who have already practised as specialists for at least two years would also be exempt. Furthermore, doctors who had graduated at least four years before taking up a special branch would be eligible for the title of specialist on binding themselves not to take up general practice. These regulations, it is thought, will meet the just demands of both general practitioners and specialists, and should regulate in an amicable way the relations between these distinct parts of the profession. The propositions contained in Prof. Strausky's report are being submitted to the profession for judgment, and if approved will soon be brought into force.

Bathing Fatalities.

The great heat has tempted large numbers of people to bathe in lakes and ponds, as well as in the open river; the negligence of bathers, together with the complete absence of first-aid arrangements, has resulted in many cases of drowning. The Medical Society of Vienna has therefore published in the daily papers a short instructive article warning those with affected hearts, and especially those with diseased ears, against the danger of cold water. The latter category of persons are especially unaware of the risk they run; a perforation in the drum may easily cause labyrinthine irritation and vertigo. The principles of artificial breathing and the methods of resuscitating the apparently drowned are also described, and public authorities are urged to establish a regular life-boat service, or at least to keep ready for use a small boat on all water used for bathing purposes. The teaching of swimming for school children is earnestly recommended as one of the chief means for doing away with these fatal accidents. In addition to the instructions and warning pertaining to the bathing itself, the public are also warned against the disagreeable—not to say dangerous—effects of over-indulgence in ice-cold drinks and fruit as well as of alcoholic beverages before bathing. Whether because of these warnings or not the number of drowning fatalities has recently been considerably diminished.

July 20th.

Public Health Services.

The London County Council and Public Health during the Heat Wave.

REPLYING to Mr. J. D. Gilbert, M.P., who asked for information as to public health in London during the recent dry weather, especially as to possible increase in scarlet fever or other epidemics, Captain Warburg (Chairman of the Public Health Committee of the L.C.C.) said the weekly average number of cases of scarlet fever had dropped from 925 in October, 1920, to 435 in April last. Since April the number of notified cases had been gradually rising, the present weekly average being 611. Diphtheria had decreased since the autumn of last year. With regard to other epidemic diseases, the position had on the whole been very satisfactory. The hot, dry weather did not appear to have affected, to any noticeable extent, the general health of the people, except that there were more persons, especially children, affected by slight febrile attacks, accompanied in some cases by catarrh of the respiratory passages. There had also been a slight increase in the number of deaths among children under two years from epidemic diarrhœa. It had not been found necessary to take any special action in the direction of safeguarding the health of the community apart from the measures of prevention which are ordinarily adopted.

Welfare of the Blind.

The General Purposes Committee of the L.C.C. has investigated the question of the establishment of a scheme for the welfare of the blind in the County of attention directed to the children in this way than bestowing energy on tuberculosis dispensaries for established cases.

The discussion was continued into the afternoon.

Sir **GEORGE MCCRAE** (Scottish Board of Health) spoke of the work done in Scotland in this respect, referring to the farm colony established by the President (Sir Robert Philip), and to the fact that when the National Insurance Act became law, Scotland had all the machinery ready, and 60 per cent. of the local authorities had adopted notification of the disease. In that country to-day there were 101 sanatoriums and other institutions, comprising 3232 beds actually in use, apart from accommodation for other diseases. The deaths from the disease of all forms in the country were in 1919 6326, as against 8517 in 1910. In Scotland they recognised the great importance of housing in this matter, for bad houses were the greatest barrier to progress, and the housing in that country was deplorable.

Further Discussion of Ætiological Factors.

Prof. **S. LYLE CUMMINS**, representing Great Britain, paid a warm tribute to the great work done in connexion with this combat by the French, and said the contribution just delivered to the Conference by Prof. Calmette was one he did not expect to hear surpassed. When tuberculosis attacked a fresh people it conformed to all the behaviour of an acute infectious disease, but not among victims in a people already subject to it. He spoke of the lessons in this regard afforded by the disease among the various constituent peoples taking part in the war. It supplied the reason why our army supplied a long pension list instead of a high death-rate from the disease; and he put in a plea on behalf of the ex-soldier the true nature of whose disease was not early recognised, but who was eventually found to have tuberculosis.

Dr. **J. H. LANDIS** (Cincinnati) contended that the discussion had served to confirm the impression that the ætiology of tuberculosis was the part of the subject about which least was known. Some contended that at whatever age the disease might manifest itself it was the outcome of an infection acquired quite early in life, and that infection late in life seldom occurred. But the speaker considered that adult infection took place oftener than was usually thought. In the United States the black race showed double the death-rate of that of the white people.

Dr. **L. G. HAYDON** (Pretoria) spoke of the great influence in the spread of tubercle exerted detrimentally by the incursion of kraal village inhabitants (constituting the mass) to centres of industry where they came into contact with infected civilised people, and their periodic return to their homes. These cases he agreed were rapidly progressive and fatal, and the direct means of spread was by expectoration, aided, he did not doubt, by Indian hemp smoking.

Dr. **H. SUTHERLAND** (Ministry of Pensions) outlined the policy of the Ministry in regard to tuberculous ex-soldiers, and those who were subsequently found to have that disease.

Dr. **W. CAMAC WILKINSON** (London) referred to work in Australia in connexion with this disease, and averred his belief in the efficacy of tuberculin. He emphasised his view that generalisations about the pathology of the disease should be founded on nothing less than post-mortem examination. The von Pirquet method was unreliable for diagnosis, as it was too sensitive; there should be subcutaneous injection of tuberculin, and if that was positive it was proof of the presence in the body of living active tubercle bacilli.

Dr. **CH. RIST** (Paris) said that if a child having consumptive parents was removed from them in early life and brought up in non-infectious surroundings, he would not only not be likely to develop the disease, but the incidence rate among such would be lower than among the general population. The high susceptibility of certain races was due to the disease not having been experienced in childhood; this received ample emphasis in the war in the case of black contingents. He believed hereditary predisposition played some part in the production of the disease, but not to the extent usually supposed. He combated the idea that physical robustness necessarily meant good resistance to tubercle; and he instanced a family which lived in ideal conditions and a hygienic life, but the children of which died rapidly of tubercle. Also it was clear that the Irish were more, and the Italians less, susceptible to the disease than the commonality of people. He agreed with those who denied to the von Pirquet reaction a practical diagnostic value. If that fact were generally recognised it would save much disappointment.

Dr. **H. HYSLOP THOMSON** (M.O.H. Hertford) spoke of the prevalence of tuberculosis among the mentally-defective and feeble-minded. In a large institution with which he was connected, the death-rate from the disease in 1914 was 20 per 1000, and during the war that figure rose to 118. The clinical manifestations of the disease among these patients differed markedly from those in ordinary folk in the fact that there was no cough and no sputum and the chief lesions were intestinal. There was a field here for an instructive investigation.

THURSDAY, JULY 28TH.

The Rôle of the Medical Profession in the Prevention of Tuberculosis.

The last open session of the Conference was devoted to this aspect of the subject, and was remarkable for two important contributions, from Sir Humphry Rolleston and Sir George Newman, which were followed by a good discussion.

Sir **HUMPHRY ROLLESTON** said the isolation of all carriers of the bacilli would be effective only if adopted in the stage before the discharge of such bacilli from the individual. If all latent cases were detectable by the von Pirquet test, 90 per cent. to 95 per cent. of urban populations and an enormous number of cattle would prove to be infected. Krause had said that tuberculosis was the price we paid for our civilisation. The Tuberculosis Order of 1912–13 should be revived as soon as possible; this was asked by the National Council for the Prevention of Tuberculosis at its meeting last year. Small doses of the infection in early life probably conferred some degree of immunity; the danger lay in mass infections. Periodic examination of children every six months by the method of Calmette would be of great service in detecting the onset of infection. The test should be applied to a selected area without delay. The question of general hygiene could not be separated from this campaign; improved sanitary and physiological conditions, proper housing, good feeding, healthy and not excessive work, suppression of alcoholism and venereal infection were essential for the prevention of diseases, of which tuberculosis was the commonest. Medical men were in a position to diminish and prevent infection, to improve the resistance of the people by securing healthy surroundings, proper feeding and occupation, and to promote the education of the masses in matters of hygiene. The doctor could take part in the prevention of the disease by teaching students and by helping on research. He constituted the first line of defence against all diseases; he was acquainted with the life-history and physical condition of the members of the families who came under his care, and he had an unequalled opportunity of educating them in the laws of physiological righteousness. This was the more important as patients did not usually seek advice until disease had become definitely established. Teachers in medical schools had a great responsibility in forming the outlook of the future general practitioner in regard to this disease. But few medical schools in this country gave a systematic course of instruction in tuberculosis, in which early diagnosis should receive special emphasis. There was also need for the creation of University chairs in Tuberculosis, such as those in Edinburgh and Wales. And

Correspondence.

"Audi alteram partem."

AN APPEAL FROM THE RUSSIAN RED CROSS.

To the Editor of THE LANCET.

SIR,—I appeal to all my colleagues in the British Isles and the British Empire, imploring them to hear the cries and groans of the millions of my countrymen who are dying from starvation, cholera, typhus, dysentery, and malaria. The women and children are waiting for your help; not merely your sympathy, but your real and material help. We, who are physicians, know that to infectious disease there are no boundaries, no nationality, no rich, no poor, no strong, no weak. Infectious disease, in its march, destroys all that it meets.

I ask all British physicians to raise aloft the banner of humanity for speedy help to my country, by sending Medical Sanitary Detachments, Medicaments, and Hospitals to the areas of distress and famine. I shall be happy to furnish all particulars on application.

I am, Sir, yours faithfully,
B. BELILOVSKY, M.D. Petrograd,
L.R.C.P. & S. Edin. and Glasg.

S, Eccleston-street, London, S.W. 1.
(Telephone: Victoria, 2541.)

ROSACEA.

To the Editor of THE LANCET.

SIR,—Dr. A. Whitfield's Lumleian lectures, which you have recently published, are models of their kind, and in my opinion are among the most important contributions to the scientific study of dermatology that have appeared in this or any other country for many years. I have read them not once, but several times, and each time with more and more enjoyment. But I should like, if I may, to join issue with him on one point, namely—the ætiology of rosacea, and his classification of patients with this condition into two types: "the irritative and the toxic." I think he has to some extent misinterpreted some of my remarks in the paper on gastric analysis in cases of rosacea, which I published some time ago with Dr. J. A. Ryle, and I therefore wish to recapitulate the views which I then attempted to put forward.

Everything points to the idea that in rosacea the flushing of the face depends on some abnormality of the gastric mucous membrane. Probably in the majority of cases, if not in all, there is actual chronic gastritis—i.e., inflammation of the mucous membrane—and, although irritants such as alcohol, tea, coffee, condiments, &c., may be direct or predisposing causes, in many cases the constant swallowing of pus from the mouth or nasopharynx would seem to be the most important factor in producing the gastritis. The presence or absence of inflammation, however, in the gastric mucosa is difficult to determine, owing to the rapid post-mortem changes that normally take place in it. In early cases of rosacea the secretion of hydrochloric acid by the stomach may be normal or even temporarily excessive; in chronic cases there is almost constantly either marked hypochlorhydria, or frequently complete absence of free acid.

With regard to Dr. Whitfield's two types—the irritative or angeioneurotic and the toxic—although the distinction is a useful one clinically, I think that the flushing is in both cases dependent on the condition of the gastric mucous membrane. It can easily be understood that in persons with an unstable vasomotor system—and such are usually, though by no means always, women—the irritability of the gastric mucous membrane resulting from gastritis is apt to make the flushing of the face a more marked and frequent symptom than it is in their more phlegmatic fellow-sufferers. In the toxic type, although oral and nasopharyngeal sepsis and the secondary intestinal infection resulting therefrom may lead to severe toxæmia with "a pale, lemon-tinted complexion," and may predispose to staphylococcal infection of the skin, the rosaceous flushing is probably still dependent on the gastritis set up by the swallowing of pus. In my experience the toxic acne of middle-age, to which Dr. Whitfield refers, is usually accompanied by some degree of rosacea, and probably depends on the lowered resistance to infection that chronic sepsis creates.

Dr. Whitfield says that he cannot agree with my description of the appearance of the tongue in rosaceous patients. I admit that it is not a constant feature, but the majority of cases of both types certainly do have the pale, smooth (i.e., the papillæ are hardly apparent), flabby tongue that I described; it is often clean, though, of course, in the toxic type it is dirty and furred.

In conclusion, I will describe one case which illustrates some of the points I have raised:—

The patient is an unmarried lady, who came to see me first in April of this year for flushing of the face and pustules on the chin, to which she had been subject for the past five or six years. She had long suffered periodically from sore throats and laryngitis, and she complained of chronic post-nasal catarrh. Four years previously she developed "goitre," after an attack of tonsillitis, and, although this disappeared after a time, the thyroid continued to enlarge from time to time. She belongs certainly to the angeioneurotic type, and flushes very easily. When I first saw her she had mild persistent rosacea with pustules on the chin, but she was not anæmic and her complexion, apart from the pustules, was good. Her tongue was smooth, very pale, and slightly indented at the edges; her teeth were in good condition, but her tonsils were very septic, and contained definite pus in their crypts; muco-pus could also be seen in the nasopharynx. Although I could not arrange for a test-meal, I ordered her dilute hydrochloric acid in 40 minim doses after meals, and a resorcin-calamine lotion. She returned to see me a few days ago, saying that as long as she took the acid she remained entirely free from pustules, but whenever she omitted to do so for a few days a fresh crop would invariably appear. She no longer flushes after meals, but does so when excited or nervous; the flushing, however, on these occasions is not confined to the rosaceous areas.

Here, I think, we are dealing with an example of the angeioneurotic type, in whom gastritis had been produced by the constant swallowing of pus from septic tonsils and the nasopharynx. Although the enlargement of the thyroid, and, perhaps, indirectly the vasomotor instability, were probably due to the throat infection, the patient can in no sense be considered to belong to Dr. Whitfield's toxic group.

I am, Sir, yours faithfully,
H. W. BARBER.

Devonshire-place, W., July 30th, 1921.

THE SUPPOSED EXTERNAL EFFECTS OF HUMAN VISION.

To the Editor of THE LANCET.

SIR,—With reference to the paper by Dr. C. Russ in THE LANCET of July 30th, I would like to point out that, as such discoveries as these are as good as drink to the mystic and charlatan, it would be as well if they could be thoroughly investigated without loss of time. Indeed, their importance as error might well exceed their interest should they turn out well-founded, great as that must be for psychology as for physics. While acknowledging the restraint of Dr. Russ in his conclusions and disclaiming any right to criticise his method or observations, there appear to be certain considerations and questions with which he has not dealt. "The fact that the direct gaze or vision of one person soon becomes intolerable to another," which was the starting point of his research, is (in my opinion, adequately) accounted for already. The discomfort is not sensory but arises in the sphere of ideas and sentiments, and is manifestly dependent upon the past history of the patient and his psychic relations with the gazer. Thus a woman may feel child, because he thought this imparted some passive immunity. At the earliest opportunity he gave a diagnostic injection of Koch's old tuberculin. If there was a reaction, he concluded that the child had already been tuberculised by the mother, and he continued with increasing doses until he got to a dose of a milligram. This required five months, and during that time the child went on well. If the mother had open tuberculosis the infant became tuberculised soon after birth. He advocated the systematic sending of such children to tuberculosis dispensaries, where they could have the kind of treatment he had carried out.

The **President** expressed his appreciation of the help being given by the Press, and Dr. **Minor** voiced the gratitude of the delegates from abroad for the kindly reception and entertainment accorded them.

The Conference then closed.

During Friday visits were paid to a number of sanatoriums and hospitals, and on Tuesday international delegates were entertained at luncheon by the Government.

TREATMENT AND EDUCATION OF PHYSICALLY DEFECTIVE CHILDREN:

CONFERENCE AT NEWCASTLE-ON-TYNE.

A Joint Conference arranged by the Newcastle Invalid Children's Aid Association and the Central Committee for the Care of Cripples was held at the Royal Victoria Infirmary, Newcastle-on-Tyne, on July 19th. Both morning and afternoon meetings were well attended. Lady **Parsons** took the chair at the morning session, which was first addressed by Prof. **Rutherford Morison**, who, in opening, estimated that there exist three cripples for every 1000 of the population, and that at this rate there are 1500 cripples in Newcastle and Gateshead. Of this crippling 40 per cent. is due to tuberculosis and 26 per cent. to infantile paralysis. Prof. Morison emphasised the importance of prevention, instancing what has been done in other diseases, and claimed that with preventive measures and adequate early treatment three-quarters of the crippling could be prevented. He also called attention to the psychology of the cripple, how he is apt to be singled out by the healthy boy or girl as a subject for persecution and contempt, and how this and his difficulties in the struggle of life are apt to sour him and to make him morose. Prof. Morison mentioned the existence of a home for crippled children in Gosforth, associated with the name of Mr. Sanderson. This, until lately, had been a home and a school, but no surgical treatment had been carried out; lately, however, arrangements have been made for operative treatment to be carried out at another institution, and it is hoped to make the home a centre for both education and treatment of cripples.

Mr. R. C. **Elmslie** related his experience of the progress that has been made in the surgical and educational care of crippled children in London during the last 12 years; better coöperation between the schools and hospitals and increased provision for tuberculous children had resulted in much improvement in the condition of the children, but much still remained to be done, more particularly for children with infantile paralysis. Surgeons are still obliged to do a great deal of work in the out-patient department that can only be really efficiently carried out if the children are in an institution. Speaking of the education of cripples, Mr. Elmslie pointed out that every cripple must eventually compete in the labour market with healthy rivals, and unless he has been educated and taught a trade his position is hopeless. In his opinion no institution has any right to keep in crippled children for prolonged surgical or other treatment without arranging for their education, nor to keep them in and educate and clothe them without arranging for adequate treatment.

Mr. H. **Platt**, relating experiences from visits to America, pointed out that the chief difference in that country is due to the much larger number of American surgeons who have relinquished other branches of surgery in order to devote themselves to orthopædics. In most of the medical schools and universities in America there is a chair of orthopædics, and there are far more hospital beds given up to the work than there are in this country.

Afternoon Session.

In the afternoon, under the chairmanship of Sir **Theodore Morison**, Mr. **John Fraser** was the principal speaker. Mr. Fraser devoted himself chiefly to the prevention of tuberculosis, pointing out that attention to a few simple measures might do much. The measures advocated were: (1) Preventing a child during early years from coming into contact with persons suffering from open tuberculosis; (2) attention to the hygiene of the child's mouth and throat; (3) boiling milk; (4) special care of a child after an attack of measles, whooping cough, &c., when there is an undoubted increased liability to tuberculous infection.

After an active discussion the following resolutions were unanimously adopted:—

1. That this Conference is of opinion that a local branch of the Invalid Children's Aid Association should be formed with the following objects: (1) The procuring of all available means of assistance, care, and education; (2) the keeping of records; (3) the discovery of early cases of crippling disease.
2. That hospital school accommodation is most urgently needed now, and should be provided at the earliest possible date.

VIENNA.

(From our own Correspondent.)

Deaths of Eminent Physicians.

Within the last few weeks the medical faculty of the Vienna University has sustained the loss of several of its most esteemed members, who were responsible to a great degree for the high position held by Vienna in the scientific world. Amongst the best known was Prof. V. von Urbantschitsch,[1] the successor of Politzer as head of the otological clinic. Although in no way as eminent as his predecessor, he was an excellent teacher; to his efforts are due the recognition and treatment of deafness as a social disease. He was the instigator of the Union "Vox," which endeavours to unite the deaf and to alleviate their condition by promoting instruction in lip-reading and testing all apparatus designed as an aid to hearing. As a result of the war the number of deaf persons has largely increased; many of them owe a great debt of gratitude to Urbantschitsch for the help obtained through his initiative. He carried out original research concerning the physiology of the ear and its correlations to the other senses—vision, taste, and smell. A few days before him there died Prof. Viktor Lang, the President of the Vienna Academy of Sciences, a famous physicist, the teacher of numerous generations of students in medical and general physics. He was an authority on crystallography and the physics of minerals; early in his career he gave up medical practice and devoted himself to science, but retained a great interest in all sides of medicine.

A New Medical Act.

As a result of the medical strike effected some few weeks ago the Government has now fulfilled its promise and brought before the National Assembly a Medical Act of which the following are the leading points. In future no person may practise medicine in Austria unless he or she can produce a diploma of Doctor of Medicine, granted or confirmed by an Austrian medical faculty. The preparatory hospital year, as demanded by all medical corporations, has made before the completion of medical demobilisation, these appointments would now again be declared vacant and re-advertised, or whether the original appointments were to be considered the permanent appointments of the present holders.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: I would refer my hon. friend to the answer given to the hon. Member for Hemsworth on June 16th, of which I am sending him a copy.

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[1] See annotation, The Lancet, July 16th, p. 144.

Home Hospitals for Defective Children.

Lieut.-Colonel FREMANTLE asked the President of the Board of Education if, under the grant regulations of the Education Act of 1918, a grant of some £16 to £25 was made in respect of each child of the age of 2 years and upwards residing in a home hospital for physically defective children; that a certificated teacher must be employed in the training of such children, and if he was aware that in some cases certificated teachers, from £200 a year, were employed in such homes for teaching about a dozen children for a few hours a day for five days a week, despite the fact that before the Act came into force adequate teaching was given to such young children free of charge by voluntary helpers; and would he consider whether a more economical method could be employed.—Mr. FISHER replied: The grants payable to certified voluntary boarding special schools which provide maintenance and treatment as well as instruction are, under Grant Regulation No. 19, approximately as stated. The qualifications required in the teaching staff of these schools are set out in Appendix B of the Regulations, and have not been raised since the passing of the Act of 1918. Proposals for economy in the staffing of individual schools are, and will be, considered by the Board on their merits.

Ex-Service Men in Mental Hospitals.

Colonel WEDGWOOD asked the Minister of Pensions whether he had any authority to intervene in any way in the cases of ex-Service men, under the Lunacy Acts, who had the status of private patients.—Mr. MACPHERSON replied: I have no authority to intervene in matters coming within the scope of the Lunacy Acts; but in all other questions affecting Service patients I have the same powers as in the case of other pensioners. I may, however, say that by the courtesy of the Board of Control a medical officer attached to Ministry headquarters now visits, in conjunction with the Commissioners of the Board of Control, mental institutions in which ex-Service men are under treatment as private patients.

Committee on Leadless Paints.

Captain BOWYER asked the Secretary for the Home Department what was the composition and terms of reference of the fresh committee which he had promised to appoint to examine the recent further evidence as to the results obtained with leadless paints—Mr. SHORTT: I am not yet in a position to announce the composition and terms of reference of this Committee, but I hope to do so shortly.

Mentally Deficient Children.

Major BIRCHALL asked the Minister of Health whether he would state the number of Poor-law children in separate Poor-law institutions for the sick, in separate Poor-law institutions for the mentally deficient, and in non-Poor-law institutions on Jan. 1st, 1921.—Sir A. MOND replied: The numbers on Jan. 1st, 1921, were as follows:—

—	Not mentally infirm.	Mentally infirm.	Total.
In separate Poor-law institutions for the sick ..	7086	99	7185
In separate Poor-law institutions for the mentally infirm	—	1329	1329
In non-Poor-law institutions (not being lunatic asylums)	8550	*689	9239

* Including 630 in separate institutions for the mentally infirm.

THURSDAY, JULY 28TH.

Housing Conditions in Scotland.

The House went into Committee on a Vote of £1,875,999 for the salaries and expenses of the Scottish Board of Health, Mr. J. HOPE in the chair.

Mr. ROBERTSON moved to reduce the Vote by £100 for the purpose of calling attention to housing and the insanitary condition, especially of the mining towns and villages, in Scotland. He said the Housing Commission's report in 1911 stated that there were in Scotland no less than 120,730 single-apartment houses, equal to 12·8 of the total number of houses. Of the total population of Scotland 100,000 people at that date were living in single-apartment houses, and 39·3 per cent., or nearly 2,000,000, were living in two-apartment houses. The conditions were worse now than they were in 1911, because, according to the census figures, the population had increased by 2½ per cent. In no fewer than 800 houses the inmates exceeded eight in number. There were thousands of instances at the present time of more than one family living in a two-apartment house, and many instances of more than one family living in a single-apartment house. There were instances of 11 or more persons living in a single room. In 1911 the death-rate in one-roomed houses was 20·14 per 1000, in two-roomed houses 16·83 per 1000, in three-roomed houses 12·63 per 1000, in four-roomed houses 10·32 per 1000, and so on. In the county of Lanark there were many cases where consumptive patients were obliged to live in the same room with several other persons. The cruelty of it was that when these people were taken from these dens, and hope had been revived in their breasts by residence in a sanatorium, they were driven back again to live out their existence in the dens owned by rich men where they contracted the disease. Do not let them cast their eyes to the ends of the world and beat their hands on their breasts and thank God that we were not like other nations. Why were our wealth producers rotting in the slums while the Government were spending money on military adventures in far-off lands that had little connexion with our country? He sincerely hoped that on this question of housing in Scotland there would be no holding back.

Mr. MUNRO (Secretary for Scotland) said that he agreed with Mr. Robertson that the conditions of housing in some of the mining districts were an outrage upon decency and a blot upon civilisation. As regarded tuberculosis and infantile mortality, however, it was curious to find, notwithstanding the shocking housing conditions to which Mr. Robertson referred, that both infantile mortality and tuberculosis had steadily declined in Scotland during the last 10 years. While in 1911 infantile mortality in Scotland was 112 per 1000, it had diminished in 1920 to 92 per 1000; and while the death-rate from phthisis in Scotland in 1910 was 115 per 100,000, the figure had fallen to 88 in the year 1919. He claimed that, so far from having neglected the housing of the working classes, the present Government had made a larger contribution to the solution of housing problems in Scotland and England than any other Government in the history of this or any other country in Europe, or perhaps in the world. All the Government were doing was to mark time and call a halt in approving tenders until sufficient progress had been made with the houses that were now under construction.

Mr. W. GRAHAM said he was not in any way an authority on medical matters, and he did not know how far it was possible to trace the prevalence of cancer to bad or indifferent housing conditions, but a very large proportion of the cases came from the same locality, and that seemed to point to the importance of some investigation from the standpoint of this disease, which in some way appeared to be taking the place of tuberculosis.

Captain ELLIOT: Surely it is agreed that cancer occurs in good houses as well as bad.

Mr. GRAHAM said he entirely agreed that they found cancer in every grade of society, but in Scotland a very large number of cases came from certain areas, and he suggested that while tuberculosis was decreasing other diseases were increasing, and that seemed to be a matter worthy of investigation.

After further discussion the vote was agreed to by 173 votes to 58.

War Neurosis and Shell-shock.

Mr. MILLS asked the Minister of Pensions what was approximately the total number of pensioners now receiving treatment for war neurosis and other shell-shock conditions; and what was the number and proportion of these cases who had yet had no treatment or were awaiting treatment.—Mr. MACPHERSON replied: There are now approximately 3400 men under treatment in institutions for disabilities of this nature. About 900 are awaiting admission, and, if unable to work, are receiving treatment allowances. I may add that there are a large number of cases in which out-patient treatment is found to be sufficient.

Medical Courses in Psychotherapy.

Mr. FREDERICK ROBERTS asked the Minister of Pensions whether a medical man trained as a psychotherapist by the Ministry of Pensions, and refused work as a neurological specialist, would be accepted for work on the neurological boards in London in place of one of the untrained ordinary members or neurological members of such board, or whether, in the interests of the pensioner, such training was to be allowed to go to waste.—Mr. MACPHERSON replied: The scheme of training medical men in psychotherapy was instituted by my Department to meet the urgent need for this particular form of treatment, and until the demand in the different areas has been fully met, the question of employing them on medical boards does not arise.

The Price of Spirits.

Mr. HIGHAM asked the Prime Minister whether he would consider the advisability of removing the restrictions

London. On the recommendation of the Committee the Council has resolved that it will not at present provide or maintain institutions for adult blind persons, but will utilise to the greatest extent possible existing charitable and other associations. It was further agreed that a central council shall be established by the L.C.C. for advisory and other purposes, consisting of representatives of associations for the blind, representatives of the Council, and, if deemed desirable, other persons with special knowledge of the needs of the blind. A detailed welfare scheme which has been evolved by the General Purposes Committee is being forwarded to the Minister of Health for his approval.

Treatment of Tuberculosis.

In connexion with the scheme of the L.C.C. for comprehensive treatment of tuberculosis in London, the following recommendations by the Public Health Committee were adopted :—

(*a*) That the Ministry of Pensions be urged to expedite its decisions as to its acceptance of responsibility for the treatment of tuberculous ex-Service cases, not only in new cases, but also in cases at present receiving residential treatment, in which the Ministry of Pensions has not yet decided that the tuberculous condition of the patients is attributable to or aggravated by war service.

(*b*) That the Public Health Committee be authorised to arrange for the completion of courses of treatment and training in cases of ex-Service patients at present receiving treatment and training and in respect of whom the Ministry of Pensions decides that the tuberculous condition of the patients is not attributable to or aggravated by war service.

(*c*) That the Council is not prepared to include, amongst the objects of expenditure on the tuberculosis dispensary service ranking for the Council's grant under its scheme for the treatment of tuberculosis in London, expenditure by metropolitan borough councils on the provision of extra nourishment.

(*d*) That in cases in which the income of an insured person, accepted for residential treatment for tuberculosis, is the main support of the family, no assessment be made for contribution towards the cost of such treatment.

The Public Health Committee has accepted an offer by the authorities of Brompton Hospital to allocate for the sole use of the Council 260 beds at Brompton Hospital and 100 beds at Frimley Sanatorium, for lump sum payments of £4000 a month. A similar arrangement has been entered into with the Victoria Park Hospital authorities, the monthly payments in this case being £888 17*s.* 9*d.* for 80 beds. The county medical officer has been authorised to arrange for 40 observation beds to be allocated to the Council at the Royal Chest Hospital, City-road. The observation beds at Brompton Hospital will be reduced by the same number.

Doctors' Certificates.

It was reported to the Middlesex Insurance Committee recently that the Tottenham Medical Union had asked the ruling of the Ministry of Health in the following circumstances : "A" is an insured person on the panel of "X." He goes to "Y," who is a panel doctor in the same locality known as "X," and pays him for treatment privately. In the event of "A" requiring a certificate of incapacity in order to obtain his sickness benefit, should "Y" give an ordinary National Health certificate or write a private certificate?

The Minister replied that an insurance practitioner is only entitled to use the official form of certificate (Form Med. 40) for patients whom he is attending as insured persons. An insurance practitioner who is treating an insured person as a private patient would therefore have no alternative but to issue a private form of certificate.

Insured persons are not disqualified from receiving sickness benefit by obtaining medical certificates from doctors attending them in a private capacity, and a society is not entitled to refuse to receive and consider, in connexion with a claim to benefit, certificates not given under the medical certification rules. On the contrary, a society is bound to take into due consideration any medical certificate put forward in support of a claim. It is perhaps unnecessary to add, on the general question of the acceptance of fees by an insurance practitioner, that although, technically, an insurance practitioner is entitled to charge a fee to the patient of another practitioner who, in an exceptional case, applies to him for treatment as a private patient, it is clear that any practice of this sort would tend to be seriously prejudicial to the medical service for the insured.

The Services.

RE-ASSESSMENT OF PRE-WAR DISABILITY PENSIONS.

A QUESTION was recently addressed to the Minister of Pensions, in respect of the re-assessment of pre-war disability pensions of officers who served again in the late war, as it appeared such officers were debarred from any increase of either the service or disability elements of their retired pay, unless the total of such retired pay was less than the service element alone would now be under the new regulations, they were deprived of all compensation for the injuries received in their former service. The Minister was asked whether he would take steps to remove this injustice at once, and whether, as the pre-war Warrant, 1913, Article 561, laid down that these pensions were never to be less than the half pay of the rank, he would apply the new scale of half pay to such cases, pending the settlement of the new standard of disability retired pay, which it had been stated was still under consideration. Major Tryon (Parliamentary Secretary to the Ministry of Pensions) stated in his reply that it was necessary in this matter to distinguish (1) officers disabled before the present war and again disabled by services in it; (2) officers disabled in former wars and not further disabled; and (3) officers disabled by peace service before the present war, and not further disabled. The position of officers was fully considered by the Select Committee on Pensions and was provided for in the Royal Warrants of August 1st, 1917, and July 2nd, 1920; such officers generally gained considerable advantage so long as their disablement by Great War service continued. Officers in the second class could be dealt with under the warrant of Dec. 10th, 1919, the general effect of which was to give the disablement addition allowed by the warrant of 1917 to officers disabled in former wars and still suffering from the effects of such disablement. Article 501 of the pay warrant 1913 or 1914 only entitled the officers to whom it applied to the half-pay rates laid down in the warrant, and not to any higher rates introduced subsequent to the officer's retirement.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. M. B. Macleod to be Surg. Lieut.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lieut.-Comdr. H. L. Murray and J. H. G. Howe to be Surg. Comdrs.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. P. MacKessack retires on ret. pay and is granted the rank of Col.

Temp. Capt. G. Marshall relinquishes his commn. and is granted the rank of Maj.

The undermentioned temp. Capts. relinquish their commns. and retain the rank of Capt. : P. P. Butler, J. Ash, J. E. Thompson, H. F. Stephens, J. Martin, and M. Ashley.

ARMIES OF OCCUPATION.

Capts. J. M. Chrystie and J. G. Morrin relinquish their commns.

1st (Lowland) Fd. Amb. (D.F.).—Temp. Lt. N. M. D Fox relinquishes his commn. and retains the rank of Lt.

3rd (Welch) Fd. Amb. (D.F.).—Temp. Maj. A. Bird relinquishes his commn.

ROYAL AIR FORCE.

Flt. Lt. T. N. Wilthew relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

Lt. R. E. Burns is transferred to the unemployed list.

DEATHS IN THE SERVICES.

Col. C. H. Hale, C.M.G., D.S.O., late A.M.S., who died on June 20th at Portsmouth, aged 59, entered the service in 1887. He served in the Matabele war of 1896 and for his services received the D.S.O. He was an assistant director of medical services during the late war and was awarded the C.M.G. He retired in 1917.

Medical News.

Royal Colleges of Physicians of London and Surgeons of England.—At meetings of Comitia of the Royal College of Physicians and of the Council of the Royal College of Surgeons, on July 28th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 107 candidates (82 men and 25 women) who have passed the Final Examination in Medicine, Surgery and Midwifery of the Conjoint Board, and have complied with the by-laws. The following are the names and medical schools of the successful candidates:—

G. K. Arthur, St. Bart.'s; A. W. Austen, Westminster; Martha F. Barritt, Manchester; Frances S. Barry and Geraldine M. Barry, Royal Free; Marjorie M. S. Bartlett, St. George's; Hylda C. Briscoe, St. Mary's; Lorna P. Brown, Royal Free and Univ. Coll.; G. G. Bruce, Aberdeen; E. M. Burrell, Cambridge and St. Thomas's; A. V. Campbell, Liverpool; F. C. W. Capps, St. Bart.'s; Christabel L. M. Charlesworth, Glasgow and King's Coll.; J. C. Churcher, St. Thomas's; L. E. Claremont, Univ. Coll.; Marion C. V. Clarke, Royal Free; C. S. Cloake and I. J. Corbett, London; R. D. Cowan, Toronto; J. N. Craig, Dundee; E. Cuerel, Lausanne; J. J. da Gama Machado, St. Bart.'s; H. C. de Penning, Bombay and St. Mary's; E. C. Dodds, Middlesex; J. R. Dow, Charing Cross; T. W. K. Dunscombe, Durham; E. R. D. Eastman-Nagle, St. Thomas's; Doris Kathleen Emery, Royal Free; F. T. Evans, St. Bart.'s; J. C. Evans and J. Franks, London; H. Freeman, Westminster, E. St. C. Gainer, Middlesex; P. P. Gandhy, Bombay and St. Mary's; B. Gould, London; Marjorie P. C. Greene, Royal Free; J. F. Hackwood, St. Thomas's; A. H. Hall, Birmingham and London; G. A. M. Hall, Durham; M. Hall, Guy's; B. J. Hallows, St. Bart.'s; G. H. C. Harding, Liverpool; S. Hartley, Oxford and St. Thomas's; S. E. Harvey, St. Thomas's; Marjorie Hawkins, Westminster; M. S. Hashish, Cairo and St. Bart.'s; A. D. Hepburn, Cardiff and Westminster; I. Hipshon, Leeds; R. J. Hodgkinson, Guy's; C. A. Horder, Cambridge and St. Bart.'s; Erna Henrietta Jebens, Royal Free and St. Mary's; L. M. Jennings, St. Bart.'s; Margaret G. Jones, Royal Free; R. C. Lightwood, King's Coll.; D. M. Lloyd-Jones, St. Bart.'s; Eva Lombard, Geneva; Muriel J. Lough, St. Mary's; A. G. Mackay, Edinburgh; D. McClean, St. Thomas's;. C. G. Martin, Cambridge and St. Bart.'s; Enid M. Moore, St. Mary's; L. S. Morgan, St. Bart.'s; J. N. Morris, King's Coll.; R. E. Murray, Calcutta; M. Newman, Liverpool; T. S. North, St. Mary's; H. A. Osborn, Oxford and King's Coll.; Alice Owen, Royal Free; A. Pain, Middlesex; D. B. Pauw, Oxford and St. Bart.'s; Winifred Peacey, Royal Free; L. S. Perera, Singapore and London; Mary W. Pitt-Lewis, Royal Free and St. Mary's; E. Philbin, Manchester; J. H. Porter, Cambridge and Univ. Coll.; J. G. Reed, St. Thomas's; L. M. Rice, Toronto; G. H. Roberts, Charing Cross; A. Robertson, Guy's; Mary F. Roope, Charing Cross; E. Savage, Cardiff and St. Bart.'s; T. Seshachalam, Madras and London; H. Shannon, St. Bart.'s; W. Shaw, Cambridge and St. Bart.'s; A. H. Shelswell, Guy's; S. S. Shri-Kent, Punjab and Liverpool; O. L. C. Sibley and A. I. Silverman, Middlesex; S. R. Shoaika, St. Bart.'s; L. Smalley, St. Thomas's; H. K. Snell, King's Coll.; Dorothy M. Stewart, Royal Free and St. Mary's; Y. A. Sumbul, St. Mary's; Muriel A. Sutton, Univ. Coll.; Marjorie P. Taylor, Charing Cross; Wenefride Thompson, Royal Free and St. Mary's; A. W. Tibbetts, Birmingham; Doris Lyne Veale, Royal Free; A Verwey, Leyden and St. Bart.'s; J. G. Walker, Charing Cross; W. J. G. Walker, Univ. Coll.; L. K. Watson and L. R. A. Wells, Guy's; E. T. Wright, St. Mary's; J. E. Wright, Guy's; and C. F. Young, London.

Diplomas in Tropical Medicine and Hygiene were conferred upon the following 25 candidates from the London School of Tropical Medicine:—

W. Allan, Aberdeen Univ.; J. A. Anklesaria, Bombay Univ.; P. M. Antia, Bombay; S. Bardhan, Calcutta Univ.; W. B. Borden, Maryland, U.S.A.; E. J. Clark, Edinburgh Univ.; K. Comyn, Cambridge Univ and Roy. Army Med. Coll.; S. D. De Vos, Ceylon Med. Coll.; S. F. Dudley, St. Thomas's Hosp.; K. A. Gandhi, Bombay Univ.; L. E. Liat, Singapore Med. Coll.; J. P. Litt, Edinburgh Univ.; T. C. St. C. Morton, Edinburgh Univ.; J. S. Nicholson, Glasgow Univ.; K. S. Nigam, Allahabad Univ.; W. S. Ratnavale, Calcutta Univ.; S. Roach, St. Bart.'s Hosp.; Alice I. Shaw, Calcutta Univ.; H. C. Sinderson and E. T. A. Stedeford, Edinburgh Univ.; W. M. Tough, Aberdeen Univ.; H. M. S. Turner, Guy's; A. M. Walcott, California, U.S.A.; T. B. Welch and N. M. Wilson, St. Bart.'s Hosp.

Diplomas in Ophthalmic Medicine and Surgery were conferred upon the following candidates:—

G. M. Ali, Allahabad Univ.; M. D. Anklesaria and C. R. Athavale, Bombay Univ.; E. R. Chambers, London Hosp.; F. B. Chavasse, Oxford and Liverpool Univs.; R. M. Dickson, St. Andrew's Univ.; G. C. Dixon, Oxford and Manchester Univs.; J. M. Gibson, National Univ. Ireland; E. W. Ingle, Edinburgh Univ.; R. D. Kamdin, Bombay Univ.; L. A. R. V. Koil Thampuran, Madras Univ.; Ida C. Mann, St. Mary's Hosp.; R. R. Mishra and S. S. Mohamedi, Bombay Univ.; R. B. North, Sydney Univ.; P. H. Robinson, Cambridge Univ. and London Hosp.; C. Rudd, Birmingham Univ.; N. L. Sheorey and C. N. Shroff, Bombay Univ.; H. J. Taggart, Queen's Univ.; J. N. Tennent, Glasgow Univ.; and T. H. Whittington, King's Coll. Hosp.

Royal College of Physicians of London.—An ordinary Comitia of the College was held on July 28th, Sir Norman Moore, the President, occupying the chair. Dr. J. Beresford Leathes was admitted to the Fellowship of the College.

The following candidates having passed the required examination were admitted Members: Drs. S. C. Basu, J. V. C. Braithwaite, J. C. Bramwell, W. Brown, A. E. Clark-Kennedy, R. L. T. Grant, D. McE. Kilgour, N. Kletz, H. M. Oddy, H. S. Pemberton, A. Piney, R. J. Reece, L. R. Shore, J. H. Spencer, A. F. Tredgold.

The resignation of his membership by Dr. F. Edge was accepted and an application by Dr. J. J. MacW. Dunbar, asking that the Membership, which he resigned in 1881, might now be restored to him, was granted.—The Dean of the Faculty of Medicine, Edinburgh University, announced that the Murchison Memorial Scholarship for the current year had been awarded to Dr. Jessie McCririe Craig.—The President announced that he had appointed Sir John Rose Bradford to represent the College on the Voluntary Hospitals Commission. On the recommendation of the Council the Baly medal was awarded to Dr. Henry Hallett Dale and the Moxon medal was awarded to Sir Thomas Clifford Allbutt.—The Weber-Parkes prize and medal was awarded to Dr. Louis Cobbett, for his researches on tuberculosis as embodied in his book entitled "The Causes of Tuberculosis."—Dr. Drewitt was appointed a representative of the College on the Committee of Management of the Chelsea Physic Garden, vice the late Sir George Savage.—Dr. Sidney Martin and Sir Arthur Newsholme were re-elected representatives of the College on the Executive Committee of the Imperial Cancer Research Fund.

Royal College of Surgeons of England.—An ordinary council meeting was held on July 28th, Sir Anthony Bowlby being in the chair. Prof. C. S. Sherrington, P.R.S., was admitted as a Fellow of the College under the rule relating to the election of members of 20 years' standing.

A letter was read from Mr. J. S. Rodman, secretary to the National Board of Medical Examiners of the United States of America, transmitting the following resolution passed at the annual meeting of the Board: "Resolved: That whenever a candidate appears before the National Board for examination presenting a certificate from the Conjoint Board in England, the same shall be accepted as a satisfactory qualification for admission to Part III. (practical) of the examination required by the National Board of Examiners."

University of Aberdeen.—At the recent summer graduation the Struthers Medal and Prize in Anatomy was awarded to Dr. Annie Anderson for "Preparations Showing Development of Cerebral Fissures during Fœtal Life." The Lizars Medal in Anatomy was awarded to Edward C. Chitty and William Gunn (equal).

University of Manchester. — The following appointments have been made: Assistant Director of the Physical Laboratories, Mr. J. M. Nuttall, M.Sc. Manch., Senior Lecturer in Physics; Lecturer in Chemistry, Mr. D. C. Henry, B.A. Camb.; Lecturer in Education, Mr. P. G. Reynolds, B.A. Lond. The Cheshire County Council Education Committee have renewed their annual grant of £500 to the University.—The following award has been made: Moseley Memorial Prize in Physics, A. J. Hailwood.—The following representatives of the University on Outside Institutions have been appointed: General Medical Council, Prof. H. R. Dean; Fleetwood Secondary School, Prof. Calder; Bolton School, Colonel E. W. Greg, C.B.; Leek High School, Mr. Herbert Morris; Leek Westwood Hall Girls' High School, Miss Mary A. B. Herford, M.A.; John Rylands Library, Prof Herford and Prof. Kastner; Winwick Educational Foundation, Mr. Geoffrey Owen.

London School of Tropical Medicine.—The following are the results of the examination held at the end of the sixty-sixth session (May to July, 1921):—

*S. Dudley (Surg. Comdr., R.N.) ("Duncan" and "Lalcaca" medals), *K. S. Nigam, *T. C. Morton (Flight-Lieut., R.A.F. Med. Ser.), *A. C. Vardon, *J. P. Litt (Capt., R.A.M.C.), *Lee Ee Liat, *J. Kilian Clarke, *K. A. Gandhi, *E. T. C. Stedeford, *H. M. Stanley Turner, (Wing-Comdr., R.A.F. Med. Ser.), H. C. Sinderson, W. B. Borden (Major, U.S. Army), S. Roach (Surg.-Comdr., R.N.), A. M. Walcott, J. Singh, R. Hunter, F. Dahlerup, W. Milne-Tough, L. B. Perry, R. M. Bharucha, E. J. Clark, R. L. Symes, J. A. Anklesaria, P. M. Antia (Capt., I.M.S.), L. W. Barlow, S. N. Bardhan, J. C. Callanan, H. G. Holdbrook, E. Matthai, W. J. McClintock, J. S. Nicolson, A. C. Paterson, P. Popoff, W. S. Ratnavale, J. A. Ross, A. D. Soares, R. H. Turner, S. de Vos, N. M. Wilson, J. A. A. Duncan, J. Grell, P. R. Lentin, Hassan A. Soud.

* With distinction.

acute discomfort in the knowledge that someone is gazing at a hole in her stocking, a discomfort strictly analogous to that experienced by a person with something to conceal while another stares through "the windows of his soul."

We must admit that here, as in Dr. Russ's first experiment (where the solenoid swings according as the gaze is directed to one or other pole), the effect of the gaze takes place selectively in the *line of vision*, the least deviation of the physiological axis transferring the effect to the new point of fixation. Dr. Russ has omitted to draw the legitimate inference, that the effect is produced at the conjugate focus of the fovea centralis, or on that axis, since if all portions of the retina were equivalent the exact direction of the eye could have no significance, both poles of the solenoid having similar optical and other relations to the retina as to the eye as a whole. This experiment, therefore, indicates that the force (if there be such) emanates from the fovea and from no other part of the eye (at least in appreciable amount), and also, I think, that it is refracted by the optical media in a manner similar to light, although the macula is the most active part of the retina. These considerations and the problems they suggest cast some doubt on Dr. Russ's hypothesis, and the fact that they are not raised by him suggests that experiment has outrun reflection, as may happen with ultra-objective minds. Of course, the theory would look well enough if all retinal emanations could by refraction or otherwise be projected along the axis of macular vision; but though such a supposition is apparently a natural error, the Congress of Ophthalmologists must have known that whatever proportion of such emanations could escape from the eye, and whatever the refractive index of the media to them, they must then be dispersed in proportion as the eye tends to a distant focus.[1] Dr. Russ records incidentally and without comment that the influence was not reflected by a mirror, but does not give us any results to indicate the behaviour of the new force as regards distance of action, so that even this observation is unreliable. The only experiments on its conduction are on transmitting media. He does not study the effect of retinal inactivity through disease, or of opacity of the media, yet these are obvious controls, while the *deviation* of the force would supply a valuable clue to its nature.

It is to be hoped that Dr. Russ will inform us upon these and other points, as, I say, a partly known force supplies a convenient hypothesis which enables lazy thinkers to "pigeon-hole" inconvenient problems, and affords pabulum to the rabble of transcendent theorisers and myth-makers who stand between the people and truth.—I am, Sir, yours faithfully,

IAN D. SUTTIE, M.B., F.R.F.P. & S.Glasg.

Glasgow, August 1st, 1921.

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[1] Supposing the active retina to be radiant, it is easy to calculate that only about a millionth of this total radiation will be projected upon the pole of the solenoid.

MEDICAL EXHIBITION AT DORPAT, ESTHONIA.—A Medical Exhibition in connexion with the First Esthonian Medical Congress is to be held from Nov. 30th to Dec. 7th next, in the rooms of the Hygienic Institute of the Dorpat University, and has for its object the acquainting of the population of Esthonia with the achievements, resources, and research of medical science as a whole. The Exhibition will comprise the following sections: (1) anatomy, physiology, pathology, forensic medicine, &c.; (2) hygiene, epidemiology, bacteriology, climatology; (3) clinical medicine, therapeutics, surgery, obstetrics, health resorts and sanatoria; (4) venereal diseases; (5) medicamental matters; (6) apparatus and instruments; (7) medical literature. Foreign associations, firms, and individuals are invited to take part, and applications from abroad will be accepted up to August 15th. The Esthonian Government will grant the following facilities to those desirous of participating in this Exhibition. Exhibits from abroad will be free of Custom duty if not sold in Esthonia; no space fee will be charged; free visas will be granted on application to intending visitors to the Exhitition. Further particulars may be obtained on application at the Esthonian Legation, 167, Queen's-gate, London, S.W. 7.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Legislative Programme.

On Tuesday, July 26th, Mr. A. CHAMBERLAIN (Lord Privy Seal), in making a statement to the House of Commons on the Government's programme of business for the remainder of the Session, indicated that the War Pensions Bill was among the measures which it was necessary to pass into law before Parliament adjourned. On the other hand, the Summer Time Bill and the Clinical Thermometers Bill would not be proceeded with further. Among other Bills that the Government would not press—certainly not after 11 o'clock, unless they could be passed with general consent—were the Criminal Law Amendment Bill and the Licensing (No. 2) Bill.

Medical Privilege.

Lord DAWSON OF PENN had given notice of his intention to call attention in the House of Lords on Wednesday, July 27th, to recent rulings as to the privilege of medical men with regard to evidence in Courts of Justice and to move that the matter be referred to a Select Committee of the two Houses of Parliament. He explained, however, that he had received an intimation from the Government that it would be more convenient that the motion should be postponed. He hoped that the postponement, to which he assented, would be for a short time only.

Criminal Law Amendment Bill.

The Criminal Law Amendment Bill was considered on Tuesday, July 26th, by a Standing Committee of the House of Commons, Mr. RENDALL in the chair. On Clause 1, which provides that it shall be no defence to a charge or indictment for an indecent assault on a child or young person under the age of 16 to prove that he or she consented to the act of indecency, Major CHRISTOPHER LOWTHER moved that the age should be reduced to 15.—Major FARQUHARSON, who was in charge of the Bill, said he could not accept the amendment, which was negatived.

Mr. RAWLINSON moved a proviso that "the party so consenting shall be guilty of a misdemeanour." He objected to such grievous power being put into the hands of young girls by the clause as it stood.—Mr. SHORTT (Home Secretary) hoped the Committee would not accept the amendment, which might have the effect of defeating the real objects of the Bill.—On the suggestion of Earl WINTERTON the amendment was amended so as to limit its operation to young persons of 15 years. This was agreed to by 17 votes to 12.

An amendment, moved by Mr. RAWLINSON, to Clause 2, omitting a subsection providing that reasonable cause to believe a girl was of or above the age of 16 shall not be a defence to a charge of seduction was rejected by 21 votes to 4.—Major CHRISTOPHER LOWTHER moved that the subsection should apply only where it was proved that up to the time the offence was committed the girl was *virgo intacta*.—Sir RYLAND ADKINS said it would be quite impracticable to apply such a test, and the amendment was withdrawn.

Sir RYLAND ADKINS moved the omission of the subsection extending the time for taking proceedings under the clause from 6 to 12 months after the commission of the offence.—The amendment was agreed to.

Sir R. THOMAS moved an amendment on Clause 3, which increases the penalties to which persons summarily convicted of brothel keeping, &c., are liable, providing that any such person who was an alien should, in addition to any such punishment under the clause, be recommended for deportation.—The amendment was agreed to, as was also a new clause, moved by the same hon. Member, providing that any alien convicted of procuring or attempting to procure should be recommended for deportation, in addition to receiving the punishment already provided by law.

The Committee stage of the Bill was concluded, and the Bill was ordered to be reported to the House.

HOUSE OF LORDS.

TUESDAY, JULY 26TH.

Coroners (Remuneration) Bill.

The Coroners (Remuneration) Bill was read a third time and passed. [On Thursday, July 28th, the Royal Assent was given to this Bill, as well as to the Dentists Bill, the Public Health Officers Bill, the National Health Officers Bill, and the Health Resorts and Watering Places Bill.]

HOUSE OF COMMONS.

WEDNESDAY, JULY 27TH.

Appointments of Medical Referees.

Mr. MYERS asked the Minister of Pensions whether, seeing that the original appointments of medical referees were

Wilfred W. E. Fletcher, M.B.Camb., D.P.H., who died on July 31st after an operation, was for 25 years a medical inspector of the Local Government Board and had lately acted as medical officer of health for the Metropolitan Borough of Hackney.

SPIRIT DUTY (VOLUNTARY HOSPITALS) GRANT.—The Ministry of Health and the Scottish Board of Health are prepared to receive applications from voluntary hospitals for grants in respect of payment of duty involved by the use of duty-paid spirit or drugs containing duty-paid spirit for medical and surgical purposes in these hospitals during the year 1920.

BETHLEM ROYAL HOSPITAL.—A course of lectures and practical instruction for the Diploma in Psychological Medicine of the Universities of London, Cambridge, Durham, &c., will begin at the Bethlem Hospital early in October next. Syllabus and further particulars may be obtained on application to the Physician Superintendent.

ABERDEEN SICK CHILDREN'S HOSPITAL.—A market fair in aid of this hospital was held on Saturday, July 30th, in the policies of Durris House, the seat of Mr. H. R. Baird. Over 20,000 people were present. Sir James Taggart, in opening the fair, said that Mr. Baird's aim was to raise £1000. The market was reminiscent of the old-time country fairs. In a large marquee in the centre of the meadow were neatly-laid-out stalls, heavily laden with china, fancy goods, flowers cut and in pots, cakes, fruit and vegetables, jumbles, pictures, furniture, rabbits, eggs, and the like. There were the usual attractive side-shows, including a fortune-teller and an aerial flight. Along with special donations the total amount realised was over £1000.

SUMMER COURSE IN HELIOTHERAPY AT LEYSIN.—The programme of the course already announced to be given by Dr. Rollier and his collaborators at Leysin, Switzerland from August 16th to 20th is as follows:—

Les bases scientifiques de l'héliothérapie. Etude physique et biologique de la lumière (Dr. Rosselet).—La pratique de l'héliothérapie des tuberculoses chirurgicales et ses résultats cliniques (Dr. Rollier).—Le diagnostic radiologique des tuberculoses ostéo-articulaires et le contrôle radiographique des résultats cliniques de l'héliothérapie (Dr. H. J. Schmid).—La cure de travail et l'avenir des convalescents de tuberculose chirurgicale. L'héliothérapie préventive (Dr. Rollier).—Les adjuvants de l'héliothérapie (radiothérapie, photothérapie artificielle, &c.). L'héliothérapie des affections non tuberculeuses.—Les appareils orthopédiques utilisés pour l'héliothérapie (Dr. Amstad).—Héliothérapie et peau (Dr. Leuba).—Visite des établissements héliothérapiques du Dr. Rollier et présentation de malades (Drs. Rollier, Amstad, Alexandrowski, Miéville et Giauque).—Visite et démonstration de "l'Ecole au soleil" (Dr. Rollier).

The course is gratuitous. Board and residence will be reserved for participants at 10 frs. a day, early application to be made to Secrétariat médical du Dr. Rollier, Les Frênes, Leysin-Village, Switzerland.

Dr. F. J. Waldo, City Coroner, held an inquiry on July 19th into the fire which broke out on the evening of July 8th at 52, Aldersgate-street, premises within the danger zone, in the possession and occupation of the Kolynos Incorporated, makers of dental cream. Dr. Waldo announced that he had received a number of letters from residents and occupiers in the immediate neighbourhood protesting against the storage of dangerous and combustible material in such a congested area. Mr. Norman L. Elliott, surveyor in the works department of the London County Council in charge of the means of escape section, said he had inspected the premises after the fire, and was not satisfied with the means of exit. He advocated arrangements being made between owners of adjoining premises for the erection of bridges from building to building. Mr. Paterson, H.M. Inspector of Factories, said that when he visited the premises in March, 1920, he thought the exits were reasonable. A warehouseman said to him the cause of the fire was a complete mystery unless it was a fuse. The electric light machinery was running at the time of the fire.

Giving particulars of the substances stored on the premises when the fire broke out, Mr. John Melvern, B.Sc., of Muswell Hill, chemist to the company, stated that there were 250 gallons of alcohol, 2½ tons of glycerine, between 50 and 100 lb. of thymol, a considerable quantity of eucalyptus oil, and three cases of peppermint oil. Superintendent Sells, of the Clerkenwell Fire Brigade, stated that the business carried on in the building caused a great risk to the neighbours, and Colonel Fox, of the Salvage Corps, described the exits as "most unsatisfactory, the roof access being a dangerous fire trap." At another inquiry recently held by Dr. Waldo on a fire at 33, Whitecross-street, the fact was elicited that people employed on the lower floors could not use the fire escape to the roof because the occupiers of the upper floors were not at work that day.

Obituary.

JAMES WALKER DOWNIE, M.B., C.M. GLASG., F.R.F.P.S. GLASG.

Mr. James Walker Downie, who died at Shandon on July 21st, was a native of Glasgow, and after being educated at the High School entered the University, where he graduated M.B., C.M. in 1881. After a period of study of diseases of the ear, nose, and throat in London he returned to Glasgow to take up junior appointments at the Royal and Western Infirmaries. He was soon appointed lecturer on diseases of the nose and throat at the Western Medical School and lecturer in the University, and later became surgeon to the Western Infirmary and to the Royal Hospital for Sick Children, to which at the time of his death he was consulting surgeon. He had been consulting laryngologist to the Ochil Hills Sanatorium and was for some time a member of the Medical Consultative Committee of Consumption Sanatoria of Scotland.

Mr. Downie became a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow three years after graduating; he examined for the Faculty in aural surgery and presented it with a handsome mace. He was an honorary president of the Glasgow University Medico-Chirurgical Society, ex-president of the Scottish Otological and Laryngological Society, and an ex-vice-president of the British Laryngological and Rhinological Association. He made frequent contributions to local societies and was the author of a clinical manual for the Study of Diseases of the Throat.

Appointments.

ABEL, A. LAWRENCE, M.S. Lond., F.R.C.S. Eng., has been appointed Honorary Surgeon to the Kensington and Fulham General Hospital.

NICORY, C., M.R.C.S., L.R.C.P. Lond., House Surgeon to Torbay Hospital.

PAVEY-SMITH, A. B., M.C., M.B., B.Ch. Camb., F.R.C.S. Eng., Surgeon for Nose, Throat and Ear to the Royal Bath Hospital and Rawson Convalescent Home, Harrogate.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. M.O. £500.
Barnsley, Beckett Hospital.—Jun. H.S. £200.
Bedford County Hospital.—H.S. £200. Asst. H.S. £150.
Birmingham General Hospital.—Res. Anæsthetist. Obst. H.S. H.S. Each £100. H.S'.s to Spec. Depts. £125. Res. Surg. Officer. £180.
Birmingham, Queens' Hospital.—Honorary Surgeon.
Bradford Royal Eye and Ear Hospital.—Hon. Asst. Ophth. Surg.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Bristol Royal Infirmary.—Cas. Ophth H.S.'s £120.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
City of Leeds.—Asst. M.O.H. £650.
City of London Maternity Hospital, City Road, E.C.—Res. M.O. £100.
Deptford Metropolitan Borough.—M.O.H. £800.
Devonport, Royal Albert Hospital.—H.S. £200.
East Suffolk County Education Committee.—Female Asst. Sch. M.O. £500.
French Hospital and Dispensary, 172, *Shaftesbury-avenue, W.C.*—Anæsthetist. £25.
Glasgow, Bellahouston Ministry of Pensions Hospital, Cardonald.—M.O. £350.
Glasgow, District Mental Hospital, Gartloch, Gartcosh.—Jun. Asst. M.O. £350.
Glasgow, Victoria Infirmary.—Visiting Surgeon.
Glasgow, Woodilee Mental Hospital, Lenzie.—Asst. M.O. £350.
Great Northern Central Hospital, Holloway, N.—Dental Surg.
Great Yarmouth Hospital.—H.S. £200.
Hull Royal Infirmary.—V.D. and Cas. O. £250. Asst. H.S. £150.
Kensington and Fulham General Hospital.—Hon. Phys. Res. M.O. £200. Non-Res. Surg. £100.
Kent County Council, Lenham Sanatorium.—Asst. M.O. £400.
Leeds, Hospital for Women and Children.—Two H.S.'s. £25.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Lincoln Education Committee.—Asst. Sch. M.O. £500.
Liverpool, Royal Southern Hospital.—Surg. Tutor and Registrar. £20. Second M.O. to V.D. Dept. £200. Two H.P.'s. Three H.S.'s. Each £100.

governing the price at which whisky could be sold to the public; whether he was aware that the present high price of whisky was due to the fact that the Government took 8s. 5½d. per bottle from the price paid by the consumer for whisky 30 per cent. under proof; and would he explain the reason for the continuance of this imposition.—Mr. **BALDWIN** (President of the Board of Trade): This matter is under consideration.

Infantile Mortality in British Guiana.

Mr. **STEWART** asked the Secretary of State for the Colonies the latest statistics as regards infantile mortality in the Colony of British Guiana, and the figures showing the population to-day in comparison with recent years; whether the lack of population could be in any way attributed to defective sanitary administration which, owing to the low-lying nature of the coast-line, was imperatively necessary; whether the present insanitary conditions were due to the lack of proper administration on the part of the executive or to a lack of proper sanitary laws on the part of the legislature.—Mr. **CHURCHILL** replied: In British Guiana the rate of mortality of infants under one year was 223 per 1000 in 1918 and 185 per 1000 in 1919. The returns for 1920 have not yet been received, but may be expected shortly. The figures for 1918 were adversely affected by shortage of food caused by the war. The population was 278,000 at the census of 1891, 296,000 at the census of 1911, and was estimated at 306,000 in 1919. Sanitary work in the coast-strip is heavily handicapped by natural conditions, as the cost of good drainage is often prohibitive. Improvement in sanitary conditions which will continue to engage my careful attention depends, in my judgment, principally upon the general development of the colony—with regard to which I am in consultation with the Governor. There is no restriction as regards the nationality of foreign immigrants other than ex-enemies.

MONDAY, AUGUST 1ST.

Officers' Pensions and Medical Fees.

Major **GLYN** asked the Financial Secretary to the War Office whether, when an officer commuted his pension, after having undergone a medical examination, he would consider a revision of the costs charged as a fee, which at present varied from £1 to £10, to a uniform figure of £2, in view of the fact that this sum was said to be charged to defray the cost of the medical examination, which necessarily was of the same character for all cases; and whether Clause 9 of the form of instructions to officers in the army on this subject, dated July, 1920, might be amended accordingly.—Mr. **HILTON YOUNG** replied: I think that the method of charging a fee bearing some relation to the amount of the sum for which the pension is commuted is, in all the circumstances, the most equitable method, and I am unable therefore to revise the regulations in the manner proposed.

Insanitary Milk Transit.

Mr. **CHARLES EDWARDS** asked the Minister of Health whether his attention had been called to the complaints of dairymen to the effect that milk churns were often transported in guards' vans and luggage vans which were not suited to the carriage of milk in hot weather, with the result that much milk was wasted because it turned sour in transit, and that the health of the infant population suffered from the shortage; and whether he could take any steps to induce railway companies to provide better facilities for the conveyance of milk.—Sir **ERIC GEDDES** replied: Neither my right honourable friend, the Minister of Health, nor I have received any complaints of the nature indicated, but I shall be pleased to inquire into any specific instances which may be brought to my notice.

Suicide and War Neurosis.

Mr. **MYERS** asked the Minister of Pensions what was the total number of suicides among the in-patients of pensions institutions for war neurosis: whether certain institutions had a higher record in this respect, and why; and whether there was sufficient staff, medical, nursing, and orderly, in such institutions to lessen the painful occurrences of suicides.—Mr. **MACPHERSON** replied: I understand that out of the very large number of patients who have received treatment for neurasthenia in Ministry institutions, there have been eight cases of suicide, and that in no institution has there been more than one such fatality. In no case was it found that there was negligence or inadequate supervision, and I am satisfied that every reasonable precaution is taken to guard against these distressing occurrences.

Naval and Military Medical Appointments.

Commander **BELLAIRS** asked the Financial Secretary to the Admiralty how many medical officers in the navy held appointments, whether administrative or clerical, where they are not practising their profession in the direct treatment of human ailments and injuries.—Mr. **AMERY** replied: Eight medical officers of the naval service hold appointments of a clerical or administrative nature where they are not called upon to undertake the direct treatment of human ailments or injuries, but I may point out that the duties of these officers include the examination of candidates for entry and the survey of invalids, &c., which is essentially work for a medical officer. There are also five naval health officers, whose work, while not involving direct treatment as defined by the hon. and gallant Member, should be classed under the heading of preventive medicine.

Commander **BELLAIRS** asked the Secretary of State for War how many medical officers in the army hold appointments, inclusive of India, where they are not practising their profession in the direct treatment of human ailments and injuries.—Sir **L. WORTHINGTON-EVANS** replied: The total number of medical officers in the army at home and abroad (excluding India) who are not practising their profession in the direct treatment of human ailments and injuries is 166—the whole of the remainder being employed in direct treatment of human injuries and ailments. The 166 officers include those employed as professors and instructors at the Royal Army Medical College and elsewhere; those employed in preventive medicine, hygiene, and other scientific subjects, and in the medical examination, inspection, and training of recruits, and also 26 officers doing duty in territorial schools of instruction and in administrative medical posts with territorial divisions. I regret that similar information for India is not readily available, and could not be obtained without reference to that country.

Medical Service of the Air Force.

Commander **BELLAIRS** asked the Secretary of State for Air whether his Council was attempting to build up a separate medical service from the Army and Navy; if so, how many medical officers were there; whether casualties or invalids were sent both to naval and military hospitals, or exclusively to military hospitals; and whether any hospitals had been or were being built for the Air Force.—Captain **GUEST** replied: The answer to the first part of the question is in the affirmative, and to the second part, 124. This figure excludes medical officers employed at the Air Ministry. With regard to the remaining parts, casualties and invalids are sent, where possible, to the nearest naval, military, or civil hospital. No hospitals have been or are being built for the Royal Air Force, but Royal Air Force hospitals have been established in buildings at Halton and Cranwell which were formerly occupied by other units. In addition, a temporary hospital for officers exists at Avenue House, Finchley. The latter is a private house, hired for the purpose, and has not been altered.

TUESDAY, AUGUST 2ND.

Women Panel Doctors.

Sir **WALTER DE FRECE** asked the Minister of Health if he would state how many women physicians were at present acting as panel doctors; and, in that case, how many patients they had on their lists.—Sir **ALFRED MOND** replied: 117 women physicians are at present acting as panel doctors in England and Wales and the number of patients on their lists is 40,686.

Working Expenses of Army Hospitals.

Captain **WEDGWOOD BENN** asked the Secretary of State for War what was the reason for the increase in the charges for educational establishments and working expenses of hospitals and depôts in the Estimates for the present year.—Sir **L. WORTHINGTON-EVANS** replied: I understand the question to refer to the total of Head III. of the Estimates entitled "Cost of Educational, &c., Establishments and Working Expenses of Hospitals, Depôts, &c.," which shows the full cost of the various Army institutions and establishments for which working expense accounts have recently been instituted under the new system of Army accounting. The increases as compared with 1920-21 are mainly due to two causes; firstly, as in the case of depôts, to the expansion of this sub-head to include classes of depôts not previously costed; and secondly, as to the case of the schools and technical establishments, to fuller information, disclosed by the new accounts as to the actual cost of these institutions, including such items as stores consumed and rental value of the properties. Notes will be found on the explanation pages of the estimates opposite each individual institution, and in any particular case I shall be happy to supplement the information there given as far as possible.

THREAT OF FAMINE AND PELLAGRA IN U.S.A.—A large portion of the Southern cotton belt is apparently in danger of serious food shortage and an epidemic of pellagra. The President is stated to have instructed public health and Red Cross authorities to ascertain what relief can be afforded by the Government. The difficulty of selling cotton has resulted in a shortage of money, and many thousands of people are apparently deprived of the foodstuffs which protect against this disease.

as possible on his road. A short description of an individual case will probably afford the best illustration.

Example of a Complaining Patient.

Miss A. was an unattractive woman past middle age, with a large fibrotic goitre and an inoperable recurrence of carcinoma of the breast. When seen at the end of November, 1920, the left breast was solid with growth, there was some ulceration of the new growth at the site of the operation on the right breast, and many nodules of growth were scattered over the right chest wall. She was very depressed, and full of complaints about her nurses, her food, and the cheerlessness and discomfort of her room. She was not confined to bed, but appeared to spend the whole of her time sitting by the fire and thinking. She found difficulty in concentrating her attention upon a book, she had hardly any visitors, and there were no relatives or friends who would find house-room for her. She was thus thrown back almost entirely upon her own resources. These included an affectionate regard for a niece in a convent school in France, and a sense of gratitude towards a distant relative who was providing for her maintenance in a nursing home; beyond these she seemed to have no interests outside shopping, life in a comfortable boarding house, and travelling about London. She displayed little emotion in talking about her own illness, except when expressing her sense of grievance against the doctor (since dead) who had first diagnosed the case, because he had not concealed his diagnosis from her.

She was asked to face the facts (admittedly known to her) that she had cancer, that most people with cancer die, and that it was probable that she would do as others had done. At the second visit she refused to see me, but I was informed that she was much more cheerful and stronger and had been out visiting friends. (Her internal conflict had become external—if she could only avoid this brutally truthful doctor she could feel as if she were getting well.) During the following three weeks I saw her seven times and we became good friends, though she continued to cherish grievances against her nurses. Her strength increased at first, but later diminished, and by the New Year was was finding difficulty in getting up. Her dislike of the matron and of her special nurse was now intense, and during the first week in January she began to have definite delusions of persecution and disturbing dreams.

Growth of Phantasy.

She was now entirely unable to leave her bed, and began rapidly to lose touch with the world of external fact. The cheery conventionalities of the nurse and of her few visitors were now thoroughly unreal to her, and the life of her dreams and phantasies became for her the real life, disturbed by occasional shadowy perceptions of taking nourishment, having her bed made, or receiving a visitor. She was evidently worried and unhappy, and she had a moderate amount of physical pain. Without external help it seems probable that at this point she would have withdrawn completely from contact with external affairs; she would have spent her remaining strength in a lonely struggle against insuperable difficulties in the land of phantasy. But with the help of a pre-established personal understanding and a readiness to talk in the language of her own phantasy, I was able to accompany her and to help her to overcome her difficulties. She recounted to me her dreams; many or most of them were half-waking dreams, more properly described as phantasies.

Three dreams recurred frequently in various guises: (1) Of lying at night in a sanctuary; (2) Of struggling to get somewhere; (3) Of people with a motor plotting against her. The patient evidently derived great comfort from recounting these dreams to a sympathetic listener, but she often had difficulty in talking, and would not take the trouble to give associations. It was therefore necessary to guess at the interpretation, and to wait for confirmation in subsequent dreams before making use of any information so gained. Also, since the interpretation of the dream was left for the time being in the region of the unconscious, it was necessary when one did make use of it to speak in the language of the unconscious.

Thus, when she first dreamed that people with a motor were plotting against her by the road-side, it seemed probable that the dream had reference to arrangements for her own funeral. This interpretation became more probable when she dreamed on the following night that the people in the nursing home were plotting to take her away in "a motor or something." She recounted this first as a dream, then as a statement of fact. I told her that I had sent for her niece, who was coming to take care of her. She replied: "It will be no use. I shall be taken away before she comes." I promised to keep in close touch with everything that went on at the home, and assured her that she certainly would not be taken away before my visit to her on the following day. This veiled statement that she would live for at least 24 hours completely relieved her anxiety, and I left her sleeping comfortably. The mention of the word "death" might have excited the alarm conventionally proper to such an occasion.

On the following day she reported a night full of dreams of frantic struggles to get somewhere, so as not to be lost. They all ended in the nurse flinging her roughly on the bed. She was persuaded to see that the nurse was only doing her duty in looking after her. On the following day she had still been struggling all night to get somewhere and still always finishing with the nurse, but now as a rescuing angel and not as a pursuing demon. On the evening of the same day she took a great liking to the nurse and made friends with her old enemy the matron. At the same time she became contented and pleased with all her surroundings and with herself. She had been a very difficult patient and had worn out the patience of those around her, and this sudden change of front on her part no doubt gained for her a considerable increase of comfort and attention.

A Dream of "Home."

The next day she continued her policy of reconciliation; she sent for a priest and was received into the Roman Catholic Church. On the same night she had a dream which linked together most of her previous dreams and was probably for her the solution of her life problem. It was as follows: "I was in a place with high, thick, moss-covered walls, with pretty little white lights scattered about in the walls. In one part there were beautiful strings of beads hanging down over the stone. We all lay or sprawled upon the floor until midnight in night-dresses or chemises. The place was beautiful, but its effect was rather weird and frightening. Then I think I must have been in a boat in this place, because there was water underneath. I went out in a boat or on a bed and was struggling up a hill to make money. (On inquiry, she was sure it was a great struggle, though she was not herself rowing or doing anything.) I went on and came down the other side of the hill, but finished at the same place as I had started from, which had now become this room, and I called it home." She dreamed this dream several times with slight variations, but always finished at home, and was always "so glad to get there." When the niece arrived she gave an account of a watchnight service to which she had taken her aunt a year or two previously, and which had evidently supplied much of the imagery of this dream.

For several reasons it seemed probable that the place from which the patient started in this dream was at once her mother's womb, Mother Earth, and Mother Church. She set out from it on the voyage of her life, which was always an uphill struggle to obtain creature comforts, yet a struggle which demanded effort from others rather than from herself. She had followed her course right up the hill and down the other side, but was now surrendering her life to the common stock of human life whence it had come, to Mother Church whence it had come, to Mother Earth whence it had come, and was very glad to get home again.

Cessation of Mental Conflict.

The niece recognised this as a correct summary of her aunt's life-history. With the help of the knowledge of the patient's attitude of mind derived from this dream, it was comparatively easy to keep in touch with her mentality during the remaining days of her life. The niece was instructed to abandon all reticences and to talk quite freely in her aunt's presence, assuming that she knew of her approaching death and welcomed it. Her death had appeared to be imminent, but after this solution of her conflicts there was a very definite return of physical strength, and on the first day of the remaining week of her life her voice, from an almost inaudible whisper, became strong enough to carry across the room. She then grew steadily weaker until her death. She slept peacefully at nights, and during the days was perfectly conscious and seemed quite happy. She said that her sleep was natural; she thought she had pleasant dreams, but could not remember them. During the last three days she could only make herself heard with great difficulty, but she intimated that she liked best to hear her niece and a friend talking to each other about everyday affairs in the room, and on the last day she expressed herself as quite ready to die. She was fully conscious half an hour before her death, and died—apparently without any discomfort—in her sleep.

Physical pain was never a very prominent feature in this case, but there was considerable and increasing pain during December, and a little T. opii was given; after the solution of the mental conflicts, however, the pain ceased entirely, and no sedatives were required. During the last fortnight the patient appeared to have entirely forgotten the existence of her growth, and no mention was made of it or of any pain. There is no doubt that the last week of this patient's life was quite exceptionally pleasant and satisfactory both to herself and to those around her, and it

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Dental Examination, and have been granted the diploma L.D.S. R.C.S. Edin. :—

Sidney Sack, James D. C. Archibald, Michael J. Quinlivan, Gerrit Johannes Lamprecht, Esias Andries Nortje, Raymond Levey, James S. Wilson, William Gunn, and Leonard Lees. Douglas G. Munro passed in the subject of Medicine and Surgery.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on July 18th :—

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Thomas F. Arnott, John Barlow, Alexander K. Bowman, Thomas M. Burton, Donald S. Campbell, Thomas C. Christie, Percy B. Farrar, Lennox M. Johnston, Alexander A. Kirkland, James R. Learmonth (with honours), William M. McCash, John M. McKenzie (with commendation), Alexander H. McLean, George L. Mitchell, G. W. St. Clair Ramsay (with commendation), Rebecca E. Roulston, William L. Templeton (with commendation), Ernest J. T. Thompson, James Watt, John C. Watt, Jeanie L. D. Wilson, and Robert McLaren Wilson.

NATIONAL VETERINARY MEDICAL ASSOCIATION.—Dr. O. Charnock Bradley, of Edinburgh, was re-elected President of the Association at the annual meeting at Chester, on July 27th.

WALSALL HEALTH COMMITTEE.—The Ministry of Health has withdrawn on grounds of economy its sanction to a scheme of the Committee to provide an open-air pavilion for consumptive children in the borough.

LITERARY INTELLIGENCE.—The Roll of War Service of the University of London Officers Training Corps just being published by the Military Education Committee of the University, at 46, Russell-square, London, W.C., contains the names and particulars of 665 fallen officers who were members or former members of the Contingent. A second section records 1726 honours and distinctions awarded to 1068 officers, including V.C., 5; D.S.O. with bar, 5; D.S.O., 45; M.C. with two bars, 3; M.C. with bar, 41; M.C., 497; D.F.C., with bar, 1; D.F.C., 9; A.F.C., 10; Mentioned in Despatches, 584 (twice, 97; thrice, 19; four times, 6; five times, 2; six times, 1); foreign awards, 114. The third section gives particulars of 4276 officers and former officers and cadets of the Contingent who served as officers in the war. The price is one guinea in cloth binding, packing and postage 1s. extra. Other bindings are available.—Mr. Henry Kimpton is publishing the following new books and new editions: Diseases of Children, designed for the use of students and practitioners of medicine, by Herman B. Sheffield; Physical Diagnosis, by W. D. Rose, 2nd edition, revised and enlarged; Tuberculosis, and How to Combat It, by F. M. Pottenger.

DONATIONS AND BEQUESTS.—Mr. John Graham Rodger, of Beacon Hill, Liverpool, former member of the Mersey Docks and Harbour Board, has left the following bequests. The bequests, besides others, include £5000 each to the Liverpool Royal Infirmary, Northern Hospital, Royal Southern Hospital, Bluecoat Hospital, Woolton Convalescent Institution; £2000 each to the Liverpool Merchants' Guild, Home for Female Incurables, and Myrtle-street Children's Infirmary; £1000 each to the Indigent Blind School, Mount Pleasant Consumption Hospital, Eye and Ear Infirmary (West Kirby), Children's Convalescent Home.—The late Mr. John Bevan Morgan, of Llanelly, Carmarthen, has left £750 to the Llanelly Hospital, and £25 each to the Carmarthen Infirmary, the Deaf and Dumb Institution, Swansea, and the Institution for the Blind, Swansea.—By will the late Mrs. Susan Mary Harries, of Wem, Salop, left £300 each to the Royal Salop Infirmary, the Wolverhampton Orphanage, and the Home for Incurables, Leamington; and £200 to the Shropshire and North Wales Eye, Ear, and Throat Hospital.—By will the late Mr. John Dyer, of Richmond Villas, Swansea, left £1000 to the Swansea General and Eye Hospital for furthering the endowment of the Dyer Ward, but from which 7s. 6d. per week is to be paid to the matron for the purchasing of flowers, fruit; and sweets for the children; £1000 to the North Devon Infirmary, Barnstaple; £500 each to the Swansea Infirmary for the Blind, the Deaf and Dumb Institution, Swansea, and several other charitable institutions.—The St. Mary's Hospitals, Manchester, have received legacies of £160 from the executors of the late Mr. Thomas Groom Baker and £200 from those of the late Mr. Joseph Core. The Manchester Royal Infirmary also received a legacy of £600 from the late Mr. Baker, and other donations from several sources to the amount of £200 have been received. The "Golliwog days" in aid of the Ancoats Hospital on May 27th and 28th have resulted in a sum of £525 being paid over to the hospital.—The Chelsea Hospital for Women has received £25 from the Mercers' Company and £26 5s. from Sir S. B. Provis towards the building of its Nurses' Home. £16,000 have now been received, leaving £13,000 still to be collected.

MEDICO-LEGAL SOCIETY.—The following dates have been arranged for meetings of the society during the session 1921–22:—1921: Oct. 18th, Nov. 15th, Dec. 16th (annual dinner). 1922: Jan. 17th, Feb. 21st, March 21st, April 27th, May 30th, June 29th (annual general meeting). Members are desired to make a note of these dates.

UNIVERSITY OF PARIS.—A revisional vacation course on Recent Ideas concerning Diseases of the Digestive Tract will be given in the amphitheatres Trousseau and Bichat, Clinique Médicale de l'Hôtel-Dieu, from Sept. 12th to 23rd. The course will be under the direction of Prof. Maurice Villaret, and will comprise 30 lectures, divided into four main sections of Explorations, Symptoms, Diseases, and General Treatment. A certificate will be issued to students who complete the course, for which the fee is 150 frs.

VITAL STATISTICS IN FRANCE.—In France last year the excess of births over deaths was 159,790, as against 58,914 in 1913. For the first time since the war statistics have been available for the whole of the country, including the three departments of Alsace Lorraine. The births were 834,411 last year, compared with 790,355 in 1913, an increase of 44,056. The deaths were 674,621 against 731,441 in 1913, a decrease of 56,820. The number of marriages was almost doubled—623,869 last year against 312,036 in 1913.

TREATMENT OF SURGICAL TUBERCULOSIS IN BRISTOL.—For some time past the Bristol City Council, advised through its health committee by the medical officer of health and the tuberculosis officer, has had under discussion plans for the institutional treatment of surgical tuberculosis. There has been some difficulty in securing adequate premises, and in consequence of this difficulty it was at one time proposed that Bristol should as a temporary measure rent beds at Alton, while a more permanent home was being secured in or near Bristol. This plan has, however, been disapproved by the Ministry of Health under the pressure of the economy campaign, and although the Bristol Health Committee is anxious to proceed with the Alton proposal its fate is for the time being uncertain. At the time when it was first mooted this proposal was criticised on the ground that economy and efficiency can be reconciled only by a policy of concentration rather than one of diffusion. These critics are, through the medium of the Bristol Medical Committee, likely to secure a hearing before long, and it is possible that even if the Alton plan should fail other proposals may be forthcoming by which delay in the provision of the necessary premises may be obviated. The Bristol Council is proceeding with the more permanent part of its plan, the development of an estate of 70 acres on the outskirts of the city recently purchased in order to provide 100 beds for the treatment of "pre-tuberculous" children. In the meantime temporary premises leased to the Council by the Bristol Guardians are being used to their utmost capacity under the direction of the City Tuberculosis Officer, Dr. C. J. Campbell Faill, for the treatment of tuberculous lesions, pulmonary as well as surgical, in children, but these premises are grievously inadequate.

HOSPITAL FOR TUBERCULOUS CHILDREN, BELFAST. The Belfast Corporation has opened a new hospital for tuberculous children at Graymount, a few miles from the city on the north side. The property includes a commodious mansion, formerly the residence of Major Kerr-Smiley, M.P., and 15 acres of land with well-laid out pleasure gardens. It overlooks Belfast Lough. There are ten large airy wards with accommodation for 50 patients, a number which will be increased as soon as circumstances permit. The institution is intended for the non-pulmonary forms of tuberculosis, especially for cases of bone and joint disease. Attached to the hospital is an operating theatre and a workshop for the manufacture of splints. There is also an open-air day school which is attended by contact cases—i.e., children from homes where cases of tuberculosis exist. These children spend the day at the hospital and are provided with two meals. They are taught the elements of housewifery, simple dress-making, knitting, &c. Miss Jolly is matron, and the attending surgeon is Mr. H. P. Malcolm.

The opening ceremony was performed on July 22nd by the Lady Mayoress of Belfast, and the principal speakers were Sir E. Coey Bigger, Chief Medical Inspector to the Irish Local Government Board, and Prof. Thomas Sinclair. The former mentioned in the course of his speech that one half the cost of maintaining the institution would come from the city rates and the remaining half from Government funds. He pointed out that there was a decided decline in the incidence of tuberculosis in Ireland. In the ten years ending 1910 the average number of deaths from tuberculosis was 11,627, while in 1920 the total deaths were only 7420, a reduction of 33 per cent. He urged more attention to the milk-supply with the view of stamping out the bovine type of tuberculosis. Prof. Sinclair expressed the opinion that better results were obtained in surgical tuberculosis by open air and hygienic measures than by operative procedure.

hospital helper who contracted small-pox during his work. In the summer the hospital flew the Red Cross flag for two weeks in readiness to receive wounded from the fighting 30 miles to the southward, but the few casualties which occurred were sent to Tientsin. The famine spread through neighbouring districts in the autumn and the Mission undertook the distribution of grain under the auspices of the North China International Society for Famine Relief. An outbreak of pneumonic plague ten miles south of Tsangchow took place at the end of the year, at which time the earthquake, very serious elsewhere, was slightly felt in the neighbourhood.

A couple of pages of the report deal with the women's hospital. The difficulty occasioned by the suspicious attitude of many of the patients is partly overcome by the plan of allowing each patient one relative or friend to live in the hospital and wait on the patient. A great hindrance to medical work is the well-known ability of the Chinese to suffer uncomplainingly for long periods of time; many patients are only brought to hospital in a hopelessly advanced stage of disease. Tuberculosis and cancer are common, and all treatment is prejudiced by the absolute lack of sanitation in the homes of the poorer people. A lack of funds prevents the undertaking of more extensive work.

A MEDICO-EDUCATIONAL EXPERIMENT.

IN the medical report which has been issued on the Oak Bank Recovery Home opened at Prestwich in October, 1917, by the Invalid Children's Aid Association, for ailing children, Dr. A. A. Mumford, the medical adviser to the Home, gives an account of the work done and of the principles of treatment adopted.

Earlier experiments in 1913–14 had shown the importance of steady and definite out-door occupation in establishing a permanent recovery in ailing children, better results following a shorter and fully occupied stay in the country than a longer and unoccupied stay in a convalescent home. Dr. Mumford notes that the final test is to be found in the ultimate fitness of the child for citizenship, and points out that the measurement of respiratory capacity forms a reliable index to the standard of will-power as well as that of bodily health in a given individual. On this axiom is based the treatment for the ailing and delicate children admitted to Oak Bank Recovery Home. Careful notes are taken of the range of breathing of all the children, most of whom on admission possess barely the minimum of respiratory capacity to suffice for a sedentary life, and although they are not encouraged to put forth exaggerated respiratory efforts, nor is any formal training given to this end, yet, after a sufficiently prolonged stay the range of breathing is found to be greatly increased. The benefits resulting from the acquirement of adequate respiratory capacity are claimed by Dr. Mumford to be far more permanent than are those derived from the usual forms of Swedish drill. Tables are appended to the report, suggesting that the longer the stay of the child the better the results as gauged by the breathing tests, the nature of the tests applied, however, not being specified.

Dr. Mumford correlates with these observations similar observations made upon children at the Greengate Dispensary, Salford. These children, who are suffering from actual deformity of the chest, associated with a severe degree of rickets, receive the same treatment as do the Oak Bank Home inmates, without the advantage of country air; and after three or four years of treatment they are usually discharged, not only completely cured but above the average in general health. Dr. Mumford concludes by the remark that improvement in class work is constantly associated with increased range in breathing.

WORTHING WATER-SUPPLY.

THE Worthing Corporation is wise in the step it has just embarked upon in preparing for the increased demands that must inevitably be made upon it in the near future as regards that all-important commodity, water. Worthing grew in population more than any other urban district in West Sussex in the decade 1901–1911; the figures of the population were 22,567–30,308 respectively; and while the 1921 census figures are not yet available they must, as the result of changed circumstances since 1911, show a very large increase in population, inasmuch as a considerable extension has been made of the boundaries. The demands for water have consequently greatly increased. The works from which Worthing obtains its present supply are situated at Broadwater, at the foot of the South Downs, and were constructed a quarter of a century ago. At that time the Local Government Board stipulated for a daily yield of 1,000,000 gallons before sanctioning the loan to cover the cost. The supply proved ample and of excellent quality, but during the past ten years, consequent upon the increased population and the extended district, the average daily consumption has increased from about 900,000 gallons to 1,050,000 gallons, or at the rate of only about 15,000 gallons per day per annum. In a week of maximum use the average daily supply rises to about 1,300,000 gallons, an increase of about 25 per cent. This is approaching very closely to the maximum yield of the existing works, which at the end of a series of dry years may fall even as low as 1,300,000 gallons per day. Acting, therefore, on the advice of Mr. Kenneth P. Hawksley, consulting engineer of Westminster, the corporation has, without a word of opposition, voted in principle for a scheme to make ample provision for the future at a cost of £80,500. But this formidable sum is not to be raised at once, nor in the immediate future, but steps are to be taken forthwith for acquiring the land only and then piecemeal the construction of the works and the provision of the necessary machinery. In the first place, efforts are to be made to secure an additional flow of water from the excellent source already tapped at Broadwater; while the new site upon which the corporation has designs for an extension of their water-getting area is in the same vicinage as the existing works and known as the Long Furlong Valley. There is no doubt this will result in an abundant supply of water as excellent as that from the Broadwater site. The South Downs are noted for their excellent springs. A few miles eastward of Worthing the large towns of Brighton and Hove are supplied with water from similar sources. Worthing may be congratulated upon its foresight.

A. P.—We are informed that the site for the proposed Lister Memorial has not yet been decided upon.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 8th.—12 noon, Dr. S. Pinchin; Diseases of the Heart. 2 P.M., Dr. Morton: X ray Department. Mr. MacDonald: Surgical Out-patients. Mr. Gibb: Eye Department. 4.30 P.M., Lecture:—Dr. A. Saunders: Scurvy.

TUESDAY.—10 A.M., Mr. D. Buxton: Dental Department. Surgical Registrar: Demonstration of Cases (Surgical Wards). 11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burrell: Medical Out-patients. 4.30 P.M., Lecture:—Dr. Pritchard: Acute Pyogenic Infections.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Addison: Operations. 4.30 P.M., Lecture:—Mr. Page: Anæsthesia.

THURSDAY.—11.30 A.M., Obstetrical Registrar: Gynæcological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Simmonds: Orthopædic Department. 2.30 P.M., Dr. A. Saunders: Demonstration of Cases, Medical Wards. 4.30 P.M., Lecture:—Mr. MacDonald: Bladder Growths.

FRIDAY.—12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Mr. Simmonds: Surgical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 4.30 P.M., Lecture:—Mr. D. Buxton: Dental Emergencies in General Medical Practice.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. Dr. Burnford: Visit to Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics, and Operations.

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Manitoba University.—Asst. Prof. of Anatomy. $3500. Prof. of Biochemistry. $1500. Asst. Prof. of Physiology. $3500.
Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.
Nottingham City Asylum.—Med. Supt. £700.
Nottingham General Hospital.—H.P. £200.
Oxford, Radcliffe Infirmary and County Hospital.—Cas. H.S. £200.
Preston County Asylum, Whittingham.—Asst. M.O. £572 18s.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.
Royal Waterloo Hospital for Children and Women, Waterloo Road, S.E.—H.P. £100.
St. Bartholomew's Hospital.—M.O. for Dept. of Psychological Medicine.
Seamen's Hospital Society, Greenwich, S.E.—H.P. H.S. Each £150.
Singapore Municipality.—Bacteriologist 9000 dollars.
Swansea County Borough.—Asst. M.O. £500. Dental Surg. £500.
Sydney University, New South Wales, Australia.—Chair of Psychiatry. £1100.
Tynemouth County Borough.—Clin. Tuberc. O. and Asst. M.O.H. £600.
Wakefield, Clayton Hospital.—H.S. £225.
West Derby Union.—Asst. Res. M.O. for Walton Institution, Rice-lane. £100.
Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.

Births, Marriages, and Deaths.

BIRTHS.

EARP.—On July 22nd, at Onex, Geneva, Switzerland, to Kathleen, (née Goodliffe) wife of J. Rosslyn Earp, M.A., M.R.C.S. —a daughter, who was named Evelyn Mary.

HARTIGAN.—On July 28th, at Wood Hatch, Farnborough, the wife of Colonel J. A. Hartigan, C.M.G., D.S.O., R.A.M.C., of a daughter.

JEPSON.—On July 24th, at a nursing home, the wife of W. Baly Jepson, M.C., M.R.C.S., St. Bartholomew's Hospital, of a daughter.

NORBURY.—On July 29th, at 25, Harley-street, the wife of Lionel E. C. Norbury, O.B.E., F.R.C.S., of a daughter.

WINFIELD.—On July 27th, wife of Dr. F. B. Winfield, of Harborne, Birmingham, of a daughter.

MARRIAGES.

BUTCHER—DYER BALL.—On Thursday, the 28th July, at Blackheath, Trevor A. Butcher, O.B.E., M.R.C.S., L.R.C.P., to Lucy, only daughter of the late James Dyer Ball, I.S.O., Hong-Kong, and Mrs. Ball, 55, Lewisham-hill, S.E.

HUDSON—BASTOW.—On June 19th, at St. Alban's Church, Burnaby, B.C., W. F. A. Hudson, M.A. (Cantab.), of Fosthall, Nakusp, B.C., to Irene Bastow, M.B., B.S. of 12, Cardiff-road, Luton, Beds.

NAPIER-CLAVERING—SPRIGGE.—On July 23rd, at Stoke Poges Church, by the Rev. Canon A. T. Barnett, Mark, elder son of Mr. and Mrs. Claude Napier-Clavering, of Harborne, Birmingham, to Elizabeth, elder daughter of Sir Squire and Lady Sprigge, of Stoke Green, Slough.

DEATHS.

ALLEN.—On July 23rd, 1921, at Riversdale, Belper, Richard G. Allen, M.R.C.S. Eng., L.R.C.P. Edin.

ATKINSON.—On July 25th, at Bexhill-on-Sea, Frederick Page Atkinson, M.D., formerly of Surbiton, aged 80.

LYON-SMITH.—On July 29th, at 35, Harley-street, W., Harry Lyon Lyon-Smith, M.D., of heart failure.

WILSON.—On the 19th July, at St. Martin's House, Jersey, suddenly, Fleet-Surgeon George Wilson, Royal Navy (Retired).

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

CRIPPLES HOSPITAL, HARTSHILL.—On July 21st Lady Stafford formally opened the nurses' wing at the Hospital of the North Staffs Cripples Aid Society, Layfields, Hartshill. The foundation stone of the new block was laid by Sir Joseph Cook, now acting Premier of Australia, some time ago, the building being then intended for an operating theatre, but the necessity for better accommodation for the nurses was so urgent that temporary arrangements were made for the theatre. Although the cost of the addition has been largely raised already, the hospital requires a greatly increased annual income. If sufficient funds were available the work could be greatly extended. The income for last year was about £9000, the annual expenditure about £12,000; 198 patients passed through the wards, an increase of 34 on the previous year; 805 new out-patients presented themselves for treatment, and the average attendance in the out-patient department was 5076 per month. An average of 161 visits per month was made to the homes of patients. Pensioners are paid for by the Government, and all voluntary income is spent upon the children.

Notes, Short Comments, and Answers to Correspondents.

PHANTASIES OF THE DYING.

SOME REMARKS ON THE MANAGEMENT OF DEATH.

BY J. NORMAN GLAISTER, M.B., B.S. LOND.,

CHIEF ASSISTANT, MEDICAL O.P.D., ROYAL FREE HOSPITAL.

IT is commonly assumed that the function of the physician is to restore the disordered health of his patient to a normal condition, but it is difficult precisely to define a normal condition. It is obvious that a physical condition normal for a man of 65 is not normal for a boy of 15; it is almost equally obvious that the normal condition for a man aged 150 is one of peaceful slumber in a churchyard. The suggestion here brought forward is that we should regard death as being, like birth, a natural process; by so doing we shall escape the futile struggle, well known to every general practitioner, against a death known to be both inevitable and desirable.

The method of dealing with a dying patient here described will not improbably be criticised on two grounds: (1) That there is nothing new about it—up to recent times it has been usual for the priest to attend to the mental comfort of the dying, and he can do so still where it is considered necessary; (2) that it is new and unnatural and an undesirable intrusion into the privacy of last moments. Such criticism would encourage me in the belief that the provision of mental comfort for the dying has been a preoccupation of the human mind from the earliest antiquity, and that present-day practice falls far short of what it might achieve in the fulfilment of the legitimate demands of a deep-rooted human instinct.

Mental State Associated with Inoperable Cancer.

For the sake of simplicity let us confine our attention to the typical case of a patient dying from inoperable cancer. Consider first the mental state usual in such a case. The illness of the patient is steadily progressing; his friends know that he is dying, but he is supposed not to know—or at least, not to know how advanced it is. He is perfectly sane, presumably capable of drawing inferences from his own observation of facts, and growing steadily worse; the efforts of those about him to dissuade him from taking his illness seriously are in marked contrast with their earlier attitude of urging him to seek thorough treatment. The atmosphere of unreality soon shuts him off completely from the world of common-sense and normal conversation; the word "cancer" is never mentioned, and the friends avoid any remarks which might encourage him to ask a direct question as to the verdict. Soon the outsider listening to a conversation between the patient and his friends will notice the most elaborate circumventions on both sides; each speaker is obviously preoccupied with "cancer," and draws attention to it negatively by his avoidances.

The patient's mind is therefore in a condition of continual conflict. He knows that he is dying of cancer, and this for him is very likely the most important fact in the world; it appears constantly in his dreams, but in the waking world there is not a living soul with whom he can discuss it. He tries to exclude it completely from his conscious and rational thinking. His conventional life and his intercourse with other people are based upon the supposition that he may soon get well; his inner life is based upon the exactly opposite supposition. Again, as in every case of extreme illness, the instinct to accept death is steadily growing stronger; but all his intercourse with others tends to accentuate the instinct of self-preservation natural to the healthy, which his friends persistently force upon him. The one thing which he craves—human companionship up to death as in normal life—is denied him. As the end approaches, the effort of those around him to encourage him becomes such a mockery that it is abandoned; but there is nothing to put in its place. There is no objective which the patient can now pursue in common with those around him, and he sinks into lonely phantasy. The rôle of the doctor is to treat symptoms, to prolong life as far as possible, and to relieve physical pain by morphine or otherwise. For all human purposes the patient is thus thrust out from the company of living minds and buried away from contact with his kind weeks or even months before his death.

The method here advocated aims at providing human companionship for the patient up to the last moment of consciousness; it relieves fear by showing a desire to share his dreams and phantasies, and to accompany him as far was urged that every effort ought to be made to pursue this direction, and to institute similar work at as many centres as practicable without waiting for the legislation requisite to enable arrangements in other directions to be made. [Dr. Bond then offered suggestions as to how best to bring this about.] On the lines suggested, a very valuable amount of out-patient work could be put in hand, not only without expenditure but at a saving of public funds.

Widening the Scope of Treatment by Voluntary Admission.

To make clear the meagre extent to which voluntary in-patient treatment is available, it may be pointed out that of the three kinds of institutions for the insane—county and borough mental hospitals, registered hospitals (the 13 supported by voluntary contributions), and licensed houses—only the registered hospitals and licensed houses can receive voluntary admissions, and that, as 86 per cent. of the 22,000 patients annually admitted into all institutions for the insane go to the county and borough hospitals, it is obvious that such voluntary treatment as the law allows is, indeed, almost negligible. The procedure for voluntary admission into the registered mental hospitals is commendably simple, is entirely free from formality, but is subject to notification and supervision by the Board of Control. It has worked well, and there would seem no valid reason why it should not be made equally as simple for licensed houses, or why it should not be extended to the county and borough mental hospitals, where it is, in point of fact, most urgently needed, and still more generally—such as, to general hospitals, other suitable institutions, properly organised nursing homes, and to single care: always provided that supervision is adequate. Subject to this proviso, there is some reason to think that notification of the patient's admission without mention of name would be sufficient—which would accord with public sentiment and tend to popularise early and preventive treatment—and to doubt whether even notification of each admission is necessary as respects public hospitals and those supported by voluntary contributions. Legislation on these lines would meet the necessities of the first subdivision of certifiable cases—those cases which, for sake of brevity, are here termed the "willing," and some of the arrangements could then at once be made, again without incurring fresh expenditure.

Permissive Legislation to Authorise Retention.

But legislation to widen the scope of voluntary treatment would only very partially alleviate the present position. To be effective, either therapeutically or educationally, it should take note of and mitigate the hardship of the law's present attitude towards those members of the second subdivision of certifiable cases—namely, the "indifferent"—whose mental illness is in an early stage and is presumably recoverable. In soliciting sufficiently comprehensive legislation, it should always be remembered that the many who have the mind to volunteer for treatment, but whom the law does not permit to do so—the "willing"—and the very many more who are too ill to object—the "indifferent"—but whose responsible relatives have every confidence in the treatment proposed though objecting to certification as a preliminary step, together constitute the majority of recoveries from certified attacks of mental disorder; that these recoveries number some 35 per cent. of the total admissions: and that, of these recoveries, 44 per cent. take place within six months of the alleged commencement of the illness, and 73 per cent. within a year. It is on behalf of both these types of cases, the "willing" and the "indifferent"—but not on behalf of the "unwilling" nor with respect to protracted cases among the "indifferent"—that urgent appeal should be made for legislation which would permit medical freedom of action for a short, but sufficient, time in which recovery may take place—a period of six months has been suggested, to be extended on adequate grounds. The desired legislation would authorise, without certification, admission and retention but not detention; it would be permissive in character and would not necessarily impose expenditure of money upon any authority; though to complete the scheme on comprehensive lines, educationally as well as therapeutically, considerable expenditure would probably be necessary later and when funds are available. Under such permissive legislation opportunity would, in the meantime, be afforded to test, if need be, the soundness of the proposals. Surely those of the public who, in the face of such limited and reasonable proposals, still raise objections on the score of the liberty of the subject are making liberty a travesty and a despotism raised out of a will-o'-the-wisp abstraction.

The Consultative Council's Scheme.

On the assumption that this relief by legislation will sooner or later be granted—but not until then—it may readily be seen how admirably the Consultative Council's scheme can serve the requirements of psychological medicine:—

Domiciliary service, it is true, will continue to be but little employed in mental cases until undergraduate instruction in the subject is better provided for; after which the general practitioner can be counted upon as a powerful agent in promoting mental hygiene. *Primary centres*, where provided with out-patient departments—but only if so provided—could render signal service in the treatment of early cases and in preventive work. *Secondary centres* would serve the same purpose, and should also provide mental in-patient service—but, pending the legislation referred to, they cannot do the latter; adequate in-patient accommodation involves the erection, or provision by adaptation, of psychiatric clinics as annexes to general hospitals; their erection would involve expenditure which it is useless to urge at present. The *University centres* (with teaching hospital and medical school) would afford, but with greater elaboration, the same facilities as at secondary centres, and in addition would supply organised undergraduate and post-graduate instruction, the latter leading to a diploma in psychological medicine: for teaching purposes, besides arrangements for the more purely scientific subjects, a clinical triad is needed—psychiatric clinic, neurological department, and the public mental hospital and institution for mental defectives; in addition, instruction should be accessible in mental hygiene of childhood, in criminology and the psychological aspect of industrial hygiene.

It is at the university centres that present efforts should be concentrated, and it is here, when money is available, that the first psychiatric clinics should be erected: an obvious opportunity exists here for the intervention of someone interested in this great need and generously disposed.

Regarded as supplementary services, our public mental hospitals (the 97 county and borough mental hospitals, with over 100,000 beds, the 13 voluntarily supported hospitals, with over 2000 beds, and the as yet few institutions for defectives) constitute no mean asset in any general scheme of medical and allied services. While emphasis can be laid on their general excellence, any defects or deficiencies should not be lost sight of. [Dr. Bond here took the opportunity to ventilate such matters as classification of patients, dietary, freedom of egress, clinical facilities and records, and the medical staff—including (i.) the institution of a visiting staff as consultants in branches other than mental, (ii.) the better organisation of the resident staff, and (iii.) their at present restricted position in the public service.]

Fluidity of Service Desirable.

While regarding each of these three items relating to the medical staff as of much moment, the position in the public service of the resident medical staff of public mental hospitals and institutions for defectives may be urged as a matter of the highest importance, and, apart from securing legislation, as the key to any chance of progress. At present they are restricted seems not unreasonable to attribute the fact to the special attention devoted to the solution of her mental difficulties.

The Necessity for Plain Speaking.

An immense amount of skilled effort is directed towards the extirpation of malignant disease, to the great advantage of those patients who are cured as a result; but unhappily most of those attacked remain uncured, and to these we seem to be able to offer comparatively little that is of value to them. Has not the time arrived for a broad re-survey of the whole treatment of the inoperable cancer case? Operative procedures of great value for the prolongation of life and the relief of discomfort have of late been described, but in very many cases the patient cannot be given the benefit of such treatment because it is considered necessary to maintain the fiction that there is no question of cancer, or alternatively that the growth has been permanently disposed of by a previous operation. When cancer has been diagnosed the facts in their least painful guise ought to be laid before the patient, and this may be a mental operation of considerable difficulty. The patient and his medical attendant can then discuss adequately their plans for extirpating the disease, or failing that for making the best possible use of the remainder of life, with all the help that the surgeon, the radiologist, and the psychologist can give them.

"PETROMORTIS."

POISONING by the exhaust gas of motor engines has already been the subject of comment in these columns (see THE LANCET, 1920, i., 1334). In the House of Lords the Marquis of Aberdeen commented recently upon the emission of noxious vapours from motor vehicles, suggesting the need of amending the Light Locomotive Acts so as to bring the matter under the control of the police authorities generally, when it was pointed out by the Duke of Sutherland (replying for the Minister of Transport) that the County Council could make regulations for the parks under their control similar to those which ruled in the great London parks, and that the police and London County Council possessed powers under the Locomotives on Highways Act to take proceedings against owners of motor vehicles that emitted smoke.

The London County Council have on various occasions exercised these powers. The visible emission of smoke from motor vehicles is certainly a cause of discomfort to other users of the road and sometimes interferes with vision, and constitutes a nuisance and a risk which should be stopped. The offence is due either to excessive lubrication or to an imperfect explosive mixture, the result of using a low-grade petrol or benzol without the sufficient addition of air. Whenever an explosion in a petrol engine is of moderate intensity and the combustion is incomplete, the exhaust gases will contain an increased percentage of carbon monoxide, which may rise to 15 or 20 per cent., while the percentage of carbon dioxide will correspondingly be lower.[1] According to Haldane 0·05 per cent. of carbon monoxide in air may produce symptoms of poisoning, 0·1 per cent. will cause headache and palpitation, while 0·2 per cent. is absolutely dangerous. Carbon monoxide is invisible and merely detectable by the symptoms it produces if inhaled. It is lighter than air, and so when emitted from a moving car will ascend and quickly become diluted. It is only when through a leak in the exhaust pipe that it escapes into a closed car, or where engines are run in imperfectly ventilated garages or, as during the war, in dugouts, that serious results have ensued.

Lieut.-Colonel Dale Logan, D.S.O., R.A.M.C. (retired),[2] Dr. R. P. Albaugh,[3] and A. C. Foote[4] have published accounts of serious results that have thus been caused. Automobilists using closed cars who develop headache after long runs would do well to eliminate this possibility. In America there have been a large number of deaths in small garages, with windows and doors closed, when engines have been run for testing purposes. There the term "petromortis" has been used by the press as to the cause of death in cases of this kind.

THE WEST RIDING MEDICAL CHARITABLE SOCIETY.

THE 93rd annual meeting of this Society was held at Sheffield on July 28th under the presidency of Prof. Arthur J. Hall. Reference has been made in former years to the valuable work carried on by this Society. Founded in July, 1828, at a meeting held in Leeds, it has gone on steadily increasing its sphere of usefulness. The Society now numbers 826, last year's increase of 63 being the largest in any one year. Those desirous of being admitted members of the Society must be in good health and not over 40 years of age. No application for a grant can be given except in respect of a member who has been an annual subscriber for at least five years. As is stated in the rules, the objects of the Society are as follows: "To help (*a*) any member who is *disabled by illness*, or accident, or age, and who has not adequate means of support; (*b*) the widow or children of a member dying in indigent circumstances; (*c*) the mother of such member, being a widow (or the sister, being single or a widow), who has acted as his housekeeper for a period of not less than five years immediately preceding his incapacity or death; (*d*) in the education of the children of members thus disabled."

The great majority of members join from altruistic motives and the Society deserves the support of every practitioner in the West Riding who is entitled to join. On the other hand, it is a wise and provident act for all young medical men and women to become members of this Society, for they know that if evil days fall upon themselves or upon those who are dear to them, and for whom they may not have been able to make provision, they will not be left without sympathy and help. The feature of the annual meeting is the careful consideration of the applications for help. The applicants are all known intimately by the stewards of the particular district in which they reside and full details of their circumstances are brought before the meeting. The grants are made for one year, each grant being subject to revision. Many of the grants have been running for long periods, one of them for 35 and one for 40 years. On this occasion 15 grants were made amounting to £1843. It was some years before the Society with its humble origin was able to make any grants at all, and it is a gratification to the members to know that the total sums granted now amount to £69,197.

ENGLISH–ESPERANTO DICTIONARY.

ESPERANTO was designed by a Polish ophthalmologist, Dr. Zamenhof, as an international link of communication. To-day medicine itself is becoming more and more recognised as a bond uniting the peoples of the world, and so it is natural that there should be many Esperantists among medical men. These will welcome a new and enlarged English–Esperanto dictionary,[1] containing some 30,000 entries. This number of words can, however, be considerably extended by the Esperanto student, as prefixes and suffixes play a very important part in the construction of the language. A feature of the dictionary is the printing in a separate line of every word having a distinct though allied meaning. For example, the word entertainment is repeated three times for the separate significations of hospitality, amusement, and soirée. Some new roots have been introduced which the authors offer for the acceptance of students, *tanko*, the armoured car introduced during the war, and *kamufli*, to camouflage, being examples; but not everyone will approve of the list of neologisms. *Pulo*, for instance, which is given for the name of the game played with billiard balls as well as for pool in the commercial sense, has long been in use by Esperantists for flea, and is indeed an international root, being derived from *pulex*. Although there is a fair proportion of technical words which the average educated man is expected to be acquainted with, there are not many medical terms, save those which are in more or less common use. There is a convenient list of proper names. Such a dictionary has long been wanted by Esperantists.

A MISSION HOSPITAL IN CHINA.

Prof. Harold Balme, dean of the School of Medicine, Shantung Christian University, brought the claims of preventive medicine in China before a large gathering of visitors to the British Medical Association gathering at Newcastle on July 22nd. We have before us the annual report for 1920 of the Roberts Memorial Hospital, Tsangchow (Province of Chihli), which contains a brief account of the extension of the main hospital work by the establishment of temporary branch hospitals, and gives some idea of the enormous amount of work undertaken by these outposts of Western medicine. Members of the hospital staff spent three weeks during the spring of the year under review in the city of Hsien Hsien, 50 miles distant from Tsangchow, and the capital of a county containing over 1000 villages and 320,000 people; and during those three weeks 2130 out-patients were attended to and 219 operations performed (112 of them under chloroform anæsthesia) in makeshift surroundings; two deaths only occurred—one of an out-patient, who drank "a week's supply of medicine at one go," and the other a Chinese to a temperature of 80° C., and is then condensed in vacuo at 50° C. for about three hours to a viscid fluid. The method, though not quite so satisfactory in retaining all the vitamins as my process of evaporation at room temperature, would be more practicable on a large scale.

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[1] T. Watson: On the Thermal and Combustion Efficiency of a Four-cylinder Petrol Motor. London, 1910.

[2] Journal of State Medicine, October, 1920.

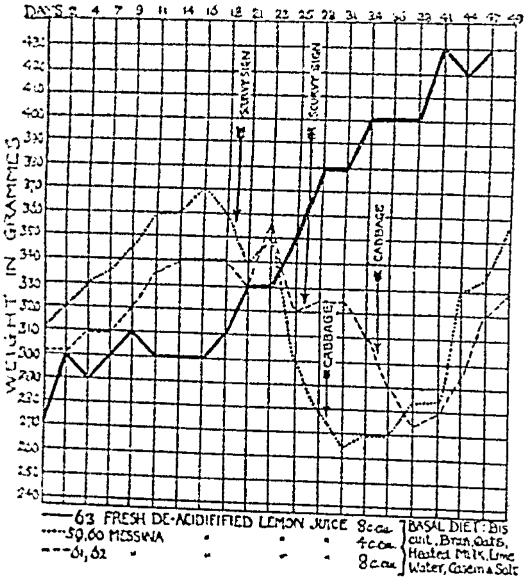
[3] *Gasoline Engine Exhaust Poisoning*, American Journal of Public Health, August, 1917.

[4] A Case of Gasoline Poisoning, United States Nav. Med. Bull., No. 10, 1916.

[1] English–Esperanto Dictionary. By F. Fulcher and B. Long, B.A. Camb. London: E. Marlborough and Co. 1921. Pp. 346, *7s. 6d.*

During the past months a sample of lemon juice extracted from the whole lemon at Messina has been received and tested at the R.N. College, Greenwich. The fluid was turbid and contained some of the rind oils; it appeared to have undergone some changes since collection. This, when strained and de-acidified and used in quantities up to 8 c.cm. daily, had absolutely no preventive effect. The scurvy symptoms came on early, and were even more marked than usual from the 15th to the 21st day, and death occurred unless an efficient antiscorbutic was given. A control which received the same quantity of de-acidified juice prepared from fresh lemons in the laboratory showed no signs and steadily gained weight (Chart 2). A second sample of lemon juice from Messina which had been preserved with potassium metabisulphite gave equally bad results when tested biologically.

CHART 2.



Tinned tomatoes have been found by M. H. Given, H. B. McClugage, and A. F. Hess[3] in America, to have very definite antiscorbutic powers; these have not, so far as I know, been tried in England. They form a very palatable and excellent food. It seemed desirable to carry out some experiments here, for such food might easily be included in the ration of sea-going ships under special conditions. The animals were placed on the usual basal diet, and to this was added daily 4 c.cm. of the tinned tomatoes from brands bought in the open market. The guinea-pigs very quickly got used to the new addition to their diet, and ate it with avidity. When it was used as a prophylactic the animals steadily gained weight; in others, which had been allowed to develop definite scurvy symptoms with marked wasting, it rapidly established a diminution of the symptoms and a steady gain in weight, the results being excellent. Charts are given showing curves of the various experiments, but full protocols of all the animals under examination are not included for want of space.

Conclusions.

1. The tablets prepared in the cold have retained their efficiency for over 12 months.
2. Commercial lemon juice made from the whole fruit received from Messina, which had not been specially protected from heat, had lost all its antiscorbutic properties when tested in England, confirming the work of Miss Alice Davey.[4]
3. Tinned tomatoes in doses of 4 c.cm. act efficiently against scurvy in guinea-pigs, both as a prophylactic and a curative agent.

SCURVY:

A SYSTEM OF PREVENTION FOR A POLAR EXPEDITION, BASED ON PRESENT-DAY KNOWLEDGE.

BY A. H. MACKLIN, M.D. VICT.,
AND
L. D. A. HUSSEY, B.SC. LOND., A.K.C., F.R.ANTHROP. SOC.,
MEMBERS OF THE SHACKLETON-ROWETT EXPEDITION; LATE MEMBERS OF THE SHACKLETON ANTARCTIC EXPEDITION.

SCURVY has played a very prominent part in the history of Polar exploration, and a close examination of records shows that its presence or absence has borne a close relationship to success and failure. In the light of recent knowledge it is probable that many of the tragedies which have occurred were due to scurvy, though the condition was not recognised or reported as such at the time. It may easily be understood that in the preparation for a modern expedition the prevention of scurvy is a most important consideration, and an account of the actual steps taken may be of some interest. Until quite recently little attention has been directed to this and other deficiency diseases by the bulk of the medical profession in the British Isles, where cases of adult scurvy in an advanced condition have been very rare; and the signs of early scurvy are so indefinite that they are difficult to recognise, unless they occur simultaneously amongst a large body of people leading similar lives, and under conditions where its onset might be expected.

There are several reasons for the interest which has been aroused. Numerous cases occurred in Europe under the severe conditions of famine imposed by the war, and allowed of unprecedented opportunities for its study by medical men in the different zones. Moreover, much greater attention has recently been directed to infantile scurvy and the factors influencing its onset, especially the effects on milk of drying and preserving processes, and the possibly detrimental effects of pasteurisation and sterilisation.

Modernity of Deficiency Diseases.

It was formerly the custom to regard pathological changes as due always to the addition to the system of some harmful foreign substance; the discovery that functional disturbance and tissue changes may be due to the lack of some essential body has opened up a new conception of the ætiology of disease. Moreover, deficiency diseases are to a great extent modern diseases, due to the tendency of people to crowd together into large towns, which necessitates the comparatively large use of preserved foods. It has been very fully demonstrated that these essential bodies or "vitamins" are present in foods in the natural state and in fresh condition, but that their functional activity is much diminished or totally destroyed by many preservative processes. Since the war remarkable interest has been aroused, and the word "vitamin" figures largely, not only in medical literature, but in the advertisement columns of the daily papers, and has almost become a household term, though its meaning is by no means always clear.

Early Antiscorbutic Data.

The apathy and lack of general interest which formerly existed with regard to these subjects made things very difficult for those responsible for the organisation of past expeditions; moreover, the

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[3] Given, McClugage, and Hess: Proc. Soc. Exp. Biol. Med., 1921, Feb. 16th.

[4] Davey, Alice J.: Bio-Chem. Jour., 1921, vol. xv., No. 1.

Presidential Address

(ABRIDGED)

ON

PSYCHOLOGICAL MEDICINE:

ITS POSITION IN MEDICAL AND ALLIED SERVICES.

Delivered before the Medico-Psychological Association

By C. HUBERT BOND, C.B.E., D.Sc.,
M.D. Edin., F.R.C.P. Lond.,
COMMISSIONER OF THE BOARD OF CONTROL, AND EMERITUS LECTURER IN PSYCHIATRY AT MIDDLESEX HOSPITAL MEDICAL SCHOOL.

Dr. Bond began by claiming justification for the selection of this topic on account of the widespread interest incited by some of the problems presented during the war in connexion with cases of nervous and mental breakdown, and the fact that sufficient time has now elapsed for the necessary stride forward in which to take stock of the war's lessons, to appraise the permanency of any apparent change[1] in incidence of mental maladies, and to revise demands—shaped at first on idealistic lines—in conformity with available resources.

The restraining influence of the nation's straitened circumstances would, he said, have rendered the subject impossible of selection, but for the conviction that an unfortunate amount of mental therapy is being neglected, and that a large proportion of it can be successfully undertaken without fresh expenditure of money. As an incentive to put in hand what can now be overtaken—delay in doing which is negligent—and to make quite clear what is required either financially or by way of legislation before the remainder of the work can be even commenced, something in the nature of a thoroughly understood scheme of mental medical service seemed wanted. A scheme for general medical services, including several special ones, but with very small reference to psychological medicine, having been propounded from an authoritative source—the Consultative Council on Medical and Allied Services, established under the Ministry of Health Act of 1919—it seemed desirable to take this as a basis for consideration how best to give effect to the dictum that the mental health of the nation was of no less moment than its physique.

The Council's report, and the reports of the Welsh Council, the Council of the Scottish Board of Health, and of the Irish Public Health Council were reviewed by Dr. Bond, to emphasise the small extent to which the growing needs of psychological medicine had so far been considered on anything like comprehensive lines, despite the rising interest in mental disorders and in the maintenance of mental health—of which interest several notable examples were cited. At the same time note was taken of a regrettable falling-off, during at least the last ten years, in the financial support hitherto given to mental hospitals (13 in England and Wales) supported by voluntary contributions; as a consequence there were now many persons of good education and social standing being treated in public mental hospitals in association with others without these qualifications, whereas these 13 hospitals were founded specially for such cases. For lack of funds the hospitals were not able to do anything like the amount of charitable work they once did, and often were unable to add the structural arrangements demanded for modern lines of treatment. This want should be made widely known, for these excellent hospitals had a fine record worthy of generous support.

Lunacy Laws in Relation to Mental Treatment.

Dr. Bond then went on: So much misunderstanding still prevails, both in professional and lay circles, concerning the legal aspect of the topic, that before attempting to show what comprehensive arrangements should be aimed at, which of these can be made forthwith and which must await either legislation or the removal of financial restrictions or both, it seems advisable to set the legal position out afresh and once again to make clear how the Lunacy Laws, while designedly protecting the liberty of the subject, obstruct the adequate treatment of mental disorders and render improvement in schematic organisation impossible—save in one direction. The easiest way to understand the matter, I suggest, is to consider mental cases as administratively divisible into (*a*) the uncertifiable, and (*b*) the certifiable (under either the Lunacy or Mental Deficiency Acts), and the certifiable cases as subdivisible into (i.) the "willing" (those who have the mind to recognise they are mentally ill and desire treatment), (ii.) the "indifferent" (those who are too mentally ill to raise any objection to proposed treatment), and (iii.) the "unwilling" (those who, whether they recognise their mental illness or not, are hostile to any curtailment of their liberty involved in treatment). Ostensibly the law puts no obstacles in the way of either out-patient or in-patient treatment for uncertifiable cases; nor does it with respect to out-patient treatment for certifiable cases. With respect to both classes of cases, that indeed is an accurate statement as regards out-patient treatment. But the dividing line between uncertifiability and certifiability is notoriously thin, and the former condition readily, and often suddenly, passes into the latter; so that, in practice, fear of incurring penalties attached to undertaking in-patient treatment contrary to the provisions of the Lunacy Acts (section 315 of the Act of 1890) results in a large number of uncertifiable cases receiving no treatment, and in inadequate arrangements for it; and therefore the position of uncertifiable cases in need of mental treatment as in-patients cannot be ignored. It is, however, in connexion with in-patient treatment for certifiable cases that the law, because of the public's dislike of certification, proves such a hindrance to early treatment and obstructs the making of arrangements on lines which will conduce to treatment being sought more promptly, to better study and increased research in mental disorders, and therefore to all-round progress in the specialty. The obstruction lies in the fact that, excepting the almost negligible amount of voluntary treatment permitted, which is restricted in place to the mental hospitals supported by voluntary contributions and to licensed houses, in all three classes of certifiable cases—i.e., not only the unwilling, but also the willing and the indifferent—certification must be carried out before any form of in-patient treatment can be legally secured.

Importance of Out-patient Treatment.

It is thus manifest that the sole direction in which an extension of existing mental medical service can be made without legislation is in out-patient work—preferably at general hospitals. Such work is in progress at some of the London hospitals and at a very few provincial ones. A notable example of what can be done in this sphere may be cited in the work going on in the out-patient department of the Radcliffe Infirmary at Oxford, details of which will be given later in a paper to the Association by Dr. T. S. Good. It amount of importance has been given to heat, and that oxygenation has played a more important part. The following are extracts from an article appearing in THE LANCET, March 5th, 1921:—

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[1] For example: While during the quinquennium 1910–14 the average number of female direct admissions into institutions for the insane and into single-care (in England and Wales) was 11,668, or a ratio of 6·21 per 10,000 population, the average number during the three war years 1915–17 was 10,894—i.e., a ratio of 5·59 per 10,000: but the admissions during the years 1918–20 were 11,687, 12,060, and 12,003 respectively, with corresponding ratios of 5·93, 6·15, and 6·07: and it may be of some significance that, while in pre-war years there was no marked seasonal or monthly variation in the number of admissions and such as obtained was never high in November, yet in 1918, while the number of female admissions in September and October were respectively 7·2 and 7·8 per cent. of the total female admissions during that year, the percentage during November was no less than 10·1, and the maximum number of reception orders made on any given day occurred on the day following the Armistice. These figures, for what they are worth, have been restricted to females because those relating to males would be vitiated by the large number of the male population serving with the Forces.

> It was found that bubbling air at ordinary temperature through an antiscorbutic solution (of lime juice) inactivated it. On the other hand, on boiling an active solution for two hours in an atmosphere of CO_2, no marked diminution in the activity could be recorded, whilst on boiling a similar solution for one hour during which time air was bubbled through, almost the entire activity was lost. . . . . . .
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> From the administration of daily doses of 1·5 c.cm., 4 c.cm., and 6 c.cm. of the juice boiled in an atmosphere of CO_2 for two hours, no inactivation perceptible by our present technique could be established. It is probable that more light will be thrown on this question in the near future.

In spite of these great strides, and the data now available, it must be admitted that the knowledge of the subject is still very incomplete, both as to the pathogenesis and exact nature of scurvy, and as to the factors influencing the vitamin. Moreover, the matter (in its modern aspect) is so much in its infancy that it has not been possible to apply the test of time even to the extent of the few years during which an expedition is cut off from supplies.

Pathology of Scurvy.

The pathology of scurvy, in so far as the results of autopsies are concerned, has been known for many years and carefully described by independent observers, but the pathogenesis is still incomplete, and investigation in this direction is a matter of extreme difficulty. The path, however, has been broken, and much new light has been thrown on the subject by the work of McCarrison, recently embodied in a single volume.[1] It has been shown that there is a definite pre-scorbutic stage, characterised by a general depressed vitality, which persists for a varying period before the second stage, the stage of toxæmia, sets in, producing the symptoms more usually considered as characteristic of scurvy. The symptoms of the first stage are a feeling of unusual tiredness and lack of interest in things generally, a greater readiness to take to bed, and a greater reluctance to get up. There is shortness of breath on exertion, and the patient suffers from frequent headache and vague "rheumatic pains." The pulse-rate is increased, and Hess has noticed in children a tachycardia similar to that of exophthalmic goitre. Clinical observers have noticed a dilatation of the right side of the heart, though there is generally some shrinkage in that organ as a whole. From clinical observations made in Russia, where one of us had the opportunity of seeing a very large number of cases occurring in adult men, it appears that this stage may persist for a considerable period, weeks or even months elapsing before more marked symptoms arise. McCarrison describes during this period "a state of ill-health of the bowel" with "congestive and hæmorrhagic lesions in the tract." The second stage, which is one of a profound toxæmia, produces, in more or less marked degree, the symptoms of profound depression, dull earthy complexion, bleeding, swollen gums, and other conditions more usually associated with scurvy, and in the advanced stage producing the ugliest of clinical pictures. Of this condition the Austrian, Kramer, wrote, "The scurvy is the most loathsome disease in nature," and the Canadian poet, Service, forcibly, if somewhat crudely, writes:—

"... . the scurvy softens your bones
And your flesh dents in like putty, and you spit out
your teeth like stones."

The depressing effect of an outbreak of this disease during an expedition can be imagined. In the large series of cases seen by us in Russia the swelling and sponginess of the gums was a very characteristic but not altogether a constant feature; we saw some very advanced cases with pronounced symptoms in which the gums were not swollen, though bleeding occurred readily. In these cases the teeth, though loosened in the sockets, were in excellent condition, with absence of caries, which points to a probable relationship between the two conditions. The toxæmia, which is accompanied by severe metabolic disturbance, is almost certainly gastro-intestinal in origin, and in connexion with this the following extracts, having a direct bearing on the subject, are made from Robert McCarrison's "Studies in Deficiency Disease."

For the sake of brevity in this article, the wording has in places been considerably altered:—

1. The health of the gastro-intestinal tract is dependent on an adequate provision of accessory food factors, especially vitamines B and C. . . . . Vitamine C . . . . is especially concerned in the production of congestive and hæmorrhagic lesions in the tract, and evidences of these may be found in animals which have not exhibited during life any clinical manifestation of scurvy in a noteworthy degree. A state of ill-health of the gastro-intestinal tract may thus be a pre-scorbutic manifestation of disease due to insufficient vitamine intake. . . . .
2. The disorder of the intestinal tract is enhanced when the deficient food is ill-balanced.
3. In general the disorders resulting in this situation from deficient foods are:—(*a*) Congestive, necrotic, and inflammatory changes in the mucous membrane, either involving the entire tract or limited to certain areas; (*b*) degenerative changes in the neuro-muscular mechanism, tending to dilatation of the stomach, ballooning of areas of small and large bowel, and probably also to intussusception; (*c*) degenerative changes in the secretory glands, such as must cause grave derangement of digestive and assimilative processes; (*d*) toxic absorption from the diseased bowel; (*e*) impairment of the protective resources of the mucosa against infecting agents, resulting not only in infection of the mucous membrane itself, but permitting of passage into the blood stream of micro-organisms from the bowel.
4. There is a definite individual idiosyncrasy.

Of the deleterious effects of food deficiencies on the endocrine glands, and the consequent disturbance of metabolism, we have said nothing, though their importance in the pathogenesis of scurvy is fully recognised. The exact processes which take place in this connexion are not clear, and for our present purpose we do not see that we can draw any practical conclusion from the present-day knowledge of the subject. The changes in these glands do not seem to result from the bowel lesions, but have a certain amount of influence on their production. McCarrison says: "Whatever be the true nature of vitamines, they resemble in their action that of hormones, whose function is to stimulate metabolism." He shows that some of the endocrine extracts "can delay in onset, and alleviate, though not permanently dispel, the symptoms of polyneuritis in pigeons suffering from deprivation of vitamine B." Extracts of the thyroid, or of some of the other endocrine glands, might therefore be of use in staving off the more pronounced effects of scurvy, and in this way might be of real value on a sledging journey which had resolved itself into a race against time, and where the ability to carry on for a few days more would bring the party within reach of a depôt of supplies, as occurred in the case of the late Captain Scott and his companions; though we do not know that scurvy was the cause of death on that occasion.

For many years certain factors have been regarded as having a predisposing influence: cold, fatigue, mental depression, fear, short rations, crowded, dirty, and ill-ventilated surroundings, and individual idiosyncrasy.

In passing we must remark that this analysis of the situation does not in any way pretend to be a complete epitome or representation of the present-day knowledge of scurvy; we have attempted merely to pick out those considerations which we regard as being of practical value, to be carefully weighed as having a direct bearing under the heading of this article.

Factors Bearing on Incidence of Scurvy in Polar Expeditions.

Further, fully to understand the problem it is necessary at this stage to explain the circumstances in respect of the incidence of scurvy which may arise during a Polar expedition. Life on the ship, or at a well-stocked base, permits of a full and varied diet, and more or less bulky foods can be carried. Accommodation is, of course, very limited, but quarters can be kept in their work each to his respective institution; instead of which they should be regarded as public officials whose specialist services should be freely available at all centres in their locality where either mental treatment or the diagnosis of mental condition is required as part of the public's medical and allied services. In short, fluidity of service should be brought about, which in most instances will need not legislation, but an alteration in the institution's rules, which are so far statutory that, having received the Secretary of State's (now the Minister of Health's) approval, they have the force of law. This fluidity of service would enable much preventive and early treatment, now neglected, to be performed, nor would that be at the expense of the medical staff's institutional duties; on the contrary, the constant touch kept with the periphery, the witness of the operation of predisposing factors, and the better knowledge of premonitory symptoms and early stages of mental disorders, would broaden the outlook of the medical staffs, and much enhance their effectiveness within the institution.

Fluidity of service is required, not only for routine therapeutic work at clinics and in out-patient departments of general and other hospitals, but also for work in at least two of four other important relationships which psychological medicine ought to establish. These four are its relations (i.) to medical services for school children—details of which will be supplied in a paper from Dr. G. A. Auden, (ii.) to criminology—the valuable work being carried out at H.M. Prison at Birmingham may be cited as an example, (iii.) to industrial hygiene—concerning which an account will be contributed later by Dr. C. S. Myers, and (iv.) to the naval and military medical services; and it is as regards the first two that this fluidity of service is chiefly required.

As ancillary to these matters, allusion may be made to health visitors, the value of whose services in relation to mental treatment is insufficiently realised in this country. They are at present only represented, as respects psychological medicine, in connexion with the work of the Mental After-Care Association, and with that of the Central Association for the Care of the Mentally Defective. They should be recognised as indispensable throughout the whole of the scheme of work that has been outlined, and our public mental institutions could do much in promoting arrangements for the training of suitable persons.

In conclusion, Dr. Bond added: But for the obvious utility of specific reference to, and falling in line with, the Consultative Council's scheme, my address might perhaps better have taken "Mental Hygiene" as its title; for, indeed, such suggestions as I have been able to offer have as their ultimate goal the promotion and preservation of mental health. Even should all these proposals mature, pruned and added to as none better than the Medico-Psychological Association is capable of doing, all the work requisite for this preservation will not be overtaken. It is therefore of good augury that an idea is afloat to establish in this country a National Committee for Mental Hygiene on the lines of the body of men and women who, under that name, have been for the past 13 years doing such magnificent work in the United States, and out of whose example similar committees have sprung up in the Dominion of Canada and are contemplated elsewhere in the Dominions and in France.

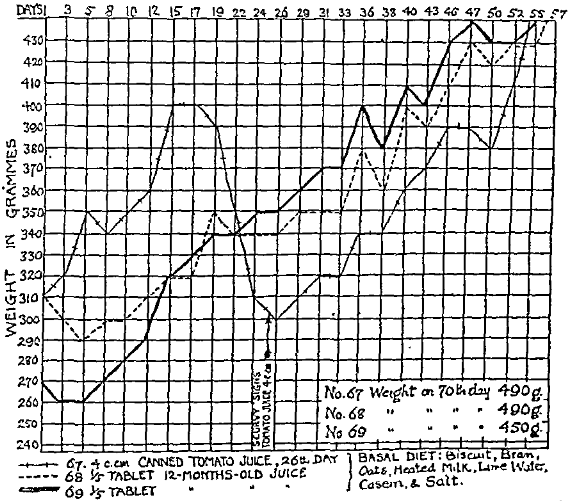
FURTHER EXPERIMENTS ON THE PRESERVATION OF LEMON JUICE AND PREVENTION OF SCURVY.

BY SIR PERCY W. BASSETT-SMITH, K.C.B., C.M.G., F.R.C.P. LOND., F.R.C.S. ENG.,
SURGEON-REAR-ADMIRAL, R.N.

IN previous papers[1] I have drawn attention to a method of making a portable, palatable, and efficient dried preparation of lemon juice, which it was hoped would be particularly useful for landing parties in special expeditions of naval character, or, more particularly, for sledging work in arctic and antarctic regions. It was, however, necessary to test these tablet forms after prolonged periods of storage, for the time element is generally recognised as being one of very great importance in reducing the antiscorbutic value of most preparations.

I have therefore tested healthy young guinea-pigs of about 300 g. weight with tablets which had been stored in the laboratory at room temperature for over 12 months. The basal diet consisted of ships' biscuit, bran, oats, casein, salt, and lime-water, with 60 c.cm. daily of milk so heated as to destroy any antiscorbutic vitamin. Each day one-fifth of a tablet was given, equivalent to 4 c.cm. of fresh lemon juice. The animals under experiment have over a period of 70 days showed no signs of scurvy; they are bright and healthy and have steadily gained weight, as shown by the curves in the annexed chart. Control animals, without antiscorbutic factors, show signs of scurvy about the 21st day and then rapidly lose weight (Chart 1).

CHART 1.



It has been previously shown that short periods of heating, even at boiling point, only slightly reduce the antiscorbutic value of lemon juice, and it is probable that these tablets could be produced on a commercial scale by a process similar to that used for the preparation of Nestlé's condensed sweetened milk, which contains most of the original vitamins[2]; the milk is heated for about three and a half minutes close relationship between this and other deficiency diseases, especially beri-beri. In so far as they can be separated clinically, however, the latter presents for its prevention a much less difficult problem. The anti-beri-beri (anti-neuritic or water-soluble B) vitamin is much more resistant to extraneous factors than the anti-scurvy vitamin, and foods in which it maintains its activity are more easily obtainable. Its elimination is aimed at on the ship by provision of the following foods: rice (containing germ), whole meal flour, dried eggs, dried peas, beans and lentils, fresh meat (including the sweetbreads, liver, and brains of any animals killed), and marmite is added to the sledging ration, which in itself probably contains active anti-beri-beri vitamin. During the course of the expedition fresh penguin eggs will be freely used if obtainable.

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[1] THE LANCET, 1920, i., 1102, and ii., 997.

[2] Hume, E. M.: Bio-Chem. Jour., 1921, vol. xv., No 1, pp. 163–166.

It is probable that the next few years will show great advances in the knowledge of deficiency diseases, and in Admiral Bassett-Smith's work in connexion with prophylaxis in the Navy a ready-made system will be available for future exploration.

In conclusion, we wish to thank many prominent workers who have given us their ready assistance in our preparation, Admiral Bassett-Smith, and Dr. Hess, of New York, for personal interviews and much sound advice; Surgeon-Commander E. L. Atkinson, Dr. G. de M. Rudolf, and others. We have made full use of all available literature, and our acknowledgments are due to the various authors.

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ANÆSTHESIA WITH NITROUS OXIDE AND OXYGEN UNDER PRESSURE.

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DURING recent years it has come to be recognised that nitrous oxide, mixed with sufficient oxygen to make it respirable over a long period, is the safest and most physiological of all anæsthetics, its use being unaccompanied by unpleasant or dangerous accessory effects either during or after the operation.

When shock is threatened, or when a definite toxæmia is present, chloroform or ether accentuates the danger, whereas nitrous oxide with oxygen seems to be harmless in this direction. The fact that histamine produces fatal shock in an animal which has been long under ether, in doses harmless to a normal animal, or to one anæsthetised with nitrous oxide and oxygen, was recently shown experimentally by one of us (H. H. D.).[1]

On the other hand, the use of nitrous oxide and oxygen has the drawback that, when sufficient oxygen is given to secure perfect oxygenation of the blood, the anæsthesia obtained is not deep. It is notoriously difficult under such conditions to obtain an adequate relaxation of the belly wall for an abdominal operation, unless the muscles are paralysed by nerve-blocking with a local anæsthetic in addition. To secure deep anæsthesia, with full relaxation, by means of N_2O, the proportion of oxygen must usually be so reduced that the patient is slightly blue; the anæsthetic effect is complicated by a partial asphyxia. When pure N_2O is used for short operations, as in dentistry, the asphyxial element becomes very prominent, the anæsthesia produced being largely due to asphyxia, and not differing greatly from that which is produced by inhaling pure nitrogen until unconsciousness occurs.

At present, therefore, anæsthesia with nitrous oxide and oxygen is apt to be a compromise between the disadvantages of imperfect relaxation and those of exposing the patient to defective oxygenation of his blood. These latter are likely to be more serious in the case of a patient for whom nitrous oxide and oxygen on other grounds would be the anæsthetic clearly indicated, by the presence of toxæmia. Dr. Otto Leyton called to the attention of one of us (L. H.) the need of an anæsthetic for use on diabetics, free from these alternative drawbacks, and recalled the demonstration made long ago by Paul Bert, of the possibility of maintaining deep anæsthesia by means of a mixture of nitrous oxide and oxygen in a chamber under a small positive pressure.

Experiments on Dogs.

As long ago as 1878,[2] Bert observed that complete relaxation could be produced in a dog by putting it in a pressure chamber filled with a mixture of N_2O and O_2, 5 parts to 1, under a plus pressure of one-sixth atmosphere. The corneal reflex was abolished, pinching an exposed sensory nerve caused no reaction. A limb could be amputated without any movement on the part of the animal. Recovery from the anæsthesia took place after three or four breaths of pure air. Martin[3] studied continuous anæsthesia produced by this method. He filled a bell-jar with a mixture of N_2O and O_2, 85 parts to 15, and raised the pressure as Bert had done. A flow of the gaseous mixture was adjusted to ventilate the chamber, and, in addition, some milk of lime was put within to absorb CO_2. An animal within this bell-jar was thus kept anæsthetised for 72 hours. On withdrawal it began to move after 15 minutes, tried to stand up after 35 minutes, walked and obeyed commands after 55 minutes, but refused milk. Next morning it appeared normal and ate food eagerly.

Bert[4] states that pressure chambers for performing surgical operations under his method of anæsthesia were being installed at the Hospital St. Louis at Paris, also at Lyons, Geneva, and some towns in Germany.

We could find no published records of the use of these chambers, but merely the statement, in a recent text-book, that they had not succeeded, and that one of them was to be seen still, as a curiosity. Through the courtesy of the present Superintendent of the St. Louis Hospital we received the information that alarm at a mishap occurring when the chamber was first used, which nearly resulted in the death of the patient, had led to the abandonment of the method. Whatever the accident might have been, it seemed clear that it could not be due to anything inherent in the method, and, in view of the practical interest of the matter, we decided to make the experiment on animals, under conditions which, with small modifications, could be applied to a surgical operation on man, if a suitable chamber were available.

Experiments on Cats.

The animals used were cats, and they provided rather a severe test of the method, on account of the difficulty of producing a really deep anæsthesia in the cat, without reducing the oxygen in the mixture to a point near to the limit compatible with life. The mixture of N_2O and O_2 was made in a large Douglas bag and passed through a meter to a mask which snugly fitted the snout. When we used 4 parts N_2O to 1 part O_2, and a current through the mask of 4 litres per minute, the animals continued to wag their tails, to breathe noisily, and to show rigidity of the adominal wall and resistance of the legs to passive flexion. When the ventilation was reduced to 2 litres and then to 1½ litres per minute, the animals were a little more deeply anæsthetised, but still too lightly to stand any operative measure. The pads were moist and pink in colour. When the mask was removed after inhalation had lasted for 30 minutes, the cats were able to walk when put to the ground, but were slightly ataxic for a few seconds. Cats are known to be particularly resistant to N_2O, so we next tried a mixture of 1 part O_2 to 7 of N_2O. With a ventilation of 3½ litres per minute the limbs and literature dealing with the subject was extremely meagre, much of it in foreign languages, and available only to those with access to large and well-stocked medical libraries. Little attempt was made to keep it up to date. Reference to the history of Polar exploration, and the records of early voyages of discovery, showed that reports in connexion with antiscorbutics, though often dogmatically made, were unreliable, and contradictory results were obtained from apparently similar methods of prevention. The number of possible fallacies in deductions drawn and the probable influence of unconsidered factors, showed that no real assistance could be drawn from this source. Certainly the value of fresh foods, especially fruits and vegetables, had long been recognised, as is seen by the memoirs of the famous Captain Cook, who made use of them on every available occasion, and whose voyages were remarkable for the absence of scurvy in the advanced stage; for in those times the disease was frequently not recognised until it had reached an advanced stage. The improved conditions resulting from Board of Trade regulations in connexion with seamen showed a marked diminution in the number of cases occurring at sea; and this diminution was largely attributed to the use of lime juice, which for many years held sway as a sure preventive of scurvy, and a certain cure for it when it had set in.

Method Adopted by Sir E. Shackleton.

In 1913–14, when the last expedition was in process of preparation, a reliable system of prevention was particularly difficult to form, for lime juice had been shown to be of doubtful value, and the "vitamin theory," though established, was still in its infancy; and of the factors influencing the vitamin comparatively little was known. It had not been shown that the Mediterranean lemon possessed a much greater antiscorbutic value than West India lime; the failure of lime juice was attributed to the high temperature used in its concentration. Nevertheless, Sir Ernest Shackleton, who fully realised the importance of strong anti-scurvy measures, and who had made himself fully cognisant with the state of knowledge at that time, took every possible step to secure them, relying not on any one preparation, but on providing a well-balanced dietary. How far the method was effective in this respect the results of recent workers, especially McCarrison,[1] have shown, and all Sir E. Shackleton's expeditions have been remarkable for the absence of any signs of scurvy. The system adopted lay in the provision on the ship of good foods, supplied in great variety and in ample quantity, great care being taken to see that it was served cleanly, and in as attractive a manner as conditions permitted. Living quarters were made as bright as possible and kept scrupulously clean. Everything possible was done to maintain general good health and a high morale. For sledge journeys a preparation of lime juice was made in the concentration of which low degrees of heat were used, and the product was put up in air-tight capsules, each capsule containing a ration for one day. In the light of more recent knowledge this ration was probably not rich in active vitamin, but its efficacy was never tested, for no extended sledge journeys were carried out until after the loss of the *Endurance*. For 10½ months the party lived on a severely restricted and monotonous dietary, but it was composed largely of fresh meat.

Epitome of Results with Different Antiscorbutics.

Between that time and the present, however, a great deal of work has been done, and great advances have been made both along the lines of clinical investigation and direct experiments on animals.

An epitome of the results having a practical application is here given:—

Lemon Juice.—The historical investigations of Chick, Hume, and Skelton[2] and of A. H. Smith,[3] followed by experiments on animals at the Lister Institute by Chick and Hume, have displaced lime juice from its time-honoured position as an antiscorbutic, but have shown that lemon juice is very rich in active vitamins and has in the fresh state a high antiscorbutic value. It withstands drying under certain conditions. Holst and Frolich pointed out that by evaporating fresh juice in a vacuum the efficacy was retained, and Harden and Zilva that by drying it in an acid medium an active residue is left. Admiral Bassett-Smith[3] has elaborated these methods, and with a view to prophylaxis in the Navy has prepared a convenient and portable product by evaporating the juice in vacuo over sulphuric acid; a viscid syrupy mass is left which may be preserved by the addition of 10 per cent. alcohol—which also prevents freezing—or by making it into tablets. In both forms it has been shown to retain its antiscorbutic value. There has not yet been time to test fully its keeping qualities over a number of years, but there is no doubt that these preparations will be of the utmost value in Polar exploration, and in other circumstances where similar conditions are met with. The amount estimated as necessary per man per day for prophylaxis is the equivalent of half a lemon in the fresh state.

Orange Juice.—Orange juice has also been shown to have high antiscorbutic value, and Givens has prepared a dried product, containing active vitamin, which has retained its efficacy after two years' storage.

Milk.—Chick, Hume, and Skelton have shown that milk in the fresh state has a comparatively low antiscorbutic value which varies according to whether the cows from which it was obtained were fed on fresh greenstuffs or not. Milk powder, however, may be comparatively rich in vitamins, but this depends largely on the manufacturing process to which it has been subjected.[4] The "spray" process of drying milk has been shown to be very detrimental to the antiscorbutic vitamin, but the "roller" process is much less so. Milk prepared by the Just-Hatmaker process has been shown by Hess and Unger[5] to be efficacious, both for the prevention and treatment of infantile scurvy. In this it is poured in its fresh state on to two revolving drums, heated to a temperature of over 100° C., on which it forms a film, and is scraped off within a few seconds by a knife edge into a container. Other factors essential to a good powdered milk are good pasturage, healthy cows, hygienic methods of dealing with the milk, and as little exposure to air as possible during the whole process.

Vegetables.—Most fresh vegetables are richly antiscorbutic, but dried vegetables have been shown to be almost totally devoid of active vitamin. Holst and Frolich, however, have prepared an active dry preparation of white cabbage by keeping out all moisture and preventing hydrolysis, but evidence in connexion with it is scarce. Vegetables preserved in tins by the process of canning are also of little value. A notable exception is canned tomatoes, which Hess and Unger have shown to be antiscorbutic, and have used it with success in infantile scurvy. It has also been adopted for use in the United States Army. Campbell and Sherman state that after boiling for one hour, tomato juice loses only 50 per cent. of its water-soluble C vitamin, and about 70 per cent. after four hours. The rate of loss is increased if the juice be first made alkaline or neutral.

Germinated Pulses and Cereals.—Furst was the first to demonstrate the presence of active vitamin in germinating cereals. Chick, Hume and Delf at the Lister Institute have carried on further investigation, and the result is one of importance in Polar exploration, for the dried pulses and cereals can be easily carried and made to germinate as the occasion requires. Wiltshire applied this treatment clinically in dealing with an outbreak of scurvy amongst Serbian soldiers, and he describes it as being superior in value to treatment by lemon juice.

Meat.—Preserved meats may be regarded as having no antiscorbutic value at all. Dietcher, Pierson, Biester, and others found that small amounts of fresh beef had no appreciable effect in the prevention of scurvy. There are numerous instances, however, in the history of exploration, which show that fresh meat is able both to prevent and to cure scurvy, provided enough of it be eaten. It has been suggested that it must be eaten raw or lightly cooked, but our own experiences in the last Shackleton expedition showed that this is not necessary.

Factors Influencing the Vitamins.

The anti-scurvy or water-soluble C vitamin has been shown to be more sensitive to destructive influences than either the fat-soluble A, or water-soluble B vitamins. The influences most detrimental to its activity have been considered to be heat, drying, exposure to air, ageing, and an alkaline reaction. The precise factor acting on the vitamin has not been clearly shown. With regard to heat, the experiments of Miss Delf tended to show that intensity of heat is less destructive than prolonged heating at a lower temperature. Results, however, proved puzzling, and a more recent experiment by Zilva, carried out at the Lister Institute, shows that probably an undue

The major period involves the first third of the gestation period, and the minor is a diurnal periodicity. Sometimes, but very rarely, the nausea and vomiting extend beyond the third or beginning of the fourth month. Many cases which have been most distressing in their symptoms clear up spontaneously at about this time, and many women, knowing this, acquiesce in the discomfort and distress of their condition instead of seeking relief at experienced hands. In this they have been encouraged, either openly or tacitly, by the inability of the medical profession to aid them in their difficulty, and such an attitude has confirmed their belief that a certain degree of nausea or even vomiting is an inevitable accompaniment of child-bearing.

Minor or Diurnal Periodicity.

The minor periodicity of nausea and vomiting in pregnancy is shown clearly by the use of the designation "morning sickness," though all cases do not exhibit this periodicity in the morning. Nevertheless such a periodicity is very common, and a diurnal wave of nausea is often observed even if the crest is not matutinal. Such intermittent cases pass insensibly into a continuous condition of nausea or vomiting. The rejection of food, both involuntary and voluntary, with the supervening starvation, intensifies and complicates the picture until we come to know it as pernicious vomiting. It is evident from the latter statement that the so-called pernicious vomiting is regarded as a development of the milder form, differing only in degree, and in multiplicity of effects. Indeed, the work on this subject was commenced with the idea of separating the factors involved in pernicious vomiting through a study of its presumably simpler forms.

Findings Relating to High Carbohydrate Diet.

The following facts had had a determining effect on the choice to attack the problem experimentally through an investigation into the effect of high carbohydrate diet on the simpler cases of vomiting in pregnancy.

(*a*) Autopsy findings, in a large number of cases in the literature, of acute yellow atrophy of the liver.[7] The necrosis of the central portions of the lobules and the fatty degeneration of the peripheral portions occur, even in so-called acute cases where marked emaciation of the patient is not shown.

(*b*) The findings of Mottram[8,9] that a short period of hunger was sufficient in some animals to produce a fatty infiltration of the liver, and that a similar condition was sometimes found in ill-nourished and nervous pregnant animals. These fatty infiltrations are purely physiological in character and readily pass away under more normal conditions.

(*c*) The knowledge that of all metabolic disturbances the carbohydrate metabolism is the one most readily affected.

It is easy to see that, given the above-mentioned facts, a connexion could readily be traced between a disturbance of carbohydrate metabolism, resulting from a disturbance of the glycogen of the maternal liver, upon which a fatty infiltration would ensue, and the autopsy findings, in the advanced cases of vomiting, of extensive hepatic degeneration. If there existed any parallel between the animal experimentation of Mottram and the human cases, then pregnancy, together with a short period of hunger, was sufficient to account for the minor periodicity of the nausea and vomiting of pregnancy.

Starvation and Nausea.

In this connexion Dorman [10] makes the statement:

> "Small amounts of easily digested food are to be taken every two or three hours, with regular meals omitted. Many patients discover this fact for themselves. *The extremes of nausea come on after a prolonged fast.*† Sometimes the evening meal, which is a late dinner, following a light luncheon, is the time of greatest distress. The meal is approached with a great distaste for food and is either refused or rejected after eating. The underfeeding then exaggerates the nausea. A tolerance for dinner may be acquired by taking afternoon tea."

Titus, Hofmann, and Givens,[6] commenting on morning sickness, remark:

> "The first nausea of pregnancy usually affects the patient early each day soon after she arises. *This is after the longest period of fasting in the 24 hours.*† An overnight fast can produce only moderate hunger, but any hunger may be considered mild starvation. If eating before making any exertion relieves this morning nausea it is obvious that there is a relation between starvation and the occurrence of the nausea."

One of the first characteristics of starvation is a lowering of the glycogen content of the liver. With prolonged starvation it may disappear entirely. Fatty infiltration of the liver is an inevitable sequel to glycogen diminution, and the logical procedure to avoid such a condition is to maintain the glycogen content at as high a level as possible. In this way the treatment of nausea and vomiting in pregnancy by the use of a high carbohydrate diet was devised, with the results which were mentioned at the beginning of the paper. Moreover, the possibility of failure of normal protein metabolism, which had been advanced by Stone [11] and by Ewing and Wolf [12] had been entirely discredited by the damaging criticism of Underhill and Rand [13] and the precise experimental findings of Losée and van Slyke.[14]

In connexion with the influence of starvation Titus, Hofmann, and Givens have unjustly criticised the theory of our previous paper, although as has just been quoted, they themselves point it out as a factor in the condition. In fact, if the two papers are compared side by side they present a wonderful similarity. A short period of starvation lowers the glycogen content of the liver. This short period during the night hours is ordinarily insufficient to produce any symptoms, but in pregnancy there is added an extra strain upon the glycogen supply due to the pregnant condition itself. It is thus the double load upon the maternal liver which is sufficient to produce a temporary fatty infiltration of the organ, which clears up during the day hours under the influence of the carbohydrate of the food. The evidence of the fatty infiltration, or even perhaps of a slight degree of fatty degeneration, is shown by the occurrence of acetonuria even in very mild cases of nausea and vomiting. Small areas of fatty degenerated liver are known to become normal under carbohydrate feeding,[15] though the beautiful work of Whipple and his associates [16] only appeared after the publication of our first paper. The clinical use of glucose in cases of delayed chloroform poisoning is also well known.[17] On the other hand, one portion of the theory advanced by us is certainly open to criticism. At the time we had before us a personal communication from Imrie to Mottram[18] stating that the fœtus was greedy of unsaturated fat. Since then Imrie [19] has published his results in full, and it is evident that the statement referred to fat in the fœtal liver at term. Such results, of course, could have no bearing on the present discussion, and any arguments previously based on them must be withdrawn.

Major Periodicity.

The minor periodicity of nausea and vomiting thus receives adequate explanation on a theory of glycogenic disturbance, or carbohydrate deficiency, in the maternal liver. The major periodicity also is capable of interpretation by this hypothesis. The first third of pregnancy is characterised by the parasitic behaviour of the fertilised ovum, and the defensive measure adopted by the mother in the formation of a placenta, with the subsequent change of the parasitic life to a symbiotic one. Accompanying this is a period of nitrogen loss, in many experimental animals,[20] and although a similar negative balance has not been observed in women it is extremely likely that such is the case.[21] Both Bar [20] and Murlin [20] have pointed out the coincidence of this negative balance of nitrogen and what they term "physiological vomiting of pregnancy." Both terminate of themselves at about the same time. Placenta formation is also complete at about the same period, and it is warm, airy, clean, and bright, and if the personnel has been carefully selected, there is no reason why morale should be low. The conditions on a sledge journey are not so good, and, as far as the danger of scurvy is concerned, vary considerably in the methods adopted. There are explorers who advocate the close copying of methods adopted by the Eskimo, and depending for subsistence largely on such "game" as these barren areas afford. This necessitates a very large consumption of fresh meat, and experience shows a great freedom from scurvy under these conditions. However, there are obvious disadvantages in such a method of travel; the activities of the party are limited to "game" areas, and the daily rate of progress is necessarily very slow. It is quite inapplicable to the dead, gameless Antarctic continent, and under any conditions where the total distance to be covered is great, where the areas to be crossed are totally unknown, possibly devoid of all sources of food, and where rapidity of travel is essential. Under these conditions all food must be carried, it must of necessity be light, and to meet the large expenditure of body energy each ration must have a high calorific value. To obtain the necessary lightness all excess of moisture must be driven off, and the manufacturing processes necessary are such that at present no reliance can be placed on them for the supply of antiscorbutic vitamins.

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† The italics are mine.—V. J. H.

The modern sledging ration allows of approximately 2½ lb. of food per man per day on full rations, but circumstances may necessitate a reduction of this amount, and cold and fatigue are certain to be more or less constant factors at some stage of the journey. In this type of sledging occasions sometimes arise in which the route leads through a "game" district, and of course full advantage is taken of any opportunity to procure fresh meat. These occasions, however, cannot be relied on, and so the deficiency of vitamin in the sledging ration must be made up by the addition of foods containing sufficient active vitamin to maintain health. In Polar exploration, even when extended sledge journeys are not contemplated, the physical forces of the area are such that unforeseen events may happen, leading to circumstances in which the supply of food may be small and unvaried. Such possibilities, with the danger of the supervention of scurvy, must be considered beforehand, and preparation made for them. They may be classed for practical purposes under the heading of "sledging conditions."

Prevention of Scurvy.

On the above considerations a system for the prevention of scurvy falls naturally under three main headings: (1) the elimination of predisposing factors; (2) the supply of active antiscorbutic vitamins in sufficient quantity; (3) careful treatment of the bowel in the pre-scorbutic stage, and the elimination of extraneous toxins from the gastro-intestinal tract.

It must be directed also to the two sets of conditions outlined above: (1) life on board ship or at a well supplied base; (2) sledging conditions, including abnormal circumstances arising from accident.

The elimination of predisposing conditions is aimed at, in the manner previously indicated, by good management of living conditions in general and maintaining a high morale. The former has been an outstanding feature of all Sir E. Shackleton's expeditions, and with regard to the latter it is interesting to note that in writing of the characteristics necessary to an explorer he has placed the quality of "optimism" high above that of "muscular strength," though sound health and fitness of the personnel are, of course, a sine quâ non. The hours of relaxation are carefully provided for, music is supplied by gramophone, and a large and well-selected library is carried. The most important part of the system depends upon the correct balancing of the dietary and in the selection of foods calculated to contain the active vitamins in sufficient quantity. In carrying this out it is necessary not only carefully to select the foods but to ensure the packing so that at the time of consumption the vitamin shall not have been impaired by age or exposure. The main principles involved in attaining this are: (1) quick packing immediately after preparation, avoiding undue exposure to air; (2) rigid exclusion of the products from air by using hermetically sealed containers; and (3) the storage of cases containing antiscorbutic foods in a cool place, avoiding proximity to engines or boilers.

Reliance has been placed on the following foods:—

On Board Ship.—Lemon juice concentrated by the method advocated by Admiral Bassett-Smith, but not made into tablets, the concentrated juice being treated by the addition of 10 per cent. alcohol to prevent its freezing. Dried milk. Considerable reliance is being placed on the regular daily consumption of dried milk. We have been to great pains to see that the preparation carried has been prepared from healthy cows fed on good pasturage, subjected to as little handling as possible, and prepared by the "roller" process, whereby the milk is subjected on drums to a high temperature for a few moments only. In the packing of it care has been taken to see that at no stage shall it be exposed to undue oxygenation, and similar care will be used when the milk is issued and served. Condensed milk is also being used. Fresh meat will be used whenever obtainable. The meat of the various seals, whale meat, and penguin meat, though having an oily taste, can be made quite palatable by careful cooking. Canned tomatoes will be issued regularly on board ship. As regards germinated pulses and cereals, a quantity of peas, beans, and lentils will be carried, and in the event of signs of incipient scurvy appearing will be used after having been made to germinate. It is necessary to serve them lightly cooked, and as they are very indigestible, they will not be used for prophylaxis or until the necessity arises. Whenever any opportunity occurs of obtaining supplies of fresh vegetables full advantage will be taken of it. In addition a supply of potatoes, carrots, and onions will be carried, and their use prolonged as far as conditions permit.

Sledging Conditions.—Lemon juice tablets, as advocated by Admiral Bassett-Smith, packed in air-tight containers. Dried milk, as above, packed in small air-tight packages, each package containing only one day's ration, thus avoiding undue exposure to air. For the supply of fresh meat a rifle and shot-gun and ammunition form part of the equipment of each self-contained unit in any area where "game" is obtainable.

A representative modern daily sledging ration is composed as follows: pemmican, nut food, biscuit, tea, sugar, dried milk, amounting to a total weight of about 2½ lb. per man per day, and having a food value of about 5000 calories. None of these foods can be relied upon to prevent the onset of scurvy; hence the importance of carrying a reliable antiscorbutic preparation.

The elimination of gastro-intestinal toxæmia is aimed at primarily by supplying a well-balanced ration and sufficient food containing active vitamin, as outlined above. Great care will be taken to maintain in each member an orderly condition of the bowels. Constipation is a factor which frequently arises in Polar expeditions and is due to two main causes: the first is that whereas on the whole every member of the expedition leads a vigorous, active life, occasions occur in which for considerable periods no exercise at all can be taken. Also the process of defæcation has often to be carried out under most unpleasant conditions, when the individual makes the period of exposure as short as possible, tending to incomplete evacuation at each act. A careful preliminary examination will be made, also, of the personnel, especially of the mouth and nasal passages, to avoid any potential sources of toxins, such as dental caries, pyorrhœa alveolaris, chronic rhinitis, or latent chronic disease of the nasal accessory sinuses.

Poisoning from outside the body will be as far as possible eliminated by careful attention to tinned and potted foods, and also by rigidly rejecting the meat of any locally killed animal which shows signs of disease. We found on the last expedition that diseased conditions producing marked pathological changes occurred fairly frequently among seals and penguins.

Conclusion.

In this article attention has been particularly directed towards scurvy and the anti-scurvy or water-soluble C vitamin, but it is realised that there is a and the practical applications certainly merit consideration and trial. It may, however, rightly be asked if there is no other condition in which an analogous state of affairs exists? A very analogous condition sometimes arises in starvation treatment of diabetes, expecially if carried out according to the original directions of Allen,[30] where there is a complete and rapid withdrawal of food.

> "What is seen clinically is first a vague malaise, often with headache or pains elsewhere, dizziness and increasing prostration. Nausea seems to be invariable and the gravest stage is reached when vomiting is established. Though the condition is acidosis, the appearance is not that of typical coma. Dyspnœa may not be prominent, and the consciousness may be clear up to the last hours or minutes of life. The end comes with uncontrollable vomiting and profound and rapidly progressive weakness."

The avoidance of such a condition as that described is brought about by the adoption of Joslin's modification of the fasting treatment, where the starvation is brought about gradually, and it is this well-known clinical result that induces the belief that the speed of the depletion of the glycogen stores plays a big part in the resulting symptoms in the nausea and vomiting of pregnancy.

Practical Considerations.

From the foregoing certain practical considerations are evident. Each factor must be brought under control by proper treatment.

A. *The Metabolic Factor.*—The glycogen supply of the maternal liver must be kept as high as possible by use of a diet rich in carbohydrate. This does not mean that the necessary protein supply must be entirely withheld, except temporarily. Fats, however, may be excluded for quite long periods of time without any ensuing harm. A high carbohydrate diet is best accomplished in a series of small meals, five or even six in number being taken throughout the day. Cereals in various forms (bread, toast, crackers, rusks, the different varieties of breakfast foods), vegetables of all kinds, both cooked and fresh, and especially in the form of salads (without dressing), fruits both fresh and stewed, with a little milk (not cream), form a very satisfactory and appetising diet, which is rich in carbohydrate. Such a diet taken in a number of small meals for three or four days is very satisfactory with patients complaining of morning sickness or mild nausea. Their acetonuria soon vanishes under the dietetic treatment and the symptoms are replaced by a feeling of extreme wellbeing. Such a diet, however, must not be continued too long. There must be added to it a little more protein. Milk, eggs, fish, chicken, meat (except pork) are added. Among the fish we usually exclude salmon, mackerel, and whitefish, on account of their fat content. Butter, too, is usually kept at a minimum. There need be no fear on such a diet that fœtal growth will be retarded by lack of accessory factors. With fresh green vegetables and fresh fruits in the daily menu an ample supply of all of them is assured. In addition, and especially if it is thought that the dietetic restrictions will not be kept as rigorously as they should, one to two teaspoonfuls of milk-sugar dissolved in a cup of tea, or coffee, or glass of water, or lemonade may be ordered three times a day. The milk-sugar is practically tasteless. In the more severe cases where rest in bed and isolation are demanded, no attempt is made to feed the patient by mouth if there is any disinclination to take food. Usually in these cases the patient has no desire to eat, the tongue is coated, and the breath foul, the vomiting is severe, and is often bile-stained. sometimes occasionally flecked with blood. On the other hand. the vomitus may be perfectly clear. except for a little mucus. Epigastric pain is frequent in these cases. The urine may show a little bile: it contains large amounts of acetone bodies responding readily to the Rothera or the Gerhardt test: a trace of albumin is often found but rarely any casts: the volume in 24 hours is low and the specific gravity high. Some degree of dehydration is almost invariable in these severer cases, a parched tongue and mouth, dry lips and skin, and often an intense thirst mark a degree of anhydræmia. Advantage is taken of any symptom of thirst to urge fluids by mouth. Water, lemonade, orangeade, ginger ale, weak tea, any liquid of such a nature that the patient fancies is not only allowed ad libitum, but urged, and two teaspoonfuls of lactose are dissolved in each glass or cup of liquid. From 50-70 ounces of fluid a day can thus be given by mouth. At the same time 6 to 8 ounces (depending upon the amount the patient can bear with a reasonable degree of comfort) of 10 per cent. glucose are given by bowel as nutrient enemata three times a day. A cleansing enema is first given in the morning. In a few cases we have given the glucose enemata by Murphy drip, and used a 20 per cent. solution of the sugar, giving two hours on and one hour off. Some patients seem to prefer this method of administration, as the amount of fluid introduced into the bowel at one time is very small. When given 6 to 8 ounces at once, even with a urethral cathether and very slowly, a certain amount of distension is unavoidable and with it usually some degree of nausea. Usually, however, the Murphy drip method of administration produces abdominal cramps, which are very painful. We have also used 10 per cent. glucose given interstitially, generally 500 c.cm. Such administrations are, however, very painful for at least 24 hours afterwards, and the fear of a second injection has sometimes a harmful effect. This harmful effect may be mitigated by using 30 gr. bromide t.i.d. in each enema for the previous and subsequent 24 hours. Half a grain of codein may also be used the night of the injection with advantage.

Where, however, the symptom of thirst cannot be taken advantage of, and no amount of urging will cause the patient to drink, in addition to the enemata just mentioned one litre of sterile 5 per cent. glucose in normal saline is given intravenously. Like all other intravenous injections it is given very slowly so as not to embarrass the action of the heart. Two or three such injections are usually sufficient, and they are never continued when the avenue of supplying water by mouth becomes available. In spite of all this some cases continue to vomit, and the more water you get into them the greater is the volume of vomitus, while the urine still remains low in volume and of high concentration. It would seem as though the vomitus had taken the place of the urine as the excretory path for water. A chemical examination of such a vomitus shows it to be mainly water, with traces of urea and salts. It contains no acetone bodies, although the blood and the urine may contain them in high concentration. If, as Gilliatt and Kennaway [29] suggest, the vomiting is "evolved as a protective mechanism, serving to rid the body of harmful substances," certainly the harmful substances must be bile or unknown substances existing in minimal amounts. It should certainly be present in cases such as we have described, where the volume of vomitus may be two or three times that of the urine, even when no water is taken by mouth. Such cases are very difficult to treat, and are best attempted by adding 25-40 gr. of bromide to each enema for two or three days. At the same time water is supplied intravenously, and a cautious use may be made of digitalis and caffeine.

Two or three days of such metabolic treatment as has been described are usually sufficient to produce an amelioration, even in very severe cases, and most of them express a desire for something to eat. A little dry toast, or a few cream crackers, with a little preserve or marmalade are given. Mashed potato and fresh fruits come early on the list of allowed foods. Then porridge or any of the breakfast cereals are admitted, and finally a free choice of vegetables. The glucose enemata are continued until the urine becomes acetone free. Then protein is allowed, chiefly chicken and fish, for three or four days. Milk soups and purée soups are also very useful here. If, however, the clinical condition is very greatly belly were not relaxed; with 2 litres, finally reduced to 1 litre per minute, the belly wall became softer, and the legs showed much less resistance to flexion or extension; tail wagging and vocal breathing ceased. The pads were sweating and slightly blue in colour. When the mask was taken off the animal staggered drunkenly, but quickly recovered. We then tried 8 parts N_2O to 1 part O_2. With a ventilation of 3 to 3½ litres per minute the breathing was slow and deep, the pads bluish and sweating, the abdomen softer, but the recti contracted in response to a touch. With 2 litres per minute asphyxial breathing occurred and the belly was soft. When the mask was removed the animals were unconscious, with blue lips and dilated pupils, but recovered quickly after a few breaths of pure air.

Results in a Pressure Chamber.

Having shown that cats cannot be deeply anæsthetised by N_2O until asphyxiation is partly induced, we next tried the same mixture—viz., 8 parts N_2O to 1 part O_2 in the pressure chamber at the Lister Institute, for the use of which we are indebted to the Director, Prof. C. J. Martin. The method of administration was exactly the same, except that we took the cats and the bag containing the mixture into the chamber, and did not begin the administration until the air pressure had been raised till it stood at plus 7 lbs.—i.e., at about 1½ atmospheres in place of 1 atmosphere. The partial pressure of N_2O was thus raised from eight-ninths to twelve-ninths of 760 mm. Hg, that is, from 675 mm. Hg to 1013 mm. Hg, and that of oxygen from one-ninth to one-and-a-half-ninths of 760 mm. Hg, that is, from 84 mm. Hg to 126 mm. Hg. The partial pressure of oxygen in pure air at sea level is one-fifth of 760 mm. Hg—i.e., 152 mm. Hg. So that the effect of the extra half atmosphere of pressure was to raise the partial pressure of N_2O notably, and, at the same time, to make that of oxygen much nearer to that in the air of the plains, and equal to that in the air of an alpine health-resort. Be it noted that the anæsthetic is given in the pressure chamber in the ordinary way; nothing is changed except the pressure of the atmosphere, which acts, of course, upon the flexible bag containing the mixture. With a ventilation of 2 litres per minute the breathing of the cats was quiet and good, and the anæsthesia was quite as deep as in the last experiment under semi-asphyxial conditions; the belly and limbs became limp, the tail-wagging ceased, and the animal made no response to stimuli, but the pads were of a bright pink colour, with no trace of blueness. We obtained full, deep anæsthesia without any deficiency of oxygenation. When the mask was taken off the animal recovered at once and appeared remarkably alert and normal.

Conclusion.

In an operating room built as a pressure chamber it should be, then, a very simple thing to secure sufficiently deep anæsthesia in man, using N_2O and O_2, 4, 5, or 6 parts to 1, with safety, and with freedom from symptoms of after-poisoning and shock. There is no difficulty in building such an operating chamber. An air-compressor would be required to keep up the pressure at the extra half atmosphere, or less, and to ventilate the chamber, and an air lock fitted with doors would be needed to allow people to pass freely in and out. Mr. R. H. Davis, of Messrs. Siebe, Gorman and Co., tells us that the engineering problem is a very simple one, for the extra pressure required is very slight.

If there is any difficulty it will be from the surgical side, on account of the interposition of the air lock between the operating chamber and the outside. Given an adequate air compressor, passage in and out through the air lock can be reduced to 30 seconds or so. We hope it may be possible soon to bring the method to practical trial.

References.—1. Dale: Brit. Journ. of Exp. Pathol., 1920, i., 103. 2. Bert: Compt. rend. Acad. d. Sci., 1878, lxxxvii, 728. 3. Martin: Compt. rend. Acad. d. Sci., 1888, cvi., 290 4. Bert: Compt. rend. Acad. d. Sci., 1883, xcvi., 1271.

NAUSEA AND VOMITING IN PREGNANCY.

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A LITTLE over two years ago J. W. Duncan and the writer[1] put forward the theory that the nausea and vomiting of early pregnancy was due to a deficiency of glycogen in the maternal liver. Such a deficiency might be either absolute or relative, i.e., actually lower than normal in amount or lowered relatively to the fat requirement of the maternal and fœtal organisms. In practical support of their ideas they advanced the two following facts which, at the time, they had collected from a series of over seventy cases:—First that, with rare exceptions, the cases showed a ketonuria; even very mild cases in which considerable amounts of food were taken gave urines responding to the nitro-prusside test for aceto-acetic acid*; and secondly, that all improved and most of them very speedily recovered upon a diet or treatment high in carbohydrate, and thus designed to combat the ketosis. It must, however, be distinctly understood that we do not regard the acetone bodies as of themselves the cause of the nausea and vomiting. The acetone bodies are to be regarded as symptomatic of the disturbed state of the maternal liver. Both these facts confirmed us in the idea that the glycogen content of the maternal liver was too low for the requirements of the pregnant organism.

In the present paper it is desired to extend and amplify the contention of the previous report. A further two years' experience with the method of treatment has only offered confirmation of the ideas, and to date, nearly two hundred cases have been treated by carbohydrate feeding with but few failures. The few failures have been either cases due to deliberate and continued breaking of dietetic regulations, or cases brought in in such an advanced condition of pernicious vomiting, that it is doubtful if any treatment would have been of avail. Moreover, Titus, Hofmann, and Givens,[5] have recently published an account of carbohydrate feeding in vomiting of pregnancy which is almost identical with that of Harding and Duncan in its practical details, though they differ in some points of theoretical explanation. Their series of cases numbers over seventy, and that independently they should have arrived at similar conclusions is of itself strong evidence in favour of the theory of glycogen disturbance in the maternal liver. It is not proposed in this present paper to give any extensive review of the literature of the subject; the latter has attracted the attention of obstetricians, pathologists, and chemists to a considerable degree, and has of necessity gathered around itself a multitude of theories, many of which can only be of transitory value. Moreover, from time to time there have appeared excellent reviews in other contributions.[6]

A. *The Primary Ætiological Factor.*

In the nausea and vomiting of pregnancy there are two periods of occurrence, a major and a minor.

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* It cannot be too strongly emphasised and reiterated that the most delicate test for aceto-acetic acid, and consequently for a ketosis, is the sodium nitro-prusside reaction, discovered in its original form by Legal[2] and believed later to be a test for acetone. Harding and Ruttan[3] were the first to point out the mistake and show that the reaction with sodium nitro-prusside and ammonia, especially in presence of strong acetic acid, should be interpreted as aceto-acetic acid, and not as acetone. They found that urines containing no acetone but containing aceto-acetic acid gave a strong positive reaction while urines containing acetone in amounts equivalent to those containing aceto-acetic acid only gave at the most a very weak coloration. They also compared the relative sensitiveness of the Gerhardt or ferric-chloride reaction with the nitro-prusside reaction. In urine the ferric-chloride test for aceto-acetic acid ceased to be positive at a concentration of one part in 7000, while the nitro-prusside reaction continued to give positive tests until the acid had diminished to a concentration of one part in 30,000. These figures refer to the concentration in urine. In water the test is from five to ten times more delicate still. Hurtley[4] has independently arrived at the same conclusion. This point has been emphasised as the significance and priority of our paper appears to have been overlooked.

on the boat she was very ill with an undiagnosed complaint, from the effects of which she was only recovering when she first attended the hospital.

From the history it was concluded that the illness from which the patient suffered on the boat must have been the original typhoid infection, and it was confidently expected that plentiful agglutinins would still be remaining in the blood. Serum was accordingly obtained and tested in dilutions of from 1/250–1/2500 against the Lister Institute agglutinable typhoid emulsion. To my great surprise no agglutination was obtained. At the same time a catheter specimen of urine was obtained and cultures were taken from the operation wound, which was now almost healed; no growth of *B. typhosus* was obtained from either source.

The absence of agglutinins from the patient's serum seemed so inexplicable under the circumstances that a further agglutination test was performed with the original organism, with the same result as before. Furthermore, one agar slope culture of the organism was used to absorb 2 c.cm. of a 1/10 dilution of the Lister Institute agglutinating serum (already diluted 1/10). The absorbed serum was then put up in dilutions of whole serum of from 1/250–1/5000, against a known agglutinable typhoid strain, when it was found that the agglutinins had been completely removed within these limits. All doubt as to the identity of the organism with *B. typhosus* was finally removed by this result, which was confirmed by Dr. H. Schütze of the Lister Institute, who very kindly typed the organism independently.

On the strength of these findings the M.O.H. of the district in which the patient lived was notified, and shortly afterwards a report was received from him that examination of the patient's fæces had resulted in the isolation of an organism shown by agglutination tests to be *B. typhosus*. Various attempts were made to get the patient to report again to the hospital, with a view to ascertaining if her serum would agglutinate her own organism, but unfortunately she had moved from London and her experiences since her identification as a typhoid carrier had not encouraged her to go out of her way to deal with medical men.

The points in this case to which attention is particularly drawn are: (1) the occurrence of a typhoid abscess in the breast, having, so far as could be made out, no association with underlying bone; (2) the fact that the patient, although a carrier, was unaware that she had ever had typhoid fever: and (3) the absence of typhoid agglutinins in the patient's own serum.

SCHISTOSOMA MANSONI IN SOUTH AFRICA.

BY F. G. CAWSTON, M.D. CANTAB.,

FIRST STREATFEILD RESEARCH SCHOLAR.

IN view of the return to Natal in 1918 of a large number of our troops from the campaign in Egypt, I drew the attention of the Defence Department to the large number of fresh-water snails in the Durban suburbs which might act as intermediary hosts for the Egyptian form of *Schistosoma mansoni*, which up to that time was unknown in South Africa except on the Rand, amongst native labourers who had been imported from the tropics.

In August, 1919, I motored Dr. Annie Porter of the South African Institute for Medical Research to several pools at Mayville and Sydenham, and we collected about 350 snails from one pool where *Physopsis africana* was heavily infested with schistosomes and *Limnæa natalensis* with the larvæ of fasciola. In the *Medical Journal for South Africa*, January, 1920, Dr. Annie Porter stated that she had found both *Schistosoma hæmatobium* and *Schistosoma mansoni* in these two common species of fresh-water snail, and in *Parasitology*, September, 1920, Dr. E. C. Faust reported both parasites in the material I sent him from *Physopsis africana*.

On June 11th, 1921, a boy was brought to me for treatment who had suffered from constant hæmaturia of 18 months' duration, but no other symptoms, since bathing in these pools at Sydenham. Microscopic examination of the centrifugalised deposit of urine passed revealed the presence of both lateral and terminal-spined ova, the latter being much more numerous. Both forms were about the same size, being from 0·12 to 0·15 by 0·06 mm. in diameter: the lateral spine was about twice the size of the terminal one.

In view of the more serious nature of infection with *S. mansoni* every endeavour should be made to eradicate the snails from these heavily-infested pools. Since the introduction of white duck[1] on the pool where Dr. Porter and myself collected so many in August, 1919, this water has remained free from them.

Durban.

A CASE OF
HUMAN ANTHRAX IN BUGANDA KINGDOM.

BY W. L. PEACOCK, M.B., B.CH. GLASG.,

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AND

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THE following case is reported as being the first instance in Buganda proper of an infection of man by *B. anthracis*. Human infections have been reported by Spearman in 1917 from Jinja, in the Eastern Province, and by Taylor from Ankole, the great cattle country in the Western Province of Uganda Protectorate. Spearman's case was not subjected to a full bacteriological examination, but Taylor isolated an organism in pure culture which corresponded, in so far as it was tested, to *B. anthracis*. The disease in animals has been known for some time to the Veterinary Department, in East Africa at any rate, and Taylor, as the result of a careful inquiry in Ankole, found that anthrax was well known to the Banyankole herdsmen. The history of the present case is briefly as follows:—

On Feb. 15th, 1921, a Muganda bricklayer, engaged on the construction of the venereal hospital at Mulago, was sent to hospital with a rough diagnosis of abscess of the jaw. Suspicion was aroused by the trifling character of the pain in comparison with the intensity of the swelling and œdema. On the edge of the right jaw there was a slightly raised tuberculated oval ring, some 1½ by ¾ inches in extent; there were no vesicles. The centre was slightly depressed and considerably darker than the skin in general. A dense infiltrated area surrounded the ring and extended for about an inch all round, fading into the œdema. The latter was so intense as to be almost fluctuating; it extended from the zygoma to the clavicle, and caused a certain amount of obstruction to respiration. There was surprisingly little pain. The temperature on admission was 100° F. The patient, whose work had nothing to do with hides or cattle, stated that he had bought and cut up some of the flesh of a bullock which was alleged to have been gored by another—probably a Luganda term for "death from unknown causes." Three days later he noticed a small papule on his cheek which he scratched, and it had gone on increasing in size from that time up to his admission to hospital some six days later.

On admission the pustule was at once excised and the wound painted with pure carbolic, partly closed by stitches, and a wet carbolic dressing applied. The temperature at once fell, and remained practically normal until his discharge three weeks later; the œdema subsided and had almost disappeared at the end of a week. A smear examined immediately after the excision showed typical anthrax bacilli in pure culture. They occurred singly or in short chains of two or three.

Bacteriological Report.

Tissue received 16/2/20 in saline; section prepared, revealing large bacilli scattered through tissues bordering on wound: bacilli Gram-positive. The blood-stained saline showed numerous similar bacilli in very long chains, the ends being cut off square. A portion of the material was repeatedly washed in sterile saline and rubbed on agar slopes, which were incubated at 37° C., aerobically and anaerobically. Vigorous growth resulted, under both conditions, of mixed culture of Gram-positive cocci and the large bacillus. The bacillus was easily isolated in pure culture. The organism answered to the classical description of the anthrax bacillus. The square-cut ends were most obvious in preparations lightly fixed with heat. In 36–48 hour cultures spore-formation was observed; spores central. Bacillus immobile; tended to form very long chains in liquid culture media; liquefied gelatin in funnel-shaped manner, the 25 per cent. gelatin used in this climate hiding the finer characters of the growth. Grew well on agar, aerobically thought, that the drain upon the glycogen of the maternal liver is brought about by pregnancy. One of the functions of the placenta in its early stages is to store glycogen for the growing fœtus.[22] In this way it functions for the fœtal liver until that organ is able to store its own reserve carbohydrate, and during this period of storage it is the glycogen of the maternal liver upon which it draws for its supply. With the placental formation complete, a condition of equilibrium establishes itself between the placenta and maternal liver, and the excessive drain being lessened the glycogen then comes to its normal amount, all fatty infiltration or degeneration disappears, and with it there is a cessation of vomiting or nausea. The carbohydrate theory is thus capable of explaining the major periodicity as well as the minor periodicity of nausea and vomiting in pregnancy.

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[1] See reference in THE LANCET, 1919, ii., p. 636.

Insufficiency of Hepatic Glycogen persisting throughout Pregnancy.

There are also a few cases in which the nausea and vomiting continue after the fourth month, and may be present throughout the entire period of gestation. It is assumed in such cases that an equilibrium between the placental and hepatic glycogen is never reached, and the depletion of the maternal stores continues. This is possible because Slemons[23] has emphasised the demand of the fœtus for carbohydrate throughout its intra-uterine life. The fat of the fœtus comes probably from carbohydrate, and not from maternal fat. Hence if the equilibrium just referred to is not established, and the placental stores of glycogen are not sufficient to act as a buffer between fœtal demands and maternal supplies, the condition of insufficiency of hepatic glycogen will persist throughout the entire pregnancy.

It is evident that if the dual periodicity of the nausea and vomiting in pregnancy is accepted as the criterion whereby theories of its ætiology are judged, that the carbohydrate deficiency theory is the only one which satisfies both conditions. Auto-intoxication, disturbances of internal secretions, neurosis, may explain part of the phenomena, but can only be secondary in origin, though they may become so large that clinically in some cases they assume a primary importance. Moreover, some of these act either directly or indirectly upon carbohydrate metabolism, and may thus reinforce the original fault. It is also apparent that under the title of nausea and vomiting in pregnancy we have not included those cases which Williams [24] classifies as reflex, conditions in which malpositions of the uterus, ovarian tumours, &c., are to be set down as the inciting cause of the disturbance. Such cases, it is believed, are rare, and surgical treatment is the only procedure.

B. *Secondary Ætiological Factors.*

Intestinal Intoxication.—No one can doubt the importance of regular bowel movement in ordinary health, and it is equally important in the pregnant condition. Dirmoser [25] was responsible for the emphasis which has rightly been placed upon this factor, and several cases have come under observation where a certain degree of nausea in a pregnant state has indubitably been due to this cause. To ascribe to intestinal intoxication a primary ætiological importance is, however, to place it in a wrong position. Such cases as we have seen would have shown a degree of nausea even if pregnancy had not been present. They were cases in which the patient had suffered from a glycogenic disturbance of the liver with its accompanying nausea and vomiting, and had reacted favourably to carbohydrate treatment. Enemata had ceased, and the patient was on a liberal diet, when a slight degree of nausea returned. Fearing a relapse to her original distressing condition, the symptom of the nausea is exaggerated, with a depressing mental effect. The most careful examination of the urine fails to reveal any acetone bodies, and a purgative is followed with good results and a disappearance of the nausea. Whether or no the liver of the pregnant animal possesses a lowered detoxicating power by reason of lowered glycogen content it is, in our opinion, not possible to state at present. Certainly the protective action of a previous high carbohydrate diet makes the liver less susceptible to delayed chloroform poisoning.[16] Moreover, it is interesting to point out that after the carbohydrate treatment advocated in this and the previous paper, with its high amount of vegetables and with lactose by mouth, has been continued for a little time, certainly all danger of intestinal intoxication inciting another attack of nausea is reduced to a minimum, as the change in the direction of a putrefactive to an acidophile bacterial flora is well known on such a diet.[26]

Neurosis.—This factor is undoubtedly an important one; so important clinically that it has been given a premier place by many observers in this field. Nevertheless, for the reasons which we have previously stated it has been here placed as a secondary ætiological factor. A normal pregnancy is marked by heightened nervous reflexes,[27] and an unduly sensitive sympathetic nervous system can only have one effect upon the store of hepatic glycogen. It will result in its diminution. The effect of excitation of the sympathetic nervous system upon glycogen is well known to produce an excess of sugar in the blood at the expense of the glycogen in the liver, and it is thus seen how this neurotic factor will aid and reinforce the original primary factor. Thus the importance of rest and isolation cannot be too strongly emphasised. The many and varied reports of cures by suggestion, or by some trivial procedure, thus fall into their place. The excitation of the sympathetic nervous system is brought under control, and with it a diminution of the drain upon the glycogen, and a consequent return to more normal conditions. Quantitatively, the factors of pregnancy and neurosis may vary to such an extent that the second may become the greater of the two, and thus present itself as the major factor from the therapeutic standpoint; nevertheless, the metabolic factor must not be overlooked, otherwise the condition may simply recur, as is instanced in Williams's classic paper [24] (Cases 5 and 7).

Pernicious Vomiting.

In the foregoing paragraphs, then, it has been proposed that the primary ætiological factor in the nausea and vomiting of pregnancy is a lack of glycogen in the liver of the mother, with intestinal intoxication, and neurosis, as secondary factors, the metabolic and neurotic factors reinforcing one another; fatty infiltration of the liver ensues, and consequent upon the subsequent nausea there arises a positive distaste and intolerance for food, resulting in starvation. The outcome is the so-called pernicious vomiting. The influence of the resulting starvation has been very clearly emphasised by Underhill and Rand,[12] who ascribe to it the whole changes in the urinary pictures of pernicious vomiting. Their views have met with criticism, but it has only been that of degree. Ewing,[28] while admitting that starvation has an influence on the picture, claims that it is not an entirely adequate explanation. Gilliatt and Kennaway[29] point out that ammonia coefficients in pernicious vomiting rise more rapidly, and to greater heights, than in simple starvation. Neither criticism, in our mind, destroys the value of the arguments of Underhill and Rand; they merely emphasise that to starvation there should be added a further factor or factors. The lack of carbohydrate in inanition which is responsible for the urinary changes which have been found, is intensified in pregnancy by the factors which we have just previously been discussing, and we believe that it is the speed with which the changes occur that constitute the peculiarly vicious and dangerous condition which one meets with in pernicious vomiting. Without this added strain of pregnant growth, starvation changes would tend to come to equilibrium, until the approach of death itself.

We have thus put forward in a general way a hypothesis to explain the nausea and vomiting of pregnancy. In our opinion, it makes the fewest assumptions and is consistent with the greatest number of facts. It does not assume any specialised toxæmia of pregnancy was the peculiar duty of the group to ensure that the outcome of the discussion should not be lost sight of. The question of county survey was a subject which was receiving consideration by the group, and it was now proposed to approach the War Office with a view to further the work.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this Society Mr. **PIEDALLU** made a communication on a case of Uncontrollable Hiccough Cured by Aspirin. The patient was an alcoholic man, aged 67, suffering from pneumonia and delirium tremens. The hiccough had lasted for five days and five nights in spite of all the usual antispasmodics administered, such as belladonna, camphor, bromides, &c. A gramme of aspirin was then given as recommended by Petgès at a previous meeting of the Society, and within 24 hours the hiccough was cured.—Mr. R. **HUERRE** read a paper on the Solubility of Sulphur and its Clinical Applications, in which he maintained that sulpho-carbonate solutions of sulphur should be prepared with precipitated sulphur, and not sublimed sulphur, containing a large proportion of insoluble sulphur.—Mr. **HENRY BOURGES** read a paper on the Treatment of Acute and Chronic Gonorrhœa by Permanganate of Silver. The silver salt was used in very dilute solution, which was prepared with hot water immediately before use, the injections being given as soon as the solution became cool. In acute urethritis daily lavage with 0·05 g. per 1000 was employed, and in chronic urethritis a solution of 0·10 g. was given daily or every other day. In washing out the bladder progressively increasing doses were given, commencing with 0·02 g. at first, and raised the following days to 0·03, 0·04, and 0·05 g. The silver salt gave better results when employed from the first than permanganate of potash.—In a paper on Opotherapy and Mild Forms of Graves's Disease MM. **MARIE** and **FOURCADE** reported ten cases in women, aged from 19 to 47, under treatment for mild attacks of Graves's disease which were apparently due to emotion and commotion connected with the war, such as air-raids and long-distance bombardments, but really caused by old-standing disturbance of the glands of internal secretion. The diagnosis was confirmed by the improvement following treatment by ovarian or pituitary extract.—Dr. **NAAMÉ**, of Tunis, read a paper on the Treatment of the Vomiting of Pregnancy by Thyro-ovarian Extract. He referred to his previous paper read before the Society in 1905, when he attributed the vomiting of pregnancy to auto-toxæmia due to thyro-ovarian insufficiency. The disappearance of vomiting about the middle of pregnancy was due to establishment of a glandular equilibrium owing to hypertrophy of the thyroid gland. Thyro-ovarian opotherapy, by favouring the development of this hypertrophy, caused a rapid cessation of the vomiting. A cachet containing thyroidin, 0·05 g., and ovarin, 0·10 g., was given three or four times a day, half an hour to an hour before food. Mr. Naamé stated that he had employed his treatment with success for 19 years.—Mr. **AUGUSTE LUMIÈRE**, of Lyons, read a paper on Boro-potassic and Boro-sodic Tartrates, in which he stated that he had prepared a boro-sodic tartrate which appeared to possess all the conditions required to obtain the maximum advantages from boric acid with the minimum drawbacks. He claimed that the substitution of boro-sodic tartrate for potasso-sodic tartrate was justified on chemical, physiological, and clinical grounds.—Mr. G. **LEVEN** read a paper entitled "General Alimentary Therapeutics," in which he maintained that there need be no special diet for different diseases. What was harmful to the dyspeptic was injurious to the cardiac, the renal, the tuberculous, &c. The variations in a particular diet, like the prognosis, should be determined by the gravity of the disease and not by its nature.

REVIEW OF PENSION APPEALS.—The Minister of Pensions was recently asked if he was aware of many cases of claims being disallowed by the pensions appeal tribunal, in which the decision had not been in accordance with the medical evidence or had been based on inaccurate and insufficient evidence or a faulty record of the medical history or record of service of the claimant; and whether any machinery existed or could be created through which cases of hardship arising on any of the grounds indicated could be reopened and reviewed.—Major Tryon replied that the pensions appeal tribunals were independent statutory bodies under the control of the Lord Chancellor, and that their decisions were final and binding on both the man and the Ministry. It was the practice to furnish the man with a précis of the evidence, if he so desired, thus giving him an opportunity of calling attention to any omission which he considered might be prejudicial to his claim.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

WEDNESDAY, JULY 20TH.

At the first session, Prof. **MATTHEW J. STEWART** (Leeds), the President, being in the chair, a discussion took place on

Hæmochromatosis.

Prof. J. **SHAW DUNN** (Glasgow) said that the term hæmochromatosis had come to be applied to a peculiar morbid condition, characterised by an accumulation of free iron-containing pigment in certain parenchymatous organs and in the skin, associated with interstitial fibrosis of the liver and pancreas, and, in some cases, with glycosuria. The liver, pancreas, and retroperitoneal glands showed a peculiar rusty colour, and gave an intense Prussian-blue reaction. Most other organs, although they might not be obviously pigmented, also gave the iron reaction on testing. Histological examination revealed the presence of brown granular pigment in proportion to the strength of the iron reaction seen on testing macroscopically. If cold hydrochloric acid were employed, the granules in the liver cells gave an intense blue colour, but the pigment in the fibrous tissue coloured a greenish brown. It would therefore appear that the iron was chemically in a more free condition when first deposited in the liver cells. In the pancreas, the islets of Langerhans were less pigmented than the ordinary gland tissue. Apart from the liver and pancreas, the iron granules were not associated with special degenerative phenomena of the tissues. The disease was usually seen in middle-aged patients, and the early stages were unassociated with symptoms. Neither pigmentation nor cirrhosis were primary symptoms; both were probably due to a common cause. Chemical examination of the organs showed that while there was no evidence of alteration in the total amount of iron in the blood, the excess in various organs was very great. The liver contained about 100 times the normal percentage. Even if all the iron ingested in the food were retained in the body, it would take at least three years for the accumulation of the amount seen in hæmochromatosis. In point of fact, retention of iron was not always absolute. None had been discovered in the urine by different observers, but a certain amount, though less than normal, was excreted in the fæces. This meant that the period of development of hæmochromatosis must be more than three years, and the iron accumulation was in all probability going on during the whole life of the patient. The excess of the iron was not due to an excessive breakdown of red cells; probably the condition was the outcome of a congenital metabolic peculiarity.

Dr. W. H. **MAXWELL TELLING** (Leeds) said it was still an unsettled question as to whether hæmochromatosis was a separate disease or just a stage of development of certain forms of cirrhosis of the liver, but the main clinical and pathological features were so distinctive that most observers regarded it as a definite entity. It occurred between the ages of 30 and 60, and was almost exclusively confined to males. The disease lasted two to three years as a rule, and there was sometimes an alcoholic history. Diabetic phenomena were slight or moderate, and occurred, if at all, late in the disease. The liver was considerably enlarged, and abdominal distension with attacks of diarrhœa, alternating with constipation, were common. The pigmentation of the skin varied from a leaden colour to a more definite bronzy appearance. The patients were curiously listless and apathetic in a way that was often seen in Addison's disease, to which the pigmentation added another resemblance. The disease was uninfluenced by treatment, and there was progressive cachexia till improved, and the acetone bodies continue to be found in small amounts in the urine, the introduction of protein into the diet need not be delayed until their actual disappearance. Usually, however, there is a close correspondence between the acetonuria and the clinical condition. Cream, butter, eggs, fat bacon, and fried dishes are best deferred until the patient has been for some time on the carbohydrate-protein diet, and even then should be introduced cautiously, and used sparingly.

B. *Intestinal Intoxication Factor.*—The bowels, if at all constipated—as they usually are—are opened by an enema or laxative. As far as laxatives and purgatives are concerned we have only one observation to offer. Avoid phenolphthalein and calomel. Almost all cases of severe vomiting show a slight degree of albuminuria, and although it is of so slight a degree that it is usually neglected and disappears without any treatment, nevertheless we do not think it worth while to risk aggravating it by the use of phenolphthalein or calomel. Once the high carbohydrate diet is established, the amount of vegetables and fruits is usually sufficient to keep the bowels in open condition. The milk-sugar is also useful in suppressing the putrefactive bacteria.

In addition considerable quantities of fluid are always urged by mouth. Any toxic substances absorbed from the bowel, or any produced by the maternal liver in its process of fatty degeneration, are thus kept at a minimum concentration in the blood and tissues. This applies especially to severe cases.

C. *The Neurotic Factor.*—Rest in bed with complete isolation is advocated at once for all cases in which the neurotic factor is recognised. Such a case is best treated at a hospital, as the requisite degree of isolation cannot be attained at home, even with a trained nurse in charge. Heavy doses of sedatives are usually rigorously avoided. On admittance to the hospital half to one grain of codein may be used for the first night to counteract the exciting effect of the removal and the new surroundings. After that, however, the only sedative allowed as a matter of routine is a mild dose of bromide (20 to 30 gr.) given by bowel in the evening. Very strict attention is paid to the other two factors. Visitors are rigorously excluded. In a few rare cases, where the patient is of a very excitable temperament, the bromide may be continued in each enema for a few days.

Summary.

It has been proposed that the primary ætiological factor in the nausea and vomiting of pregnancy is lack of glycogen in the maternal liver.

That secondary factors are intestinal intoxication and neurosis.

That as the condition progresses starvation and possibly dehydration intensify the symptoms to a degree known as pernicious vomiting.

That the correct therapy consists in the recognition of the value of the factors and bringing them under proper control by the following means:—

(*a*) The use of glucose to restore and maintain the glycogen content of the maternal liver; (*b*) the keeping open of the bowel; (*c*) rest and isolation, with a cautious use of sedatives to control the neurosis; (*d*) the use of water to combat any dehydration.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
ABSCESS OF THE BREAST
OCCURRING IN A TYPHOID CARRIER.

By S. C. DYKE, M.B., D.P.H. OXON.,
PATHOLOGIST TO THE CLINICAL UNITS, ST. THOMAS'S HOSPITAL.

ALTHOUGH abscesses due to *B. typhosus* have been reported as occurring in a number of different sites, I have not in the literature come across an example of location in the breast. It has accordingly been considered worth while to report the following case.

The patient, a married woman aged 30, reported in the out-patient department of St. Thomas's Hospital on March 15th last, complaining of a lump in the right breast, which she had first noticed about three months before. It had shown no signs of activity until about three weeks earlier, when it started to enlarge and became somewhat painful. The lump was diagnosed as a carcinoma, and the patient was directed to come to the hospital a week later for admission, with a view to its removal.

Patient was admitted to the surgical unit wards under Sir Cuthbert Wallace on 22/3/21. By this time there was a well-defined tumour, occupying almost the whole of the right breast, but inclining a little to the inner and upper part. It was adherent to the skin, which was inflamed, just above the nipple, and fluctuation could be elicited in this spot. There was no discharge from the nipple; it was in no way adherent to the deeper structures and no enlarged glands could be made out in the axilla. Patient's temperature was 100° F. Diagnosis was altered to one of mammary abscess. On the following day the tumour was incised and drained by Mr. W. W. Wagstaffe.

On examination in the clinical units' pathological laboratory the pus was found to be of a viscous nature; the cells were so degenerate that the order to which they belonged could not be determined; no organisms were seen in stained films. On culture the pus gave a pure growth of a Gram-negative bacillus. In the ordinary routine cultures of this organism were made in MacConkey broth and in gelatin by stab. No liquefaction of the gelatin occurred and there was no change in the MacConkey. The organism was now put up in mannite and broth; it was found to be motile and to produce acid only in mannite. It was accordingly put up against the Lister Institute typhosus agglutinating serum (titre of 2000) and agglutination was obtained to the full titre.

By the time that this result had been obtained the patient had left hospital with the operation wound almost entirely healed. On April 4th she was seen in the out-patients department and questioned as to past history of typhoid infection. The patient stated that up to October, 1920, she had been for four years resident in India, but had no knowledge that she had ever had typhoid. In July, 1920, while resident at Quetta, her two children had been ill with what was diagnosed as measles; she had nursed them and became affected with what was thought by her doctor to be the same disease. From that time until she left India in October, 1920, her health was good, but while coming over in producing cancer in mice by inoculation with these organisms. Fourthly, he had produced a focal reaction in the tumour after injection of minute doses of vaccine from these organisms. He concluded that cancer was due to anaerobic bacteria attacking cells during a period of enfeebled resistance.

Dr. J. A. MURRAY (Director, Imperial Cancer Research Fund) said that mammary tumours in mice were common, and this, together with the very great variability in the length of incubation in Dr. Robertson's experiments, and the fact that there was no constant relation between the site of inoculation and the site of the tumour, caused him to doubt whether there was any specific relation between the organisms and the tumours described. Dr. Murray saw the rod-like structures demonstrated at Oxford 14 years ago, but he still held that they were not bacteria. He mistrusted results which depended on metallic impregnation methods of staining.

Blood Platelets in Scurvy.

Dr. S. PHILLIPS BEDSON (Newcastle-on-Tyne) read a paper on the Blood Picture in Scurvy with Particular Reference to Platelets. In pathological conditions, he said, which are accompanied by a diminution in the number of blood platelets, a tendency to hæmorrhage is almost always observed. In scurvy we had a clinical condition in which hæmorrhage was a constant feature. The question therefore arose as to whether or not the platelets were reduced in numbers in the acute stages of scurvy. Dr. Bedson showed tables of results obtained from experimental animals and from one human case. In all neither platelets nor red cells were diminished. Indeed they increased somewhat in what was termed the "pre-scurvy" period, dropping again to normal at death.

Pathology of Gastric and Duodenal Ulcer.

Dr. A. G. GIBSON (Oxford) described his experiments with a streptothrix obtained from a case of acholuric jaundice. The organism was injected into the peritoneum of monkeys. After some months the monkeys were seen to fail in health; they had occasional rigors and tenderness over the spleen. Post mortem several circular ulcers were found in the stomach; the spleen was fibrotic; the liver showed areas of atrophy, and there were hæmorrhages in the lungs. Microscopically endophlebitis was seen in all these organs. Dr. Gibson said that the gastric ulcers were produced by infective material passing to the stomach via the splenic veins. He did not think, however, that this was the usual method whereby gastric ulcer was caused in the human subject.

Dr. D. P. D. WILKIE (Edinburgh) said he was about to describe a pathological and clinical entity not usually recognised by pathologists. This was a condition of dilatation of the first three portions of the duodenum with congestion and hypertrophy of its walls. Chronic vomiting was a symptom in many cases. In one case there were periodic attacks of acute pain of such a nature that the disease was mistaken for gall-stones. The duodenum was dilated up to the point where it is crossed by the mesenteric artery. In cases where there was slight visceroptosis, so that the small intestine hung over the brim of the pelvis but did not reach its floor, the duodenum might be subject to intermittent compression by the artery. Cases, however, occurred in children, and were then undoubtedly of congenital origin. The treatment of the condition was to anastomose the third part of the duodenum to the jejunum. Sometimes it was possible to raise the colon and to relieve the obstruction in this way. The condition might be associated with duodenal ulcer, acute pancreatitis, or with disease of the biliary apparatus.

Experimental Tar Cancer in Mice.

Dr. J. A. MURRAY gave a description of the work which he and Dr. W. H. Woglom (New York) had carried out in producing cancer by painting the skin of mice with tar. The tar was applied to the skin at the back of the neck two or three times a week for some months. Then, in a few animals, warty growths appeared and increased in size as long as they were painted. Portions of these growths were inoculated into the same animals, and they continued to grow progressively and sometimes formed metastases. When autogenous inoculation was performed with benign tissues growth ceased. Malignant tumours grew progressively. The great difficulty with which all workers in cancer research were faced was what criteria should be adopted in deciding whether a growth was innocent or malignant. Tar cancer had been produced by Japanese observers, but their observations did not prove that the growths so obtained were really cancerous.

Dr. GASKELL said that Dr. Murray's work was epoch-making, in that it pointed to a method which might be reliable in the study of cancer. He wished to know whether it was possible to perform the experiments in an aseptic manner, so as to eliminate the bacterial factor in the production of cancer.

Dr. FORD ROBERTSON congratulated Dr. Murray on his very interesting and important observation. The question of ætiology of cancer was not solved. He thought that the skin lesion produced by painting with tar opened the way for infection.

Dr. A. LEITCH (Cancer Hospital, London) said that spontaneous tumours often developed during experiments. Carcinoma could not be diagnosed with certainty by pathological methods. Even if a tumour grew progressively on transplantation it was not necessarily malignant.

Dr. MURRAY said that sterilisation was ideal but not possible in the animal body. He agreed with Dr. Leitch that there was no definite line of demarcation between malignant and benign tumours.

FRIDAY, JULY 22ND.

On this day a joint discussion with the Section of Medicine and of Physiology, Pharmacology, Therapeutics and Dietetics took up the subject of

Renal Function Tests.

Prof. HUGH MACLEAN (London, St. Thomas's) said that in recent years much attention had been paid to tests for renal function, and that now we were in a position to assess the condition of the kidney with some degree of accuracy. He would devote himself chiefly to the clinical side of the question, and to acute nephritis in particular, since in the latter disease the tests were of special importance. Retention of salt was important in acute nephritis. One of the first indications of improvement was the return of salt in the urine, and this generally occurred simultaneously with diuresis. The stimulation by retained urea and by œdema produced diuresis as soon as the kidney cells could respond. In well-marked acute nephritis no tests for renal efficiency were necessary; the condition was sufficiently indicated by the symptoms. But later, in order to ascertain what progress was being made, tests were of the greatest value. One of the most important was the determination of urea in the blood. The normal amount was about 20 to 40 mg. per 100 c.cm. of blood. Until three-quarters of the kidney substance had been put out of action no retention of urea took place. The fallacy of the blood-urea test was that, in chronic cases, it gave no indication of deranged function until the disease had reached such a stage that the clinical condition alone would give the information required. In acute nephritis, however, the test was invaluable. Blood urea rose steadily in fatal cases even when the clinical condition seemed good. Concentration of urea in the blood had no relation to uræmia, except that both were the result of renal insufficiency. Reduction of protein in the diet reduced the urea but did not stave off uræmia. As regards other methods, the diastatic test was of some value, but he would not rely on it alone. The phenol-sulphone-phthalein test was useful but difficult to carry out with accuracy. The urea-concentration test was simple to carry out and gave very constant results; it had the advantage of and anaerobically at 37° C. Growth creamy at first, becoming greyish and dryer later on; faint mousy smell. Milk curdled and digested. The edges of the growth on agar showed little tongue-like projections, which, in common with the isolated colonies on agar, showed the beautiful wavy appearance caused by strands of parallel chains of bacilli which is described and figured in the text-books. Isolated colonies on agar plates presented a very characteristic appearance suggestive of tiny three- or four-fingered star-fish, or catherine wheels. In texture they looked like little bedraggled tufts of wool. In peptone water the woolly appearance was very noticeable in the masses of growth which, on gentle shaking, detached themselves from the surface clumping.

The serum of the patient taken on March 8th agglutinated up to 1/80, with traces at 1/160. The bacillus refused to emulsify very evenly either in normal saline, 0·1 per cent. saline, or distilled water, but controls were set up with normal saline and with normal human serum, and the results were definitely positive. The tests were performed with 0·3 c.cm. unit volumes, and incubated for two hours at 37° C., two hours at 56° C., and confirmatory readings taken overnight.

Animal Inoculation.

A rabbit and three healthy wild rats were inoculated. The rabbit received two drops of a saline emulsion of the bacillus subcutaneously on 10/3/21. The animal died on the 18th; post mortem the spleen was small; mesenteric vessels much injected; peritoneal cavity contained blood-stained fluid. The heart-blood gave a pure culture of a Gram-positive bacillus corresponding in every way with the organism inoculated. The rats were all inoculated in the same manner on 12/3/20. Rat 292 was found dead on the morning of 13/3; the other two were alive on this date, but were found dead on 14/3/20.

Post-mortems.—Rat 292: spleen slightly enlarged, injected mesenteric vessels; small amount of exudate in peritoneal cavity; heart-blood gave the bacillus in pure culture; spleen smear showed the bacillus together with a Gram-negative bacillus. Rat 293: spleen much enlarged; liver enlarged, soft and friable; mesenterics injected; reddish fluid in peritoneal cavity, heart-blood gave the bacillus in pure culture. Rat 291: spleen and liver not enlarged; gelatinous red-tinged exudate in peritoneal cavity; great injection of mesenteric vessels; heart-blood gave the bacillus in pure culture.

Sections of the spleen and kidney of rat 293 showed the bacillus more numerous in the spleen. Sections of rat 294 showed bacilli in the spleen, but not in the kidney.

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP.

A meeting of this group of the Society of M.O.H. was held at 1, Upper Montague-street, on June 30th, Lt.-Col. H. R. Kenwood, the President, being in the chair, when Col. H. W. Grattan, Deputy Director of Hygiene, War Office, read a paper on the

Coöperation between the Civil and Military Sanitary Authorities during a Great National Emergency.

Col. Grattan said it was clear that coöperation would be simplified when both the military and civil sanitary authorities had a good working knowledge of each other's administrative machinery and organisation. In order to ensure the application of local knowledge it would be necessary for the civil and military to be in practical communication with one another—not only at headquarters, but also in the outlying areas and districts. The following list of subjects would require consideration: (*a*) Inter-notification of infectious diseases; (*b*) water-supplies, including extension of water mains; (*c*) drainage and conservancy arrangements; (*d*) control and accommodation of cases of infectious disease; (*e*) disinfection of clothing and blankets; (*f*) arrangements for ablution; (*g*) destruction of refuse; (*h*) supervision over the preparation of the food-supplies for the army; (*i*) the prevention of spread of infectious disease on mobilisation; and (*j*) the treatment of soldiers discharged from the army on medical grounds.

The secret of success in organisation lay in decentralisation, and one of the first steps would be to arrange a conference between representatives of the Ministry of Health and the War Office with a view to coördinated action. Liaison officers would be required in London, and in the provinces the Ministry of Health should allot medical inspectors to certain administrative areas, with the special duty of assisting coöperation between military and local authorities. Instructions might be issued by the Army Council to commands, and circular letters from the Ministry of Health to civil sanitary authorities pointing out the means to be adopted to ensure coöperation. Col. Grattan referred to the circular letter issued by the L.G.B. early in the war to sanitary authorities in which the duties of an M.O.H. of a district containing troops were defined. Difficulties occurred later in bringing military and civil sanitary authorities into touch, as military officers were unaware of the boundaries of the civil sanitary districts; similarly M.O.H.'s lost time in tracking down the military officers. The two organisations differed widely, and in order to prevent confusion and overlapping it was essential for a military command to realise the principles on which the civil sanitary organisation of an area was based, otherwise delay would occur by reference to a central civil authority having possibly little immediate local jurisdiction. It would undoubtedly be an advantage if the county authority, which controls and administers measures relating to tuberculosis, small-pox, venereal disease, maternity and child welfare, and the pollution of rivers, would also take up the question of coöperation with the troops in matters of public health.

Lt.-Col. Caldwell Smith illustrated from his own experience the value of coöperation with local authorities by personally enlisting the sympathy not only of the M.O.H. of the area concerned, but also the sanitary inspectors and chairmen of public health committees.

Maj.-Gen. Sir W. G. Macpherson said that billeting was often unsatisfactory because the police made arrangements without in the first instance consulting the local sanitary authority. At the beginning of the war the L.G.B. gave every assistance to those entrusted with maintaining the health of the troops by sending medical inspectors to different parts of the country.

Col. Sir G. Sims Woodhead said that before the war no preparation had been made for a real sanitary service. This work fell largely upon the R.A.M.C. (T.F.), with its two sanitary companies, so that when war broke out this essential work was carried out by a few men. The time was ripe for organising the sanitary services and the liaison between the army and the civil services. To illustrate this need he instanced the erection of a hutted camp, with huts inadequately ventilated, where later an epidemic of cerebro-spinal fever occurred. One way of bringing about a closer coördination was for responsible civil posts to be made available to service-trained men on their retirement.

Surg.-Rear-Admiral Sir P. W. Bassett-Smith, speaking from the naval point of view, said that by the development of a naval health service a real effort was being made to bring about closer coördination.

Major J. Hutchinson Wood considered that medical officers had too often been overruled by the higher authorities in local commands, particularly in regard to the selection of camp sites.

Lt.-Col. Anderson said the quartering committees were excellent liaison arrangements, the local M.O.H. being a member of the committee. A scheme for coöperation had actually evolved towards the end of the war.

The President endorsed the opinion that full advantage had not been taken of local knowledge, little opportunity was given for local initiative. It the more usual type of abscess seen in infections by the commoner pyogenic organisms. There were also malignant endocarditis with infarcts in various organs and one case in which a piece of a clot riding astride a patent foramen ovale had broken off and lodged in the middle cerebral artery, causing softening of the brain. The teaching value of such a collection is evident. In no way inferior were the series of organs in which each specimen illustrated a typical lesion. Each of its kind was perfect. Among the hearts were beautiful examples of pericarditis, and one especially where the sac was shown distended by a very large effusion. Similarly, in the lung series, a student might find examples of the principal diseases affecting that organ. The specimens were so good that the lesion could be identified at a glance. Among the stomachs was a remarkable dissection showing the lymphatics of that organ permeated by cancer. New growths of the alimentary canal were well represented, and there were several excellent specimens of foreign bodies, as well as of cancer, in the œsophagus.

A very interesting collection of syphilis in various organs was lent by Sir CLIFFORD ALLBUTT. Microscopical sections were appended to each of the organs shown. The series showing syphilis of arteries was extremely complete. Another beautiful exhibit illustrating a special paper was Prof. STEWART'S collection of organs from cases of hæmochromatosis. Portions of liver and pancreas, spleen and glands were shown from several cases. In three, carcinoma had supervened in the liver on the top of the primary lesion. Considering the rarity of carcinoma of the liver, its occurrence in such high proportion was very striking.

Among the exhibits illustrating recent research, mention must be made of Dr. DA FANO'S remarkable sections from cases of encephalitis lethargica. The first four preparations illustrated the pigmented and non-pigmented granules first discovered by himself in this disease. Others showed the typical perivascular and interstitial infiltration. In one very interesting acute case, where death took place on the third day of the illness, the infiltration was seen to be composed of polymorphs and macrophages instead of the usual lymphocytes and plasma cells. One section showed an inflamed salivary gland—an interesting confirmation of Netter's observation that as in rabies, so in encephalitis lethargica, the salivary glands may be the seat of infection. Sections from encephalitis lethargica were also shown by Dr. SHAW. They illustrated clearly the focal œdema, perivascular hæmorrhage, and neuronophagia seen in this disease.

Another exhibit of the results of research, which also illustrated a paper read at the pathological section, was shown by Dr. FORD ROBERTSON. He has by using special methods succeeded in cultivating an anaerobic diphtheroid organism from scrapings from malignant tumours, and seeks by his experiments to prove that this organism is the cause of cancer. His preparations showed cancerous tumours which had developed in mice following inoculation by this organism; the tumours were present in several different organs, although the inoculations had been made subcutaneously.

Among the pathological curiosities of the museum must be mentioned a case of malakoplakia of the kidneys and bladder. Only 22 instances of this rare disease have been reported and this is the only one in which the kidneys are affected. Macroscopically small greyish semi-transparent nodules are seen in the mucosa of the bladder and in the kidneys. These nodules tend to coalesce. Microscopically large characteristic cells are seen with cell inclusions somewhat resembling the corpora amylacea of the prostate. The cause of the disease is quite unknown, but it appears probable that it is due to an infective agent. Another unique specimen was a calculus hydronephrosis of the kidney due to cystin calculi. The dilated pelvis contained small round stones and a larger one blocked the ureter. A case of hypernephroma with secondary deposits in the heart and other organs was also shown. An astonishing tonsillar calculus, measuring two inches in length, excited considerable curiosity. The specimen came from the East, the home of pathological monstrosities. Among the tumours a rare specimen was that of lipoma glandulare, lent by the West London Hospital. The fat in this tumour has the peculiar arrangement of that found in hibernating glands of animals. Such tumours arise in the region of the shoulder and are thought to be derived from a vestigial hibernating gland in man.

Treatment by radium was illustrated by means of photographs and the various tubes used were shown.

Besides pathological specimens a large and extremely interesting collection of X ray plates and prints was on view. They ranged from an excellent series illustrating bone deformities to tuberculous lungs, which were illustrated by some very beautiful photographs. A very interesting exhibition was that contributed by Mr. THOMSON WALKER of X rays of renal calculi. The prints showed the calculi not only from the antero-posterior aspect, but from the lateral view as well. By this method renal calculi can be differentiated with certainty from gall-stones. With the technique elaborated by Dr. KNOX, gall-stones, which were in former times only seen occasionally, can now be revealed with certainty. In one case renal and biliary calculi were present together and were clearly seen in the photograph.

Whether looked at from the teaching or from the purely pathological standpoint, the museum was a remarkable one. Museum workers might gain many ideas in the arrangement and mounting of specimens, while few could examine the collection without carrying away with them some new facts. The organisers may be congratulated on their achievement.

SECTION OF PHYSIOLOGY, PHARMACOLOGY, THERAPEUTICS, AND DIETETICS.

WEDNESDAY, JULY 20TH.

The proceedings began by a resolution moved by the President, Prof. H. H. DALE, F.R.S., and seconded by Prof. A. V. HILL, F.R.S. (Manchester), of regret and condolence on the sudden death of one of the vice-presidents, Prof. J. A. MENZIES.

Various Uses of the "Hot Wire."

The first paper was by Prof. HILL, the subject being "The Use of the Hot Wire for Investigating (*a*) the Time Relations of the Pulse; (*b*) the Characteristics of Voluntary Contractions in Man." The principle of the use of the hot wire is that if a platinum wire is heated by passing an electric current through it a puff of cool air on the wire will cause a change of electric resistance. This change can be recorded by means of a string galvanometer. The apparatus containing the hot wire was shown, and also the small funnel connected by an indiarubber tube, which transmitted the impulse from the pulse to the wire. Only the changes of current must be transmitted to the hot wire, and various methods were described to prevent the recording of the steady current used for heating the wire. A number of lantern-slides were shown illustrating the use of the hot wire. The tracings were in many cases taken simultaneously with a mechanical record by means of a mirror connected to a tambour. In all cases the records of the different phases of pressure in the pulse exactly coincided in the optical and hot-wire tracings. By this apparatus the velocity of the pulse can be very accurately measured, since simultaneous records can very readily be taken from different parts of the circulatory system. The apparatus is quite incapable of mechanical vibrations, and since the vibrations of the galvanometer can be completely damped an absolutely reliable record can be obtained. Since in tracings obtained by this method contamination by mechanical vibrations is prevented, this fact enables one by comparison to establish which of the vibrations obtained by other methods are mechanical in origin.

death. He considered that the condition was due to defective iron elimination, and that the cirrhotic process was secondary to the irritation by the massive pigment deposit. Primary carcinoma of the liver had occurred in several cases. He thought every case of cirrhosis of the liver should be carefully investigated from the hæmochromatosis point of view. In early cases the deposition of the iron pigment might be missed.

Discussion.

Dr. J. F. GASKELL (Cambridge) described a case which had been investigated by himself and Dr. Mackenzie Wallis. The conclusion arrived at was that the tissues had an abnormal affinity for iron. The condition of organs in normal and abnormal excretion of iron was interesting. In the kidney the iron was found in the glomeruli and tubules of the first order only. This was entirely different from its distribution in the conditions of blood destruction such as pernicious anæmia. In the liver the iron was accumulated round the bile canaliculi, and also in the walls of the bile-ducts. The condition suggested an attempted excretion by normal channels associated with rapid reabsorption. It was possible that there was an essential disorder of iron metabolism with the presentation of the iron to the tissues in an abnormal form.

Dr. MACKENZIE WALLIS (London, St. Bartholomew's) defined hæmochromatosis as a condition in which iron-containing pigments were deposited in certain tissues in abnormal amounts. In searching for cases of bronzed diabetes types he had come across various forms of pigmentation in diabetics, not due to iron. In xanthoma diabeticorum a canary-yellow pigmentation of the hands and feet was present. He was inclined to think that this pigmentation had no reference to hæmochromatosis, but was at present investigating a case. He regarded the cirrhosis as caused by the free iron pigment; the masked iron pigment represented an attempt on the part of the body to get rid of the pigment by means of the lymphatic system.

Dr. J. CRUICKSHANK (Aberdeen) described a case which had recently come under his observation but was not yet fully worked out. Golden-brown pigment which did not contain iron had been found in many organs. There was no obvious relation between P.M. and clinical symptoms.

Prof. J. M. BEATTIE (Liverpool) described a case in which diabetes had been present three years before bronzing of the skin, showing that diabetes was not always a late symptom. In this case a large quantity of iron had been found in the intestine.

Prof. STEWART said that probably hæmochromatosis was not such a rare disease as was thought. The diagnosis during life was difficult, but surgeons might throw more light on the subject by examining the abdominal glands in cases where a laparotomy had to be performed. It might be possible to detect iron pigment in the epithelial cells in the urine.

Prof. SHAW DUNN, in reply, said that the yellow, non-iron-containing pigment was probably the same as that found in brown atrophy of the heart, &c., and was not characteristic of hæmochromatosis. On the whole the appearances suggest that in hæmochromatosis the iron was first deposited in the cells on normal physiological lines, but in an exaggerated form. For the recognition of early cases it would appear that pigmentation of the skin was the likeliest feature to rely on.

The Streptococci.

Prof. BEATTIE said that the high frequency of hæmolytic streptococci in the human throat might explain the important rôle these organisms played as the secondary invaders in a multitude of diseases. At the same time it must be recognised that, like the pneumococcus or *B. diphtheriæ*, they might be present in the normal throat (14 to 90 per cent. of cases), and under certain conditions might become the causal agent of disease. It was significant that various acute infections started with a "sore throat." The importance of a systematic classification of streptococci was very great. The morphological and cultural reactions were unsatisfactory for the purpose, as the types defined by them had no relation to pathogenicity. Hæmolytic and immunological reactions were useful. Hæmolytic strains of streptococci were associated with acute infections. Technical difficulties in the way of agglutination and precipitation tests were great, but there was evidence that these were being gradually overcome, and that serums had been prepared which were highly protective to white mice against infections with organisms of the homologous type. From the experimental side it seemed perfectly clear that the streptococci of human origin were not a unit, but that several types existed; that these types could be differentiated by immunological and other reactions, and that homologous serum could protect against infections. At present these homologous serums were not of practical value in human infections, but the line of work opened up was of very great importance, and there was every hope that the results with antistreptococcal serum would be as brilliant as those obtained in the past with antimeningococcal serum.

Dr. H. WARREN CROWE (Harrogate) proposed to widen the discussion to include the non-hæmolytic streptococci such as the pneumococcus and *S. viridans*. He showed a medium composed of heated blood which would enable streptococci to be differentiated into a large number of types. He discussed the relation of the organisms to rheumatism. Seven or eight varieties of streptococci could be cultivated from one tooth, and in the treatment of rheumatoid arthritis a vaccine from each of these organisms must be prepared.

Dr. G. H. DIBLE (Southampton) said that the problems that confronted us were numerous and difficult. A classification to be effective must contain the following three points: (1) the tests used must be simple; (2) there must be clear lines of division between the groups; (3) the classification must have a definite meaning as regards pathogenicity. He divided the streptococci into two main groups—the hæmolytic and the non-hæmolytic. Each group had four sub-groups based on an association of characters, such as heat resistance, fermentation of sugars, &c.

Dr. J. W. MCLEOD (Leeds) described his experiments with hæmolytic streptococci. He was sceptical as to the value of specific serums. His serum did not protect rabbits inoculated with a virulent strain of hæmolytic streptococci, although normal horse serum had delayed the fatal result.

Dr. W. FORD ROBERTSON (Pathologist, Scottish Asylums) put forward a classification which had yielded satisfactory results. He found his methods of great use in the preparation of vaccines.

Prof. BEATTIE, in reply, said he was very sceptical of classifications based on one or two characters only. A classification should give some idea of the degree of pathogenicity and whether homologous serums could be used.

THURSDAY, JULY 21ST.

Relation of Carcinoma to Infection.

Dr. FORD ROBERTSON said that for many years he had maintained that carcinoma was an infection. He had found rod-shaped bodies in cancer cells, and he considered these as a stage in the life-history of a carcinomatous organism. Using special culture methods he had been able to convert aerobes into anaerobes. An anaerobe might get into a living cell and multiply, and then one of two things would happen: the cell might die, or growth might be stimulated. In the latter case the cell would divide and might acquire a habit of division. To confirm his hypothesis that cancer was caused by anaerobic organisms, he had recourse to four methods. Firstly, direct examination of epithelial cells showed that minute rods resembling bacilli were present in special areas. Secondly, he had succeeded in making cultures from the freshly scraped surface of a tumour, and had grown minute granular rod-shaped bacilli, similar to those seen in sections. Thirdly, he had succeeded issue, occurring in subjects after the appearance of lupus. Figures quoted from Forchammer, Besnier, Demme, Eibe, Leloir, Bendu, and others gave 21 to 62 per cent. of visceral tuberculosis, with death from phthisis in 5 to 21 per cent. of lupus patients. In this country he had not found any figures recorded showing such a great frequency of visceral disease. The family tuberculous history was of importance in the consideration of this question. In his own hospital cases of lupus there was a tuberculous family history in 23 compared with Sequeira's 40 and Bendu's 33 per cent. Dr. H. Osborne (deputy M.O.H., Salford) had furnished him with figures showing the incidence of cutaneous tuberculosis compared with other forms of tuberculosis for the last five years, which showed 2 per cent. of all cases. In the city of Manchester in 1913 the proportion of skin tuberculosis to other forms was about 3·5 per cent. From the Manchester and Salford Hospital for Skin Diseases a series of lupus cases (72), taken in the order of their notification about the year 1913, showed by 1921 visceral tuberculous disease in 11 per cent., with a fatal issue in about 4 to 5 per cent. (Dr. D. P. Sutherland). Of 50 cases of lupus vulgaris examined for signs of visceral disease, one had active phthisis which was prior to the lupus, two had the appearance of chronic phthisis with cough the only definite symptom and no other signs of activity without tubercle bacilli in the sputum, two presented evidence of old and apparently arrested phthisis. In the remaining 45 cases there were no physical signs distinctive of recent or old phthisis, though 21 of these allowed suspicion of tuberculous predisposition. There was a family tuberculous history in 12 cases (Dr. R. W. Marsden's report).

The discrepancy between the speaker's own and some of the continental figures could be interpreted in these latter through the contraction of visceral disease by predisposed subjects under their conditions of environment by the ordinary channels of infection without the lupus being itself causal. Otherwise we might reasonably expect greater uniformity in the figures of relative incidence from all countries. Dr. Stanley Griffith had found 50 per cent. cases from Dr. Lancashire's hospital yielding tubercle bacilli of bovine type. The great majority of the cultures were attenuated. His own conclusions were that whereas the causal relationship of primary visceral with secondary cutaneous tuberculosis was already established, the opposite causal relationship was not definitely proved, and that the majority of cases of cutaneous tuberculosis remained "good lives."

Discussion.

Dr. HALDIN DAVIS (London) did not agree with Dr. Lancashire's conclusions.

Dr. W. KENNETH WILLS (Bristol) mentioned that from some Bristol figures only 3 per cent. of his lupus cases showed other tuberculous lesions. As had been suggested to him the infection of the skin might occur from infected handkerchiefs through an abrasion. Lowering of resistance by tuberculin treatment might cause spread from the site of the local infection. He had seen Addison's disease follow the tuberculin treatment of a case of lupus. The high continental figures could be interpreted through the poor conditions, housing, &c., prevailing in some of the large continental towns.

Dr. R. CRANSTON LOW (Edinburgh) thought that this question should be looked at from the opposite point of view. The type of patient who had lupus was the type of patient with visceral tuberculosis. A probable high degree of sensitisation by avirulent tubercle bacilli suggested a good prognosis. Among patients without lupus there might well be an equal number with visceral tuberculosis, but such patients were not examined for the presence of tuberculous lesions without any local indication of the disease.

Dr. HENRY MACCORMAC (London) said that one of the most striking features of lupus was the distribution of lesions about the various orifices of the body. The connexion of visceral with skin tuberculosis depended upon the mode of infection. If the condition was usually a blood infection then most cases of lupus must be secondary to some internal tuberculous focus.

Dr. A. D. HEATH (Birmingham) considered that the bad hygienic conditions of cottagers might account for the high incidence among the rural population. He believed the cases due to infection with bovine types to be milder than the cases of human type infection. The more fibroid the lupus was, the greater was the involvement of the mucous membranes and the more likely to be followed by dissemination.

Dr. D. WELLS PATTERSON (Newcastle) had seen only four cases of lupus which were proved to have been followed by phthisis. He considered that the large number of cases of facial lupus was associated especially with lupus of the nasal mucosa.

Dr. S. E. DORE (London) had not seen one case of active pulmonary tuberculosis in association with active lupus. He believed that there might be auto-vaccination from the local lesion. In his opinion the clinical manifestations and behaviour of any case depended upon the anatomical disposition of the disease.

Dr. LANCASHIRE briefly replied.

Cutaneous Sensitisation and Focal Sepsis.

Dr. H. W. BARBER (London) read a paper on Cutaneous Sensitisation and Focal Sepsis in the Ætiology of Certain Skin Affections. He said that the first part of his paper would deal generally with protein sensitisation and focal sepsis, while in the second part some particular dermatoses would be considered. Our knowledge of protein sensitisation was based on the experimental work carried out on hay fever. For a long time the association of asthma with urticaria or eczema had been noted. Protein sensitisation was to a great extent bound up with the subject of food idiosyncrasy, and the periods of desensitisation resembled those of anti-anaphylaxis to experimental anaphylactic shock by protein injections. Many important papers had been written on this subject, especially in America, notably those of Schloss, Engman and Wander. He would draw special attention to the influence of (*a*) heredity; (*b*) gastro-intestinal disturbance in the occurrence of protein sensitisation. It was difficult to say how far the morbid reactions resulting from these idiosyncrasies to food, animal, or bacterial proteins were dependent on anaphylaxis. Concerning cutaneous tests for protein sensitisation he would say that a strong reaction was almost always an important aid to diagnosis and treatment, while a doubtful reaction might be equally important or of no practical significance. Grouped reaction occurred presumably dependent on a kindred chemical composition. In his own opinion the phenomenon of local sensitisation of the skin was of considerable importance. With regard to focal sepsis the commonest primary foci of infection were the teeth, tonsils, naso-pharynx and nasal sinuses, and possibly the intestines. In persons in whom digestion and assimilation were incomplete, or who suffered from inflammatory conditions of the intestinal mucous membrane, protein substances capable of acting as toxic antigens might be absorbed direct into the blood stream and provoke anaphylactic reactions. But other possible foci than those mentioned existed, such as the appendix, gall-bladder, lungs, ears, genito-urinary tract, and the female pelvic organs.

Turning now to individual skin affections or groups of affections he would say that typical cases of erythema multiforme as classically described by Hebra were probably always of bacterial origin, the organism being in most cases a hæmolytic streptococcus, as in purpura hæmorrhagica. One of the most widespread eruptions of erythema multiforme that he had seen occurred in a boy with chronic rheumatic heart disease within a few hours of tonsillectomy. The fact that the eruption recurred periodically in certain persons suggested that, like asthma and some forms of urticaria and eczema, it was an anaphylactic phenomenon. The majority of cases of erythema nodosum were, showing a lesser defect in the kidney than was shown by a rise in the blood urea. In order to carry out the test 15 g. of urea were given in 2 or 3 oz. of water. The patient emptied his bladder at the time of taking the urea, and again one hour and two hours later. If more than 2 per cent. urea was excreted, the kidneys were fairly healthy. As regards salt excretion, there was no means of testing it directly, but the defect would be shown by the presence of œdema. Salt was present in the body fluids in the proportion of 0·6 per cent. If the kidney was not excreting salt, water would be retained; if the secretion of water was deficient, salt would be retained so as to keep the percentage constant. Neither high blood pressure nor albuminuria was necessarily associated with renal defect. Examination of the kidney by means of these tests was extremely important, especially in surgical affections of the urinary tract, where the inefficient kidney was a contra-indication to operation.

Prof. W. Boyd (Manitoba) said that from the clinician's point of view the functional capacity of an organ was an essential point. It had been advised as an efficiency test of renal function that two-hourly samples of urine be collected; measuring the quantity and taking the specific gravity of each sample might give information of value. The normal kidney would eliminate amounts of urine varying according to the amount of fluid taken—the specific gravity varied widely. The sclerotic kidney would excrete practically the same amount of water and solid every two hours. This tendency to uniformity in the amount of urine and specific gravity was known as fixation of the kidney. Unfortunately "fixation" was not a reliable indication of impaired kidney function. Neither the potassium iodide nor the phenolphthalein tests were satisfactory. He preferred to place reliance upon the estimation of blood urea. In his experience, less than 50 mg. of urea per 100 c.cm. of blood had a favourable prognostic significance. If the blood urea rose over 50 mg. stringent non-protein diet was called for. Above 100 mg. the prognosis was exceedingly grave.

Dr. Mackenzie Wallis, after a considerable experience of tests, had limited them to four or five. The water test was simple and very efficient. 500 c.cm. of water were given, and the volume of urine measured every half hour for four or five hours. A normal individual excreted the whole volume in the first hour, no matter what amount had been given. He agreed with other speakers as to the estimation of blood urea and the urea-concentration test. He was also an advocate of the value of estimating the diastase in the urine. Recently he had worked on the question of blood sugar in nephritis, and found that it was raised, whereas normal sugar excretion was diminished.

Dr. W. MacAdam (Leeds) thought that the urea-concentration test was not always reliable in surgical cases. The urea output was occasionally found increased in parenchymatous nephritis or pyelonephritis. Mechanical obstruction interfered directly with kidney function, and was associated with changes in the glomeruli.

Dr. D. W. Patterson (Newcastle) spoke of his experience with men invalided as the result of war nephritis. In most cases renal function had recovered, but cardio-vascular changes suggested that permanent damage had been done to the kidney. He agreed as to the usefulness of the water, urea-concentration, and diastase tests.

Dr. R. Errington (Sunderland) had worked along the lines suggested by Prof. Maclean and had obtained satisfactory results. He relied generally on the urea-concentration and diastase tests, and had found they corresponded in 85 per cent. of 1000 cases.

Demonstrations.

Protein Skin Tests in Asthma.—Dr. Mackenzie Wallis demonstrated the cutaneous reactions obtained in asthmatics with various proteins. He had grouped several closely related types of protein together and combined them into six tests; for example, all the various animal proteins including epidermal, fur, feathers, &c., were used together. If a positive skin reaction was obtained, the particular type of protein causing this reaction has then to be determined separately. After cleansing, the skin was scratched just sufficiently to break the surface without producing bleeding. A positive reaction was shown in a few seconds by a zone of hyperæmia, spreading outwards from the area tested. This was followed by a definite urticarial wheal. In many cases of asthma, the patient was found to give positive reactions to one or more groups. The largest proportion of cases reacting to these skin tests were found to be sensitive to pollens. In the animal group of proteins, feathers appeared to be responsible for the most cases. Care had to be taken to avoid too severe a reaction in a highly sensitive person, and the tests should not be done immediately after an acute attack.

Renal Function Tests.—Dr. Wallis also demonstrated microchemical methods for the estimation of urea in blood, sugar in blood, and sugar in urine. These methods possessed the advantage that they could be easily applied without any inconvenience to the patient. The small quantities of blood required could be obtained by a simple prick of the finger. The blood could either be weighed by absorbing it on a specially prepared filter-paper and weighing on a torsion balance, or the blood could be drawn up into a small graduated pipette. The blood was extracted with distilled water and estimations of urea and sugar made upon the extracts. The use of a tungstic acid method of precipitation of blood proteins devised by Folin and Wu in America rendered such observations possible. It was possible to make an estimation of the blood urea and blood sugar in a very short time, and the estimation of the urinary sugar content could be carried out simultaneously. With these methods it was possible within the space of one hour to obtain considerable information which was of value in the diagnosis of renal insufficiency.

PATHOLOGICAL MUSEUM.

A notable feature of the meeting was the collection of specimens arranged in the College of Medicine by Dr. A. D. Bernard Shaw, secretary of the Pathological Museum Committee. Material had been asked for under the following headings: (1) Exhibits bearing on discussions and papers to the various Sections; (2) specimens and illustrations relating to any recent research work; (3) instruments relating to clinical diagnosis and pathological investigation; (4) individual specimens of special interest or a series illustrating some special subject.

Some very fine exhibits were lent by the Pathological Museum of Durham University, from among those recently added by the curator Mr. W. E. M. Wardell. A remarkable series consisted of groups of specimens illustrating the pathology of individual cases. All the more important blood diseases were thus represented. On one table, for instance, were placed the spleen, liver, heart, glands, and bone marrow from two cases of myelogenous and of lymphatic leukæmia respectively. Together with each set of organs was appended a history and description of the patient. In the same way were shown pernicious anæmia (here a portion of the liver had been treated to show the Prussian blue reaction for siderosis), lymphadenoma, status lymphaticus, and an interesting case of exophthalmic goitre in a discharged soldier. The two latter were placed side by side to emphasise the lymphoid overgrowth in both. A case of pyæmia following osteomyelitis in a child was similarly arranged. The femur showed septic infection of the shaft with separation of the epiphysis of the great trochanter, and was surrounded by the heart, showing acute infective endocarditis, and the lung, kidney, and intestine containing septic infarcts. Next to it was a case of blood infection by the streptothrix of actinomycosis; the primary lesion was in the lung and pleura. The honeycombed appearance produced by actinomycosis contrasted clearly with attention to the factor of repeated scratching in the prolongation of any eruption.

Dr. Dore did not agree with Dr. MacCormac in the exclusion of acne cases from the qualification for a pension.

Dr. Heath remarked that in his opinion many of the seborrhœic cases should have been discharged much earlier from the army.

Afternoon Session.

At the afternoon session Dr. Wells Patterson and Dr. S. Thompson demonstrated a series of very interesting cases in the skin department, Royal Victoria Infirmary. 1. Case of hydroa vacciniforme. 2. Case of a diffuse granulomatous non-ulcerated eruption involving symmetrically the whole buttocks and spreading forward between the legs on to the front and inner aspects of thighs in a middle-aged man. This condition had gradually extended from its commence- ment about the perianal region four years previously. Several areas showed slight scarring after treatment with acid nitrate of mercury while the greater part of the eruption in appearance suggested warty lupus. No biopsy had been made for histological examination, and the Wassermann reaction was negative. The general impression was that this condition was probably lupus, while the suggestion of a fungoid granuloma was also put forward. 3. Case of extensive florid lupus involving buttocks, thighs, lower part of abdomen with lesions on penis, and elephantiasis of penis and scrotum in a man aged 21. The condition had commenced in early childhood. 4. Case of middle-aged man with extensive erythema involving greater part of the trunk and upper third of both arms of ? four years duration, and with no subjective symptoms. Over the back and front of the chest the erythema appeared diffuse, while on the flanks and arms discrete, pinhead-sized, raised lesions predominated. One condition had originated over the upper part of the pre-sternal region and had gradually spread to the present extent. There was no scaling, nor scarring, with some slight suggestion of general thickening of the skin. The general feeling of members was that the condition was probably that of angioma serpiginosum, though a tentative diagnosis of parakeratosis variegata was also suggested.

SECTION OF UROLOGY.

Friday, July 22nd.

The first meeting of the new Urological Section was held on July 22nd, Mr. J. W. Thomson Walker, President of the Section, in the chair, when papers were read by Mr. J. F. Dobson (Leeds General Infirmary) and by Dr. Alfred Parkin (Newcastle) on the

Diagnosis and Treatment of Cystitis.

In introducing his subject, Mr. Dobson laid stress on the unsatisfactory condition of affairs in the treatment of cystitis. This was in all probability due to inaccurate diagnosis and failure to recognise the fact that inflammation of the bladder was frequently secondary to a focus of infection elsewhere in the urinary tract. The first step in diagnosis was the examination of the urine, and the second an investigation of a catheter specimen. After having obtained a bacteriological report on the latter, a careful clinical examination must be undertaken, including a rectal examination in the male, and a rectal and vaginal examination in the female. In the abdominal examination a search should be made for signs of bladder distension or tenderness, also for the presence of abdominal tumours, appendix lesions, prolapse, tenderness, or enlargement of the kidneys. If no explanation of the infection were obtained, an X ray examination must be made of the whole urinary tract for the presence of calculi; finally cystoscopy must be undertaken in order to obtain accurate knowledge of the condition of the bladder and ureters.

In discussing treatment, Mr. Dobson reviewed the urinary antiseptics in general use. Although urotropine occasionally gave excellent results, against these successes must be placed innumerable failures. The ideal compound would be one that was "chemically stable and relatively non-toxic and non-irritating. It should be antiseptic on high dilution in urine of any reaction, and should be eliminated unchanged in high percentage by the kidney" (E. G. Davis). Unfortunately no such drug was at present known. In discussing bladder lavage, Mr. Dobson regarded it of little avail as a prophylactic, but of use as a preliminary to the surgical treatment of enlarged prostate, stricture, tumour, calculus, &c., the action in such circumstances being probably largely mechanical. Renal lavage had become a popular remedy, but unfortunately it appeared that recurrence was by no means uncommon. It had been demonstrated that collargol when used for this purpose permeated the whole kidney and even appeared in the peri-renal fat. More information must be obtained on this subject before a definite opinion of any value could be given. Vaccines appeared to be of very little if any use in the treatment of urinary infections. In the opinion of the speaker the best advice that could be given in this connexion was the following: "If you must have a vaccine, have it prepared by a bacteriologist who is sceptical of the value of vaccine therapy."

Dr. Parkin said that in no branch of his work was a general physician so dependent on the help of a specialist as in genito-urinary cases. For accurate diagnosis the aid of experts in the use of the cystoscope and ureteral catheter, and of a bacteriologist was essential. From an examination of the urine and from a consideration of the symptoms an opinion might be formed as to the site of the disease and of its nature, but without the help of the exact methods of examination employed by the genito-urinary surgeon a reliable diagnosis could not be made with certainty. As a matter of every-day practice cases were met with in which nephritis had been diagnosed because of the presence of albumin in the urine, but in which a more careful examination of the urine showed that the diagnosis was pyuria rather than albuminuria. For this reason a microscopic examination of the urine should be made in order to determine the presence of pus or of renal casts. There were certain cases of chronic nephritis that might easily be confused with surgical conditions of the bladder and kidney, owing to the occurrence of periodic attacks of hæmaturia. The absence of œdema and of albuminuria between the attacks of bleeding in these cases, which are of a granular kidney type, admitted little possibility of error. On the other hand, some acute cases of *Bacillus coli* pyelitis closely resembled acute nephritis, but a mistake would not be made if a careful examination of the urine had been undertaken, and pus cells discovered.

Dr. Parkin concluded by again pointing out the importance of supplementing a careful clinical examination by a bacteriological examination of the urine, and by a skilled investigation of the urinary tract.

The papers were discussed by Mr. A. Fullerton (Belfast), Mr. J. Swift Joly (London), Mr. Kenneth Walker (London), Mr. A. N. Fletcher (Brighton), Mr. F. K. Smith (Aberdeen), Mr. Angus Macdonald (North Shields), Mr. S. G. MacDonald (London), Mr. Thomson Walker, and Mr. W. Clay (Newcastle).

Mr. Clay then introduced the subject of

Contusions of the Kidney.

As a result of having seen two fatalities following the adoption of the expectant treatment of renal injuries, Mr. Clay was in favour of exploration in all cases except those in which the trauma had been obviously of an extremely trivial character. When at the exploratory operation the kidney was found to be severely damaged, and yet doubt was felt as to the justification of immediate nephrectomy, the compromise could be adopted of retaining the organ on the surface. In such a position the kidney was under complete control and hæmorrhage could be satisfactorily dealt with should it occur. He had treated several cases by these means and had been satisfied.

In the second part of the paper Prof. Hill described the method of using the apparatus with modifications for recording the electric changes in a contracting muscle. He found that in normal individuals 40 or 50 vibrations per second were recorded, but that in the case, e.g., of an old man, the record showed obvious tremors. His explanation of this was that in a contraction of the muscle not involving intense activity of the muscle some fibres only were in a state of contraction, and that these fibres were in a state of maximal contraction, obeying the "all or none" law. If the contraction was maintained there was a switching over to another set of fibres. In a healthy individual this switching over was so well coördinated that it occurred with perfect smoothness as shown by the curve. In fatigue or old age it was accompanied by tremors.

In the discussion the President and Dr. W. Martin took part.

The second paper was by Dr. W. R. Grove (St. Ives) and Dr. H. W. C. Vines (Cambridge), on

The Ætiology and Treatment of Varicose Ulcers.

Dr. Grove said that in these cases there was a deficiency of ionised calcium in the blood, and intramuscular injections of calcium were tried. When improvement occurred it was found to be associated with a diminution of the calcium deficiency. Later thyroid extract and calcium were given by the mouth with negative results, except in one case, which showed a marked advance. This suggested the possibility of a contamination with parathyroid, and future cases were treated with parathyroid extract, which, especially in early cases, caused remarkably rapid improvement. Since it has been suggested by the authorities on the subject that the parathyroid gland controls the calcium metabolism of the body, these results indicate that parathyroid deficiency may be the primary cause of the varicose ulcers and explain the beneficial effect of parathyroid extract. In cases of gastric ulcer improvement also followed on the parathyroid administration.

The third paper, on

Anaphylatoxin,

was read by the President, who said, in substance: It is generally agreed that anaphylaxis is due to the formation of an antibody which combines with reinjected antigen. One theory attributes the symptoms caused by the reinjection to the occurrence of this combination in the cells. According to this view antibody in the blood is protective. The other theory supposes that union of antigen and antibody causes the formation there of a toxic substance—"anaphylatoxin." Many methods of imparting such toxicity to guinea-pig's serum have been found, most of them having little direct relation to anaphylaxis. Dale and Kellaway have investigated the nature of the change taking place in serum when it has been rendered toxic by incubation with starch, agar, &c. They find no evidence of protein cleavage, nor any change of viscosity or of surface-tension corresponding to the appearance of the toxicity. "Anaphylatoxin" does not act directly on plain muscle, as it should in theory, but by producing changes in the blood resembling the changes which precede clotting. An animal can be rendered immune to "anaphylatoxin" by a sub-fatal dose, and its serum will transmit the immunity to another guinea-pig; but this guinea-pig, if previously anaphylactic to an antigen, retains its sensitiveness unimpaired. Excess of antibody added to the saline bath in which anaphylactic plain muscle is suspended will protect it from the effect of the antigen. The author regards the similarity of the symptoms produced by "anaphylatoxin" to those of the true anaphylactic reaction as superficial and misleading, and adheres to the theory which attributes anaphylaxis to antibody located in the cells.

The proceedings terminated by a short paper from Prof. M. C. Potter (Newcastle) upon

Certain Electrical Signs of the Human Body.

He described experiments showing that an E.M.F. was produced during the action of yeast on a solution of glucose. He demonstrated a negative charge in the breath exhaled in the human subject.

In the afternoon Dr. G. A. Clark gave a demonstration on "The Passage of Sulphate through the Cells of the Tubules of the Kidney of the Frog." The aorta was perfused with oxygenated Ringer, and the renal portal vein with Ringer containing 0·2 per cent. sodium sulphate. The urine formed contained sulphate.

THURSDAY, JULY 21ST.

Dr. H. Muir Evans (Lowestoft) gave a paper on

Poison Organs and Venoms of Poisonous Fishes.

He described the position and histological structure of the poison glands in the spiny dog-fish, sting ray, and weaver. Specimens of these types were shown and microphotographs of the poison glands and surrounding tissue shown. The slides from which the microphotographs were taken were on view in the Museum. He described his experience of the effects of the wounds inflicted by the fish and the result of the poison. In the case of the wound inflicted by the weaver, one symptom is acute pain, such as to cause the sufferer to express the wish to have the part amputated. Immediate alleviation is obtained by the local subcutaneous injection of 5 per cent. potassium permanganate.

The second paper was by Dr. J. Sim Wallace (London) on

The Physiology of Oral Hygiene.

He emphasised his view that the saliva was of greater value in connexion with oral hygiene than as a digestive juice. He disputed the importance usually attached to the ptyalin of the saliva and attributed its importance to the secretion of mucus, which he considers effective both in protecting and cleansing the teeth.

In the discussion which followed the paper he pointed out that yellow teeth had a thin covering of enamel, and white teeth a thick covering, but that yellow teeth were less liable to decay. He was opposed to the view that imperfect development of the teeth is due to lack of fat-soluble A in the diet.

Prof. C. H. Browning (Glasgow) was unable to be present, but sent to the President his paper on "Recent Work on Chemo-therapy."

A demonstration was given in the afternoon by Prof. Potter of the E.M.F. produced by the action of yeast on glucose.

SECTION OF DERMATOLOGY.

THURSDAY, JULY 21ST.

At the meeting of the Dermatological Section, with Dr. J. Farquhar Christie, President of the Section, in the chair, the morning session was devoted to the reading and discussion of three papers.

Dr. George H. Lancashire (Manchester) read a paper on

The Association of Skin Tuberculosis with Visceral and other Tuberculous Manifestations.

He suggested that the discussion should be concentrated on the practical point. How far is a subject of primary cutaneous tuberculosis liable to secondary visceral infection? The other side of the question—i.e., the secondary invasion of the skin from primary visceral disease—was much simpler and would include the following forms of cutaneous tuberculosis—scrofulodermia, verruca necrogenica from auto-inoculation, acute miliary tuberculosis of the mucous orifices, post-exanthematic dissemination, and the tuberculides. With regard to the tuberculides, the bacillary theory was now being more favoured than the toxic theory. Concerning the question for discussion, any evidence would be only statistical and presumptory, and the literature on the subject was somewhat scattered and fragmentary. Continental figures showed a high incidence of visceral—mainly pulmonary—tuberculosis, many of these with a fatal period which followed. The authors noted that hæmolytic streptococci were widely disseminated amongst carriers, and point out the serious danger attending the treatment of measles.

In conclusion the authors see no reason for assuming that the late pandemic differed in essentials from that of 1890. The bronchial and pulmonary complications, though varied, were characteristic of the epidemic; the influenza bacillus was practically always present, pneumococci and streptococci being found as secondary organisms in the complications. Pneumonia following measles was almost coincident with that following influenza, and there seemed to be little doubt that the influenza epidemic played an important part in the production of pneumonia after measles.

A short appendix deals with a small series of experiments made on monkeys. Two animals into whose nose and pharynx *B. influenzæ* was introduced showed a "self-limited disease resembling many cases of influenza."

A TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Fourth edition. By JOHN GLAISTER, M.D., D.P.H. Camb., F.R.S.E., Professor of Forensic Medicine and Public Health in the University of Glasgow. Edinburgh: E. and S. Livingstone. 1921. With 137 illustrations and one coloured plate. Pp. 918. £1 10s.

SIX years have passed since Prof. Glaister edited the third edition of his valuable work on medical jurisprudence, and with the help of a few judicious excisions he has managed to keep the added matter necessary for its re-issue within the limits of about 40 pages. The additions responsible for the increase in the present volume include fresh information relating to industrial and other poisonings, and to lunacy law and responsibility for crime, the case of Arthur Beard occupying six pages. Beard was the man who ravished a girl when he was drunk, and, in trying to smother her cries, killed her. The final appeal to the House of Lords, and the elaborate exposition of the relation of drunkenness to other forms of mental derangement, in connexion with the question of responsibility, will make Beard's case for long the authority in this particular branch of criminal jurisprudence. However, to anyone who studies the legal aspects of mental derangement in its various phases, there is as yet no assurance of finality in the decisions of the courts as to responsibility, nor any promise that Prof. Glaister will not have to include fresh cases of equal importance in his next edition. The prominence given to toxicology in its relation to medical jurisprudence on Prof. Glaister's title page, accompanied by the assignment to this subject of more than a quarter of the space at his disposal, is, of course, fully justified by the importance of the science of poisons in the regions where medicine and the law are brought in contact. It is no part of the medical man's duty to play the detective, except in so far as to do so is to safeguard the life or health of his patient, but in the matter of poisoning the detection of crime may of necessity go hand in hand with the diagnosis and treatment of illness. Suspicion may prove baseless on investigation; but that is no reason why suspicion should not enter the mind of the medical attendant, or be dismissed without inquiry.

In connexion with poisons, as with mental derangement, intoxication, and crime, new editions of text-books dealing with medical jurisprudence will continue to be necessary, and so complete and methodical a work as Prof. Glaister's will have to be kept up to date. It need hardly be said that his index is full and satisfactory, and that his footnotes supply references which will enable his readers to turn readily to the authorities upon which his text is based. His chapter on "Personal Identity" supplies a good deal of useful information, including an explanation of the processes and organisation connected with classification and identification by finger-prints. This is not strictly a medical subject, but is closely linked up with the study of identification by the medical man, who may at any time be called in where finger-prints fail to supply the necessary clue. The monstrous mis-identification of Adolf Beck in 1896, and again in 1904, with John Smith, convicted and imprisoned in 1877, would never have been allowed to pass unchallenged if a medical man had been assigned the duty of comparing the physical facts plainly observable in Beck with the recorded description of Smith. As it was, the police and the female victims of Smith, by perfectly honest mistakes, sent an innocent man in 1896 into penal servitude, and nearly succeeded in doing so again in 1904.

ARTIFICIAL LIGHT.

Its Influence upon Civilisation. By M. LUCKIESH, Director of Applied Science, Nela Research Laboratory, National Lamp Works of General Electric Company. University of London Press, Ltd. London: Hodder and Stoughton. 1921. Illustrated with photographs. Pp. 366. 12*s*. 6*d*.

ARTIFICIAL light is so inextricably interwoven with human activities and has exerted such a profound influence on human civilisation that we gladly welcome, from the pen of an American author and man of science, this readable volume, which is well adapted for the purposes both of the specialist and general reader. It sketches vividly, and with not too much detail, the progress of light and lighting from its infancy to its vigorous youth at the present time, dealing with the accelerated applications during the last two decades. The early chapters describe primitive artificial light—e.g., the art of making fire, and the ceremonial use of light. The real science of light production was born in the latter part of the eighteenth century, and consecutive chapters treat of oil lamps, early and modern gas lighting, electric arcs, and incandescent filament lamps. The next chapters concern the various economic influences of artificial light, and discuss lighting of streets and lighthouses, artificial lighting in warfare, and signalling. Photography, the means of modifying artificial light, the influence of light on health, and spectacular lighting all come in for mention. Finally, we have short chapters on the expressiveness of light, lighting of the home, and lighting as a fine art. With the discovery of fire early man obtained a power over darkness and the vicissitudes of climate, and thereby initiated one of the greatest strides along the highway of human progress. With the discovery of artificial light man's activities were no longer bounded by sunrise and sunset; enormous industrial developments followed the increase of working time.

The possibilities of artificial lighting seem infinite. Even when mankind was well conversant with the advantages of daylight, it took a decade and more of propaganda, not to speak of air-raids, to convince a conservative people that daylight saving was an economical proposition, the needs of the majority being considered. It is interesting to find that long before the late Mr. Willett launched his plea for dayling saving, Benjamin Franklin, in 1784, wrote and published in the *Journal* of Paris, a "seriocomic" essay on daylight saving.

JOURNALS.

Brain. Vol. XLIV., Part 1.—J. Boeke: The Innervation of Striped Muscle-Fibres and Langley's Receptive Substance. The paper contains the results of recent investigations on the mode of innervation of the striped muscle-fibres, the mode of ending on them, the manner in which the nerve endings are connected with the muscle-fibres, and the path by which the stimuli arriving by the nerves may reach the contractile substance of the muscle-fibre. The old conception of the tissues as being built up of cells, which are indivisible, self-propagating, independent organisms originating in a direct line from the dividing egg-cell must be abandoned. In place of it we find the cells he thought, unquestionably due to streptococcal infection. In his opinion those cases associated with tuberculosis were possibly really examples of Bazin's disease. In urticaria and angio-neurotic œdema—the commonest cutaneous reactions in cases of protein sensitisation—the eruption was, in some cases at any rate, a true anaphylactic phenomenon. While perhaps most cases of chronically recurring urticaria were due to food-protein idiosyncrasies, there was nevertheless a very important group of cases—sometimes with angio-neurotic symptoms and in women often associated with symptoms of hyperthyroidism—in which the toxic agent was evidently bacterial. The association of eczema with protein sensitisation and focal infection was now definitely established. Concerning eczema due to external irritants, such irritants may be either protein or non-protein substances, as in "baker's eczema," and that due to paraphenylendiamine in hair-dyes. The phenomena of idiosyncrasy towards drugs, chemicals, &c., and towards proteins were so similar that they might all be conveniently termed anaphylactoid. There were two main types of infantile eczema. The one form corresponding to the true seborrhœic eczema of adults was apparently associated with excessive carbohydrate feeding. The second form corresponding to Czerny's exudative diathesis group was probably always due to susceptibility towards one or more foreign proteins usually of food substances, though in a few cases the offending protein might be bacterial. Eczema of adults was less likely to be often due to food sensitisation but some were directly or indirectly due to focal infection, especially oral sepsis, and more particularly the eczema of the "nummular" type. With regard to lupus erythematosus, in none of the cases which he had investigated was there any evidence of active tuberculosis, but every one of them presented one or more definite foci of infection, especially oral and tonsillar sepsis. From some of his cases he had been able to recover *Streptococcus longus* from the fæces. An important feature of his series had been the accompaniment of the disease by definite arthritis. In the time allotted to him he was unable to discuss the herpes group of dermatoses or alopecia areata. In conclusion, he believed that the further study of individual peculiarities towards foreign proteins and bacteria was likely to solve some of the dermatological problems remaining unanswered.

Dr. CRANSTON LOW described experiments carried out on himself with the artificial production of sensitisation to primula by scarification, which experiments suggested not a local but a general sensitisation. He believed in the influence of heredity. Obviously there was some chemical substance in the different members of a group able to produce local reactions of varying intensity in sensitised subjects. This property of ability to react appeared to lie in and to be confined to the epithelial cells of the skin, in support of which belief were Bloch's skin-graft experiments. Test reactions to food protein were of very doubtful value owing particularly to the occurrence of periods of desensitisation, and in connexion with this part of the subject he would advocate the rubbing of the supposed sensitising substance into the unbroken skin after Moro's method rather than by scarification. He discriminated between urticaria and eczema—the one was a general vaso-motor effect, the second was an effect of skin sensitisation. In Edinburgh Hebra's prurigo was fairly common, often associated with asthma and eosinophilia, but dieting had no effect on this condition. He suggested that the patient by scratching might become sensitised to his own tissues. Dermatitis herpetiformis might be provoked by eating meat and with pemphigus might depend upon the absorption from the bowel of anaphylaxis-producing substances. With regard to lupus erythematosus he considered that Dr. Barber's experiments were in the right direction, but he personally had not seen any focal reaction to vaccines. In acute infections such as typhoid fever hypersensitisation always preceded immunity, while in chronic infective conditions the period of hypersensitisation might persist indefinitely.

Dr. HALDIN DAVIS was unable to follow Dr. Barber the whole way. All the various cutaneous irritants caused their own individual reaction in each case. In his opinion the exudative reactions were due to bacterial proteins. Focal sepsis was very common in any class of affection, dermatological or other.

Dr. KENNETH WILLS asked what definition of eczema should be adopted in the consideration of this question of sensitisation. Should the follicular type of infection in infants—associated with dry pityriasis capitis in the parents or nurse—be classed as eczema and was it due to protein sensitisation, or again the cases of the erythemata due to light occurring on the exposed parts of elderly patients?

Dr. BARBER replied, drawing attention to the presence of indicanuria in some cases of eczema excited by light.

Dr. CRANSTON LOW referred to eczema due to light and to the hæmatoporphyrinuria occurring in cases of hydroa vacciniforme, and suggested that the circulating hæmatoporphyrin (a hæmolytic substance under the influence of light rays) was the cause rather than an effect of this condition.

Dr. HENRY MACCORMAC read a paper on

Skin Diseases in Pensioners.

Our meagre knowledge of the ætiology of so many skin diseases occurring under ordinary circumstances made the question of the pensioner's claim a particularly difficult one. For resolving the problem into a less complicated form he suggested classifying all these cases as far as possible into three groups: i. Where the disease is definitely due to war service; ii. where it is open to question how far war service may have caused or aggravated the complaint; iii. where the condition should not be attributed to war service. Group i. would include all diseases of parasitic origin such as oriental sore, scabies, infected tuberculosis of the skin, and ringworm. Even at the present time pensioners presented themselves with conditions labelled scabies which had taken origin during the war. Some of these were instances of dermatitis due to the prolonged application of sulphur, others had been incorrectly diagnosed as scabies—for example, cases of dermatitis herpetiformis. This group should also contain two other classes: (*a*) Where the disease had arisen or become chronic owing to the impossibility of obtaining some special recognised form of treatment, and (*b*) where the remedial measures employed had resulted in disfigurement or injury. Group ii. comprised conditions such as eczema, psoriasis, and lichen planus. The assessor must be prepared to answer two questions: (1) If the condition had arisen during service, was it attributable? (2) If it had existed prior to this, how far had service aggravated it? Seborrhœic eczema was peculiarly prevalent among the troops in France—ranking third in incidence (from figures from No. 25 General Hospital, B.E.F.), after the two recognised infections of scabies and erythema—so that it would seem to have been directly connected with the conditions of army life there. If we considered eczema merely as a symptom of some underlying dyscrasia, a view which was not unsupported by facts, then might we not conclude that the abnormal state, of which the eruption was only a part, had resulted from a condition attributable to service? The rule of conceding that any first attack was attributable to service, and that a skin disease known to have existed during civil life, and which reappeared due to service had been aggravated by it, seemed equitable and just. Group iii. included conditions such as acne vulgaris and self-inflicted eruptions. Many youths who had entered the army were of the acne age-period, and there was no evidence that the circumstances of military life contributed in any way to cause this affection. Concerning the self-inflicted conditions, there was always the difficulty of obtaining the proof.

Dr. CRANSTON LOW maintained that each case must be considered on its own merits—e.g., a first attack of psoriasis had followed vaccination in the army, commencing on the vaccination site. He would draw if workers take unnecessary risks and if safety appliances are not used; and (*d*) to discuss accidents which occur, their causation and means of prevention. Signs are clear that welfare constantly needs coöperation with medical advice; this is well shown in the account given in the June number of a successful medical conference held at the London headquarters of the Industrial Welfare Society. The conference was attended by medical men engaged whole or part time by industrial concerns. Addresses given by Dr. R. M. Wilson and Prof. E. L. Collis are shortly reported; both speakers dwelt upon the importance of industrial hygiene and upon the value to industry of medical supervision. The conference appointed a small committee to consider the position and report to an adjourned meeting which is to take place in September at Balliol College, Oxford.

Journal of the Royal Army Medical Corps, July, 1921.—In this issue Sir William Leishman lifts a corner of the covering veil to tell how the enteric fevers were prevented in the late war. Typhoid fever had been a serious matter in South Africa, but preventive inoculation had diminished it, so inoculation, albeit voluntary, became a recognised service proceeding, and it was decided that, in the event of a mobilisation, inoculations would be more freely offered, vaccine would be sent to the depôts in quantity, and increased manufacture of vaccine would be at once begun. As it was planned so it happened: indeed better, for Lord Kitchener himself recommended inoculation to the soldiers in orders. Those who went overseas were ever better and better protected; 30 per cent. in the original expeditionary force, but 90 to 98 per cent. before long. Clinical differentiation of the enteric fevers is difficult, so these cases were all primarily classed as "enteric suspects," and later diagnosed by the laboratories, rigidly, as typhoid or paratyphoid A or B, the remainder were termed "enteric group." It soon became clear that inoculation was worth while. In 1915 the average British force in France was 613,000, the inoculated were 94 per cent.; they showed 0·94 cases per 1000 and 0·056 per 1000 deaths, the uninoculated 6 per cent. had 7·64 cases and 2·306 per 1000 deaths. In the first 16 months of the war the protected British had some 170 deaths, the French 11,690. The French later took to inoculation and became as immune as the British. Sir William Leishman ascribes escape from typhoid fever to (1) preventive inoculation; (2) field sanitation; (3) exclusion of carriers (in itself a laborious series of researches). Triple vaccine (T.A.B.) was introduced in February, 1916. The thorough laboratory work done on the "enteric suspects" made easier the early differentiation of the hitherto unknown trench fever.

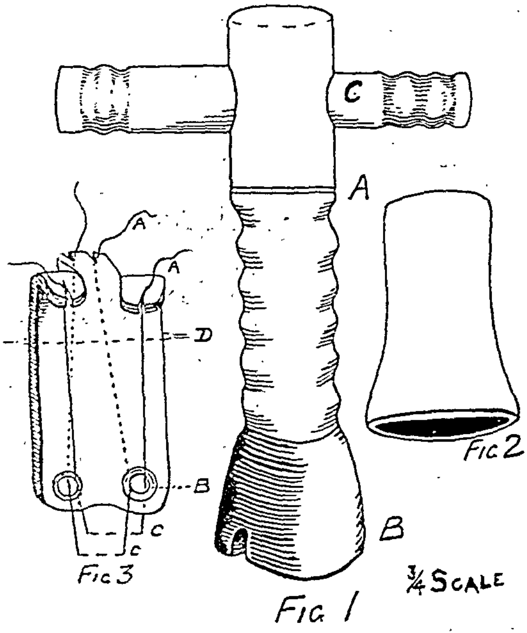
Colonel W. F. Tyndale, writing of the work of an A.D.M.S., shows that the greatest anxiety of a medical staff officer with an army in the field is the evacuation of wounded during an action, and he tells in illuminating detail how this may best be done. Dr. W. Wallace, in "The Vision of the Soldier," has some excellent and sympathetic remarks on the origin, prevention, and treatment of malingering. A labour unit was sending up many eyesight malingerers. One who had vision 6/60 only, was slowly induced to admit 6/6. "Do you know who I am?" said the ophthalmologist. "Some sort of medical officer," said the malingerer. "No," said the medical officer decisively, "I am a detective," and eye cases from that unit at once fell off.—Dr. Melville D. Mackenzie, assistant port medical officer of Liverpool, reports that sporadic typhus outbreaks in the front line in Mesopotamia were best dealt with by simultaneously delousing the whole infected party, and this by dropping kit and clothing into boiling water with a little alkali for 1½ minutes; all lice and eggs are killed. The method is quick, sure, and attainable. A question occurs to us. If a man's clothes are damaged by this procedure, has he any claim for compensation? His life has probably been saved. Disinfection has damaged, we suppose, his clothes. Without the disinfection his death would have precluded his using them.

London Panel Committee Gazette.—The last number of this circular for insurance practitioners in London gives a useful account of the Drug Fund and of the various changes which have taken place in the Regulations framed to control this fund. The rôle of the panel committees is clearly set out along with certain rules for their guidance, which are the result of considerable experience. Practitioners may well note the definition of excessive prescribing and the object of Article 34 of the Medical Benefit Regulations.

New Inventions.

IMPROVED DEVICES FOR BLADDER DRAINAGE AND CLOSURE.

THESE devices have proved to me very satisfactory. Fig. 1 is an improvement on the suprapubic drainage-tube previously described in THE LANCET (May 11th, 1918). The oval bulbous end, B, plugs the bladder wound and prevents leakage after a purse-string suture is applied above it. Leakage, however, is usually caused not only by not using such a device but on account of the bladder wall shrinking away from the parietes. Hence some surgeons sew the edges of the wound of the parietes. The trumpet end holds the bladder up, but I wind the sutures C C, Fig 3 (about to be described), round the arms C of Fig. 1. If a rubber drain be preferred, the head is separated at A and driven into the rubber tube. Fig. 2 is an oval tube, which, if pushed into the bladder end of the rubber, will fulfil the same use as B, Fig. 1. Oval bladder tubes are best. Fig. 3 shows the little device to which I would draw particular attention. It is easily made in a few minutes. Its object is to close the bladder wound when this is no longer required, thus hastening convalescence and preventing fistula. C C show the sutures inserted on each side of the bladder wound; the ends of these, as before mentioned, are temporarily tied round the arms of Fig. 1. When this tube is removed these ends are crossed through holes B of Fig. 3 and brought into slots as shown. The edges of the bladder wound are thus closely brought together and heal before the super-imposed tissues. D shows skin surface.



J. MACMUNN, M.R.C.S., M.R.C.P.I.
Finsbury-pavement, E.C.

Mr. MACDONALD discussed the treatment of bladder growths. The treatment of choice in cases of papilloma was diathermy applied through a cystoscope. Unfortunately such treatment had serious limitations; growths low down in relation with the internal meatus were mechanically impossible to reach, while some growths increased in size so rapidly that it was difficult to keep pace with them. Single papillomata in patients over 45 to 50 years of age should be subjected to operation rather than to diathermy, as it was impossible to tell with the cystoscope whether any given papilloma was malignant or benign. The only satisfactory treatment of carcinoma of the bladder was excision, but unfortunately about 50 per cent. of cases were inoperable before they reached the surgeon. For this reason special emphasis must be laid on the importance of early diagnosis and of cystoscopic examination in all cases of hæmaturia.

The PRESIDENT gave an account of the

Open Operation for Removal of the Prostate.

He pointed out that the complications that might be feared after prostatectomy were: (1) hæmorrhage; (2) post-operative infection; (3) post-operative obstruction. Many deaths ascribed to shock were in reality the result of hæmorrhage. In other cases, although hæmorrhage might not be entirely to blame, it contributed largely to a fatal result. Cases of obstruction following prostatectomy were by no means rare. The obstruction in such cases generally lay at the internal meatus where the bladder opened into the cavity left after removal of the prostate, and was due to the semilunar fold formed by the trigone muscle and the overlying mucous membrane. In order to avoid these complications and sequelæ, for several years he had practised the open operation, thus bringing the operation of prostatectomy into line with other modern surgical procedures. In order to obtain a good view of the bed from which the prostate had been removed, the patient should be placed in the Trendelenburg position and a special bladder retractor employed. Any strips and folds of mucous membrane left after enucleation of the prostate must be picked up with long forceps and clipped away. After trimming and removal of these folds a large oval opening was left at the vesico-prostatic orifice which fully exposed the interior of the prostatic cavity. The suggestion had been made that the mucous membrane at the internal meatus should be stitched to the urethral mucous membrane, but such a refinement was unnecessary even if it were practicable. What was necessary was to make certain that loose folds, tags, long shreds, and small detached gland nodules were not left hanging from the wall of the cavity to promote sepsis and encourage the formation of secondary stone by sloughing. The operation, as well as diminishing the amount of sepsis and the risk of post-operative obstruction, also allowed of the complete control of hæmorrhage, any spouting vessel being seized by means of forceps and tied. Two objections had been raised to the open operation—namely, the length of the incision and the increase in the time required for completion of the operation. However, these objections were not of great moment, for the operation could be completed within 20 minutes, and the risk of post-operative hernia was not increased by the larger incision.

In the afternoon a joint meeting was held with the Section of Radiology and Electro-therapeutics, at which large numbers of excellent skiagrams of calculi were exhibited. Dr. ROBERT KNOX, President of the Section of Radiology, gave an account of work done on the subject of biliary calculi, whilst Mr. THOMSON WALKER showed some excellent pyelograms and photographs of calculi of the urinary tract.

WALLASEY SANATORIUM COMMITTEE.—This committee, which has been in existence eight years, terminates its activities this year; its work is to be transferred to the Town Council. Over 100 cases have been dealt with during the period named, only 4 per cent. of cases coming from Wallasey village itself.

Reviews and Notices of Books.

EPIDEMIC RESPIRATORY DISEASE.

By EUGENE L. OPIE, FRANCIS G. BLAKE, JAMES C. SMALL, and THOMAS B. RIVERS. London: Henry Kimpton. 1921. Pp. 402. 36s.

THE sub-title of this book—The Pneumonias and Other Infections of the Respiratory Tract Accompanying Influenza and Measles—is really a better guide to its contents than is the actual title. The volume is the outcome of an exhaustive inquiry into epidemic respiratory disease occurring amongst American troops at Camp Funston (Kansas) and Camp Pike during the period covered by the late influenza pandemic. It does not pretend to give any information as to the pandemic as it occurred in other parts of the world or as to epidemic respiratory disease in general, and nearly all its references therefore are American; but as a record of lobar pneumonia, broncho-pneumonia, purulent bronchitis, &c., occurring in an army of healthy young adults under military training the book is of considerable value. Intensive studies of this kind make for accuracy, and we wish that there had been more opportunity for such work amongst the British armies in the field.

The masses of statistics and pathological and bacteriological records need no further précis than they receive in the excellent summaries at the end of each chapter. The book may be roughly divided into two parts, the one dealing with the influenza epidemic and its pulmonary complications, the other with measles and its complications. With regard to the former the authors conclude that Pfeiffer's bacillus is the "specific etiologic agent of epidemic influenza" and that it is always present in early uncomplicated cases, a point of view that is now gaining ground. An investigation of normal individuals showed a rapidly increasing prevalence of the bacillus simultaneously with the progress of the epidemic, raising thereby a consideration of the carrier condition which the authors believe is, in influenza, analogous to that found with other infections. They hold that if "*B. influenzæ* is to be regarded as the cause of influenza it must change quite rapidly under certain circumstances from a relatively saprophytic organism to a relatively virulent pathogenic organism, and conversely return to its avirulent state following the passage of an epidemic." Pneumonia following influenza presented a complicated picture; the bacteriological results with the "typing" of pneumococcal strains showed 12 per cent of types i. and ii., and 88 per cent. of the other types found in normal mouths (type ii. atypical, iii., and iv.). These results are remarkably similar to those obtained in Edinburgh by Dr. W. R. Logan, whose paper in the May number of the *Edinburgh Medical Journal* was recently reviewed in these columns, though we are not quite clear as to whether or no the identical methods of classification were used by the American author and Dr. Logan. The American authors also note that no definite evidence could be obtained that Pfeiffer's bacillus alone caused pneumonia. Here again the results agree with those of Dr. Logan. The hæmolytic streptococci were apparently rarely found in the Edinburgh inquiry, whereas in the American epidemic they were not uncommon. In America great difficulty was experienced in obviating secondary infections with this variety of organism, and the authors point out that absolute elimination of overcrowding in the wards, segregation of patients according to type of bacterial infection, and effective individual isolation are all essential measures in prevention.

The measles epidemic followed, and was therefore complicated by, the influenza epidemic. Altogether 867 cases of measles were observed, amongst which there were 56 cases of pneumonia and 48 of otitis media. Hæmolytic streptococci were rarely found during the pneumonia period, which occurred early in the epidemic, but were common during the otitis

8. Persistent indigestion in middle life, with loss of weight and change of colour, may mean internal cancer.

This knowledge will save lives, and should be brought home to the public, for the plain facts about cancer are not generally known. Cancer theories and cancer cures have their fascination for the curious, but nothing can exceed the usefulness of making what is now known of cancer a commonplace in every household in the country.

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Anoxæmia in Clinical Neurology.

In an address given to the British Association in 1920, and published in The Lancet in August of that year,[1] Dr. J. Barcroft dealt with some of the medical aspects of oxygen-want, or anoxæmia. Its importance as a factor in the production of symptoms in disease is as yet but incompletely defined. This may be because we are not very familiar with its clinical manifestations, which, therefore, are not readily recognised. Dr. Barcroft clearly indicated the circumstances in which we may expect anoxæmia to occur, and defined three types of the condition. These are (1) an anoxic type, due to low oxygen tension in the blood, such as occurs at high altitudes and when for any reason lung ventilation is imperfect; (2) an anæmic type dependent upon a deficiency of hæmoglobin in the circulation, as in anæmia, or in carbon monoxide poisoning when much of the hæmoglobin is not free to take up oxygen; and, finally, (3) a stagnant type, when, with a normal blood, the supply to the tissues is defective. However produced, the cells in these circumstances lack sufficient oxygen for their metabolic needs. Quite apart, therefore, from those special atmospheric conditions applying to aviators and miners, there must surely be a variety of common affections owing some part of their symptomatology to this physiological factor. What this part may be, how often present and how important, it remains for clinical investigation to tell us. Nowhere is its influence so clear as in the case of the nervous system, and it is with this aspect of the problem that Dr. F. M. R. Walshe deals in an article on the Rôle of Anoxæmia in the Production of Symptoms in Disease and Injury of the Nervous System in the current number of *Medical Science*.[2] The results of experimental physiology indicate that the initial reaction of the central nervous system to minimal grades of oxygen-want is the development of a true hyper-excitability. Indeed, the extreme sensitiveness of the nerve cell and the synapse to oxygen deprivation has long been a commonplace of physiology. Though directed to other ends, numerous and diverse observations on the reactions of the spinal animal have attracted the attention of physiologists to this factor. Kaya and Starling and Mathison found that asphyxial states owe their effects mainly to anoxæmia and not to the carbon dioxide excess which accompanies it. Normally, spinal transection induces a state of shock in the divided cord which precludes all reflex activity, yet in slight asphyxia the acute "decapitate" cat may show apparently spontaneous scratch reflexes. Even after extensive posterior-root section motor discharges continue, indicating a true hyper-excitability of the spinal grey matter. A complex reflex response, comparable with the "mass reflex" described by Head and Riddoch in spinal man, may be obtained in the cat after shock has passed off, and its occurrence is of importance in the light it may throw on the origin of this phenomenon in man.

Of wider clinical interest are the psychical and neurological symptoms of cerebral anoxæmia. Haldane has said that "anoxæmia not only stops the machine but wrecks the machinery," the machine in this case being the brain. However, Barcroft produces evidence showing that acute anoxæmia of short duration probably leaves no residual defects of function or of structure behind it. The complete recoveries observed during the war in some cases of the superior longitudinal sinus syndrome of Holmes and Sargent, in which the motor cortex is asphyxiated severely for a period of hours, confirms this view. Nevertheless, though they are but transient and possibly of rare occurrence, such symptoms are not without significance to neurologists. They include impairment of the highest cerebral functions; defects of memory, of attention, and of judgment; marked emotional disturbances, such as pugnacity, extreme irritability, and the presence of fixed ideas. On the lower levels we see tremors, ataxy and weakness, increase of tendon jerks, muscular twitchings and spasms, and subjective and objective sensory disturbances. The symptom-complex of tetany may be readily produced in the normal subject by an artificially induced anoxæmia. Of chronic anoxæmia, as Barcroft has pointed out, we know very little, and it is this form that we might expect to be of more frequent occurrence and of greater significance to clinicians. On the whole, the symptoms seem to resemble those of fatigue rather than those of irritation which characterise the acute forms. The whole question is clearly one of which there is urgent need of further knowledge. Walshe emphasises the importance of quite another aspect of the problem. At the moment, phylogenetic and more particularly psychogenetic factors are being widely invoked to explain the genesis of disorders of the nervous system. Highly speculative theories of both orders abound and bid fair to eclipse a physiological method of approach to the problems of disordered function in the nervous system. Phylogenetic hypotheses are rarely capable of proof and as rarely find support in comparative anatomical or physiological studies. Further, it is urged that physiological factors must first be eliminated before we can justifiably seek a psychical origin for nervous diseases. Moreover, a sound knowledge of neuro-physiology should be regarded as an essential part of the equipment of the psychologist attacking any problem of clinical neurology. That this does not always obtain is seen from the frequent confusion of physiological and psychological categories seen in the writings of psychopathologists. In a recent book on this subject, a highly elaborate psychological theory is built up on the basis that skeletal muscle tone is innervated from the autonomic nervous system. Yet this is a postulate not accepted by physiologists and one with a great weight of direct evidence against it.

The wide range of psychical and somatic nervous disorders which may arise from a simple physiological factor, such as anoxæmia—and there are doubtless others as important—should therefore make us pause before we abandon lightheartedly the physiological method which has so brilliantly advanced our knowledge in the past and has been one of the proudest boasts of the English school of neurology, in favour of abstract and speculative psychological methods. It is only by the combined labours of trained workers in both fields, and not by the facile and exclusive adoption of any single method, however new and attractive, that progress will be made.

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[1] J. Barcroft, Anoxæmia, The Lancet, 1920, ii., 485.
[2] F. M. R. Walshe, Medical Science, 1921, iv., 427.

derived by division of the egg-cell at some period of development fusing to form a syncytium, from which the adult cells are later differentiated. The adult cells are thus independent of the old ones, and by this means the "individual dominates the elements which compose it," and harmony between the different tissue elements is achieved. This is found to be the case in the nervous system and the "neurone theory" requires revision. Further, the fibres of the neuroblasts do not run free in the interstices between the cells, but everywhere they follow distinct protoplasmatic paths, either of migrant medullary elements or of mesenchymatous cells, until they reach their destination. During the process of nerve regeneration, after a nerve has been cut, there exists, or is established, a perfect harmony between the elements of the different tissues which build up the path that has to be followed by the regenerating nerve-fibres. By means of special preparations it is shown that in both striped and unstriped muscle-fibres the nerve fibre axis-cylinder passes through the sarcolemma and ramifies in a layer of granular protoplasm which is collected in a small mass at the place of the nerve ending. In the sarcoplasm surrounding the neurofibrillar end-ramifications there is a reticular differentiation, extremely delicate, on one side attached to these ramifications, on the other side losing itself in the sarcoplasm. This Prof. Boeke proposes to to call the "periterminal network." It is difficult to say whether it is to be regarded as a continuation of the neurofibrillar structure or as a differentiation of the sarcoplasm itself. The author does not hesitate to assert that it is of sarcoplasmic origin, but he considers that it develops only in connexion with and under the influence of the neurofibrillar structure of the nerve ending. After section of a motor nerve it rapidly disappears, and as soon as the regenerated fibres reach the muscle-fibre the periterminal network reappears. The author believes that it represents the "receptive substances" of Langley. With regard to sensory nerve endings, at least two different kinds of tactile end-organs exhibit the same feature. The corpuscles of Grandry in the skin covering the duck's bill consist of two large flat disc-like cells within a capsule, with the axis-cylinder terminating in a flattened expansion between the cells. In Bielschowsky preparations not only could the tactile disc be seen in a syncytial connexion with both cells, but inside the protoplasm of these cells there was visible a distinctly stained, sharply defined network in absolute continuous connexion with the neurofibrillæ of the tactile disc. Therefore there is reason for supposing that not only in the case of the motor endings but also in the different forms of the sensory nerve endings there exists in the first place a close connexion between the nerve endings and the surrounding "lemmoblastic" elements that gives us a right to speak of a syncytial arrangement; secondly, we may assume that everywhere between the neurofibrillæ of these nerve endings and the protoplasm is inserted a distinct reticulum, which seems to be the histological substratum for the receptive substance of the physiologists.

F. J. F. Barrington: The Relation of the Hind-Brain to Micturition. Having previously established that (1) there is a motor tone passing to the bladder through the pelvic nerves which arises in the central nervous system above the level of the lower thoracic region of the cord; (2) transection of the cord in the lower thoracic region abolishes reflex micturition—i.e., the reaction which ultimately occurs if a bladder is gradually artificially distended, leading to the expulsion of its contents; (3) transection of the cord in the lower thoracic region permanently abolishes micturition; the author endeavours firstly to determine the level in the central nervous system of the origin of the motor tone of the bladder muscle; secondly, to find out what parts of the central nervous system could be removed and micturition still take place; thirdly, to find what simple reflexes are combined together to form micturition. It was found that the tonic influence the central nervous system exercises on the bladder through the pelvic nerves arises at about the level of the middle of the pons. The conclusion appears to be justified that reflex micturition takes place normally in cats in the absence of the whole of the fore-brain and anterior part of the mid-brain. It is probable that removal of the cerebellum has no effect on reflex micturition. Experimental analysis of reflex micturition showed that active contraction of the bladder can be produced by distension of the organ to a given volume, by slightly moving the catheter in and out in the direction of the urethra, and, lastly, by distension of the posterior urethra. Two reflexes were found leading to relaxation of the urethra; they were evoked respectively by running water through the urethra and by distending the bladder. It appears that these five reflexes are of such a nature that when one starts the others are brought into action automatically. It is noted that five to ten minutes after decerebration passage of urine by a forcible stream very commonly occurs. This appears to be due to the removal of an inhibitary influence arising in the part of the brain removed.

Cecil Worster-Drought: Lesions of the Posterior Tibial Nerve. Lesions to this nerve are most frequently overlooked. The motor disability is relatively slight, the patient complains of pain or numbness in the foot; it is seen that he is able to plantar-flex the foot at the ankle and also to flex the toes. As a result, the condition is often termed "functional." This happened in many of the 64 cases which form the basis of the communication. Changes in cutaneous sensibility are found over the sole, at the margins of the foot, and over the posterior and lateral aspects of the heel. There is also paresis and often atrophy of the plantar muscles and interossei, the toes being hyper-extended at the metatarso-phalangeal joints and flexed at the inter-phalangeal joints. When the site of injury is above or involves the branches of the posterior tibial nerve supplying the flexor longus hallucis and flexor longus digitorum muscles, flexion of the toes is either much diminished or is entirely absent. The ankle-jerk is also reduced or impossible to elicit. The author advocates exploration of the nerve when sensory disturbances of long standing are the predominant feature.

The number also contains a summary of a paper on Tabes: Its Early Recognition and Treatment, by Dr. Farquhar Buzzard, in which he draws attention to the value of the recognition of the character of lightning pains, and a paper on the Effects Produced by Obscuring the Vision of Pigeons previously deprived of the Otic Labyrinth, by Mr. Sydney Scott, both being read before the Neurological Section of the Royal Society of Medicine.

The Journal of Industrial Welfare (Monthly. Price 9d.) continues to keep us posted with the way in which the welfare movement is advancing, notwithstanding the vicissitudes through which the world of industry has been, and still is, passing. This publication continues to improve and has now become well established. An excellent article, well illustrated, appeared in the March issue from the pen of Mr. W. B. Welch, of the Birmingham Small Arms Company; attention is drawn in it to works notice-boards, to the advantage of having an arranged scheme of notices, and to the need for making them attractive. From time to time matters of definite medical interest are discussed, as, for instance, when Major J. B. Malone in the May number described an excellent scheme put in force by the Portland Cement Manufacturers, Ltd. The essentials of the campaign are: (1) the education of the workman by propaganda; (2) coöperation between employees and management; (3) "safety first" committees in the works; (4) watching for hazards; and (5) encouraging suggestions. These essentials are pursued with encouraging results by the committees whose duties are (*a*) to encourage "safety-first" principles amongst the workers; (*b*) to report to the management likely hazards and methods for minimising them; (*c*) to report

Annotations.

"Ne quid nimis."

PROFESSIONAL SECRECY.

We understand that certain of our readers have concluded from a sentence in a leading article which appeared in The Lancet of July 23rd, that we urged the General Medical Council in the exercise of its powers with regard to infamous conduct in a professional respect to remove from the Register the name of any practitioner who gave evidence against a patient in a court of law, whether ordered to do so by the judge or not. We did not make any so direct recommendation, and the motive of a purely tentative suggestion has been misunderstood. In a brief reference to the discussion at the meeting of the British Medical Association, we wrote: "As it is, the lawyer and the priest are not protected by statute, but no one questions the lawyer as to what the prisoner has told him and *the priest would be punished for divulging. Possibly* the General Medical Council *might assist* by offering to remove from the official register the name of any practitioner who laid bare his patient's secrets on the invitation of a judge." This was intended to convey, and in our opinion was only calculated to convey, the suggestion that, at present, the often referred to case of the Roman Catholic priest offers no parallel to that of the medical man. If the former enjoys any special privilege or protection in the witness-box, as to which we are sceptical, it is due to the belief (1) that he has solemnly pledged himself not to reveal the secrets of the confessional; (2) that he would incur ecclesiastical penalties by so doing. We consequently suggested that as no such pledge or penalties exist for the doctor, his refusal to give evidence might "possibly" be strengthened by his being able to point to the danger that he would incur in giving it. We frankly agree with one correspondent that the High Court of Justice might resent such action on the part of the General Medical Council. The mention of what "possibly" might be done was, however, a suggestion only. It was made in accordance with the view developed in a leading article in The Lancet of July 30th, that at some future date a test case calculated to arouse a strong combined protest by the medical profession, should call attention to the whole subject. Moreover, the suggestion, as another correspondent has pointed out to us, was made at the meeting of the British Medical Association.

THE INTERNATIONAL ASPECTS OF CHILD WELFARE WORK.

An informal conference on the International Aspects of Child Welfare Work was called by the Friends' Relief Mission in Vienna on July 18th. The honorary president was Frau Marianne Hainisch, mother of the President of the Austrian Republic. Miss K. D. Courtney acting as chairman in the morning and Dr. Hilda Clark in the evening. Other speakers included Prof. von Pirquet. Miss Jane Addams, president of the Women's International League for Peace and Freedom. Dr. Poerner, and Dr. Horneck, as well as representatives of child welfare agencies in Switzerland, France, Austria, and Germany. The value of relief work in promoting international understanding was dwelt on by several speakers. Dr. Hilda Clark pointing out that, while international legislation was vitally important, the interest and goodwill of ordinary people, especially of those concerned with questions of family life, might have far-reaching effects in the economic welfare of nations. Miss Jane Addams advocated an international standard of child welfare below which no country should go, which would prevent children from starving in one country while abundant food was available in an adjacent one. Prof. von Pirquet, dealing with the incidence of tuberculosis in Vienna, said that, while it had been very prevalent before the war, the years of under-nourishment had given it a terrible impetus. It had been found that 90 per cent. of the children examined reacted to the cutaneous test, and as soon as symptoms of tuberculosis declared themselves in an individual it was necessary to take active steps to increase the powers of resistance. Prof. von Pirquet described the means taken to supplement the insufficient sanatorium accommodation in Austria. The roof of a hospital for tuberculous children had been adapted to take 100 patients, who thus spent their whole time in the fresh air, the beds being placed under a roof shelter. By this simple and inexpensive device the accommodation of the hospital had been doubled, and remarkably good results had been obtained. Dr. Poerner said that, whereas diseases of the digestive tract formerly accounted for the greatest number of infant deaths, general debility now ranked first as a cause of infant mortality, suggesting an embryonic weakness resulting from bad health conditions in the parents. The decrease in digestive disorders was mainly due to the fact that, owing to the scarcity of fresh milk, a far greater proportion of mothers nursed their babies than in pre-war days, in spite of their own under-nourishment. Pyæmia and skin diseases showed an increase as a cause of death, while a falling-off in nervous diseases might be accounted for by a reduced consumption of alcohol on the part of parents.

THE TEACHING OF OBSTETRICS AT LEEDS.

The Leeds Maternity Hospital is one of the youngest and most useful of the Leeds charities. Founded in 1905 by the Leeds Ladies' Hospital and Maternity Fund, it began its work with 33 beds; in 1910 the hospital was transferred to the present buildings, which are well situated and not far from both the medical school of the University and the infirmary. There are now 70 beds, and material enlargement is needed. During 1920 the number of patients treated at the hospital was 1540; of these 1314 were cases of confinement, the balance being made up of cases attended elsewhere, in which complications had arisen as a direct result of labour. In addition to the work done within the walls of the hospital, there is an extern department in which, last year, the number of confinements was 1366. Five subsidiary homes are maintained in connexion with this extern department; the managers of the hospital have from the first recognised the importance of the teaching of midwives as a part of their work, and during the year 98 pupil midwives received training, 83 obtaining the certificate of the Central Midwives Board. In connexion with the training of nurses at the General Infirmary an arrangement has been made by the board of the infirmary for 20 of the infirmary nurses to receive three months' training at the Maternity Hospital, so that they may obtain the midwifery certificate. To carry this arrangement out the infirmary grants to specially selected nurses scholarships which cover fees and expenses during training. Nurses are also received for training from the Poor-law infirmary, from the West Riding Nursing Association, from the general infirmaries at Halifax and Nottingham, and from other institutions. The work is under the control of the members of the honorary staff, of which the Professor of Midwifery at the University is an ex-officio member.

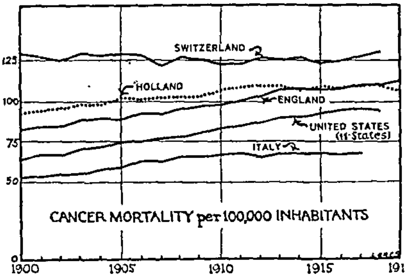
The presence of this well-equipped hospital in Leeds has enabled some great improvements to be brought about in the instruction of students; prior to 1885 the latter had to rely on the private practitioners for their experience in practical midwifery, while a few went to special institutions such as the Rotunda. At the request of the board of the medical school an extern maternity department was instituted at the infirmary; after some years the desire for more systematic teaching in practical midwifery led to some few cases of special difficulty being admitted to the infirmary, and subsequently a very small intern

THE LANCET.

LONDON: SATURDAY, AUGUST 13, 1921.

Cancer and the Public.

TUBERCULOSIS, as we pointed out last week, shows signs of being a moribund disease. Cancer, on the other hand, appears to be renewing its youth. The bills of mortality due to cancer have been rising year by year in most countries of Europe since exact figures were available; the increase has been variously ascribed to more exact diagnosis, the introduction of tomatoes to the diet, and a lack of opportunity of dying of other diseases; but, explain it how we will, the sinister fact remains that each year more deaths from cancer in this country are recorded. We are glad therefore that Red Cross organisations are taking note of this fact and regarding it as a field for voluntary effort. The June *Bulletin* of the League of Red Cross Societies contains a striking article on the importance of early treatment in cancer, supplied by the League's department of medical information. Intensive work is going on in many parts of the world to seek out the essential cause or causes of cancer—much of this work has been recorded in our columns—but for the moment nothing has arrived of proved utility in preventing or curing the disease. At the same time, as the *Bulletin* justly indicates, the cure of cancer offered by the surgeon is more certain to-day than any cure which the phthisiologist has to offer to the tuberculous, for all his acquaintance with the bacillus of Koch; and it is suggested that the Red Cross societies of the world have a great field of service for their propaganda of knowledge among the peoples.



The *Bulletin* sets out nothing that is not well known to medical men and women, and even to the well read of all classes. But this is not enough when we recall that in 1919, to take an example, 4151 British women died of cancer of the womb, of the majority of whom it may be said with confidence that operation undertaken in the earliest stage of the disease would have ensured their recovery. Out of every 100 women who come to consult the doctor with this complaint, 60 are already in so serious a condition that no operation can be attempted; for 20 more an operation is attempted too late to stop the encroaching disease; 5 die as a result of operation which is serious in itself when left to the last moment, and only 15 are cured. The immediate solution of the problem may be expressed in one word—Educate. Here is work for Red Cross societies if they want it—namely, to teach the public that to wait until cancer causes pain is to wait for death. If a woman over 35 years of age suffers from irregular bleeding, especially after intercourse, she should at once consult a doctor. Some may shrink from doing this from motives of modesty, but there are now many medical women and there is a hospital staffed entirely by women doctors in South London. The *Bulletin* paints cruelly but truly the result of neglect of this earliest indication of serious disease.

Let us suppose that the early symptom is neglected; how then does the illness progress? A sudden severe loss of blood may occur and by alarming the patient may also save her life. Or there may gradually develop a constant discharge, at first watery, then more deeply stained with blood, finally evil-smelling, thick and yellow. The patient is beginning to lose weight and at any moment she may feel the first gnawing of pain—the pronouncement of a sentence from which there is seldom, if ever, a reprieve. The pain grows worse, the wasting becomes extreme, until the sufferer lies helpless in bed, too weak to move, nauseated by the evil stench from which her nostrils will never again be free, unable to eat or sleep, and racked by an incessant torture, until death comes as the only friend potent to release her.

It is truly a terrible picture; none who have witnessed it can ever forget it, but it is not an uncommon picture. Radium may do something sometimes, morphia may help a little at the end, but knowledge, if it is given to the people in time, can save these lives and all this suffering.

This is only an illustration; the same can, of course, be said in regard to cancer of the breast and other visible cancers. The medical profession knows all this too well. The crucial matter is to get the knowledge into the hands of the public. The American Society for the Control of Cancer has long been educating the American public in this way and has prepared a list of facts about cancer that might well be published broadcast.

1. Cancer begins as a small local growth which can often be safely and easily removed in the early stages by competent surgical treatment, or in certain favourable cases by radium, X ray, or other methods.

2. The beginning of cancer is usually painless; for this reason its onset is doubly insidious, and other danger signals must be looked for and heeded in time.

3. Cancer is not a constitutional or blood disease and there should be no thought of disgrace or hereditary taint associated with it.

4. Cancer is not a contagious disease and there is no danger from living in the same house or from contact with a patient.

5. In ordinary sense, cancer is not inherited. Some authorities believe that there may be inheritance of a certain tendency to the disease, but even this is not clearly established. The disease is so frequent that, by the very law of chance, many cases will occur in some families. Life insurance companies do not regard cancer in the family as a reason for rejecting applicants or increasing premiums.

6. A persistent lump in the breast, or continued abnormal discharge or bleeding should take a woman to her doctor forthwith. The increased flowing which frequently occurs at the change of life is always suspicious, as is the return of flowing after it has stopped.

7. Sores, cracks, lacerations, lumps and ulcers which do not heal, warts, moles or birthmarks which change colour or appearance are danger signs which demand competent medical investigation and treatment.

the low flats—all necessitate careful consideration. For use on the reservation the water is pumped to settling tanks, where the suspended matter is first precipitated by coagulation with aluminum sulphate, after which the water is passed through sand filters. This purification is further supplemented by disinfecting the water with liquid chlorine. Mosquitoes, it is noted, have been practically exterminated by the usual methods. The reservation offers many facilities for research work, particularly in various phases of sanitary engineering. Its position is suitable for the establishment of a school for the teaching of public health administration.

THE FUTURE OF RED CROSS CLINICS.

SCATTERED over the country are a number of clinics founded by the Red Cross for the treatment of the wounded. Now that pensioners under treatment are happily becoming fewer, a movement is being made to retain the services of these clinics for civilian patients. Physical therapy in the treatment of injury and disease is becoming more and more widely recognised, and there are comparatively few large city hospitals where a department devoted to this treatment cannot be found. But the expense of securing this treatment in private is considerable, and a large section of the community is rightly unwilling to attend hospital for treatment, and yet cannot afford to pay for it to be administered privately or in their own homes. For these the proposed transfer of the Red Cross clinics to civilian work will be an incalculable boon, and may well be carried through provided sundry safeguards are observed. We may classify these briefly as affecting the medical men of the district, the patient, and the practising masseur. Little opposition will arise from medical men provided that patients are admitted to the clinics only on the recommendation of a qualified medical practitioner. This would protect the clinic from the patient who casually drops in for treatment without the knowledge or consent of his doctor. Patients must be safeguarded by placing the clinic under the care of a medical man specially qualified to prescribe details of treatment, and able to supervise and control everything that is done on their behalf. The interests of the practising masseur should be safeguarded by ensuring that only patients who are unable to pay the fees for private treatment usual in the district are received as patients of the clinic. This would entail the employment of an almoner or some other person suitably skilled in social service work. Should the clinics be run in any sense as competitors with the private masseur, great hardship would be inflicted. Granted these safeguards, we welcome the proposed transfer.

TUMOURS OF THE BONY CHEST. WALL.

ACCORDING to Dr. C. A. Hedblom,[1] of the Mayo Clinic, tumours of the bony chest wall are comparatively rare. He has collected 213 cases, including 48 from the Mayo Clinic, 23 of which came to operation, and 25 in which operation was not performed. In 167, or 78·7 per cent. of the 213 cases, the tumours were of the ribs, and 46, or 21·3 per cent., were of the sternum. 61·4 per cent. were sarcoma, and 18 per cent. were chondroma, the ribs being primarily involved in 78·7 per cent., the sternum in 21·3 per cent. Of the Mayo Clinic cases, 2 were examples of recurrent carcinoma following amputation of the breast in the female, in 2 the primary growth was in the male breast, 1 was a hypernephroma secondary to a tumour of the kidney on the same side, and 1 was secondary to a cancer of the thyroid. Although there is usually no history of trauma in tumours of the chest wall, the absence of such a history is no proof that the origin of the tumour was not traumatic. Minor injuries, as Dr. Hedblom points out, are as a rule quickly forgotten. Moreover, chest tumours are commoner in males who are more liable to injury, and the area involved is usually the more exposed anterior and lateral portion of the chest. It is probable therefore that in some cases at least trauma plays a part in the ætiology both with regard to incidence and the malignant degeneration of the benign forms. Apart from the presence of a tumour, pain, which may be present before there is any discernible growth, is the most characteristic symptom both in benign and malignant tumours, being present in 50 per cent. of the 213 cases. Loss of weight was noted in 15, or 31·2 per cent., dyspnœa was present in only 4 cases, and effusion in 2. In typical well advanced cases the diagnosis of neoplasm is certain, but in early cases a diagnosis may be impossible. Cold abscess, exostosis, gumma, aneurysm, and dermoid cyst must be differentiated. Early radical extirpation, which was performed in 10 of the 48 Mayo Clinic cases, is the treatment of choice, while late radical or palliative extirpation, which was performed in 13 of those cases, may result in a relatively long period of freedom from recurrence even in the presence of extensive involvement. The contra-indications to operation are metastases, very extensive involvement, periostitis, and advanced cachexia. Intratracheal or intrapharyngeal insufflation anæsthesia affords an effective means of preventing operative pneumothorax. Shock, pneumonia, and empyema are the commonest causes of death following operation.

STOCK ALLEGATIONS AGAINST INSURANCE DOCTORS.

AT the recent delegates' meeting of the High Court of the Ancient Order of Foresters, held at Leeds, serious charges were made against panel doctors. In the words of the High Chief Ranger, as they appear in the daily press:—

1. Panel doctors frequently issue certificates without seeing the insured person.
2. There is a marked tendency...... to refer patients for hospital treatment as out-patients, as the panel doctor gets his capitation fee whether the man is well or ill. The net result is that the doctor draws the money while the hospital does the work.
3. In some cases panel doctors show a reluctance to call on patients outside surgery hours.
4. In order to retain their panel at present strength "a few" panel doctors are chary about offending possible malingerers by giving them too hasty clearing-off notices, fearing that the patients might change their panel.

Items 1 and 4 refer to breaches of the certification rules and the Order of Foresters has only itself to blame if the doctors guilty of such unprofessional conduct are not brought before the proper tribunal. Lax certification is dealt with very severely by the Minister of Health when cases are brought to his notice by medical service subcommittees, and the General Medical Council has warned the profession that such conduct will incur grave penalties. In regard to item 2 the practice of referring cases to hospital out-patient departments is necessary under the present system owing to the fact that in no other way can a second opinion be obtained for an insured person. That hospitals are not paid for the services they render to insured persons is not the fault of the insurance practitioners, who hope that the omission will be rectified in the near future. The reluctance suggested in item 3 would render doctors liable to a charge of negligence, also a matter readily dealt with by the medical service subcommittee. It seems to us that there is little or no substance in these and similar complaints, for, as Sir A. Mond pointed out in the House of Commons last week in reply to Mr. Haydn Jones, machinery is provided under the Insurance Act regulations for investigating complaints and imposing penalties where such complaints are substantiated. But the Minister added that he was considering whether the time had not come for an inquiry into the working of the Acts as regards both cash and medical benefits.

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[1] Archives of Surgery, July, 1921.

Mental Hygiene.

WE publish this week, in an abridged form, the important address delivered by Dr. C. HUBERT BOND before the Medico-Psychological Association at the recent annual meeting of that body. Dr. BOND is not only President of the Association, but a Commissioner of the Board of Control, and these facts might well have deterred him from independence or originality in his remarks: but, as will be seen, his double responsibilities produced the exactly opposite effect upon him. He spoke clearly, he spoke out, and was ready with a constructive policy, making no attempt to conceal shortcomings, but facing the truth that considerable reform is necessary in directions to which he makes specific reference. There is little if any support to be found in the address for the sensational views adopted by certain newspapers which delight to picture lunatic asylums as prisons, but there is no suggestion that the circumstances which surround the treatment of mental patients are ideal either for the patients or for the medical staff. Dr. BOND shows clearly that these circumstances are not calculated to promote the mental hygiene by which the beginnings of mental disease can be prevented and recoverable cases put in the way of recovery. And most thinking people will agree with him.

The subject is just now very much before the public. It is dealt with in some detail in the annual report, just received, of the Scottish Board of Control, where a series of recommendations may be found for setting up psychiatric clinics on the basis of 30 years' experience of observation wards in Glasgow. It should be borne in mind, say the Scottish Commissioners, that at the present time skilled advice and treatment of incipient insanity form the prerogative of persons sufficiently wealthy to afford it, and that the vast majority of the people can only receive treatment for insanity after the malady has become so confirmed that they can be certified and placed in asylums. We reviewed last week two books upon the administration of lunatic asylums, one written by Dr. MONTAGU LOMAX entitled "Experiences of an Asylum Doctor," and the other, "A Mental Hospital," by Dr. JOHN MACARTHUR, medical officer at Colney Hatch. There is no comparison between the two authors in the matter of experience; from Dr. MACARTHUR we get a detailed picture of the administrative side of mental medicine from one who is specialising in his subject; while from Dr. LOMAX we get a vivid sketch of the life that has to be lived by the inmates of mental hospitals, both patients and their curators, written as the result of a temporary if protracted charge. It will be allowed, however, that more than occasionally the man who is *in* a department but not *of* it, can take an all-round view of things as they are in a way which is not easy for those bred in the system. He can ask himself and others the why of happenings which normally pass unquestioned as matters of routine and tradition. Dr. LOMAX's criticisms of the conduct of asylums, which in many cases amount to charges of inhumanity in administration—though this may have to be inferred rather than be the subject of categorical statement—are to receive official investigation. Sir ALFRED MOND has now promised in the House of Commons that the visiting committee of the asylum at which Dr. LOMAX was employed as locum tenens will be asked by the Board of Control for their observations upon Dr. LOMAX's statements, with a view to possible action. We hope that there will be a prompt publication of the views of the Board of Control, for there is no factor more potent in keeping early and curable mental cases out of the reach of medical treatment than public distrust of asylum régime.

At the recent meeting of the British Medical Association, before the Section of Neurology and Psychiatry, Prof. G. M. ROBERTSON, superintendent of the Morningside Mental Hospital, read a most interesting paper on the diagnosis and treatment of borderland cases. He defined the borderland as where, on one side of a boundary, we have the region of the neuroses, consisting of disorders presenting such symptoms as spasm, paralysis, and sensory disturbances; and, on the other side of the boundary, the region of the psychoses, which included such disorders as mania, melancholia, and dementia præcox. He points out that between the two sets of conditions no hard-and-fast line can be drawn, the neuroses and psychoses passing gradually from one to the other. This is not a negligible strip of territory, but a stage whereon the most poignant dramas of human life are played, but, owing to public distrust, among other things, the actors receive no medical help, in too many cases, until obstinate conditions of mental ill-health have been developed. All of which brings us back to Dr. BOND's wise pronouncement that mental health is no less important than ill-physique, and that the Report to the Ministry of Health of the Consultative Committees, English, Irish, and Welsh, on the physical health of the community, and how to preserve it, should form a broad model upon which we should strive to preserve the mental health of the people. The numerous barriers which prevent the intelligent treatment of in-patient mental cases should be relaxed, the position of uncertifiable cases requiring mental treatment should not be ignored, for, as Dr. ROBERTSON has shown, the uncertifiable pass into the certifiable, by which time they have become resistant to all treatment. Without the need for new legislation we can progress in the treatment of the out-patient cases; but several things are required. Broader vision from the medical profession and the public, so that they may see mental disease as a disorder logically dependent upon cause and effect, and often curable. Machinery whereby mental cases can be medically treated like sick people that they are. And money.

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REGIONAL MEDICAL OFFICERS.

OF the 33 regional medical officers appointed by the Ministry of Health one has died, and the vacancy is not being filled. In making this statement in the House of Commons in reply to a question by Sir JOHN HARMOOD-BANNER, Sir A. MOND stated that these officers act as medical referees on questions of incapacity of insured persons for work referred to them by the Approved Societies, or raised direct by insured persons. In addition they act as consultants to insurance practitioners and generally assist in maintaining the efficiency of the insurance medical service. That should now be common knowledge, and we may hope that the spate of questions on the subject will soon dry up. From the side of the Approved Societies welcome recognition is coming in of the work of the regional medical officers. This appears in the recent annual report of the Prudential Approved Societies, and the societies as a whole are making more use of the new system which is working well. If the insurance practitioners on the other side coöperate with the regional officers it should result in a better understanding between the two main parties in the working of medical benefit, and the insured person will gain from the smooth working of the insurance service. This service may have to be extended shortly in regard to purely consultation cases, for the regional staff has been overworked through the increased number of references occasioned by the coal crisis.

the chemical, bacteriological, and physical qualities of river, well, and reservoir water under remarkable conditions.

Questions of Quality often Ignored: the Example of Toronto.

It is to be regretted that there still remains the tendency to accumulate waterworks statistics without proper consideration being given to the circumstances which govern the safety and potability of the supplies in question, for these are of high value from a comparative point of view. Not long since (1914) an important Blue-book (Return as to Water Supplies—England and Wales) became available for reference. Despite its great use, it is matter for regret that all *detailed* references to the chemical and bacteriological composition of the supplies dealt with are practically ignored. Beyond doubt the returns are filed away and are theoretically still available for inspection, but for the time being, at all events, the facts are buried. Is it too late to plead for their resuscitation, and for an authoritative account of how far the abnormal conditions of drought have influenced our water-supplies throughout the country from a *quality* standpoint ?

In 1919 a paper on Water and Sewage Purification appeared in Reports of the Progress of Applied Chemistry, Vol. IV. In dealing with the valuable work carried out at the Toronto water laboratories, the following observations were made, which are worthy of repetition here, as showing the importance of accumulating accurate data throughout the country as to the qualities of our water-supplies and the need for scientific investigation :—

> "Toronto is splendidly equipped for carrying out important water investigations. A very large number of samples are examined and many valuable researches carried out on water purification, and one can only compare the scale of their operations to that of the Metropolitan Water Board, which have always interpreted Section 25 of the Metropolis Water Act (1902) in the most liberal and imperial spirit, as if indeed their responsibility to humanity was of general and not merely of local significance. Can quite the same be said of all our large water undertakings throughout the United Kingdom? It is to be feared that this cannot be said, but the fault is not to be found with the medical officers of health, analysts, chemists, and bacteriologists concerned, but rather with waterworks authorities who, too often, are content with the little rather than the more, and who do not always recognise that applied science has infinite possibilities, not only as regards safeguarding health, but in respect of saving unnecessary expenditure, and that these matters should be looked upon in a national and not a parochial spirit. It is true, however, that in very many cases the water-supply is so pure that numerous analyses and comprehensive investigations may seem to be uncalled for, and, no doubt, this has influenced waterworks policy in the past. Nevertheless, a great deal can be learnt from the study of even pure water, and there can be but few waterworks which possess no problems awaiting solution by the trained observer."

The Present Need for Strict Economy.

Not within the memory of most, if any, of us, apart from the disquieting remembrances aroused by the Worthing (1893), Maidstone (1897), and Lincoln (1905) epidemics, has the question of water-supply aroused so much interest as in the present year. As a counsel of perfection it is well to plead for supplies unimpeachable at their source and abundant in quantity. But we must be prepared to consider, if not accept, compromises, or to embrace new ideas, or perhaps even to condone temporary expedients, not because we have recklessly abandoned our old principles, but in view of the fact that this time, of all times, is the opportunity for searching diligently, in relation to questions of water-supply, for avenues leading to economy. In matters of this kind it would be a grave mistake to create a false impression. It is not hinted that it is permissible to gamble on the real safety of our water-supplies, but it is suggested that the lessons of the war and its aftermath, and the circumstances arising out of the drought, and increased knowledge generally, have taught us many new things operating in the direction of economy.

Economical considerations have within recent years influenced waterworks procedure.

In 1915 Aberdeen received the assent of Parliament to a scheme for purifying the River Dee for waterworks purposes by (1) excess-liming, (2) short storage, and (3) rapid filtration, the saving in capital cost on alternative schemes exceeding £100,000. The way towards this event was paved by the discovery that caustic lime present in water, in even the smallest excess, exercised a strong bactericidal action.

In 1916 the Metropolitan Water Board decided to save coal by chlorinating raw Thames River water (70-80 million gallons a day) and allowing the treated water to flow by gravity down the Staines aqueduct, instead of first pumping it up into Staines Reservoirs. The difference, for the year ended March 31st, 1921, between the cost of pumping and the cost of chlorinating represented a saving of over £10,000. The New River supply of the Metropolitan Water Board is made up of a variable mixture of New River water (Upper Lea water) and pure well water. During the greater part of the year, owing to the good quality of the well water and the relatively satisfactory state of the river water, the filtered water results are remarkably good, as judged by the ordinary chemical and bacteriological standards, despite the fact that the rate of filtration at the New River works is considerably in excess of that practised at the other works of the Board. During winter floods the river water deteriorates so much that the excellent quality of the well water fails to "mask" the deterioration of the mixed filtered water product. The storage reservoirs at Hornsey and Stoke Newington are far too small to affect the position materially. In 1916 the Metropolitan Water Board started investigations with the object of seeing whether it might not be possible to remedy this state of affairs by chlorination. It is obvious that to increase materially the filtration area, or to provide adequate storage accommodation, would mean an immense capital outlay in order to improve matters during these transitory periods of deterioration.

The experiments have been most satisfactory in a bacteriological sense, and preliminary difficulties as regards taste have been overcome by the use of permanganate and carefully graded doses of chlorine according to the current quality of the water.

In 1917 Rotherham decided on the policy of re-using the abandoned and severely censured Ulley gathering ground, and, subject to the approval of the Local Government Board, to supply from this source water rendered safe by sterilisation processes. Somewhat later Cardiff determined to adopt a similar course in regard to a portion of their gathering ground, which had been provisionally given up as not wholly satisfactory for waterworks purposes.

In 1917 Accra was faced with a very unsatisfactory position as regards its water-supply. The water (swamp water, liable to pollution) deteriorated to a remarkable extent in the relatively large storage reservoirs, absolutely necessary for purposes of quantity. Exhaustive experiments were made, and it was found that by applying the "excess lime" method of treatment the water was freed from excremental bacteria—e.g., *B. coli*—and remained clear, odourless, and free from growths under conditions of storage. The saving on alternative purification works represented a large sum of money. This is the first occasion on which the excess-lime method has been used for the express double purpose of destroying "plankton" development and rendering water safe from the epidemiological point of view.

In 1919 Sheffield conceived a scheme for the utilisation of river water as compensation water, which, despite its bold and unprecedented character, received, with certain reservations, the assent of Parliament. It is of interest to consider this unique proposal at more length, because its influence on future procedures may be far-reaching. Sheffield was obliged by Act of Parliament to pass about 10 million gallons daily of pure moorland water from the Dam-Flask and Rivelin reservoirs down the course of the grossly polluted River Don (which, of course, was not used for drinking purposes) as compensation water. The proposal was to reserve this pure water to increase the domestic supply to Sheffield, and to abstract from the Don below the point where the sewage effluent from the city, together with many other impurities, entered the river an approximately similar amount of water, to purify and soften it, and to pump the purified river water back about eleven miles up-stream and pass it through the statutory mill gauge in lieu of the unnecessarily pure water discharged from the reservoirs for compensation purposes. The word "unnecessarily" in this connexion is used advisedly, for the River Don water was only used for trade purposes and was so heavily polluted with ochre streams, trade effluents, and waste liquors near and below the point of discharge of the compensation water that to "feed" it with water of a high degree of purity was a wasteful procedure. Sheffield considered that if they purified and softened the river water abstracted below Sheffield to a standard at least equal to that proposed by the Royal Commission on Sewage Disposal, and softened it as well, they were in no department was opened at the Hospital for Women, but not until the development of the Maternity Hospital was the present arrangement made possible. The University and the Maternity Hospital have entered into an agreement by which the hospital undertakes the whole of the practical teaching of the students in midwifery. This instruction is directed by a committee, which consists of the Dean of the Faculty of Medicine and the honorary staff of the hospital, including, of course, the Professor of Obstetrics. The University and the hospital combine in the election of a resident medical officer and obstetric tutor; the University regulations require that all students shall attend the intern work of the hospital for a period of one month before doing any duty in the extern department, and from the resident officer the students will receive their earliest practical instruction. It will soon become necessary to appoint a junior to assist in the work. It is very desirable that all students, during the time they are on intern duty, be provided with accommodation close to the hospital so that they may be summoned by telephone to see all cases of difficulty and of interest. Strenuous efforts are being made in this direction, and it is hoped that these will shortly prove successful.

PAYING POOR-LAW PATIENTS IN MANCHESTER.

THE result of conferences between the Manchester Board of Guardians and representatives of the medical profession has been agreement upon a scheme for the use, by paying patients, of beds in Poor-law hospitals. Amongst other provisions of the scheme, which is to be controlled by the medical superintendent of the hospital in which the beds are provided, are the following:—

> The beds shall be available for cases sent in by any medical practitioner who shall be allowed, if he desires, to attend, treat, or operate on them himself, with the assistance of the resident medical and nursing staff of the hospital.
>
> Patients shall be admitted to any of the beds with the recommendation of a medical practitioner, where possible, subject to the final approval of the medical superintendent of the hospital.
>
> Any practitioner may, if he desires, attend and treat gratuitously any patient recommended for admission by him who can only afford the standard hospital fees for maintenance and treatment. Intention to do so must be stated at time of admission.

It is felt by the representatives of the Manchester Medical Committee that the arrangement may not only prove of great value to a number of patients, but will also provide an opportunity for general practitioners to participate in institutional treatment. The tariff of fees will be arranged by the local Medical Association.

COMPOSITION OF HUMAN FAT.

ALTHOUGH a good deal is known regarding the chemical composition of the fatty tissue of animals and its relation to the fats in the food, little work has been done on the constitution of human adipose deposit. It is agreed that the fats of infants have a higher melting point and contain less oleic acid than the fats of adults. In a recent article O. Schirmer[1] describes the results of his investigations to determine whether the state of nutrition and conditions of disease affect the composition of the fats of the human body. He examined the fat of the abdominal wall. It showed extraordinary variation in water content, from 5 to 71 per cent., so that there can be no question of anything like a mean water content of 29·9 per cent. as given by Vierordt. In fat persons the fatty tissue contains less water than the fat of lean individuals, so that there would appear to be a relation, hitherto unobserved, between the fat and water metabolism of the body. From his observations the author concludes that in certain cases of disease very large amounts of fat in adipose tissue are replaced by water, and in this condition the absorptive connective tissue plays an important part, especially as the test tissue which contained most water showed the largest amount of connective tissue. In the fats themselves the consistence diminishes with increase in the iodine number. Fats with a high iodine number—about 70—are fluid at room temperature. On standing there is formed gradually a solid deposit consisting of tripalmitin. In fat individuals the iodine index rises very considerably and the fat is much more fluid than in spare individuals. The amount of cholesterol is much higher in fats with a low iodine number. A normal iodine number in a person of normal nutrition may be taken as 65 to 66·5, corresponding to an olein content of 59 per cent. In very fat persons the corresponding iodine number lies in the region of 70. Tables are given to show the influence of diseases and constitution on the quantity and composition of the fats, but no simple rules can be deduced from them. Nephritis, diabetes, and castration seem to lessen the iodine number. Experiments on rabbits and ducks were undertaken to study the effects of food fats on the body fats. The composition of the fats given in the food modified the composition of the body fats, even when the food contained no excessive amount of fat. The administration of oil increased the iodine number, while tallow diminished it. Human fat with an iodine number of 69 melts at 16° to 20° C., and rabbit fat with the same iodine index at 40° C.

A MODEL VILLAGE IN U.S.A.

THE first annual report on the health department of the model village which the United States Public Health Service has been developing for nearly two years on the 516-acre Government reservation at Perryville, Maryland, contains some interesting information. The reservation was used during the war as a site for a large nitrate plant; the buildings included 200 cottages, two general stores, a model school house, club, firehouse, and theatre for the work-people, and the whole property was handed over by Congress for use as a hospital site and for storage of the medical supplies of the Public Health Service. The Public Health Service promptly transformed a group of cottages into one hospital and set out to build another; the two together now accommodate 430 patients. Not including the variable hospital contingent, the reservation now has a population of 839 persons, the sexes being, roughly, equally represented. The birth-rate on the reservation was 39·33 per 1000, as against 21·30 in the whole State and 28·78 in the county. The death-rate was only 3·07, an excess of children being roughly balanced by the small number of aged persons. While this low death-rate is partly due to the favourable age constitution of the population, much of the credit is laid at the door of the efficient health administration. Careful work has kept down the figures of cases of communicable disease, particularly diphtheria, of which 30 cases occurred during the year in the county and three on the reservation; one of these last was a new-comer, one a young sister of a boy who was found to be a carrier, and one an adult. The low prevalence of contagious disease is ascribed directly to close watch and prompt isolation, laboratory diagnosis, and prophylaxis, and indirectly to pasteurised milk, filtered and chlorinated water, school medical supervision, and good living conditions, including sewers, screens, and covered garbage cans. A physical examination of the children showed that 93·5 per cent. had physical defects of teeth, tonsils, adenoids, eyes, or hearing, this large percentage probably being due to the lack of facilities for remedial correction nearer than Baltimore. Similar percentages are found in the county outside the reservation. Many of these defects have recently been corrected. Between Nov., 1919, and Nov., 1920, the percentage of underweight children was reduced from 42·7 to 13·8. The drinking water is drawn from the Susquehanna River, and is, unluckily, in bad condition, being contaminated in several highly variable ways. The geological formation of the country, the daily conflict of the tide and the river current, and the strong winds on manifesting itself in mortality statistics; for we learn, whereas among grinders in Sheffield for the five years, 1908–12, the average number of deaths due to pulmonary tuberculosis was 58·2 per year, while the deaths from this cause amounted to 51·2 per cent. of deaths from all causes, that in the two years, 1919–1920, the average number of deaths due to tuberculosis was 33·5, while these deaths formed 33·0 per cent. of deaths from all causes. We are glad to note the diminution in tuberculous silicosis in a city where it has been rife all too long.

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[1] Arch. f. Exp. Pathol. u. Pharmakol., vol. lxxxix., 1921.

Mr. G. S. Ram deals with dangers associated with the use of electricity in factories. He points out that shock from alternating currents at low pressures is more fatal (18 cases out of 25) than from high tension (4 cases out of 20), and stresses the fact that much ignorance as to the importance of artificial respiration still exists even among ambulance men and doctors. No matter how "dead" the victim may appear to be, artificial respiration should be *immediately* applied, and kept up for *at least two hours*, even though the doctor on arrival should rashly pronounce life to be extinct.

The subject of health and sanitation is reported upon by Miss Martindale, who deplores neglect of that short arresting requirement of the Factory Act, "A factory must be kept in a cleanly state." She deplores it in the interests of health and psychology, since the general tendency is for workers to fall into line and become in harmony with their environment. She reviews the conditions found in many industries, and when referring to unnecessary high temperatures, quotes a chance remark, "Bible talks of earning a living by the sweat of the brow—it's done by the sweat of the whole body here."

Progress of Welfare.

Considerable interest attaches to the summary given by Dame Adelaide Anderson of the progress of welfare, progress which makes it certain that the improvements already recorded will steadily spread, largely on the initiative of workers themselves, throughout industry. In this connexion provision of welfare accommodation, such as canteens, and the help of welfare supervisors, are rightly considered to be the forerunners of welfare developments which tend to increase and engender good feelings. Many experiments to meet the particular needs of each works are afoot, and testify to the vitality of the movement in glass works, cutlery and electro-plate works, oil and seed mills, woollen, worsted, hosiery, silk, cocoa-nut matting, and other textile industries, as well as in the metal trades and fish curing; while in a growing number of factories medical women are being appointed to supervise the health of women and girls. In relation to canteens it is found that if they are kept comfortable and clean they are well patronised, thus adding industrial significance to the truth "that unquiet meals make ill digestions." The introduction of washing facilities is reported to be much appreciated; for instance, at one cotton mill, with a long queue of workers waiting to wash at the dinner hour, although the idea of washing-basins had been scoffed at before they were installed, it was found difficult to cope with the numbers who wanted to use them. Here little less than an industrial revolution is proceeding.

When we turn from these matters to first-aid and ambulance, reported upon by Mr. J. C. Bridge, similar rapid advance is recorded. Novelty of treatment by sterilised dressings is passing away, and in a few years first-aid on modern up-to-date lines will become essential to the equipment of every works. Its value can be measured: one large firm of iron and steel manufacturers reduced their annual compensation rate from 17*s*. 7*d*. in 1918 to 16*s*. 7*d*. in 1919, and to 14*s*. in 1920: this result is attributed to avoiding septic cases through provision of first-aid attendance at all hours: elimination of lost time should also be added to the credit side. A picturesque description of sugar-refining is given by Mr. H. J. Wilson, who tells how charcoal filter beds are filled by men only lightly clad, descending through manholes with bags over their heads to the bottom of black, warm cylindrical filters, where they spread the charcoal thrown down to them by treading it level—a dirty and disagreeable operation. A code of welfare regulations is outlined, the establishment of which appears to be badly needed. The subject of factory lighting is reported upon by Miss R. Squire, who is still able to tell of windows in old shops invariably dirty, of walls lacking whitewash, of machines installed without consideration for natural light, while window space is cramped and blocked by stuffed rags and stored materials. Dirty windows and old-fashioned burners are false economy while the sun shines without; illumination in factories clearly lags far behind scientific knowledge.

Medical Research in Factories.

The chapter contributed by Dr. T. M. Legge is of particular interest. It draws attention to the way in which factory doctors are being appointed in large American establishments, a development which is stimulated from within and not imposed by the State from without. Contrast is rendered possible by an account given with the recent development in Belgium where the State has established a complete factory medical service, with a whole-time inspectorate and part-time employment of medical practitioners. Both countries in this matter are well in advance of Great Britain. Dr. Legge reports the result of a careful investigation into the amount of lead present in the air of places where electric accumulators are made; it confirms the conclusion previously arrived at by him, that about two milligrammes of lead inhaled daily represents the minimal dose which will cause plumbism. Continued attention is being directed to the subject of epithelioma among patent fuel workers. Early treatment and medical supervision are now considered able to prevent this disease; but we appear to be no nearer to determining the injurious constituent in pitch which causes malignancy. The subject of industrial dermatitis continues to receive special attention from Mr. Bridge, who holds strongly that, apart from personal susceptibility, personal cleanliness is the all-important preventive. Several interesting inquiries made by him are reported under this heading.

Mr. J. H. Parsons supplies a report on glass-workers' cataract, which commences in the posterior layers of the lens, and also occurs among workers exposed to other molten and red-hot metals. The probability is expressed that this form of cataract results not from the direct action of rays upon the lens itself, but from indirect action affecting the nutrition of the lens through the ciliary body. The rays concerned would appear to be heat rays rather than ultra-violet rays. Prevention can be assured if workers will only wear spectacles of Crookes's glass.

Readers who recall the correspondence in the public press as to the causation of phthisis among printers will welcome the account of an investigation made by Mr. C. B. Roos into the dust of printing shops. The suggestion made that printers suffer from tuberculous silicosis due to inhaling silica dust never had anything except imagination to support it. Now Mr. Roos reports that printing shops contain but little dust, often less than an ordinary room, and that the little dust present contains very little silica, less than is found in London "domestic" dust.

HOSPITAL GRANTS AND WAGES OF EMPLOYEES.—The Secretary to the Treasury was recently asked whether his attention had been drawn to a resolution passed by the public pharmacists branch of the National Drug and Chemical Union, to the effect that no grants from public funds should be made to any hospital or other institution unless the provisions of the fair wages clause were observed in the payment of the employees; and whether he would give effect to this resolution and make the fair wages clause applicable in connexion with the grants to hospitals. The reply was delivered by Sir Alfred Mond, who stated that he had received a copy of the resolution and would bring it to the notice of the Hospitals Commission.

LUNACY AND DIVORCE.

IN the House of Commons recently Mr. Rendall, M.P., asked a question of the Home Secretary as to the number of married persons in lunatic asylums in England and Wales; as to how many of these had been certified for more than five years; and as to the intention of the Government with regard to the recommendation of the Royal Commission, that certified insanity of five years' duration should be a ground for divorce. The figures apparently were not available, and it was intimated that no measure of the kind suggested could be added at present to the programme of legislation. They would be interesting figures if they should be obtained, as they would show roughly how many persons could possibly be affected by the facility for divorce proposed. They would not show with anything like accuracy how many divorces would follow the innovation, for there would certainly be a considerable proportion of men and women who would not avail themselves of it. Such figures, when compiled, should be amplified by particulars as to the respective numbers of the cases in question in which insanity has been established for 10, 15, 20, or more years. In the event of divorce on the ground of insanity being made possible at some future date, it would also, no doubt, be provided only for cases where the patient, according to the best medical opinion obtainable, is incapable either of recovery or of appreciation of the step taken. We do not propose to discuss a question into which personal convictions and personal religious belief enter largely, but we would point out that sympathy for this and other classes of cases of great and admitted hardship has undoubtedly increased in the last few years. This has been largely due to the obvious fact that the existing law is not confined in its action to the cases of cruelty, desertion, and adultery for which it was intended, but is taken advantage of to secure the annulment of many marriages by processes which savour strongly of mutual agreement and collusion. It is naturally argued that if young people who have little or nothing worse than boredom to complain of in their married lives can obtain relief without encountering any serious social disapproval, it is unjust that sufferers whose lives are wrecked without hope of recovery should have no remedy. It may be argued that in many, if not all, cases, the insane person will have done nothing for which he can be blamed. This must be admitted, but, on the other hand, as suggested above, divorce might well be confined to cases where it inflicted no penalty.

THE second report of the Welsh Consultative Council, which appears this week, recommends the establishment of a Welsh National Council of Health to provide for the development and organisation of health services and institutions in the Principality.

THE Common Council of the City of London recently voted in favour of an increase of salary from £1500 to £2000 per annum for their medical officer of health, Dr. W. J. Howarth, C.B.E. It was, however, pointed out by the town clerk that the resolution had been carried by 84 votes to 64, and that under a standing order of the Corporation a two-thirds majority was necessary in such cases before the increase could be made. Dr. Howarth will, we hope with certainty, find the Common Council willing to renew its consideration of the matter at some future date; we are assuming the validity of the by-law, or the interpretation put upon it by the town clerk, as points which must have been duly considered.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C.2.

WATER-SUPPLY:

CONSIDERATIONS ARISING OUT OF THE DROUGHT.

(BY A SPECIAL CORRESPONDENT.)

OWING to the drought, the time seems opportune for dealing briefly with current events and opinions as regards water-supply. The war and its aftermath, and the experience gained during the drought, have taught us many lessons, and we are face to face to-day with an economic position of considerable gravity. It is easy to say "hands off" as regards water-supply and public health questions generally, but it is none the less true that poverty and misery are the forerunners of disease. Beyond question it is our bounden duty to apply fresh knowledge and new experiences to the problems of preventive medicine, and see if money cannot be saved without prejudice to health.

The severity of the drought, now partially broken, is common knowledge, but the following table usefully summarises a few of the salient meteorological features of the last six months:—

Camden-square, London. (British Rainfall Organisation.)

—	Mean temp. degrees F.		Rainfall in inches.		Duration of sunshine in hours.	
	1921.	Av. 1860–1919.	1921.	Av. 1881–1915.	1921.	1920.
February ..	40·7	39·9	0·18	1·67	46·8	32·7
March ..	46·8	42·2	1·19	1·83	113·8	107·3
April	49·5	48·0	1·29	1·54	191·7	73·1
May	57·0	54·5	1·03	1·76	227·6	186·8
June	61·8	60·2	0·37	2·02	221·7	180·2
July	69·4	63·4	0·13	2·38	253·9	130·7

Official Call for Information.

An interesting step has recently been taken by the Ministry of Health. Waterworks authorities throughout the country have been circularised, and certain particulars asked for. For example: (1) the average yield per 24 hours for the year 1920; (2) the minimum yield per 24 hours during 1920; (3) the minimum yield per 24 hours resulting from the present drought. As, in some instances, the flow will continue to decrease despite the advent of rain, measurements should be continued until the point of minimum flow has been satisfactorily established. There can be no question that the information obtained will greatly assist the future development of water-supplies throughout the country, as we have now a unique opportunity of gauging the yield of water under unprecedented conditions.

It may, however, be suggested that the present time is favourable for securing a large amount of other useful information. For example, it is extremely important to know how the *quality* of our water-supplies has stood the test of the prolonged drought and the remarkable meteorological conditions which have accompanied it, and how far the floods, which must follow, will affect the position. Sanitary and waterworks authorities and medical officers of health are, no doubt, alive to the fact that the present conditions of water-supply are, apart from questions of deficiency, intensely interesting from the point of view of *quality*, and that the advent of rain will not rob the subject of its importance. Indeed, in many instances, when the fear of scarcity has disappeared, questions of purity will immediately arise. For example, what kind of water is going to be impounded, in unprecedented amount, into heavily depleted reservoirs, and are all wells, the output of which has been in most cases steadily diminishing, going necessarily to yield, in due course, exactly the same quality of water as characterised the past?

It is to be hoped that the opportunity has been, is being, and will be seized to collect information of order to avoid the implication that any one form of treatment would be practised in it to the exclusion of others. In order to preserve the individuality of the institute as a personal memorial to King Edward, it was decided not to merge it in any Government organisation like the general hospital; the Government granted a convenient site and the subscriptions amounted approximately to Rs.2¼ lakhs. The Government also obtained sanction from the Secretary of State to contribute an equivalent sum for the establishment and maintenance of the institute.

Plans and estimates, showing an expenditure of Rs.80,000, were prepared and approved, and the foundation-stone was laid by Lord Pentland on July 16th, 1917. Owing to war conditions and the difficulties connected with labour and supply of materials, progress was slow, and the costs gradually increased until expenditure amounting to Rs.280,000 was incurred. Moreover, the securities belonging to the committee, of the face value of Rs.5.15 lakhs, depreciated 50 per cent., and only the generosity of the Madras Government prevented the closing down of the tuberculosis institute, which, in temporary quarters, has given relief for the past five years to about 3000 patients per annum.

The institute has now been formally opened by Lord Willingdon, the Governor, in the presence of a large medical and lay gathering. In an introductory statement Archbishop Aelen, chairman of the committee, described the history of the institute and outlined the objects for which it had been established under the following heads: (1) relief to the tuberculous sick; (2) training of medical practitioners, students, and nurses in a knowledge of the diagnosis, treatment, and management of tuberculous patients, and public health administration connected therewith; (3) research work connected with tuberculosis; and (4) dissemination to the public by lectures and leaflets of information and knowledge relating to the disease. The chairman also explained that a tuberculosis institute was only the first unit in anti-tuberculosis measures; the second unit, in the form of a block of tuberculosis wards, had been provided by the munificence of Rao Bahadur M. C. T. Muthia Chetti, who had contributed the sum of half a lakh of rupees for the purpose. He appealed to private benefactors to help in the provision of the other necessary units—viz., a sanatorium, a farm colony, and a hospital for advanced cases. The Governor, in declaring the institute open, stated that another stage had now been reached in the attack on tuberculosis. In Dr. Chandrasekhar the institute had for its head an able and experienced medical officer, under whose guidance its progress was assured. There had been apprehension regarding the opening of a temporary tuberculosis hospital in Temple Gardens, a building situated in the midst of a densely-populated area of the city; but this arrangement was merely temporary, the intention being to construct a block of tuberculosis wards in the close vicinity of the institute, and as soon as this block was complete the hospital in Temple Gardens would be closed. On the authority of those best qualified to know, he added, there was no possible risk of infection to those residing near Temple Gardens. He hoped that before many years were over a Presidency hospital with a medical college near by might make that locality the therapeutic centre of the city of Madras.

The institute, designed by the late Mr. Thomas, consulting architect to the Government, has two storeys, with a large central hall containing a broad staircase and roofed with a dome. On the ground floor are situated the waiting rooms for patients, the examination rooms, the treatment rooms, and dispensary; while on the upper floor are the laboratories and microscope rooms and the administrative offices. The floors and staircase are of polished marble, and in this institute Madras has a memorial to the late King-Emperor in every way worthy of the Senior Presidency of India.

Madras, July 7th.

CZECHO-SLOVAKIA.

(From our own Correspondent.)

The Ministry of Public Health and Physical Education is going to open at the Prague Medical Faculty post-graduate courses for physicians in the autumn. The course for general practitioners will include theoretical lectures as well as practical exercises in all branches of medicine. Another course, organised under the auspices of the Masaryk Antituberculosis League, will be for physicians desiring to become officers in tuberculosis dispensaries. The third course will be conducted along the lines of a venereal diseases institute. It will be open not only to physicians but also to teachers and other persons interested in the problem.

Tuberculosis Death-rate.

The tuberculosis death-rate in the Republic has shown a very sharp decline in the years following the war. The curve began to decline in the years 1885, when the rate stood at 460 per 100,000, and continued slightly to decline until 1900; after the latter year the downward trend of the curve became more rapid until the outbreak of war in 1914. At that time the rate was about 320; it rose rapidly to 380 in 1916, and reached a maximum figure in 1918, the year of the influenza epidemic. The figures for 1920 show that not only has the rate reached the pre-war level again, but that the general trend of the curve has been maintained; the rate for 1920 is 275, some 50 points lower than in 1914.

Popular Health Education.

The League of Red Cross Societies is carrying out a demonstration by means of a unit for popular health education. The unit, organised by Mr. Marshall C. Balfour, of the League, consists of a director, one advance agent, and two physicians as lecturers; an organiser will shortly be added. The unit has a truck equipped with a kinema apparatus of its own; lectures on tuberculosis, venereal disease, and child welfare are given to children in schools, to workers in factories, and to the people as a whole in public buildings. Pamphlets and posters on health topics are being distributed. The unit began its work in Prague, and is now touring the country districts. Its success shows that the unit system, as developed in France by Prof. S. M. Gunn of the Rockefeller Foundation, is applicable also to the conditions in Czecho-Slovakia. An international conference on venereal diseases will be held in Prague early next October; it is being organised by the League of Red Cross Societies, and will follow the same lines as the recent conference in Copenhagen. Delegates from Poland, Hungary, Roumania, Austria, Jugo-Slavia, and Greece will be invited to attend. This conference will not only give a new impulse to the fight against venereal diseases, but will also bring together, for the first time since the war, the representatives of these countries for a peaceful discussion of common problems.

Medical Library and the Rockefeller Foundation.

The city of Prague, which is at the present time the educational centre not only for Czecho-Slovak, but also for Jugo-Slav, Ukrainian, and Russian medical students, has not hitherto had a well-organised medical library or reading room. The Ministry of Public Health and Physical Education has recently opened on its own premises a library and reading room where some 120 periodicals, including German, French, and English publications, will be made accessible to every visitor. At the present rate of exchange it has been very difficult for even the universities to secure foreign publications; for this reason the Rockefeller Foundation has offered to supply these periodicals to the universities at the cost according to the pre-war rates of exchange, the Foundation itself meeting the difference due to the deterioration of the currency.

way injuring trade interests, destroying the amenities of the district, or endangering health. Indeed, by utilising a pure moorland water for augmenting the domestic supply of Sheffield, they were greatly contributing to the prosperity and welfare of that important city, and conserving the water and financial resources of the country, inasmuch as any alternative project for providing an equal quantity of potable water would have involved the ratepayers in a capital outlay of approximately £3,000,000, compared with £350,000. The proposed method of purification was by lime and soda treatment, followed by efficient filtration.

Parliament endorsed the wise proposals of Sheffield on all points of principle, but imposed certain reservations. The Report of the Select Committee on Local Legislation which considered the Sheffield Bill stated:—

"The Sheffield Corporation Bill contained entirely novel proposals with regard to water-supply. The Corporation were allowed, after full evidence being given, to substitute for compensation water, which they are now under statutory obligation to discharge into certain rivers, an effluent from their sewage works purified to a standard required by the Bill, and which standard is based to a considerable extent on the findings of a Royal Commission of some years ago. The urgent need for, and difficulty in obtaining, a further supply of water for domestic purposes, combined with the special circumstances affecting Sheffield, make this case suitable for testing an experiment, which, if as successful as the evidence suggested, would be of incalculable advantage in other cases, where suitable conditions exist for its application."

Compensation Water: Standard Rate of Consumption and Avoidance of Waste.

A striking instance of present-day tendencies to economy in water-supply is the challenge of the necessity for providing one-third of the supply as compensation water, irrespective of the real circumstances. This is a subject which must be thrashed out in the interests of the general community; it is not a matter to be governed solely by precedent.

The drought has taught us that sooner or later, but the sooner the better, some tangible conclusions should be reached as to what is a reasonable rate of consumption per head of the population. No doubt, the circumstances vary considerably in different places, but, excluding trade interests, some figure for domestic purposes should be arrived at which is economically satisfactory without departing from the needs of decency, good sanitation, or reasonable enjoyment. The standard, whatever it may be, should never be exceeded, unless the circumstances clearly indicate that there is no financial reason why a more generous supply should not be afforded. The manner in which people generally have recently economised in the use of water has been little short of amazing, but it is still more remarkable how much less water than has been actually employed is really necessary in the interests of health.

It is not contended that a householder should of necessity in the future elect to have a supplementary rainwater supply, use his "slop" water for garden manurial purposes, his "washing" water for the watering of plants, reduce his personal ablutions to a minimum, and never use clean water for flushing operations. Nevertheless, if the householder has no leaking taps and adopts altruistic principles in relation to public water-supplies, it is an incontestable fact that, without infringing on the calls of health, or suffering any sensible hardship, a considerable saving in water consumption can be secured. It needs to be remembered that a decreased consumption of water implies correction for increase of population, and therefore postpones fresh capital expenditure, or a rise in working expenses; alternatively, when a population is stationary it usually connotes an economic gain, or an additional security, for the reason that whatever purification processes are in vogue the working expenses are either reduced, or the plant can be worked to yield the most efficient results. Indeed, it might be urged on the highest plane of all that as decreased consumption means, or should mean, a purer water, every effort should be taken to secure economy in the use of water in order to safeguard the interests of health. These matters are of special importance in the case of double-pumping schemes, and in connexion with water-supplies which require carefully contrived methods of water purification.

The Cheapness of Water.

A pure and abundant water-supply is amazingly cheap, and our outlay on public health is a mere drop in the ocean of the calls made on our purse to-day; but the fact remains that however desperately we resent other and vastly more costly expenditure on other projects, our duty to the nation to economise *in all possible directions* remains unaltered. Equally frankly it should be emphasised that the proportion of the total cost of a water-supply which can be fairly attributed to purification processes is, in most cases, singularly small.

There appears to be no evidence that the health of the community has suffered in any way as a result of the prolonged drought.

FACTORY HYGIENE IN 1920.

REPORT OF THE CHIEF INSPECTOR OF FACTORIES AND WORKSHOPS.

WE commented briefly last week on the medical aspects of the report[1] of Mr. R. E. Graves, H.M. Chief Inspector of Factories, printed in handy and convenient form similar to the publications of the Ministry of Health.

Danger in Industry.

The question of safety is dealt with by Mr. H. J. Wilson, who points out that two-thirds of all factory accidents are not due to machines, and that of the remaining one-third only a small percentage could be prevented by better guards. Education of the worker and personal care in avoiding risk are the means for preventing accidents. Safety committees, composed of workers, are the means to employ, and figures are stated which show how one such committee reduced an accident rate of 3·7 per cent. of total employees in 1916 to one of 0·8 in 1920; progress in this direction is said to be steady though slow. One point not referred to by Mr. Wilson appears to us of interest—viz., the comparatively low rate of accidents among women; in all industries 3·1 per cent. of males, but only 0·7 per cent. of females sustained accidents, while of these accidents 1·1 per cent. were fatal among males, and only 0·3 among females. Males are certainly exposed to greater risks in industry, but in the textile industries, where more women than men are employed and upon very similar work, we also find that 1·5 per cent. of males sustained accidents, and only 0·6 per cent. of females, while 1·3 per cent. of these accidents were fatal among males, and only 0·2 per cent. among females. Is it justifiable to conclude that women are "safer" animals than men, and more resistant when injured?

Mr. G. S. Taylor discusses the administration of the various codes of regulations governing safety and health in dangerous trades. Here special interest attaches to an investigation carried out by Mr. Macklin into the grinding of metals: the special danger is that from exposure to silica dust arising during the process from the old-time sandstone wheel. Now is reported the steady substitution for these grindstones of composition wheels fitted to semi-automatic machinery. Composition wheels wear away more slowly, and give rise to less dust, while the dust is less injurious as regards both size and nature, and is more easily collected and removed from the air by well-constructed exhaust ventilation. The substitution is reported to be taking place most rapidly in the cutlery trade at Sheffield with advantage to health and to finance, since the new wheels improve output; and Mr. J. Law considers that the complete elimination of sandstone will probably be reached in due course as experience determines the power, grit, grade, and bond required for the various types of grinding. The effect of this substitution is already of ophthalmia neonatorum, or more than 3 per cent. of the total births. Is this high percentage due to the large number of illegitimate births, or to the fact that every case of "slight discharge" notified by a midwife is counted as a notification? Fortunately, no permanent damage to eyesight resulted. The very marked shortage of houses is being greatly met by the Municipal Housing Scheme, which provides for the erection of 661 houses in three separate estates.

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[1] Cmd. 1403. H.M. Stationery Office. Price 1s. 6d.

Ramsgate.

In his report for 1920, Dr. W. J. Bannister describes many of the well-known advantages of Ramsgate as a health resort. The estimated population for 1920 was 29,338. The birth-rate has gone up from 17 per 1000 in 1919 to 28 in 1920. The death-rates are, as Dr. Bannister suggests, no doubt affected by the influx of aged persons and invalids who come to reside in Ramsgate in the hope of prolonging their lives. Thus among the 339 deaths there are 45 from heart disease, 40 from cancer, and 27 from phthisis. Were it not for this, one would regard a general death-rate of 13·6 compared with 12·4 for England and Wales, and a tuberculosis death-rate of 1·22, slightly higher than that of Sheffield, as somewhat paradoxical. 1920 was a year of low infant mortality rates, and a rate of 71·6 cannot be considered satisfactory for a health resort like Ramsgate. The explanation is no doubt to be found in the large number of artificially fed infants. Thus we read, on page 39, the result of inquiries as to the feeding of infants born in 1919: "Of 451 of these children, 145 were breast-fed for 9 months; 72 were breast-fed for 6 months; 94 for 3 months; and in the case of 115 attempts at breast-feeding were made." Dr. Bannister has something to say about the unsatisfactory state of the law as regards adulterated milk. One would think that these health resorts in the South of England are in an ideal position to create a demand for grade A (certified) milk. We believe it is a fact that there is not at present a single grade A (certified) dairy farm in the "Garden of England." A centre for the treatment of venereal diseases was opened during the year. No houses were built during the year, and consequently the overcrowding due to some 200 houses being occupied by more than one family continues. 26 houses were demolished, mostly houses which had been damaged by air-raids or bombardments. Dr. Bannister also submits his report as school medical officer. Of 142 children suffering from "tonsils and adenoids," only 37 received operative treatment and many cases yielded to indirect treatment, such as the removal of carious teeth. Of 478 children of the 6 to 8 group examined at the schools by the school dentist, it was found necessary to refer 215 for treatment. Satisfactory arrangements have been made for the treatment of minor ailments at the school clinic and treatment was secured for a high proportion of the children referred for treatment on account of minor ailments, visual defects, and defects of nose and throat and teeth.

The Services.

ARMY DENTAL CORPS: AMENDED RATES OF PAY.

The rates of half-pay for officers of the Army Dental Corps, which were fixed in January last at half the rates of full pay, have been amended and will now be the rates provided for other arms of the Service in terms of Army Order 324 of 1919.

THE INDIAN MEDICAL SERVICE AND JAPAN.

An officer of the Indian Medical Service may be selected to proceed to Japan next year for three years' study of the language. It is remarkable that in India the officers of the Indian Medical Service share equally with the officers of the Indian Army all the opportunities and rewards for the study of foreign language, whereas in the British Army the opportunities offered to their combatant brethren are not shared by the Royal Army Medical Corps.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. A. W. Gunn to be Surg. Lieut.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Temp. Maj. F. M. Rodgers relinquishes his commn. on ceasing to be employed at the Lord Derby War Hospital and retains the rank of Maj.

The undermentioned Capts. to be Majs.: (Bt. Maj.) G. H. Dive, (Temp. Maj.) L. C. Hayes, (Bt. Maj.) R. Gale, K. Comyn, (Bt. Maj.) F. R. Laing, (Temp. Maj.) A. S. Cane, J. M. Weddell, (Actg. Maj.) A. P. O'Connor, T. H. Dickson, H. G. Robertson, H. V. Stanley, P. C. Field, R. M. Davies, E. C. Stoney, and T. W. Stallybrass.

Lt. A. McD. Simson is secd. for service with the Egyptian Army.

ARMY DENTAL CORPS.

Capt. A. B. W. Rust to be Maj.

The undermentioned to be Lts., with the temp. rank of Capt.: Temp. Capt. N. H. Medhurst, from unemployed list, R.A.F. Dental Branch, and Flight Lt. J. H. W. Fitzgerald, Dental Surg., from R.A.F. Dental Branch.

SPECIAL RESERVE OF OFFICERS.

Lt.-Col. P. Paget to be temp. Lt.-Col., with pay and allowances as Maj.

TERRITORIAL FORCE.

Lt.-Col. A. E. Jerman relinquishes his commn. on account of ill-health and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

Capts. P. T. Tolputt and W. S. Richardson to be Majs.

Capt. J. Marshall (late R.A.M.C., Spec. Res.) to be Capt.

Capt. A. C. Pearson resigns his commn. and is granted the rank of Maj.

Capt. and Bt. Maj. C. S. P. Hamilton, R.A.M.C., vacates the appt. of Adjt., R.A.M.C. Schl. of Inst., Wessex Divn. (T.F.).

Capt. W. W. S. Sharpe, R.A.M.C., to be Adjt. of the R.A.M.C. Schl. of Inst., Wessex Divn. (T.F.).

Maj. H. W. Williams resigns his commn. and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. G. P. Chappel resigns his commn. and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. G. F. Hardy (late R.A.M.C.) to be Capt.

Capts. W. A. Milne, H. A. Philpot, and G. C. Walker resign their commns. and retain the rank of Capt.

The undermentioned officers, having attained the age limit, are retired: Lt.-Col. J. M. Moir retains the rank of Lt.-Col., with permission to wear the prescribed uniform; Maj. W. G. Sutcliffe is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Majs. A. Ehrmann, H. Dutch, and C. A. Morris retain the rank of Maj., with permission to wear the prescribed uniform.

Maj. H. Meggitt retains the rank of Maj.

Capt. T. S. Allan is granted the rank of Lt.-Col.

Capt. A. G. T. Hanks is granted the rank of Maj.

Capts. H. G. L. Allford, W. R. Murison, A. Ambrose, A. Macphail, J. F. Hall, J. K. Brownlees, and G. Eustace, retain the rank of Capt.

TERRITORIAL FORCE RESERVE.

3rd Lond. Gen. Hos.—Capt. W. S. Handley resigns his commn. and retains his rank.

DEFENCE FORCE.

Dep. Asst. Dir. of Med. Servs.—Temp. Lt.-Col. P. Paget to be Dep. Asst. Dir. of Med. Servs.

Asst. Dir. of Med. Servs.—Temp. Col. F. W. Higgs, Def. Force, relinquishes his temp. appt.

Temp. Maj. R. Davidson, Def. Force, to be Dep. Asst. Dir. of Med. Servs.

Lt.-Col. E. P. Connolly, R.A.M.C., to be temp. Col.

Capt. R. Davidson to be temp. Maj.

Temp. Cols. E. V. Gostling and F. W. Higgs relinquish their temp. commns.

The undermentioned relinquish their commns.: Temp. Majs. J. C. S. Burkitt and A. Robertson, Temp. Capts. W. Tresawna, J. C. Anderson (retains the rank of Capt.), R. M. Wilson, Temp. Lt. P. Lloyd-Williams.

2nd (Highland) Fd. Amb. (D.F.).—Temp. Capt. H. J. Rae and Temp. Lt. H. J. Dawson relinquish their commns. and retain their rank.

1st (Lond.) Fd. Amb. (D.F.).—Temp. Maj. E. Knight relinquishes his commn.

Temp. Maj. C. V. Bulstrode and Temp. Capts. H. Wilson and A. C. H. McCullagh relinquish their commns.

2nd (Northumbrian) Fd. Amb. (D.F.).—Temp. Lt.-Col. D. L. Fisher relinquishes his commn.

Temp. Capt. J. A. Stenhouse relinquishes his commn.

2nd (E. Ang.) Fd. Amb. (D.F.).—Temp. Capt. F. W. Poole to be temp. Maj.

3rd (S. Midland) Fd. Amb. (D.F.).—Temp. Lt.-Col. T. A. Green relinquishes his commn.

MEDICINE AND THE LAW.

THE DURATION OF PREGNANCY.

THE decision of the Lord Chancellor in the Gaskill case, which turned on the longest possible period of gestation, must have been anticipated by all who had followed the evidence. The husband, a soldier, had returned to duty 331 days before the birth of a large child, estimated to weigh about 11 lb. The Attorney-General was asked by the Lord Chancellor to call expert medical witnesses, and Prof. Henry Briggs, Dr. T. Watts Eden, and Dr. John Fairbairn gave evidence at the adjourned hearing. None of these witnesses was prepared to dogmatise on the impossibility of a 331 days' pregnancy, and the Lord Chancellor, having no other grounds for doubting the probity of the defendant, refused to grant a divorce. Various points of interest arose during the hearing, though the case was more of legal than of medical import. The only point of difference between the views of the expert witnesses was that Prof. Briggs, from his personal experience, maintained that the post-mature child did not invariably show increased size, weight, and general development, whereas Dr. Eden agreed with Dr. Fairbairn that he would not credit a 331 day duration of pregnancy in a hypothetical case unless the child showed decisive evidence of post-maturity. It is quite possible that some of the long cases in Prof. Briggs's own series—the longest of these lasted 306 days—may have arisen from a delay in conception, the spermatozoa remaining alive but ununited. The length of life of the ununited spermatozoa is a factor which remains unsettled, though recent German investigations suggest that it may extend up to 14 days.

Medical Precedents.

The problem set before the experts was not complicated. They were not asked to prove that pregnancy can last 331 days, but merely to state any scientific reason which would make such a duration physically impossible. The word "scientific," used so frequently by those conducting the case, was rather a bitter reminder of the difficulties attending controlled investigation in medicine, and especially in obstetrics. The medical witnesses had as the basis of their opinion only the records of other clinicians and their personal experiences, both dependent, not on trained observation under experimental conditions, but on the statements of more or less credible patients. In fact, our knowledge of the average duration of pregnancy and of its variations has been derived from reasoning which is purely deductive—from the application to a particular instance of a general law founded on experience rather than on experiment. Of what determines the onset of labour we remain ignorant. However, so constant and, within certain limits, so invariable is the period of gestation in any animal that it is almost a specific characteristic; the rarity of phenomena such as a 331 day pregnancy, reckoned from coitus, may be estimated from the fact that the longest previous record, in the series collected by von Winckel, is 315 days from coitus (336 days from the last menstrual period). In this case the child was abnormally large, weighing about 16 lb., whereas in the case under discussion no exact measurements of weight or size were taken. Surprise was expressed by the counsel for the plaintiff that the medical attendant of the defendant should not have taken special precautions to weigh the child in view of the extraordinary interest and momentous importance of a case in which his estimate of the probable date of labour, calculated from information received, was exceeded by so many weeks. The suggestion implies a degree of confidence between patients and doctors which need not, and too often does not, exist. Inaccuracy, misunderstanding, and occasionally domestic conditions may obscure the issue, and the practising doctor learns early in his career that it is impolitic to manifest too great an interest in discrepancies. However, periodical antenatal examinations are becoming more and more general, and may be expected to throw some light on these rare cases of prolonged gestation. For the record of the size of the uterus month by month gives confirmation of the dates supplied, and such records, if combined with those taken of the child after delivery, may serve in the future to differentiate cases in which the abnormal duration is due to delay in conception after coitus from cases where it is attributable to other causes. Had the defendant been a regular attendant at an antenatal centre, and given consent to the production of her case-sheet, she might have been spared the unpleasant necessity of having her virtue vindicated in open court.

The Legal Bearing.

The judgment of the Lord Chancellor in the Gaskill case did not lay down any new rule of law. It has long been established in the courts that the legitimacy of a child born in wedlock must be presumed until it is proved by evidence that sexual intercourse between the parties did not take place at any time, when by such intercourse the husband could, according to the laws of nature, be the father of the child. In the case before him Lord Birkenhead could find no evidence of adultery; only the abnormal length of the pregnancy had raised the issues. There was nothing else to point to the respondent having committed adultery, and she had denied having done so. "I can only find her guilty," said his lordship, "if I come to the conclusion that it is impossible, having regard to the present state of medical knowledge and belief, that the petitioner can be the father of the child. The expert evidence renders it manifest that there can be no such impossibility. In these circumstances I accept the evidence of the respondent, and find that she has not committed adultery." This is a finding of fact based upon medical evidence. The medical knowledge and belief of a future generation may confirm it or may not, but as a judgment of the Lord Chancellor dealing with scientific evidence upon a physiological question of obvious difficulty it will be treated with respect; unless there is good reason to dissent from it. In relation to divorce, and to questions of parentage as affecting succession to property, it is of considerable moment that a period of 331 days is to be looked upon as a not impossible period of gestation. The civil code of France and the Rhenish civil code appear to agree in placing the limit at 300 days, the common law of Prussia having recognised 302 days as possible. This presumably implies that a child might inherit property in the United Kingdom, and at the same time be denied an inheritance of property from the same source situated in France or Germany.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

King Edward VII. Memorial Tuberculosis Institute.

AT a public meeting held in Madras on May 17th, 1910, a general committee was appointed to decide the most appropriate form of memorial to the late King-Emperor Edward VII. It was resolved that the memorial should take the form of a hospital for consumptive patients, with a sanatorium or sanatoriums in suitable localities in the Presidency; a general appeal for funds was issued, and attempts were made to secure suitable sites. After some difficulty in the latter connexion, a resolution of the committee was sent to the Government in November, 1912, to the effect that the hospital should take the form of a tuberculin dispensary in the city of Madras, and that the balance of the funds should be devoted to the construction of a sanatorium in a suitable locality. The Government agreed to the proposal, but suggested that the institution be called a tuberculosis institute instead of a tuberculin dispensary, in

This is contained in the Philosophical Transactions for 1874, pp. 501–5, where he mentions cases in which the operative heat radiation originated from the faces of the experimenters.

I am, Sir, yours faithfully,
A. A. CAMPBELL SWINTON, F.R.S.
Victoria-street, Westminster, August 9th, 1921

AN INSTRUMENT WHICH IS SET IN MOTION BY VISION.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Ian D. Suttie's letter in your issue of August 6th, the desirability of further work is obvious. My researches so far have been voluntary and unendowed, but there is a limit to one's endurance, at least on the financial side. Even Dr. Suttie must take this factor into account when complaining that I have not worked out yet all the variations of the eye force in diseases, cataracts, &c. He probably has already realised that time given to research must be at the expense of any medical man who has a living to get in practice. The tone of the critical remarks of Dr. Suttie is in sharp contrast to the interested and modest observations by the leaders of science to whom I gave the demonstrations. My assistant and I were impressed of course by the natural power but penetrating acumen of these men upon the numerous occasions that the effects were demonstrated before them. I hold no academic qualifications in physics and none are attached to Dr. Suttie's letter, but perhaps this was only his modesty.

Referring to Fig. 2, I must suppose that Dr. Suttie has not yet had time to make merely a few thousand observations on a model of that type. If and when he has done so, he will find with pleasurable surprise that while applying all his will-power or psychic force, or whatever it is, the condenser will not move, provided his vision is withheld. As a general principle I may remind him of the unwisdom of invoking a force as little known and as complex as psychology to explain something demonstrably due to a variation in a known (electrostatic) state. The force is reflectable, though the slight loss of power at so many feet from the mirror had to be ignored in the reference I made (p. 223). His reference to cataracts as controls is surely a feeble suggestion, and I gave him the best illustration of a means of cutting off the force by closing of the eyes, referred to under the heading of controls.

Dr. Suttie thinks my experiments have allowed me to outrun the appropriate amount of reflection. This may be so, as I have only been pondering them for four years, and it is one week since my work has reached him by means of THE LANCET. He may have heard me at the Congress giving more than once an amiable reminder to the questioners that when current electricity had just been found out it was unreasonable to expect us to be already driving the trams and telephones and lights by its power. Dr. Suttie's closing remarks appear to group him amongst the earnest searchers after the truth. The qualifications for that position are the production of much hard work and the other sacrifices. After such efforts in our subject he may well take the matter further than I have, and then he will not be so troubled by anxieties as to what fraud or abuse it may suffer by charlatans or others, who are the equivalent of the weeds in every garden. These latter activities will thrive as long as human credulity continues to like entertainment at least as much as instruction.—I am, Sir, yours faithfully,

Beaumont-street, W., August 8th, 1921. C. RUSS.

THE FÆCES IN ALIMENTARY DISORDERS.

To the Editor of THE LANCET.

SIR,—It is evident that in my article on this subject in THE LANCET of July 2nd I have failed to make my meaning clear to Dr. Chalmers Watson. I expressed the view that, in routine examination of the fæces, a Gram-stained bacteriological film was of little help; if, however, definite organisms, such as typhoid, were suspected, it was another matter. In that case (I left my readers to assume) the appropriate bacteriological methods were to be undertaken as a matter of course. I would assure Dr. Watson that my statement in regard to the small value of a Gram-stained film is based on experience in which the coöperation of both clinician and bacteriologist has been intimate; but I welcome his insistence on the necessity for such coöperation.

I shall be glad to learn the sort of conclusions which Dr. Watson himself is able to draw from Gram-stained films. Undoubtedly in some cases there are what for clinical purposes may be called "stools of putrefaction," in others "stools of carbohydrate fermentation," each with their more or less typical bacterial flora; but these conditions can be recognised without recourse to bacteriological investigation. Sometimes these findings are linked up with some abnormal clinical condition, sometimes they are associated with apparently good health; although, even when, for example, a "stool of putrefaction" is associated with the symptoms of so-called "intestinal toxæmia," the pathology of the condition is not at all clear. Undoubtedly the recognition of these types of stool gives useful indications for treatment, especially in the matter of diet. But to assume, as some clinicians appear to do, that the preponderance of a Gram-positive or Gram-negative flora has any special significance in that connexion seems to me to be at present quite unwarranted.

I am, Sir, yours faithfully,
Liverpool, July 30th, 1921. ROBERT COOPE, M.D.

THE OBJECTIVE STUDY OF THE NEUROSES.

To the Editor of THE LANCET.

SIR,—I am afraid that Dr. F. L. Golla has pushed the bottom out of his receptacle of interesting material in the last column of the report of his third Croonian lecture in your issue of August 6th. A woman tidies up immediately before childbirth because the probable date of it has been fixed, and because she knows that her chests of drawers will be looked over by others when she is in bed. His asking a midwife whether this tidying habit was common counts just nothing as a confirmatory procedure; as well might a laboratory analyst ask his bottle-washer to decide whether such or such a result was right or no. Only when Dr. Golla writes, "We have here an instinct untainted by any possibility of mimicry, and since its existence is apparently unknown, free from any complication due to suggestion," does he seem to invite controversy, for the remainder of the lecture is extremely interesting and useful.

What about most men and women tidying up before going to bed for operations of various kinds? Are they fetching up the old nest-making instinct?

I am, Sir, yours faithfully,
HAYDN BROWN.
Cavendish-square, W., August 5th, 1921.

LABOUR AFTER CRIMINAL ABORTION.

To the Editor of THE LANCET.

SIR,—The following notes of a case may interest gynæcologists and also medical jurists. Some years ago a married woman, finding herself two months pregnant, endeavoured to procure abortion by taking pills. These failing, she went one morning and, presumably, visited an abortionist; later in the day she joined her husband, who was innocent of what was going on, and spent the afternoon shopping with him. It was not until late that evening that she was seized with pain, after giving herself a douche. The following day a doctor was sent for, who found her suffering from commencing peritonitis. The next day, 48 hours after the symptoms began, she was operated upon, when there was no sign of any wound in the vagina or cervix, but there was general peritonitis with pus in the pelvis. A perforating wound, large enough to

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Norwich.

Dr. H. C. Pattin gives the estimated population for 1920 as 125,700. The birth-rate has jumped from 16·35 in 1919 to 25·6 in 1920. The recorded death-rate —12·47—becomes 11·5 when corrected for the age and sex-constitution of the population. The infant mortality rate was 74 per 1000 births, 71 among legitimate infants and 133, or nearly double, among illegitimate infants. Dr. Pattin looks forward to the provision of better central accommodation for infant clinics and to the establishment of a model maternity hospital on the outskirts of the city. Over 1200 new babies were brought to the clinic during the year. The health visitors also act as school nurses; 2724 newly-born infants were visited and of these 475, or about 1 in 6, were reported to be ailing at the time of the first visit. Of the mothers, 2390 were reported to be healthy, 240 delicate, and 91 badly nourished; 730 infants were, for varying periods, fed with dried milk. "The results of the feeding with dried milk, on the whole, have been satisfactory—in some instances quite remarkably so." The standard income adopted for the purpose of supplying milk below cost price was 10*s.* per week per head in the family and Dr. Pattin believes that "this has worked out very fairly." Out of 2057 defects found among the school children 82 per cent. were remedied. Of the newly-notified consumptives 42 per cent. had a separate bedroom, 12 per cent. a separate bed in a double-bedded room, and 46 per cent. shared a bed. The joint scheme for treating and training consumptives of Norwich, Yarmouth, and the county at Stanninghall is making progress. Dr. Pattin does not think the attendance at the V.D. clinic is satisfactory and judges from the increase in ophthalmia neonatorum notifications that there has been some increase in the prevalence of venereal diseases; 120 new cases of gonorrhœa and 75 cases of syphilis attended the clinic from Norwich. There were 31 cases of ophthalmia neonatorum notified and one of these ended in complete blindness; the others recovered. As regards prevention of these diseases Dr. Pattin pins his faith to instruction and training of the faculty of self-control in the new generation and thinks that as regards the existing generation the practical limitation of effort to instruction concerning danger, moral suasion, and provision of treatment is not satisfactory. "The scarcity of houses persists, 48 only having been erected in 1920. The council's scheme provides for the erection of a total number of 1200; and that figure will hardly keep pace with the natural increase in population, leaving the real shortage pretty much as it is. The occupation of numbers of unsatisfactory dwellings has therefore still to be tolerated; and with this yet more unsatisfactory conditions of relative overcrowding."

The death-rate from pulmonary tuberculosis was 1·0 and from all forms of tubercle 1·3. The boot-making industry contributed 12·0 per cent. of the phthisical cases notified in the year and 20 per cent. of the deaths. As regard the prevention of tuberculosis Dr. Pattin says: "I attach more importance to the provision of adequate food than to any other measure." Many will agree with him especially if he refers to quality rather then quantity. We note that 149 smoke observations were taken and several persons cautioned. We shall not get much further with the purification of the air until local authorities realise that industrial smoke from boiler furnaces is quite unnecessary and take more drastic action against offenders.

Stoke Newington.

Dr. H. R. Kenwood's report for 1920 gives the estimated population as 52,084. The birth-rate was 23·1, against 16·8 for the preceding year, and the recorded general death-rate was 12·4, which is above that of 14 other metropolitan boroughs. The comparatively poor position of Stoke Newington among the metropolitan boroughs, Dr. Kenwood explains, is due to an exceptionally heavy incidence of whooping-cough, scarlet fever, and diphtheria. The infant mortality rate was 80·1 and the death-rate from pulmonary tuberculosis 0·7, compared with 1·0 for London. "The borough of Stoke Newington is mainly a residential area, a considerable proportion of the population being employed elsewhere. The residences comprise those of the well-to-do and the tenements of the low-wage earner." At times during the year only the more urgent cases of scarlet fever and diphtheria could be removed, owing to lack of accommodation in the Metropolitan Asylums Board hospitals. The Ministry of Health have made suggestions for improving the service given by the joint Hackney and Stoke Newington tuberculosis dispensary by the provision of an evening session, a special schools session, and an arrangement by which the time during which patients are kept waiting will be reduced to a minimum.

The work of the antenatal clinic grows. Dr. Kenwood thinks that when the midwife is more fully trained "she will become the ideal antenatal health visitor." He also voices the need for dental treatment and suggests a joint dental clinic with the education authority. The day nursery costs the borough over £400 a year and there were only 5000 attendances in 1920. We are not surprised that the committee are to consider closing it. Stoke Newington, like other towns, is suffering from overcrowding, a shortage of houses, and a difficulty in getting war arrears of repairs cleared off. Dr. Kenwood has a good deal to say, too, with regard to careless and destructive tenants, and thinks we need additional powers to punish them as a help towards their education.

Blackpool.

The estimated population of Blackpool is 70,515 and during recent years the town has had more deaths than births. Dr. E. W. Rees-Jones, in his report for 1920, submits a table showing that the birth-rate in 1878 was 38·8 per 1000, that in 1913 it was 16·25, in 1918 10·63, in 1919 11·84, and in 1920 it has risen to 16·71.

Dr. Rees-Jones tells us that the chief occupation of the inhabitants is catering for visitors, but that there is a strong tendency to establish industries, such as the manufacture of waterproof coating, which employ female labour. The industries of the town are healthy. With regard to the low birth-rate, Dr. Rees-Jones points out that there is a low proportion of married women below the age of 45 years. The percentage of illegitimate to total births has always been high in Blackpool. Thus the figures for the eight years beginning with 1913 have been as follows: 8·05, 6·87, 7·62, 8·81, 11·52, 11·18, 11·98, and 8·31. In spite of the large number of illegitimate births, the infant mortality rate was 69·6, but Dr. Rees-Jones says, "We must aim at a rate not exceeding 50." Of the 82 infant deaths, 13 were those of illegitimate infants, and 57, no less than 70 per cent. of the total, died before reaching the age of 3 months. The death-rate (corrected for age and sex constitution of the population) during 1920 was 13·63. The death-rate from phthisis (Dr. Rees-Jones apparently does not give the rate from all forms of tuberculosis) went up during the war and has now declined. The figures, beginning with 1912, are as follows: 0·79, 0·76, 1·07, 1·09, 1·06, 1·03, 1·31, 0·69, and 0·86. Dr. Rees-Jones recommends the corporation to provide dental treatment for tuberculous patients. Dr. B. F. Bartlett, assistant medical officer of health, has carried out the duties of venereal diseases officer and reports: "During the past 21 months the number of cases attending the clinic for treatment has increased ten times. The town being so largely a health and pleasure resort, with a fluctuating population, many cases are necessarily recorded as transfer cases without having completed their full course of treatment." More accommodation for the clinic is needed. There were 37 cases

ARTHUR BOWEN RICHARDS MYERS, M.R.C.S., L.S.A.,

LATE BRIGADE-SURGEON, BRIGADE OF GUARDS.

Colonel A. B. R. Myers, who as army surgeon in the late "sixties" did much work in connexion with disorders of the heart in their relation to the soldier's life, died at his residence, St. George's-road, London, on August 6th, within a few days of the eighty-third anniversary of his birth. Born in 1838 at Tenby, he was educated at St. David's and qualified M.R.C.S. and L.S.A. in 1859. After having acted as prosector to the Royal College of Surgeons of England, he joined the Coldstream Guards as assistant surgeon, and between this time and that of his appointment as surgeon-major in 1883 did most of the cardiac work with which his name is associated. He published in our columns an article on aortic aneurysm, in which he discussed the probable cause of its prevalence in soldiers as compared with sailors and with the male civilian population. He became convinced that the amount of aortic aneurysm in the army might be much diminished by the tunic being fitted more loosely round the neck and upper portion of the chest. "I cannot see," he wrote, "the propriety of making any portion of the soldier's dress so tight as to place him at a great disadvantage in regard to health, comfort, and usefulness, when actively employed, and especially now that the capabilities of each individual are being so much more studied than formerly."

In the following year he obtained the gold medal for his Alexander prize essay on the Ætiology and Prevalence of Diseases of the Heart among Soldiers. He also contributed the article on Exercises to Quain's Dictionary of Medicine, and papers on the heart and on syphilis to the Transactions of various medical societies. Whether or no Myers's theories were based on sound pathology—we have advanced far since then in our diagnostic equipment—his deductions were both wise and fruitful in results for the soldier's health and comfort.

Myers served in the Sudan Expedition of 1885 and was awarded the Suakim medal with clasp; he was promoted brigade-surgeon in 1888, and retired in 1891 with the rank of Brigade-Surgeon Lieutenant-Colonel. In later life he actively associated himself with municipal and church affairs. He was for many years a manager of the metropolitan Asylums Board; he served on the St. George's (Hanover-square) Board of Guardians, presided over a regional committee of the Charity Organisation Society, and sat on the Central (Unemployed) Body for London. This was indeed a useful life.

EDGAR FREEMAN MORRIS, M.R.C.S., L.S.A.

THROUGH the death of Mr. Edgar Freeman Morris at Hereford on July 31st from cerebral hæmorrhage the medical profession of Herefordshire is made the poorer by the loss of an able and conscientious surgeon and an honourable and straightforward colleague. He was a native of Hereford, where he was born in the year 1857. On leaving the Hereford Cathedral school he began his medical studies at University College Hospital, qualifying in 1880 as M.R.C.S. and L.S.A. Shortly afterwards he was associated in practice with his father in Hereford, and was elected a Poor-law medical officer. He joined the staff of the Herefordshire Infirmary in 1892, and at the date of his death was senior honorary consulting surgeon of that institution. He was a pioneer in the county of electrical treatment, and achieved a considerable success in the practice of this branch of medicine. A Conservative in politics and a staunch churchman, acting as vicar's warden over many years, he did not take a very active part in local municipal affairs, though he was a regular attendant on the city bench of magistrates. He was a P.M. of the Vaga Lodge of Freemasons and held provincial rank. He was chairman of the local medical war committee during the war and acted as consulting surgeon to three Red Cross hospitals. He was married twice and is survived by his widow, one son, and two daughters.

Medical News.

UNIVERSITY OF LONDON.—The following have been appointed to act as examiners for the Second Examination for Medical Degrees, Part II., in the Session 1921–22 (chairmen asterisked):—*Anatomy:* *Prof. W. Wright (Lond. Hosp. Med. Coll.) and Prof. E. Barclay-Smith (King's Coll.) together with the External Examiners (Prof. G. Elliot Smith and Dr. W. L. H. Duckworth). *Physiology:* Prof. F. A. Bainbridge (St. Bart.'s Hosp. Med. Sch.) and Prof. H. E. Roaf (Lond. Hosp. Med. Coll.) together with the External Examiners (Prof. J. S. Macdonald and *Prof. M. S. Pembrey). *Pharmacology:* Dr. P. Hamill (St. Bart.'s Hosp. Med. Sch.) and Dr. V. J. Woolley (St. Thomas's Hosp. Med. Sch.) together with the External Examiners (*Prof. F. Ransom and Prof. J. A. Gunn).

Mr. H. J. Waring has been elected chairman of the Brown Animal Sanatory Institution Committee. The Rogers Prize of £100 for 1921 has been awarded to Mr. Lambert Rogers for an essay entitled "The Surgical Treatment of Hyperthyroidism." Applications are invited for the William Julius Mickle Fellowship, of the value of at least £200, which is awarded annually by the Senate to the man or woman who, being resident in London and a graduate of the University, has in the opinion of the Senate done most to advance medical art or science within the preceding five years, and has therein shown conspicuous merit. Applications must reach the Principal Officer of the University not later than the first post on Oct. 1st, 1921. The Senate invite applications for the following readerships:—Readership in Psychology, tenable at King's College (salary £500 a year: latest date of application, Sept. 16th, 1921); Readership in Pathological Chemistry, tenable at University College Hospital Medical School (salary £700 a year: latest date of application, Sept. 15th, 1921). Further particulars may be obtained from the Academic Registrar, University of London, South Kensington, S.W. 7.

The following prizes and certificates were recently presented to successful students of the London Hospital Medical College by Mr. W. M. Pryor, Chairman of the College Board:—

"Price" Entrance Scholarship in Science, £100, R. W. Thomas; "Price" University Scholarship in Anatomy and Physiology, £52 10*s.*, W. R. Brain. Entrance Science Scholarship, £50, W. A. Taylor. Duckworth Nelson Prize in Practical Medicine and Surgery, £10, L. R. Fifield and G. H. E. H. J. Jones (equal, prize divided). Sutton Prize in Pathology, £20, D. S. Russell. Anderson Prizes in Elementary Clinical Medicine, £5, (1) K. E. Tresilian and J. L. Cox, (2) D. Waterfield and W. R. Brain (equal, prizes divided); honorary certificates, N. Gray Hill, F. C. Hunt, L. O. Lindsay, E. G. Snaith, E. W. Morris, M. C. N. Hadley, K. W. Todd and R. M. Morris. Arnold Thompson Prize in Diseases of Children, £15, J. V. Good; honorary certificates, D. J. Cox and D. S. Russell. Buxton Prize in Anatomy and Physiology, £31 10*s.*, H. W. Taylor and K. W. Heritage (equal, prize divided); honorary certificates, F. B. Byrom and D. Frost. Letheby Prizes, (1) Organic Chemistry, £15, W. A. Taylor; honorary certificates, R. W. Thomas, C. P. Donnison, J. T. Fathi and E. C. Hudson; (2) Chemical Pathology, £10, R. T. Brain. *Clinical Medicine*, £20 Prize, G. H. E. H. J. Jones; honorary certificates, M. E. Kennedy, L. R. Fifield and D. J. Fox. *Clinical Surgery*, £20 Prize, G. H. E. H. J. Jones; honorary certificate, L. R. Fifield. *Clinical Obstetrics and Gynæcology*, £20 Prize, D. S. Russell and C. S. Cloake (equal, prize divided); honorary certificate H. R. Ashton. *Elementary Clinical Surgery*, £5 Prizes, (1) L. R. Fifield, (2) A. Barker, (3) W. R. Brain and (4) S. A. Grant; honorary certificates, F. H. Mather, C. R. McClure and R. M. Morris. *Minor Surgery*, £5 Prizes, (1) M. F. B. Lynch, (2) G. King; honorary certificates, E. C. Hudson and D. J. Martin. *Practical Anatomy*, £5 Prizes, (1) F. Byrom, (2) F. C. Nicklin.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At the recent election of officers by the President and Council, Sir Humphry Rolleston and Dr. Horace G. Turney were appointed to take the place of Dr. Hector Mackenzie and Sir John Rose Bradford as Censors; Dr. G. F. Still to take the place of Dr. A. F. Voelcker on the Library Committee; Dr. W. Aldren Turner, Dr. H. Morley Fletcher, Dr. A. P. Beddard, and Dr. Charles Bolton to fill vacancies as Examiners in Medicine; Dr. J. P. Hedley, Dr. T. G. Stevens, and Dr. J. D. Barris to fill vacancies as Examiners in Midwifery. Dr. C. R. Box and Dr. Hugh Thursfield were appointed Examiners for the Murchison Scholarship.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination held from July 5th to 25th the following candidates were approved in the undermentioned subjects, but are not eligible for diplomas:—

Medicine.—Edith I. L. Abbott, Univ. Coll.; M. T. Ahmed, Guy's; N. A. Aiengar, Bombay and Guy's; O. A. Akjalg, Liverpool; Charlotte K. J. Almond, King's Coll.; S.

Correspondence.

"Audi alteram partem."

THE VOLUNTARY HOSPITAL SYSTEM.

To the Editor of THE LANCET.

SIR,—Your leading article in THE LANCET of July 30th (p. 237) is, if I may say so, both opportune and apposite. It is essential that those who support and those who criticise the "voluntary hospital system" should, as you say, agree as to "what it is of which they are speaking and thinking"; otherwise we may find that we may be agreed where we are *not precise and* precise where we are not agreed. No doubt, as Pascal said, it is desirable to define all our terms and prove all our propositions; nevertheless, as John Hunter remarked, definitions are of all things the most damnable.

When King Edward's Hospital Fund, towards the end of last year, set itself to consider what principles of policy should be put forward with a view to preserving the voluntary system, I submitted a memorandum on the subject, in which I said:—

> "It is well to have some definite notion of what is implied by the '*voluntary hospital system*.' The voluntary hospital system, as it has been generally understood in this country, usually implied: (1) That the hospital is *mainly* supported by voluntary subscriptions or endowments; (2) that the staff consists of honorary physicians and surgeons who render *voluntary and gratuitous* service to the patients; (3) that eligible patients are freely admitted, and any contributions towards expenses they can make are *voluntary offerings*; (4) that the hospital is managed by an unpaid voluntary board, elected by subscribers, and *independent of any State or municipal department or* bureaucratic control."

I then went on to point out how the voluntary system had been menaced from without and from within, and undermined in regard to all these implications. The real problem appears to be whether this undermining is to proceed further, whether the process can or should be reversed, or whether equilibrium is possible and can be preserved in the position which at present obtains.

In a paper I contributed in 1912 to the Conference of the British Hospitals Association at Birmingham, entitled "Hospitals and the State," I observed that in this as in other matters communism was replacing voluntaryism, and that—

> "We have arrived at this stage, half unconsciously, as the result of a series of legislative enactments, nearly all making in one direction, but as is our wont in this country without any very clear preconception of the end in view, and often accompanied by ingenuous disavowals of any socialistic trend on the part of the authors of the legislation in question."

I am afraid that some ardent supporters of the "voluntary system" have, no doubt unwittingly, contributed in some measure to undermining it. Lord Cave's Committee cautiously avoided defining what the voluntary system is which they are convinced is "worth saving," and of which they say "it would be lamentable if by our apathy or folly it were suffered to fall into ruin." The Report, however, adumbrates certain policies which the Committee regard as hostile to, or incompatible with, "the voluntary system." Thus they insist "if the voluntary system is worth saving, any proposals for continuous rate or State aid should be rejected," although they add "we think it is clear that in order to save the hospitals from immediate disaster some assistance must be forthwith given from public funds." Again, they regard voluntary contributions by patients as "more in accordance with the voluntary principle" than requiring a fixed charge as a condition of admission. And again in reference to staff funds, to which in your article you direct special attention, the Committee think that any extension of the practice of carrying a percentage of grants from public authorities, beyond the present limits, to the medical staff would "endanger the future of the voluntary system." The bearing of the partial replacement of an honorary visiting staff by a *whole-time paid staff, subsidised from public funds*, on the preservation of the voluntary system does not appear to have engaged the attention of the Committee.

The newly constituted Voluntary Hospitals Commission have, however, ventured where Lord Cave's Committee feared to tread, and have vouchsafed the definition of a voluntary hospital:—

> "An institution (other than an out-patient dispensary) managed by a responsible committee, and wholly or mainly supported from voluntary sources (including income derived from endowments or investments), the object of which is to provide medical or surgical treatment of a curative character."

It remains to be seen whether this definition will hold, in the light of the discussions at Newcastle and elsewhere, and some may regret with you the difficulty of maintaining unmodified the voluntary system "in which most of us have been brought up, with all its splendid ideals and occasional defaults."

I am, Sir, yours faithfully,

W. J. COLLINS.

Regent's Park, N.W., August 2nd, 1921.

THE ULTRA-MICROSCOPIC VIRUSES.

To the Editor of THE LANCET.

SIR,—In a letter published in THE LANCET of July 23rd Dr. F. W. Twort draws attention to the work of d'Herelle and his own earlier work along similar lines. If the phenomena discussed are indeed due to ultra-microscopic viruses the credit of first describing them undoubtedly rests with Twort. I wish, however, to reiterate the opinion which was expressed in a paper recently published in THE LANCET[1] that these phenomena of interference with bacterial growth are more accurately ascribed *to the production by bacteria of relatively thermostable* substances, possibly of the nature of ferments. If this view is correct, and to some such explanation Twort appears, in his paper, to lean, then the credit of first directing attention to the phenomenon undoubtedly goes to C. Eijkmann, who did much careful work on the subject, publishing a number of papers between the years 1901 and 1907. Eijkmann has not given any definite name to the substances, and the name "autotoxin" suggested by Conradi and Kurpjuweit is inaccurate in so far as the substances produced often affect other bacteria more powerfully than those producing them. On the analogy, therefore, of leucocidins we have proposed that these substances should be called "bactericidins."

I am, Sir, yours faithfully,

JAMES WALTER MCLEOD.

University of Leeds, July 29th, 1921.

THE SUPPOSED EXTERNAL EFFECTS OF HUMAN VISION.

To the Editor of THE LANCET.

SIR,—In his interesting paper, Dr. C. Russ states that the only reference in literature to the subject with which he is acquainted is a paper by Lord Kelvin in the Philosophical Transactions of the Royal Society On the Supposed New Force of M. J. Thore. Surely he means not Lord Kelvin, but Sir William Crookes, who wrote a paper under this heading in which he ascribed Mr. Thore's results to the effects of heat radiation.

Dr. Russ and others interested in the subject should, however, also study Sir William Crookes's several and voluminous papers on Attraction and Repulsion resulting from Radiation, published in the Royal Society's Philosophical Transactions from 1873 to 1879, and particularly Crookes's historical account of experiments by numerous physicists from 1792 to 1871 on the subject of repulsion by heat.

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[1] McLeod and Govenlock: THE LANCET, 1921, i., 900.

The Rev. James Marchant, Director and Secretary of the National Council of Public Morals for Great and Greater Britain, has received the honour of K.B.E.

Mails for Tristan da Cunha for despatch by the s.s. *Quest*, R.Y.S., which is to convey Sir Ernest Shackleton and his party on their Antarctic Expedition, will be accepted in London up to August 23rd.

The Dentists Act.—The Royal Assent to the Dentists Act, 1921, has been given, but no registration under its provisions can be effected until the Dental Board has been constituted, which may not be until some months hence.

Middlesex Hospital Medical School.—The winter session will open on Tuesday, Oct. 4th, when the introductory address will be delivered by Mr. G. Gordon-Taylor, at 3 P.M., after which the prizes gained during the previous year will be distributed by Sir John Bland-Sutton. The annual dinner will be held at 7.30 on the same evening at the Trocadero, Mr. Comyns Berkeley presiding.

Edinburgh Post-graduate Courses, 1921.—Post-graduate courses in connexion with the University and Royal Colleges will be held this year from August 14th to Sept. 9th inclusive, and will comprise (1) a general medical course and (2) a general surgical course. The composite fee for each course will be ten guineas for the four weeks, or six guineas for either the first or second fortnight. The medical course will include lecture-demonstrations, and, where possible, practical instruction on medical anatomy, medical side-room work, examination of the blood, X ray and electrical therapy, morbid anatomy and post-mortems; clinical instruction in medicine, diseases of children, diseases of the skin, and infectious diseases; and special instruction in the methods of examination of the nervous, circulatory, respiratory, alimentary, and renal systems. The surgical course will include lecture-demonstrations on surgical anatomy, surgical pathology, and surgical X ray diagnosis; clinical instruction in surgery at the Royal Infirmary and Royal Hospital for Sick Children; clinical instruction in venereal diseases; surgical out-patients; surgical and gynæcological operations; and special instruction in abdominal and renal surgery and the surgery of the mamma. A series of special lectures, open to all graduates, will be delivered thrice weekly during the month, on subjects of general medical and surgical interest. Further particulars of the courses may be had on application to the Hon. Secretary, Post-graduate Courses in Medicine, University New Buildings, Edinburgh.

County of London Panel Committee.—The recently concluded course of post-graduate lecture demonstrations in general medicine at Charing Cross Hospital having proved a great success, the Panel Committee are encouraged to arrange further courses during the coming autumn. The subject to be dealt with will depend upon the choice expressed by the majority of those joining, and will be either general medicine, general surgery, or midwifery and gynæcology. If sufficient names are obtained two or more courses may be arranged. The fee for any course will be 3 guineas, payable in advance to the Secretary of the Panel Committee. Practitioners desirous of joining should notify the Secretary of the Panel Committee as soon as possible, and will assist if they will enter for more than one course, signifying the course for which they have most preference.

Charing Cross Hospital.—A course of ten lecture demonstrations in clinical pathology will be held in the Institute of Pathology, Charing Cross Hospital, during September, October, and November, 1921. Lecturers: Dr. W. M. C. Topley, director of the institute, and Mr. Cole, university lecturer in biochemistry, Cambridge University. Fee for the course, 3 guineas, payable in advance to the Secretary of the Panel Committee.

St. Thomas's Hospital.—A further course on venereal diseases will be held during September, October, and November, 1921. Colonel Harrison, D.S.O., will give the lectures and supervise the practical teaching. Fee for the course, 3 guineas, payable in advance to the Secretary of the Panel Committee.

South-Eastern and North-Eastern Fever Hospitals.—The Panel Committee have arranged with the Metropolitan Asylums Board, for two courses of clinical demonstrations on the Diagnosis of Fevers and Treatment of Diphtheria, to be held (1) at the South-Eastern Fever Hospital, Avonley-road, New Cross; (2) at the North-Eastern Fever Hospital, St. Ann's-road, South Tottenham, N. The courses will commence on or about September 29th, and will consist of six demonstrations with cases. Each class will consist of not more than 12 members. Practitioners desirous of joining should make early application; the fee for each course will be £1 12s., payable in advance to the Secretary of the Panel Committee.

United States Public Health Service.—The hospital programme of the United States Public Health Service is being rapidly developed; nine new hospitals, which will accommodate more than 3000 patients, will shortly be ready for use. Three of these, in Iowa, Montana, and Oregon, with space for about 500 patients, should be in operation within two months. The Colfax hotel, at Colfax, Iowa, a building with over 130 acres of grounds, is being fitted to receive 200 patients. The Army hospital at Fort William Henry Harrison, near Helena, Montana, will be opened with 100 general patients, but may later be greatly expanded. It is hoped to open the hospital at Dawson Springs, near Hopkinsville, Kentucky, with 500 tuberculosis patients within five months. The Hahnemann Hospital at Portland, Oregon, for 164 general patients by July 1st, and the Speedway Hospital, at Chicago, for 1000 general patients, have already been completed. Of three Army forts handed over by Congress to the Health Service, that at Fort Walla Walla will shelter 284 tuberculosis patients; Forts McKenzie (Wyoming) and Roots (Arkansas) are each planned to accommodate more than 600 cases of nervous and mental disease. A naval station at Gulfport, Mississippi, has just been taken over from the Navy, and will be utilised as a hospital or home either by the Public Health Service or by some other branch of the Government.

Leeds Workpeople's Hospital Fund.—In 1887 an arrangement was made between this association and the charitable institutions of the city whereby the latter abstained from approaching the wage earners for direct support to the charities, but relied upon the systematic collection by a committee of workpeople of weekly subscriptions from men, women, and children in receipt of wages. Until recently the amount subscribed was one penny per week from each man, and one halfpenny from each woman or child. During the last 12 months an appeal has been made to the workpeople to double their subscriptions; additional collections are now made in the various clubs and public houses of the city and in some of the elementary schools; ward competitions and the annual gala also bring in varying sums. The total income for the year covered by the annual report amounted to £39,739, a sum exceeding that subscribed in any previous year, showing an actual increase over the past year of £13,931. The Fund makes grants to the various medical charities of the city, the General Infirmary always receiving the largest amount, which this year reached the sum of £20,000. The Leeds Public Dispensary receives £3000; the Hospital for Women, £2500; the Maternity Hospital, £1000; the Jewish Hospital and District Nursing Home, £1000; and smaller institutions, £75 to £50. In addition to the provision of money for the medical charities the Fund has purchased, and now administers, three convalescent hospitals, one for men and two for women. The benefits of these homes are limited to the subscribers to the Fund, but admission to them is not regarded as a right of any subscriber, applications being carefully dealt with at a weekly meeting of the committee.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, August 15th.—12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Simmonds: Visit to Surgical Wards. 4.30 P.M., Dr. Paterson: Enlargements of the Abdomen.

Tuesday.—2 P.M., Dr. Burrell: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 4.30 P.M., Lecture:—Dr. Burnford: Clinical Medicine (I.).

Wednesday.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department. Mr. Addison: Operations. 4.30 P.M., Lecture:—Mr. Gibb: Ulceration of the Cornea (I.).

Thursday.—11.30 A.M., Obstetrical Registrar: Gynæcological Demonstration. 2 P.M., Mr. Simmonds: Orthopædic Department. Mr. D. Armour: Operations. 4.30 P.M., Lecture:—Mr. MacDonald: Enlarged Prostate.

Friday.—10 A.M., Mr. D. Buxton: Dental Department. 12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 4.30 P.M., Lecture:—Mr. Simmonds: Surgical Emergencies (I.).

Saturday.—10 A.M., Dr. Burnford: Visit to Medical Wards. 12 noon., Mr. Sinclair: Surgical Diseases of the Abdomen.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-Patient, Out-patient Clinics and Operations.

admit the tip of the little finger, was visible in the fundus of the uterus. The edges of the wound were sloughing. The patient's condition next day was apparently so hopeless that an attempt was made to obtain her dying deposition. She obstinately refused, however, to admit that any illegal operation had been done on her. With even greater obstinacy she refused to die, and after a long illness recovered.

She had been told that her illness must have destroyed any chance of her ever having children. About a year later she informed her doctor that she was again pregnant. Considering the damaged condition of her abdominal wall and the probability of adhesions, it seemed inevitable that labour would be difficult and that trouble might arise in the third stage of labour. Her confinement took place in due course, labour being easy and quick and the puerperium normal in every respect. To the obstetrician the case is an interesting illustration of the capacity of the uterus for recovery, and of the danger of foretelling a difficult confinement. To the medical jurist the case is important as the woman seems to have spent an afternoon shopping after perforation of the uterus with a weapon, however caused. In the law courts recently an eminent specialist stated in evidence that such a thing would be impossible, and, apparently, that definite expert pronouncement had an important bearing with the judge and jury. The case narrated above, therefore, also illustrates the danger of stating in a court of law that anything in medicine is impossible.

To any medical man interested in the case from the point of view of medical jurisprudence further details will be supplied.

I am, Sir, yours faithfully,
July 31st, 1921. X.X.X.

PRIVATE AND PANEL PRACTITIONERS.

To the Editor of THE LANCET.

SIR,—In the last paragraph under Public Health Services in your issue of August 6th, you state that "technically an insurance practitioner is entitled to charge a fee to the patient of another practitioner" who comes to the former for treatment in preference to his own "panel doctor," but you go on to say that "any practice of this sort would tend to be seriously prejudicial to the medical service for the insured." Why and how thus prejudicial? The panel doctor for whom the person has in the first case "signed on" for gets *his* capitation fee legitimately, though he does nothing for it, the second panel doctor gets his *fee* from the patient willing to pay it, and the insurance funds are saved the expense of medicine or anything ordered by the second doctor, for as the patient is a "private" one the second panel doctor either supplies it or sends his patient to a chemist with a prescription—presumably not to be supplied at the cost of the insurance finances. And the patient gets *his* satisfaction by consulting the medical man he wishes to consult. The patient can, of course, transfer to the practitioner he desires to attend him, but until he does so I do not understand how such a proceeding can be so terribly prejudicial to the medical service for the insured.

I am not and have never been on the panel list and I hope I shall never be compelled to put my name on it, but I am brought into contact daily with many panel practitioners and I am interested in questions concerning panel practice.

I am, Sir, yours faithfully,
August 6th, 1921. NON-PANEL.

AN APPEAL FROM THE RUSSIAN RED CROSS.

To the Editor of THE LANCET.

SIR,—As a Russian practising in this country permit me to associate myself with the stirring appeal made by my colleague, Dr. Belilovsky. I feel confident that the British medical profession, which has always been most responsive to any appeals in the name of humanity to alleviate suffering, will not turn a deaf ear to such a heart-rending S.O.S. from my unfortunate country. I view with great satisfaction that the International Red Cross Committee and the acting Director of the League of Red Cross Societies have jointly issued a statement proposing the formation of an international relief organisation to coördinate the activities of all the voluntary bodies. The Supreme Council, too, is giving attention to this urgent problem. But meanwhile what is needed is immediate assistance from each individual doctor in this country and from the British medical profession as a whole.

I am, Sir, yours faithfully,
L. ZEITLINE, M.R.C.S. Eng.
Gateshead, August 9th, 1921.

Obituary.

WILFRED W. E. FLETCHER, M.B.CAMB., D.P.H.,

LATE MEDICAL INSPECTOR, LOCAL GOVERNMENT BOARD.

IT was with great sorrow that the many friends of Wilfred William Ernest Fletcher heard of his death on July 31st, at the age of 64, in a London nursing home after a serious operation. In compliance with his expressed wish he was buried in the graveyard of his native village of Tarleton, which lies about eight miles from Ormskirk. Dr. Fletcher was a Lancashire man and came of an old clerical family well known in the county, his father having been for many years rector of Tarleton, and his late brother rector of Chorley and archdeacon of Blackburn. He was educated at Rossall School and Caius College, Cambridge, his medical studies being carried out at St. Bartholomew's Hospital. He took his B.A. degree in 1881 and his M.B. in 1884, in which year he obtained also the M.R.C.S. and L.S.A. Later he took the D.P.H. Not long after obtaining his medical qualifications Dr. Fletcher was appointed whole-time medical officer of health for the West Lancashire Rural District, and this post he held until 1892 when he was invited to join the medical department of the Local Government Board. This latter appointment he relinquished in 1917 after completing 25 years' service as a medical inspector. After his retirement the post of medical officer of health for the Metropolitan Borough of Hackney became suddenly vacant, and Dr. Fletcher was offered the temporary appointment until the end of the war, or until such time as a suitable permanent officer could be found. He filled this appointment for about two years and performed his duties to the entire satisfaction of the Council and of the staff which served under him. His genial personality was well known throughout a large part of England, especially in the Midlands and the North-Western Districts, in which he conducted many public inquiries, and numerous printed reports by him were published by the Local Government Board. It may be remembered that one of his more recent and interesting reports concerned a joint inquiry made by himself along with a superintending inspector of factories and a senior labour adviser of the Home Office, regarding the alleged danger of the transmission of certain diseases from person to person in weaving sheds by means of what is known among factory workers as "shuttle-kissing."

Fletcher was very popular with his colleagues at Whitehall, as also with the large number of medical men with whom he came in contact in the discharge of his official duties. His kindly disposition and engaging personality often turned opponents into friends. He held strong and pronounced views on politics, but his transparent honesty of purpose and his candour led those who differed from him to listen to his arguments even when expressed in somewhat forcible language. He leaves a widow to mourn his decease.

rates in respect of boys and girls between the ages of 16 and 18. The State does not make a weekly contribution to Health Insurance but provides two-ninths of the costs of benefit and the administration thereof. The State contribution to Unemployment Insurance is one-fourth of the contributions from employers and employed, that is, 3¾d. weekly in respect of men and 3¼d. weekly in respect of women.

Staff of Pensions Ministry Hospitals.

Mr. Hayward asked the Minister of Pensions what was the total number of patients and the total number of staff (including administrative, medical and nursing staff, and all other employees), respectively, employed at each of the following hospitals: Shepherd's Bush, Netley, Orpington, Ruskin Park, and Bellahouston.—Major Tryon supplied the following printed statement:—

	Staff.*	In-patients.	Out-patients.
Shepherd's Bush	412 (*a*)	543	511
Netley	109 (*b*)	191	90
Orpington	458 (*c*)	923	2
Ruskin Park	247 (*d*)	327	436
Bellahouston	344 (*e*)	717	1168

* Including part-time medical officers.

(*a*) Includes 265 domestic and lay assistants.
(*b*) ,, 61 ,, ,, ,,
(*c*) ,, 362 ,, ,, ,,
(*d*) ,, 136 ,, ,, ,,
(*e*) ,, 177 ,, ,, ,,

I may add that the proportion of staff to patients varies with the type of case treated in the hospital and with the structural arrangements of the hospital.

Friday, August 5th.

Criminal Law Amendment Bill.

The House considered the Criminal Law Amendment Bill on Report.

Mr. Macquisten moved a new clause providing that "any act of gross indecency between female persons shall be a misdemeanour and punishable in the same manner as any such act committed by male persons under Section 11 of the Criminal Law Amendment Act, 1885." This clause, he said, was one which was long overdue in the criminal code of the country. He had had professional experience of calamitous cases due to gross practices indulged in of this kind. These moral weaknesses dated back to the very origin of history, and when they grew and became prevalent in any nation or in any country it was the beginning of the nation's downfall. The falling away of feminine morality was to a large extent the cause of the destruction of the early Grecian civilisation, and still more the cause of the downfall of the Roman Empire. One could not go into the details; it was more a matter for medical science and for neurologists, but all lawyers who had had criminal and divorce practice knew that there was in modern social life an undercurrent of dreadful degradation unchecked and uninterfered with. He believed if the punishment of the law were imposed upon it it would go a long way to check and even to eradicate it. Neurologists would tell them how largely the spread of the use of cocaine and other drugs was due to the dreadful nerve deterioration which beset many of the idle part of the population. He had seen happy homes wrecked in this way. Only that night he had been speaking to a man, whom he had known for a comparatively short time, and who told him how his home had been ruined by the wiles of an abandoned woman who had pursued his wife, and later some other misconduct happened with a male person which enabled him to get a divorce. This was a matter with which it was necessary to deal on account of its civil and sociological effects.

Major Farquharson said that on behalf of those who were promoting the Bill he was very pleased to accept this new clause.

Colonel Wedgwood could not believe that the House would pass the clause, which would advertise a beastly subject. To call in the policeman to suppress a vice was the best way to encourage the knowledge of that vice and the spread of it. On the other hand it would lead to endless blackmail.

Sir E. Wild said that if hon. Members were to consult any neurologist, any great doctor who dealt with nerve diseases, they would be told that this was a very prevalent practice. He had the authority of one of the greatest nerve specialists for saying that no week passed that some unfortunate girl did not confess to him that she owed the breakdown of her nerves to the fact that she had been tampered with by a member of her own sex. He (Sir E. Wild) had consulted many asylum doctors and they assured him that the asylums were largely peopled by nymphomaniacs and people who indulged in this vice. He had also consulted the criminologists and they said that these practices took place. This vice did exist, and it sapped the fundamental institutions of society. It stopped childbirth, because it was a well-known fact that any woman who indulged in this vice would have nothing to do with the other sex. It debauched young girls and produced neurasthenia and insanity.

On a division the clause was read a second time and added to the Bill by 148 votes to 53.

Sir R. Newman moved to leave out the provision in Clause 1 (consent of young person to be no defence) to the effect that the party consenting should be guilty of a misdemeanour if he or she was of the age of 15 years. He urged that this provision would make it impossible to get a conviction, because it was really on the evidence of the child herself that in nine cases out of ten the case against the prisoner mainly depended.—Mr. Hohler seconded. On a division the amendment was negatived by 167 votes to 27.

Sir E. Wild moved to leave out Clause 2 (removal of defence of reasonable belief as to age of girl). With all the desire in the world to promote morality and protect young people against themselves it was not fair that this only defence a man had should be taken from him.—Major Hamilton seconded.

Mr. Shortt (Home Secretary) hoped the House would not accept the amendment.—Major Farquharson, speaking as a physician, appealed to the House to let the clause stand as a mere physical protection to the race.—On a division the amendment was negatived by 103 votes to 49.

The Report stage of the Bill was concluded. The motion for the third reading of the Bill was carried by 101 votes to 8.

Tuesday, August 9th.

Poison Antidotes Bill.

Brigadier-General Surtees introduced a Bill to provide that the receptacle of each poison sold by retail shall bear a printed description of an antidote for that poison. The Bill was read a first time.

Overcrowding at Dartmouth.

Mr. Rawlinson asked the Financial Secretary to the Admiralty whether the medical advisers of the Admiralty early in the year warned the Admiralty of the risks of overcrowding involved in the increased number of cadets at Dartmouth; whether the cadets were now sleeping in dormitories with less than 3 feet between bed and bed; whether some of the beds were directly under the windows and on more than one occasion the beds had been soaked with rain; whether the cubic space of air allowed per cadet was less than the space insisted on in industrial schools; and whether he would reduce the numbers at Dartmouth next term, either by sending more cadets to sea or otherwise.—Mr. Amery replied: As regards the first part of the question, I would refer to the replies on the subject already given to the hon. Member on March 23rd and April 5th respectively. The answer to the second part of the question is in the affirmative. As regards the third part, owing to the construction of the dormitories and the large amount of window space, it has been found necessary for a proportion of the beds to be placed to a greater or lesser degree directly under the windows, but the bottom halves of the windows can be easily closed in bad weather, leaving fanlights in the upper part open for ventilation, and, if necessary, the windows on one side of the building can be closed entirely. No reports have been made to the authorities at the College of any beds being wetted by rain. With regard to the fourth and fifth parts of the question, the amount of cubic space of air provided during the past term per cadet is more than double that insisted upon by the Home Office in the case of industrial schools, and under the arrangements already made the number of cadets at Dartmouth next term will be reduced to 540, as against 586 during the present term. This number will be further reduced in January next to about 495. I may add that, during the present term, there has been an almost complete absence of sickness amongst the cadets.

Coroners' Inquests in Ireland.—For some months past the holding of coroners' inquests has been prohibited in 24 counties and four county boroughs in Ireland. The absolute prohibition was revoked last week, and a fresh order was issued which permits coroners and juries to function "in any case in which the holding of an inquest may be authorised by the competent military authority." Our correspondent writes: It would have been wiser to maintain an absolute edict against the functioning of coroners, until the prohibition can be completely removed. The delegation of certain inquiries to a coroner and jury, and the choosing of others for military investigation, whether public or secret, is sure to arouse suspicion.

Annecke, Guy's; Ruth M. Arkwright and Marjorie H. S. Auden, St. Mary's; Joyce Rayner Batten, Univ. Coll.; D. P. Bhargava, Lucknow and London; E. E. L. Burnier, Lausanne; A. E. Collie, Middlesex; M. Critchley, Bristol; J. G. D. Currie, Cambridge and St. Thomas's; Muriel A. M. Davies, St. George's; A. H. Douthwaite, Guy's; Emmie D. Fenwick, St. Mary's; E. C. H. Foreman, Univ. Coll.; J. E. Gardner, St. Bart.'s; R. Goodman, Charing Cross; Doris M. Hammond and Kathleen M. D. Harding, St. Mary's; Margaret Haywood, Royal Free; B. Homa, St. Bart.'s; *Isobel E. Imison, Liverpool*; Eva M. Johnson, Univ. Coll; R. J. Jones, Liverpool; R. G. Karn, Univ. Coll.; J. Kindness, Charing Cross; Kathleen H. B. King, Royal Free; F. Knoyle, Middlesex; A. H. Kretchmar, St. Bart.'s; Geraldine N. Longford, St. Mary's; J. A. Mackay-Ross, St. Bart.'s; Y. Maximos, Middlesex; O. E. J. McOustra, Univ. Coll.; Iva Claro M. Molony, St. Mary's; J. B. G. Muir, Middlesex; H. A. Nathan, Charing Cross; C. P. Oliver, St. Thomas's; F. A. Pickworth, Charing Cross; Kathleen M. Platt, Liverpool; F. W. M. Pratt, Durham and St. George's; J. A. Prichard, Bristol; A. R. Rutnam, Middlesex; F. L. Rayner, Guy's; T. R. Rees, St. Bart.'s Hilda E. Reynolds, Bristol; E. H. Richards, Guy's; Effie F. A. Samter, Manchester; Margaret C. Scrace, Royal Free; Creina Shepherd, King's Coll.; A. I. Solberg, Leeds; S. Suvansa, St. Bart.'s; R. O. Swaine, Middlesex; N. S. Taylor, *Liverpool*; *Norah Walden, Royal Free*; J. R. Wright, Manchester; and Eva Young, Royal Free.

Midwifery.—Edith I. L. Abbott, Univ. Coll.; M. Ahmad, King's Coll.; M. T. Ahmed, Guy's; Marjorie H. S. Auden, St. Mary's; S. Annecke, Guy's; Helen R. Ashton, London; J. R. *Azurdia, Liverpool*; *Joyce R. Batten, Univ. Coll.*; A. O. Bekenn, Birmingham; H. S. Bell, St. Bart.'s; D. P. Bhargava, Lucknow and London; S. Bloom, St. Bart.'s; A. M. F. Browne, St. Mary's; E. E. L. Burnier, Lausanne; A. W. Carleton, Middlesex; W. R. Carling, Cambridge and Guy's; K. A. *Carter, Univ. Coll.*; N. E. D. Cartledge, St. Bart.'s; T. H. Cathrall, Oxford and London; H. R. Chibber, Liverpool; T. J. Clayton, Charing Cross; W. L. S. Cox, Univ. Coll.; W. Dabbs, Birmingham; Edith M. P. Davies, Royal Free; T. H. R. Davies, Univ. Coll.; Enid M. Dixon, London; A. H. *Douthwaite, Guy's*; Alice E. Dove, Univ. Coll.; H. O. Eksteen and M. A. El Biblawi, Guy's; Mary C. Elliot, Univ. Coll; C. E. Fenton and L. R. Fifield, London; Lydia S. Fuller-Maitland, St. Mary's; J. E. Gardner, St. Bart.'s; A. A. Gemmell, Cambridge and Liverpool; T. J. E. *Gittins, Birmingham*; Louisa P. Gordon, King's Coll; E. H. Griffin, Guy's; H. G. Hall, Univ. Coll.; B. D. Hughes, St. Bart.'s; Isabel E. Imison, Liverpool; J. Jackson, St. Bart.'s; E. R. Jagger, Manchester; Eva M. Johnson, Univ. Coll.; E. M. Jones, St. Bart.'s; H. B. *Jones, Guy's*; R. J. *Jones, Liverpool*; A. T. L. Kingdon, Univ. Coll.; A. H. Kretchmar, St. Bart.'s; F. I. Labieb and E. G. Lewis, Charing Cross; E. V. Lupprian, St. Mary's; W. S. McClinton, Toronto and Charing Cross; D. C. McIntosh, Univ. Coll.; *D. W. McKay, Toronto*; F. H. *Mather, London*; F. R. L. *Miller*, St. Bart.'s; C. Minasian, St. Mary's; W. E. M. Mitchell, H. W. Needham, and G. J. V. Nelken, St. Bart.'s; K. Olafsson, Iceland and St. Bart.'s; T. C. Oliver, London; C. L. Ousep, Madras; Hilda W. Page, Univ. Coll.; H. M. *Palmer*, Cambridge and St. Thomas's; J. N. D. *Paulson* and *Evelyn V. Pilley*, St. Mary's; Edith C. Phelps and Betsy Porter, Royal Free; Gladys H. Randall, Charing Cross; E. H. Richards, Guy's; H. R. Rishworth, Charing Cross; A. E. Roche, Cambridge and St. Bart.'s; A. T. Rogers, Guy's; Dorothy W. Roughton, London; A. H. M. Sabry, *Charing Cross*; Elaine M. K. Salmond, Royal Free; S. Sandler, London; Norah B. A. Sankey, St. Mary's; Ena M. Sansom, Royal Free; C. Satyaraju, Madras and London; L. Segal, Charing Cross; C. D. Shapland, Univ. Coll.; N. F. Shaw, Middlesex; Vera E. Shaw, St. Mary's; J. W. Sinclair, Toronto; E. G. Snaith and J. Solomonoff, London; Mary A. E. Somers, Bristol; Eleanor C. E. Stone, St. Mary's; H. A. Surial, Birmingham; M. L. Sutcliffe, Univ. Coll.; Annie D. Symons, Royal Free; L. M. Teuten, St. Mary's; W. Thomas, London; W. T. de V. Thomson, Liverpool; P. H. T. Thorlakson, Manitoba; H. Tothill, St. Bart.'s; A. Vasudev, London; A. H. C. Visick, St. Bart.'s; K. L. Ward, London; B. G. Watson, Birmingham; J. L. Wesley-Smith, Leeds; Hilda M. Whitfield, *Univ. Coll.*; *C. E. Whitting*, Cambridge and St. Thomas's; Catherine M. Williams, L. S. Woolf and A. D. Wright, St. Mary's; and Eva Young, Royal Free.

Surgery.—Helen R. Ashton, London; T. J. D. Atteridge and S. Bloom, St. Bart.'s; *J. G. B. Brass, London*; A. W. Carleton, Middlesex; Linda Catmur, London; H. O. Eksteen, Guy's; L. R. Fifield, London; M. Garden, Univ. Coll.; Kate Glyn-Jones, London; C. M. Gwillim, St. Bart.'s; F. J. S. Hall, St. Mary's; Margaret Haywood, Royal Free; W. Laing, St. Bart.'s; I. B. McCann, Guy's; D. W. McKay, Toronto; Frances M. Margerison, Charing Cross; G. J. V. Nelken, St. Bart.'s; Enid M. Powell, Charing Cross; J. J. Rowlands, London; Elaine M. K. Salmond, Royal Free; A. I. Solberg, *Leeds*; *D. D. C. Thomson, London*; Helen C. Tompson and Norah Walden, Royal Free; C. E. Whitting, Cambridge and St. Thomas's; and J. R. Wright, Manchester.

St. Thomas's Hospital Medical School.—Mr. R. A. Hill has been elected to an Entrance Arts Scholarship (1921, value £25), and Mr. J. M. Ashton has been elected to an Entrance Science Scholarship (1921, value £150).

Westminster Hospital: Annual Dinner.—The annual dinner for past and present students of Westminster Hospital will be held on Friday, Oct. 7th, at the Great Central Hotel. Sir Charles Ryall will occupy the chair.

Donations and Bequests.—Ancoats Hospital, Manchester, has received sums amounting to over £930, including £637, the proceeds of St. Jerome's Church (Ardwick) Bazaar, and £121, the proceeds of a swimming gala held by the Manchester Victoria Swimming and Life-Saving Society. The board of management of the Royal Infirmary, Manchester, in addition to a number of new annual subscriptions and increased annual subscriptions, acknowledge the receipt from various donors of £203.

Manchester: Precautions against Infantile Diarrhœa.—The Manchester Health Authority has issued a timely warning to parents of the dangers of infantile diarrhœa, particularly at this time of year and with the coming of rain after the long spell of hot weather. The local by-laws as to the removal of breeding places of the common fly in manure heaps are systematically and efficiently enforced; all stables are inspected, and arrangements made for the removal of refuse at least once a week, the incubation of flies being thus cut short. Householders are asked to assist in the work by burning all refuse and maintaining a high level of cleanliness on their premises. *It is advised that all food and milk be protected from contact with and contamination by flies or germ-breeding dust; that the soiled garments of infants be placed at once in a weak disinfectant solution of chloride of lime;* and that infants at the breast should, if possible, not be weaned during the hot months. The importance of securing immediate medical attention for a child attacked by diarrhœa is emphasised; if a private medical man is not available the child should be taken to one of the widely-scattered child-welfare centres. Steps have been taken to supply each householder with cards for notification, and the arrangements are so complete that public coöperation should secure effectual treatment of any outbreak which may occur.

Medico-Psychological Association of Great Britain and Ireland.—*The annual meeting of the Association was held on July 12th to 14th, at the home of the Royal* Society of Medicine and at the Springfield Mental Hospital, Tooting. The proceedings opened with the business meeting, under the presidency of Dr. W. F. Menzies, when a sincere tribute was paid to the lifelong work in the specialty of the recently deceased Sir George Savage; and a vote of condolence with the members of his family was passed by members rising in their places. The remaining sessions were presided over by Dr. C. Hubert Bond, the new President.

A large number of members were entertained at luncheon by Mr. A. H. Trevor (a legal member of the Board of Control) and the dinner was made memorable by the attendance of the Lord Chancellor, *the Minister of Health, and a really representative gathering of both professions.* Both Lord Birkenhead and Sir Alfred Mond assured the gathering of their sympathy with the aspirations of those concerned with the care of the mentally afflicted, and of their readiness to do their best to bring about the realisation of their aims. The retiring President and officers were cordially thanked. The new President's address was then delivered, and appears in this issue of The Lancet. Sir Robert Armstrong-Jones, in proposing a cordial vote of thanks to Dr. Bond for his address, referred to the great help given to psychological medicine during the war by Sir Alfred Keogh, and to the increasing attention being *given to borderline cases of* mental disorder. *Dr. J. G. Soutar seconded, and alluded to* the enthusiastic *work done for the Association by Dr. Bond when he was its general secretary.* The vote was carried by *acclamation.*

Among the subjects on which papers were contributed, practically all followed by long discussions, were:—Dr. P. W. Bedford: The Goldsol Test in Mental Disease. Dr. Edwin Goodall: Demonstration of X Ray Photography of Barium Meals in Cases of Dementia Præcox. Dr. E. Goodall and Dr. H. A. Scholberg: A Note on the Diastase-Contents of the *Urine in 120 Cases* of Mental Disorder. Dr. T. S. Good: *The Oxford Clinic (followed by a memorable speech by Prof.* Robertson, Edinburgh). *Dr. C. S. Myers*: Psychological Medicine in Relation to *Industry.* Dr. Edward Mapother and Dr. J. E. Martin: Recurrent Phantasies of Infancy and Childhood as a Source of Delusions. Dr. Wilfred Caroleu: Legislative Restrictions in Connexion with the Treatment of Incipient Insanity. Dr. G. A. Auden: Mental Defect and the School Medical Service. Dr. Henry Devine: Expatiation Mechanism in a Case of Schizophrenia. Dr. Bernard Hart: The Problem of Prevention in the War Psycho-neuroses. *Dr. W. Ford* Robertson: *Chronic Bacterial Infections in Dementia* Præcox. *Dr. T. Beaton*: *Change of Phase in the Psychoses. Dr. Henri Colin (Paris)*: Mental Hygiene and Prophylaxy. Dr. J. T. Dunstan: The Feeble-Minded Problem in South Africa. Prof. William Brown: Psychology and Psychotherapy. Friday was devoted to visits to various mental hospitals, and the meeting at the Springfield Hospital was followed by a garden party.

Notes, Short Comments, and Answers to Correspondents.

THE PROBLEM OF THE HEAD LOUSE.*

By G. A. Auden, M.D. Cantab., F.R.C.P. Lond., D.P.H.

The war has taught us much concerning the life-history and habits of the head louse, and moreover has shown that disinfestation is by no means the easy matter it was at one time supposed to be. This is true of both the head and body louse. It is with the former that I propose to deal in this paper.

With the absence of any proper conveniences, in an overcrowded home, amidst her multifarious duties, it is not altogether surprising that many a mother gives up in despair the attempt to keep her children's heads free from infestation. However, it is really quite uncommon nowadays to find a child who has not had some form of anti-louse treatment. This has been one of the difficulties in my investigation detailed below. It will be admitted that, in view of these difficulties, the discovery of an effective agent for the disinfestation of the head would be a great social service to the community.

Necessary Properties of Effective Agent.

Such an agent, to be of general value, must be (1) non-toxic, (2) non-irritant, (3) non-inflammable, (4) lethal or repellent to the louse, (5) have penetrating power sufficient to destroy the embryo, (6) soften and thus facilitate the removal of the nit. And lastly it must be cheap, readily accessible and easily applied, without any complicated ritual of procedure.

Prof. G. H. F. Nuttall[1] gives a very long list of insecticide substances which have been recommended by various observers. Only a comparatively small number of these, however, conform to the above conditions, while many must be ruled out of court for one reason or another. Again, many of the materials described can be used for clothing only, and require more prolonged application than is possible for treatment of the head.

Advantages of Derbac.

After trials of various substances, I have been experimenting with a soap sold under the proprietary name of Derbac, which appears to possess certain advantages of chemical and physical composition. Made primarily by the action of caustic soda upon the starch, proteins, &c., contained in cereals, the molecular composition is different from that of the ordinary fat soap, and the colloidal products produced in its manufacture are of a different character. In the first place it does not form an insoluble lime soap in combination with the calcium of the water, and there is a much less precipitation of the fatty acids in consequence. The result is that much more fatty acid remains in the solution. Certain soda-starch compounds are formed, and the soda acts upon the proteins to produce soaps of amino-acids and ammonia. Further, Derbac contains a heavy percentage of birch tar, which appears from Prof. Nuttall's list as a useful remedy, repellent to the louse and a well-tried remedy for skin affections. The tar is presumably emulsified in the course of the manufacture. It is probable also that as the birch tar contains cresols and other phenolic bodies, phenolates are produced. I am inclined to regard coal-tar derivates as undesirable for and irritating to the skin. This is seen in the action of carbolic acid on the skin, and in the well-recognised irritation of the skin caused by coal soot. Prof. Nuttall, writing of birch tar (p. 556), says, "Further tests should evidently be made."

"True Wetting" and Destruction of the Nit.

The chemistry of soaps and the colloidal conditions which are formed by their use are exceedingly complicated, and not altogether understood. The cleansing properties are probably in the main due to "true wetting" of the substance caused by an alteration of the surface-tension and the formation of an emulsion which has an affinity for dirt, grease, &c. Many liquids do not truly wet a surface, and there is no "molecular intimacy," as it is called. To be effective in destroying the louse and embryo, it would seem necessary that there should be this true wetting action, accelerated by the essential thorough lathering of the head.

The problem is that of the nit rather than of the louse. The latter can be dislodged by many repellent substances accompanied by mechanical means, such as the Secker comb, especially if it is enmeshed in a good lather. Lice, however, are so resistant that only a prolonged application of most substances, with the exception of the mineral oils, will kill them. Moreover, lice which appear to have been killed are frequently quite active a couple of hours later. Thorough combing out is therefore essential.

The destruction of the embryo in the nit is the chief object to be aimed at. The dislodgment of the dead nit is a secondary consideration. It is not generally recognised that the louse lays her eggs close to the scalp, and that the distance of the nit away from the root of the hair to which it is attached is a measure of the age of the nit. I believe that many a parent has been prosecuted and even fined for louse infestation, although the nits are old shells from which the louse has long hatched out.

Test of Disinfestation Material.

In order to test any disinfesting material, experiments must be carried out under certain predetermined conditions, with definite control experiments. These may be summarised as follows:—

1. Hairs must be taken from children who have received no previous treatment, and on whose heads there are living lice.
2. The hairs supporting nits must be taken immediately before and immediately after treatment with the disinfestor chosen, and incubated under identical conditions, at a temperature of 90° F., the optimum temperature for louse incubation.
3. Nits must contain embryos in both cases. For this purpose it is necessary to examine a number of hairs microscopically. In any given sample of hairs far more shells than living nits are found.
4. After incubation the nits taken before treatment should either hatch out or show evidence that the embryo has continued to develop, while the nits, after treatment, should show no evidence of continued development. Sometimes active pharyngeal movements in the contained embryo can be seen, thus affording definite evidence of its life.

It is thus difficult to carry out experiments which conform to these stringent conditions, or to hatch out lice under artificial conditions, and a good deal of experience is necessary to detect changes in the embryo indicative of death. Moreover, there is no means of learning what percentage of nits in an untreated case hatch out. Under natural conditions a certain proportion of nits probably do not produce living lice.

Results of Experiments.

In my experiments the hairs were placed in test-tubes in an electric thermostat incubator regulated to a temperature of 90° F., and the lice placed in small glass receptacles with a perforated false bottom of glass. In some cases a small plug of damp cotton-wool was placed at the bottom of the tube to prevent desiccation. This, however, appeared to be unnecessary, and increased the difficulty in looking for hatched-out lice.

The result of the 12 experiments may be summarised as follows:—

(*a*) *Adult lice.*—After the head had been well lathered for about ten minutes, the majority of the lice remained motionless, and could be picked or rubbed off with fair ease. When placed upon filter-paper and in a glass cell they appeared to be dead, but had again become active within two hours, in all cases making their way into the lower compartment. The notable fact, however, was that in the three experiments with live lice, all were found dead on the following day, after about 16 to 20 hours' incubation at 90° F. This is remarkable, for the louse is extraordinarily resistant to chemicals if the application is not prolonged. In a control experiment live untreated lice lived 60 hours in the incubator and presumably died of starvation. I have found lice to revive after a drop of chloroform has been placed upon them. (To the flea chloroform causes instantaneous death.) They also survived drops of a mixture of absolute alcohol and clove oil, of such strength as to cause intense burning sensation on the tongue or lip. It would appear, therefore, that the treatment, although not immediately fatal, does have a lethal effect upon the adult louse, and that two or three applications would be efficacious in freeing a head from lice by these means. A difficulty which is often found in these cases is the presence of impetiginous crusts under which the lice seek shelter. It is therefore a wise precaution to take steps to kill the lice which have been detached, by boiling the towels which have been used or by pouring boiling water upon them.

(*b*) *Nits.*—I prepared a considerable number of slides of nits incubated at 90° F., taken immediately before and after treatment. That some embryos survive a single treatment was proved by their hatching out, but the evidence of the microscope goes to prove that far more hatched out, as judged by the vacated shells, from the untreated hairs. In by far the majority of slides made from untreated hairs, the nits were found to be empty, and the bottom of the test-tube in which they had been incubated was littered with

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* An abstract of a paper read before the School Medical Officer Group of the Society of Medical Officers of Health.

[1] Parasitology, vol. x.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, AUGUST 2ND.

Milk for Tuberculous Persons.

Mr. THOMAS GRIFFITHS asked the Minister of Health whether he was aware that the Hertfordshire County Council proposed to provide milk for tuberculous persons and that the provision made would allow for a supply of milk for 47 persons in addition to the supply provided by the insurance committee for 153 insured persons; whether the limitation of the supply to persons with tubercle bacilli in the sputum excluded many persons, especially children, for whom milk was necessary; and whether, in view of the inadequacy of one pint of milk per day for the purpose, he would consider, in the interests of public health, withdrawing the regulation which limited the expenditure of local authorities, if they were to receive Government aid, to £2 per 1000 inhabitants.—Sir A. MOND replied: I understand that the scheme of the county council provides for the supply of milk to about 200 tuberculous persons at any one time and that this is the maximum provision which can be made within the limits of an expenditure of £2 per annum per 1000 inhabitants of the county. The limitation of the supply to persons with tubercle bacilli in the sputum does not apply to cases of non-pulmonary tuberculosis, the majority of which are children. The Exchequer grant allows on the average an expenditure of double that hitherto incurred by the insurance committees. I can hold out no hope of an increase in the amount of the grant.

WEDNESDAY, AUGUST 3RD.

Opium Cultivation in China.

Mr. STEWART asked the Under-Secretary of State for Foreign Affairs whether the Government could give any information as to the position of opium in China at the present time; whether the Chinese government undertook to put down the cultivation of opium in China when we gave up the export from India; whether it was the fact that great cultivation was being carried on in many Chinese provinces and that smuggling of native opium into Shanghai and Hong-Kong was taking place; and what the Government proposed to do to get China to carry out her treaty obligations.—Mr. HARMSWORTH replied: Papers are now being prepared for submission to Parliament showing the present position of opium cultivation in China. It is the case that China undertook to put down cultivation as the condition on which the export of opium from India was stopped. At that time opium-growing in China seemed to have been satisfactorily suppressed, but I regret to say that recent reports indicate a marked revival in certain provinces and there is evidence of smuggling of Chinese opium into Hong-Kong on a considerable scale. No doubt it is also smuggled into Shanghai. Strong protests have been repeatedly addressed to the Chinese Government, but have hitherto remained entirely unheeded. The hon. Member is doubtless aware that the League of Nations are now actively interesting themselves in the whole opium question.—Sir J. D. REES: Now that the real facts are known is it not time to consider a revision of our policy rather than run the risk of irritating China by trying to force her to carry out what she is obviously unable to carry out?—Mr. HARMSWORTH: I hope the policy will not be changed.

Necessity for Better Rural Housing.

Mr. LAMBERT asked the Minister of Health for what reason he was giving a precedence to large industrial areas over rural areas in the Government housing scheme, seeing that an increase of the rural population would ensure a greater supply of home-produced food being available for the inhabitants of Great Britain.—Sir A. MOND replied: It has been necessary to consider the relative claims of rural and industrial areas to the limited house provision at my disposal, and I think it will be generally recognised that more overcrowding prevails and that other health conditions are more unfavourable in large industrial areas than in rural areas, and while I am aware that there is a deficiency of houses in rural areas I have had under the circumstances to decide to give precedence to industrial areas.

Tuberculosis Hospital at Boston.

Mr. ROYCE asked the Minister of Health whether, in view of the extreme urgency for local treatment of patients, a sanction given by the Ministry to the Holland County Council to purchase Norton House, Boston, for the purpose of a tuberculosis hospital was afterwards withdrawn; whether he would give the reason for the Ministry's action; whether the contract for the purchase was completed after the approval conveyed by the Ministry's letter of May 10th last; whether, in consequence, the council was legally bound to go on with the purchase; and what steps, if any, he proposed to take in these circumstances.—Sir A. MOND replied: In view of the general instructions of the Government as to economy in public expenditure my Department has been compelled to suspend various public health schemes involving capital expenditure where an authority was not definitely committed. In the particular case referred to sanction to a purchase which had previously been given was withdrawn because on the information in the possession of the Department it appeared that the authority was not definitely committed to the purchase. It has now been ascertained that the authority is committed and the purchase will accordingly be completed.

Seamen's Insurance.

Major HENDERSON asked the Minister of Health whether he was aware that the Controller of Health Insurance promised a deputation which waited on him on July 6th that he would summon an early conference of all interests concerned to consider the advisability of improving the system of seamen's insurance; and what steps, if any, had been taken towards this end.—Sir A. MOND replied: The matter to which the hon. Member refers is now being investigated by an Office Committee appointed for the purpose. Steps will be taken at the earliest possible date to obtain the views of all interests concerned.

Pensions Surgical Hospital at Shepherd's Bush.

Major COHEN asked the Minister of Health whether it was his intention to permit the return to the Hammersmith board of guardians of the infirmary and workhouse in Ducane-road, Shepherd's Bush, which was at present being used as a special surgical hospital by the Ministry of Pensions; and whether he was aware that the Red Cross spent over £16,000 on rendering this hospital suitable for special types of cases, and that at present there was no other suitable accommodation to be obtained elsewhere.—Sir A. MOND replied: I have already written to the guardians urging them to agree to an extension of the tenancy of this institution by the Ministry of Pensions.

Licensing (No. 2) Bill.

The Licensing (No. 2) Bill as amended in Standing Committee was considered on Report, and agreed to. The Bill was read a third time and passed.

THURSDAY, AUGUST 4TH.

Medical Officers of Pensions Ministry.

Mr. HAYWARD asked the Minister of Pensions how many doctors on the staff of or employed by the Ministry, other than doctors serving part-time on medical boards, were engaged on administrative duties, and how many were engaged on the actual work of attending to patients; and what were the total annual salaries of the doctors engaged under each category, respectively.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: 317 whole-time medical officers are employed at the Ministry, partly or solely on administrative duties. Their annual salaries inclusive of all emoluments amount in the aggregate to £316,255. Of these, however, 75, while holding administrative posts, are engaged for a large part of their time in visiting or examining and arranging for the treatment of pensioners, and some considerable proportion of them are, and have to be, officers with specialist qualifications. 300 whole-time doctors are employed solely on the treatment of pensioners. Their annual salaries, inclusive of all emoluments, amount in the aggregate to £220,108. In addition, the Ministry utilises the part-time services of 653 medical officers and specialists in connexion with treatment at hospitals, limb-fitting centres, and clinics, at a total annual cost of £210,558. There are also 1717 medical referees paid on a fee basis who are employed in examining and certifying patients for treatment.

Cost of Health Insurance to the Workman.

Sir ROBERT CLOUGH asked the Minister of Labour whether he could state the cost per man per week of health and unemployment insurance to the workman, to the employer, and to the State respectively?—Dr. MACNAMARA replied: The normal weekly contributions from employers and employed for Health Insurance and Unemployment Insurance, where payable, are at present as follows:—

	Health.	*Unemployment.*	Total.
In respect of men:			
Employers	5d.	8d.	1s. 1d.
Employed	5d.	7d.	1s.
In respect of women:			
Employers	5d.	7d.	1s.
Employed	4d.	6d.	10d.

In certain cases where low wages are paid, the employer's contribution for Health Insurance is increased and that from the employed is correspondingly reduced. Unemployment Insurance contributions are payable at half the above now a fine combination of discreet treatment in its broadest and best sense.

The home club is not a sanatorium in the ordinary sense; it is not a home, with the unyielding personal demands so often encountered; it is not a school with inflexible and rigid conformity to rules. It is something of all these, with social advantages adapted to the level of the innate possibilities of the epileptic. Above all, it is sufficiently in contact with outside activities to increase the epileptic's hope that he may leave it so soon as he is able to make the proper adjustments to the ordinary stresses of life.

THE MEDICAL DEPARTMENT AND MILITARY MORALE.

THE *Military Surgeon* for June prints as its first paper the Wellcome first prize essay with the title given above. The successful essayist is Lieut.-Colonel Louis C. Duncan, and it must please Mr. H. S. Wellcome, who founded the prize, to know that his liberality has evoked so very valuable an examination of the subject. Competition was open to medical officers, present or past, of the United States Army, Navy, Public Health, or Reserve services. Every officer works intuitively to improve the morale of his men, but in the United States Army this duty was specialised, and included in the staff of the American Expeditionary Force was "a morale division, with a chief, and subordinate officers in all divisions, brigades, and regiments." "An army has two supports: physical and mental (or moral). The physical support has become relatively the more important." The influence of the army medical officers on morale is great, for the conditions which govern the physical support are already, most of them, under medical supervision (such as food, shelter, clothing, health and sanitation), while to the department falls also in great measure the choice of the recruits and the elimination of the unfit: "they detect the diseased, the insane and the degenerate," eliminate "men with chronic venereal disease, drug addicts, drunkards, sexual perverts," and, an unexpected class, "the chronic grumbler." "The chronic venereal case will probably not be accepted for first-class service"; [he cannot, for instance, be a range-taker in the British Navy.] If the soldier's morale is to be maintained he must be kept in good health, and the importance of sanitary camp sites, kitchens, latrines in relation to health cannot be over-estimated. Armies have been ruined by disease alone, but the epidemics feared in the past have been conquered, small-pox, yellow fever, typhoid, and even typhus. Cleanliness of person and clothing, the prevention of lice and scabies, are being now properly studied and handled; for these the Medical Department will be largely responsible. If excellent care is given to the sick and wounded, the personal confidence of every soldier is increased and the morale of the army is exalted. Venereal disease has a deteriorating effect. The slack or slovenly appearance of a ward of venereal patients is a matter of common notice, so it is an important duty in relation to morale for medical officers to reduce venereal disease "by the utmost energy in instruction, provision of effective prophylaxis, enforcement thereof, and effective treatment."

Next come the mental factors—character. There was a great difference between the army of 1898 (Spanish-American war) and that of 1917-18. The recruits were similar, the soldiers different. In 1898 saloons. and worse places, abounded, drunkenness was common. In 1917 saloons and other vicious resorts were eliminated: men did not deteriorate in the army. Soldiers may even have been improved. Training and drill teach order, alertness, obedience, and confidence in brethren. A well-disciplined army has good morale. Discipline to-day is intelligent, and rests on an educated conviction of the need for method, regularity, and obedience. The Medical Department disciplines its own men, who are 8 per cent. of the army; further, it detects malingerers, and determines pleas of insanity, &c., and must remember not to be unduly lenient, for though discipline does not abolish mercy, justice demands punishment for crime. Officers must be leaders, better educated, more skilful, and with more initiative than their men. The medical officer knows the men individually, and should therefore be in close touch with the morale officer; he should throw himself into the sports and recreations of his unit. Games develop vigorous bodies, entertainments cheerful minds, and both are in the province of the Medical Department.

The elevating influence of sex is not to be forgotten: the Army Nurse Corps is part of the Medical Department. The Red Cross works under its direction—why not the Y.M.C.A., and the chaplains, most of whose work is in the hospitals? In the Meuse-Argonne battles, further forward than the Red Cross tents, it was to the regimental aid stations that men not actually sick, but weak and exhausted, turned for chocolates and dough-nuts, and were themselves sent back refreshed, turned again into happy warriors. The Medical Department has no direct part in winning victories, yet Napier gave the doctors credit for the victory at Vittoria, as they had sent back 5000 men from the hospitals, cured, into the line. The part, then, of the Medical Department is first to do what is its own technical duty well; secondly, to encourage all helpful agencies directed by others; thus, to the sound body the department has secured is added the quickening spirit. The whole essay will repay study.

PUBLIC HEALTH IN TASMANIA.

IN presenting the report on Public Health in Tasmania for the 12 months ending June 30th, 1920 (Hobart, 1920), Dr. E. Sydney Morris, Chief Health Officer and Chief Quarantine Officer for the State, mentions that he did not assume his position until April 27th, the duties having been performed by the assistant health officer, Dr. Arthur H. Clarke, up to that date. Dr. Morris is, however, satisfied, by the results of his personal observation, that "matters of local health administration are grossly neglected by many local authorities throughout the State," and that "the general tendency seems to be to wait until an outbreak of disease necessitates recourse to drastic and expensive remedies, rather than to carry out a systematic and steady growth of important sanitation." As Tasmania has had responsible government since 1856, it seems quite time that steps should be taken to bring about an improvement. There is still no organised method of nightsoil disposal in certain important centres (the individual householder being charged with this responsibility), and only four (out of 49) districts took samples of food and drugs to ascertain if the legal standards of quality were maintained. The Commonwealth Government have, however, intimated that they are prepared to extend their sphere of operations in regard to public health, subsidise measures of disease prevention, and "inspire and coördinate public health measures generally without infringement or transfer of the sovereign power of States," as is done in the U.S. of America. It is to be regretted that adulteration of milk is somewhat extensively prevalent; of 65 samples taken, no less than 26 were found to be adulterated or below the legal standard. The chief causes of death during the year 1919 were diseases of the circulatory system (13·57 per 10,000), influenza (10·64), nervous diseases (9·70) and respiratory diseases (9·41). There were only 11 deaths from typhoid fever (0·52 per 10,000), and not a single death from small-pox The total death-rate was 103·77 per 10,000 during 1919, as compared with 88·42 in 1918; the increase was chiefly due to influenza (10·64, compared with 1.81 in 1918), circulatory diseases (13·57, compared with 12·17), and "diseases of early infancy" (9·22, compared with 7·31). The general death-rate in 1919 from all causes was 10·37 per 1000, compared with 8·81 in the previous year: the ratio is, however, lower than in any other State of the Australian Commonwealth, West Australia having the next lowest (11·10), and New South Wales the highest (13·40), the average for the whole of Australia being 12·82.

The pandemic of influenza invaded Tasmania in August, 1919; excellent arrangements had been made in advance to cope with the situation; an amending Act had been passed, extending the powers of the Chief Health Officer; vaccine depôts and provision for free inoculation, ambulance transport, special hospital accommodation and nursing had been organised; respirators were supplied to the public, and local authorities advised through the press or by circular. When the disease actually appeared, schools, theatres, picture shows, &c., were closed; religious services in churches and buildings only allowed under certain conditions; masks were required to be worn by persons travelling inside any public conveyance where the number exceeded three; all shops (except chemists and dispensaries) were closed at 6 P.M. Extra doctors and nurses were engaged from the mainland. Only 898 cases of influenza were actually notified, being those of the C type (toxic, fulminant, or severe pulmonary); this number is therefore no indication at all of the extent of the epidemic. Dr. Morris estimates that "fully 33 per cent. of the population were affected"; this would imply some 70,000 cases, the mean population of Tasmania being estimated at 211,416. It is to be regretted that 17 towns are still without any organised sanitary service, the conditions observed by inspecting officers being "in many cases revolting." In the report of the Chief Inspector (Appendix II.) it is stated that several sanitary inspectors, who have obtained certificates of competency from the Royal Sanitary Institute, have been "informed by some local authorities that the stipends fixed by the Wages Board for expert knowledge are beyond their means of payment," and some of these officers have received notices of termination of their appointments. Such a condition of things is in the highest degree unsatisfactory.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Wednesday morning of each week, such information for gratuitous publication.*

KENNEDY, W. N. W., M.D.Edin., D.P.H., has been appointed Medical Officer of Health and Medical Superintendent of the Child Welfare Scheme for the Burgh of Galashiels.

St. Thomas's Hospital: H. L. SLAUGHTER, M.R.C.S., L.R.C.P., D. MCCLEAN, M.R.C.S., L.R.C.P., H. L. WILLEY, M.R.C.S., L.R.C.P., K. H. TALLERMAN, M.C., M.R.C.S., L.R.C.P., F. A. PHILLIPPS, M.B., B.Ch. Cantab, M.R.C.S., L.R.C.P., E. M. BURRELL, M.R.C.S., L.R.C.P., S. HARTLEY, M.C., M.R.C.S., L.R.C.P., and J. SPIRA, M.R.C.S., L.R.C.P., *Casualty Officers and Resident Anæsthetists*; C. K. J. HAMILTON, M.C., M.B., B.Ch. Oxon., M.R.C.S., L.R.C.P., E. D. GRANGER, M.B., B.S. Lond., M.R.C.S., L.R.C.P., A. D. WHITELAW, M.R.C.S., L.R.C.P., and G. A. BACK, M.R.C.S., L.R.C.P., Resident House Physicians; G. M. KENDALL, M.B. Cantab., M.R.C.S., L.R.C.P., Resident House Physician for Children; G. D. C. TRACY, M.R.C.S., L.R.C.P., P. T. LIANG, B.Ch. Cantab., M.R.C.S., L.R.C.P., D.T.M., S. H. G. HUMFREY, M.R.C.S., L.R.C.P., and F. V. SQUIRES, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., Resident House Surgeons; E. P. BROCKMAN, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., *Resident Orthopædic House Surgeon*; W. A. LOW, M.C., M.R.C.S., L.R.C.P., Senior Obstetric House Physician; L. B. MAXWELL, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., Junior Obstetric House Physician; E. A. Sparks, M.R.C.S., L.R.C.P., Senior *Ophthalmic House Surgeon*; J. A. P. SHAW, M.R.C.S., L.R.C.P., Junior Ophthalmic House Surgeon; R. H. O. B. ROBINSON, M.B., B.Ch. Cantab., F.R.C.S., Eng., Clinical Assistant in Throat Department; B. SHIRES, M.B., Ch.B. Edin., Clinical Assistant in X Ray Department.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Jun. H.S. £200.

Barnsley County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £500.

Bath, Royal Mineral Water Hospital.—Res. M.O. £250.

Bedford County Hospital.—Asst. H.S. £150.

Belgrave Hospital for Children, Clapham-road, S.W.—Female H.P. H.S. Each £100.

Birmingham Children's Hospital.—Res. M.O. £150.

Birmingham General Hospital.—Res. Anæsthetist. Obst. H.S. H.S. Each £100. H.S.'s to Spec. Depts. £125. Res. Surg. Officer. £180.

Birmingham, Queen's Hospital.—Surg. Registrar. £100.

Birmingham University.—Lecturer in Physiological Dept. £300.

Bradford, Royal Eye and Ear Hospital.—Hon. Asst. Ophth. Surg.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £120. H.S. £120.

Burnley Union.—Res. M.O. £300.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Derby County Borough Education Committee.—Sch. Dentist. £500.

Dreadnought Hospital, Greenwich, S.E.—H.P. H.S. Each £200.

Glamorgan County Asylum, Bridgend.—Jun. Asst. M.O. £415.

Glasgow, District Mental Hospital, Gartloch, Gartcosh.—Jun. Asst. M.O. £350.

Halifax County Borough.—M.O.H. £900.

Huddersfield Royal Infirmary.—Asst. H.S. £200.

Hull Royal Infirmary.—V.D. and Cas. O. £250. Asst. H.S. £150.

Ipswich County Borough.—Asst. M.O.H. £500.

Leeds General Infirmary.—Res. Surg. Officer. £200.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

Liverpool, Royal Southern Hospital.—Surg. Tutor and Registrar. £20. Second M.O. to V.D. Dept. £200. Two H.P.'s. Three H.S.'s. Each £100.

Manchester, Ancoats Hospital.—H.S. £150.

Manchester Ear Hospital.—Anæsthetist. £15 15s. H.S.

Manitoba University.—Asst. Prof. of Anatomy. $3500. Prof. of Biochemistry. $4500. Asst. Prof. of Physiology. $3500.

Metropolitan Hospital, Kingsland-road, E.—Surg. for Diseases of Nose and Throat.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £200.

Northamptonshire Sanatorium, Creaton.—Res. Med. Supt. £500.

Norwich, Norfolk and Norwich Hospital.—Fourth H.S. £200.

Nottingham General Hospital.—H.P. £200.

Queen's Hospital for Children, Hackney Road, Bethnal Green, E.—H.S. £100.

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.

Rochester, St. Bartholomew's Hospital.—Res. H.S. £250. H.P. £200.

St. Mary's Hospital, Paddington, W.—Cas. Phys. £100.

Salford Royal Hospital.—Cas. H.S. £150.

Singapore Municipality.—Bacteriologist. 9000 dollars.

Swansea County Borough.—Dental Surg. £500.

Sydney University, New South Wales, Australia.—Chair of Psychiatry. £1100.

Tynemouth County Borough.—Clinical Tuberc. O. and Asst. M.O.H. £600.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments:—Llanwrtyd Wells (Brecon); Southwell (Nottingham).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Walsall County Court in Circuit No. 25. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than August 27th.

Births, Marriages, and Deaths.

BIRTHS.

BILLING.—On July 31st, at Denholm, Chingford, the wife of Dr. E. Billing, of a daughter.

DAVIDSON.—On July 30th, at Avonleigh, Torquay, the wife of Dr. W. Cameron Davidson, of a daughter.

KAY.—On August 1st, at The Manor House, Blakeney, Norfolk, the wife of A. R. Kay, M.R.C.S. Eng., of a son.

SINCLAIR.—On August 3rd, at 20, Riverview Gardens, S.W. 13, the wife of Neil F. Sinclair, F.R.C.S.—a son.

WOODS.—On August 4th, at St. Andrew's-street, Cambridge, the wife of R. Salisbury Woods, M.A., M.D., B.Ch. Cantab., of a daughter.

MARRIAGES.

MURPHY—SPOONER.—On August 2nd, at Bramshott, Hants, William Murphy, M.B., to Harriet Annie Spooner, of *Liphook.*

DEATHS.

MYERS.—On August 6th, at St. George's-road, S.W., Brigade-Surgeon-Lieut.-Colonel Arthur Bowen Richards Myers, late Brigade of Guards, aged 82.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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POSITION PAGES. Terms on application.

by the fact that its curve is symmetrical. The integrated equation for such a curve will be—

$$\text{Log}\ \frac{x}{A-x} = K\,(t-t');$$

where A expresses the total transformation at completion of the process, K is a constant expressing the velocity of the process, and t′ is the time at which the mass of the product equals ½ A.

CORRELATION OF CATALYTIC REACTION WITH DEFECTIVE OXIDATION IN NERVE CELLS.

Now the importance of this observation lies in the evidence that it affords that the neural process conditioning the movement is in the nature of a catalytic reaction. The researches of Mott have shown that the nervous asthenia of extreme forms of myxœdema and of dementia præcox are associated with evidences of defective oxidation processes in the nerve cells, and the correlation of the two observations affords an alluring hypothesis. The casual drawing of a straight line affords a very good example of a cortical mechanism, unchained in response to an autogenous voluntary stimulus, which runs its course without further interference. We may look to observations of disturbances of the catalytic process such as those furnished by Koch and Mann in dementia præcox to afford an insight into the asthenic types of neurosis. The slide shows the rapid exhaustion of a patient who suffered from lack of power of concentration and a distressing sense of mental fatigue when he was set to obtain a record with the Mosso ergograph. That the fatigue was not peripheral was shown by the absence of signs of muscular fatigue in response to electrical stimulation before and after the ergographic tracing. By correlating my method for the estimation of the effort tonus reflex, described in the first lecture, with observations on the squeeze exerted on a dynamometer I have noted that in such patients the bodily response of effort dies down rapidly, and simultaneously with the maintenance of the squeeze. The effort is, however, there, and this serves to differentiate this class of patients from those that we shall consider later under the category of hysterical weakness. It is in the treatment of these asthenic patients that so much harm is wrought by attempts to stimulate them to greater efficiency without first restoring their bodily condition.

NECESSITY OF CONSTITUTIONAL TREATMENT OF ASTHENIC PATIENTS.

All neurologists of experience are convinced of the great efficacy of constitutional treatment which is too often ignored by the new school of psychotherapy. I will now turn to consider those neuroses in which the predominating symptoms are manifested objectively and subjectively as an excessive response on the part of the mechanism that we have studied as the bodily reaction to nocuous stimuli. I have endeavoured to show that the bodily response to nocuous stimuli is essentially one of activity, and that the benign or agreeable stimuli are responded to by quiescence; and, furthermore, that the activity which we occasionally ascribe to the action of agreeable stimuli is really the response to those conditions of the environment that hinder their enjoyment. The time at my disposal would not allow me to attempt to consider in detail the various forms in which such a hyperexcitability of the mechanism of affection may show itself.

In the previous lecture I spoke of the caution with which we must view all attempts to attribute activity of the vegetative nervous system to the direct action of the internal secretions; it is much more promising to seek for evidence of modifications of the excitability of the autonomic mechanism as a result of long-standing hyper- or hypo-function of the endocrine system. The relations between excitability of the autonomic system and glandular activity have been more extensively studied in the case of the thyroid than in that of any other gland; I will not dwell on the well-known symptoms of hyperthyroidism; there are, however, a certain number of cases of neurosis exhibiting a hyperexcitability of the affective mechanism together with tachycardia, vasomotor disturbances, and tremor without any thyroid enlargement. There are three signs revealed by the objective examination of such cases on which I lay great stress. First, the hyperexcitability of the mechanism of affection as revealed by a study of the galvanic reflex; in these cases the skin resistance is invariably very low. This sign, though never absent in indubitable cases of hyperthyroidism, can, of course, taken alone, only amount to an objective demonstration of the hyperexcitability of the affective mechanism. The isolation of thyroxin, the active principle of the thyroid internal secretion, has permitted the quantitative estimation of the influence of the thyroid on metabolic activity. Since in cases of indubitable hyperthyroidism we invariably find the basal metabolism to be above the normal rate we cannot diagnose its presence in the absence of this sign. The determination of the rate of basal metabolism is a procedure of no great difficulty, which can be accomplished in a very short time with fairly simple apparatus. It is to be hoped that this valuable method will soon become an established procedure in the investigation of cases of neurosis. There is, however, a third sign of the existence of the condition of hyperthyroidism which is likely to prove of great value. Goetsch has devised an intradermic test that serves to demonstrate the existence of hyperexcitability of the sympathetic system. The reaction depends on the demonstration of sympathetic hyperexcitability by injection into the superficial layers of the epidermis of minute quantities of adrenalin. The test shows no more than that the sympathetic system is hyperexcitable, and furthermore it only demonstrates a hyperexcitability at the junction between the sympathetic neurone and the effector cell. It cannot, therefore, be held to be of absolute diagnostic import, any more than the exaltation of the galvanic reflex. Its importance lies in the fact that it is apparently never absent in cases of hyperthyroidism, and taken with the two preceding tests it will establish the diagnosis. As modified by Ascoli and Faggioli, the test is described thus: When 0·05 c.cm. of a 1 per 1000 solution of adrenalin is injected by a fine hypodermic needle, pushed just under the epidermis, so that its whole intradermic course is clearly visible through the skin, the resultant swelling assumes after a few minutes a dark-blue colour as if ink had been injected. The swelling then becomes surrounded by an alabaster-like halo which grows in intensity and extent, often sending out irregular shoots in one or more directions. Around the white halo appears in turn a red halo, more or less intense in colour and width. Frequently a contraction of the pilomotor muscles occurs, giving an appearance like goose flesh to the alabaster zone. This is fairly well shown by the photograph (Fig. 2). The area of goose flesh in my photograph is not, however, limited to the alabaster zone. Having reached its maximal development in half an hour, after a stationary period of an hour or so, the reaction gradually disappears, the blue spot changing to red, and leaving ultimately a small swollen papule. By using a more dilute solution, for instance, one in two hundred thousand to one in a million, the reaction is less intense but always preserves the same type. It differs, however, by the absence of the central blue spot for which a small red mark is generally substituted later on, and the red halo is not always prominent. The excitability of the subepidermal test in ordinary circumstances lies between dilutions of one in two hundred thousand and one in a million (Parke Davis phials). In some cases of disturbances of the menopause, of arterial hypertension, of Graves's disease, and sometimes in pregnancy, the excitability is increased, giving positive results with further dilutions up to one in five to twenty millions. It should be always compared with a control injection of distilled water, as some people react in a somewhat similar fashion to the water injection.

freshly hatched lice. The appearance of the unhatched nits after treatment and incubation is not altogether distinctive, but there seems to be a shrinkage in the embryo in treated cases, leaving a space between the shell and the body, probably due to drying up after death.

Comparison of Disinfestation Agents.

It would appear from the above experiments that the soap in question fulfils to a considerable extent the conditions laid down in this experiment. It appears to have a lethal effect on the embryo in the nit in a large number of cases, but more than one application seems necessary to destroy all viable embryos. It immobilises the louse, but does not immediately kill it. As all lice after treatment died within 24 hours, it is probable that it has more than a mere repellent effect. In this connexion I may add that bed-bugs immersed for one minute in an ordinary solution of the soap died immediately. It is non-toxic and non-irritant, easily applied, and has no danger attendant upon its use. It has also the merit of being within the means of the poorest and least intelligent parents of the community. Further, it may be hoped that an indirect advantage may accrue from the fact that it is a soap in encouraging parents to appreciate the general hygienic value of a weekly head-wash for their children if not for themselves.

THE TRAINING OF EPILEPTICS IN THE UNITED STATES.

IN the *New York Medical Journal* of June 15th appeared an article by Dr. L. Pierce Clark, dealing with the study and sociological training of epileptics. Dr. Clark points out the scientific need for exact observation of the peculiar physical incitors, when present, and of the psychic factors which lead to attacks of epilepsy, and the lack of suitable places where such work may be carried out. It is not possible for the trained observer to gain a proper evaluation of the character of the epileptic in surroundings that do not lend a normal setting in which the individual may display his innate temperamental defects. Large public hospitals and sanatoriums hardly contribute such precise and detailed observations as are now found necessary for exact diagnosis. Hence the need of small observation clubs and homes, for study and treatment of obscure cases. The solicitude customary in the patient's own home makes the latter environment inconvenient for trained observers; a combination is required of close observation with home environment to furnish data on the real nature of this obscure periodic disorder and its foundations in perverted and undeveloped instincts.

Epileptics Unsuitable for State Hospitals.

Epileptics placed in State hospitals for the insane disturbed an otherwise tranquil environment by their general inaptitude for socialisation. In many instances the temperamental faults of epileptics have necessitated restriction of their separate accommodation to large buildings where better personal discipline could be maintained, but reversion to this old institutional type only made matters worse, and the provision of small isolated cottages is the plan now widely recognised to be best for this class of patient.

Dr. Clark's own experience at the Craig Colony for Epileptics led him to provide each private patient with his separate nurse trainer and a tranquil existence; normal contacts were thus more or less evenly maintained, but although the life itself was ideal it seemed to encourage the main trends of the epileptic's disease. The normal residents with whom the patient came in contact either shunned the patient or over-indulged his eccentricities; and it is doubtful how closely in contact with each other epileptics may dwell without harm.

The chief aims, he thought, in group treatment of the epileptic in private practice were: (1) to establish an environment giving a fair knowledge of the life reaction faults each patient possessed; (2) an opportunity to direct proper re-education of habits; and (3) preparation of the more favourable cases to re-enter the outside world.

A First Experiment.

An effort in sociological study of the epileptic was first undertaken eight years ago on the edge of a little New England town; a group of men patients was established, each with an individual nurse trainer or attendant; but the unity between a proper home atmosphere and the actual training force was not complete, nor was the training personnel sufficiently unified to make consistent general training possible. However, daily routine, training, and observation were in force; the patients worked at gardening, woodcutting, and handicrafts, and later in the summer at gathering fruit. While this contact with townsfolk widened their interests, it lacked in social "rapport." The club being two miles distant from the town, the patients had little opportunity to engage in small village interests and activities. Thrown thus upon their own resources, the internal activity of the club group had to be expanded; but there was disinclination among the patients to adapt themselves to its environment, particularly on the part of those who were more rigid in mind and habits. Many calculated that the summer would soon pass, and that there was no use in making great efforts for so short a period.

The next step was to move the club group nearer to New York in the autumn and eliminate the faults in social grouping. Several normal individuals lived in the same house with the patients; impromptu lecture courses and new occupational interests were provided. A continued change of appeal is necessary to stimulate the rigid mental habits of the epileptic. Not a few lessened their conflicts by long walks and by occupation in the workshops.

Mixed Groups of the Two Sexes.

The next summer the New England village plan was again instituted, but with a different home management, under the nurse trainers themselves. Cottages, one for women and one for men, a short distance from each other, were secured. One dining service for all was provided. The forming of mixed groups of both sexes proved a greater incentive to spontaneous activity, occupational and social, than we had hitherto come across. The club group returned to the suburbs for the winter, where it held no new features apart from an experience of occupational outlets that withdrew much of the patient's attention from the still too rigid home management.

The following summer, the third, an abandoned hotel on the main street of the same town was taken over. Inasmuch as many patients had in the past shown considerable disinclination to follow consistent work merely for the work's sake, a system of remuneration and prize rewards was instituted, especially in gardening. A great deal of directed training had then to be undertaken by the nursing staff. Many interesting observations in this field were made; the compensation and reward principle is not a bad one, and many people, sick or well, will keep continuously employed for no other motive; in this respect the epileptic is no exception.

We soon discovered that having patients in the heart of the village life was very bad for them. Perhaps if time, patience, and extraordinary tact were employed, this principle would be no more harmful for epileptics in the United States than it is in Europe, as followed out at Bielfeldt, or in the colonisation of the insane at Ghiel in the Scottish boarding-out system. But the epileptic is not as amenable to gregarious and family life as is the chronic dement; his very temperament is opposed to this species of social treatment unless discriminating guidance and supervision are provided.

In the fourth summer it was decided to test a seaside residence. All the former features of interests, occupations, and grouping were retained, and it was found that other guests at this resort were more casual and less demanding than the people of a country town. The separate personnel of home management was finally discarded, and the club placed under one head; the social side of club activity was a great success, but consistent work and teaching were much slowed. Sea-bathing was beneficial; the patients were under proper espionage, and no accidents occurred.

The Most Recent Experiments.

The fifth summer an agricultural college town was tried, and all the patients took one or more of the summer courses; the work they accomplished did credit to all. Most epileptics possess but a third of the normal individual's physical and mental capacity, but the environment did not prove too taxing, as the summer schedule was not nearly so strict as the regular term college work.

The sixth summer it was thought that climatic conditions differing from those of the seashore experiment might have a social and occupational value in treatment. To this end the whole group was taken to the Adirondacks, and distributed in adjacent cottages; four schools were inaugurated, consisting of carving classes, Montessori and kindergarten work, æsthetic and rhythmic dancing, and English classes. Some psychotic and neurotic patients were included. The use of patients as assistant teachers increased the value of the experiment, and showed that such a plan could be made highly useful to the epileptic.

The present experiment embraces all the good points learned from previous settings; the club is established a short distance from a large town situated on the Sound in Connecticut. Personal attendants for each patient are dispensed with, group nursing and training being substituted under efficient and capable trainers. The two sexes live in the same household, which consists of children, youths, and adults as in an ordinary large family. Tennis courts, a golf course, and sea-bathing supplement indoor activities. The proper coöperation of the servants employed helps not a little. Housework, lectures, books, and magazines are available; some undertake church work, and a few have taken courses in the small business college the town affords. A club group has been formed for constructive discipline and suggestions in social activities. Thus there is recognise a difficulty is not always to be able to avoid it. The chief source of error in such investigations must always be the possibility that the subject derives his associations not from endogenous sources but from the investigator. The most casual perusal of the literature of psycho-analysis must convince any unprejudiced observer of the reality of this difficulty. We find that different investigators tend to discover widely different mechanisms of thought as lying at the root of the neurosis. The universality of the sexual basis so vehemently asserted by partisans is strenuously denied by other investigators, who themselves propound mechanisms that are not admitted universally. On any theory all these observers cannot be right, and in physical science, if we found that honest experimenters obtained consistently different results with a certain method we should not hesitate to impugn the validity of the method. A form of inquiry which involves the exclusive concentration of the mental activity of the subject on the performance of a task set to him by the observer renders him particularly sensitive to any form of stimulus that he may receive from the observer. We have seen in the preceding lectures that the expression of mental activity is far from confined to vocalisation. Movements of every variety are involved; the more obvious movements to an observer have in point of fact not been dwelt upon, that is, such movements as are evidenced by facial expression, eye movements, and the play of the pupils, for the sole reason that though obvious to the eye they present overwhelming difficulties to instrumental registration. An example from the animal world may illustrate the part that such movements play in communicating our approval or disapproval.

THE THINKING HORSES OF EBERFELD.

I know of no better example of the perils that beset this form of investigation than the story of the "thinking horses" of Eberfeld. A Prussian schoolmaster, Herr Krall, succeeded in educating horses so that they would indicate the sum or product of numbers written on the blackboard by stamping the hoof the proper number of times. Later on they acquired the power of doing divisions and extracting cube roots. They were investigated by most of the eminent psychologists of Germany and many were the papers written about their feats. The bona-fides of their master were undoubted and they would perform equally well in his absence. As time went on these animals developed superhuman powers: they would not only solve the difficult problems of the blackboard, but they would guess correctly and stamp out the number of which the observer was thinking. At this stage they were investigated by Stumpf; he confirmed their marvellous powers of guessing the numbers thought of, and then proceeded to test their ability when blindfolded. The horse did everything it could to see the observer from under the bandage; when it succeeded in doing so the answer was right, but when the blindfold was effective it was generally wrong. That solved the mystery; Stumpf found that, in common with every observer, when the number that he had thought of was stamped out he made a little involuntary gesture of assent which the quick eyes of the horse noted. I have often repeated the same experiment, taking the part of the horse myself, and so long as the subject is innocent of the method employed I have seldom failed. To an experimenter conducting an analytic examination no stimulus word can be totally without affective import, be it the expectancy of a result or the recognition of its futility.

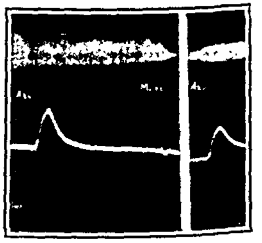
RESPONSIVENESS OF THE SUBJECT OF INQUIRY.

The subject is dissociated from all other stimuli than those communicated by the observer. He is warned to respond without self-criticism or hesitation. If with a casual fixation of attention it is easy to repeat the experiment of the Eberfeld horse under the conditions of a psycho-analytical investigation there must be many signs such as the inflexions of the voice and the play of the features, that it is impossible to control. In such a responsive attitude on the part of the subject wilful deception of course plays no part. Evidence of the extent to which the responsiveness of the subject can be raised under appropriate conditions can be found in the Proceedings of the Society for Psychical Research. Whatever be the eschatological value of these documents they certainly contain a mine of information to the student of abnormal psychology. The alertness with which almost imperceptible hints are adopted, the amazing accuracy with which the observer's mind is interpreted by perfectly honest subjects who have placed themselves as purely receptive instruments in the hands of the observer whilst under the belief that they are giving utterance to the thoughts possessing their brain, must give pause to anyone who notes the conditions under which analysis is carried on. Even when suggestion is discounted it is impossible to ignore the part played by the analyst in the interpretation of the results. I have sufficiently dealt in a previous lecture with the incommunicable uniqueness of states of feeling. It is for these and similar reasons that, in so far as it has appeared to be desirable to inquire into the associations connected with any particular phase of conduct, I have confined myself to a very superficial examination that readily permits of an objective control. The patient is allowed to tell his history without interruption or question whilst a continuous record of his skin resistance to a constant current is photographically recorded on a roll of bromide paper. The observer sits behind him, and the main headings of his discourse are taken down on a sheet of paper ruled so as to allow the time at which any statement was made to be compared with the timed record of his resistance. I have made many such records and they form curious psychological documents.

INCONSTANT REACTION OF THE VEGETATIVE SYSTEM.

It is by no means those statements to which the patient appears to attach most importance that furnish evidence of an affective response; obvious attempts to achieve pathos may leave the galvanometer unmoved, whilst the narration of some less prominent incidents which reveal the general orientation of the patient's attitude will evoke a well-marked galvanic reflex. Even with such precautions the results obtained must be interpreted with considerable caution. Sherrington and Grünbaum have shown that stimulation of a cortical area after an interval by no means invariably evokes the same form of response, and we may interpret this as a physiological demonstration of the fact that our reaction at any given time to a stimulus is determined to a great extent as to its form by the particular equilibrium in which the stimulus finds the nervous system. Still more so is this true of the mechanism of the affective response. The vegetative nervous system does not always react in the same fashion to the same type and intensity of stimulus. I was able in conjunction with Symes to furnish an experimental demonstration of this fact in connexion with the sympathetic innervation of the bronchial muscles. When the neuro-muscular junction of the sympathetic nerve-supply to the bronchiolar muscles is stimulated by the same dose of adrenalin a precisely opposite type of response may be elicited, according to the condition in which the stimulus finds the bronchiolar mechanism. If the bronchioles be constricted the stimulus will cause dilation; on the contrary, when the bronchioles are dilated sympathetic stimulation will cause constriction (Fig. 3). A very little

FIG. 3.



Antagonistic action of adrenalin on bronchioles. Firstly, when dilated; secondly, when constricted.

Croonian Lectures

ON

THE OBJECTIVE STUDY OF NEUROSIS.

Delivered on June 21st before the Royal College of Physicians of London.

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PHYSICIAN TO ST. GEORGE'S HOSPITAL.

LECTURE IV.[1]

IN the preceding lectures I have endeavoured to give some account of the objective features of the fundamental mechanisms of cerebral activity. I propose in this concluding lecture to indicate in what fashion objective psychology may be applied to the study of the neuroses. We have seen that the mechanisms of cerebral activity are fundamentally of two characters. In the first place the discriminatory cortical activity finds its expression in the movements of the voluntary nervous system—that is, in actual muscular movement and in the kinæsthetic representation of such movements in the motor cells of the cortex. In the second place the general reactions of the organism to stimuli that tend to destroy or impede functional activity find their expression in the movements of the thalamic system and effector organs. Since the nervous system is an instrument of movement, and nothing else, we should be prepared to find that a certain group of the functional disturbances that we term neuroses would be the expression of some chemico-physical changes affecting movement of the neurones generally. Our knowledge of the chemico-physical processes that constitute activity of the neurones is as yet too incomplete to furnish a secure basis for a descriptive pathology.

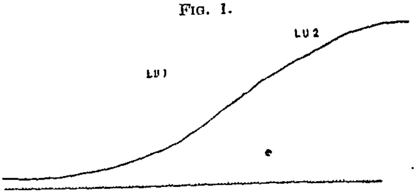
THE FUTURE TASK OF NEUROLOGY.

At present we rely chiefly on deductions from the similarity to certain aspects of neurosis in the behaviour of the organism when functional activity is disturbed by toxic substances, whether ingested or manufactured, in the body. The study of these physico-chemical disturbances will be the great task of the neurology of the future. The researches of Sir Frederick Mott and his pupils have broken new ground in the elucidation of the micro-chemical signs of disturbances of the function of the neurones, whilst the work of Pighini has opened the path for chemical investigation through the study of metabolic disturbances. The policy of the London County Council in giving effect to the scheme endowed by the late Dr. Maudsley in founding a school and hospital for the study of the earliest stages of nervous disturbances is justifying itself by the additions now being made to our knowledge of the chemical and physical changes that express disordered function of the neurones. The work of Koch and Sydney Mann performed in the L.C.C. laboratory suggests that the general bodily deficiency of oxidation activity demonstrated in dementia præcox is the interpretation of the micro-chemical changes shown by Mott to be characteristic of the nerve cells in this disorder. Just as such an advance in our knowledge of the physical basis of this form of insanity must once and for all dispose of the theories of its psychogenic origin such as that advanced by Jung, so we may hope that by similar methods the physical basis of the asthenic forms of neuroses may be established.

There is, indeed, a certain body of physiological evidence in favour of the view suggested by the micro-chemical methods of Mott and his pupils, that the processes of nervous activity are of the nature of a catalytic phenomenon. Brailsford Robertson repeated an earlier observation by Loeb and Koryanyi on the *determination of the curve of the velocity with which a simple movement of drawing a straight line of indeterminate length is performed.* Robertson ruled straight lines with a form of apparatus allowing the construction of a curve of the velocity with which his pencil travelled at any moment of the drawing. The pencil, which was in reality a metal stylus connected with one arm of the circuit of a battery activating a Deprez signal, travelled across a number of longitudinally arranged alternating slips of ebonite and copper. The copper slips were each connected with the other arm of the signal circuit. When the stylus travelled over one of the copper slips the circuit was closed and the signal made a mark on the smoked paper of a drum rotating at uniform speed. Since the copper slips were equidistant it is obvious that by measuring the distances between the signal marks on the drum it was possible to ascertain the velocity with which the stylus moved at any point of its journey. These data furnished a curve of the velocity which showed the following characteristics: The velocity underwent progressive acceleration; beginning slowly, the velocity of the stylus reached a maximum and then again diminished, so that the commencement and termination of every curve was asymptotic.

In order to verify the conclusions of Robertson I arranged an endless band of linen revolving with constant velocity round two drums set horizontally at a distance of about two feet apart. The band of linen was a yard in width. Midway between the two drums it passed over a third roller. The apparatus was covered by a board except for a gap about 2 inches wide just over the middle roller. A line of arbitrary length was ruled with a pencil along one edge of the gap and the quickly moving band did not allow the curve traced to be followed by the eye. No attempt was made to determine voluntarily either the velocity with which the line was drawn, or its length, so long as it was within the limits of the band. Lines were drawn both towards and away from the body, using movements of the whole arm, elbow-joint, or wrist in order to eliminate the possible influence of the type of movement employed on the form of the curve. When the band was removed the resulting curves in every case agreed with that constructed by Robertson (Fig. 1). Now Robertson has shown that such a curve is typical of an autocatalytic process—that is, a chemical process of such a nature that it is catalysed by one of the products of reaction; in such a case the commencement and termination of the velocity curve is asymptotic.

FIG. 1.



Curve traced by drawing a straight line across a rapidly-moving linen band. *Time below in 1/100 second.*

Examples in chemistry of such autocatalytic reactions, in which one or more of the products of reaction accelerate their progress, are furnished by the hydration of methyl acetate or the hydrolysis of cane sugar at 100°. In such a reaction a point must be reached when the decrease in the active mass of the reacting substance balances the increase of the active mass of the catalyser. A catenary reaction is the only other type of reaction that will show a similar acceleration, but the autocatalytic reaction is distinguished constitute a method of expression primarily for egoistic and secondarily for social needs which has been conditioned by an organic disability of the mechanism of affection. Another cardinal symptom of the hysteric is referable to the same organic disability. All writers on hysteria have emphasised the abnormal suggestibility of the hysterical subject. Suggestibility has been defined by McDougall as a process of communication resulting in the acceptance with conviction of the communicated proposition in the absence of logically adequate grounds for its acceptance.

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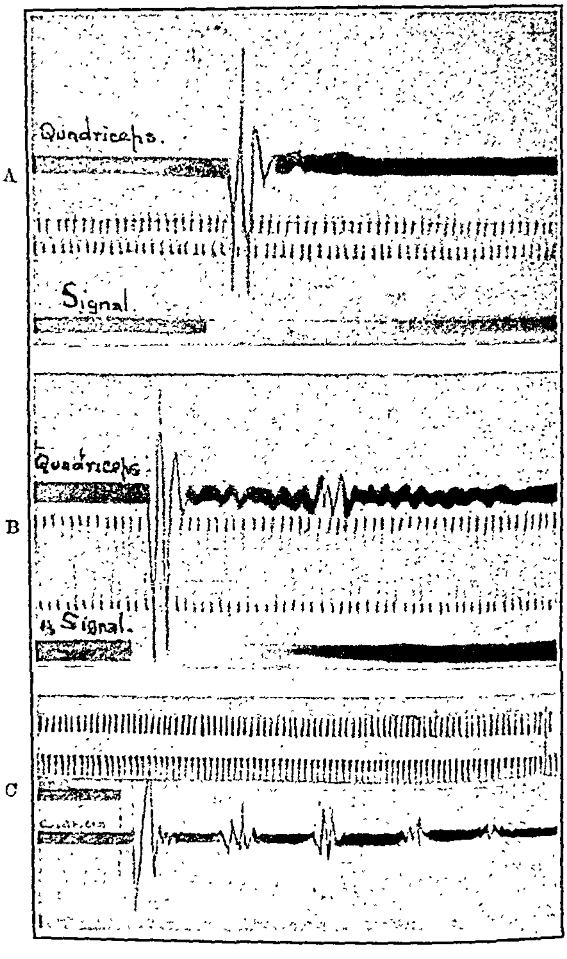
[1] Lectures I., II., and III. appeared in THE LANCET of July 16th and 30th and August 6th, respectively.

The destructive criticism of logic by the pragmatists has taught us one thing—that is, that no judgment is without its affective side, a truth which, though by no means new, since it is implicit in the revolt against formal logic which began in the psychological studies of Fries and Herbart, is still occasionally forgotten. Our strongest bond with reality is that of the feelings which constitute our strongest defence against the irrational. Mind dissociated from feeling is mind very much at the mercy of any suggestion. It is the bodily reaction against a suggestion that is in discord with the general tendencies of our activity that is the real guarantee against its acceptance. It is just this defence that the hysteric lacks; to a greater or less extent his activities can be unduly influenced both by autogeneous and heterogeneous suggestions. In other words, the innate and habitual pattern reflexes, having lost the mechanism of bodily reaction by which they reply to stimuli tending to interfere with their activities, are no longer the potent protective system that they constitute for the normal man and can be displaced or dissociated by any new stimulus of sufficient potency. Great as has been the work of Babinski and his school in demonstrating the mimetic nature of hysterical symptoms, it has been needlessly impaired by the criterion that they have adopted of what constitutes a hysterical symptom. Limited by the subjectivism that defines hysteria as only differing from fraud in its moral aspect, they decline to consider as hysterical any symptom that cannot be produced by an effort of will. This is a return to the subjective method par excellence. Of will and its limitations we have no objective knowledge, and as Spinoza once said: "No one has yet learned from experience what the body regarded merely as a body is able to do in accordance with its own natural laws, or what it cannot do. For no one knows enough about the constitution of the body to examine all its functions."

The study that we have just made of the movements manifested during cerebral activity has revealed a series of motor, circulatory, and glandular reactions, which, though not capable of being directly influenced by volition, are in their totality the expressions of volitional effort. Owing to his dissociation from states of feeling the hysteric appears to readily assume that state of muscular hypertonicity which we have observed as an accompaniment of concentrated effort, and the reflex response to certain stimuli is in consequence greatly exalted. The response to auditory stimuli frequently takes the form of an exaggeration of the normal "start." I have pointed out that the latent period of the start in man is extremely short, not much longer than the 0·05 second found by Sherrington in the decerebrate animal and the exaggerated start of the hysteric, having the same latent period as that of a normal man, a voluntary origin must therefore be ruled out. Even more striking is the exaggeration of the knee-jerks. The response may not only be increased but followed by a series of irregular clonic contractions—which may, however, be readily differentiated from the true quadriceps clonus of a lesion of the pyramidal tract when recorded by the oscillograph or the string galvanometer (Figs. 4). As Wertheim Salomonson has pointed out, the electromyogram of the true clonus points to an origin different from that of the spurious hysterical clonus. None of these phenomena are directly referable to voluntary activity, but they are consistent with the supposition that the patient is in the same state of muscular hypertension as a normal person whose whole organism is concentrated on a particular voluntary effort. I have occasionally succeeded in obtaining myograms exhibiting a similar functional clonus from normal subjects concentrating all their attention on squeezing the dynamometer. It is generally accepted that when a case of hysteria is characterised by some paralytic or motor symptom which simulates the effects of a definite organic disturbance it is always possible to differentiate between the hysterical symptom and the organic one by the fact that such subsidiary mechanisms as would be certainly affected in organic lesions are not affected in the case of hysteria. In hysteria, owing to the ignorance of the subject of the physiology of the symptom mimicked, the affection of these subsidiary mechanisms would never be suggested to him.

FIG. 4.

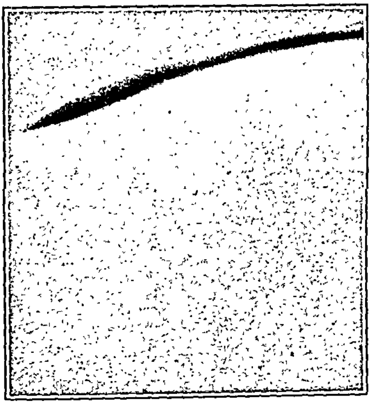


Electromyograms taken with Bock-Thoma oscillograph.
A, Normal knee-jerk. B, Hysterical knee-jerk, with functional patellar clonus. C, Knee-jerk, with patellar clonus in spastic paraplegia.

Whilst in the great majority of cases this rule holds good, and is indeed sufficiently constant to be our standard method of differentiation between organic and functional disease, it is not quite universally true. It would appear that certain mechanisms are so closely allied with the normal exercise of particular functions that although their existence and connexions are unsuspected by the patient it is impossible for the main function to be suspended without their being also affected. Hurst has pointed out that in cases of total hysterical deafness the start or jump to a loud sound may be suppressed. Such suppression

Using this technique in preference to that of Goetsch I have obtained positive results in all those of my cases exhibiting indubitable symptoms of hyperthyroidism with hyperemotionalism, and in some dozen cases occurring at the climacteric in which flushing, giddiness, and nervous tremors were complained of, and which showed an excessive galvanic reaction. So far the evidence seems to be clear that hyperactivity of the mechanism of affection is associated with the frequent occurrence of hyperactivity of the thyroid. That thyroidism is not the only cause is certain; we find such hyperexcitability associated with other bodily states, in diabetes, at puberty, at the climacteric; it can be produced artificially by many drugs such as adrenalin. That hyperthyroidism can be conditioned by the environment is certain; cases occurred during the war in which pronounced symptoms of Graves's disease were noted within a few days of exposure to the strain of action; but I have already sufficiently emphasised in my first lecture that considering the multitudes subjected to like conditions we cannot but come to the conclusion that the very small number of men affected had a pre-existing abnormality of the thyroid function. There is good reason to believe that a long-continued excitation of the affective mechanism may lead to a temporary hypertrophy of the thyroid activity; this fact was demonstrated by French observers in the civilian population of bombarded towns, but where there is no pre-existing state of organic instability such states are not lasting. The implantation experiments of Steinach have demonstrated that excitability of the affective mechanism subserving sexual activity may be directly influenced by the internal secretions of the gonads.

FIG. 2.



Intradermic test for sympathetic hyperexcitability, showing the needle track and an appearance like goose flesh in the alabaster zone.

PROBLEM OF RELATIONSHIP OF INTERNAL SECRETIONS TO NERVOUS MECHANISMS.

Our knowledge of the relationship of other internal secretions to nervous mechanisms is as yet too scanty for discussion; such secretory activity may well be the determining factor in unloosing innate types of nervous mechanism or instincts—e.g., the unchaining of the dormant maternal instincts in the capon. Some of the wildest imaginings of the novelist may, indeed, have a basis in physiological fact. It is by no means inconceivable that latent innate reflex patterns may occasionally be aroused without any form of suggestion by knowledge or example on exposing the individual to the appropriate environmental stimulus; examples are not wanting in the study of animal behaviour. The mention of these abnormalities of instinctive behaviour leads us to the consideration of another type of neuroses, in which the distinguishing feature is some line of conduct, which is at entire variance with the demands of the environment and which we can recognise to be related to the affective symptoms that are aroused by any interference with it. We have already seen that it is hopeless to seek in such conditions for associations between the primitive innate mechanism and conscious discriminatory processes. These types of instinctive behaviour may occasionally have been re-awakened by the environment, or they may owe their appearance to certain structural abnormalities which constituted the primary stimulus at a period when the innate mechanism was not at variance with the more primitive conditions under which the ancestral stock lived. It is only the manifestation of primitive instincts that are ill-adapted to the environment which is of importance to neurological medicine. Similar in their manifestations to the instincts, and yet so different in their origin, are the conditioned reflex patterns or habits. Both types have, as we have seen, this in common, that interference with their free activity is responded to by the nervous system in the same fashion in which it responds to a nocuous stimulus which tends to injure or impede the normal course of vital activity. The resultant powerful bodily reaction with its disagreeable affect may on frequent repetition condition a new defensive habit mechanism of which certain writers who prefer the terminology of dynamic symbolism speak of as repression by a censor whose habitat is the unconscious. In normal people, whose mechanism of affective reaction is not hypertrophied, such unfitting instinct and habit mechanisms will cause but little disturbance. In those whose affective mechanism is hyperexcitable the disturbance produced may be so profound as to affect every manifestation of conduct. What is in some men an excentricity constitutes in others a neurosis.

PROBLEM OF STIMULI ORIGINATING HABITS.

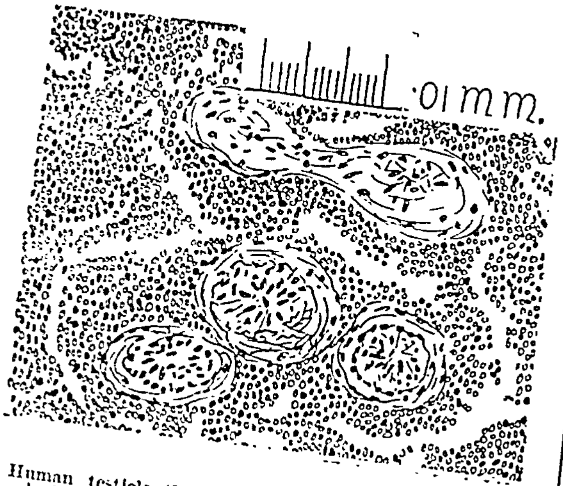
Now though to endeavour to discover what are the primary psychical correlatives of an instinct mechanism is to attempt the impossible, to determine the form of stimulus that originally conditioned a habit is a more hopeful task; by doing so we may be able to introduce the links of the habit mechanism to other and more rational associations and so to disintegrate its power. It is this task that is attempted by those who try to arrive at the original condition by the analytic method. I do not propose to discuss the utility of the psycho-analytic method. That it has given much valuable information in the realm of psychology is beyond question; whether its application in the field of medicine has yielded advantages outweighing its manifest drawbacks is a question about which there is much difference of opinion. An attempt to discover the associations presumably existing between different processes of cerebral activity and a particular disordered mechanism by learning from the patient what he can tell of the associations which are most readily evoked by an appropriate verbal stimulus is of course a perfectly legitimate objective method, but in an attempt to base our study of neurosis on purely objective investigations we are bound to scrutinise very carefully the validity of the means which we adopt.

DIFFICULTIES OF INQUIRY BY METHOD OF ASSOCIATION.

There are several factors involved in an inquiry conducted by the method of association that must prove to be very grave difficulties in the path of anyone seeking to conduct investigations in the spirit of objective science. These difficulties are probably quite well realised by the many acute intellects that have busied themselves with the analytic method, but to found the spermatic vessels too short to allow of the testis being placed without tension in the scrotum. True crural ectopia of this kind has been denied to exist by Eccles,[2] but a similar case to mine was reported by J. A. C. Macewen.[3]

The problem of bringing down by operation a testicle arrested in the inguinal canal is, to my mind, insoluble, if it is to be effected without damage to the gland. It is, indeed, possible to bring down and fix in the scrotum many testicles by adopting the procedure recommended by Bevan.[4] The essential step of Bevan's operation is the division of the spermatic vessels, it being maintained that the artery to the vas is capable of carrying sufficient blood to the testicle to keep up its activity. Bevan devised his operation after a consideration of the work of J. Griffiths,[5] who, after tying the spermatic artery and veins in the dog experimentally, came to the conclusion that one of three results followed: (1) atrophy, (2) suppuration and necrosis, (3) no interference with the normal functioning of the organ. In operations upon man suppuration and necrosis should not occur. It was due to sepsis in the experimental work. On carefully reading Griffiths's paper it will be found that in only one animal did no alteration in function or structure occur and, in making a post-mortem examination, he was able to demonstrate by injection that the circulation through the spermatic artery and veins had been re-established. Now this re-establishment of the circulation cannot possibly take place when Bevan's operation is performed on man because the spermatic vessels are not only ligated but cut across. Mixter[6] has reported that Bevan's operation is usually followed by great atrophy of the testicle, and with this statement my own experience is in agreement.

FIG. 1.

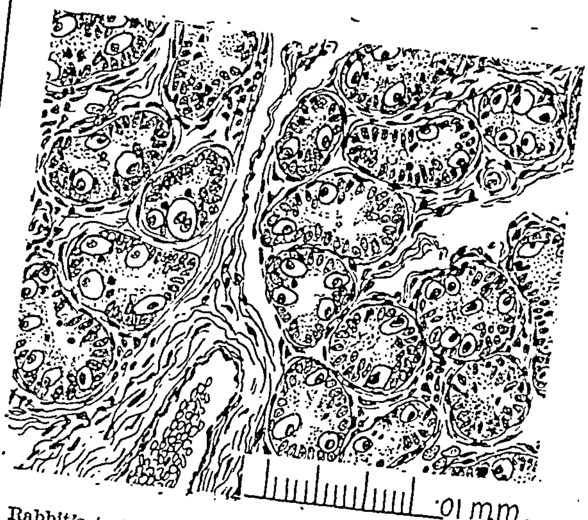


Human testicle three days after Bevan's operation had been performed, showing hæmorrhagic infarction and necrosis of tubules.

In 1913 I performed Bevan's operation on an adult man with an inguinal testicle and hernia. In suturing the wound the superficial epigastric vein was transfixed. The suture tore a hole in the vein and maintained the patency of it, and bleeding from the wound was continuous. Three days later the wound was opened up. The superficial bleeding point was not thought to be sufficient to account for so much hæmorrhage, so I examined the ligated divided ends of the spermatic vessels. There was no hæmorrhage from them. The testicle was removed and the inguinal canal sewed up completely. The testicle was sectioned and Dr. E. H. Kettle's report was as follows: "The condition is practically one of infarction. In the hæmorrhagic areas of the testicle the tubules are necrotic and structureless and stain a faint pink. Shadows of nuclei can be seen. The tubules are separated from one another by blood. In the globus minor the tissues are œdematous and infiltrated with blood and there is some angioblastic reaction."

Fig. 1 is a line drawing of the section and it shows the degenerated tubules and infiltration with red blood cells. Looking at this it is difficult to conceive that the gland would ever recover sufficiently to perform any function spermatogenic or internal secretory in nature. An organ which was able to produce and maintain the male characters or, at least, to make its contribution towards this end had been converted by my operation into a useless appendage. My conviction is that this is the usual result of performing Bevan's operation.

FIG. 2.



Rabbit's testicle four months after orchidocœlioplasty.

C. Davison[7] published an ingenious method of operation, the essential feature being the division of the deep epigastric artery and internal inguinal ring, and the flattening out of the small angle formed by the spermatic vessels as they run from the abdomen to the inguinal canal. Unfortunately, this does not increase the useful length of the spermatic vessels sufficiently for it to be of great use in the average case. Walther's operation, which has been adopted by Mr. Philip Turner, is useful in just those cases where the deficiency in length of the spermatic vessels is not a great obstacle.

Orchidocœlioplasty.

The alternative to placing the testicle in the scrotum—namely, replacing it in the abdomen intra- or extra-peritoneally—has not received very much attention from surgeons. The objections urged against it are: (1) that sections of retained testicles with rare exceptions show little evidence of spermatogenesis; (2) that testicles placed in the scrotum frequently increase in size and function normally; (3) that, experimentally, abdominal replacement causes testicular atrophy.

It is true that the retained testicle maintains its fœtal characters histologically. This may be not because of its position but because of the congenitally deficient impulse to development. The fact that testicles placed in the scrotum frequently develop normally is simply an expression of delayed development. A certain number of retained testicles descend late and become normal organs finally.

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[2] The Imperfectly Descended Testicle, 1903, pp. 10–12.

[3] THE LANCET, 1920, i., 655.

[4] Jour. Amer. Medical Assoc., Sept. 19th, 1903.

[5] Journ. Anat. and Phys., vol. xxx., p. 81.

[6] Boston Med. and Surg. Journ., 1916, lxxv., No. 18, 63.

[7] Surg. Gynæc. and Obstet., 1911, xii., p. 333

observation of our own feelings reveals a similar process. A stimulus that has evoked a pleasurable feeling may on repetition prove disagreeable, and vice versa: "Nessun maggior dolore che ricordasi dei tempi felici nella miseria." It by no means follows that a stimulus evoking a galvanic response indicating its "nocuous" nature always did so. As a method of therapeutics the attempt to disintegrate the aberrant mechanism by the introduction of fresh associations, if the contention as to the organic disturbance underlying the neuroses be correct, can only claim to be a form of symptomatic treatment. In the absence of efficient radical treatment symptomatic treatment is justified, so long as it is not mistaken for a process of radical cure. It is as symptomatic treatment that the methods of psychotherapy must justify themselves, and there can be no greater disservice rendered to its claims than the talk of "cures" evidenced by the sublimation or removal of certain symptoms of a particular neurosis.

HYSTERIA.

So far I have dealt with the fundamental characters of neurosis in which the physical disturbance is manifested by a hyperactivity of the mechanism of affection. I will now turn to a type of neurosis in which I have reason to think that the fundamental disorder is an impairment of the activity of the mechanism of affection; the forms of neurosis that fall under this definition are those designated as hysterical or pithiatic. The conception of the nature of hysteria has undergone a radical change in recent years. The supposed stigmata that seemed to constitute the neurosis an organic disease have been discarded one by one. Under the ægis of Babinski we have learnt to eliminate all symptoms from the clinical picture of the neurosis that are not entirely under the control of the will, until we have reached a point when our knowledge of hysteria may be summed up in Babinski's famous dictum—"Entre l'hystérie et la fraude il n'y a qu'une difference d'ordre morale." Hysteria, then, can only be distinguished from conscious simulation by a purely subjective criterion; it may appear to be a retrograde step to return to the old search for organic disturbance after our symptomatology has been carefully purged of the so-called stigmata, which have one after another been shown to be simply the response of the patient to auto- and hetero-suggestion. If, however, the view that a neurosis is the expression of an organic disturbance is to be consistently maintained, an attempt to demonstrate the existence of signs of such disturbance in hysteria is a logical necessity. The implications of the view propounded by Babinski do not seem to have been clearly recognised. Starting with a purely objective analysis of conduct, he finishes by abandoning all attempts at an explanation in terms of neuropathology and refers us to a purely subjective standpoint. Any attempt to understand hysteria must be founded on some knowledge of the general orientation of the behaviour of the hysteric before his conduct brings him into contact with the physician. Such knowledge is rarely directly available to the specialist; it may more often be gleaned from information supplied by the family doctor or by intelligent relatives. The picture obtained from these sources is that of an egocentric individual without strong or durable emotions, though very anxious to impress the outer world with the gravity and intensity of his experiences. Always more ready than a well-bred person should be to impress his fellows, he will not willingly apply himself to any task involving strenuous exertion, fatigue, or danger. The total personality conveys an impression of flimsiness. He appears to be a very different person to the volcano of ill-suppressed sexual passions that some writers on psychotherapy have portrayed. The symptoms of hysteria convey to the observer a certain general impression of what can be called theatricality—though possibly the stage ill deserves such a comparison. The necessity under which the cinematograph actor finds himself of conveying his mental states to the audience by emphasising all the mechanisms of expression has much in common with the conduct of the hysteric. Such vague impressions might lead us to look for indications of enfeeblement of the mechanism of affection which reinforces and protects the general tendencies of normal conduct. In 1918 I had the opportunity of examining all the cases of neurosis that passed through the Maudsley Neurological Clearing Hospital, which at that time had over six hundred beds. I found that the large class of patients exhibiting those motor and physical symptoms which constitute the hysterical syndrome could be readily differentiated from other types of neurosis by the extraordinary depression of the galvanic response to any form of stimulus. Such patients would start or tremble at a loud noise or painful stimulus, when a normal man would hardly budge, but the galvanic response would be either absent or less than normal. Though they might talk of great emotional perturbation there was no corresponding galvanic reflex. The *mise en scène* of the galvanometer room seemed to be extremely conducive to the exhibition of hysterical crises, and I had the opportunity of observing the galvanic reflex during many such scenes. One young soldier suffering from a hysterical contracture of the foot broke down during an examination; tears rolled down his cheeks, he addressed his dead brother in language savouring of a South London melodrama, he asked why he himself had not been killed in his brother's place so that the favourite son might have been left to comfort his poor old father, and all the time whilst he wailed and wept the spot of light from the galvanometer mirror remained steady. In my second lecture I pointed out that in the recitation of dramatic poetry the counterfeiting of rage or grief, no matter how dramatically performed, is unaccompanied by the electrical signs of activity of the affective mechanism. In these observations we have, I think, the key to hysterical behaviour. It is purely imitative. I published these results in a very condensed form at the meeting of the British Medical Association in the autumn of 1918, and since then have seen no reason to modify the conclusions that I then formulated. I not only found that the response to the alleged emotional states is absent but that the hysteric reacts subnormally to all forms of adequate, that is nocuous, stimuli. We are therefore entitled to assume that the activity of his mechanism of affection is subnormal. In the second lecture I demonstrated that a study of the time relations of the galvanic and other forms of response to nocuous stimuli shows that the stimulus is recognised and elicits an appropriate cerebral response an appreciable time before the bodily mechanism of affection reacts. We have, in fact, a kind of dualism—on the one hand the discriminatory mechanism associated with intelligent behaviour, and on the other the reaction of the organism as a whole to a nocuous stimulus. Herein lies the explanation of hysterical conduct. The hysteric is as capable as a normal man of recognising that the situation in which he finds himself is one of potential peril or discomfort, he can respond immediately to the situation by an appropriate cortical reaction; but if the stimulus be continued his activity lacks the reinforcement supplied by bodily reaction. To determine his line of conduct a representation of the situation is necessary, and such a representation must normally involve the activity of the mechanism of affection, since in no other way can the unpleasantness of the situation which reinforces the intellectual appreciation of its danger be recognised. Deprived of this determining force his reaction to the situation will be at the mercy of any casual stimulus. We have had objective evidence that the affective reaction fails him; he has then recourse to other forms of expression more or less distantly associated with the feeling of unpleasantness. The association of bodily ailments with the feeling of distress will most readily furnish the mechanism by which the patient endeavours to represent to himself and to symbolise to the external world the fact that his activities are impeded or threatened by some nocuous influence in the environment. Hence the hysterical symptoms really more in length, folded repeatedly on itself, with a multitude of sharp flexures. Thus a great vis a tergo must be required to overcome the resistance of this intermediate path. Is the secretory pressure in the seminal tubules sufficiently high for this purpose? I think not. The delicate cells here present, undergoing frequent mitoses, give anything but the appearance, in microscopic section, of being subjected to such constant pressure. The necessary force I believe is obtained by contractions of the cremaster muscle on the soft testicular and epididymal substance. If this is so we have an explanation why, when an abdominal replacement is performed, the external secretory cells are unable to function against the great resistance of the intermediate path. The internal secretory cells, whether they be in the interstitial tissue or reside in the tubules, are not so affected, their secretion finding outlet through the circulation.

FIG. 5.

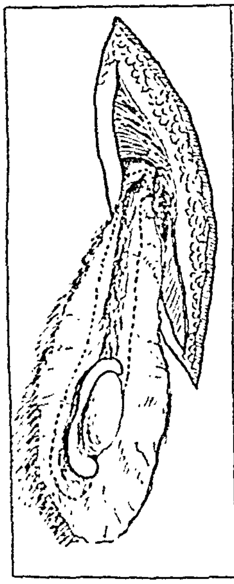

FIG. 6.

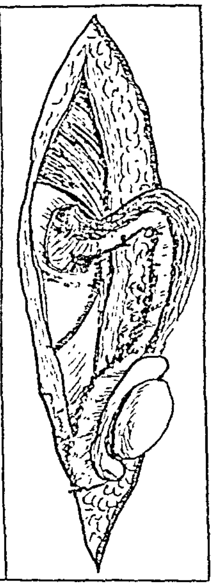

FIG. 5.—Diagram to show how the tunica vaginalis is cut when an abdominal replacement of the testicle is to be made.

FIG. 6.—Diagram to show how the tunica vaginalis is sewn back so as to form a small peritoneal fold behind the cord. The peritoneal opening can then be sutured without any danger of compressing the cord structures.

The practical application of this knowledge amounts to this, that after an abdominal replacement no hope of the development of the power of spermatogenesis can be indulged in, but, on the other hand, it can be assumed that the internal secretory function will be carried on as usual. When the surgeon is confronted with the choice between a Bevan operation and an abdominal replacement there can be no question that the latter is the proper choice, for it is unlikely that after Bevan's operation any function at all will remain to the gland. But there is another possibility to be faced. An inguinal testicle may only be delayed in its descent and be destined to continue its passage ultimately into the scrotum and to reach full development. If such a testicle were placed in the abdomen all hope of spermatogenesis would be lost. To minimise this risk it is desirable to postpone operation until 8 years of age or even 12 years unless there is some other factor indicating earlier measures. The chief factor determining early operation is the presence of pain either due to partial torsion or to muscular traumatism. Both these factors cause fibrosis of the organ and prevent its development. A bubonocele is not an indication in itself, and in any case up to four years no truss should be worn. But if there is a large hernia, or if symptoms of strangulation occur at any time, early operation is imperative, and abdominal replacement should be the method of choice.

In older children and adults it is easy to separate the hernial sac from the cord structures and to make an adequate extraperitoneal nook in the iliac fossa for the reception of the gland, but in young children the peritoneal sac is so exquisitely thin and frail that its separation from the spermatic cord becomes almost impossible. In such patients an intraperitoneal replacement is done. The procedure is as follows:—The sac is split up to the internal ring; at this level two-thirds of the circumference of the sac are divided transversely, and the incision is carried down on each side of the cord at about one-third of an inch distance from it (see Fig. 5). Behind the cord and epididymis the two cut edges are sutured with fine catgut, so that both these structures become surrounded completely by peritoneum, and at the aperture of communication with the abdomen an artificial mesorchium for the emerging cord is made (Fig. 6). The testicle can now be replaced in the abdomen and a satisfactory suture of the aperture of emergence made without there being any danger of injuring the spermatic vessels by the stitching. The inguinal canal is closed as in the radical cure of hernia.

Conclusions.

1. The future treatment of the incompletely descended testicle will lie in the direction of furnishing the missing stimulus to full development.
2. The ectopic testicle can usually be transferred to the scrotum without endangering its future growth.
3. It is not possible to implant a testicle arrested in the inguinal canal into the scrotum without damage to the organ.
4. The replacement of such a testis into the abdomen will destroy any prospect of ultimate spermatogenesis, while it will not interfere with the internal secretory function. The seminal tubules are unable apparently to secrete against the high resistance imposed by the passage through the coni vasculosi and epididymis, unless they are aided by the contractions of the cremaster muscle.
5. Early operation is not recommended. An uncomplicated bubonocele is no indication for operation, but attacks of torsion or strangulation are.
6. When it is impossible to bring down the testicle into the scrotum without endangering its blood supply, orchidocœlioplasty is preferable to removal. The technique of the operation is indicated.

GASTRIC OPERATIONS:

A NOTE ON ONE HUNDRED CONSECUTIVE CASES.

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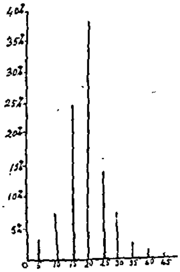
GASTRIC surgery has passed through several phases. A few years ago the last word seemed to have been said in the surgical treatment of disorders of the stomach. More recently a feeling was abroad that all was not well with gastric surgery, that gastro-enterostomy was a bad operation, that excision of ulcer was disappointing, and that, bad though the results of the physicians were, the results of the surgeons were even worse. More recently still, as numerous articles and discussions have shown, opinion has veered again and surgeons at any rate are well pleased with their results. A variety of remedies for one disease suggests inefficient treatment, and the varied procedures invented for the treatment of gastric ulcer might suggest that surgical treatment was unsatisfactory. As in everyday life, so in surgery, there have been waves of fashion, and the treatment of gastric ulcer has been especially at the mercy of the prevailing fashion. The writer believes that the great majority of operations by capable surgeons for lesions of the stomach are satisfactory and that the failures are due to the adoption of the wrong operative procedure. The essence of surgery is experiment—much of an involuntary mechanism does not, however, appear to be true of the affective reactions. I have never failed to obtain a galvanic reflex to a loud sound in cases of hysterical deafness. Another example of the difficulty in drawing an absolute line between voluntary and involuntary symptoms in hysteria is furnished by the vestibular reactions.

I have been able successfully to suggest a definite vertigo to two cases of hysteria who complained of ill-defined symptoms of giddiness. In both these cases when they were asked to perform the pointing test with their eyes shut they invariably showed a deviation corresponding to the direction of the suggested vertigo. Thus in the absence of the start reaction we have an involuntary mechanism definitely suppressed and in the vertigo reaction we have it appropriately altered, when a strict interpretation of hysteria in the terms of Babinski's definition would require them to remain unaffected. What may be the nature of the pathological changes responsible for this hypoexcitability of the mechanism of affection in hysteria it is impossible at present to specify. That the organic change exists prior to the development of the more obvious symptoms may be inferred from a study of the previous history of such cases. The diagram (Fig. 5) is constructed from the statistics of Kraepelin of the age-incidence of hysteria based on 430 cases. Although the years immediately succeeding puberty are those most affected by "Sturm und Drang" it would hardly be expected that the fall in the curve would be so steep were it not that a definite amelioration of the organic response rather than a disappearance of environmental stress is the responsible factor.

FIG. 5.



Kraepelin's curve of age-incidence in hysteria.

CONCLUSION.

At the risk of wearying by reiteration, I will again call your attention to the absence of any proof that the early experiences of the hysteric differ from those of the majority of mankind and to the fact that they therefore cannot be held to play any considerable part as predisposing factors. Of the disturbances of mechanism responsible for the psychoses I do not propose to speak. We have already seen how the observations of Mott and his pupils may be considered to have definitely settled the question of the organic origin of dementia præcox. The profound metabolic disturbances in manic depressive insanity, though still awaiting investigation, are indicative of a similar organic basis. Through the kindness of Dr. Mapother I was able to satisfy myself that the seemingly violent emotional activity of mania is unaccompanied by objective signs of hyperexcitability of the mechanism of affection. Were but a tithe of the attention at present devoted to the classification and tracing of psychogenic disturbances in the insane given to an objective study of their nervous mechanism by physiological methods, we should probably before long have remedied the deplorable condition of the pathology of insanity. Unhappily asylum authorities have not yet recognised the necessity for observers skilled in physiological methods.

In concluding these lectures I must acknowledge with the profoundest sense of obligation the kindness and encouragement in their preparation that I have received from Sir Frederick Mott, in whose laboratory at the Maudsley Hospital the experimental work connected with them has been performed.

THE TREATMENT OF THE IMPERFECTLY DESCENDED TESTICLE.*

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HOWEVER we look at the problem of the imperfectly descended testicle it must be conceded that our present methods of treatment are unsatisfactory. Our knowledge of the condition, so far as it goes, points to the lack of some hormone whose exact nature and point of origin have hitherto eluded scientific research. The future of treatment will, undoubtedly, be in the provision of the missing chemical stimulus, but until we are in a position to do this we must perforce employ methods which fall short of this ideal in their intent, and anything which will further or improve the technique of these measures must not be neglected. From this standpoint it is of first importance to recognise two classes of cases of deranged testicular descent. In the first the testicle starts along its normal path and then becomes arrested before it has emerged from the inguinal canal—that is, an inhibition occurs of a process begun in normal fashion. In the second the testicle emerges from the external abdominal ring, but instead of passing into the scrotum it is diverted to some abnormal situation (the ectopic testicle).

When the organ is simply arrested in its normal path to the scrotum experience has shown that average activity cannot be expected from it, but an ectopic testicle may histologically and functionally be a normal organ. As Thomson Walker says,[1] "the imperfectly descended testicle may never produce spermatozoa, and when it does, this activity may but last for one or two years and then disappear. But all observers have agreed that such testicles produce the internal secretion necessary for the development of the male characters."

In treating this condition our choice lies between two procedures, orchidopexy and orchidocœlioplasty.

Orchidopexy.

Many operations have been designed for the placing of the testis into the empty scrotum. This is the procedure of choice when it is possible without prejudicing the subsequent development of the organ. The obstruction to the easy retention of the testis in the scrotum is the shortness of the spermatic vessels. The experience of all surgeons is that the tendency to retract after operation is very great, but this does not apply to the ectopic testicle. Published statistics have not distinguished between the ectopic and the incompletely descended testicle, and they point to better results than can be expected, and indeed occur, if only the cases of arrested descent be considered. In this connexion it is to be remembered that an inguinal testicle is frequently an ectopic organ. It is very common to find that the testicle has emerged from the external abdominal ring and then turned upwards and outwards towards the anterior superior spine of the ilium coming to lie upon the surface of the external oblique. When this has happened the spermatic vessels are often of almost normal length and the testicle can be placed in the scrotum without them being an obstruction to this manœuvre. The same applies to the perineal testicle. It is not always the case in crural ectopia. Should the testicle emerge from the external ring and then be dragged into the thigh, as described by Eccles, the spermatic vessels would probably be of sufficient length, but I have not operated upon such a case. In a true crural ectopia I opened the inguinal canal, dragged the hernial sac and testis up along the crural canal (as in the inguinal operation for femoral hernia), but glass stomach. A partial gastrectomy is preferable. The operation performed was the usual posterior, except in two cases, where, owing to the fixation of the stomach to its bed, a modified anterior operation was done, the jejunum being pulled through a hole in the transverse mesocolon and great omentum and anastomosed to the lower border of the anterior wall of the stomach. These cases did exceptionally well. In most cases the pylorus was ligatured and in two cases actually divided. The additional time and risk attached to this procedure is perhaps not justified, although the immediate and later results of this operation were exceedingly satisfactory; three cases had undergone an operation for perforation before, and their ulcers had remained active and necessitated further treatment. In all cases the appendix when present was removed at the same time.

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* A paper read before the Royal Society of Medicine on June 1st, 1921.

[1] Text book of Genito-urinary Surgery, 1911.

(c) It has already been stated that gastro-enterostomy for dilated stomach not due to organic obstruction is a bad operation. The writer performed it in one early case of general visceroptosis with marked gastric symptoms, and the patient died of high intestinal obstruction. In such cases the atonic musculature renders gastro-enterostomy hazardous, but even if a vicious circle is avoided no benefit is likely to be derived from the operation.

Excision of Simple Ulcer.

A few years ago this was much in vogue, but now is less frequently practised. By excision is here meant wedge-shaped resection (nine cases), sleeve resection (one case), local excision—i e., artificial perforation and closure (three cases), transgastric excision (one case). One case died of pulmonary embolism 24 hours after operation. Excision appeared at one time to be an attractive method of removing the disease completely without sacrificing too much of the stomach. Of late it has been performed less frequently. Its final results are disappointing. Five cases report themselves as quite well, one was quite well when last seen one year and eight months after operation, four are not happy with their digestion, and four have been lost sight of. The results of excision cannot be compared with those of partial gastrectomy. It has the following disadvantages: It has a higher mortality. It is often most difficult of performance. It is apt to leave a deformed stomach. On two occasions pylorectomy has been performed for hour-glass stomach resulting from a previous excision. This series of cases shows that a partial gastrectomy can be performed with less risk and greater permanent advantage to the patient.

Partial Gastrectomy for Simple Conditions.

Partial gastrectomy has been performed on 25 occasions with one death: (*a*) for simple ulcer, (*b*) for hypertrophied and dilated stomach, and (*c*) for myoma.

(*a*) *For Gastric Ulcer.*—It is undoubtedly the most satisfactory method of dealing with ulcers of the lesser curve and the pyloric half of the stomach. The immediate results are excellent. The only fatal case was that of a man of 47 with a very large ulcer and in very poor condition. He died suddenly of syncope 12 hours after operation. Post mortem: No other cause of death could be found. The post-operative course is exceptionally easy. Patients suffer from no more shock and much less vomiting than after gastro-enterostomy. The final results are excellent. Of the 21 cases of ulcer successfully submitted to gastrectomy 15 have been examined recently and are in perfect health. Six are known to have been cured of their digestive complaints at periods of from one to two and a half years after operation. I know of no more grateful class of patient than those who have had gastrectomy performed for ulcer. This, after all, is the best test of the operation, but it has other features to commend it. It removes an ulcer especially prone to malignant change. In two cases where ulcers were removed in the belief that they were simple routine pathological examination showed early carcinoma beginning in the edge. It is more certain to cure symptoms than gastro-enterostomy alone. Two cases had had gastro-enterostomy previously performed elsewhere for ulcer of the lesser curve and pylorus, and their symptoms had persisted. At further operation the ulcers were found still active and partial gastrectomy was performed. They have been in perfect health during the three and a half and four and a half years which have now elapsed since operation.

(*b*) *For Hour-glass Stomach.*—Partial gastrectomy is the ideal method of treatment for hour-glass stomach. It is more usual to perform gastro-enterostomy to the proximal or distal pouch, or both. Symptoms may be relieved, but the final result is ugly in the surgical sense, and a deformed stomach is left with ulcer or scar untreated. The best results, in the writer's experience, are obtained by complete removal of the ulcer or scar and distal pouch and the fashioning of a new stomach out of the proximal half. This series includes cases where gastro-enterostomy and gastrectomy have been done, and the final results of gastrectomy are strikingly better.

And for Hypertrophied and Dilated Stomach.—Cases are sometimes met with when very long-standing pyloric obstruction has caused enormous hypertrophy and dilatation of the stomach. Usually the pylorus has been the site of an ulcer which has healed some years before. In two cases of this series the size of the stomach was astonishing. The stomach was a huge thick-walled bag with a greater curvature reaching to the pelvis. The pylorus was in either case quite atrophied and would just admit a quill. It was manifestly impossible to drain the stomach at its lowest point by a gastro-enterostomy, so in each case the vast excess of stomach was removed, the cut ends were closed, and gastro-enterostomy performed to the new stomach of normal size. One case is worthy of record.

J. W., aged 69, had suffered for 50 years from pain after food and vomiting. For the last 20 years he had washed out his stomach six times a week. He was becoming feeble from malnutrition and toxæmia. At operation the pylorus was almost completely stenosed, and the stomach dilated and hypertrophied to an extraordinary degree. About half the stomach, including the pylorus, was resected. The circumference of the resected part measured 12 in., 11 in. of the greater curvature being removed. There was practically no shock and the patient made a rapid convalescence. He is still in excellent health (at the age of 73) with no stomach symptoms whatever, although for some months after operation his 20 years' habit was so strongly ingrained that there was difficulty in restraining him from his daily stomach wash-out.

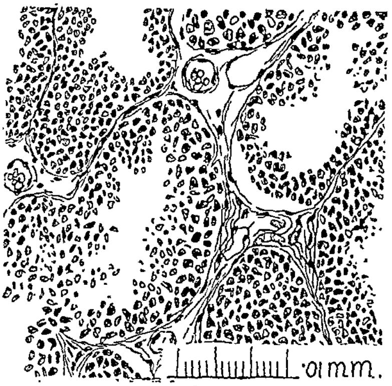
(*c*) *For Myoma of the Stomach.*—There was one case of pyloric obstruction which was found on operation to be due to a rounded tumour of the pylorus projecting into the lumen. The patient was a woman, aged 61. A partial gastrectomy was performed and has been followed by complete relief. The tumour proved to be a myoma.

The Operation.

The operation employed for partial gastrectomy for ulcer has followed largely the Billroth II. method. The vessels are first controlled, and the gastro-hepatic and gastro-colic omentum divided. The duodenum is crushed and divided and the duodenal stump inverted. Posterior gastro-enterostomy is performed—the jejunum being joined to the proximal part of the stomach. The ulcerated part of the stomach is then removed through healthy tissue and the cut end closed. The writer has tried other methods but finds this the easiest and safest; 40 to 45 minutes is the average time consumed, and drainage is usually not necessary. If in doubt as to the duodenal closure, it is wise to leave a tube in the wound for 24 hours. In two cases a duodenal fistula appeared a few days after operation. If the patient is put on an egg diet—12 to 14 eggs a day—the fistula rapidly closes. Catgut is used throughout. The chief difficulties met with during an operation are the result of dense adhesions. Adhesions of the ulcer to the pancreas are not so formidable as they

The third objection rests upon some experiments performed on dogs by Joseph Griffiths.[8] He states that following his operation the spermatogenic cells degenerated and the tubules were left with a lining of a single layer of cells elongated towards the centre. Griffiths gave no details of his actual procedure, so I have repeated the experiments in two adult and one young rabbit. In this animal the tunica vaginalis is not shut off from the peritoneal cavity, and it is easy, after a laparotomy, to drag the testicle up into the abdomen. In one animal this was done on the left side through a lateral laparotomy wound, and the thick gubernaculum cut across. Great care was taken not to injure the spermatic vessels or vas, and the gland was sutured to the abdominal wall by a stitch going through the gubernaculum. Healing occurred by first intention and there were no obvious effects produced. Four months later the animal was killed and both testicles removed for examination. The abdominal testicle was found to have shrunken in size, its weight being 1·75 g. compared with a weight of 5 g. for the opposite normal organ. Figs. 2 and 3 are drawings from sections of the abdominal and scrotal testes. In the abdominal testicle there is a complete disappearance of spermatozoa; the spermatogenic cells are degenerated and those derived from them are absent, so that there is a diminution in size of the tubules. Other cells lining the tubules are not so affected and their nuclei take on the stain in normal fashion. The interstitial tissue is much increased. There is no evidence of any vascular change. In the interstitial tissue, Leydig's cells, so obvious in the human testis, are not detectable. I regard Fig. 2 as representing the end-result on the structure of the seminal tubules, for four months in the rabbit correspond to a span of a number of years in a human life.

FIG. 3.

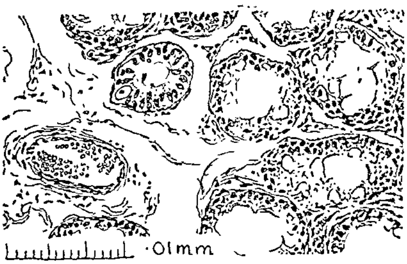


Normal rabbit's testicle.

Fig. 4 shows something of the genesis of these changes. This testicle had been replaced in the abdomen by an inguinal operation for two months only. It shows less interstitial cell proliferation and fibrosis. The most interesting features are the changes in the tubules themselves. In the tubule cavities are the evident remains of the degenerated spermatogenic cells, whilst there is a lining layer of a single row of low epithelium. Undoubtedly, the low cells elongate centripetally. Thus it will be seen that after abdominal replacement the spermatogenic cells and their derivatives degenerate, whilst certain cells lining the tubules, presumably not concerned in the spermatogenic function, remain alive. Probably these cells by their activity maintain the male characters, for Von B. Romeis[9] has pointed out that Steinach's assertion[10] that sex characters depend upon the interstitial cells of Leydig has not been confirmed by other authors, and that the function of these cells is still undetermined, whilst Sejous asserts that certain cells in the seminal tubules correspond to the suprarenal medullary cells and are part of the chromaffin system upon the integrity of which the male characters depend.

The questions may well be asked: Why do these degenerative changes occur when the testis is simply replaced in the abdominal cavity? Why has its function been so seriously deranged? Need it be an inevitable result? It was in answer to these problems that I was tempted to repeat Griffiths's experiments, which have, so far as I know, not been carried out by other observers. I approached the problem with the idea, almost amounting to conviction, that there must either be some interference with the vascular supply, or some obstruction of the vas deferens, produced by the operation. If this were so and such injury were shown to be avoidable, orchidocœlioplasty would become the operation of choice in the incompletely descended testicle. Griffiths's experiments were performed upon dogs. I selected the rabbit because in this animal the cavity of the tunica vaginalis remains connected permanently with that of the abdomen, so that peritoneal fluid bathes the testis equally when it lies in either cavity; moreover, the testicle can be pulled up into the abdomen with scarcely any disturbance of the neighbouring parts. The experiment in the rabbit would seem, therefore, to be more simple and less liable to disturbing factors than in the dog. Injury to blood-vessels or vas deferens was sedulously avoided, and microscopical sections lend no support to the view that any derangement of the blood supply occurred in the experiments. We are thus driven to furnish some other explanation of this baffling phenomenon of testicular atrophy, and I think it is to be found by a consideration of the anatomy of the testicle. This gland is unique in the relation of its secreting acini to its excretory duct. There are no comparatively straight channels running from the secreting elements to fuse obliquely with neighbouring ducts to constitute an ever enlarging tube until the main duct is reached, as, for example, in the pancreas. In the testicle, between the seminal tubes, which are themselves very tortuous, averaging 2 ft. in length, and the main excretory duct—the vas deferens—the testicular secretion has to follow a very devious course. First it passes through the convolutions of the coni vasculosi, and then along the tube of the epididymis, a minute channel 20 ft. or

FIG. 4.



Rabbit's testicle two months after orchidocœlioplasty.

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[8] Jour. Anat. and Phys., xxvii., 1892–93, p. 183.

[9] Münch. Med. Woch., August 27th, 1920.

[10] Verjüngung durch experimentelle Neubelebung der alternden Pubertätsdrüse, 1920.

gastrectomy. The smaller stomach left after removal of the greater part of the lesser curve and pylorus seems to produce no disability afterwards. The disease is removed entire through healthy limits. There is no operation which causes so little anxiety both at the time and during convalescence with so great a permanent improvement in the subsequent health of the patient. There will be certain cases—e.g., cases of low vitality demanding a quick operation where gastro-enterostomy only is advisable. The results, however, judging from these cases, will not be so good as with the more complete operation. Wedge-shaped and sleeve resections have been given up. They are more difficult of performance. The result is often unsightly and the permanent effects not so good as can be obtained by partial gastrectomy.

3. The consensus of opinion has been for some time that duodenal ulcers can be cured by the operation of gastro-enterostomy. This series of cases, short though it is, certainly bears this out. It is probable that bad results from this operation come from mistaking duodenal symptoms for duodenal ulcer, and performing gastro-enterostomy without definite pathological evidence of ulcer. In the writer's experience the classical symptoms of duodenal ulcer are not so definite as has been stated, and hunger pain, as Waugh has pointed out, is symptomatic also of other conditions.

AN EXPERIMENTAL STUDY OF PROPHYLACTIC INOCULATION IN TYPHUS FEVER.

BY PROF. S. KUSAMA, M.D.

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OF the three successful examples of prophylactic inoculation against acute infectious disease caused by an invisible virus—viz., Jenner's vaccination against small-pox, Pasteur's preventive treatment of hydrophobia, and Koch's inoculation against rinderpest—the first two are made with a so-called fixed virus, which has been passed through the bodies of heterologous animals for many generations, its attenuation having been effected in the process, while the third is made with the bile of infected cattle. Although the nature of rinderpest vaccine is not yet clearly known, it seems highly probable that it contains the virus in a considerably attenuated state. Hitherto all investigators who have experimented in prophylactic inoculation of acute infectious diseases with accompanying exanthem have used either attenuated virus or bile of infected animals, but none save those already mentioned has yet succeeded in obtaining any efficacious result with them.

Since last spring I have been experimenting with typhus, the causative agent of which seems also to be invisible virus, and have employed the Japanese monkey (*Macacus fuscatus*) in an endeavour to find a means of prophylaxis against it. I found that, as stated by Nicoll, human convalescent serum was efficacious in preventing infection by the virus. I also found that monkeys' convalescent serum, if used in a certain dosage (e.g., more than 1 c.cm. per kilogramme of body weight of the animal), has also a preventive effect against infection by 50 times the minimal morbid dose of the virus, which fact was reported before the meeting of alumni of the Kitasato Institute for Infectious Diseases in April, 1919. Such passive immunisation may be of experimental value, but it is difficult to apply in general practice, as the serum cannot be obtained cheaply enough at the present time. I therefore attempted to discover an attenuated virus. For this purpose I treated the blood of the infected monkey either physically or chemically, or inoculated the virus into the body of various species of animals for several generations, or used virus withdrawn from the animal towards the close of the course of the disease; all trials with these materials, however, proved negative.

Observations on Results Obtained.

From my study of typhus during the past two years—in which period I have employed over 200 Japanese monkeys—the following facts have been clearly observed:—

(*a*) The incubation period differs according to (1) the site of inoculation of the virus, (2) the virulence, and (3) the quantity of virus or blood. The incubation period is shortest when the virus is inoculated into the vein, or is very strong, or given in a large quantity. By injecting the virus hypodermically, or employing a virus of weak potency or in small quantity, the incubation period is lengthened. If virus of the same potency is inoculated at the same site, the incubation period will naturally be influenced only by the quantity.

(*b*) The incubation period is indirectly proportional to the pyrexial period. If the symptoms develop after a longer period of incubation, the days of disease are fewer, and vice versa.

In the light of the above-mentioned conclusions, it may be said that under the same conditions the incubation period is lengthened or shortened according to the quantity of virus inoculated; the period may be lengthened at will by inoculation of a very small quantity of the virus. Thus we may find a dose of virus, small enough to shorten the days of disease, producing practically no symptoms, whilst at the same time giving a certain degree of active immunisation to the inoculated animal. If this idea prove true, there will be no need to attenuate the virus either by fixing or by passage through the animal body; simply by giving a very small dose a certain degree of immunisation may be bestowed on the animal. Considering this to be attainable, the next step was to find out the quantity which would bring about such theoretical results in monkeys.

Details of Experiments.

Experiment 1 (August 28th, 1919).—The strain of virus here employed was obtained from a female case, Midzuguchi, in 1918, in the Aomori Prefecture, by the author and his assistant Yanagisawa. It had passed through 32 generations at the time of experiment, the virulence being just enough to infect a Japanese monkey with an attack of 9 to 11 days pyrexial period, after 8 days' incubation, by intravenous injection of 0·5 c.cm. of the sick monkey's blood. The infected blood was first diluted with sterile sodium citrate solution (2 per cent. sodium citrate and 1 per cent. glucose in physiological saline), in order to prevent clotting, and then diluted with the saline to different concentrations, so that 1 c.cm. of each dilution corresponded to 0·1, 0·01, 0·001 c.cm. of the original blood. In all experiments here reported the same dilutions were used.

Three Japanese monkeys were treated as follows: No. 100 was given 0·1 c.cm. of guinea-pig's blood (thirty-second generation of Midzuguchi strain); No. 99 was given 0·01 c.cm. of guinea-pig's blood (thirty-second generation of Midzuguchi strain); and No. 103 was given 0·001 c.cm. of the blood of monkey No. 102 taken on the fourth day of sickness (thirty-sixth generation of Midzuguchi strain). All the injections were made intravenously. Monkey No. 100 had onset of fever after an incubation of 9 days and No. 99 after 16 days, but No. 103 had no rise of body temperature even after 25 days. Nos. 100 and 99 had pyrexial periods of 7 and 8 days respectively.

By the results thus obtained the theory has so far been proved to be true; a small quantity of the affected blood—e.g., 0·001 c.cm.—did not produce the clinical symptoms at all, while the larger the dose the longer was the pyrexial period and the shorter the incubation period. In order to see whether monkey No. 103, which had no clinical symptoms, had acquired active immunity or not, I injected hypodermically 0·5 c.cm. of the blood of monkey No. 104 (withdrawn on the fifth day of sickness produced by inoculation with Midzuguchi strain at the thirty-eighth generation). This was just 50 times as much as the minimal morbid dose. The animal had no attack of the disease, and was thus clearly proved to have acquired a certain degree of immunity from the first inoculation.

Encouraged by this favourable result I wanted to repeat the experiment, but unfortunately I could not obtain a monkey, and so the strain of virus was lost;

more so when an attempt is made to cure permanently a condition the cause of which is unknown. Numerous theories of ulceration have been advanced—oral sepsis, embolism, intestinal stasis. The modern trend is to search for some broad pathological basis. Association of symptoms and pathological findings has for some time pointed to the right iliac fossa as the starting-point of gastric and duodenal ulcers. The appendix, the terminal ileum, and the ascending colon have borne the brunt in turn. The most attractive and the most recent addition to the subject is contained in an original and very suggestive paper by G. E. Waugh in the *British Journal of Surgery*[1] on the Morbid Consequences of a Mobile Ascending Colon. Although discussion of the general part of that article is beyond the scope of this paper, yet acknowledgment must be made here of the substantial relief his work must bring to a very large body of sufferers. The patient who before would have been subjected to colectomy, ileocolostomy, or the removal of an inoffensive appendix can now be offered an operation by which he will lose nothing and may gain much. This must be said in passing. But for the moment it is only necessary to consider Waugh's theory of the formation of duodenal and gastric ulcers. He attributes the ulcer formation to the weight of a loaded and mobile colon causing destruction of tissue at the point of strain. Exact figures are not available, but it is believed that in most cases of ulcer in this series an abnormally mobile colon was present. This does not necessarily mean that ulcer is caused by the mobile colon. An abdomen in which the colon is abnormally mobile is a pathological abdomen, and as such is more prone to pathological processes than the normal type. The abnormal mobility is the predisposing cause. What is the exciting cause? Waugh's theory is a mechanical one. He believes that the pull of bands and ligaments determines the ulcer, and adduces much evidence in its favour. He has successfully treated formed ulcers of the stomach and duodenum by colopexy only. But even if it is granted for a moment that mobile colon is indirectly or directly the cause of ulcer it must be confessed that in the class of ulcer dealt with in this paper there was not the surgical courage and optimism to leave the ulcer untouched in the belief that healing would straightway follow. In two of these cases the ulcer had practically perforated; sometimes withdrawal of the stomach was sufficient to cause it to perforate. In the case of other large callous ulcers involving most of the stomach tissue death had gone so far that natural repair could not be expected. In two cases routine microscopical examination of chronic ulcer showed an early carcinoma at the base.

Problem of Dealing with Ulcers.

Even, then, if we look with favour on Waugh's theory, the problem of dealing actively with the ulcer is still before us. Some years ago the writer determined to test the various approved surgical methods of dealing with stomach disorders and to keep a close watch on his patients afterwards. All patients were subjected to a complete chemical and radiographic examination and a large amount of material was investigated. This paper is based on 100 consecutive cases. No case is included that was operated on less than 18 months ago. Cases of acute perforation and congenital pyloric stenosis of infants have been omitted. An attempt has been made to collect, by interview or by letter, reports from all cases. The result has enabled the writer to arrive at certain definite conclusions, for his own guidance, as to the operative procedures which will give the best results in different types of case. In the treatment of ulcers the extent of success is only limited anatomically. Ulcers that are entirely accessible can be cured. The inaccessible can be relieved. With tumours it is the same, early recognition in this case being the dominant factor.

The operations may be tabulated as follows (O.M.: operation mortality):—

			O.M.
1. Gastro-enterostomy for	(a) duodenal ulcer ..	21	0
	(b) gastric ulcer ..	20	1
	(c) dilated stomach ..	1	1
2. Excision of simple ulcer	.. .. ..	14	1
3. Partial gastrectomy for	simple ulcer	22	1
	hypertrophied and dilated stomach	2	0
	myoma	1	0
4. Pyloroplasty	.. ..	1	0
5. Partial gastrectomy for	carcinoma	7	1
	sarcoma	1	0
6. Inoperable carcinoma	.. ..	7	1
Gastro-enterostomy for carcinoma	.. ..	3	1

Gastro-enterostomy.

Gastro-enterostomy is a most valuable operation for diseases of the stomach, but it has been very much abused. Disappointing results in gastric surgery are attributable rather to the performance of gastro-enterostomy without adequate indication than to any other factor.

The clear indications for gastro-enterostomy are: (1) gastric stasis due to organic obstruction of the stomach; and (2) an ulcer of the stomach or duodenum which may be afforded rest and allowed to heal by a short-circuiting of the food path.

The absolute contra-indication is an atonic dilated stomach. A more debatable indication is the presence of an ulcer in such a situation in the stomach (cardiac end) that gastro-enterostomy cannot give rest to the ulcer. Neutralisation of the acid juice is given as the justification of this procedure, but in 45 per cent. of ulcers of the body of the stomach in this series examined by Dr. E. H. Shaw the acidity was normal or reduced. This theory does not appeal to me, and I have found in these cases that the further from the cardiac end and the nearer to the duodenum the ulcer was situated the better were the final results.

(*a*) *Gastro-enterostomy for Duodenal Ulcers.*—Gastro-enterostomy was performed 21 times for duodenal ulcers. There were no deaths. In accordance with the experience of others the results were very satisfactory; 15 cases are under observation at the present time, and of these 13 enjoy perfect health and have no digestive trouble whatever. One suffers from discomfort and a feeling of hyperacidity after meals, and one has vague abdominal pains, but no symptoms directly referable to the very large ulcer which was short-circuited. The six others were all in excellent health when last seen at periods varying from four months to two years after their operations. The operation performed has been the usual posterior "no loop" operation, with the stomach opening in the Mayo line. Catgut was used throughout. The pylorus was closed in most cases. The immediate results seemed to be better and the post-operative course smoother after ligature of the pylorus. The final results were not much affected.

(*b*) *Gastro-enterostomy for Gastric Ulcers.*—Twenty cases were operated upon, of which one died. The fatal case was that of a woman, aged 59, who was found at operation to have a large perforation of the pylorus which had been closed by adhesion to the gall-bladder. Gastro-enterostomy was performed and the hole closed. Unfortunately, the pylorus leaked and she died 16 days later. Post mortem extensive sloughing of the pylorus and duodenum was found. Of the 19 cases remaining 11 have been seen or questioned at the present date and 13 are in good health. One suffers from "occasional indigestion." Of the remaining five, two appeared to gain little relief from the operation, one has been lost sight of, and one, a case of double gastro-enterostomy for a severe hour-glass stomach, has never been quite satisfactory. Five ulcers were of the cardiac, 15 of the pyloric half of the stomach. The poor results were cases of ulceration near the cardiac end of the stomach. The writer has for some time ceased to perform this operation for ulcers in this location in the absence of gastric stasis. Nor does he employ it now for hour-must be settled by future research. The purpose of the present paper is only to draw the attention of investigators to the fact that the use of a minute quantity of typhus virus, not attenuated by a special method, can harmlessly confer upon an animal a prophylactic power against the virus. It is sincerely hoped that this discovery may throw some light on the prevention of those diseases which have invisible viruses as their agency.

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[1] British Journal of Surgery, January, 1920.

SOME OBSERVATIONS ON BASAL METABOLISM IN MENSTRUATION.

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THE theory that the life processes of women undergo a periodic variation correlated with menstruation has been suggested by many writers and was emphasised as long ago as 1876 by Jacobi, and again by Goodman in 1878. Since then the effect of menstruation on the life processes of women has been studied in various ways. The lines along which these investigations have proceeded include observations on the temperature, pulse-rate, blood pressure, the metabolism of nitrogen, phosphorus, and calcium, the excretion of creatine, and the CO_2 output and O_2 consumption. The results recorded are extremely conflicting, but the later, and probably more accurate, observations all point to the fact that, with the possible exception of temperature and perhaps also of pulse-rate, there is no periodic variation in any of these values. In the case of temperature most workers agree that there are slight but definite periodic changes correlated with menstruation.

In view of these conflicting results it was decided to undertake yet another series of experiments comparing the physiological processes in the menstrual and inter-menstrual periods. The points chosen for determination were: (1) the basal metabolic rate of normal women during menstruation and between menstrual periods; and also at these times (2) the cost to the organism of a certain definite piece of work, and (3) the rate of recovery from that work.

(1) Observations were made on five subjects, the basal metabolism being determined, as far as possible, each day during the menstrual periods and three or four times between these periods. In three cases the subjects came to the laboratory about 8 A.M., in the post-absorptive condition, and lay down for half an hour before the experiment began. A five-minute sample of expired air was collected in a bag, measured, and analysed by means of the Brodie gas analysis apparatus. Of the other two subjects more numerous observations were made, and the samples collected while they were still in bed. The height and weight of each subject were determined, and the surface area read off from a Du Bois height-weight chart. From these data, the O_2 consumption per minute per sq. m. of body surface was calculated, and Table I. gives the average results for each subject for the different phases of the monthly cycle.

TABLE I.

Subject.	No. of periods covered by observations.	Total No. of observations.	C.cm. O_2 consumed per sq.m. per min.			
			Pre-menst.	Menst.	Post-menst.	Inter-menst.
I.	5	39	139	139	145	146
II.	4	25	144	143	141	142
III.	4	29	140	140	132	139
IV.	6	58	116	109	109	116
V.	2	33	111	114	117	116

When the results are expressed in this way the respiratory quotient (R.Q.) is not taken into consideration. As this was found to be variable and not constant, as is frequently assumed, the calorie value per sq. m. per hour was calculated, taking the R.Q. into account. These results are given in Table II.

TABLE II.

Subject.	Caloric value per sq.m. per hour.			
	Pre-menst.	Menst.	Post-menst.	Inter-menst.
I.	40·7	40·2	40·4	40·9
II.	40·4	40·4	40·5	39·8
III.	40·2	40·8	38·9	40·3
IV.	33·5	31·3	31·5	33·1
V.	32·2	32·5	32·8	32·2

It will be noticed that the inter-menstrual values vary considerably in the different subjects, although the mean value, 37·2, agrees with that given by Benedict as an average value for women. The variations during the different phases of the sexual cycle are so small that they cannot be regarded as showing any marked effect due to menstruation; the fluctuations which normally occur are often greater than these variations. This conclusion agrees with that recently expressed by Blunt and Dye, but it is not in accordance with the view put forward by Snell, Ford, and Rowntree. These observers, in a preliminary communication which appeared last year, expressed the belief that menstruation "does affect the basal metabolic rate in women at times in health and in disease."

(2) and (3) Although the results obtained show that the basal metabolism is not appreciably affected by menstruation, it seemed possible that the cost of work to the organism during the menstrual period might differ from that during the inter-menstrual period. Consequently a few determinations have been made to test this possiblity, and although these experiments are not yet completed, the method and an example of the results obtained are included here. A certain definite piece of work was performed on days during the menstrual period and again during the inter-menstrual period. The amount of exercise is very much less than that performed in the experiments of Krogh and Lindhard, and of Douglas, Campbell, and Hobson, on the subject of respiratory changes during work and rest. This small amount of exercise was selected as it was found that the subject could undertake it without any real physical fatigue; with greater amounts this was not so. The work consisted in stepping up and down on a low stool in time with a metronome; the exercise lasted for three minutes, 36 steps per minute were taken, the stool being 6½ in. high. The basal metabolism was first determined in the usual manner, and then, after the subject had been standing for about five minutes, a half-minute sample of expired air was taken before exercise began. During the exercise half-minute samples of expired air were collected during the first half of each minute. After the cessation of exercise the subject remained standing and half-minute samples of expired air were collected during the first three minutes, and then during the fifth, seventh, ninth, and eleventh minutes, by which time it was found that the metabolism was restored to normal. The O_2 intake and CO_2 output for each of the half-minutes were determined and the results are given in the graphs, Fig. I. being a result obtained during the inter-menstrual period, and Fig. II. during the menstrual period. These indicate that the cost of work and the rate of recovery from work are the same during the menstrual and inter-menstrual periods. In both cases there is a sharp rise in the CO_2 output and O_2 intake during exercise, followed by a gradual return to the resting value when work ceases. The greatest drop occurs during the first two minutes of rest, the fall after this being much more gradual. The variations in the R.Q. are interesting. Whilst the work is being done the R.Q. falls at first, usually being lowest during the second minute of work with a tendency to recover during the third minute of work. After cessation of work the R.Q. rises very rapidly,

may at first appear. As a rule, with cautious persistence the stomach can be dissected off the pancreas and a portion of the pancreas can be sacrificed if necessary. Adhesions to the transverse mesocolon, especially when the mid-colic artery is involved, present greater difficulty. The vessels may be so endangered that the possibility of having to perform colectomy as well makes the risk greater than the condition warrants and radical treatment of the ulcer should not be attempted.

After-treatment.—Nothing is allowed by the mouth for 36 hours; 10 per cent. glucose and saline is given rectally. Morphia is given without stint for the first 24 hours; after 36 hours fluids are allowed until the morning of the fourth day, when a purge is given and the diet is then rapidly increased. Chicken is usually taken on the tenth day and the patient is allowed up on the fourteenth day and home on the seventeenth day. Convalescence is, as a rule, surprisingly easy. In fact, when once the operation is concluded there is even less cause for anxiety than after gastro-enterostomy. Vomiting is uncommon. Nor is there any need to diet the patient after recovering from the operation. There have been no cases of gastro-jejunal or jejunal ulcers following gastro-enterostomy or gastrectomy.

Pyloroplasty.—A young woman, aged 22, presented the symptoms and signs of pyloric obstruction. At operation a spastic condition of the pylorus was found. The pyloric ring was so rigid and thick and resembled so closely the hypertrophic pylorus of infants that it was decided to try Ramstedt's operation. This was done and has proved quite successful. She writes two and a half years after operation: "I have not had a return of the complaint and my operation has been quite successful." The cause of this curious condition of the pylorus was not determined. There had been no history of stenosis in infancy. There was no sign of ulceration or inflammation. The hypertrophy of the circular fibres was most marked. The rest of the abdomen was normal.

Operations for Malignant Disease.

Sarcoma.—There was one case of sarcoma in this series. It has already been fully reported.[2] Gastrectomy was performed in 1916 and the patient has recently reported (December, 1920) that he is still in perfect health, hard at work.

Carcinoma.—In 17 cases of carcinoma of the stomach seven were found on operation to be beyond surgical help by reason of extension and dissemination. In three the growth was not removable, but gastro-enterostomy gave relief for a period; seven cases were subjected to gastrectomy; one case died as the result of operation. It was that of a man of 58 with carcinoma of the body of the stomach involving the colon. The growth was removed together with part of the transverse colon. He was making an excellent recovery, when 14 days after operation a small perforation occurred at the colon line of suture and he died from shock and toxæmia within a few hours. The other cases did immediately well, but the late results are very disappointing. One, a girl of 22, died of widespread dissemination nine months after operation. Another died of local recurrence one and a half years later. Another died of local recurrence three years later. One died of pneumococcal meningitis four months after operation, and at the autopsy the abdominal condition was thoroughly investigated and no sign of disease could be found. On the face of it the results of gastrectomy for malignant disease appear disappointing, but these cases were all rather advanced and had been treated medically for some considerable time. It is every surgeon's lament that so many cases of cancer of the stomach are not suspected or diagnosed until the disease is too widespread for hope of cure. Earlier recourse to surgery in intractable stomach complaints and the more radical treatment of ulcer by gastrectomy whenever possible should improve the outlook.

Conclusions.

In the operative treatment of ulcers of the stomach and duodenum it is of paramount importance to maintain a breadth of view and to consider each ulcer on its merits. The surgeon who at once associates every ulcer with gastro-enterostomy or with excision, as the case may be, will be disappointed in his results. It must be remembered that the causation of ulcer is unknown, or at least not proved. Even if we believe we know the primary cause of which ulcers are but a secondary manifestation, yet, however desirable it is to find the cause and relieve it, the ulcer itself is fraught with such possibilities of disaster that immediate and direct treatment of the ulcer is generally desirable. Nevertheless, granted that the ulcer requires direct surgical treatment, it is our duty to explore the whole of the abdominal cavity before embarking on any set procedure. In every case of this series a complete examination of the abdominal cavity was made. The appendix was removed when present as a general precaution. As a rule it looked innocuous. Anchoring of the terminal ileum (Lane's kink) was found on a few occasions and freed. Abnormal mobility of the colon was a frequent concomitant and in recent cases (too recent for inclusion in this series) has been treated by Waugh's method. In three cases cholecystectomy for gall-stones was performed at the same time.

After the preliminary examination the exact presence and situation of the ulcer is determined. The ulcer must be established beyond doubt. If necessary, the stomach must be opened and the mucous membrane inspected from within. It is easy to be misled by a thickening of the lymphatics along the ulcer course, or on the pylorus, or by thickening of the peritoneum, into the error of believing an ulcer to be present when none is. It is, no doubt, easy when the patient or the audience are expecting the performance of a gastro-enterostomy, to conclude that a few adhesions and slight thickening of the duodenum represent an ulcer. This is the class of operation which has brought discredit on gastro-enterostomy.

If an ulcer is present it can usually be classified into one of three groups: 1. Ulcers situated, usually on the anterior surface of the stomach, sometimes on the posterior, proximal to a line drawn vertically downwards from the beginning of the lesser curve. 2. Ulcers situated between this line and the pyloric vein—usually on the lesser curve—sometimes on the posterior surface of the stomach, more rarely anteriorly. 3. Ulcers beyond the pyloric vein, most frequently at the beginning of the second part of the duodenum.

1. Ulcers of the first group are the least satisfactory to treat, and fortunately, are the least common. They are difficult by reason of their comparative inaccessibility. The best available treatment is local excision, which may be done with a knife or by Balfour's method with the cautery. Posterior ulcers are difficult. Access must be obtained by free division of the hepatic or colic omentum if necessary, or by a transgastric operation. Gastro-enterostomy is not carried out unless definite gastric stasis has been demonstrated before. Any associated condition, mobile colon, appendicitis, ileal kink, is appropriately dealt with at the same time. Until the cause of ulcer is definitely established the treatment of ulcers in this situation cannot be quite satisfactory. All that this treatment amounts to is artificial perforation and closure, and it is known that subsequent perforations are not uncommon. One of this series had previously perforated twice and at the third operation an ulcer was found about to perforate again. Four cases had previously perforated and were operated on for recurrence of gastric symptoms. It is true they were all in the neighbourhood of the pylorus, which is, perhaps fortunately, peculiarly the ulcer zone.

2. Ulcers of the lesser curve and pyloric part of the stomach are very amenable to surgical treatment. The ideal method for ulcers in this situation is a partial

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[2] Brit. Jour. of Surg., 1916-17, iv., 301.

involving no special apparatus or equipment were quite adequate, and in particular he instanced the use of warm water.

Mr. D. McCrae Aitken (London) was in agreement with the previous speakers as to the fundamental efficacy of complete rest in the early stages, and as to the necessity for the avoidance of physio-therapeutic manœuvres. He described in detail the correct postures to be adopted in the case of the upper and lower limb, and laid special emphasis on the prevention of the common distortions of the lower limb—viz., flexion of the hip and knee.

Mr. W. R. Bristow (London) outlined the rôle of electro-therapy in the early nutritional treatment after the acute stage had passed. At first the interrupted galvanic stimulation was to be used, and this should always be applied to each individual muscle. Later, in recovering muscle, the interrupted faradic current should be utilised as soon as an effective response was elicited, but it was important to realise that a faradic response in a muscle did not mean that full function would necessarily return. During the application of all forms of electrical stimulation the appropriate splints were to be retained in position. He pleaded for the rational use of electro-therapy in this and similar conditions, and for its application to be taught more efficiently in the medical schools.

Dr. F. H. Humphris (London) dealt with the early treatment of acute poliomyelitis from the standpoint of the pure electro-therapist, and claimed that paralysis could be prevented or even cured by the early application of the various forms of electrical treatment. He considered that the whole theory of treatment by rest was open to doubt. Electrical treatment should be instituted in these patients on the first day of the illness, and its site of application should be the spine. In the later stages, of all forms of electro-therapy the static current was perhaps the most valuable.

Prof. H. Brooker Mills (Philadelphia) gave a graphic description of the vast epidemic of poliomyelitis which ravaged the North American Continent in 1916. From the aspect of preventive medicine he considered that the isolation of contact cases, and the local cleansing of the mouth and throat in infected individuals, were two measures of the greatest importance.

Mr. L. A. Parry (Hove) questioned the suitability of the plaster-of-Paris "bed" advocated by Mr. Elmslie for use in ordinary hands, on the grounds of the difficulty of its construction. He also made an appeal for the invention of more suitable types of walking instruments than those generally in use.

Mr. Harry Platt (Manchester) deplored the propagation of such teaching as that advocated in the use of electro-therapy in the acute stages of anterior poliomyelitis. He considered that the discussion had already shown unanimity on the question of the physiological correctness of complete rest both for the inflamed spinal cells and for the locomotor system in general. In the reconstructive treatment of the later stages, the difficulties encountered made one realise the vital importance of the prevention of deformity. The common flexor contracture of the hips, which in many cases prevented the child from being made to walk, could be prevented if the position adopted in the early fixation stage included fixation of the hips in hyperextension.

Dr. W. Mitchell Smith (Stoke-on-Trent) quoted an interesting experience of an epidemic of the poliomyelitis type in pigs. He referred also to the difficulties of preventing the flexion deformity of the hips and the tilting and rotation of the pelvis.

The President mentioned that he had often noticed that a large number of children affected with poliomyelitis had brown eyes.

Dr. Buzzard, in reply, reaffirmed the correctness of complete rest in the early treatment. He stated that he had listened to a lurid description of a child acutely ill, burning with fever, and with rapidly extending paralysis, being subjected to the application of a high frequency electrical current. If this was to be the future treatment of acute poliomyelitis in the early stages, then he could only hope that clinicians would never acquire the power of early diagnosis.

Arthrogenic Contractures.

Dr. Murk Jansen (Leiden) gave in brief an exposition of his well-known views on the rôle played by muscles which act on more than one joint in the production of contractures during the course of or following arthritis. The muscles of the polyarticular class always tended to dominate the monoarticular muscles which showed early fatigue. The common deformities at the hip- and knee-joints were explained by the adoption of this thesis.

Birth Paralysis.

Mr. Platt, in a short communication on birth paralysis (obstetrical paralysis, Erb's paralysis), considered briefly the modern conception regarding the pathogenesis of this disability in view of recent controversial opinions. The position now might be summarised as follows: (1) the clinical, experimental, and operative evidence was all in favour of the view that in the majority of cases there was a supraclavicular lesion of the brachial plexus; (2) there was a certain amount of evidence in favour of the view that a primary injury of the shoulder-joint capsule with secondary involvement of certain terminal branches of the brachial plexus might occasionally be met with; in this small proportion of cases all the clinical features of birth palsy might be present. From a practical standpoint it should be realised more universally that in the majority of patients spontaneous recovery of the paralytic phenomena occurred, and that operative exploration of the plexus was rarely needed. But this tendency towards natural recovery was in itself by no means always a beneficent factor, as it often determined a policy of inattention to the important postural treatment of the limb. Recovery of the spontaneous type was almost always associated with the development of a fixed internal twist of the whole arm, best marked at the shoulder-joint where the contracture was rendered more conspicuous by the accompanying posterior subluxation of the head of the humerus. In the older child the resulting disability was usually considerable and the deformity and general under-development of the limb became more and more unsightly as the years went on. As illustrating the frequency of this type of contracture might be quoted the figures of Fairbank (42 out of 60 cases) and in the writer's series 28 out of 34 cases. The contracture and subluxation could be prevented by early correct postural treatment, and in this connexion the common teaching—viz., of bandaging the arm to the side—was to be condemned whole-heartedly.

The treatment of birth paralysis could be considered under three headings: (1) early postural treatment; (2) the question of the indications for the operative exploration of the injured plexus; and (3) the treatment of the contractures in cases where the paralysis had undergone recovery. (1) At the earliest possible moment the limply hanging arm should be fixed on a splint in the position of abduction and external rotation at the shoulder, the elbow flexed, and the forearm supinated, and if necessary, the wrist in dorsiflexion. With the limb maintained the whole time in this position gentle passive stretching should be carried out daily in the region of the shoulder to prevent the occurrence of the internal rotation contracture. Later on muscle re-education, as far as is feasible in a young infant, was to be instituted. The posture was to be continued until the child developed the full power of active external rotation and abduction at the shoulder. Under such measures recovery was almost invariably seen to follow, and in the end there would be the absence of any contracture. (2) In the few cases where the paralysis was persistent after nine months of appropriate treatment, exploration of the plexus was to be considered, provided the clinical syndrome was not indicative of a lesion situated close to the spinal cord. (3) The shoulder-joint contracture could generally be overcome by manipulation under the experiments were thus discontinued at that time. In May, 1920, I visited Korea and Manchuria with one of my colleagues, Kobayashi, to study typhus, which prevails there, and at Shunsen, Kogendo, in Korea, we obtained a strain of virus from a boy of 17, which we called "Korean strain"; another strain was obtained at Kuroishi town in the Aomori Prefecture, from a female aged 43, and was called the "Kuroishi strain."

Experiment 2.—In this experiment my object was to repeat my first experiment with fresh virus, to see whether or not some different result might be obtained; the virus employed in my first experiment had passed through monkeys' bodies for many generations, and I thought some change of virulence might have occurred. In the second experiment, therefore, the virus was passed only once through the monkey's body before use.

The first series of inoculations were of the Kuroishi strain (one generation), consisting of the infected blood of monkey No. 107, given intravenously as follows: to No. 109, 0·001 c.cm. of blood; to No. 120, 0·0001 c.cm. of blood. Neither developed any symptoms; and then 0·5 c.cm. was injected of the blood of monkey No. 97 (inoculated with the third generation of Korean strain, the blood being withdrawn on the fourth day of illness); this dosage, five times the minimal morbid dose, was given hypodermically to No. 109 and intravenously to No. 120 on the twenty-second day from the initial injection. The monkeys were then continuously observed for 40 days, during which time neither of them contracted the disease.

It may thus be seen that such small quantities as 1/100th and 1/1000th of the minimal morbid dose, given either hypodermically or intravenously, will confer upon the injected animal an active immunity against five times the minimal morbid dose.

Experiment 3.—In this experiment I endeavoured to find the minimal prophylactic dose and minimal morbid dose when virus was given hypodermically. Six monkeys were employed, being given monkey's blood infected by the Korean strain, as follows:—

Monkey.	Dosage in c.cm.	Monkey.	Dosage in c.cm.
No. 141	0·1	No. 136	0·0001
No. 140	0·01	No. 135	0·00001
No. 139	0·001	No. 134	0·000001

No. 141, given 0·1 c.cm. of infected blood under the skin, had the onset of symptoms after 15 days, and six days of pyrexial period. None of the other experimental animals, which were given 0·01 c.cm. or less, had clinical symptoms. The minimal morbid dose, therefore, may be considered to be 0·1 c.cm. of the blood. The five monkeys which had been free from clinical symptoms were each given hypodermically 0·5 c.cm. of the blood of the infected monkey No. 138 (taken on the second day of the pyrexia), and the minimal prophylactic doses necessary were observed. As control animal, untreated monkey No. 144 was also given 0·5 c.cm. of the infected blood. The control animal, No. 144, had a pyrexial attack on the eighth day from inoculation, the pyrexia subsiding on the twenty-third day, while the experimental monkeys, Nos. 110 and 135, had pyrexia after an incubation period of 15 days and fever lasting for six days, with symptoms far less severe than those of the control.

The above-mentioned experiment proved that as the minimal morbid dose is 0·1 c.cm. of the blood by subcutaneous injection, 1/100,000th of the minimal morbid dose protects the animal against five times as much as the minimal morbid dose of the virus. It is also interesting to notice that the virus above a certain dosage gives the animal practically the same degree of immunisation, irrespective of the doses actually injected.

Experiment 4.—This experiment was done to determine the presence or absence of virus in the blood of the animals which had received either the prophylactic injection or the proof injection. In results hitherto obtained, the blood of animals in which experimental typhus had been produced always contained more or less of the virus throughout the course of the experiments. The virus was clearly demonstrable in the blood on the day before the febrile attack, and also throughout its duration. It has been, however, impossible to demonstrate its presence in the animal's blood during the incubation period, for even an injection of so much as 1·0 c.cm. of blood taken during the incubation period produced no symptoms in the second animal. This fact suggested the impossibility of tracing the virus in the blood of monkeys which had received a small quantity of virus for prophylactic purposes. I have, however, taken 1·0 c.cm. of blood from each of the 11 monkeys employed in the experiments, mixed the samples, and injected the entire mixture into another monkey; this animal showed no symptoms. Although this is not a conclusive proof of the absence of virus in the blood of the injected animals, it might be affirmed that in the bodies of injected animals the virus does not increase sufficiently to be demonstrable by an animal experiment.

Summary.

The results thus far obtained may be summarised as follows: None of the 12 monkeys which received injections, either hypodermic or intravenous, of one-tenth or less of the minimal morbid dose of virus had a febrile attack. This fact is very important, for in my last attempt the virus was injected without attenuation of its virulence by passage through animal bodies or by any other known methods. The degree of immunity thus obtained was not the same as in the first experiment, when the hypodermic prophylactic injection protected the animals against 50 times the minimal morbid dose; in the second experiment, in which the prophylactic injection was made both hypodermically and intravenously, the animals were protected against five times the minimal morbid dose; and in the third experiment the hypodermic prophylactic injection protected the animals against five times the minimal morbid dose. According to my experiments, the virulence of the experimentally infected monkeys' blood was greatest on the first and second days of the symptomatological attack and gradually decreased in the course of the disease until at the end of the pyrexial period it had lost a large percentage of its maximum virulence. As regards the site of injection, the intravenous injection produced a severer attack of the illness than the hypodermic; it was therefore natural that the results of immunisation of experimental animals had been so discrepant. And it may be concluded that the immunisation which can be conferred upon the animal is just great enough to protect against five times the minimal morbid dose of highly virulent virus.

The fact that the same degree of immunisation was possibly obtained by the use of very different doses (e.g., 1/10 to 1/100,000th of the minimal morbid dose) can be explained as follows: The virus that has been introduced into an animal's body may enter the general circulation to a certain degree in spite of the animal's individual protective power or resistance, acting at the same time as the antigen; thus it stimulates the formation of antibodies in the animal, but the antibodies then serve to oppose the general circulation of the virus in conformity with the individual resistance. And if all the virus is thus destroyed before it circulates sufficiently to cause the onset of symptoms, a certain degree of immunity is bestowed on the injected animal. If this assumption be true, a general circulation of virus should occur before a certain degree of immunisation is obtained, when a very small quantity of virus has been injected. If the general circulation of the virus should be so rapid that the virus approaches the minimal morbid dose, the prophylactic inoculation with the virus itself would seem highly dangerous. But with the typhus virus, as stated above, no pyrexia occurred among the monkeys after the prophylactic injection. From this fact the growth of the virus in injected animals does not appear to be rapid.

The results thus obtained would be more interesting if the experiments could be applied to the human body. The practical application must, however, be postponed until the virulence of the prevailing virus, the individual differences in susceptibility, and degree of immunisation are fully established. The three strains that I have employed—i.e., the Midzuguchi, Korean, and Kuroishi strains, were nearly equal in virulence as regards the monkeys, but no one can tell if the same holds true for men. The question of the susceptibility of man against typhus virus forms a problem difficult to solve, but there is no doubt that man has a much higher susceptibility than the monkey. The difficulty may be regulated by the use of a more diluted virus, but the immunisation thus obtained might not then be strong enough to protect the injected person against infection. These problems preserve and restore the part affected. In this treatment great attention to detail was necessary.

The various forms of such treatment were: 1. Climatic—country and marine treatment, alternated if possible. 2. Diet, hygiene, &c. 3. Local treatment—rest generally, and immobilisation of the part. In the subacute or chronic stage the patient was got up with a suitable appliance. In convalescence a retention apparatus was used. 4. Abscesses—rarely opened. Invariably aspirate with due precautions. Surgery was now confined to a very limited sphere—e.g., cases of profuse suppuration, or the removal of septic focus. 5. Adjuvant measures: (*a*) heliotherapy was very valuable, accelerating the cure, though there were patients who could not stand it; (*b*) sea-bathing; (*c*) X rays; (*d*) vaccines—were limited in their usefulness, but of value where there were infected sinuses; (*e*) certain forms of chemotherapy.

The speaker then showed a series of slides descriptive of the methods in use at Alton and Hayling Island, and of typical cases. He pointed out that interesting results were being obtained from an investigation at present being carried out on the effects of heliotherapy and sea-bathing on the metabolism of these patients. In the diagnosis, one had to be on the look out for syphilitic arthritis, osteo-myelitis, and pseudocoxalgia. He emphasised that the most dangerous form of the disease was when it occurred in the flat bones of the skull, and that this was a condition where operation should be done at the earliest moment in order to prevent dissemination.

Mr. **John Fraser** (Edinburgh) showed slides describing a certain type of diaphysitis which he considers to be a mixture of syphilis and tubercle in bone. He agreed in principle with Sir Henry Gauvain, but regretted that facilities for such treatment were not generally available in Scotland; hence early operation was more often necessary. He also approved strongly of heliotherapy and a certain form of tuberculin treatment.

Dr. **W. Camac Wilkinson** (London) emphasised the importance of early diagnosis by the practitioner, and indicated methods by which one can intervene long before the tragic results have developed. He held that bone tuberculosis was associated with the human type of bacillus, and therefore the first line of defence was the family. Bone tuberculosis was never the primary lesion, which was most commonly in the lungs or bronchial glands: (1) defence in the family must be strenuous—the carrier must be instructed and treated, and if necessary segregated; (2) defence in the bronchial glands—tubercle in these glands cannot be identified early, all tests fail except tuberculin; (3) defence in the bones—obtained by the use of tuberculin combined with treatment. He concluded (1) that tuberculin as a diagnostic is safe and trustworthy, and (2) that tuberculin as a remedy in proved ways is better than any other method, and indeed than all other methods.

Mr. **F. C. Pybus** (Newcastle) deplored the lack of local facilities. His treatment therefore was based on the means at his disposal—i.e., the out-patient department. He agreed that Alton conditions are the best form of treatment. He never operated on such cases if he could avoid it. As regards abscesses, one should always aspirate and never drain. In the radical cure of abscesses or other foci there were two principles: prevent infection from outside, and prevent infection from inside. He pointed out that in single hip disease the single Thomas hip splint was not efficient.

Mr. **Tubby** gave a short outline of the development of the campaign for the conservative treatment of surgical tuberculosis, and looked forward to the development of heliotherapy.

Dr. **Lockhart Stephens** (Emsworth) presented the point of view of the general practitioner, who ought to recognise early tubercle. Large costly institutions were in themselves unnecessary, as sun and fresh air are free.

Dr. **H. Scurfield** (late M.O.H., Sheffield) asked the percentage of cure at Alton, and stated that in his opinion sanatoriums only patched up the cases.

Dr. **T. H. Martin** (Leasowe) said that in the Liverpool clinics the single Thomas splint was not used for cases of tuberculous hip. He gave statistics of cure at Leasowe, and said that a history of familial tuberculosis in these cases was rare.

Mr. **McCrae Aitken** referred to the beginnings of the conservative treatment. Cases of bone tuberculosis must be rigidly excluded from contact with pulmonary cases. He agreed that the majority of surgical tuberculosis cases are not of human origin. He referred to his experiences with tuberculin, and stated that he had become frightened of it for orthopædic reasons—e.g., the possibility of ankylosis of a joint following a flare-up. He emphasised the absolute necessity for good and plentiful feeding.

Dr. **Camac Wilkinson**, asked by the Chairman to reply to questions raised, gave details of cure by tuberculin, and showed charts. He quoted recent statistics showing that in the large percentage of such cases the infection was human in type.

Mr. **Tubby** then moved a resolution to the Council of the Association expressing the high opinion of the Section of the value of modern conservative treatment, and their realisation of the necessity for the multiplication of institutions similar to those already existing. Dr. Scurfield seconded, and the resolution was carried unanimously.

Sir **Henry Gauvain** replied, quoting further statistics in favour of the human type infection. He took the occasion to thank Mr. Tubby for advice and help given in conservative treatment.

Milk Control and Tuberculosis.

Dr. **H. M. Cargin** (West Hartlepool) read a short paper dealing with the legal and public health aspects of this problem, and advocating the necessity of rigid control—e.g., in the inspection of dairy cattle. An interesting discussion followed.

Dr. **Scurfield** stated that he did not think that the use of pasteurised milk avoided the danger of bovine tubercle, and he strongly advocated dried milk.

Prof. **Brooker Mills** (Philadelphia) described the methods used in the U.S.A. to handle the problem—the city milk commissions and their regulations.

Dr. **J. D'Ewart** (Manchester) discussed the attitude of the farmer, and described the hospital milk-supply in Manchester. He did not think that dried milk was without danger.

Mr. **Elmslie** had seen scurvy, but not rickets, after the use of dried milk.

Dr. **Williamson** also referred to various points in the use of dried milk.

Demonstrations.

1. Cranioplasty, by Mr. **A. E. Morison** (Sunderland) who discussed the indications for the operation, and briefly described his methods. He showed eight cases and numerous X ray photographs.

2. Hydrocephalus, by Dr. **J. D. Lickley** (Newcastle), who discussed the symptoms and signs, the pathology, and the operative treatment. He showed several casts, pathological specimens, and photographs.

3. On Finer Adjustment: with Special Reference to the Hand, by Dr. **F. A. Hort** (Sunderland), who discussed certain refinements in the use of plaster and of splints, showing modifications of certain splints and some beautiful plaster casts of zoological and botanical specimens, illustrating the refinements of which plaster was capable.

SECTION OF AMBULANCE AND RED CROSS.

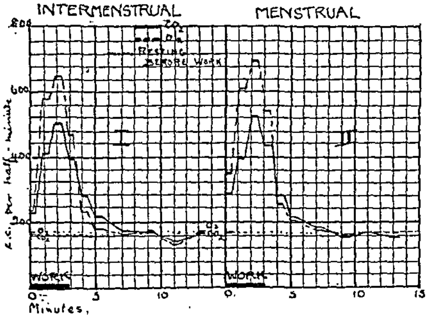
Wednesday, July 20th.

This section was well attended by medical men from Northumberland and Durham interested in ambulance work.

Sir **James Cantlie**, President of the Section, occupied the chair at the session, and opened the proceedings with a well-reasoned address on the

Claims of First-Aid to be regarded as a Special Branch of Practical Surgery.

He deplored the fact that such poor facilities were provided for the teaching of that important branch of is usually highest during the second minute of rest, and then falls slowly to normal with perhaps slight fluctuations. Although more of these experiments must be done before any definite conclusion can be drawn, the processes appear to be identical during the menstrual and inter-menstrual periods.



In conclusion, I wish to thank Prof. Winifred Cullis for suggesting to me this piece of work and for help and criticism during the work, and the Industrial Fatigue Research Board for the purchase of some of the necessary apparatus. I should also like to thank most warmly the subjects of the observations for their coöperation over a long period.

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THE LATE PROF. G. T. LADD.—The death is announced at Newhaven, Connecticut, of George Trumbull Ladd, A.M., D.D., LL.D., emeritus professor of mental and moral philosophy, Yale University, author of "Elements of Physiological Psychology" and many other theological, philosophical, and psychological works.

PORTSMOUTH VENEREAL DISEASES NOTICES.—The affixing in public lavatories of notices giving instruction as to prevention of venereal diseases was discussed on August 9th at a meeting of the Portsmouth Town Council, when certain members of the council expressed their strong disapproval of the practice, stating their belief that it was an offence against decency, and that the notices were shameful and disgraceful. Other members pointed out that a visitor from the Ministry of Health had recently been to Portsmouth and had found no fault with the council's action in the matter; moreover, that action had been approved by a large conference of all the leading organisations of the town.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF ORTHOPÆDICS AND DISEASES OF CHILDREN.

WEDNESDAY, JULY 20TH.

AT the first session, Mr. A. H. TUBBY, the President, being in the chair, a discussion on the

Early Diagnosis and Treatment of Anterior Poliomyelitis

was opened by Dr. E. F. BUZZARD (London), who emphasised some of the frequent mistakes made in the diagnosis in the initial stages of this disease. He considered that given a more widespread recognition of the conception of acute poliomyelitis as one of the specific fevers of childhood, the clinician should be able to arrive at an early diagnosis with greater frequency. It was to be remembered that, contrary to the ordinary accepted teaching, pain was often a prominent symptom of the onset. Confusion sometimes arose in connexion with the resemblance of this disease to other acute infective conditions of the nervous system—viz., meningitis, toxic polyneuritis, Landry's paralysis, myelitis, and lethargic encephalitis. By careful examination it was usually possible to avoid errors from a clinical survey of the patient alone. A serological diagnostic test was theoretically available, but owing to the time involved was of little practical use. In approaching the early treatment of poliomyelitis it was essential to visualise the morbid anatomy of the disease. Treatment might be conveniently discussed under three headings representing stages in the progress of the condition: (1) the treatment of the patient who is ill with the disease, (2) the treatment of the patient during convalescence; and (3) the treatment of the resulting disabilities. During the first two stages a policy of inactivity, supplemented by several well-defined active measures, was indicated. The pyrexia and pain should be treated on the usual lines; in an epidemic, an immune serum, if available, should be given a trial, and the routine use of hexamine, although of doubtful efficacy, was to be regarded as reasonable. Physiological rest, however, was the great essential, and combined with it, the adoption of correct postures for the patient as a whole and for each portion of the body. The paralysed parts should be kept warm and their local circulation promoted by light rubbing. For about 18 months after the onset of paralysis varying degrees of recovery of function in muscles could be expected. This period was one of probation, and should be occupied by the continuance of muscle relaxation, and the preservation of contractility by interrupted galvanic stimulation of the individual muscles. The conventional electrical bath was both harmful and a waste of time. After a period of correct treatment extending over some 18 months, further mitigation of the patient's disablement depended on artifice or operation, these measures being provided by the intervention of the orthopædic surgeon.

Mr. R. C. ELMSLIE (London) laid stress on the practical value of early diagnosis with reference to the immediate application of the principles of complete rest. He advocated the routine use of complete fixation of the recumbent patient on a frame or preferably a plaster-of-Paris "bed." At this stage all physio-therapeutic treatment was to be condemned. In the position adopted for fixation the correct posture for the limbs was of course essential. In the stage of later convalescence, muscle re-education should be begun and it was important to remember that all active movements were to be carried out over a very small range in order to avoid the risk of fatigue. Later on, for the lower limbs, suitable walking instruments were absolutely essential, and unless devised and ordered by experts often merited the criticism which their use evoked. In the later stages, for the preservation of nutrition of the limbs, the simplest measures stones and the results. He showed that these calculi could be recognised and differentiated from renal calculi by their more anterior position (shown in lateral view) and by their structure—the presence of greater density in their peripheral parts.

Mr. J. W. THOMSON WALKER (London) showed that injection of the pelvis of the kidney with opaque material via the ureter would give an indication of the position of the kidney and the relation of the latter to biliary and renal calculi and calcified glands. The description was illustrated by slides.

Dr. E. P. CUMBERBATCH (London) opened a discussion on

Surgical Diathermy,

calling attention to the forms of active electrode which were used. These did not cause destruction to a sufficient depth of malignant growths. Deeper destruction could be procured by using disc end-pieces provided with prongs 10 or 15 mm. long. It could also be obtained if the tissue in contact with the end-piece were prevented from drying. This could be done by allowing salt solution to drip slowly on to the tissue around the end-piece. If the growth were freely movable and an attempt made to excise it by the blade end-piece, he advised that it should be first coagulated in situ before excising it. After reference to the regions of the body to which the diathermic cautery could be applied for malignant growths, the after-effects, the complications that might occur, and the duration of freedom from recrudescence, he described his experience in the use of diathermy for lupus, hæmorrhoids, and pigmented areas of skin. The results were encouraging and he thought that a more extensive trial of the method should be made.

Dr. C. W. S. SABERTON (Harrogate) said that he had obtained excellent results in the treatment of nævi of the mucous membranes by diathermy. In malignant growths of the mouth and throat diathermy produced better results than surgery, and at Harrogate the newer method was preferred. He described a case of naso-pharyngeal sarcoma in which diathermy procured freedom from recurrence for a much longer period than excision by the knife. The use of diathermy for amputating the cervix uteri, for cauterising fungating growths of the anus, vulva, and perineum, for relieving pain of hæmorrhoids and vesical spasm, was described.

Dr. F. H. HUMPHRIS (London) contributed a paper on the treatment of papillomata of the bladder and of corns by diathermy. The treatment of the latter consisted in first wearing away the hard tissue with a revolving steel burr and then with an emery wheel. A moist compress is kept in contact with the corn during the night, and the following day the centre is cauterised by fulguration.

Dr. WILLIAM HILL (London) said that after cauterisation, by diathermy, of malignant growths cicatrisation of the tissues occasionally occurred. Shock also sometimes followed the operation. He wondered why radium had not been used for the case of sarcoma described by Dr. Saberton, as this agent produced such excellent results in sarcoma.

Dr. H. E. GAMLEN (Newcastle) remarked that he had obtained good results in the treatment, by diathermy, of nævi of the mucous membranes and of hæmorrhoids.

THE EXHIBITION.

An exhibition of surgical instruments, drugs, foods, and other products of medical interest, arranged by Mr. W. E. WARNE, was open from July 19th–22nd in the St. George's Drill Hall, St. Mary's Place. Lighting and arrangements were good, an efficient restaurant with string band was provided, but the ventilation was very defective and made the life of the exhibitors needlessly irksome. In the following account the exhibits have been grouped in subjects, the reference number to the stall and catalogue in parenthesis.

Medical books were remarkably well represented by the exhibits of E. A. Brooke-Williams, London (24), H. R. Ellis, London (61), H. K. Lewis & Co., London (13), Oxford Medical Publications, London (54), R. Waugh, Newcastle (22), and John Wright and Sons, Bristol (61).

Instruments.

There were five large exhibits of general surgical instruments: Down Bros., London (68), showed a collection of original models carried out at the suggestion of surgeons; J. Gardner and Son, Edinburgh (28), a number of instruments made in rustless steel; Mayer and Phelps, London (21), instruments for many special purposes including anæsthetics and clinical diagnosis; John Weiss and Son, London (5), a complete equipment for general and ophthalmic surgery; R. Whitelaw, Newcastle (12), up-to-date instruments along with a selection of splints, limbs, and boots. Special exhibits by Robert McQueen and Son, Newcastle (33), of instruments designed by surgeons on the staff of the Royal Victoria Infirmary, and the Genito-Urinary Manufacturing Co., London (60), of cystoscopes, urethroscopes, pharyngoscopes, &c.

Of scientific appliances, the Cambridge and Paul Instrument Co., London (37), exhibited an electrocardiograph, a Mackenzie-Lewis polygraph, a Woodhead-Varrier Jones recording clinical thermometer outfit; Hawksley and Sons, London (80), polygraphs by Mackenzie and Jaquet, sphygmomanometers, electrical diagnostic and anthropometrical instruments; Chas. Hearson and Co., London (63), electric incubators, all-metal wide range thermostatic ovens, autoclaves, myographs, and the like; Ogilvy and Co., London (45), microscopes, microtomes, epidiascopes.

Artificial Limbs and other Appliances.

A wide range of other appliances was on view including six exhibits of artificial limbs: Anderson and Whitelaw, Birmingham (70), a selection of light dress arms, workers' arms, and the implements for use with them; F. G. Ernst, London (71), specially concealed appliances for poliomyelitis, ununited fractures, and rheumatoid arthritis; W. R. Grossmith, London (72), arms and legs adapted to particular amputations; M. Masters and Sons, London (69), light Anglesea legs and other appliances; Peet, Gilman and Company, Newcastle (29), willow and light metal limbs in many forms; P. K. Arm, Belfast (75), a mechanical arm with gripping hand and safety leg with automatic knee lock.

Hospital beds and equipment including the Alton portable bed were shown by Hoskins and Sewell, Birmingham (2); a folding chair and sun-blind for sanatorium use by Institution Requisites Co., Birmingham (73); and fracture apparatus on portable tubular bed-frame, embodying the lessons of the war, by Robert Morison Edinburgh (35).

X ray outfits and tubes along with a handy "hot-point" immersion heater were in the exhibit of the British Thomson-Houston Co., London (62); materials for radiant heat treatment in that of the Dowsing Radiant Heat Co., London (36); radio-active applicators in standard sizes in that of the Kramer Radio Active Applicators, Birmingham (66); electrical aids for the deaf in that of W. H. Pettifor, London (59); and Edridge-Green lanterns and tests in that of Rayner and Keeler, London (41). Kodak (67) had an exhibit of X ray films and developing tanks.

Drugs and Chemicals.

Fine chemicals had a large place in exhibits by Brady and Martin, Newcastle (79), who made a point also of animal extracts, and by Phillips Spencer, Dakers and Co., Newcastle (40), along with crude drugs and compressed tablets. Pharmaceutical preparations were shown by Anglo-French Drug Co., London (56), galyl, ambrine, cuprase, dimol, &c.; Genatosan, London (53), sanatogen, formamint, detoxicated vaccines; C. J. Hewlett and Son, London (4), evapogens, veronigen, somnigen, &c.; Howards and Sons, Ilford (82), standard ether, agotan, optochin, &c.; W. Martindale, London (46), amyl nitrite, animal extracts, sterules, vaccines, &c.; Oppenheimer, Son and Co., London (1), palatinoids, pulverettes, roboleine, &c.; Parke, Davis and Co., London (47), metagen, hemoplastin, hormone preparations, phylacogens, &c.;

næsthesia in children under one year, and occasionally n children a little older. If complete reduction was not obtained at one sitting it was advisable to effect t in stages. After correction fixation should be kept up for a considerable period and preferably by means of a well-fitting plaster. The after-treatment was o be along the lines of the early postural treatment. Where the contracture could not be stretched by manipulation alone the open operation for division of the shortened structures was indicated. This might include, n addition to division of the subscapularis tendon, the coraco-humeral ligament and even the conjoined tendon of the biceps and coraco-brachialis. The original technique of Fairbank for the open operation has been modified with advantage by Sever, and in the experience of the writer could be expected to give satisfactory results provided the period of post-operative fixation was short and stretching and re-education were begun early.

No discussion followed the papers of Dr. Jansen and Mr. Platt owing to the limited time at the disposal of the Section.

THURSDAY, JULY 21ST.

At the second session, with Dr. H. MORLEY FLETCHER (London) in the chair, a discussion took place on

Blood Diseases in Children.

Dr. HUGH THURSFIELD (London), in introducing this subject, said that though it was now nearly eighty years since the discovery of the disease leukæmia had ushered in a period in which these diseases had been studied carefully by clinicians, it might at first sight appear that there had been little or no progress made. Yet if we considered the state of knowledge 20 years ago he believed that it was possible to demonstrate that the progress, though slow, was sensible. Our ideas on classification and differentiation of the diseases were clearer and more definite. He went on to plead for new methods in the study of blood diseases, contending that there had of late been too much concentration on what appeared to him to be the somewhat sterile study of the origin and nature of the white cells of the blood, while we were still grossly ignorant of the functions of most of these. Premising that he was about to lay down propositions in a more dogmatic manner than either his knowledge or his judgment permitted, he proceeded to classify the diseases under discussion into three groups: (1) congenital; (2) secondary; (3) primary, anæmias. For the purposes of the discussion he attempted to define exactly what is meant by anæmia, and the criteria of the different types. After some remarks on the congenital states of the blood, and on the secondary anæmias, he briefly discussed the nature of von Jaksch's pseudo-leukæmic anæmia of infants and then passed on to the problems of the primary anæmias. Again, for the purposes of discussion he proposed that there were only three types of severe primary anæmia known below the age of puberty—leukæmia, purpura, and that which he proposed to call the anæmia gravis of children. This last was perhaps more commonly known as aplastic anæmia, a name to which he took exception since it appeared to him to be a descriptive term applicable to some stages of any severe anæmia. Discussion of some of the problems of leukæmia followed, and he dealt with the differentiation of "aleukæmic leukæmia" and anæmia gravis. For this last type he insisted that its origin was infective, and that, like its analogue in the adult, pernicious anæmia, it was not a clinical entity. Remarks on treatment the success of which, in the speaker's opinion, depended entirely on the successful detection of the focus of infection brought the paper to a conclusion.

Prof. BROOKER MILLS (Philadelphia) opened the discussion with some appreciative criticism of the introducer's main contention that the cause of these complaints must be looked for in infective processes. He then referred to hæmophilia as possibly a congenital disease of the hæmopoietic system. He concluded by illustrating from his own and his colleague's experience the influence of hidden foci of infection on several remote organs or systems.

The CHAIRMAN did not agree with the introducer that the subjects of anæmia gravis were chiefly drawn from the hospital class of the community. He was inclined to think that it was not infrequently met with in well-to-do families, though in no class a common disease. He also doubted whether so sharp a line could be drawn between the different forms of the primary anæmias as Dr. Thursfield had suggested, considering that there were stages in the course of some of the acute leukæmias which it was impossible to distinguish from anæmia gravis.

Dr. J. F. GASKELL (Cambridge) agreed with the introducer that newer methods were eminently desirable in this field of knowledge and gave a very brief account of the trend of some researches at present being made at Cambridge by Dr. Howard Vines on the behaviour of the calcium content of the blood. Though the direct bearing of these researches on the clinical problems which they were considering was not obvious, it was clear already that the variation in the calcium had a profound effect on the whole hæmopoietic system.

Dr. JOHN THOMSON, Dr. LEONARD FINDLAY, and Mr. TYRRELL GRAY also contributed brief remarks; the first dealing principally with that mysterious disease melæna neonatorum, an unusual case of which was shortly described by Mr. Gray. Dr. Findlay thought that the introducer was mistaken in excluding Banti's disease from the category of children's anæmias, and made some interesting general criticisms on the subject of the debate.

Dr. THURSFIELD made a brief speech in conclusion.

Short Papers.

After the conclusion of this debate Dr. FINDLAY read a short paper on the Pre-natal Treatment of Syphilis, in which he advocated this method as the only satisfactory means of controlling congenital syphilis. The treatment of the infant after birth he regarded as quite definitely a failure, whereas the treatment of the pregnant woman had in his hands produced very favourable results.

This paper was discussed by Prof. BROOKER MILLS, Dr. A. A. S. SKIRVING, Dr. IVY MACKENZIE, and others, who for the most part were in agreement with Dr. Findlay. A resolution was passed by the Section calling the attention of the Council of the Association to the matter with a view to the earlier and more complete recognition of the syphilitic mother.

Dr. JOHN THOMSON then read a short paper on Some of the Problems of Hypertrophic Pyloric Stenosis, and Mr. TYRRELL GRAY discussed the surgical aspects of the same disease, based on the operation of some 50 cases at the Hospital for Sick Children, Great Ormond-street.

Dr. MORLEY FLETCHER, Mr. PAGE, and Dr. FINDLAY contributed remarks, but the discussion was prematurely closed owing to want of time.

FRIDAY, JULY 22ND.

Tuberculosis of Bone in Children.

At the third session, Mr. R. C. ELMSLIE being in the chair, Sir HENRY GAUVAIN opened a discussion on the General Principles of Treatment in this condition, pointing out that in 1912 Sir Harold Stiles advocated radical measures in the treatment of bony tuberculosis in children, while shortly afterwards, Mr. TUBBY, in opening a discussion on the subject at the Royal Society of Medicine, urged the adoption of conservative treatment, which was now the more general method of choice. The fundamental principle of all treatment was based on the fact that the condition is an osteitis or osteoarthritis occurring in a tuberculous child, such a lesion being secondary to an infection, and that therefore one must treat the patient generally. In the blood and urine were antigens present before the disease was clinically manifest; and some held that they could demonstrate tubercle bacilli in the blood at this early stage. As a general disease demanded general treatment, he was at present in favour of conservative treatment—i.e., designed to improve the patient's resistance, and to unable to subscribe without reservation to the infective view so cogently urged by the author, he will read with satisfaction the publication of this scholarly monograph.

Inguinal Hernia, the Imperfectly Descended Testicle and Varicocele.

By Philip Turner, M.S., F.R.C.S., Assistant Surgeon, Guy's Hospital. London: J. and A. Churchill. Pp. 104. 9*s.* 6*d.*

The author who sets himself the task of writing a monograph upon hernia, the undescended testicle, or varicocele, has indeed a difficult problem in front of him. These common conditions are within the possibility of study of a multitude of men, and for that reason have always received an immense amount of attention and thought. If an individual is to add to knowledge he must be ingenious in his originality, or bring forward the after-results of a large series of cases, and it is by this high standard that we must judge such monographs. This volume of 104 pages contains much sound advice in the treatment of the average case, but it does not help the practising surgeon in dealing with just those problems in treatment which still await solution. In the treatment of hernia there is one principle upon which the author insists which does really seem of importance—the careful avoidance of injury to muscle fibres by dissection, or strangulation by suture. The observance of this more generally might well reduce the number of recurrences. We look in vain for guidance in the treatment of recurrent hernia, or of those cases in which the conjoined tendon is feebly developed; nor does Mr. Turner describe the recurrence which breaks through the inner end of the posterior wall of the inguinal canal after the cure of an indirect inguinal hernia, though it must have been his fate to deal with these difficult relapses. It would have been of interest to hear his views of the value of such measures as the transplantation of the rectus muscle, or its sheath, or the use of a fascial transplant.

Mr. Turner has gained more success in orchidoplasty than have most surgeons, and this he attributes to his careful division of fascial bands in the cord, and to the method of fixation of the testicle in the opposite side of the scrotum. We cannot agree that " it is certainly very unusual for there to be any difficulty in transplanting the testicle to the scrotum "; even after division of all fascial bands a certain proportion of testicles will not reach the scrotum without tension. His percentage of successes demonstrated—viz., 50—is a very creditable performance in this unsatisfactory condition. As for the varicocele operation the method of suspension is an advance, but here also an account of results would have made interesting reading.

The Sex-Complex.

Second edition. By W. Blair Bell, B.S., M.D. London: Baillière, Tindall and Cox. 1920. Pp. 251. 21*s.*

We cordially welcomed the first edition of this book and are not surprised that a second has been called for. It is with regret that we note that the author does not intend to publish any further editions. That the labour of keeping such a book up to date is very onerous we have no doubt, but we cannot agree with him that " this is not the kind of book that can usefully be taken through numerous editions," for it will always require a skilled assessor to decide the relative importance of various new observations as they are made. The ordinary reader has neither the time nor the knowledge necessary for this and is apt to become confused both by the abundance of the material and the apparent discrepancies contained therein. Inasmuch as a beginning can now be made in forming generalisations, the opinions of such an assessor as Dr. Blair Bell will have special value, for it requires personal experience in original work correctly to evaluate the work of others.

It should be made clear that Dr. Blair Bell does not use the word " complex " in the psychological sense; his subject is the correlation between the female reproductive organs and the endocrine glands, and the way in which these interact with one another in health and disease. The essential fact, as he says, is that femininity itself is dependent on *all* the internal secretions. These profoundly influence both the psychology of the individual and the general metabolism, which in turn is influenced to subserve the necessities of the special functions. These aspects, metabolic and psychological alike, are discussed in an interesting and illuminating manner.

The Endocrines.

Sympathetique and Glandes Endocrines. By Lereboullet, Harvier, Carrion, and Guillaume. Being Vol. IX. of Traité de Pathologie Médicale et de Thérapeutique Appliquée. Paris: Maloine et Fils. 1921. Pp. 350. Fr.18.

Few subjects in medicine are attracting more attention to-day than the relations between the sympathetic nervous system and the endocrine glands. This volume of the Traité de Pathologie Médicale et de Thérapeutique Appliquée is therefore specially welcome. After a general study of the endocrine glands the pathology of each is considered. Then follows an account of the anatomy and physiology of the sympathetic nervous system, and of its pathology. The last section deals with organotherapy. The diagrams we have found excellent; they make it easy to understand the arrangement of the sympathetic nervous system. The chapter on the pathology of this system might well have been amplified, and three pages would appear far too little to devote to the endocrino-sympathetic syndromes. Just as the nervous system as a whole was evolved both for internal integration and for directing the external life of relation, so the sympathetic, as the lowest level of the nervous system, directs the functions of organic life and activates the body for defence against the external foe. In the accomplishment of this task it has entered into an alliance with the endocrine glands, which represent a specialisation of the older chemiotropic methods of defence, and the essential feature of disease of the endocrino-sympathetic apparatus is that it is a perversion of the primitive defensive mechanism.

Individually the sections of the book are nearly all excellent, whilest defects are no doubt due to the fact that the different sections are from the pens of different authors. A chapter correlating them would have materially enhanced the value of the book as a whole.

Treatment of Diseases of the Skin.

Third edition. By W. Knowsley Sibley, M.D. London: Edward Arnold and Co. 1920. Pp. 248. 12*s.* 6*d.*

This book, which has now reached its third edition, contains some useful information, and a number of the prescriptions given are of real value. It is not, however, a scientific treatise, in spite of the fact that the author claims, in his preface to the first edition, that the treatments given " are thoroughly up to date " and " possibly in some cases a little in advance of many of the generally accepted principles of the present school of dermatology in this country."

Although some sound observations are made on the influence of diet and of abnormal conditions of the alimentary tract in the causation of certain skin diseases, the directions for internal treatment are too often as vague as the author's views on ætiology. Herpes zoster, we note, may be produced " by atmospheric changes, exposure to cold and wet, sudden checking of perspiration, traumatism, peripheral nerve irritation or injuries, pulmonary diseases, intestinal parasites, malaria, carbonic acid gas poisoning, arsenic, reflex nerve irritation, such as dental troubles, &c. "; hyperidrosis " is probably due to faulty innervation," and Raynaud's disease " has followed cold, exposure, general disturbances of nutrition, severe systemic disease, various neuroses, and nephritic disorders." These excerpts are taken at surgery. For instance, when they went to any of the big railway stations to teach first-aid, they generally found that nothing better than an old shed was placed at their disposal. The marvel was that first-aid had done so well; but they knew that it could do much better. The speaker recalled that his first class was held below the arches of Charing Cross station. To light that apartment all they had was a candle stuck in an empty bottle, and they drew their diagrams on a piece of white paper pinned up on the wall. Surely such an important branch of surgery was worthy of better teaching accommodation than a shed. He went on to tell how interest in first-aid work in this country really dated from a medical and sanitary exhibition held at South Kensington in 1881. Interest was first taken by German universities and hospitals in the subject, and it was Germany which taught the world military ambulance, although it was England which taught civil ambulance. Despite that, no British university had yet asked for a first-aid class to be held within its sacred walls.

In regard to its practical application the speaker pointed out that when a man received a hurt or a wound the danger period was in the first 20 minutes, therefore it was during that period that first-aid was so important, for everything depended on how the injured person was then treated. Who was it that had charge of the injured person during that critical period in civil life? It was the public, and it was from that standpoint that the question must be considered. He went on to speak of the delight of improvisation which after all was at the basis of first-aid work. He approved of ready-made appliances, but said they were seldom to hand when required. The danger he saw to-day was that the training was approaching too near to the study of medicine. If that went on they would be up against the doctors, and the result would be that the public would have to take up the teaching of first-aid. In conclusion, Sir James Cantlie paid a tribute to the doctors and ambulance men of Northumberland for the magnificent work they had done. He advocated strongly the establishment of colleges of ambulance in the chief centres in this country. "Give them their proper name, and give men a better and higher notion of what is the meaning of first-aid," he added.

Dr. **ROBERT ANDERSON**, Vice-President of the Section, said that during 40 years of teaching ambulance work in the North of England he had instructed thousands of persons, and he gave several examples of the instruction having been turned to practical account. He saw no reason why every man should not have some knowledge of ambulance work, and he approved of the scheme for the establishment of colleges of ambulance.

Sir **JAMES CANTLIE** then unfolded a scheme for an

X Ray Motor Ambulance Wagon Service

for Great Britain, describing the work in London and district, where such an ambulance had been provided by the Eccentric Club, an agency which had done much good in an unostentatious fashion. The question was a humanitarian one, and he was sure they would have no difficulty in obtaining the money to establish the service. With the aid of a display map the President showed how centres could be established throughout the country from which areas could be worked. He then demonstrated the value of the yoke sling, with which to carry a stretcher, condemning the old-fashioned sling, which put all the weight on the neck, and also the carrying of a loaded stretcher on the shoulders. With the yoke sling, modelled on the lines of the farm worker's yoke, two women could carry a man on a stretcher, whereas without it six women would be needed.

A discussion was contributed to by Dr. W. **NUNAN** (Bombay), Dr. J. G. D. **CORT** (Whitburn), and Dr. C. H. **MILBURN** (Ministry of Health).

SECTION OF ELECTRO-THERAPEUTICS AND RADIOLOGY.

FRIDAY, JULY 22ND.

Dr. R. **KNOX** (London), in his Presidential address, stated that the blood was especially suitable for investigation of the action of radiation on the living tissues. He emphasised the need for further precaution by the operator against the action of the rays on himself. He referred to the method of X ray treatment practised at Erlangen and regretted the recent statements in the press that cures of cancer were being obtained. These statements, he said, were premature, and judgment should be withheld until this method had been given an adequate trial in this country. The position of the radiologist in the treatment of malignant growths should be reconsidered. Surgery was the treatment to be given first, but combined treatment by surgery and radiation was better than either singly, and more radiation should be given than is the case at present.

Prof. G. L. **GULLAND** (Edinburgh) opened a discussion on

Radiation in the Treatment of Diseases of the Blood.

He showed that radiation should be used in diseases in which there was hyperplasia of the blood cells rather than hypoplasia, in the leukæmias rather than in the anæmias. If, in the future, the stimulating action of radiation could be increased and the destructive action excluded, the anæmias, especially pernicious anæmia, might be successfully treated. Radiation, when excessive, is able to exhaust the bone-marrow function and produce an aplastic anæmia, after a preliminary anæmia with a high colour-index. X rays should be more systematically tried in polycythæmia vera. The three main varieties of leukæmia react very differently to X rays. In acute lymphatic leukæmia X rays are useless and probably harmful. Chronic myelocythæmia responded best to treatment by radiation, and the speaker preferred radium to X rays. The neutrophiles were most affected and the normoblasts disappeared rapidly. Degenerated cells were found in large numbers in radiated blood. The speaker regarded a reduction of the white count to 20,000 as a signal for stopping the radiation. He regarded splenic anæmia as one of the most hopeful conditions for treatment by radiation. It seemed to him that the problem of the future is the determination of accurate dosage. The evil effects which radiation can produce may complicate the diseases treated by this means.—Prof. S. **RUSS** (London) showed that certain measured doses of X rays produced constant changes in the number of the lymphocytes, whereas the changes in the number of the polymorphs are quite irregular. After large doses of radium a greater regularity was observed in the behaviour of the lymphocytes than the polymorphs.

Dr. J. C. **MOTTRAM** (London) read a paper on

The Use of Blood Counts to Indicate the Efficiency of X Ray and Radium Protection.

He showed that exposure to radiation was followed by a diminution in the number of lymphocytes and polymorphonuclear leucocytes in the blood, and, to a less extent, of the red corpuscles. If these changes were noted in X ray and radium workers, and if they were persistent, they indicated that there was insufficient protection. He showed that it was necessary, when making blood examinations, to determine, not the normal limits of variation in the number of the corpuscles, but the normal distribution of variation, so that when a low count is recorded, its value can be estimated.—Dr. A. **LEITCH** (London) maintained that the diminution in the number of the lymphocytes following an exposure to radiation was a physiological process, and could occur after mental disturbance. He had obtained a similar diminution in rats which showed fright when exposed to the apparatus which was in operation without the production of radiation.

X Ray Diagnosis.

Dr. **KNOX** read a paper and showed lantern-slides to illustrate his method of X ray examination for gall-crude, and some of them are quite misleading, as, for example, Figs. 3 and 4 on Plate 44, purporting to represent sections through a stoma and a lenticel respectively, and Fig. 3 of Plate 46, intended to represent the laticiferous vessels (described as "tubes") of taraxacum root. The careless drawing on the 69 plates is sufficient in itself to mar the value of the book as a guide for the beginner. Moreover, that the information given is not always trustworthy may be seen from the following quotation (p 129): "Closed collateral bundles consist of a xylem portion and a phloem portion separated from each other by a short strip of cambium, the whole being surrounded by a sheath or layer of fibrous tissue."

CHEMISTRY.

A System of Physical Chemistry. Vol. II., Thermodynamics. By W. C. McC. LEWIS, M.A., D.Sc. London: Longmans, Green and Co. 1920. Pp. 454. 15*s*.

THIS volume is one of the well-known series of text-books of Physical Chemistry edited by the late Sir William Ramsay and Prof. F. G. Donnan. Thermodynamics deal with the laws and relationships which govern the quantitative transformations of energy of one sort into energy of some other sort during physical or chemical changes in the system. The characteristic feature of this extremely interesting and important branch of physical chemistry is that one can deal with energy changes involved in a physical change of state or in a chemical reaction without requiring information regarding the molecular mechanism of the process under investigation. The school of physical chemistry, notwithstanding the eloquent criticism of Prof. H. E. Armstrong, is an ever-increasing force in this country, and Dr. Lewis's work will doubtless be regarded as a real contribution to a subject which to the non-expert appears highly mathematical and complicated.

Applied Chemistry. A Practical Handbook for Students of Household Science and Public Health. Vol. I. By C. K. TINKLER, D.Sc., and HELEN MASTERS, B.Sc. London: Crosby Lockwood and Son. 1920. Pp. 292. 12*s*. 6*d*.

ALTHOUGH it would appear that this volume is primarily intended for those students who are reading for the Diploma in Household and Social Sciences recently instituted by the University of London, yet it deserves a better fate than to be regarded simply as a text-book associated with a particular academic institution. The subjects dealt with are water analysis, water softeners and "soda" substitutes, soap, textile fibres, bleaching agents, dry cleaning, air analysis, gaseous fuels, liquid and solid fuels, and materials used for the protection of wood, metal, and other surfaces. The ground the authors have covered is considerable, but nevertheless their treatment of it is well balanced and the selection of experiments wisely conceived. Portions of the volume may well be read by students preparing for diplomas and degrees in public health.

MY LADY'S GARDEN.

Planted and Grown by HACKLEPLUME. London: Watts and Co. 1921. And from Hackleplume, 120, Grosvenor-road, S.W. 1. 25*s*.

THE author closes a sumptuous gift-book with an apostrophe to "The Tortoises who Dwell in the Waters of Lethe," in which she appears to plead for any notice rather than no notice. By the help of the index, which the reviewer—i.e., the Tortoise Who, &c.—is requested to read for the better understanding of the "garden," we gather that the verses are a tribute to all soldiers, sailors, and civilians who took part in the war. The work is divided into 19 sections, each section dealing with a different arm of the forces, or geographical unit, and throughout the verses the names of officers and men are associated with particular flowers, the reasons, given in the footnotes, being calculated sometimes to raise blushes on the cheeks of modesty. The reason for sending the book for review to THE LANCET is that one of these sections is entitled "The Physic Garden," and here various officers of the R.A.M.C. are noted as camomile, vanilla, genista, and so on.

Hackleplume is not a poet, but she is evidently full of her theme, and amidst passages of triteness, triviality, and slanginess happy lines occur. She has felt the splendours and tragedies of the war deeply, and has striven to give expression to the emotions evoked. It would not be fair to criticise more closely a work whose inspiration has been a blend of pity and patriotism. The book is illustrated by Miss Marjorie Raynor in the decorative style of flower painting which delighted the public in the middle of the nineteenth century. None of the flowers are drawn to scale, and profound liberties are taken with their hues, but the patterns made are decorative, and the technique is quite dexterous. The reproductions are good.

JOURNALS.

Journal of Industrial Hygiene. London: Macmillan and Co., Ltd. 4*s*.—Output continues to be studied as a measure of human activity. The May issue of this Journal contains an article of some interest in which the influence of tobacco upon physical efficiency is measured by this means. The process studied was that of blowing glass by machinery, during which moulds are fed with "gobs" of molten glass by a man who gathers the required amount from a furnace. The number of "gobs" gathered hour by hour throughout the day were counted, allowances being made for their size. Then the work of heavy smokers, light smokers, non-smokers, and of those who chewed tobacco was compared. Smoking was found to have little effect upon the rate of output in this occupation, which calls for strenuous physical exertion. Indeed, the light smokers had a slightly lower rate of output than heavy smokers. Chewing, on the other hand, was found associated with a definitely lower rate of output. The conclusion with regard to smoking is curiously at variance with the accepted tradition of athletes, but the data upon which it is based are substantial enough to merit consideration.—Appeal is made in the July number by Dr. H. M. Vernon to morbidity and mortality records as measures in estimating the influence of fatigue on health and longevity. Dr. Vernon's paper deals exclusively with the English iron and steel trade, in which he has carried out an extensive investigation. The sickness experienced in this industry is due for the most part to respiratory affections and forms of rheumatism; older men from 55 to 69 years of age were found to lose 6·5-fold more time from rheumatism than younger men of 16 to 20, an excess which was more marked among those working at high temperatures, where the older steel melters and pitmen lost no less than 7·7-fold more time than the younger men. Older engine men, on the other hand, lost only 3 to 5-fold more time from rheumatism than younger men. The tables given are held to establish that exposure to weather is causative of excessive sickness from rheumatism and respiratory diseases. Mortality data were found to support closely the conclusions drawn from morbidity records; here an interesting fact emerges: that exposure, such as working in the open air, which may increase the risk of respiratory diseases in general, may actually reduce the tendency to phthisis. In this excellent study Dr. Vernon sees reason to conclude that in men of good physique the fatigue of heavy work has but little direct effect on sickness and longevity, and that the heavy work of iron puddlers, of tinplate mill men, and of rolling-mill men, has no injurious effect on health except indirectly, when it induces men to sit about in damp clothes. This conclusion, that the harmful conditions of the occupations studied depend rather upon environ-

Savory and Moore, London (15), ethanesal, fructolax, datura tatula asthma remedy, &c.; W. A. Wharram, Leeds (55), *pepsin preparations, concentrated mixtures, cascalax, laxatol*, &c.; Wyleys, Coventry (50), *antiseptic jellies, bromchloral, elixirs, wylettes*, &c.

Single preparations formed the whole exhibit in the case of the Anglo-American Oil Co., London (30), nujol, an intestinal lubricant of constant viscosity; Clement and Johnson, London (43), yadil antiseptic (allylic carbide) as a liquid, ointment, soap, &c.; Crookes Laboratories, London (25), collosols, the physical characteristics visible under the ultramicroscope; Jeyes' Sanitary Compounds Co., London (42), cyllin, an antiseptic of high bactericidal power and low toxicity; Kress and Owen Company, New York (agents, Thomas Christy and Co., London) (14), glycothymoline, an antiseptic solution based on the alkalinity and saline strength of the blood; Pepsodent Company, London (38), pepsodent, a dentifrice with an acid reaction due to acid calcium phosphate; Wm. Browning Co., London (34), semprolin, a liquid paraffin of standardised viscosity.

Food Products.

Three milk products were shown: Hooker's malted milk (27) claimed to retain the vitamins and to be free from cane sugar and starch; Horlick's malted milk (48), a modified milk containing cereals in which the starches have been hydrolysed by diastase; Glaxo (39), a standardised and desiccated milk, used as a complete infant food. Chocolate was on exhibit by Cadbury Bros., Bournville (18); meat preparations by Brand and Co., London (44), with various essences and beef teas; and Oxo, Limited, London (49), with oxo, lemco, and other concentrated foods; yeast and malt preparations by Calder's Yeast Company, Newcastle (31). Special nutritive substances were on the stands of Mawson and Proctor, Newcastle (3), in the form of majax sugar of milk for humanising cow's milk; Numol, Newcastle (32), a lecithin food rich in vitamins, for use in rickets, marasmus, &c.; Sanagen Works, London (20), a casein-glycerophosphate combination in various forms; Virol (16), a preparation rich in animal fats, used in cases of malnutrition, also as virolax combined with paraffin. Wm. Gaymer and Son, Attleborough, Norfolk (17), showed samples of cyder for patients with gouty or rheumatic tendency.

Spas and Mineral Waters.

A series of six similar stands illustrated the attractions of British inland watering places—namely, Bath (6), with its daily yield of half-a-million gallons of highly radio-active water at 120°F.; Buxton (7), the mountain spa with warm radio-active mineral water at 82°F. and other chalybeate springs; Droitwich (8), with its brine baths containing more than 20,000 grains of salts to the gallon; Harrogate (9), with 87 springs, 16 used internally, divided into sulphur alkaline, saline, and chalybeate; Leamington (10), the Midland spa, with dry equable climate and a natural aperient and diuretic water; Woodhall spa (11), with its spring of water containing bromine and iodine in high degree. The Apollinaris Co., London (26), showed the sparkling table water of the Apollinaris spring and the gently purgative apenta water; Ingram and Royle, London (65), showed natural mineral waters, bottled and in tablet form, from English, French, and other foreign medicinal springs.

Miscellaneous.

Several exhibits touched nearly on the hygiene of the person and the home. The exhibit of the British Commercial Gas Association (76) bore on the abatement of the smoke evil; that of the British Electric Transformer Co., London (58), on the convenience of electric heating and cooking. The Cellular Clothing Co., London, showed the points of aertex material for health and comfort; Ronuk, Portslade, Sussex (52), the use of sanitary polish and floor materials; Sapon Soaps, London (51), the value of neutral saponified cereals in removing dirt and grease.

The Medical Insurance Agency (78) and the Medical Sickness, Annuity and Life Assurance Society (81), both had prominent exhibits.

Reviews and Notices of Books.

GOUT.

By LLEWELLYN JONES LLEWELLYN, M.B. Lond., Senior Physician, Royal Mineral Water Hospital, Bath. With a section on Ocular Disease in the Gouty. By W. M. BEAUMONT, Consulting Ophthalmic Surgeon to the South-Western Region of the Ministry of Pensions. London: William Heinemann, Ltd. 1920. Pp. 469. 30*s*.

IN reading the preface to his book it is realised that Dr. Llewellyn is a whole-hearted adherent of the view that an infective element plays an important part in the genesis of gout. In the body of the work he finds good reasons for dismissing rival theories as inadequate to explain the pathogenesis of this disease, but we have failed to find any allusion to the modern view that an attack of gout may possibly be an anaphylactic phenomenon. While holding that microbial infection is the causa causans of an attack of gout, the author admits that this infection would not produce the characteristic phenomena if there were not already a constitutional predisposition. "Gout," he says, "is an hereditary disorder, the *intrinsic* element of which is an inborn instability of nuclein metabolism which may remain latent, but under the influence of *extrinsic* factors, *infections*, become manifest, as betokened by local inflammatory tissue reactions in joints or elsewhere, the specific character of which is attested by the associated *uratic deposition*." Dr. Llewellyn is of the opinion that the presence of tophi "either clinically demonstrable or deducible from skiagraphic revelations," is the solitary unequivocal criterion for a clinical diagnosis of gout. Examples of non-tophaceous, deforming gout he believes to be largely made up of the atrophic and hypertrophic forms of arthritis deformans.

The first 200 pages of the book are devoted to a consideration of pathological and bio-chemical data and to a discussion of the various theories which have been put forward to explain the nature of gout. While not primarily of interest to the pure clinician, the fascination and lucidity of Dr. Llewellyn's style make every page worth reading. With Chapter XVI. we come to the excellent clinical account of the disease, the detailed consideration of which runs into some 50 pages. Five chapters dealing with clinical diagnosis, including skiagraphic results, then follow. The author is of the opinion that the resemblance between skiagrams of chronic gout and rheumatoid arthritis is so close as to forbid reliance being placed solely on skiagraphy to effect a differential diagnosis. Skiagraphy cannot be allowed to usurp the place of careful clinical observation. A delightful chapter follows on irregular gout, opening with Benjamin Rush's century-old dictum: "It is not a sacred disease. There will therefore be no profaneness in handling it freely"; counsel of which the author takes full advantage. Mr. W. M. Beaumont contributes a chapter dealing with certain ocular defects occurring in gouty subjects, and enters a plea for a more systematic and scientific investigation of the true link, if such exist, between iritis and arthritis. The final chapters are devoted to a consideration of treatment. While much space, as might have been expected, is given up to hydro- and climato-therapy, medicinal agents like colchicum, the iodides, atophan, come in for full attention. Colchicum and salicylate of soda act quickly or not at all. "Because of our unreasoning devotion, our almost fetishistic addiction, to these drugs, I often feel that these agents, especially salicylate of soda, have made more cripples than they have saved."

In spite of Dr. Llewellyn's views on the infective origin of the disease we notice that he devotes little space to vaccine therapy, to which there is only a single reference in the excellent index appended to the volume. It is only fair to say that radical treatment of local foci of infection and toxic absorption is duly insisted upon. Even should the reader be repeated after exertion. Their figures show that the dyspnœa in uncompensated heart cases cannot be entirely explained in terms of an increased acidity of the arterial blood. Neither can the dyspnœa be explained in terms of an altered content of oxygen and carbon dioxide in arterial blood. These negative results lead to the hypothesis that cardiac dyspnœa is due to reflex stimulation of the respiratory centre, brought about in part by venous stasis in the pulmonary circulation, and in part by an increase in the carbon dioxide in the alveolar air.

Reports and Analytical Records.

(1) "WELLCOME" BRAND ANTI-PNEUMOCOCCUS SERUM, TYPE 1; (2) "WELLCOME" BRAND AGGLUTINATING SERUM, PNEUMOCOCCUS, TYPES 1, 2, OR 3.

(BURROUGHS, WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

1. THE therapeutic serum is issued in phials of 25 c.cm. for use in cases of pneumonia caused by pneumococcus Type 1. The makers state that the usual practice is to give 50 to 100 c.cm. intravenously as soon as Type 1 pneumococcus has been identified by one of the usual methods. The mouse method and the culture-tube method are described. This determination is a necessary preliminary to treatment, for no benefit can be expected from this serum in cases of pneumonia, where the causative agent is Type 2, 3, or 4. The intravenous injection can be repeated twice a day until definite improvement occurs, an average case receiving from 200–500 c.cm. in all. Since symptoms of shock have been known to follow the intravenous injection of serum some clinicians prefer to test the patient for sensitivity by a preliminary subcutaneous injection. Both methods of procedure are described by the makers of the serum, who state that favourable results have been obtained in America from its use. It has long been recognised that the intoxication symptoms in lobar pneumonia are frequently out of all proportion to the extent of the pulmonary involvement. The degree of pyrexia, the distressing insomnia, the dangerous cardiac failure are all suggestive of a toxæmia, and it is quite conceivable that good might result from the use of a neutralising anti-serum, given with the object of assisting the patient until from his own tissues the protective bodies have been elaborated.

2. These agglutinating sera for use in type diagnosis are issued in phials of 1 c.cm. with full instructions as to the technique required for their use. The mouse method could hardly be pursued by a practitioner unless he had a licence for vivisection, but for the culture-tube method the provision of a suitable nutrient broth would be a not unsurmountable difficulty.

IRISH WHISKY.

(DUNVILLE AND CO., LTD., BELFAST.)

Two samples of whisky have been submitted to us for analysis, one being described as "Fine Old Whisky V.R.," and the other as "Special Liqueur." The following analytical data were obtained :—

	V.R.	Liqueur.
Proof spirit, per cent... ..	70·4 ..	71·3
Total extractives, per cent. ..	0·039 ..	0·1
Mineral matter, per cent. ..	0·009 ..	0·005
Organic extractives, per cent.	0·03 ..	0·095
	Parts per 100,000 of absolute alcohol.	
Secondary constituents :—		
Volatile acid (acetic) ..	11·75 ..	16·0
Furfural	2·0 ..	1·1
Esters	6·1 ..	5·1

A general consideration of these figures shows that the liqueur brand is a pot-still whisky and the V.R. probably a blend. This is borne out by the slightly higher aldehyde content of the liqueur whisky, whilst the relatively high volatile acidity in both samples is evidence of a proper degree of maturation. Both are free from acrid flavour, the liqueur brand being particularly smooth, pleasant, and characteristic of the highest grades of Irish whisky, whilst the V.R. maintains the odour and flavour associated with this brand. The deleterious qualities associated with the presence of furfural are practically non-existent, as indicated by the small trace of this compound present. These whiskies were analysed by us in 1908 and 1914, and in spite of the lower alcohol content now enforced there is no falling-off in their good qualities.

QUININE ETHYL CARBONATE (EUQUININE) AND DIQUININE CARBONATE (ARISTOCHIN).

(CHEMICALS AND BY-PRODUCTS, LTD., THE COOPER LABORATORY, WATFORD.)

We have received specimens of these two quinine derivatives. The quinine ethyl carbonate is of good appearance, tasteless, and melts between 92° and 94° C. It is a pure and high-class preparation. The diquinine carbonate, or "aristochin," is colourless, tasteless, and melts at 183–4° C. It gives, however, a positive chlorine reaction, and analysis shows it to contain 6·9 per cent. of chlorine; the product cannot therefore simply be carbonate of diquinine. In a previous issue (June 18th) we stated that the S. H. M. Co. were the sole makers of quinine ethyl carbonate in this country. Chemicals and By-Products, Ltd., inform us that this is not correct, as they have made this quinine salt for the past two years.

TAWNY PORT.

(CHAS. TUCKEY AND CO., LTD., 3, MINCING LANE, LONDON, E.C.3.)

When analysed this wine was found to have the composition—

Alcohol	19·3	per cent.
(equivalent to 33·6 per cent. proof spirit)		
Total extractives	8·6	per cent.
Containing mineral matter	0·22	,,
,, sugars	7·6	,,
Fixed acidity (tartaric)	0·41	,,
Volatile acidity (acetic)	0·05	,,

The sugars consist of a mixture of dextrose and lævulose, the latter predominating. Cane sugar is absent. These analytical figures support the opinion that this is a well-made and sound wine, conforming to the type of a good port.

NUVITA DIETETIC BISCUITS.

(GEORGE HERBERT, LTD., GLASGOW.)

Each biscuit weighs 6·5 g., and is divided into two portions of approximately equal weight; the bottom part consists of ordinary biscuit material and above it is superimposed a light-brown, very sweet layer of a thick, slightly pasty consistency. Each biscuit is wrapped in silver paper and when eaten is agreeable to the palate. The two portions were examined separately. As might be anticipated, there is no evidence of the bottom (baked) portion possessing any enzymic activity; the top, however, has a slight liquefying action on starch paste and converts a portion of this starch into sugar. It would appear to consist of a diastatic preparation mixed with wheat flour and some dead yeast cells. The manufacturers claim that the "active" or top layer is composed of materials containing vitamins natural to the wheat berry and also those added from another source. The biscuits are stated to be suitable for convalescents and others of weak digestion. Care and thought appear to have been directed to the manufacture of these biscuits, which are novel in character, and if the claims are substantiated they may be useful in a number of conditions.

ONE of the two offices of Master of Lunacy having been rendered vacant by the death of Sir David Brynmor-Jones, the Lord Chancellor has decided to act on the recommendation of the Royal Commission on the Legal Departments with reference to the suppression of one mastership, and no new appointment will be made.

random, but we can forgive anyone who after reading them abandons dermatology in despair.

In Part 1, which deals with methods of treatment, X rays are given first place, and Dr. Sibley claims that "there are but few dermatological lesions which are not improved or cured with skilled treatment by the X rays." He apparently employs them even for dhobie itch. Apart from X rays, methods of treatment by radium, electrolysis, ionisation, high-frequency currents, vaccines, carbon-dioxide snow, hyperæmia, and baths are described. The great value of diathermy is rightly insisted on. To treat scabies "with radiant heat associated with sulphur inunctions" is perhaps carrying "modern" methods a little too far. In Part 2 the various diseases of the skin are dealt with in alphabetical order, and usually a number of alternative methods of treatment, some of them not very helpful, are given. The detailed description of a definite line of treatment of proved value, based as far as possible on an intelligent appreciation of the ætiology of the particular disease under consideration, would have been more useful to the student of dermatology than a list of methods which "may be beneficial," or "have been used." We read that "high-frequency currents have been tried" for lipoma and that "painting the tumour with liquor sodii ethylatis for two or three days might be of service in some cases." It might—but then again, it might not.

A number of very good photographs are included. Some of them illustrate the effect of treatment in such conditions as acne, alopecia, seborrhœa, and scarring. Advanced students will be interested in the excellent photographs of rare cases that have been under Dr. Sibley's care. It is a bold effort to attempt a manual mainly concerned with treatment in dermatology, especially as, in the author's opinion, the ætiology of so many skin diseases is obscure and their treatment therefore mainly empirical. The fact that Dr. Sibley's book has run into three editions shows that his endeavours have received a fair measure of appreciation.

INSANITY.

Manic-Depressive Insanity and Paranoia. By Prof. EMIL KRAEPELIN. Translated by R. MARY BARCLAY, M.B. Edited by GEORGE M. ROBERTSON, M.D. Edinburgh: E. and S. Livingstone. 1921. Pp. 280. 21s.

THIS is a translation from the eighth German edition of the "Text-book of Psychiatry," Vols. III. and IV. The larger part of the book is devoted to the development of Prof. Kraepelin's well-known conception of the merging of mania and melancholia in a single definite form of mental disorder. After the separation of exhaustion and toxic states from mania and their clinical description as confusional insanity, the occurrence of cases of true mania seemed to many observers to become rare. In this work, however, descriptions of mania are again including such disorders of perception, consciousness, and memory as are reminiscent of confusional states. At times a suspicion is roused that it is in fact toxic and exhaustion states in their very varying aspects that are being described. However, Prof. Kraepelin's case is a good one and is presented in a masterly fashion. His analysis of the temporal dissociation of symptoms affecting intellect, emotion, and volition during the course of a case of manic-depressive insanity is exceedingly interesting if not wholly convincing. Dr. Mary Barclay's translation is good, though very obviously from the German.

Lunacy in India. By A. W. OVERBECK-WRIGHT, M.D., Major, I.M.S. London: Baillière, Tindall, and Cox. 1921. Pp. 406. 21s.

THE general account of the various mental affections regarded from the psychological, pathological, and clinical aspects as they occur in India given by Major Overbeck-Wright is not very notably different from accounts of similar affections occurring in Europe. His classification is founded upon that of Dr. Lewis C. Bruce, and mania, melancholia, and delusional insanity are treated of as insanities of toxic origin. Descriptions of symptoms and treatment are lucid and adequate. Probably the most useful chapters are the medico-legal ones, and these alone should render the book of value to practitioners in India.

SURGICAL WARD WORK AND NURSING.

Fourth edition. By ALEXANDER MILES, M.D., F.R.C.S. Edin. London: The Scientific Press, Ltd. 1921. Pp. 418. 10s. 6d.

THIS handy-sized volume, now appearing in a fourth edition, is a useful and concise compendium for a nurse to read and refer to during her training, and whilst working in a surgical ward. It covers the whole field of knowledge required by the surgical nurse, though some parts are more thoroughly dealt with than others. The information is up to date and for the most part judiciously selected. 393 illustrations are included. Since it is likely that further editions will be called we note a few errors and omissions. No mention is made of Irving's apparatus, now so commonly used for draining the bladder. The only form of gastroscope mentioned is a flexible one, though a rigid tube (e.g., that of Hill or Jackson) has for some years been the more common, if not the only, form used. Clover's and Hewitt's inhalers are figured and described, but not named. The segregator devised by Luys is attributed (both in the index and under the illustration on p. 247) to Leaws. On p. 391 are two illustrations of Thomas's knee-splint which are wrongly labelled "Caliper Splint"; to these illustrations we could find no reference in the letterpress. Fig. 377 portrays Jones's elbow-extension splint, but it is described as a "Splint for the forearm." Fig. 348 is neither named nor mentioned in the text. The type of cholecystectomy forceps attributed to Moynihan in Fig. 149 is certainly not the usual form now recommended by him. For treatment of secondary hæmorrhage after excision of the tongue the nurse is told to hook the tongue forwards "so as to compress the arteries against the lower jaw." Surely the efficacy of the method of dragging forward the stump of the tongue does not depend on this.

These minor errors, however, detract but little from the value of the book, which would certainly constitute a useful guide to one designing a course of surgical lectures to nurses.

THE ELEMENTS OF VEGETABLE HISTOLOGY.

By C. W. BALLARD. Associate Professor of Materia Medica, College of Pharmacy, Columbia University. New York: J. Wiley and Sons. 1921. Pp. xiv.+246. 18s.

Vegetable histology is a subject of much importance to students of pharmacognosy and food analysis, and a clear exposition of the fundamental facts and methods is needed by those who are beginning the study of this subject. Mr. Ballard in attempting to produce such an exposition has cut down the subject matter as much as possible so as to avoid the inclusion of numerous confusing details, but has not shown much judgment in his selections of matter. His book is divided into 19 chapters, of which four deal with the microscope and its accessories, and the preparation of material; two other chapters describe the chemical reactions of plant tissues and the use of stains, while the remaining 13 deal with the structure of the various plant organs. In a book of this kind the inclusion of so much matter relating to microscopes and their accessories seems rather out of place, since such information can be better obtained from books on physics or from special works upon the microscope as an instrument. A similar criticism applies to much of the general botanical anatomy of leaves, roots, stems, &c., which can be better learnt from text-books on botany. The illustrations are the subject is a histological section, especially with a magnification approximately equivalent to that given by a ⅙ inch objective and a medium ocular. Many such photographs are published in medical journals and most convey very little information to anyone who is not familiar with the appearances which it is sought to represent. The chief difficulty arises from the fact that the photograph reproduces only a single plane in the section, whereas visual examination is—or ought to be—always accomplished with a twiddling of the fine adjustment which gives a synthetic picture of the many planes into which an ordinary section can be divided. Practically also the absence of colour is a substantial defect, and it is unfortunate that while high-power colour photographs can be easily taken, no technical journal can afford to reproduce them regularly. The main claims that are made in favour of the photomicrograph are two in number. The first is that it reproduces what is actually there. This is illusory in so far as it fails to recognise the possibilities of altering the whole appearance and apparent nature of the details by altering the conditions of illumination, screening, and other technical minutiæ; photographs put forward as proof of the existence of some histological fact are open to the same critical consideration as those which purport to demonstrate the material existence of the spirit. Adequate investigation of microscopical appearances which are in dispute can be made only on the specimens themselves; for these no sort of photograph can be substituted. The second point is that photomicrographs are easy to do. This is undoubtedly true, for it is difficult to avoid getting some sort of result, and first-rate pictures are within the compass of most people. Indeed, the facility with which a process, still holding some of the glamour of the mysterious, can be put through has done much to encourage the "camera fiend" element in our histologists.

The alternative to photographs is drawings. No one can doubt their essential superiority who will compare the illustrations in, e.g., MacCallum's "Pathology," with those in, e.g., Beattie and Dickson's admirable text-book, and set himself to make out what the various black and grey marks on the paper mean. Drawings are commonly thought to be impracticable because of the time and artistic skill required, and undesirable because the original appearances have been through the uncertain mill of human judgment and interpretation. As a matter of fact, failing the original specimens, what the reader wants to know is, not what is there according to the camera, but what the author thinks is there; in the text we want the author's interpretation of what he has seen and the same is true of his illustrations. Drawings truly take much longer; a fairly elaborate picture may represent a fair day's work. But it is worth very much more than the photograph, so that two or three well-chosen pictures may go further to explain a subject than a dozen or more unintelligible photographs. And the technique of making good drawings is not very difficult to acquire. There is no need to keep a "Professor of Art as applied to Medicine," as is done at Johns Hopkins. It is not derogatory to the dexterity of Dr. E. H. Kettle, Dr. G. W. Nicholson, and Mr. G. A. Pannett to hope that others may emulate them and publish with their papers illustrations from their own drawings which really do illuminate the sections they have cut and the philosophy with which they have examined them. Let us therefore hope that the art of histological drawing will find more adherents, and that photomicrography may be relegated to its useful sphere—say, of reproducing appearances under quite low magnifications, where the labour of a drawing may become immense, or of picturing bacteria, blood corpuscles, and other objects with a negligible thickness and definite outlines.

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The Objective Study of Neurosis.

The subject selected by Dr. F. L. Golla for his Croonian lectures before the Royal College of Physicians of London, three of which have been published in recent issues of The Lancet and the fourth in the present issue, is one which must make a direct appeal to all who desire insight into the significance of that much-misused epithet "neurotic." Too often the physician is compelled to mask his ignorance of the precise nature of a patient's affection by relegating it to the ill-defined and ill-demarcated group of "neurosis," and notwithstanding the immense strides that have been made in neurological and psychological diagnosis exploration of the objective aspect of functional nervous disease has certainly not proceeded pari passu with that of the subjective. For the moment, indeed, such nervous disorder as is apparently sine materie has been passing to some extent into the hands of the practising psychologist and the professional psychotherapist, whose argument that psychological disease should be cured by psychological methods is perfectly legitimate and whose therapeutic successes are, at least in many instances, as striking as any obtained in other fields of medicine. Dr. Golla, it will be seen, approaches his subject exclusively from the physiological standpoint, and deserves every credit for his bold endeavour to call a halt to the rush of purely psychological investigations with which the study of neurosis is like to be inundated. If we understand his position rightly, he would have it that the abnormal psychical reactions of the neurotic are themselves but symptoms, and are not the cause of anything but rather the result of something. That something is "a physical disturbance of mechanism," constituting the primary factor in the neuroses; a physical disability, a "failure of organic equilibrium" is the cause of the neuropathic condition and the necessary precedent to its manifestations.

There is, of course, no actual novelty in the contention. For that matter we have been told recently by Freud himself that "the structure of psycho-analysis that we have erected is really only a superstructure which at some future time must be placed upon its organic foundation, but what this is we do not know as yet." Relying to a considerable extent on war experiences, the controversies arising out of which are evidently far from being at an end, Dr. Golla stresses the point that exposure to similar if not identical conditions has never resulted in the development of neurosis in all thus exposed; not all, who would, can or will become hysteric, neurasthenic, or whatever it be. Patently some other factor enters into the matter. The physician who believes in the psychogenic origin of the major part of the neuroses of war also admits the existence of an antecedent element, constituted by a specific hereditary predisposition; and yet this will not engender a neurosis in a given case of difficulty of adjustment to war conditions unless and until, as has been frequently emphasised, the unconscious motive or motives to which weighty psychological import is assigned have revived and reinforced wishes that have been repressed in older, pre-war, unresolved conflicts. There may, indeed, be little evidence of any specific hereditary predisposition, though Dr. J. M. Wolfsohn, working with Sir Frederick Mott, obtained a history of family or individual neurosis in a very high percentage of all war neurotics, and there may be little proof that anything mental conditions than on the amount of physical energy expended, is one of no little importance and of hope. Physical exercise is necessary in industrial work, and cannot well be avoided; environmental conditions, on the other hand, are capable of amelioration.—Dr. Alice Hamilton contributes in the May number an excellent summary and discussion of the position relating to malignant tumours of the bladder among aniline workers. The summary of evidence is a valuable one, and the case put forward for considering that arsenide of hydrogen may be the substance at fault is of interest. The case would be stronger if evidence was forthcoming that operatives exposed to arsenide of hydrogen in other industries, apart from the dye industry, suffered in the same way. Much more light is needed on this subject; just as it is upon the occurrence of cancer among chimney sweeps, briquette makers, and smokers, all of whom are exposed to products of distillation of vegetable matter. Some substance or substances are present which seem to possess the power of sensitising the tissues to malignant growth. More definite information might help to elucidate the whole obscure problem of malignancy.—Two articles dealing with poisons which may cause toxic jaundice have appeared: one in the May issue, by Dr. D. C. Parmenter, is concerned with tetrachlorethane poisoning as seen in an American plant making artificial silk, in which this volatile hydrocarbon is used as a solvent for cellulose. Exposure to fumes seems to have been well controlled, so that no fatalities or serious cases of jaundice have occurred, but a number of cases of minor illnesses are reported. Abnormal fatigue, discontent, general nervousness, loss of appetite and sleep, are the early symptoms reported, while later nausea and sickness, with abdominal pains and possible jaundice, may occur. Blood abnormalities were always found to be present, including (1) an increase, up to 40 per cent., of large mononuclear cells; (2) a slight elevation of the white count; (3) progressive but slight anæmia; and (4) slight increase in platelets. The presence of a considerable number of young mononuclears distinguished the severer cases. Dr. Parmenter holds that if sufficient care is taken to remove by suction draughts the fumes of tetrachlorethane, and if careful medical supervision is instituted, the use of tetrachlorethane commercially is feasible without undue risk to the workers; he lays considerable stress upon the importance of blood examinations for detecting early cases. The second article deals with T.N.T. poisoning, and is referred to elsewhere in these columns.

Wiener Archiv für Innere Medizin. Edited by W. FALTA and K. F. WENCKEBACH. Vol. II., Part 3. Pp. 357–633. June 30th, 1921. Berlin: Urban and Schwarzenberg. M.102.—Osteoarthropathy in Carcinoma of the Lung, by Priv.-Doz. Dr. Maximilian Weinberger. A full clinical and post-mortem report is given of a male patient, aged 62, in whom symptoms due to the bone changes of osteoarthropathy developed nearly two years before the clinical signs of disease of the lung (primary bronchial carcinoma) were evident. The bone changes were so widespread and the enlargement of the extremities so marked that the patient was admitted to hospital with the tentative diagnosis of acromegaly. Skiagrams of the forearm and knee, and a photograph of the femur after its removal on post-mortem examination complete the communication.—Acquired Hæmolytic Jaundice (Widal-Abrami), by Priv.-Doz. Dr. Hans Pollitzer, Drs. Hans Haumeder and Stefan Schablin. The pathogenesis of acholuric jaundice and the relation of the acquired to the familial or congenital forms is discussed at length. Illustrative cases are given, and in two of these the diagnosis is made in the absence of an increased fragility of the red blood corpuscles. The authors give their reasons for the view that the disease is due to dysfunction of the spleen.—Vascular Spasm in Intermittent Claudication and Reference to Certain Capillaromotor Phenomena, by Priv.-Doz. Emil Zak. The author demonstrates the important symptoms of intermittent claudication in the normal upper extremity by depriving the limb of its blood-supply by pressure on the brachial artery simultaneously rapidly clenching and unclenching the fist some 30 times. He thus explains the vascular spasm and ischæmia in intermittent claudication as the result of a normal reflex called into action by the deficient supply of blood to the part. The nature of the stimulus that provokes this reflex is discussed, and reference is made to the clinical aspect of recent physiological work on capillary tone.—Contributions to the Clinical and Pathological Study of Tetany, by H. Elias and E. H. Spiegel. The authors find an increased phosphorus content in the blood serum in various types of human tetany. The inorganic phosphorus accounts for this increase in the total, the lipoid phosphorus being unaltered. The increase is generally more marked in severe cases, and it does not appear to be determined by muscular spasm. They maintain that it is an important symptom, and possibly an ætiological factor, in tetany.—Blood Pressure in Diabetes Mellitus, by Dr. K. Hitzenberger. The blood pressure in 97 cases of diabetes was recorded and compared with that of 561 patients suffering from ailments not likely to influence blood pressure. The author found the average blood pressure lower in diabetics under 40 than in the control cases, while in diabetics over this age it was higher than in the control series.—Hæmorrhagic Nephritis and Tuberculin Hypersensitiveness, by Doz. Dr. A. Müller-Deham and Dr. Kuno Kothny. Ten cases of acute nephritis are reported in which von Pirquet's skin reaction was strongly positive. In no case was there any sign of active tuberculosis, but there was clinical evidence of "latent" tuberculosis in all cases. This last statement is based on the presence of impairment of percussion note at the apex or hilus of the lung, or on signs of old pleurisy. The authors claim to have cured six of their patients and improved four by the subcutaneous injection of Koch's old tuberculin and bacillary emulsion. With one exception of 26 weeks' duration, the average duration of illness before admission was 1½ weeks, and the average period of treatment was 2½ months. In the success of the specific therapy they employed they find support for their view that hypersensitiveness to tubercle toxins is an ætiological factor in many cases of acute and chronic nephritis.—On the Pathology of Dyspnœic States, by Priv.-Doz. Dr. Leo Hess. The author gives a clinical account and post-mortem findings in the case of four patients who suffered from heart failure and paroxysms of dyspnœa. As a result of his observations he comes to the conclusion that the dyspnœa in these cases was neither cardiac nor cerebral in origin, but rather due to vascular spasm occurring in the pulmonary circulation.—On the Inter-relation of the Composition of the Blood and Hydrochloric Acid Secretion by the Stomach, by Dr. M. Leist. Observations are made from the point of view of the effect on the blood content of chloride and water of variations in the secretion of gastric juice; and, per contra, the effect on the secretion of gastric juice of variations in the protein and water content of the blood.—On the Nervous Origin of Gastric and Duodenal Ulcer, by Dr. Stylianos Jatrou. It appears that the nervous system is not the cause, but rather a factor in the causation of gastric and duodenal ulceration.—Pathology of the Secretion of Bile, by Dr. Hermann Beth. The author describes a method for the quantitative estimation of bile salts. The contents of the duodenum containing freshly secreted bile are collected by a duodenal tube, and the results given are based on the examination of 21 patients suffering from various diseases of the liver.—On the Pathology of the Lungs (Part II., Cardiac Dyspnœa), by Prof. Hans Eppinger and Dr. Walter Schiller. The carbon dioxide combining power of the blood is taken as the index of its "acidity." The acidity of venous and arterial blood in healthy persons and in patients with heart failure is compared; the observations are

Annotations.

"Ne quid nimis."

SUBMARINE HYGIENE.

The men of the Submarine Service took great and mysterious risks on our behalf, and for their courage we hold them in honour. But in peace-time they still have to face discomforts of which we know little. Perhaps the most persistent is the stuffiness of the boats, which is explained in a handbook for medical officers of Submarine Service, by Surgeon-Commander R. W. B. Hall, R.N., issued by the Admiralty. Stuffiness is due to the presence of the crew and to gases from the batteries and engines. The engines now blow the products of combustion straight overboard, so carbon monoxide is no longer a danger, and the specially susceptible white mouse, the original mascot of the service, and figured on its banners, is no longer its guardian angel From the secondary batteries, while they are being charged, hydrogen is liberated, and, if in quantity, may cause explosion; also, if leakage occur or disaster, and sea-water floods a battery, chlorine is given off, deadly in 1 part to 10,000. But the chief unavoidable impurities arise from the crew, products of respiration or perspiration, emanations from the body, clothing, or food, and tobacco-smoke. The unpleasantnesses are due to heat, moisture, smell, loss of oxygen, increase of carbonic acid, and, rarely now, carbon monoxide. Arseniuretted hydrogen may be present from aforetime carelessness in the preparation and supply of the sulphuric acid and the lead used in the batteries.

When a boat is on the surface she is ventilated through the conning tower, the hatches, and special ventilating shafts, while if under way, a free current of air is drawn into her through all apertures by the suction of the engines, which discharge the used air overboard. During submersion no fresh air can be introduced, and at first reliance is placed on 16-inch traversing table-fans which keep the air of the compartments freely moving and mixing. After some twelve hours the inhabitants will begin to pant and the purifiers must be used to get rid of the increasing carbonic acid, the air being drawn constantly through trays of soda-lime, renewed every four hours. The air then becomes unduly hot and moist and is passed through coolers, which condense the moisture as snow. Generally there are two ventilation systems, one for the torpedo-room and fore-end, the other for the engine-room and the after compartments, each with its own supply and exhaust trunks for use when the vessel is on the surface, and each helping the mixing of air when the vessel is submerged. The battery exhaust is of special importance when recharging is proceeding, and it can be separated entirely from the general ventilation of the boat. The water-closets have air-exhausts to the engine induction system, useful on the surface: but the closets can be used when the vessel is not deeply submerged, for excreta are washed out of the pan, by sea water admitted through a specially guarded inlet, into a pressure-tight chamber, which is then closed to the pan, and the contents are blown into the sea by air pressure of 80 lb. or so. As to diseases, constipation is frequent, and dermatitis from petroleum: the risk of heat-stroke to crews of submarines operating in the tropics is great: eye-strain causes anxiety, it results from long spells at the periscope, but it is understood how needful it is that the observer shall be physically comfortable and have a good seat and a periscope that fits him and suits his sight. Eye-strain depends also in a small degree on the lighting of the boat, for the only light when submerged is electric. Lighting nowadays, to avoid glare, is indirect, the lamps being shielded by metal reflectors which disperse the light over the sides of the vessel painted a "matt" white; there is no enamel paint. Officers and men are very carefully physically selected, the ultimate responsibility apparently resting with the senior medical officer at Fort Blockhouse, the headquarters of the Submarine Service at Portsmouth. Men are not accepted who have suffered from tubercle, pleurisy, asthma, acute rheumatism, or syphilis. Extra and varied food is supplied,

The issue of the book is a return to an old practice of the Naval Medical Department, whereby it sought to teach its own officers by a well-conceived, well-executed handbook. We should like to see included in a later issue tables of the loss by diseases and injuries in the Submarine Service during each of the preceding five years, that medical officers might learn in what directions particular protection might be required.

PRIMARY CARCINOMA OF THE KIDNEY AND URETHRA.

Dr. H. G. Bugbee,[1] of New York, remarks that while hypernephroma is of frequent occurrence, true malignant neoplasm of the kidney is relatively rare. Thus Albarran and Imbert in 1903 found only 13 cases of malignant adenoma out of 529 cases of renal tumour. Among 83 malignant tumours of the kidney operated on at the Mayo Clinic up to July 1st, 1912, only 32, according to Braasch, presented the triad of symptoms characteristic of malignant renal tumour—namely, palpable tumour in the region of the kidney, hæmorrhagic urine, and persistent pain in the region of the tumour, as well as the general symptoms of malignancy. Two of the three symptoms were present in 37 cases, and only one in 14 cases. The clinical diagnosis therefore must often be based only on one or two cardinal symptoms. The conditions most likely to be confused with renal tumour are: (1) "essential" or nephritic hæmaturia; (2) retroperitoneal tumour; (3) bilateral cystic kidney; and (4) closed pyonephrosis. In the great majority of cases a pyelogram clears up the diagnosis. Carcinoma of the kidney, of which Dr. Bugbee records an example, is a distinct pathological entity to be differentiated from hypernephroma. His patient was a man, aged 44, who had had a sharp attack of left renal colic in 1892, but did not pass a stone. About 12 years later he had another attack, after which his urine became claret-coloured after riding on horseback, but he had no colic or other urinary symptoms. He remained well till October, 1918, when he had a severe attack of influenza, and two weeks after the onset developed profuse hæmaturia, and pain and tenderness in the left upper quadrant and left lumbar region. Later frequent and urgent micturition was noted, and a mass became palpable in the left upper abdomen. There were profound anæmia and marked prostration. The urine was thick with blood and pus. X rays revealed a large oval calculus in the left ureter 25 cm. from the bladder. A pyelogram showed that the renal pelvic outline was destroyed. The pre-operative diagnosis was impacted ureteral calculus and pyonephrosis. At the operation a mass of blood clot and pus was found surrounding the kidney which appeared to be gangrenous. Death took place six months later. Examination of the renal tumour showed that it was a medullary carcinoma.

Primary carcinoma of the urethra is so rare a condition both in the male and the female that considerable interest attaches to a simultaneous article by Dr. Richard F. O'Neil,[1] of the Massachusetts General Hospital, who records two cases in a man and woman respectively, together with a review of the literature. Primary carcinoma of the male urethra, of which Dr. O'Neil has collected 58 cases, rarely occurs before the age of 50. Predisposing causes include trauma and leukoplakia, resulting from chronic irritation. Stricture is present in more than 50 per cent. In some cases there is no venereal history whatever. In the majority of cases the lesion arises from the bulbous portion of the urethra, but Peacock and Menard have each reported cases in which the disease began in

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[1] Journal of Urology, April, 1921.

THE LANCET.

LONDON: SATURDAY, AUGUST 20, 1921.

The Famine in Russia: An International Menace.

The terrible conditions of disease and death associated with the famine in Russia have been made known to everyone through the whole press of Europe, and the menace to international health, which is clearly indicated, has led to many questions as to what methods, if any, of control are being employed. In particular those unaware of the present position of the League of Nations inquire why some international health bureau, under the League, is not able to bring the coöperative power of medicine to bear upon the evil. Alas, the answer to this question is as easy as it is painful to give. The international bureau of the League is not as yet instituted; constituent powers may be able to use some of the machinery and resources of the League in the fight against disease, but the full power of international coöperation is wanting. An admirable scheme for an International Health Office of the League was laid before an international health conference in London 18 months ago, and was adopted last December by the Assembly of the League, but the organisation designed has never been able to secure existence. The scheme, it may be remembered, proposed the setting up of an international health office, under the League of Nations, to consist at the outset of delegates appointed by all the Governments represented on the Committee of the Office International d'Hygiène Publique, and by other powers, not co-signatories of the Office International but adherents of the League, with a competent executive. If this scheme had materialised a fine vista of international health would have been opened, medicine taking its place as the one great thing whose international character can never be disputed. The necessary unity of design and purpose was, however, absent; the scheme has not matured, and the attitude of the Government of the United States towards the League of Nations makes perseverance in this direction for the time useless. Meanwhile, when confronted with so great and pressing an international problem as the organisation, erection, and maintenance of a sanitary cordon on the Russian frontiers, the League has only been able to give partial assistance by means of an Epidemic Commission maintained, in the name of the League, by the voluntary contributions of a certain number of Governments. This Commission, though it has done excellent work within the limits of its resources, has now nearly exhausted the relatively small amount of money and material which has been placed at its disposal by these Governments, and by the central Red Cross agencies.

The Imperial War Relief Fund issued last week a moving appeal to the nation for subscriptions to the Russian Famine Relief Fund, and in a few eloquent sentences presented to the public a picture of terror and misery unparalleled in the history of the world. The numbers of the starving population, estimated at ten millions, make relief appear hopeless, but money must be sent to save what can be saved. From this appeal we learn that once again, as the miserable wandering masses move and scatter, there is the risk that they will carry with them the epidemics that follow hunger, and the diseases which are known to be present among them. Coincidently with this great disturbance of population and spread of infection is a stream of western migration, due to the hastening out of Russia of the large masses of non-Russian populations—particularly Polish—which are now arriving or expected on different parts of the frontier from Riga to the Bosphorus. It is against this risk that the nations of Europe must help themselves and must make what individual and coöperative efforts they can. Warsaw should be one of their principal objectives, as it is to or through Poland that infection is most likely to be carried. Now much can be done in Poland. Dr. Norman White, Chief Commissioner of the League of Nations for Epidemic Diseases, has recently paid, in the company of competent international advisers, a visit to Warsaw, and is able to report that the Government of Poland is taking vigorous steps to succour the immigrants and to protect their own country and the rest of Europe from mass infections. The gates of entry are not numerous and can be watched, if adequate assistance is given to the local machinery. The Polish Government has had a sad experience in face of disease and has learned the lesssons well. Just two years ago Poland was visited with serious outbreaks of typhus. At that time a small international committee, formed at the instance of the new League of Red Cross Societies, went out to Poland, and gave advice from the personal experience of a well-chosen personnel on the direct ways to prevent and combat epidemic disease, and there is no doubt that Poland is determined to carry on the sanitary battle in defence of Europe. The Polish health authorities have fought typhus with energy and success, and Warsaw remains an excellent nucleus from which measures for the stay of the epidemic diseases may be put into action. What has been shown to be practicable in Poland should be equally feasible in the other border states of Soviet Russia.

The three diseases most feared are typhus, cholera, and plague, but plague, which requires for its propagation the intermediary assistance of rats, is the least likely to assume epidemic proportions, assuming that we are spared the pneumonic variety. If properly handled, the extension of cholera may be checked as easily as that of typhus, for, while the former disease diagnoses itself so that the patients do not easily escape the sanitary cordon, typhus, with its obscurer manifestations and longer incubation period, may escape detection. All medical eyes are turned anxiously towards Geneva, where measures of relief are being settled, and among them the important question of strengthening sanitary precautions in the border States, particularly by extending the work of the Epidemic Commission of the League of Nations. All countries should do what they can to find money and men to organise something in the nature of international effort against an international menace. Moreover, should infection spread, it is the bounden duty of all nations to recognise the liability of their conventions to make international notification of their outbreaks of disease. There must be no more concealment such as has taken place, for example, at different times at Lisbon, Paris, and Marseilles.

Histological Illustrations.

Within about the last 25 years photomicrographs as illustrations of microscopic objects have come into use, and there is a growing feeling that they are not fulfilling their promise, and that facility of production is leading to their abuse. The objections to them are particularly obvious when

Foulerton puts forward an explanation of this anomaly. Recalling Leathes's work, which showed that the common fatty changes in the liver are due to the accumulation in the cells of that organ of fat brought from the normal fat deposits of the body to be unsaturated and so made ready for immediate use, he suggests that the arsenobenzol compounds are gradually accumulated and stored up in the fat deposits during a course of treatment, and then, owing to some slight variation in the normal course of metabolism, are carried to the liver with the fat in which they are dissolved in such quantities that the liver cells are killed en masse. He points out in this connexion that a considerable number of cases of delayed salvarsan poisoning have occurred in men who have been in hospital for some weeks where rest and an ample diet may be presumed to have led to the accumulation of reserve fat; if such a case returns to a more strenuous life the mobilisation of some of this fat may set free an undesirable quantity of arsenic.

T.N.T. POISONING IN AMERICA.

THE short period during which T.N.T. was extensively used in America afforded no opportunity for exhaustive study of its poisonous effects, but the article by Dr. Alice Hamilton in the July issue of the *Journal of Industrial Hygiene* gives a useful account of American experience in manipulating this high explosive during the war. It summarises reports made by students placed in certain of the factories to make observations; there does not, however, seem to have been in the United States any organised medical supervision of those exposed to risk as was established with success in this country. Contrary to early English experience, the handling of pure T.N.T. seems to have been harmless compared with handling amatol, a mixture of T.N.T. with the hygroscopic salt, ammonium nitrate. The skin as a portal of entry was recognised to be of overwhelming importance, while oily substances favoured absorption. No evidence, from observing negroes, could be obtained of any racial immunity. Most of those employed were men, hence a comparison of the susceptibility of men and women could not be established. Younger men were found to be more susceptible than older men, to an extent which justifies the statement that it seems poor economy to employ them. Just as in England, those within the first three months of employment were found to be those most liable to the poison. No evidence was found to establish the conclusion that crude T.N.T. was more poisonous than pure T.N.T. or vice versa, but crude T.N.T. was more productive of dermatitis. The Webster reaction, which was brought out in this country, was found to be a trustworthy test for the absorption of T.N.T., but not of impending toxæmia, since the test frequently becomes negative in severe cases, probably due to the elimination of T.N.T. being suspended in such cases.

ENDOCRINE BALANCE.

INCREASE in our knowledge of the effect of the internal secretions has provided physicians with valuable methods of treatment; but there is to-day a danger that the treatment will outstrip the knowledge and that enthusiasts will pin their faith much too largely upon glandular therapy. Harvey Cushing in a paper on the "Disorders of the Pituitary Gland,"[1] has laid special stress upon this danger. After mentioning the enormous amount of literature which has arisen upon the subject in recent years, he gives quotations from different papers, showing to what extremes such therapy has been carried. There is one quotation especially that deserves repeating. It is, that "in diagnosis it is no longer a question of bimanual examination, of listening to the lungs, to the heart, testing the blood-pressure, examining the urine, examining the blood. .... It is a matter of observation and also of tests to determine what the endocrines have been doing to a patient before she comes to us ....." English surgeons will be conversant with similar extreme views which have been put forward in this country. We may recall a suggestion made at a recent discussion in London that the treatment of Graves's disease consisted solely in administering the correct glandular extract. Long articles containing misleading statements have appeared in the lay press on the value of thyroid and other glandular extracts. Such statements are usually put forward without any adequate proof and too often are based only upon attractive though fantastic theories. The danger of such views is two-fold. Firstly, there is the fact that the extracts are widely advertised by their makers and are often sold by chemists without any restriction, so that they may be taken in sufficiently large quantities to give rise to dangerous symptoms. In this respect it is only necessary to mention the ill-effects that may follow the administration of large doses of thyroid extract. In the second place, certain symptoms may be wrongly interpreted and extracts may be administered without any attempt being made to determine the cause of the symptoms. When extreme claims are made for the value of such extracts by qualified medical men the danger becomes very great indeed. Cushing, in his paper, has taken as the basis of his remarks the disorders of the pituitary gland. He has carefully reviewed the symptoms which are caused by disorders of this organ and has shown how they may be treated; but he also points out how very little evidence there is at present at hand to show that the administration of extracts of this gland are of any real value. He lays stress upon the need for those who would pursue the subject in the proper spirit to keep an exact almanac of results, so that they may be able to avoid unfavourable winds, currents and counter-currents, and may discountenance the exploitation of the few discoveries that have already been made.

BLOOD SUGAR REGULATION.

IN a recent issue of the *Journal of Biological Chemistry* (1921, vol. xlvi., p. 381) E. Langfeldt gives a useful historical survey of investigations on sugar regulation before recording the results of his own experimental work. Bernard supposed that blood sugar was secreted by the liver, and that this secretion was regulated by the nervous system. By a nerve path via the medulla oblongata the liver received impulses to increase sugar secretion, and thus the blood was supplied with sugar in proportion to the requirement. On this theory Bernard regarded diabetes as a nervous disease. Von Noorden introduced a change in this theory; he assumed, with Bernard, that the transformation of glycogen into glucose was governed by the sugar requirements of the organs, but supposed that the transformation resulted from a chemical stimulus brought from the muscles to the liver. Bernard supposed that the diastase found by him might be an important factor in the process, but it was not clear how glycogen and diastase could exist in the same cell without immediate glucose hydrolysis. Bang suggested that pure liver diastase is inactive and that an activator is necessary; that by the secretion of bile the liver cells absorb and secrete sodium chloride, which activates the diastase and maintains normal blood sugar regulation. The mechanism of adrenalin hyperglycæmia, according to Bang, is established in the same way. Grode and Lesser, however, suggest that the glycogen and diastase exist separately in the same cell, but come in contact under certain influences. In the opinion of the author these views are incomplete in that they do not account for both glycogen hydrolysis and glycogen formation, both of which participate in blood sugar regulation. From a critical examination of the literature the author concludes that the pancreas is essential for glycogen formation in the liver.

In researches made on alimentary hyperglycæmia in normal dogs the author found that the blood sugar rapidly fell under normal conditions, it was not else than the current difficulty is at the bottom of the functional disorder. However this may be, for want of a better term, the psychologist accepts the "constitutional" factor in such cases, and if the percentage of neurosis among the combatants in the war was not notably higher than among the civil population in times of peace, war strain is in a sense negligible compared with this pre-existing constitutional inability to deal with psychical conflict. For Dr. Golla it is an "organic disability," so apparent that the medical observer should have found little difficulty in spotting the future cases of neurosis before ever a shot was fired. A praiseworthy attempt was made by the American Army medical authorities to weed out presumptive neurotics during their recruiting days by resort to an expert psychological and physical examination and not a few misfits were duly eliminated, but if Dr. Golla's views are corroborated we should have at our disposal a means of detection which is bound to result in greater military efficiency if it can be employed.

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[1] Disorders of the Pituitary Gland, Retrospective and Prophetic, Presidential Address before the Association for the Study of Internal Secretions. Boston, June [illegible]th, 1921.

When we turn to consider the evidence adduced for the reality of this organic disequilibrium and the forms in which it expresses itself we confess to a certain feeling of disappointment, though the difficulties in the way of reaching practical conclusions are considerable, and much that Dr. Golla advances by way of experimental illustration is peculiarly suggestive. Micro-chemical changes in nerve-cells, possible evidence of defective oxidation processes in them, are believed to be the underlying physical basis of nervous asthenia, which is a common symptom in some of the neuroses. In another group associated with signs of overaction of the thyroid gland the mechanism of emotion is hyperexcitable as evidenced by the behaviour of the galvanic reflex, the rate of basal metabolism is increased, and the sympathetic system can be shown to be over-irritable. Another type of neurosis is distinguished by the ill-adaptation of primitive instincts and conditioned reflex-patterns or habits to the environment of the individual. Hysteria, again, is according to Dr. Golla a variety of neurosis characterised not by hyperexcitability but by subnormal activity of the affective mechanism, as revealed by galvanic reflex tests. To this last considerable importance is attached, and an ingenious theory of the nature and ætiology is adumbrated, rather than worked out, depending on the objective fact of absence or diminution of the galvanic reflex in response to stimuli of an affective order. It ought to be mentioned, however, that Prideaux not only found normal reactions in cases of hysteria, but also took records of the galvanic reflex in certain individuals in the normal state and under hypnosis and obtained no appreciable modifications in the reflex as between the two.

Assuming, or accepting, the reality of the objective physiological findings so patiently and ably determined by Dr. Golla, are we thereby any nearer the solution of the problem? Do alterations in neuroglandular mechanisms, in muscle tone, and in galvanic response, in affective reaction and nerve-cell oxidation, afford proof of the physicogenic as opposed to the psychogenic derivation of hysteria and nervous asthenia, of anxiety neurosis and compulsion neurosis? Are we any the more sure that neurotic symptomatology cannot ever be caused by intrapsychical conflict and by unconscious motive? The value of the researches of Dr. Golla resides less in the conclusions tentatively advanced than in the orientation they exhibit towards a sorely neglected side of practical medicine, that of the objective examination of the sufferer from functional nervous disease, and the application to his condition of the resources of the physiological laboratory. To this topic, which is bound to augment steadily in importance, the Croonian lectures of 1921 form a noteworthy contribution. Dr. Golla cites apparently with approval the view of Ribot, that no one really has pleasure in work itself; to its accomplishment only do we look forward with pleasure. The sensory presentation of the bodily activities accompanying effort, we are told, is a "disagreeable feeling" which we do our best to allay by accomplishing the specific action demanded. But there is much to be said, none the less, for the view of one who was no flâneur in his own sphere of activity, that "to travel hopefully is a better thing than to arrive, and the true success is to labour."

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HEALTH SERVICES IN WALES.

The second report of the Welsh Consultative Council of the Ministry of Health has been presented to Parliament. It deals comprehensively with a scheme for the systematised provision of health services in Wales. The establishment is recommended of a National Health Institute of Wales at Cardiff, with four Central Health Institutes at Bangor, Wrexham, Swansea, and Newport, and 59 Local Health Institutes at suitable centres. For thinly-populated areas it suggests that in lieu of local institutes there should be small subsidiary hospitals or centres for clinics, with single clinics, these to consist, perhaps, of not more than two beds in very sparsely populated districts. The report further considers in detail existing hospital accommodation in Wales, and finds this to be inadequate for the residential treatment of persons suffering from non-infectious disease, other than mental disease and tuberculosis. How short the accommodation is estimated to be may be judged by the recommendation of an increase of beds of from 50 to 75 per cent. In addition to convalescent homes, of which there are 11 in existence, the report advocates the institution of rest, or holiday, homes for workers run down in health. Better provision of institutions for mental deficiency and for the training of cripples is found to be needed. The provision of full-time specialists for certain diseases, and of consultants to be available in other cases when required, is approved.

Part II. of the report is devoted to the problem of the form of local government which should be established for the administration of the health scheme advocated, and for doing away with the complexity arising from too many authorities interested in health and from too small units of administration. The scheme is capable of effecting much that is highly to be desired, and to be one susceptible of improvement, when once it has been set in motion and when experience has shown where it is defective. It is, however, impossible to ignore at the present time the necessary demand for national economy, and the unwillingness of the community to increase the burden of taxes and rates already imposed upon it. Therefore it would appear that a national supervising local authority is likely to find a large sphere of usefulness in Wales in bringing about improved health service by better administrative methods, and by utilising existing institutions, the services of existing officials, and the services of voluntary workers to the fullest extent. It is not possible to predict or even to advocate immediate, wide-reaching, and costly development, either in the direction of new institutions or of an increased paid service of administrators. To effect a better service without considerable increase of outlay would commend a well-organised health authority to the public it served. To increase the liability of those who have to find the money would arouse hostility and be destructive to efficiency. It seems clear that in all health schemes gradual and considered development, rather than costly and spectacular innovation, will have to be a necessary policy for many years to come, and that anything in the nature of costly experiment on a large scale must be avoided.

THE COURSE OF SUMMER DIARRHŒA IN LONDON, 1856–1920.

By JOHN BROWNLEE, M.D., D.Sc.,
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A GOOD deal of work has been done in the Statistical Department of the Medical Research Council during the last year on the question of the relationship of weather to summer diarrhœa. This is not yet completed, but a short synopsis of what has been done is given here.

It has, of course, long been known that epidemic diarrhœa is a disease associated with warm summers, and in the report of the Local Government Board published in 1885 Dr. E. Ballard stated that when the underground temperature at the depth of four feet rises to 56°F. summer diarrhœa begins. This observation is roughly true, but in the work we have done it has not been found that the relationship of summer diarrhœa to the earth temperature is closer than to that of the air. In consequence the following remarks are based solely upon the temperature of the air. It has long been my opinion that summer diarrhœa was in the main (for its ætiology must be multiple) not one disease but two, the epidemic of the first type having its maximum in late July or early August, and of the second type in September. The forms of the epidemics are different and also the duration, the first having a steep ascent and a rapid decline, the second a more gradual slope throughout.

The first trials sought to eliminate the second epidemic. This was done by assuming that only those deaths which were in excess of certain levels were to be used for statistical purposes. In taking the correlations, therefore, between temperature and deaths from diarrhœa, the figures for no week were used unless at least 75 deaths from diarrhœa occurred. The sums of the number of cases above this level were first ascertained. The next level chosen was 100 deaths per week, the third 125, and the fourth 150. Corresponding excesses of temperature were also calculated. Using the mean weekly temperature as the standard of temperature the excesses during the summer above the successive levels of 56°, 58°, 60° and 62° were summed. The most adequate measure seemed to be a combination of the sum of the weekly excesses of temperature over 60° and the sum of the excesses of the diarrhœa deaths over 100. In this case the correlation is in the neighbourhood of 0·8. It would be thus possible to calculate, if the excess temperature above 60° were known, the amount of diarrhœa to be expected very approximately.

The second series of correlations apply to the rise of the first epidemic. The excesses of temperature over 60° prior to the 28th week in the year were summed, and the number of deaths from diarrhœa registered before the end of the 29th week placed in comparison. Here again a very high correlation was found, the correlation being above 0·8. Thus if we know the number of degrees of temperature in excess to the end of the 28th week, the number of deaths within an error of 20 per cent. could be calculated. When, however, the matter was considered more fully it was discovered that a strange break in the statistics takes place. Up to 1899 the relationships hold very closely; after 1899 a gradual change occurs. Instead of a considerable proportion of the epidemic occurring before the 29th week, after that year it begins uniformly later. In 1900, 1901, 1901, 1905 and 1906, though the epidemic is of very similar form to that experienced before 1899, it occurs later in the year though the excesses of temperature were such as would have given rise to epidemics in previous times earlier in the year. From 1907 the maximum of the epidemic, in place of occurring as a rule about the 30th to the 33rd week, occurs in the 35th to the 40th week, and instead of a large epidemic occurring—except in one year, 1911—the number of deaths is comparatively small. As already remarked, epidemic diarrhœa seems to be a mixture of two diseases. Till 1899 the first was predominant. Before that date the later epidemic was most marked in 1895. In 1907 it became predominant; the only year since 1907 in which the amount of diarrhœa was anything comparable with previous experience was 1911. Even in such a very hot year as 1917 a very small epidemic of summer diarrhœa occurred. In former times the deaths associated with such a temperature as occurred in that year would have been well over 200 a week.

It would seem, therefore, that the first type of diarrhœa has become extinct, or nearly extinct, and that the later type alone survives. Inquiring at the London Health Office, Dr. W. H. Hamer tells me that the by-laws for the cleansing of London came into action in 1893, and that by 1898 London had become a vastly cleaner town. This must account for a part of the change, but there is some other phenomenon in addition. For instance, the excess of temperature in 1884 before the 29th week was on all fours the same as that of 1914, and yet the number of deaths in the 29th week of the former year was about 600 and in the latter only 30, while with a very warm summer the epidemic had its maximum in the 40th week of the year. I therefore think it likely that though there may be a good deal of diarrhœa in London this summer it will be late diarrhœa and not on the same footing as the devastating phenomenon of the last century.

CONTROL OF VENEREAL DISEASES.

CONTINUITY OF TREATMENT.

Two important reports, here summarised, emphasise the fact that if we fail to secure continuity of treatment our venereal diseases scheme is a failure. Dr. E. W. Hope estimates that 60 per cent. of patients in Liverpool fail to continue their treatment until they are free from infection. Dr. F. N. K. Menzies and Colonel L. W. Harrison state that the average failure to complete treatment for the whole of the London clinics cannot be put at less than 30 per cent. and is probably higher. The London report points out obvious defects in the arrangements of the clinics which no doubt in part account for this serious state of affairs. The Liverpool report lays stress on the need for fresh legislation to enforce continuity of treatment, and contains a draft of the proposal of the Liverpool Corporation to this end. Both reports merit close study.

CRITICAL REPORT ON THE L.C.C. SCHEME.

The report on four years' working of the joint venereal diseases scheme for London and the Home Counties from the pen of Colonel Harrison (representing the Ministry of Health) and Dr. Menzies (representing the London County Council) shows that the facilities for treatment at the existing clinics are not adequate, and lays emphasis on the need of coördinating the work of the numerous rescue and preventive societies.

The Developing Scheme.

The scheme came into operation in 1917 and consisted of an arrangement between the counties of London, Bucks, Essex, Herts, Kent, Middlesex, and Surrey, and the county boroughs of Croydon, East and West Ham on the one hand and the principal London hospitals on the other hand, for the establishment of treatment centres, the pathological examination of specimens, and the distribution of salvarsan substitutes. The population to be served by the scheme was nearly 8 millions, of which the L.C.C. was responsible for more than one-half. The hospitals taking part numbered 21 in 1917, and the sum payable for treatment in 1917 was £27,000 and for pathological examination £6500. Since 1917 more hospitals have been included in the scheme and during 1920 the work was carried out by 27 hospitals, the total of grants-in-aid for treatment being £75,475 an for pathological work £15,100. Special developments have been the inclusion of eye hospitals in the scheme, the provision of accomthe penile urethra close to the meatus. The growth spreads along the mucous membrane, destroying it, and invading the corpus spongiosum. Later the periurethral tissue becomes invaded, and abscesses and fistulæ supervene, opening in the perineum, scrotum, pubic region, buttock, or rectum. The growth assumes the type of squamous epithelial cancer. The early symptoms are not characteristic, but are merely those of ordinary urethral stricture, consisting in increasing difficulty and frequency of micturition with or without attacks of acute retention, as well as hæmaturia and a purulent discharge. Later on a swelling appears in the perineum simulating periurethral abscess and infiltration and extravasation of urine. Dr. O'Neil remarks that while the disease is rare, its possibility should always be borne in mind in the presence of an indurated perineal mass in a man over 50, as its recognition has a very important bearing on prognosis and treatment. Primary carcinoma of the female urethra, of which Dr. O'Neil has collected 68 cases, including his own case, is commonest between the ages of 50 and 60, and 60 and 70, though instances have been reported as early as 26 or 27 years of age. The symptoms consist in frequent and painful micturition, hæmaturia, and discharge from the urethra. Retention of urine may occur. Pain is usually a prominent symptom, and may be extreme in some cases. The diagnosis is not usually difficult, especially when the disease is moderately advanced. Syphilis in the primary or secondary stage is to be excluded, as well as simple caruncle or a benign tumour. As regards treatment, a large proportion of the cases both in the male and female have become so advanced when first seen as to be inoperable except by local drainage, or by perineal or suprapubic drainage for the relief of urinary retention. More or less radical excision in some cases has been followed by encouraging results.

THE ACTION OF PILOCARPINE IN CASES OF BRAIN LESION.

Prof. Carlo Besta of the University of Messina, contributes an interesting paper on this somewhat novel subject in the *Riforma Medica* of June 11th. In the course of a series of investigations on the action of certain drugs in cases of lesions of the central nervous system, he experimented with injections of pilocarpine in several patients with head injuries and observed results which apparently have not hitherto been described. In ascending frontal lesions, associated either with simple motor disturbance or with destruction or compression of the contiguous brain structure, there occurred within a few minutes after the injection of 2 centigrammes of pilocarpine hydrochloride, and simultaneously with the onset of sudoral and salivary hypersecretion, muscular tremors and spasms on the side of the body opposite to the cerebral injury, with increase in the tendon and bone reflexes. These phenomena increased rapidly, reaching their maximum intensity in about 20 minutes; in one set of cases they were of a choreo-athetosic type, intermingled with jerking movements, in others, which were the more numerous, there was intense hypertonus with continuous tremor and rapid jerkings. In all cases the reflexes were exaggerated and the rigidity was sometimes so marked that the lower extremity remained in an attitude of extension when the limb was raised by placing the hand under the popliteal space. The clinical picture was modified according to the site of the cortical lesion, the upper extremity being mainly involved if the lower and middle portions of the ascending frontal were implicated, and the lower extremity in damage to the upper portion. This topographic relation, however, was not absolute, and moreover the neck, face, and tongue muscles only exceptionally showed any evident manifestations, perhaps due to the fact that in organic cerebral lesions these muscles normally have a symptomatology less evident than that of the limbs.

The interest of these manifestations, apart from the problem of their pathological mechanism, lies in the fact that they constitute a characteristic sign of lesion of the pyramidal tract; in 200 cases of head injuries in which the injection of pilocarpine was practised several times and always with the same result, they were observed only when the motor zone was injured—that is to say, the ascending frontal and the base of the three frontals—while they were absent in pure lesions of the frontal lobes, the parietal (including the ascending parietal), temporal, and occipital lobes and those of the cerebellum. The results obtained in cases of head injury encourage the hope that also in cases of cerebral lesion from organic disease interesting results may be obtained from a diagnostic point of view. To this end, Prof. Besta directed his attention to cases of hemiplegia and hemiparesis due to organic lesions of the motor tract, and found that, after the injection of pilocarpine, phenomena occurred exactly analogous to those observed in cases of head injury. It was found, moreover, that in capsular or subcortical lesions the phenomena induced were always of a type more exaggerated and diffuse than in pure cortical lesions. It is worthy of notice also that the symptoms were very marked in seven cases of patients suffering from paresis after encephalitis lethargica. In three cases of tumour of the posterior cerebral fossa with symptoms of hemiataxy, adiadocokinesis, &c, injections of pilocarpine produced no appreciable effects in those parts affected by the cerebellar symptoms, but caused typical and elective exaggeration of the pyramidal symptoms on the opposite side. On the other hand, in two cases of Jacksonian epilepsy, due to cysts at the base of the third frontal and in the parietal lobe, the injection of pilocarpine remained inactive. From these facts it appears that the drug acts only when the cortex of the motor zone is directly involved. The explanation of these phenomena is not to be found in the increased secretion of sweat and the cold produced by its evaporation, because they reach their maximum intensity when the sweating is also at its height, and the patients complain of disagreeable heat; further proof of this was afforded in a case of spastic hemiparesis with hemianidrosis in which the pilocarpine caused sudoral hypersecretion on the sound side only, and had no such effect on the paretic side, which all the same exhibited the phenomena of diffuse hypertonus, tremors, spasms, and increased reflexes. Moreover, if the injection of pilocarpine be preceded by that of a quarter of a milligramme of adrenalin, the secretion of sweat is inhibited, while the nervous phenomena remain uninfluenced; sulphate of atropine has the same effect. It appears, then, that this special action of the pilocarpine is independent of that which causes increased sweat secretion, and is probably one of direct action on the central nervous system; but how and where it acts is not possible to say in the present state of our knowledge. There may be here some analogy, however, to the symptoms produced by ether narcosis observed in the subjects of head injuries.

Prof. Besta's observations are interesting from a clinical point of view, since by means of a simple and harmless measure data may be obtained which demonstrate the existence of a lesion of the cortico-motor tract not revealed by ordinary clinical investigation, and of which further research may succeed in locating the exact site. His observations also have a scientific interest: they have apparently not been described previously and demonstrate a sphere of activity in pilocarpine hitherto unsuspected.

DELAYED POISONING BY ARSENOBENZOL COMPOUNDS.

Much interest and a good deal of alarm have been caused these last few years by the occurrence of a number of cases of fatal necrosis of the liver after the administration of salvarsan or its equivalents. One of the most curious points has been that symptoms of illness have frequently not come on till several weeks after the administration of the last dose of a course of treatment. In an interesting article,[1] Dr. A. G. R.

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[1] Journal of Pathology and Bacteriology, vol. xxiv. (1921), p. 257.

venereal disease is not satisfactory would be to gravely understate the position." Only the fringe of prevention has been touched by the provision at great public expense, and under skilled guidance, of free treatment at each of the leading hospitals in the city. The diseased person may attend if he chooses and for as long as he chooses. The skill and the money expended do unquestionably result in alleviating a great deal of suffering and may to a small extent limit the spread of the disease. But the failure of the system is manifest: 60 per cent. of the patients cease to attend as soon as the grosser symptoms disappear but long before they are free from infection. In stating this Dr. Hope adds that the system of clinics now in vogue in Liverpool is admittedly as good as any in the kingdom. Clearly, he concludes, it is a waste of public money and public effort to give treatment which fails to have results. The public health object of that treatment is not primarily to benefit the individual but to protect the public, and if, because of non-continuance of treatment, the individual remains a source of danger and of infection, we have rank waste of money and of effort.

A specially appointed sub-committee of the Liverpool City Council has prepared for submission to Parliament a series of proposals which have already received the unanimous approval of the municipal authorities and the local medical profession. The aim of the clauses is to secure continuity of treatment till freedom from infection is reached in the case of every person infected with venereal disease. Such an aim involves compulsory removal to and detention in hospital in certain cases and the provision of suitable hospital accommodation for the purpose. Dr. Hope tells us that measures closely in line with these proposals have already been adopted with success in some of the British Dominions and also in the United States of America.

MEDICINE AND THE LAW.

Will-making by the Insane.

A PROBATE action arising out of the will of Joseph Priddle, who died in Camberwell House, Camberwell, was tried recently by Mr. Justice Horridge, two daughters of the deceased claiming probate of a will made by him when a certified inmate of that institution. Three sons asked that the will should be set aside on the ground of the testator's incapacity through insanity and that letters of administration should be granted. The husband of one of the daughters, at that time engaged to her, had taken part in the making of the will, and had employed a solicitor who had taken every precaution, including the obtaining from Dr. F. H. Edwards, medical superintendent of the asylum, of a written certificate that the testator " has been and is now in a condition to express his testamentary desires in a reasonable fashion," that he, Dr. Edwards, had scrutinised the will, and that " there is no reason from a medical standpoint, having in view my special knowledge of the case, why this will should not be quite valid." Mr. Justice Horridge drew attention to the cases of Sivewright *v.* Sivewright (1920, S.C., H.L., 63) and Banks *v.* Goodfellow (1870, L.R., 5 Q.B. 519). In the former Lord Haldane laid down that " the question is simply whether he understands what he is about," and went on to say that in the case of a testator suffering from a delusion which might have affected him in making the will, in order to invalidate it " the delusion must be shown to have been an actual and impelling influence." Mr. Justice Horridge, in pronouncing in favour of the will of Mr. Priddle, under which, as he had already observed, " the daughters received the lion's share of the testator's property," pointed out that the testator clearly suffered from delusions, but that the question was whether he was suffering from a delusion when the will was made. There was no expressed antagonism towards his sons. The evidence of Dr. Edwards showed that there was testamentary capacity. Dr. Edwards did not examine the testator as to any antipathy towards his sons, but there was no evidence of any. In comment attention may be called to the question of antipathy referred to. It had, of course, not been brought to Dr. Edwards's attention that there might be any such feeling. But it is a point which medical men in the same position may well bear in mind. The persons responsible for the certifying of any person as insane may be near relatives whose action he regards with resentment. They may have acted perfectly rightly and in the interest of the person certified, and it would be an undeserved hardship if they should suffer from animosity on his part which may be the result of an insane delusion as to their action.

Hospital Finance and National Insurance.

Lord Burnham's recent sympathetic and practical speech in the House of Lords on hospital finance and the obligations of the Government was fully reported in THE LANCET of July 30th (p. 257). One of his strongest points was undoubtedly made with reference to obtaining by legislation or otherwise contribution to the voluntary hospitals from the surplus funds of the Approved Societies. The hospitals have hitherto had no desire to extract obligatory subscriptions from the societies or from any other source. They came into being as the provision of the benevolent for the needy. Modern developments in medical and social science have, however, brought about totally different conditions. The Insurance Acts have placed the services of the general practitioner within the reach of thousands who rarely or never sought his aid; the hospitals are expected to supplement the work of the general practitioner, and are willing to coöperate with him to secure the desired end, the promotion of the health of the people. They cannot, however, do an increased amount of work upon incomes which have not increased but diminished. It appears to be consistent with good sense and common justice that the representatives of those who benefit by the work done should contribute to pay for it. It is not consistent with justice that those who rightly send their patients to be treated should be paid for their services, and that the hospitals who undertake the resulting obligation to treat should be driven into bankruptcy by so doing. The necessary legislation should be forthcoming.

Drugs to Induce Miscarriage.

A woman named Halle, 33 years of age, was sentenced recently at the Central Criminal Court to five months' imprisonment in the second division for administering to herself drugs in order to procure miscarriage. She had been denounced to the police by an anonymous letter. In passing sentence Mr. Justice Avory pointed out that in such cases the offence was the same whether an instrument was used or drugs taken, and that for a woman to procure abortion on herself was a serious crime. He might have added to this public warning that given in THE LANCET of Jan. 21st, 1899, p. 182, that no drug capable of being used by quacks in compounding their concoctions will be effective to procure miscarriage unless taken in quantities that will endanger life or seriously endanger health. This was published at the time of THE LANCET's campaign against the sinister trade of quack abortionists,[1] which succeeded in banishing their advertisements from the pages of reputable newspapers.

Æsthetic Surgery.

A fine of £20 with £10 10*s.* costs was imposed by Mr. D'Eyncourt at Marylebone police court recently upon C. H. Willie, against whom the Medical Defence Union had obtained a summons for falsely using the title of doctor, implying that he was registered under the Medical Acts. The defendant described himself on a name-plate as " Dr. Willie, specialist," and carried on business as a " practitioner in plastic or æsthetic surgery," professing to remove marks of old age, scars, excreted in the urine, and there seemed no other explanation than that it is deposited as glycogen. In depancreatised dogs the fall of the blood sugar was much less rapid, and the author concludes that the formation of glycogen depends upon the presence of the pancreas hormone. Further experimental work on partially depancreatised dogs showed that an increase in hydrogen ion concentration of the portal veins is able to produce a heavy glycogenolysis, which led the author to investigate the conditions of action of the liver diastase with the following results. The optimum action of liver diastase in the presence of phosphate anions is at pH6.2, and the optimum of the chloride diastase is at pH6.8. When adrenalin is added the optimum is shifted to the alkaline side, the optimum being at pH7.73. Thyroiodine when added alone has no influence on the hydrolysis of glycogen. Simultaneous additions of adrenalin and thyroiodine has a strong effect. Pituitary extract is without effect. From these experimental facts the author concludes that glycogenolysis is governed by the hydrogen ion concentration of the liver cells, that with a constant blood flow and constant temperature glucose is discharged at a constant rate from the liver to the blood; a part of this glucose is utilised by the body, a part stored in the muscles, and the remainder returns to the liver, where it again forms glycogen. Glycogen formation depends upon the presence of the pancreas hormone, the materials being derived from the carbohydrates and proteins of food. It is concluded that glycogen formation and glycogenolysis are consecutive processes. The diastase acts constantly and glycogen formation takes place rapidly. These conclusions are applied by the author to the origin of hyperglycæmias, which may, he assumes, arise in the following ways: (1) by a change of the hydrogen ion concentration of the liver so that the pH is identical with or close to the optimum of the action of diastase in the presence of salts, as influenced by the action of acids on blood sugar concentration; (2) by a displacement of the curve of action of the diastase so that the optimum is close to the hydrogen ion concentration of the tissue, as illustrated by the action of adrenalin; (3) by a deficiency of the pancreas hormone, giving rise to a decreased formation of glycogen, with a resultant excess of sugar in the blood, as in diabetes mellitus and experimental pancreatic diabetes.

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[1] THE LANCET, 1898, vol. ii., pp. 1570, 1651, 1723, 1807: 1899, vol. i., pp. 182, 327, 717, 855, 908, 1739; vol. ii., pp. 111, 174.

The author finally advanced a simple chemical theory of blood sugar regulation based upon the fact that the action of liver diastase depends on precise hydrogen ion concentrations.

PULSE AND TEMPERATURE.

The possible interaction of pulse-rate and temperature constitutes an interesting and, we believe, hitherto unexplored field; for the commonly observed relation between the increase of rate and the rise of temperature is generally considered to be a common reaction to intoxication. Dr. E. Rist[1] records an interesting case of infection with paratyphoid A bacillus, occurring in a soldier with a tendency to tachycardia. During the febrile stage of this infection he had four attacks of tachycardia, lasting respectively 3½, 2½, 2 days, and 24 hours. It appeared that when the pulse-rate rose to a certain speed (between 80 and 90 per minute) the tachycardia was constantly induced, the rate rising abruptly to between 180 and 200. The somewhat remarkable consequence of this trigger release was an equally abrupt fall in the temperature, so complete as to suggest when it occurred for the first time that the patient was developing peritonitis. The temperature remained almost normal during the tachycardia, rising again as soon as the pulse-rate fell. Dr. Rist, pointing to the modern conception of fever as a result of increased production of heat and noting in this connexion the experiments of Warren Coleman and E. F. du Bois with the Atwater-Rosa calorimeter, explains these phenomena by supposing that the deficient action of the heart, and the consequent slowing of circulation and diminution of circulating blood, so reduced oxidation as to make impossible any extra production of heat. From this quite plausible explanation it is not a long step to the inquiry: What is the normal result of an increased pulse-rate in fever? Is the accompanying pyrexia the direct result of extra oxidation? If so it is easy to understand why the relation 10 per minute increase of pulse-rate for every degree rise of temperature holds with such regularity for almost all fevers, and why it does not hold true in the special case of pneumonia. In Dr. Rist's case the blood pressure was recorded, and was found to fall during the attacks of tachycardia and with the fall in temperature. The assumption generally made that there is in fever some disturbance of thermotaxy must probably be retained, since without such a disturbance the cooling machinery would be normally capable of neutralising the effect of extra heat production.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

During the years of the war the meetings of this society, though not altogether suspended, were greatly diminished in number and were merely formal. During the last two sessions for the years 1919–20 and 1920–21 the usual activities of the society have been resumed. Founded in the year 1872, under the chairmanship of the late Dr. Chadwick, when the old Leeds Medical and Surgical Club came to an end, the society has for long been regarded as the professional centre of the West Riding. The membership now amounts to 296 ordinary members, and the average attendance for some years prior to the war was about 70 to 80. The meetings are held at the General Infirmary at Leeds and this enables a large amount of clinical and pathological work to be brought before the members. About 12 meetings are held each session, and these usually include two evenings specially devoted to the exhibition of cases, and one, which for convenience is held at the medical school, for the discussion of pathological problems.

In 1892, during the presidency of Mr. William Hall of Leeds, the society decided to celebrate its coming of age the following year by instituting an honorary life membership to enable it to do honour to those members who had retired from practice and who in the opinion of the committee had brought credit on the society. The first three on whom this choice fell were Sir T. Clifford Allbutt, Sir James Crichton-Browne, and Mr. C. G. Wheelhouse, all of whom had taken part in the formation of the society. This list has since been enlarged by the addition of Mr. Pridgin Teale, Dr. T. Churton, Dr. Joseph Dobson, Dr. J. E. Eddison, Mr. Charles Richardson, Mr. Edward Ward, and Colonel H. Littlewood. By a happy arrangement, which is for the benefit of both the parties concerned, the medical library of the society and that of the faculty of medicine of the university are amalgamated and lodged at the medical school, which adjoins the infirmary. All the members of the society thus enjoy the use of a really good medical library and reading room. It is the custom to elect as president in alternate years a medical man who is in practice in Leeds and one who practises in one of the other towns in the West Riding. The president for the ensuing session, which opens in October, and which will see the jubilee of the society, is Sir Berkeley Moynihan.

The second annual report (Cmd. 1446) of the Ministry of Health has been issued complete in one cover, appearing several weeks earlier than the similar report of last year. At its price of 2s. Sir Alfred Mond hopes to enlarge the circle of those who buy and read an account of some of the operations of Government which affect most closely their daily lives. We have dealt with the major part of its contents when reviewing the recent report of the chief medical officer to the Ministry.

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[1] Annales de Médecine, 1921, No. 5, p. 360.

appearance and rapid spread of pellagra. The disease, generally held to be due to eating maize, is therefore appearing in a country where the peasants eat bread made from wheat and corn. Formerly, when Transylvania was a part of Hungary, pellagra was common, and maize was the staple food of the Roumanian peasantry. The maize is rendered unwholesome by modern intensive methods of cultivation, the grain being harvested while still unripe, with the result that putrefaction occurs. An explanation of the appearance of pellagra amongst the wheat-consuming peasants was provided by a noted veterinary surgeon, who maintained that the disease was spread by the consumption of pork, the swine from which the pork was taken having become diseased through being fed on unwholesome maize. In parts of Italy, Lombardy, and Piedmont, especially, and also in Moldowa (Roumania), pellagra is even more common than in Hungary. The Hungarian Government has distributed wheat flour among the indigent inhabitants of Southern Hungary. This year's outbreak of the disease is not severe, although some patients suffer from mental disturbance, which does not yield readily to treatment. Many of the sick recover when supplied with wholesome food.

Excessive Heat in Hungary.

The summer heat this year has been excessive, the midday temperature being as much as 45° Centigrade, the highest figure for 15 years. In addition to the ordinary inconveniences of extremely hot weather, there are also those of scarcity of water, particularly in provincial places where the supply is derived from wells. Rivers are almost dried up, and if the drought continues, pollution of the remaining water and consequent spread of typhoid and dysentery are feared. Several sunstroke cases have been reported in the capital.

Treatment of Nervous Breakdown.

The number of nervous breakdowns consequent upon changed political and economic conditions has been largely increased, and recently the Neurological Section of the Medical Society held a meeting to discuss the treatment of neurasthenia. During the discussion Dr. Frey advised the use of psycho-analysis, and the selection of amusements according to the results of examination. Cards and other indoor games, open-air sport, plays, and conversation on subjects which arouse the patient's interest, frequently have a beneficial effect. Dr. Frey has found visits to friends or complete change of environment valuable. When treating patients in their homes, he has often found it unwise to relieve women of light household duties, or restrict men from moderate exercise. Exercise and occupation (in the sense of pastime) have a disciplinary effect on patients, the curative value of which is not at present sufficiently recognised, but which he believes to be of inestimable value. Careful selection of cases is necessary. If women were taught dress-making, millinery, dairy work, basket-weaving, the lighter forms of wood-carving, drawing, painting and clay modelling; and if men were taught pipe-fitting, pattern-making, mechanical drawing, carpentry, modelling, gardening, stenography, typewriting, painting (signs and frescoes); and if both men and women were to have a choice of work—then Dr. Frey believes our institutions for the treatment of mental diseases would speedily be transformed.

The Suicide-rate in Budapest.

The year 1920 has shown an increased number of suicides committed and attempted for reasons not far to seek. After her defeat in the war, Hungary has lost about half her territory, and more than half of her population: there is very grave trade depression; the change of frontiers has deprived the country of a good part of its industrial markets, and has frequently interfered with family life, whilst the means of communication which remain are difficult to come by, and the getting passports entails much time, trouble, and expense. Even postal communication with the lost territories is uncertain; a letter travelling 10 miles from Hungary into Roumania takes 7 to 14 days, owing to the censorship. Under these conditions it is not to be wondered at that the number of suicides in the past year amounted to 540, 13 per cent. more than in 1919; of these 391 were men, 146 women, and 3 children. The suicides of children are increasing in frequency; the younger of these three was 11, the oldest 14. The causes appeared to be desperation at loss of parents and cruel treatment by employers. The oldest person who killed himself was 90 years, the highest number of suicides was 103 in November and 107 in December.

Campaign to Abolish Brothels.

On July 29th closed the International Congress for the Abolition of White Slave Traffic. A majority of members of the Congress declared that it is most desirable that the keeping of brothels, already abolished in several countries, shall be so treated throughout the world. Mr. Graaf, the Dutch delegate, made the startling statement that in the public brothels of Amsterdam there are imprisoned 72 foreign girls under age. In one of the Amsterdam brothels a printed note was found which contained a list of all the white-slave traders of Europe, together with a list of places where ready markets could be found. The Congress laid special stress upon the necessity of extending protection to coloured women as well as whites, and of carrying the fight against white-slave traffic into the colonies and dependencies of European States.

Emigration of Pharmacists from Budapest.

The slump in the pharmaceutical trade and industry is bitterly felt by chemists' assistants, who are unable to find situations. From 400 to 500 assistants, all holding the diploma of the University of Budapest, have been out of employment for from 6 to 12 months without result. Of these men, 150 assistants have resolved to emigrate, and the first group of 54 has already left for the United States. As the education of Hungarian pharmacists stands at a very high level, it is likely that in America they will find situations without much difficulty.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

PROVINCIALISATION OF MADRAS HEALTH OFFICERS' SERVICE.

MENTION was made in a previous letter regarding the appointment of a Consultative Council of Public Health to enable the Government to maintain touch with non-official opinion concerning general principles of health policy, and particular questions of medical relief, preventive medicine, &c. The second meeting of the Consultative Council was recently held to consider the reports of the five committees of the Council. One of the most important subjects reported on by the Education and Research Committee was that of the provision of trained health officers. In 1913 the Government decided that health officers might, for the time being, be provided for municipal towns whose population exceeded 30,000, and for towns classed as special—e.g., Ootacumund, Coonoor, and Kodaikanal.

As there were 31 such towns, the health service would eventually consist of 31 appointments. As a first instalment Government sanctioned the posting of health officers in 10 of the most important municipalities of the Presidency, but applicants were so scarce that in 1920 only three towns were supplied; several men who had taken up one or other of the available posts had left them, being disgusted with the conditions of service which they were expected to accept. This was doubly unfortunate, for in that year the Madras University had revised its syllabus for the degree of Bachelor of Sanitary Science, bringing it up to the standard of a British D.P.H., and several candidates had taken the degree. The health officers are purely municipal servants with small prospects of promotion and subject to the whims and fancies of modation for pregnant women suffering from syphilis, the provision by the M.A.B. of accommodation for 18 mothers and 30 children for the in-patient treatment of ophthalmia neonatorum, and the allocation of grants-in-aid to three hostels for boarding women and girls who are attending the clinics. The number of new patients suffering from venereal disease attending the clinics was 13,025 in 1917 and 23,514 in 1920, the principal increase having taken place in 1919. Early difficulties in staffing the clinics have passed away.

Essentials of an Efficient Clinic.

The report lays down the essentials of an efficient clinic. It must attract patients. There must be no undue waiting for treatment and reasonable privacy and sessions at convenient hours. It must be well-equipped and arranged so that there is no waste of the time of the medical staff. There must be provision at all hours of the day for intermediate treatment of gonorrhœa in both sexes by nurses and orderlies. The staff should be coördinated under one head and the medical staff should not be employed in doing work that can be done by clerks and orderlies. The hours at which sessions are held should be determined by the convenience of the patients, and the sessions should be sufficiently numerous to permit of each patient receiving the attention which is adequate to render him non-infectious in the shortest space of time. The conduct of the V.D. clinic, the report lays down, should be governed by the principle that it was established to render venereal patients permanently non-infectious, and that in every instance where it fails to accomplish this object it fails entirely to achieve the purpose for which it was established.

Facilities Available in 1920.

The facilities are not yet all that they should be. Most of the clinics are established in existing out-patient departments and the premises are used for other purposes between sessions. Intermediate treatment of gonorrhœa cannot be arranged satisfactorily. The restriction of hours causes congestion and overcrowding and delays detailed examinations. The rooms are not conveniently arranged; the lack of cubicles wastes the time of the medical officer and leads to undue exposure of the patients and want of privacy. It is obvious that more medical men are needed to staff inconveniently arranged clinics. To secure conveniently arranged clinics considerable capital expenditure is needed, and unfortunately no provision has been made for capital grants. A beginning has been made. During 1920 completely new premises especially designed for a venereal diseases clinic have been provided at St. Thomas's Hospital, and concurrently with the opening of these new premises there has been appointed a specially selected medical, nursing, and male orderly staff to permit of the facilities for diagnosis and treatment being available on week days from 8 A.M. until 10 P.M.

Selection of the Staff.

The selection of the staff is recognised as the most important factor in the success of the clinic. Special difficulties caused by the war have gone, but in some hospitals the work remains in the hands of members of the honorary staff without regard to the dominant consideration that ability and time to do the work properly should be foremost. Sometimes the medical staff is changed annually, rendering a high degree of efficiency impossible. Sometimes the head only attends occasionally and the real work is done by assistants. It is urged that the time has now come to appoint only men and women whose skill, knowledge, and experience in the diagnosis and treatment of venereal diseases is beyond all question, and to insist that those appointed should devote the time and attention necessary for efficient performance. Venereal diseases must no longer be a sub-department of dermatology, genito-urinary surgery, or gynæcology, and the medical officer in charge should have the same privileges and status as the honorary physicians and surgeons. The busy practitioner and the medical student have not been able to avail themselves much of the facilities for instruction offered at the clinics, and more should be done to encourage short-time paid clinical assistants. Payment of the staff is not at present on a satisfactory basis and the writers of the report see no difficulty in fixing a proper scale.

Improvement in Treatment.

The treatment of gonorrhœa, partly owing to the lack of intermediate treatment and partly owing to overcrowding or want of system, is reported to be specially unsatisfactory. More uniformity in the treatment of syphilis could be secured with advantage. The recording of toxic results from arsenobenzol treatment and the question of standards of cure need more attention.

Some of the reasons given for patients ceasing to attend before the completion of treatment are: (1) abatement of symptoms and optimism; (2) difficulty in accounting for repeated absences from work; (3) nature of occupation—e.g., seafaring, commercial travellers; (4) "not satisfied with treatment," "dislike of doctor or nurse," "hurt by injection," &c.; (5) careless or ignorant patients. The average of patients ceasing to attend before completion of treatment for the whole of the London clinics cannot be put at less than 30 per cent. and is probably higher. The remedies are (*a*) for the medical officer to impress the patient with the serious nature of his disease; (*b*) to study the convenience of the patients and abolish long periods of waiting, inadequate attention caused by congested clinics; and (*c*) the use of prominent notices in the waiting rooms, distribution of leaflets, and so forth.

In regard to stillbirths more effort might be made through the midwives to secure the examination of suspicious specimens and the attendance of infected mothers at the clinics for treatment.

Social Implications.

The report recommends that money should be spent in circulating information amongst voluntary societies concerned in hostel and rescue work, such as the Women Police, Police Court Missionaries, Y.M. and W.C.A., Church Army, Salvation Army. At the end of 1920 grants-in-aid were made to seven hostels with total accommodation of 86 beds for their assistance in securing the regular attendance at the clinics of women boarders. There are about 100 refuges and rescue homes in London with a total accommodation of some 2000 beds. These homes do not, as a rule, train their inmates to earn an independent livelihood but simply to help in the domestic work of the home.

Most of the rescue homes try to exclude girls suffering from venereal disease. The report records a universally expressed desire amongst rescue workers for the provision of what may be conveniently termed "reception houses," the function of which would be to provide immediate shelter for the night or until the girl could be sent to a suitable home. The rescue worker needs to take full advantage of the "psychological moment"; at present she often fails because she cannot find immediate accommodation for the girl. It is suggested that these rescue workers and homes are insufficiently acquainted with the activities of other bodies doing similar work and that a careful survey of the present position with a view to better organisation is needed.

Many of the rescued girls are suffering from venereal diseases, and towards the end of 1919 the M.A.B. provided a 52-bed hospital in Sheffield-street for women suffering from venereal disease who come into the hands of the women police patrols. The causes of prostitution are discussed. The report ends with extracts from "Downward Paths," Flexner's "Prostitution in Europe," and appendices give the experience of rescue workers and others.

THE LIVERPOOL PROPOSALS FOR CONTINUITY OF TREATMENT.

In his annual report for 1920 on the health of the City of Liverpool Dr. E. W. Hope writes: "To say that the position in regard to the prevention of mental state, the judge said he ought to be guided by the specialists, and he refused to make an order for her discharge. The intervals proper for her removal from control should be left to the mental specialists. He would make no order as to costs. He did not think the proceedings had been necessary. The case excited great local interest.

Women Hospital Residents.

The committee of the Melbourne Hospital recently considered the question of limiting the number of women appointed as hospital resident medical officers. The system of appointment at the hospital is that those highest in the honours list at the final examinations assume office according to their places. Thus it might happen that every place would be occupied by women in the first 12 or 15 places. At present there are five women residents out of 12 positions. The committee, after deliberation, declined to disturb the existing regulation.

Obituary.

The death of Mr. H. M. O'Hara, F.R.C.S.I., has recently occurred. Although born in Australia Mr. O'Hara was educated for the medical profession in Great Britain, and returned as a young man, at once attracting attention as a bold and brilliant surgeon. He was for many years surgeon to the Alfred Hospital, Melbourne, and his operating day was a kind of early post-graduate class. On reaching the age limit he was made consulting surgeon. Mr. O'Hara was a President of the Surgical Section at the Australasian Medical Congress about 20 years ago. He was, apart from professional work, a very well-known figure in Melbourne owing to his physical proportions and his many social interests, which ranged from horse racing to amateur opera. Mr. O'Hara was married three times and has a son in the medical profession.

June 28th.

The Services.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

THE usual quarterly committee meeting was held on Friday July 22nd, at 11, Chandos-street, when eleven grants were made to cases in the Benevolent Branch for the orphans of officers, amounting to £474 15*s.* 4*d.*, and five grants in the Relief Branch for widows and children of the rank and file, amounting to £109.

These Funds are for the relief of widows and orphans of commissioned officers, non-commissioned officers, and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and new armies, and also for the relief of those who have been so severely damaged in the late war that they need help for the education of children. Requests for relief should be addressed to the Hon. Secretary, at the offices of the Funds at 11, Chandos-street, London, W. 1.

THE sword for colonels, Army Medical Service, and officers of the Royal Army Medical Corps, will in future be of the pattern authorised for infantry. Officers in possession of the existing pattern sword may retain it in wear. The gorget patches worn by the Army Medical Service are now of dull cherry cloth.

THE HEALTH AND COMFORT OF THE SOLDIER IN INDIA.

The Territorial Army can claim to have done much to ameliorate the conditions of service of the soldier in India. Prior to their "occupation" during the war electric light and fans were unknown luxuries in Indian barracks, hospitals, and bungalows, but as the result of insistent efforts, light and fans are now installed in all the principal cantonments. A large installation to serve the whole district has just started working in Peshawar and a similar installation should be working at Umballa before the end of the year. These things, and the wider employment of nurses, are very important medical reforms, affecting the health and comfort of the soldiers.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Commr. A. C. W. Newport, M.V.O., Surg. Lieut.-Commr. A. Lawrey, L.D.S., and Surg. Lieut. H. E. Y. White to the *Renown.*

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. Hewetson retires on ret. pay and is granted the rank of Col.

Maj. C. R. L. Ronayne retires on ret. pay and is granted the rank of Lt.-Col.

Capt. D. G. Evans from Spec. Res. to be Capt.

Capt. J. L. Ritchie retires, receiving a gratuity.

G. L. K. Finlay, late temp. Capt., to be temp. Capt.

M. H. Carleton to be temp. Lt.

Officers relinquishing their commns.: Temp. Capts. J. T. Hill and F. J. R. Cowie.

Temp. Capts. granted the rank of Maj.: A. G. Welsford and C. Sullivan.

Temp. Capts. retaining the rank of Capt.: R. Hodson, D. E. Hearn, and H. L. C. Noel.

Temp. Hon. Capt. A. C. Delacroix retains the hon. rank of Capt.

SPECIAL RESERVE OF OFFICERS.

Capt. A. J. Gibson relinquishes his commn. and is granted the rank of Maj.

Capt. E. D. D. Dickson relinquishes his commn. and retains the rank of Capt.

TERRITORIAL FORCE.

Lt.-Col. A. G. Hay from 3rd Sco. Genl. Hos. to be Lt.-Col.

Lt.-Col. A. R. Wilson resigns his commn. and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. C. H. Lindsay, D.A.D.M.S., 55th (W. Lan.) Divn., to be Bt. Lt.-Col.

Capt. E. Alderson to be Maj.

Capt. T. S. Elliot resigns his commn. and is granted the rank of Maj.

Hon. Surg. Capt. C. T. Fox (late East Kent Yeo.) to be Capt.

Lt. C. S. Atkin (late R.A.M.C.) to be Lt.

The undermentioned Majs., having attained the age limit, are retired and retain the rank of Maj., with permission to wear the prescribed uniform: J. Robinson, C. S. de Segundo, J. F. F. Parr, and F. J. Oxley.

The undermentioned, having attained the age limit, are retired and retain their rank: Maj. J. E. B. Wells, and Capts. E. V. Phillips, F. Jeffree, A. Scott-Turner, C. Telfer, J. F. Farrow, and A. G. Wilson.

2nd Western Gen. Hosp.—Lt.-Col. Sir Wm. Thorburn, having attained the age limit, is retired, and is granted the rank of Col., with permission to wear the prescribed uniform.

Lt.-Col. E. S. Reynolds, having attained the age limit, is retired, and retains the rank of Lt.-Col.

Maj. A. Wilson, having attained the age limit, is retired, and is granted the rank of Lt.-Col.

Maj. R. B. Wild, having attained the age limit, is retired, and retains the rank of Maj.

Maj. A. H. Burgess resigns his commn. and retains the rank of Maj.

TERRITORIAL FORCE RESERVE.

Capt. W. J. Gray, from Gen. List, to be Maj.

Capt. D. Smith, from 2nd Lond. Sanitary Co., to be Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

Lt.-Col. to be Col.: W. Young.

Maj. C. Thomson, retd. list, to be Lt.-Col. retd. list.

Lt.-Col. A. M. Fleming to be actg. Col. while holding an appt. as A.D.M.S.

Maj. A. G. Tresidder to be actg. Lt.-Col. while comdg. an Ind. Gen. Hosp.

The King has approved the retirement of Bt. Col. W. W. White.

Major A. C. Ingram, professor of medicine, General Hospital, Madras, has proceeded on a year's leave; Major G. E. Malcolmson officiates for him. Lieut.-Col. James Masson, civil surgeon, has been appointed Superintendent of the Bhagalpur Central Jail. Lieut.-Col. R. A. Lloyd, civil surgeon, has been appointed to the executive and medical charge of Hoshangabad District Jail. Lieut.-Col. W. M. Anderson resumes his appointment as Chief Medical Officer, North-West Frontier Province. Lieut.-Col. S. E. Prall and C. M. Goodbody retire from the Service. Lieut.-Col. E. Ryan has been appointed Honorary Surgeon to the Viceroy. Lieut.-Col. J. G. G. Swan, C.I.E., has vacated the appointment of superintendent District Jail, Ferozepore. Capt. S. R. Rao, deputy sanitary commissioner, officiates as Sanitary Commissioner of Assam, vice Mayor Taylor, granted a year's leave.

and other blemishes from the faces of his customers. It was stated in his defence that he had gained experience in America and Paris, and that he "had held" a licence for face treatment from the L.C.C. A qualification mentioned was an honorary degree from the Oriental University, Washington. In fining him the magistrate observed that it was not for him to judge as to the success of the defendant's methods, which seemed to him to be highly dangerous.

Control and Drunkenness.

A question was asked recently in the House of Commons by Colonel Sir Arthur Holbrook, M.P., as to whether statistics were available showing the comparison in the number of convictions for drunkenness in controlled and uncontrolled areas; and whether the percentage of such convictions was lower, for example, in uncontrolled Herefordshire, than in controlled Worcestershire, and in uncontrolled West Suffolk than in controlled East Suffolk. The Home Secretary's answer was to the effect that all available statistics would be found in the annual volumes of Licensing Statistics, of which the volume for 1920 is now obtainable. Accurate comparison would, however, be difficult for many reasons, including the fact that the scheduled areas do not necessarily correspond with the areas for which figures are shown. This seems equivalent to a negative reply, but after all, whatever might be shown by the figures asked for, they would be unlikely to convert the more stalwart advocates of decontrol or of continued control respectively to the views of their opponents. After all, either side may be right, but figures alone, without full particulars of social and industrial conditions, prove very little in such a case. At present it is open to the advocates of continued control to say that it has been used in certain districts because they require it, and that Herefordshire and West Suffolk are to be congratulated not because they have not been controlled but because they have not needed it. On the other hand, the figures for Worcestershire and for East Suffolk, after a year or two without control, may some day supply an answer to one side or the other such as it has never had at its command before, and may prove either that control is an effective weapon for promoting temperance, or that it is of negligible importance to that end. The case for or against control may also be better established than by statistics of convictions.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

School Instruction in Venereal Disease.

THE Council of the Department of the Seine is considering a suggestion referred to it by the Société de Médecine Publique et de Génie Sanitaire in regard to introducing into the school syllabus some instruction in venereal diseases and their consequences. It appears necessary to the Société to warn youths and girls against the dangers of venereal diseases before leaving school, when they should be told that abstention from non-conjugal sexual connexion is the best of prophylaxis as well as a moral duty. The Société also emphasised the necessity of pointing out to adults and more especially to soldiers the safety that derives from the use of specific ointments, recommending only those of which the formula has been officially tested and proved.

Prophylaxis Against Influenza.

Mr. R. Dujarric de la Rivière made a communication on the prophylaxis of influenza at a recent meeting of the Société de Médecine Publique et de Génie Sanitaire. He accepted the initial cause of influenza to be a filtrable virus, the complications being due to bacterial secondary infections. Prophylaxis should concentrate on general measures directed against the transmission of the virus and on special measures of protection against the complications. The public should realise the necessity of temperance in alcoholic consumption for every individual living in an epidemic area. The danger should be indicated of excessive use of antiseptic gargles and nasal washes in causing inflammation, mucous irritation, and so diminishing resistance to infection, as well as the value of frequent washing of face and hands and of disinfecting dwellings. Cats and dogs had been shown to transmit the virus, and in an epizoötic of horses hæmoculture had revealed an organism similar to Pfeiffer's bacillus, associated with pneumococcus and streptococcus. The blood serum of convalescent horses had shown definite therapeutic action when injected into patients suffering from influenza. The author insisted on the need of isolating suspects as well as well-recognised cases during any local out-break and treating them in fever hospitals or in special blocks of general hospitals. Doctors and nurses should wear overalls and masks when on duty. Nurses should wash their hands with surgical care when going off duty, and doctors should do the same on leaving the wards. Mr. Dujarric de la Rivière went on to give instances showing that convalescing patients are not likely to contaminate other people. He recommended polyvalent vaccine against complications. Immigrants should be refused admission from any country suffering from an epidemic of influenza, and he regretted that no international conventions had yet insisted on quarantine regulations. In the event of an epidemic a regular mobilisation system should be arranged, this mobilisation comprising extempore hospitals of hutments and tents, the requisition of cars to transport patients, and prohibition of public gatherings. In non-epidemic times the public should be instructed in schools, through the distribution of pamphlets and by special cinema films at frequent intervals.

Periodic Medical Examination of School Children.

The Conseil Municipal de Paris has decided to ask its school medical officers to undertake a general medical examination of Paris school children every two months, and to record the condition of the mouth and teeth on a special sanitary card. When necessary, the children will be sent to dental surgeries selected for the purpose by the authorities.

August 13th.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

The Relation of Alcoholism to Crime.

AT a meeting of the Society of Medical Practitioners, Dr. Geró, medical expert attached to the law courts, reported that of 94 individuals charged with homicide or attempted homicide, examined by himself, there were six malingerers and four persons who were wrongly supposed to be the subject of mental defects. Of the remaining 84 criminals only 14 were females. The following conditions of health were noted: one case of pregnancy, with mental derangement, one of morphiomania, one of hysteria, nine cases of delusions of persecution, seven of various states of mental disorder, eight of hysteria or epilepsy, 13 of various diseases either supposed or known to have an effect on the brain, 10 of mental defect, and 34 of alcoholism. Dr. Gero emphasised the fact that alcoholics formed more than a third of the total number of persons charged with homicide. He added that an examination of the antecedents of criminals grouped under other headings would show that many of the epileptics and mental defective subjects were the children of alcoholic parents. He also pointed out that acts of extreme violence might be committed not only by habitual inebriates but also by persons in a state of occasional alcoholic intoxication, in illustration of which he quoted cases.

Pellagra in Hungary.

In a recent report of the public health [illegible] the south-eastern part of Hungary is [illegible]

Correspondence.

"Audi alteram partem."

WAR EMERGENCY FUND OF THE R.M.B.F.: GRANTS FOR EDUCATION.

To the Editor of THE LANCET.

SIR,—The War Emergency Fund of the Royal Medical Benevolent Fund was founded in 1916 to assist medical men after their service abroad when they returned to practice. The Committee have already expended £18,000 in grants; they still have ample funds in hand and are prepared to make liberal grants towards the cost of education, and, if necessary, to pay the school fees of the sons or daughters of any medical man who, as the direct consequence of having held a commission in the Army Medical Service during the late war, finds himself unable to give as good an education to his children as he would otherwise have been able to do. The Committee are also prepared to consider applications for grants in such cases in order to aid in education at the Universities and the Medical Schools, and in training for professions.

I am, Sir, yours faithfully,

G. NEWTON PITT,
Hon. Sec.

11, Chandos-street, W. 1, August 14th, 1921.

ÆTIOLOGY OF ASYLUM DYSENTERY.

To the Editor of THE LANCET.

SIR,—The valuable contribution to the ætiology of bacillary dysentery in asylums by Dr. W. S. Dawson and Dr. W. Moodie, published in THE LANCET of July 30th, must appeal to all interested in asylum administration, for the emphasis which it lays on the importance of routine bacteriological examination of the stools from all cases of diarrhœa. There is, however, another aspect of the problem of asylum dysentery which, I think, merits careful consideration before adopting the somewhat drastic measure of complete and permanent isolation of all cases. In any case of infection there exist two varying factors—the degree of susceptibility of the individual to infection, and the degree of virulence of the pathogenic organism. If we postulate that, in the insane, opposition to bacterial infection is lessened, it becomes clearly a matter of importance to investigate the possible source or sources of this failure of resistance, with a view to adopting the appropriate remedy.

Recent experimental research into the influence on nutrition of certain accessory food factors gives a new importance to the subject of asylum dietaries, and raises the question whether certain diseases prevalent in mental institutions may not own their perpetuation to an inadequate supply of vitamins. It needs but a small acquaintance with asylum life to learn that it is a particular class of case, the chronic demented inmate, who is liable to attacks of dysentery; and it is also a familiar fact that members of the nursing staff are almost never attacked, in spite of their constant attendance on such cases and their sometimes imperfect acquaintance with the principles of disinfection. The former class are compelled by their circumstances to accept a diet which, though adequate in amount, cannot satisfy the individual craving for certain articles of diet, a craving which possibly may be interpreted as an instinctive attempt to obtain certain essential food factors. Apart from such a theoretical consideration, it is a matter of common knowledge that the supply of a well-balanced diet for the insane becomes increasingly difficult during the winter months, when fresh vegetables are difficult to obtain, and it is a significant fact, as Dr. Dawson and Dr. Moodie point out, that the highest incidence of dysentery occurs during the period of January to April.

By feeding pigeons on a diet deficient in proteins, fats, and certain accessory food factors, McCarrison has shown that changes are produced which favour infection of the mucous membrane of the bowel by pathogenic organisms. It is possible, as he suggests, that these experimental results are applicable in some degree to man, and that a long continued subminimal supply of accessory food factors may lead to conditions favouring the development of gastrointestinal disorders. During the late war I had at one period charge of a large number of prisoners of war, many of whom suffered from both dysentery and scurvy; in such cases the generous diet of a British hospital by itself produced effects so striking that I became convinced that dysentery may, in part, be a "deficiency" disease. The final proof of such a conception will be forthcoming when it is shown possible to diminish the spread and relapse of asylum dysentery by a more careful attention to the *qualitative* deficiencies of asylum diet, and it is on these lines that work is now proceeding in this institution.

It may be true that dysentery is to a certain extent spread by individuals in good health who harbour the bacilli, but in my experience the most important source of outbreaks is the presence of mild relapsing cases, who are not in the true sense of the word carriers, and it is surely a policy of despair to recommend their permanent isolation in preference to measures directed to their cure.

I am, Sir, yours faithfully,

Whittingham Asylum, August 8th. R. M. STEWART.

THE WEANLING IN UPPER EGYPT.

To the Editor of THE LANCET.

SIR,—I was interested in the letter from Dr. W. E. Nickolls Dunn which appeared in THE LANCET of May 28th, as his remarks upon the weanling in Upper Egypt apply to the natives of the Northern Provinces of Nigeria, where also gastric ulcer, appendicitis, and carcinoma are almost unknown diseases. There is, however, a marked difference between the condition of the teeth of our natives and of those of the country Arabs of Upper Egypt, as will be seen from the following figures upon incidence of pyorrhœa, prepared by Dr. J. W. Thomson and myself in 1913 by examination of 400 prisoners in two large gaols:—

Number with pyorrhœa	..	317 or 79·2	per cent.
" with carious teeth	..	82 " 20·5	"
" with teeth missing	..	87 " 21·7	"

This incidence of pyorrhœa and dental caries among our natives is probably due to the fact that their diet, after weaning, consists almost entirely of cooked food—guinea-corn ground and made into stiff porridge, with oil (ground-nut or palm-oil) boiled with vegetable and peppers and sometimes meat or fish; yam or cassava may replace the guinea-corn; half-cooked or "toasted" meat is taken, as is shown by the frequency of tænia infections. Practically no fresh fruit is available, but sugar-cane is chewed when in season. Upon this diet the bowels act naturally two to three times a day, and relief is immediately sought in the event of constipation. In other words, the native, like a herbivorous animal, lives upon a bulky diet and opens the bowels frequently. I would, therefore, tentatively suggest that absence of intestinal stasis rather than absence of dental caries may be the reason for the comparative scarcity of gastric ulcer, appendicitis, and carcinoma.

My native work, largely surgical, involves treatment of roughly 90 per cent. natives of Northern Nigeria and 10 per cent. coast natives. The latter correspond to the Cairo natives mentioned by Dr. Nickolls Dunn, in that they live largely upon European food, including bread made from flour ground in England. Case incidence of gastric ulcer, appendicitis, and carcinoma may be judged from the following figures of the last 750 surgical operations I have performed in Nigeria.

No cases of gastric ulcer. Never seen post mortem during nine years' work.

Four cases of appendicitis or appendix abscess. Two of these were in coast natives and should be excluded. One doubtful case of retro-cæcal suppuration, one true appendix abscess in N. Nigerian.

members of the Municipal Council who, more often than not, have their own axes to grind when any question affecting the health of the town is brought up by the health officer.

The local and municipal conference at its meeting in July, 1920, discussed the whole question at considerable length, and in spite of a strong feeling that local bodies should have full powers of appointment, &c., in regard to their officers, a resolution was passed to the effect that the posts of health officer be provincialised, subject to the same conditions in regard to control, postings, and transfers as those of medical officers—viz., that the powers of control over their servants vested in local bodies should not be prejudicially affected, and that the Surgeon-General should ordinarily consult local bodies in the matter of posting and transfers. This meant that health officers should be lent to local bodies in the same way that civil assistant surgeons and sub-assistant surgeons are lent at present.

Government Adoption of the Proposal.

The Financial Relations Committee and the Public Health Board of Madras both endorsed the recommendation, and in view of the consensus of opinion the Government have recently decided to accept the proposal; orders have now been issued to the effect that the Government consider that there should be two grades of health officers, whose appointments should be included in one or other of the two existing provincial cadres of civil assistant surgeons and sub-assistant surgeons. First-class health officers should possess the L.M.S. degree of the University of Madras or some other equivalent or higher medical qualification; second-class health officers should possess the L.M.P. diploma or an equivalent qualification, and both classes should have undergone a year's special training. Special arrangements will be made for instituting a suitable course of training, with effect from July 1st, 1921, to which all assistant and sub-assistant surgeons will be eligible. Health officers will draw pay on the scale fixed for the service to which they belong, an additional local allowance being made as compensation for loss of private practice.

Further orders state that the rate of local allowance will be calculated with reference to the total service of the officers as civil assistant surgeons or sub-assistant surgeons, not as health officers. Health officers employed in municipalities will also be granted fixed conveyance allowances, and those employed under local boards will draw travelling allowances under the ordinary rules in the Civil Service regulations. The number of appointments to be sanctioned depends mainly on the requirements of local bodies; the Government consider that health officers of the first class should ordinarily be employed under all district boards, in municipalities with a population of 50,000 or more, and in important sanatoriums, whilst in other municipalities second-class health officers may be employed. The question of the proportion of the salaries of health officers to be paid from provincial and from local funds, with the bearing on that question of leave and pensionary contributions by local bodies in respect of officers lent to them, is under separate consideration. With a view further to improve the prospect of health officers the Government propose that in future recruitment to the grade of Deputy Sanitary Commissioner should ordinarily be made from the ranks of health officers possessing the requisite qualification. The Government will be informed as early as possible which of the local bodies are willing to employ health officers, and whether first- or second-class health officers are required.

Training of Health Officers.

It has now been decided that health officers should be provided for 25 district boards and 78 for municipalities, 13 of these being first class and 65 second class. The Government have approved the Surgeon-General's proposal that the syllabus laid down for the Madras University B.S.Sc. degree should be adopted for the training of all health officers; and the separate course of training formerly prescribed for second-class health officers should be abolished. They have also decided that every facility should be given for research work and the investigation of disease, and that for this purpose they should be provided with a small laboratory and a microscope. The first class held under these new rules commenced on July 4th and 20 suitable candidates were selected for the course from a large number of applicants. The medical college is unfortunately unable to accommodate a greater number, and it will therefore be a few years before a sufficient number of trained men are available. It is of some satisfaction, however, to know that this problem is at last on the way to solution.

Madras, July 20th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Folie Circulaire.

A CASE presenting some unusual features has just occupied Mr. Justice Street in Sydney, sitting as Judge in Lunacy. The wife of a man of academic distinction, resident in New Zealand, had in 1912 exhibited such mental peculiarity as to require special detention. She was allowed out with a nurse the following year, but relapsed and was again detained in 1911 and 1915. As there was no suitable private mental institution in New Zealand, her husband arranged for her transfer to New South Wales, and she entered Mount Saint Margaret's Hospital in 1915 under fresh certificates. She was allowed out in 1916, but was again admitted in 1917, and once more in 1919. In 1921 she was transferred to the State Mental Hospital at Gladesville. The present proceedings took the form of a special judicial inquiry at the instance of Mr. G. S. Thompson, F.R.C.S., who alleged the lady was perfectly sane. Mr. Thompson had been consulted professionally in October, 1920, by the patient, who was then on probation and living privately. Mr. Thompson did *not* know anything of her mental condition. He advised her to go into hospital for the purpose of an operation. The lady in whose care the patient was then living told him she was on probation and under the care of Dr. A. Davidson. Mr. Thompson stated that he had then telephoned Dr. Davidson, but that gentleman declined to recognise him in the case and refused to inform him of the patient's subsequent whereabouts. Mr. Thompson then began an agitation for a public inquiry, which resulted in the present proceedings. In cross-examination Mr. Thompson denied that he was allied to the Socialist party, but admitted he wore a red flower and lectured at Labour party meetings. Portions of a letter from Mr. Thompson to the Premier of New South Wales were read, in which were the following words:—"From the evidence before me it appears that something very improper is going on in this matter. The case requires sifting to the bottom. Mrs. —— is certainly not insane now, whatever her condition was. It is scandalous that certain persons who are gaining thereby should have power to kidnap people and keep them in prison at their own sweet will." Dr. Richard Arthur, M.L.A., Mr. Donald Fraser, M.B., and Dr. J. B. Nash, M.L.C., gave evidence that they had not found indication of the patient's insanity. Mr. W. G. C. Smith, M.B., Dr. Andrew Davidson, Dr. Eric Sinclair, Inspector-General of the Insane in New South Wales, Dr. Chisholm Ross, Dr. W. C. Williamson, and Mr. H. C. McDouall, Medical Superintendent at Gladesville, all having special alienist experience and training, testified that she was suffering from periodical insanity. Mr. Justice Street in giving judgment said that there were elements in the case which might excite suspicious people, but animadverted strongly on the language used by Mr. Thompson and his imputation of dishonesty against those in charge of the patient. He thought the latter's husband had been animated throughout by a desire to do the best. As to her sideration of their treating sick and wounded soldiers and sailors.—Lieut.-Col. Hon. G. F. STANLEY (Financial Secretary to the War Office) replied: The amount paid during the period in question to the London voluntary hospitals for the maintenance and treatment of soldier patients was about £880,000. I regret that I cannot give the sum paid in respect of each year, but I hope this will be sufficient for my hon. friend's purpose.

The Size of a Panel.

Mr. PURCHASE asked the Minister of Health the maximum of patients a doctor might have upon his panel; and to what extent he might increase this number by having assistant doctors.—Sir A. MOND replied: The limit of the number of insured persons whom an insurance practitioner may have on his list is determined by a scheme made for each area by the Insurance Committee and the Panel Committee jointly, and the extent to which the limit may be increased where the doctor engages one or more permanent assistants is determined by the Insurance Committee, who is required to have regard to the particular circumstances of the doctor's practice. No doctor working single-handed may have more than 3000 persons on his list, the maximum has been fixed in a large number of areas at 2000 to 2500, and the average number per doctor is approximately 1000.

Nurses' Registration Rules.

Lieut.-Colonel Sir JOHN HOPE asked the Minister of Health whether, under the rules for registration of nurses now lying upon the table of the House, a nurse who had been trained in Scotland and was practising in Scotland could be admitted to the English Register, and thereby remove herself entirely from the jurisdiction of the Council of the country in which she was practising; and whether he would consider the amendment of both the English and Scottish rules so that all nurses should originally register in the country in which they were practising, but should be able to be placed on the Register of the other country without difficulty or payment if they subsequently desired to practise in that other counrty.—Sir A. MOND replied: I am advised that it is not competent to the General Nursing Council to refuse to admit to the Register a nurse who is otherwise qualified on the ground that she is not practising in the country. Registration is purely voluntary, and no nurse can be brought within the jurisdiction of any of the three Nursing Councils except by her own choice. A nurse practising in Scotland would derive no advantage from admission to the English Register, since she would not thereby be entitled to describe herself in Scotland as a registered nurse.

Small-pox in Madras.

Mr. WATERSON asked the Secretary for India whether his attention had been drawn to the exceptionally heavy epidemic of small-pox which occurred in the Madras Presidency during the years 1917, 1918, and 1919, when the deaths were 31,058, 58,752, and 41,732, respectively, the number in 1918 representing nearly two-thirds of the total number of deaths from small-pox in British India; and whether any special investigation had been made of the causes of the epidemic and of the failure of vaccination to prevent it, particularly in view of the fact that vaccination was compulsory in all the municipalities, and in 193 villages and 70 ranges of the Presidency.—Mr. MONTAGU replied: I have seen reports containing these figures. The heavy mortality is attributed to laxity in enforcing vaccination and especially re-vaccination, and to inadequate scrutiny of the results. A reorganisation of the vaccination staffs in Madras was sanctioned in 1918, and is probably now in working order. I would add that sanitation is a transferred subject under the new Indian Constitution—i.e., that it is no longer under my control.

THURSDAY, AUGUST 11TH.

Pensioners' Deaths.

Mr. TYSON WILSON asked the Minister of Pensions the number of persons who, having been granted pensions owing to injuries or disease caused by the late war, had died since the pension was granted them.—Mr. MACPHERSON replied: The approximate numbers are, I regret to say, officers 1150, and other ranks 45,000.

Lady Superintendents at Holloway Prison.

Viscountess ASTOR asked the Secretary for the Home Department whether the lady superintendents recently appointed in Holloway prison possessed medical or nursing qualifications: if not, what other qualifications they possessed; and what were their duties and powers.—Mr. SHORTT replied: One of these ladies is a highly qualified nurse, who has had much experience in charge of outside hospitals. She has the supervision of all the hospital work of the prison and of the hospital staff, subject to the control of the medical officers, and the Governor, who is a medical man. The other has had great experience as a prison officer, and has the supervision of the disciplinary side of the prison with its staff, subject to the control of the Governor.

Dangerous Drugs Regulations.

Mr. GILBERT asked the Secretary for the Home Department whether the regulations under the Dangerous Drugs Act, 1920, had been officially confirmed and were now in operation; and what other powers had passed legislation in accord with the Opium Convention of 1912, so as to secure coöperation in regard to the import and export of the dangerous drugs named in the Act.—Mr. SHORTT replied: The Regulations have been made and will come into force on Sept. 1st. I cannot say definitely what other powers have passed legislation to carry out the Convention of 1912, but the powers which were signatory to the Treaties of Peace undertook to enact the necessary legislation without delay and at latest within 12 months from the Treaties coming into force. I understand that full information as to the position in each country is being collected by the League of Nations, which is entrusted with the general supervision over the execution of the Opium Convention.

MONDAY, AUGUST 15TH.

New Taxation of Motor Vehicles.

Sir HARRY BRITTAIN asked the Minister of Transport whether, seeing that six months had passed since the new form of taxation for motor vehicles was introduced, he was now able to give the House some information as to the methods in which the large sum of money obtained was being used in the development and improvement of the roads and for other purposes.—Mr. A. NEAL (Parliamentary Secretary to the Ministry of Transport) replied: The greater part of the net yield of the new taxation is being applied in grants under the classification scheme whereby local authorities receive contributions towards their approval expenditure on roads ranking as first and second class. Local authorities were advised that a balance would be available for the purpose of various improvements, and they were invited to submit such schemes by the end of July last. These schemes are now under examination.

Disabled Naval Men in Hospital.

Mr. ANEURIN WILLIAMS asked the Parliamentary Secretary of the Admiralty how many naval men were still in hospital suffering from disabilities due to the war.—Mr. AMERY replied: The number of serving naval men who are suffering from disabilities due to the war and still under treatment in hospital is 18. In addition, there are five naval men in naval hospitals who have been discharged from the Navy and are in receipt of pensions from the Ministry of Pensions. There are also 113 naval men under treatment in Royal Naval Hospital, Great Yarmouth, suffering from disabilities due to the war. This does not include naval men still being treated under Ministry of Pensions in hospitals other than naval.

TUESDAY, AUGUST 16TH.

Ex-Service Men in Hospital.

Mr. ANEURIN WILLIAMS asked the Minister of Pensions how many ex-Service men were still in hospital suffering from disabilities arising from or aggravated by service in the war.—Major TRYON replied: The number of ex-Service men at present receiving in-patient treatment from this Ministry for disabilities due to or aggravated by service in the Great War is approximately 34,000. This figure includes 2600 men undergoing concurrent treatment and training.

Business Committee and Medical Services.

Lieut.-Colonel FREMANTLE asked the Chancellor of the Exchequer if the advisory business-men's committee would consider the waste incurred in the maintenance under 12 Government departments of separate public medical and nursing services with separate institutions and personnel, separate means of recruitment, separate purchase of stores and equipment, often overlapping, often in peace-time redundant, to meet needs which to a large extent were the same, and on active service were often discharged by mutual assistance; and whether in any such consideration they would be assisted by persons having direct experience of such services.—Mr. HILTON YOUNG (Financial Secretary to the Treasury) replied: Pending detailed examination of the departmental replies to the Treasury circular of May 13th last, it would be premature for me to express an opinion with regard to the alleged duplication of machinery, but the matter will be carefully investigated.

THE Great Northern Central Hospital, Holloway, has received from King Edward's Hospital Fund a grant of £1550 for the new Nurses' Home and other extensions from the final distribution of surplus Red Cross funds.

Public Health Services.

Hospital Collections in London.

A CIRCULAR has been issued to the London hospitals by King Edward's Hospital Fund dealing with the subjects of collections from employees and the coördination of appeals for support. The Fund has lately coöperated with the London Regional Committee of the British Hospitals Association, the Hospital Sunday Fund, the Hospital Saturday Fund, and the League of Mercy in discussion of these points and the various factors bearing upon them. The King's Fund Policy Committee and the Conference of Central Agencies have decided not to pass binding resolutions until the discussion has been completed, and evidence on a good many aspects of the subject is still inadequate. The circular contains outlines of the discussions at present proceeding. It is suggested that for purposes of collection from employees the metropolis (within nine miles of Charing Cross) be divided into hospital areas around key hospitals, and that the willingness of these hospitals to coöperate with the conferring agencies be ascertained; that when an area with a key hospital is adopted, a committee be formed consisting of local representatives of the organisations concerned to facilitate the securing of maximum collections; and that a general arrangement might be made whereby the coöperating hospitals should be assured of a due proportion of the proceeds of collections.

No proposals have yet been formulated for a change in the existing practice as regards weekly contributions. A list of London hospitals, geographically arranged, with the adjacent municipal areas, Hospital Saturday Fund areas, and League of Mercy areas, is enclosed with the circular to facilitate consideration of the existing facts. Some hospitals already contemplate the holding of local conferences, and the King's Fund Policy Committee holds itself ready to receive observations from hospitals, and to assist in the summoning of such conferences. With regard to coördination of appeals, no general statement has yet been prepared; in the meantime the individual hospitals remain at liberty to act on their own judgment in the matter of appeals, other than for capital expenditure, without reference to the King's Fund.

Private and Panel Practitioners.

Our correspondent, "Non-Panel," in THE LANCET of August 13th disputes our contention that the practice of charging fees to insured persons by non-panel practitioners is seriously prejudicial to the medical service of the insured. He makes a number of good points, but he misses the essential one. It may well be that such an arrangement satisfies all parties, but it leaves the insured person with the impression that by going to the non-panel practitioner and paying fees he is getting a superior form of treatment. This impression certainly creates a prejudice against the treatment provided by the Insurance Act. By not putting his name on the medical list the non-panel practitioner limits the choice of insured persons, and those of his patients who are insured persons have to pay a second time for what is guaranteed to them by the Act. Should the doctor of his choice not be on the panel any insured person may apply to make his own arrangements, and may receive his medical benefit from the non-panel doctor under certain conditions. The doctor who accepts these conditions naturally has to guarantee that his attendance on the insured will not be inferior to that provided under the Act by insurance practitioners.

ANNUAL REPORTS OF M.O.H.

Reading.

THIS report for 1920 describes very fully the complete health organisation which Dr. A. Ashby, after 33 years' service, has left to his successor, Dr. H. J. Milligan, to carry on. Dr. Milligan, in his introductory letter, says: "Appointed in the year 1887, Dr. Ashby was medical officer of health for a period of 33 years, a period which, the perusal of this report will show, witnessed enormous strides in the public health of the district. In June, 1920, he was appointed consulting medical officer while still retaining the office of public analyst."

The year under review shows an improvement even on the highly satisfactory returns of previous years. In respect of death-rate from all causes, infant mortality rate, and tuberculosis death-rate, Reading compares very favourably with other large centres of population.

The housing shortage continues and considerable numbers of the population are still compelled to live under very undesirable conditions. Certain courts containing 70 houses which are very old and in some cases bordering on collapse have to remain occupied, and two unhealthy areas comprising 59 and 211 houses respectively, cannot be dealt with until the acute housing shortage is relieved. The council have adopted a scheme for the provision of 600 houses. Work has been begun on 162 and at the end of the year 50 were completed and occupied. There were also 28 houses built by private enterprise, for 21 of which a subsidy was granted. "The general standard of housing in the district is good. Where the actual structure of the houses often leaves much to be desired the situation is frequently relieved by the general lay-out scheme, most of the streets being wide and the majority of the houses having gardens." The occupations—biscuit manufacturing, engineering, railway work, seed growing, printing, lithographing, &c.—"have no special determining influence on the health of the inhabitants." The Registrar-General's estimate of the population is, for birth-rate 95,387 and for death-rate 95,006. The birth-rate, 23·8, is the highest recorded since 1905 and has risen from 16·7 in 1919. The death-rate 10·7, the infant mortality rate 66·7, and the tuberculosis death-rate 0·96 have to be compared with rates for the preceding decennium of 12·66, 83·3, and 1·32 respectively.

The water-supply derived from the river Kennet is passed through mechanical filters and is, in addition, chlorinated by the use of a solution of bleaching powder. The sewage is at present treated by broad irrigation on the corporation manor farm, but it has been decided to adopt the "activated sludge" system. The extension of the sewerage system to Tilehurst will enable the 563 pail-closets to be converted into water-closets. "The work of emptying pail-closets and cesspools is done by the householders and is carried out without nuisance."

Examination of milk samples for tubercle bacilli was given up during the war and is to be resumed. Inability to obtain convictions for milk samples deficient in milk fat varying from 17·7 to 13·3 per cent., shows the need for alteration in the law. Only about 17 per cent. of the infants born in 1919 were vaccinated. There is difficulty in getting early notification of tuberculosis; arrangements have been made for the treatment of pulmonary and non-pulmonary tuberculosis at the Headington sanatorium extension of the Radcliffe Infirmary, Oxford. A pavilion at the isolation hospital is in use chiefly for advanced cases. The school dentist attends to the teeth of tuberculous patients. During the year 491 new cases of venereal disease were treated at the V.D. clinic established at the Royal Berkshire Hospital for Berkshire, Wiltshire, and Reading. There are four centres for infant consultations, an antenatal clinic opened in October is being well attended, and a maternity home was opened in September. Owing to the extreme trade depression £1250 (net) was spent under the Milk Order, 1919, during the year ending March 31st, 1921.

For a "garden city" like Reading the death-rate of 6·5 per 1000 births for diarrhœa and enteritis under 2 years seems rather high, and the damage rate for 15 cases of notified ophthalmia neonatorum is also high—viz., the sight of one eye permanently affected in two cases and the sight of one eye completely lost in another.

Sir StClair Thomson has had conferred on him the Order of Chevalier de la Légion d'Honneur for services rendered in France with the Croix Rouge Française during the war.

CARE OF FEMALE MENTAL DEFECTIVES AT HULL.—On August 5th Tilworth Grange, in the parish of Sutton-in-Holderness, was formally opened by the Lady Mayoress of Hull as an institution for the care of female mental defectives. The property was acquired at a cost of £9000, and consists of a large house with numerous out-buildings, and an estate of 21 acres. Half the sum named (which includes expenditure on alterations and equipment) will be met by the Board of Control. There is accommodation for 50 patients of all grades; the staff includes a female gardener who will instruct the patients in gardening.

Appointments.

DUNDAS-GRANT, Sir JAMES, M.D., has been appointed Consulting Laryngologist to the Cancer Hospital, Fulham.

PERKINS, R. J., M.B., B.S. Lond., Physician to Out-patients' Department of the Royal Waterloo Hospital.

ROBERTS, C. S. LANE, M.S. Lond., F.R.C.S. Eng., University Tutor in Obstetrics and Resident Medical Officer, Maternity Hospital, Leeds.

TOPALIA, H. A., L.R.C.P. & S. Edin., L.R.F.P. & S. Glasg., Assistant Medical Officer to the Swaffield-road Institution and Intermediate Schools, Wandsworth Union.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. M.O. £500.
Aylesbury, Royal Bucks Hospital.—H.S. £200.
Bath, Royal Mineral Water Hospital.—Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Belgrave Hospital for Children, Clapham-road, S.W.—Female H.P. H.S. Each £100.
Birmingham Children's Hospital.—Res. M.O. £150.
Birmingham General Hospital.—Res. Anæsthetist. Obst. H.S. H.S. Each £100. H.S.'s to Spec. Depts. £125. Res. Surg. Officer. £180.
Birmingham University.—Lecturer in Physiological Dept. £300.
Bournemouth, Royal Victoria and West Hants Hospital.—Two Res. M.O.'s. Each £200.
Bradford, Royal Eye and Ear Hospital.—Hon. Asst. Ophth. Surg.
Brighton, Royal Sussex County Hospital.—H.S. £120.
Coventry, Coventry and Warwickshire Hospital.—Res. H.P. £250.
Derby, Derbyshire Hospital for Sick Children.—Female Res. M.O. £150.
Dreadnought Hospital, Greenwich, S.E.—H.P. H.S. Each £200.
Evelina Hospital for Children, Southwark, S.E.—H.P. H.S. Each £160.
Exminster, Devon Mental Hospital.—Locum Tenens. £7 7*s.* per week.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. £100.
Glamorgan County Asylum, Bridgend.—Jun. Asst. M.O. £415.
Gravesend Hospital.—H.S. £200.
Halifax County Borough.—M.O.H. £900.
Hull Royal Infirmary.—V.D. and Cas. O. £250. Asst. H.S. £150.
Ipswich County Borough.—Asst. M.O.H. £500.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Liverpool, Royal Southern Hospital.—Surg. Tutor and Registrar. £20. Second M.O. to V.D. Dept. £200. Two H.P.'s. Three H.S.'s. Each £100.
London Lock Hospital, 91, Dean-street, Soho, W.—H.S. £200.
London University.—Readership in Pathological Chemistry. £700.
Manchester Ear Hospital.—H.S.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Metropolitan Hospital, Kingsland-road, E.—Surg. for Diseases of Nose and Throat.
Mildmay Mission Hospital, Austin-street, Bethnal Green, London, E.—Jun. Res. M.O. £120.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £200.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Prof. of Physiology. £1000.
Northamptonshire Sanatorium, Creaton.—Res. Med. Supt. £500.
Norwich, Norfolk and Norwich Hospital.—Fourth H.S. £200.
Nottingham General Hospital.—Two H.S.'s. Each £200.
Poplar Hospital for Accidents, Poplar, E.—Asst. Res. S. £150.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.
Rochester, St. Bartholomew's Hospital.—Res. H.S. £250. H.P. £200.
St. Mary's Hospital, Paddington, W.—Cas. Phys. £100.
Salford Royal Hospital.—Cas. H.S. £150.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Sydney University, New South Wales, Australia.—Chair of Psychiatry. £1100.
Wakefield, Clayton Hospital.—H.S. £225.
West Derby Union.—Asst. Res. M.O. at Walton Institution, Rice-Lane. £250.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of the following vacant appointments: Dunkeld (Perth), Somercotes (Lincoln).

Births, Marriages, and Deaths.

BIRTHS.

MELHUISH.—On August 8th, at Grove-road, Wrexham, the wife of Dr. T. W. Melhuish, of a son.

TOOGOOD.—On August 9th, at Liskerret, Liskeard, Cornwall, the wife of Sherman Toogood, M.A. Oxon., M.R.C.S., L.R.C.P., of a daughter.

WALLIS.—On August 13th, at Townshend-road, N.W., the wife of Dr. R. L. Mackenzie Wallis, of a daughter.

MARRIAGES.

BRIGGS—COOPER.—On August 4th, at the Parish Church, Bramhall, Christopher Duffield Briggs, M.R.C.S., of Wigston, Leicester, to Catherine Rosa, widow of J. T. Cooper.

DEATHS.

BULL.—On August 14th, at St. Oswald's House, Stony Stratford, William Henry Bull, Colonel, A.M.S. (T.), K.H.S., V.D., D.L., F.R.C.S. Edin., aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 22nd.—12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Simmonds: Visit to Surgical Wards. 4.30 P.M., Lecture:—Dr. Paterson: Deficiency Diseases.

TUESDAY.—2 P.M., Dr. Burrell: Medical Out-patients. Mr. Banks Davis; Diseases of the Throat, Nose and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 4.30 P.M., Lecture:—Dr. Burnford: Clinical Medicine (II.).

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Addison: Operations. Mr. Gibb: Eye Department. 4.30 P.M., Lecture:—Mr. Gibb: Ulceration of the Cornea (II.).

THURSDAY.—11.30 A.M., Obstetrical Registrar: Gynæcological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients Mr. Simmonds: Orthopædic Department. 4.30 P.M., Lecture:—Mr. Simmonds: Surgical Emergencies (II.).

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Demonstration of Cases. (Medical Wards.)

SATURDAY.—10 A.M., Dr. Burnford: Visit to Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C.2.

THE LANCET: SUBSCRIPTION RATES.

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Forty-two benign tumours: Lipoma, fibroma, fibro-myoma chondroma, osteoma, goundou, papilloma, polypi, adenoma of thyroid.

Five locally malignant tumours: Endothelioma (1), submaxillary, parotid, &c.; epithelial odontome (1) in coast native.

Three malignant tumours: Sarcoma of skull in coast native, 1; of femur, 1; of humerus, 1. Carcinoma, no cases seen among gynæcological work, though chronic endometritis very common.

Colleagues working in the Southern Provinces of Nigeria have told me that carcinoma, although not common, does occur.—I am, Sir, yours faithfully,

W. B. JOHNSON,
July 9th, 1921. West African Medical Staff.

UNIVERSITIES' LIBRARY FOR CENTRAL EUROPE.

To the Editor of THE LANCET.

SIR,—May I plead in your columns for the needs of the Universities' Library for Central Europe, which has just completed the first year of its work? Owing to the state of the foreign exchanges, English books are practically unobtainable in many parts of the Continent. The Universities' Library has been formed in order to supply, at any rate to some extent, the more pressing needs of continental universities for books and periodicals in every department of art and science. The library is supported entirely by voluntary donations of money and books. It has centres in Austria, Czecho-Slovakia, Hungary, Germany, Poland, Esthonia, Finland and Roumania, and from all of these requests for specific works in English have been received, amounting in all to more than 20,000 titles. Information as to the requirements of any particular centre will gladly be sent on application.

A representative who has recently visited the Continent reports an intense desire on the part of foreign universities to obtain English periodicals and books, as also a sincere wish on their part to establish contact with the intellectual world outside. Most people have books for which they have themselves little or no further use, but which would be highly valued in Central Europe. If your readers would be good enough to look on their bookshelves and take out those volumes which they think they could do without, even at some sacrifice to themselves, and would present them to the Universities' Library, they would help directly in relieving this intellectual distress. Donations of money are also greatly needed.

Mr. B. M. Headicar, librarian to the London School of Economics and Political Science, Clare Market, Kingsway, W.C. 2, is acting as secretary for the Universities' Library for Central Europe, and will gladly supply any information or forward any books or periodicals which are sent to him.

I am, Sir, yours faithfully,
JANET E. LANE-CLAYPON,
August 6th, 1921. Member of the Executive Committee.

ZINC ELECTROLYSIS FOR ENLARGED TONSILS.

To the Editor of THE LANCET.

SIR,—In an annotation in your issue of August 6th there is a reference to the treatment of enlarged tonsils by X rays. May I mention as another procedure zinc electrolysis of the base of the tonsil. This is done by transfixing the base with a fork with five or six zinc-coated prongs. The fork replaces the blade in a Mackenzie's guillotine, which is carefully insulated by painting with enamel. The fork is attached to the positive terminal of a rheostat, while the negative electrode makes contact with the tonsil in its mesial part. One application of a current of 200 milliampères for three minutes is sufficient to cause destruction of the tonsil, which sloughs away without hæmorrhage and without inflammation.

I am, Sir, yours faithfully,
Devonshire-place, W., August 11th. A. R. FRIEL, M.D.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Poison Antidotes Bill.

THE text has been published of the Poison Antidotes Bill. The measure consists of three clauses. Clause 1 provides that "where any poison is sold by retail which under any Act or order thereunder is required to be labelled 'Poison' there shall be printed on or attached to the receptacle containing such poison a description of an antidote or antidotes, with the usual dose or doses thereof." Clause 2 states that where any person sells any such poison "without the receptacle containing the same having a description and the usual dose of the antidote thereof printed or labelled thereon he shall be liable on conviction before a court of summary jurisdiction to a penalty for each offence not exceeding five pounds." Clause 3 provides that the Act is not to apply to Ireland.

HOUSE OF LORDS.

MONDAY, AUGUST 15TH.

Criminal Law Amendment Bill.

The House considered the Commons' amendments to the Criminal Law Amendment Bill. The Commons' amendment providing for the insertion of a new clause, making any act of gross indecency between female persons a misdemeanour, was negatived. Several other Commons' amendments were agreed to, including that giving power for the deportation of aliens for procuration. The amendment giving a judge power to order the trial referring to a charge of alleged incest to be heard in camera was negatived.

Licensing (No. 2) Bill.

The Licensing (No. 2) Bill was read a third time and passed.

War Pensions Bill.

The War Pensions Bill was read a third time and passed.

HOUSE OF COMMONS.

TUESDAY, AUGUST 9TH.

Travelling Grants to Panel Practitioners.

Mr. LAMBERT asked the Minister of Health the terms of the regulations under which grants were made to medical men by the Insurance Acts for mileage and travelling.—Sir A. MOND replied: I am sending the hon. Member a copy of the Regulations from which he will see that a Central Mileage Fund is constituted, into which the sums available for mileage are paid (Article 19), that a committee, known as the Distribution Committee, consisting of insurance practitioners and other persons, reports to me as to the basis on which the sums in the Central Mileage Fund should be distributed amongst insurance committee areas (Article 20), and that the sums allocated to each area after consideration of that Report are distributed amongst the practitioners in accordance with a scheme prepared jointly by the local panel committee and the insurance committee, which is subject to my approval (Article 21).

Overcrowded Areas.

Mr. TREVELYAN THOMSON asked the Minister of Health if he was aware that it was stated at the recent international conference on tuberculosis that improved sanitation and adequate housing accommodation were amongst the most important means that could be adopted for reducing tuberculosis; and, if this was so, in the interests of economy, would his department sanction the building of more houses in those districts which were badly overcrowded, and where labour and materials were available for more houses than had at present been sanctioned.—Sir A. MOND replied: In so far as it is possible to sanction the erection of further houses within the limitations of the Government's housing scheme, which have been laid down, I shall certainly do what I can to meet the needs of the more seriously overcrowded areas.

WEDNESDAY, AUGUST 10TH.

Naval Hospital, Plymouth.

Sir CLEMENT KINLOCH-COOKE asked the Financial Secretary to the Admiralty whether he was now in a position to state what steps had been taken to improve the accommodation for the sick-berth staff at the Royal Naval Hospital, Plymouth.—Mr. AMERY replied: It has been decided to construct new quarters for the sick-berth staff at the Royal Naval Hospital, Plymouth, as soon as financial conditions permit.

Service Grants to London Voluntary Hospitals.

Mr. GILBERT asked the Minister of Health what were the amounts paid in the years 1914 to 1919, respectively, as grants in aid to the London voluntary hospitals in con

Of the 94 private patients provided for in private dwellings, with the sanction of the Board, on Jan. 1st. 1921, there were 32 in houses possessing special licences for the reception of not more than 4 patients, and 62 in houses which, having only one patient, required no licence. All pauper patients, wherever placed, come upon the register of the Board; the number provided for in private dwellings on the above date was 2030. All lunatics and mental defectives were visited by officers of the Board, many receiving two visits during the year. The standard of care continues to be satisfactory.

Suggested Reforms.

A reform in terminology is strongly urged in the report; the Board are of the opinion that the terms "lunacy" and "lunatic" should be abolished, and that for the designation "asylum" should be substituted that of "mental hospital"; this change, the Board are convinced, would be welcomed by the great majority of those concerned with the administration of institutions for the insane, and they regret the necessity of their own employment of the statutory terminology in the report. Furthermore, about 80 per cent. of the pauper patients in Scottish asylums do not come from the pauper class and would not have become paupers except for the incidence of insanity; the injustice of the designation leads the Board to advocate its avoidance in future legislation on the subject. In the light of the success which has attended the establishment in 1890 by the Glasgow Parish Council of observation wards for patients with incipient forms of mental disease, it is recommended in the report that legislation be framed for legalising these clinics, for establishing them in suitable centres, with at least one in connexion with every medical school, for their use by all classes of the community which require them, and for their support by local authorities. The Board have reason to believe that the provisions relating to the six months' certificate are widely disregarded—i.e., that the cases of patients resident for more than six months in private dwellings and requiring compulsory restraint of some kind are not brought to the notice of the Board, the members of which body now consider that houses used for the purpose should be sanctioned and approved by them, and all names of patients sent to them. The terms of admission of voluntary patients are stated to require substantial amendment. In some of the larger asylums nearly 50 per cent. of all private patients paying higher rates of board are admitted as voluntary inmates; many of them being obviously insane, their reception is a contravention of the terms of the statute. Further, a certain number have, in course of time, to be certified and remain as certified patients in the asylum. It is suggested that the statute be amended to secure more effective restriction of the employment of this section to those persons whom it was designed to benefit, as well as a periodic review of the mental condition of all voluntary inmates in asylums; otherwise there appears to be no alternative except to reconsider the present basis of the medical certification of the insane. As the law now stands there is no provision for any but the more wealthy class of patients submitting themselves for treatment as voluntary patients. It is recommended that persons unable to pay for their own maintenance in asylums, and suitable for voluntary treatment, should be provided for in this respect by the local authority as if they were certified patients. With reference to pathological laboratories, the economical advantages of the central laboratories is emphasised, and it is stated that there is no necessity to appoint an assistant medical officer as pathologist to any individual asylum.

Expenditure on Pauper Lunatics.

The expenditure of local authorities on the maintenance of pauper lunatics for the year ending May 15th, 1920, was as follows:—For maintenance and other expenses of 17,481 pauper lunatics under care for longer or shorter periods during the year, in asylums, lunatic wards of poorhouses, and private dwellings, a total sum of £617,800 was paid. Of this expenditure £38,113 was repaid by relatives and others, and £115,703 was contributed from the local taxation account. The net expenditure by local authorities on the maintenance of patients was thus £463,984, which is £51,129 more than the expenditure of last year. As regards asylums, the average cost per head is 16*s.* 8*d.* weekly, or £43 6*s.* 8*d.* per annum; in licensed wards of poorhouses the cost is 15*s.* 11*d.* weekly, or £41 7*s.* 8*d.* per annum; as regards private dwellings, the average cost is 10*s.* 10*d.* weekly, or £28 3*s.* 4*d.* per annum.

HOME LABOUR AND INSANITY.

A CORRESPONDENT writes: There are 42 males and 80 females in the Haywards Heath Mental Hospital chargeable to the parish of Eastbourne, and the fact that there are nearly twice as many females as males has led to an interesting suggestion by the members of the asylum visiting committee of the board of guardians. In their report presented to the guardians on August 12th, the committee state that there was little doubt that the stress and strain of the endeavour of many women to run their home establishments are so heavy and troublesome that they succumb. "This," the report continues, "is a point which should be carefully considered by the Women's Institutes, as it is having a very great effect on the social life of the people. Search for all labour-saving devices must be continued and every endeavour made to induce children to think less of their own comfort and offer their help and assistance to the mothers or housekeepers of the family circle." The committee on the occasion of their visit found not one of the 42 males in bed, most of the latter being cases of a chronic character.

THE NEEDS OF KING'S COLLEGE HOSPITAL.

King's College Hospital is faced with a debt of some £100,000, and as a consequence half the 388 beds ordinarily placed at the disposal of the sick poor of South London and surrounding districts have been closed. The committee of management in the special effort which they have been making to arouse greater interest in the hospital and its work with a view to raising, not only sufficient funds to liquidate the debt but to enable them to reopen seven closed wards, have been greatly assisted by a gift of eight Roneo duplicators, to be used in the printing of letters of appeal and other printed matter, thereby saving the hospital a considerable sum. It is hoped that this gift from Messrs. Roneo may be an incentive to other firms to offer gifts either in money or in kind.

OPERATION FOR RHINOPHYMA.

IN the *Scalpel* for July 30th Dr. Fallas, of Brussels, describes three cases of rhinophyma in each of which he was able to restore to the patient his former normal appearance. The instructive element in his paper is the advantage he has found in the use of the thermo-cautery instead of the knife. In the first case, indeed, he began by a cutting operation, but was compelled to resort to the cautery on account of excessive bleeding. A necrosis of the right ala nasi in this case called for a subsequent plastic operation. In the remaining two cases Dr. Fallas used the thermo-cautery only. The operations were bloodless and if one may judge from the photographs published they were also completely successful. No grafting was found to be necessary.

"ERSATZ" LEATHER.

AN action in the German courts is to be noted in which damages were recovered against a German hatter by one of his customers, who had suffered from pain in his head after wearing one of the defendant's hats for a short time. His symptoms, whatever they may have been, were ascribed by the evidence to the composition of the band of the hat which was of artificial leather, or leather substitute, into the composition of which sulphuric acid entered. The court held that the hatter was bound to discover whether his goods were likely to be injurious to his customers; in other words, that he warranted them fit for their intended use. British importers of goods of this kind will no doubt accept the case as a warning to be careful as to the nature of the material purchased.

REST AND HELP FOR HOSPITAL NURSES.

To the Editor of THE LANCET.

SIR,—In your kindness you have allowed me to appeal for years past for contributions towards the Necessitous Ladies' Holiday and General Fund, and I venture once again to ask the charity of your readers, for whose generosity in the past I could never be grateful enough. The poor ladies are suffering pitifully now through the difficulty of obtaining work. Hospital nurses who have broken down, journalists, musicians, artists, actresses, discharged government clerks, and companions, many of whom, through age and infirmity, unable to obtain any sort of work, are left behind in the city in the summer months, exposed to the privations attendant on poverty.

The Fund also supplies food, medicine, and clothing, and comforts that are even more urgently needed than rest or change of air. Faced with the high cost of living on their tiny incomes, many are in daily anxiety.

I plead, then, for the old, the sick, and helpless. All contributions sent to the following address will be gratefully acknowledged and distributed among hospital nurses who have broken down.—I am, Sir, yours faithfully,

CONSTANCE BEERBOHM (Miss),
Treasurer.

40, Upper Berkeley-street, London, W. 1.

MR. ALEXANDER GRAY, M.A., head of the Approved Society Branch of the Insurance Department, Ministry of Health, has been appointed to the new Jaffrey Chair of Political Economy at the University of Aberdeen.

Medical News.

Joint Council of the Order of St. John and the British Red Cross.—The first report of the Joint Council of the Order of St. John of Jerusalem in England and the British Red Cross Society, covering the period from Sept. 4th, 1919, to March 31st, 1921, and including a statement of accounts, has just been issued. The departmental reports cover the subjects of the auxiliary hospital for officers, the central work rooms, the Emergency Help Committee, the Home Service Ambulance Committee (with map), the Hospital Services, the Joint V.A.D. Central Committee and V.A.D. Scholarship Department, the Museums Subcommittee, the Trained Nurses, and the departments dealing with organisation and appeals, personnel and medals, provisional limbs, and stores. Three appendices contain the Hospital Library report, the scheme of the County Joint Committee organisations, and a memorandum for use in the establishment of Medical Supply Depôts.

A Conference on Economic Recovery and World Peace, organised by the Fight the Famine Council for Economic Reconstruction and the Peace Society, will be held in the Caxton Hall, Westminster, from Oct. 11th to 14th.

The Voluntary Hospitals Commission continue to receive numerous applications from individual hospitals and, to avoid misunderstanding, they are anxious to make it known that grants will only be made on the recommendation in London of King Edward's Fund, or in the provinces of the local Voluntary Hospitals Committees. Steps are now being taken in coöperation with county and county borough councils to establish these local Committees; and any inquiry as to whether a Committee has already been appointed for a particular area should be addressed to the clerk to the county council. Hospitals are asked to defer their applications until the local Hospitals Committee has been appointed.

West Indian Medical Conference.—The first of what may well prove to be a series of helpful hygienic conferences was held last month at Demerara, British Guiana, the Administrator, Hon. C. Clementi, presiding. Prof. R. T. Leiper and Dr. J. Anderson attended on behalf of the Filariasis Commission of the London School of Tropical Medicine; Dr. E. P. Minett, Government medical officer of health, acted as secretary, and a number of medical delegates were present from Trinidad, Barbados, St. Lucia, Jamaica, Surinam, Grenada, and elsewhere. In his opening address the Administrator emphasised the sanitary difficulties of the only area yet colonised in British Guiana, which he described as a partially reclaimed swamp some four feet below the level of high spring tides.

The People's League of Health.—The first Travelling Scholarship Prize awarded by the People's League of Health has been won by Mrs. M. C. D. Walters, C.M.B., M.R.San.I. The award is in connexion with the Sims Woodhead series of constructive educational health lectures delivered during the spring at Morley Hall, George-street, Hanover-square, by the League. Mrs. Walters, who during the war worked in the maternity hostels for Belgian women, is shortly to visit Belgium, and will spend a week in Brussels, where arrangements have been made for her to inspect the health centres of the city, upon which she will report to the League. The second course of the Sims Woodhead Lectures will commence in October. The fee is 10s. for the course, and 5s. entrance fee for the examination with which the Travelling Scholarship Prize is connected. Applications should be made to Hon. Organiser, the People's League of Health, 7, Hanover-square, London, W. 1.

North-East London Post-Graduate College.—A special post-graduate course will be held at the Prince of Wales's General Hospital, Tottenham, N., from Sept. 26th to Oct. 8th. It will include practical demonstration on clinical and laboratory methods each morning, demonstrations on groups of selected cases, general hospital work, and a clinical lecture each afternoon. Lectures will be given by Mr. C. J. Bond, of Leicester, on "Latent Infections"; Mr. James Berry on "The Diagnosis of Thyroid Swellings"; Colonel L. W. Harrison on "The Routine Treatment of Syphilis and Tests of Cure in Gonorrhœa and Syphilis"; Colonel W. Byam on "The Invalid from the Tropics"; Dr. Arthur Giles on "Sterility"; Mr. H. D. Gillies on "Plastic Surgery"; and Sir W. H. Willcox on "Diabetes." Practical demonstrations will also be given in associated special hospitals. Luncheon will be obtainable in the neighbourhood and tea will be provided each day in the hospital. A syllabus will be issued in due course, and further information may be obtained from the Dean.

The Wellcome Historical Medical Museum will be closed for cleaning and decorating during the month of September.

Dr. H. E. Cuff, who lost his life on the Norfolk coast on August 15th in an unsuccessful attempt to rescue two daughters from drowning, was principal medical officer to the Metropolitan Asylums Board and author of books on nursing.

Essex County Tuberculosis Scheme.—Conferences between representatives of the Essex Local Medical and Panel Committees, the Essex Insurance Committee, and the Essex County Council, with a view to securing closer coöperation between the general practitioner and the tuberculosis officer in combating tuberculosis, have resulted in an amended scheme which comes into force on Oct. 1st. This scheme, which has received the approval of the Ministry of Health, aims at making the dispensary a consulting centre and not a centre for symptomatic treatment. This being so, the local medical and panel committees have undertaken to act in full coöperation with the tuberculosis officer in carrying out the revised scheme, and to do their utmost to prevail upon other members of the profession to do likewise. The need is recognised for strong support from various sections of the public if the care and treatment of tuberculous cases are to be really effective. To grapple with the factors of environment, food, nature of work, wages, and the ever-present responsibilities of dependants, Care Associations have been established in certain districts, and will be extended when opportunity affords. A circular issued by the chief tuberculosis officer to all medical practitioners in the county gives a convenient summary of existing facilities.

Training of Nurses at Leeds—Reference was recently made in these columns to the proposed diploma in nursing at the University of Leeds; for many years the question of training in nursing at the Union Infirmaries of the city and of some of the surrounding districts has also engaged the attention of the authorities. At the Union Infirmary in Beckett-street Dr. James Allan, who has held the post of medical superintendent for about 40 years, has always regarded it as a part of his duty to instruct the nurses, and some 25 years ago he systematised his courses of instruction; the independent medical man who acts as examiner has just presented his twenty-sixth annual report to the guardians. He describes the general education of the candidates as of a satisfactory character; their knowledge has been sound, and in some cases has attained to a really high standard. The latest examination was conducted by means of written questions, together with a separate viva voce examination of each candidate in the presence of the medical superintendent and of the matron. Of late years the number of candidates has sometimes reached 30; the total number who have presented themselves for examination during the operation of the scheme is 455. The Hunslet guardians and the Barnsley guardians have made use of the same scheme for some years, with the assistance of the same examiner, who has also acted for the Fever Nurses' Association in respect of the City Hospital at Seacroft. There is no doubt that the standard of knowledge and the character of the nursing have improved under these conditions.

County Health Reform in Ireland.—An Irish correspondent writes: For some months past there have been movements in several Irish counties to bring about a unification of county health services. The county council has in each case been acting in isolation from the Local Government Board and in harmony with the local government department of Dail Earann. Last week the county council of County Clare published the details of a careful scheme which appears to be based mainly on the proposals put forward in the report of the Irish Public Health Council. The scheme recommends that the county be a unit, with a portion of Limerick incorporated, and that all public health services be coördinated and administered by a single body, to be known as the County Board of Health, with authority over the medical staff, nursing staff and health inspectors, and having control of home assistance. The Board of Health will consist of 30 members—county councillors, chairman of rural and urban councils, members nominated by the county council, representatives of the county insurance committee and of the county medical association. The report provides for five public health institutions—viz., a mental hospital, a county central home (Ennis workhouse) for aged and chronic hospital cases and the harmless insane with a detached portion for tuberculosis cases, a county nursery, four district hospitals, and an inter-county sanatorium. The scheme is, no doubt, good in itself, but one feels that it would be wiser to wait until some legislative body is in a position to deal with the health services of Ireland as a whole.

addition to the universities and schools of medicine there are many institutions where medical study may be commenced. Applications for special exceptions are dealt with by the Students' Registration Committee, which reports all such cases to the Council.

Regulations for Maintenance of Register of Medical Students.

The following examinations have been approved by the Council:—(*a*) The final examinations for the degrees in Arts and Science of any University of the United Kingdom or of the British Dominions. (*b*) All examinations which are accepted for Matriculation in the Faculties of Arts or Pure Science in any one of the Universities of Great Britain or in the Queen's University of Belfast. (*c*) All examinations not included under the foregoing section (*b*), which are accepted for Matriculation in the Faculty of Medicine in any one of the Universities of the United Kingdom of Great Britain and Ireland provided the examination is completed at not more than two periods of examination, and that the pass-certificate (or certificates) includes English, Mathematics, Latin (or Greek or Hebrew), and at least one other subject named in the following list:—Latin, Greek, Hebrew, Arabic, Persian, French, German, Spanish, Italian, Russian, or any approved modern language. (*d*) The Council may grant special recognition to the following examinations not included under the foregoing sections (*a*), (*b*), and (*c*):—(1) The final examinations for the degrees in Arts and Science of any specially recognised Foreign University. (2) Examinations conducted by approved Examining Bodies within the United Kingdom under the provisions set forth in the foregoing section (*c*). (3) Examinations conducted by approved Examining Bodies out of the United Kingdom under the provisions set forth in the foregoing section (*c*), and under such other conditions as the Council may impose in each case.

List of Bodies whose Examinations are accepted under the Foregoing Regulations.

I. *Examinations in Great Britain.*

(1) The Matriculation Examinations in the Faculties of Arts and Science of, and all examinations accepted in lieu thereof by, the following Universities: Oxford (including Responsions and Moderations), Cambridge (including the Previous Examination and the General Examination), Durham, London, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, Wales, Edinburgh, Glasgow, Aberdeen, St. Andrews. These examinations are accepted subject to the conditions set forth under Section 2 (*b*) above. (2) The Preliminary Examinations in the Faculty of Medicine of, and all examinations accepted in lieu thereof by, the Universities of Durham, Edinburgh, Glasgow, Aberdeen, St. Andrews. These examinations are accepted subject to the conditions of Section 2 (*c*) above. (3) Specially recognised Examinations conducted by approved bodies.

The following Schools Examinations have been recognised by the English Board of Education and are accepted by the General Medical Council under the conditions noted below.

AS FIRST EXAMINATIONS.

1. School Certificate Examination of the Oxford and Cambridge Schools Examination Board.
2. Senior Local Examination of the Oxford Delegacy for Local Examinations.
3. Senior Local Examination of the Cambridge Local Examinations and Lectures Syndicate.
4. School Certificate Examination of the University of Bristol.
5. First School Certificate Examination of the University of Durham.
6. General School Examination of the University of London.
7. School Certificate Examination of the Northern Universities Joint Matriculation Board.

AS SECOND EXAMINATIONS.

8. Higher Certificate Examination of the Oxford and Cambridge Schools Examination Board.
9. Higher School Certificate Examination of the Oxford Delegacy for Local Examinations.
10. Higher School Certificate Examination of the Cambridge Local Examinations and Lectures Syndicate.
11. Higher School Certificate Examination of the University of Bristol.
12. Higher Certificate Examination of the University of Durham.
13. Higher School Certificate Examination of the University of London.
14. Higher Certificate Examination of the Northern Universities Joint Matriculation Board.

(A) The First Schools Examination Certificate is accepted, provided it shows either (*a*) that English and mathematics have been passed "with credit," or (*b*) that English and a language other than English have been passed "with credit"; and also that mathematics has been passed on a "sufficient" standard. (The certificate under (*b*) must show by an explicit attestation of the examining authority that mathematics has been passed on a "sufficient" standard.)

(B) A First Schools Examination Certificate which does not fulfil one or more of the foregoing conditions is accepted, provided it is supplemented either (i.) by further Schools Examination Certificates obtained subsequently which fulfil (*a*) or (*b*); or (ii.) by certificates obtained at the Second (Higher) Schools Examination, which show that the deficient subjects (English, another language, mathematics, as the case may be) have been passed (whether as "full" or as "subsidiary" subjects) at the Second Schools Examination.

Other Certificates accepted under Clause 2 (*b*). Scottish Education Department: Leaving Certificates.

Other certificates accepted under Clause 2 (*c*). Scottish Education Department: Intermediate Certificate. Central Welsh Board: Senior Certificate. University of St. Andrews: Final Examination for Diploma of L.L.A. College of Preceptors: Senior Certificate: Preliminary Examination for Medical Students Certificate. Educational Institute of Scotland: Preliminary Medical Examination Certificate.

II. *Irish Examinations.*

University of Dublin: Matriculation Examination: (*a*) Junior Freshman Term Examination (exclusive of Trigonometry); (*b*) Special Preliminary Examination to be held in March, the standard and subjects of which shall be those of a Junior Freshman Examination (exclusive of Trigonometry); (*c*) Junior Exhibition Examination on obtaining marks of sufficient merit in the subjects of (*a*) or (*b*); (*d*) Examinations for the First, Second, Third, or Fourth Year in Arts. (Certificate to be signed in the approved form by the Medical Registrar of the University.) Queen's University of Belfast: Matriculation Examination. National University of Ireland: Matriculation Examination. Intermediate Education Board of Ireland: Middle Grade Examination, with Honours in three subjects: Senior Grade Examination. Royal Colleges of Physicians and Surgeons in Ireland: Preliminary Examination. These Examinations are accepted subject to the conditions set forth in Section 2 (*c*) above.

The remainder of the curriculum, though all under the supervision of the Council, is in detail in the hands of the various degree- and diploma-granting bodies whose representatives are members of the General Medical Council. In the next pages we give the regulations of the various examining bodies, but it must always be remembered that the examinations are under the supervision of the General Medical Council, who visit the various centres in turn and closely inspect the procedure.

III. *Examinations Held Out of the United Kingdom.*

Every Certificate from Indian, Colonial, and Foreign Universities and Colleges must contain evidence that the Examination has been conducted by or under the authority of the Body granting it, must include all the subjects required by the General Medical Council, and must state that all the subjects of Examination have been passed in at not more than two examinations; copies of the form of the required Certificate are supplied by the Registrar of the Council for the purpose. In the case of Natives of India or other Oriental countries whose vernacular is other than English an Examination in a Classical Oriental Language—e.g., Sanskrit, Arabic, Chinese—may be accepted instead of an Examination in Latin. The Abiturienten-Examen of the Gymnasia and Real Schulen on the continent and the examinations entitling to the French diplomas of Bachelier ès Lettres and Bachelier ès Sciences and other corresponding Entrance Examinations to the Universities in Europe are recognised by the General Medical Council.

These examinations are accepted subject to the conditions set forth in Section 2 (*c*) above.

Further particulars are given in the Students' Regulations, which can be obtained at the offices of the Council, price 1*s.* 2*d.*

Registration of Medical Practitioners.

Under the provisions of the Medical Act, 1858, any person possessing one or other of the medical qualifications enumerated in the schedule to the Act is entitled to registration by the General Medical Council on producing to the registrar of a Branch Council proper

Notes, Short Comments, and Answers to Correspondents.

SOVIET RUSSIA AND PROSTITUTION.

THE flood of refugees from Russia may not only bring cholera, typhus, or plague with them, but may also accentuate the prevalence of venereal disease. At the Third Congress of the Women's Sections of the Russian Communist Party, Mme. Alexandra Kollontay, one of the leading women of Soviet Russia, made a forcible speech on the subject of prostitution. A first edition of 40,000 copies of this speech was at once printed and widely circulated. It was then translated, and a first instalment is published in the August number of *Soviet Russia*, the New York organ of the Bolshevist party. From this it appears that the Bolshevist Council of the People's Commissars, when it came into power, at once abolished all Tsarist legislation on prostitution; but no other measures have been substituted. Certain localities have, however, acted on their own initiative and without interference from the central Government. In one town disorderly houses are totally closed, while in another they are allowed openly to exist. In some districts prostitutes have been rigorously suppressed, sometimes even with the aid of the militia, and treated as criminals, while in other places they are not molested at all. The speaker expressed regret at the lack of popular fundamental principles on the question, and proceeded to define the meaning of prostitution in the terms of Bolshevism. It was "a phenomenon closely bound up with an income not earned by labour; it therefore flourished in the epoch of the rule of capitalism and private property." Soviet Russia consequently must abolish prostitution because it is a survival of the principle of private property; but, above all, because by selling herself, even if only temporarily, the prostitute "becomes a *deserter from work*." Because prostitutes do not contribute their share of productive social work they must be "mercilessly condemned."

Regard for public health only entered the question as a secondary consideration, but it was by no means overlooked. The speaker recognised that prostitution is one cause, but in no sense the only cause, of venereal disease. Defective hygiene, scarcity of plates, cups, towels, &c., frequently give rise to infection.

An Insight into Conditions in the War Areas.

Mme. Kollontay proceeded to paint an alarming picture of the spread of venereal disease in Russia, apart from prostitution; for instance, in the fruitful southern provinces, where civil war has been in progress, the male Cossack population has been driven out with the Whites, or has been scattered to the winds. Only women remained in the settlements; they had enough of everything, but there were no men. Red armies advanced and took the towns, the men were billeted out, and remained for weeks at a time. Free alliances resulted, having no similarity whatever with prostitution, since the women voluntarily associated with the men with no view to material gain; indeed the gain was on the other side, the women taking care of the Red soldiers, mending their clothes and giving them homes so long as the army remained in the settlement. In this way the settlements became infected with venereal disease. The same thing was repeated with cities and villages, which were taken by the Whites. A general contamination is constantly going on. The diseases are increasing and threaten to wipe out the entire unborn population.

Suggested Preventive Measures.

To combat this danger Mme. Kollontay urged the provision of a proper sexual education for the young, so that children might enter life armed with precise information. Then she continued to plead that the most precious moral weapon the worker could possess was the feeling of comradeship and solidarity between the sexes. The possible purchase of a woman must degrade such feeling; therefore, "from the standpoint of the new Communist morality which is in process of formation, of crystallisation, prostitution is intolerable and dangerous."

Meanwhile there is a steady increase of prostitution and its attendant diseases. It is to be hoped that, as Mme. Kollontay possesses great influence in Soviet Russia, the further instalment of her speech will suggest some practical measures calculated to be of immediate service.

PUBLIC HEALTH IN ASSAM: (1) KALA-AZAR; (2) VACCINATION.

IN continuation of his report on Sanitary Matters in Assam, noticed in these columns on Nov. 27th, 1920, Major T. McCombie Young, I.M.S., Sanitary Commissioner, has issued an interesting account of the measures undertaken for dealing with the serious epidemic of kala-azar in that province during 1919. The main principle has been, where circumstances rendered it practicable, to send subassistant surgeons on survey every year through any endemic area to observe the general activity of the disease, and to discover any individual villages in which hyper-endemic conditions may have appeared. In such cases the village is notified as an infected area and its inhabitants are removed, each family being classified as infected, contact, or free, and located in each group on separate sites: a subassistant surgeon is posted to treat the sick and to supervise the working of preventive regulations. In the Sibsagar district an attempt was made to discover and deal with every village in which even a single case of kala-azar existed, and experience indicates that had a clean sweep been made in the whole area in 1917 the outbreak might have been terminated earlier, "at the same outlay, but with considerable economy in the lives of persons who would have escaped the disease." The reality of site infection is considered to have been proved, and the only known remedy is evacuation. If the bed-bug is the carrier "we still want to know under what conditions in nature it becomes infective, and how it travels from village to village to originate new foci of infection."

The report on Vaccination in this province (also by Major Young) for the triennial period, 1917–18 to 1919–20, shows the considerable increase of 81,207 operations, as compared with those of the preceding three years, but this was almost entirely due to the inclusion of the Manipur State in the provincial statistics. The ratio of successful vaccinations to the total population rose from 43·74 per 1000 in 1917–18 to 52·97 in 1919–20; for which years the small-pox mortality fell from 0·59 to 0·20 per 1000. The lymph supplied from the vaccine depôt at Shillong was of excellent quality, the percentage of success being 95·71 in primary operations and 72·04 in revaccinations: glycerinated lymph only is used.

MENTAL HOSPITALS IN SCOTLAND: ANNUAL REPORT OF THE BOARD OF CONTROL.

THE General Board of Control for Scotland have published their seventh annual report on the condition and management of lunatic asylums and on the protection and control of mental defectives in Scotland. On Jan. 1st, 1921, there were in Scotland 17,806 insane persons (exclusive of insane persons maintained at home by their natural guardians) of whom the Board of Control had official cognisance; this number, which showed an increase of 226 on that of the previous year, included the inmates of training schools for imbecile children not certified under the Mental Deficiency Act, and inmates of the criminal lunatic department of Perth Prison. Of this total, 2981 were maintained from private sources, 14,752 by parochial rates, and 70 at the expense of the State. With reference to registered lunatics, there was a total increase of 233 (38 private patients, 195 pauper patients) on the previous year's figures, owing to an increase of the number in establishments by 317 and a decrease of the number in private dwellings by 111.

Admissions, Discharges, &c.

The total number of patients admitted to establishments under a sheriff's order, sanction of the Board, and other statutory authority, was 3873 (161 more than in 1919); this figure excludes admissions by transfer, of which there were 706, a high number explained by the reconversion of Renfrew District Asylum from a temporary war hospital. Of voluntary patients 313 were admitted to asylums in 1920. Discharges were as follows: 358 private patients, 970 pauper patients, discharged recovered; 221 private patients, 311 pauper patients, discharged unrecovered, all these figures being higher than in the preceding year. Deaths occurred of 281 private patients and 1202 pauper patients, the combined death-rate for patients in establishments being 10·1, as compared with 12·1 in 1919. The total reported number of accidents to patients was 103, 18 being fatal, of which 9 were suicides; cases of attempted suicide numbered 7.

Present Condition of Establishments.—Lunatics in Private Dwellings.

Establishments for the insane in Scotland comprise: (a) royal and district; (b) private and (c) parochial asylums; (d) lunatic wards of poorhouses; and (e) the department for criminal or State patients in Perth Prison. On account of the abnormal conditions now existing many difficulties have to be faced in connexion with the administration of institutions, a large percentage of inmates of which are hospital cases. Favourable comment is, however, made on the fact that, while economy is most carefully kept in view, the dietary is ample and varied. As a general rule, the management of these establishments reflects credit upon the officials, and almost without exception a satisfactory standard of efficiency would appear to be maintained. Similarly, favourable reports are given of the administration of the establishments for mental defectives.

Medicine, the Litchfield Lecturers in Medicine and Surgery, and the other physicians and surgeons. Instruction is also given in post-mortem work and Clinical Pathology in connexion with the courses in Pathology. Post-graduate courses will be held at the beginning of October.

More detailed information may be obtained from the University Calendar; from the Examination Statutes, 1918 (both of which are published by the Clarendon Press); from the Regius Professor of Medicine; and from the Professors in the several departments of medical science.

UNIVERSITY OF OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—Courses of instruction are given in connexion with the Oxford University Medical School. These include (1) a course in Practical Medicine by the Regius Professor of Medicine; (2) Clinical lectures by the Litchfield Lecturers in Medicine and Surgery; and (3) tutorial instruction and demonstrations in special Regional Anatomy (medical and surgical), methods of Medical and Surgical Diagnosis, and Surgical Manipulation. (4) Pathological demonstrations and instruction in post-mortem work are given by the Assistant Pathologist. Opportunities are offered to students who wish to act as surgical dressers and clerks. The hospital contains 210 beds.

UNIVERSITY OF CAMBRIDGE.

The student must enter at one of the Colleges, or as a non-collegiate student, and keep nine terms (three years) by residence in the University. He must pass the Previous Examination in Classics, Mathematics, &c., if possible, before he comes into residence in October, or he may obtain exemption through the Oxford and Cambridge Schools Examination Board, the Oxford or Cambridge Senior Local Examinations, the London Matriculation Examination, the Scotch Education Department, Responsions at Oxford, and the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, the Matriculation Examination of the University of Birmingham, or by being a graduate of certain other Universities in the United Kingdom. He may then devote himself to medical study in the University, &c. Or he may, as nearly all students now do, proceed to take a degree in Arts by passing two Special Examinations for the ordinary B.A. degree, or an Honours degree in one of the Triposes. The Natural Sciences Tripos is taken most frequently, as some of the subjects are practically the same as those for the first and second M.B.

For the degree of *Bachelor of Medicine* (*M.B.*) five years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first three or four years are usually spent in Cambridge till the student has passed the examination for Part I. of the Natural Sciences Tripos and the first and second examinations for M.B. Hospital practice and many of the requisite lectures may be attended in Cambridge, and some students remain to attend lectures and hospital practice until they have passed the second part of the second examination for M.B. The laboratories for Botany, Chemistry, Physics, Biology, Zoology, Human Anatomy, Physiology, Biochemistry, Pathology, Bacteriology, Pharmacology, Psychology, and Public Health are well equipped. Addenbrooke's Hospital, the Infectious Diseases Hospital, the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research.

There are three examinations for M.B. The *first* includes (1) Chemistry, (2) Physics, and (3) Elementary Biology. These parts may be taken together or separately. The *second* is divided into two parts—viz., (1) Human Anatomy and Physiology; and (2) Pharmacology and General Pathology. The *third* is also divided into two parts: (1) Principles and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women); and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence), Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology). The examinations are partly in writing, partly oral, and partly practical, in the hospital, in the dissecting room, and in the laboratories. An Act has then to be kept in the Public Schools, by the candidate reading an original dissertation composed by himself and being examined orally on some subject approved by the Regius Professor of Physic.

Candidates who have passed both parts of the third M.B. examination are admitted to the registrable degree of *Bachelor of Surgery B.Ch.*) without separate examination and without keeping an Act.

The degree of *Doctor of Medicine* (*M.D.*) may be taken three years after that of M.B. or four years after that of M.A. The candidate is required to produce certificates of having been engaged in Medical Study for five years, and if an M.A., to pass the same examinations as are required for the degree of M.B. An Act has to be kept, consisting of an original Thesis sustained in the Public Schools with *vivâ voce* examination; and a short extempore essay has to be written on a topic taken from the general subject of his thesis, whether it be Physiology, Pathology, Pharmacology, the Practice of Medicine, State Medicine, or the History of Medicine.

For the degree of *Master of Surgery* (*M.Ch.*) the candidate must have passed all the examinations for B.Ch., or, if he is an M.A., have obtained some other registrable qualification in surgery. He is required to pass an examination in Principles and Practice of Surgery, Surgical Anatomy and Surgical Operations, and Pathology, and to write an extempore essay on a Surgical Subject. Before he can be admitted to the examination two years at least must have elapsed from the time when he completed all required for the degree of B.Ch.

Diplomas are granted in Public Health in Tropical Medicine in Medical Radiology and Electrology, and in Psychological Medicine. Candidates must hold a recognised medical qualification.

Women Students.—Increased facilities have been offered to students of Girton and Newnham Colleges, and they are admitted to the First and Second M.B. Examinations under certain conditions.

University Prize in Medicine.—The one University Prize in Medicine, the Raymond Horton Smith Prize (value £19), is awarded to that candidate for the degree of M.D. who presents the best thesis for the degree during the academical year, provided that he has taken honours in a tripos examination. Medical studies are endowed by the numerous Natural Science scholarships at the various colleges, information about which can be obtained from the respective Tutors.

An abstract of the Regulations and Schedules of the range of the examinations in Chemistry, Physics, Biology, Pharmacology, and General Pathology may be obtained upon sending a stamped directed envelope to the Registrary, The Registry, Cambridge.

ADDENBROOKE'S HOSPITAL.—Clinical Lectures in Medicine and Surgery, in connexion with Cambridge University Medical School, are given at this hospital twice a week during the academical year; and practical instruction in Medicine and Surgery is given in the wards and out-patients' rooms by the physicians and surgeons daily during the term time and vacations. The fee for pupilship is 3 guineas a term, 9 guineas a year, 12 guineas perpetual. Further information may be obtained from Dr. Aldren Wright.

UNIVERSITY OF LONDON.

The University of London was established by Royal Charter in 1836 as an examining and degree conferring body with affiliated colleges but no direct teaching functions. In 1900 it was reconstituted under the Act of Parliament, 1898, and became a teaching as well as an examining body. Many schools already existing became constituent colleges, including all the metropolitan medical schools. Lecturers were also appointed in special subjects.

LIBRARY

STUDENTS' GUIDE—SESSION 1921-1922.

THE scheme upon which the Students' Number of THE LANCET is constructed will make it easy, we hope, for all who consult it to find what they seek. The General Council of Medical Education and Registration is the controlling authority of all the medical education of the country, and its responsibility for the upkeep of the Medical Register and for the maintenance of the examination standard is first explained.

But the student has to be taught as well as examined, and as the systems under which instruction can be obtained do not conform to one pattern, the various curricula are described in detail, and under their respective headings the necessary information will be found concerning the facilities for medical study offered at the different teaching centres of the United Kingdom. The regulations for the examinations, both preliminary and professional, at these centres are set out so that the student desiring to obtain a medical degree from any university, or a diploma from any medical corporation, may ascertain the course of clinical instruction and the conditions under which submission for examination has to take place. The metropolitan medical schools and hospitals are grouped under the University of London, of which they are constituent bodies, although their educational opportunities are offered to other universities as well as to the medical corporations. A similar plan is adopted in dealing with the provincial universities, the hospitals in direct connexion with which are described with the universities; for though the hospitals may not be official schools of the universities, they supply an integral section of the teaching required by the graduates.

Upon securing degrees or diplomas admission to the Register follows, and greater education begins. The prudent young doctor already knows what he or she desires to make the next step, and there is a large range of choice displayed. The inducements to enter one of the Services should prevail more than they have done of recent years. An account is given of the conditions under which commissions can be obtained in the Navy, Army, Indian, and Air Force Medical Services, and in the Colonial Medical Service.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

POWERS, DUTIES, AND CONSTITUTION OF THE GENERAL MEDICAL COUNCIL.

THE powers and duties of the General Medical Council, or "General Council of Medical Education and Registration of the United Kingdom" to give the Council its full title, have been set out in detail in many previous Students' Numbers of THE LANCET. It is first a registering body: no person, even though his qualifications have been obtained, is a legally qualified medical practitioner unless his name appears on the Medical Register. Secondly, it is a standardising body, ensuring that the education of medical men is kept up to an efficient standard by scientific examination. Thirdly, it is a penal and disciplinary body, having power to remove from the Register any practitioner adjudged guilty of conduct "infamous in a professional respect." Fourthly, to the Council is committed the codification of pharmaceutical remedies. The duties of the Council are thus primarily of a public nature, and its construction shows its fitness for its fourfold responsibilities.

The Council at present consists of 38 members, of whom, as will be seen by the annexed list, all but 11 are official representatives of some corporate body. Five members are chosen by the Crown on the advice of the Privy Council, and six others are elected by the members of the medical profession as Direct Representatives.

President of the General Council: Sir Donald MacAlister. Members of the General Council: Sir Norman Moore, chosen by the Royal College of Physicians of London; Mr. Holburt Jacob Waring, F.R.C.S., Royal College of Surgeons of England; Dr. Benjamin Bloomfield Connolly, Apothecaries' Society of London; Mr. Arthur Thomson, F.R.C.S., University of Oxford; Mr. Frederick Gowland Hopkins, M.A., M.B., University of Cambridge; Dr. Robert Howden, University of Durham; Sir Sydney Russell-Wells, University of London; Dr. Henry Roy Dean, Victoria University of Manchester; Sir Harry Gilbert Barling, University of Birmingham; Dr. Richard Caton, University of Liverpool; Dr. Thomas Wardrop Griffith, University of Leeds; Mr. John Beresford Leathes, M.B., University of Sheffield; Sir Isambard Owen, University of Bristol; and Dr. David Hepburn, University of Wales. Dr. William Russell, chosen by the Royal College of Physicians of Edinburgh; Sir James Hodsdon, Royal College of Surgeons of Edinburgh; Dr. James Alexander Adams, Royal Faculty of Physicians and Surgeons of Glasgow; Dr. H. Harvey Littlejohn, University of Edinburgh; Sir Donald MacAlister, University of Glasgow; Dr. Matthew Hay, University of Aberdeen; and Dr. John Yule Mackay, University of St. Andrews. Sir John William Moore, chosen by the Royal College of Physicians of Ireland; Sir Arthur Gerald Chance, Royal College of Surgeons in Ireland; Dr. Edward Magennis, Apothecaries' Hall of Ireland; Dr. Andrew Francis Dixon, University of Dublin; Denis Joseph Coffey, M.B., National University of Ireland; and Mr. Thomas Sinclair, F.R.C.S., Queen's University of Belfast. Nominated by His Majesty, with the advice of his Privy Council: Sir Francis Henry Champneys, Sir George Newman, Mr. Norman G. Bennett, Dr. John Christie McVail, and Sir Edward Coey Bigger. Elected as Direct Representatives: Dr. J. A. MacDonald, Sir Thomas Jenner Verrall, Dr. Robert A. Bolam, Mr. E. B. Turner, Dr. Norman Walker, and Dr. Leonard Kidd. Treasurers of the General Council: Sir Norman Moore and Mr. Holburt J. Waring.

THE EDUCATIONAL CURRICULUM.

Professional Education.—The course of professional study after registration occupies at least five years. The Final Examination in Medicine, Surgery, and Midwifery must not be passed before the close of the fifth academic year of medical study.

Registration and Preliminary Examination of Medical Students.—The following are the General Medical Council's Regulations in reference to the registration of students in medicine:—Every medical student should be registered in the manner prescribed by the Council. The registration of medical students is placed under the charge of the Branch Registrars. Every person desirous of being registered as a medical student should apply to the Branch Registrar of the division of the United Kingdom in which he is residing; and should produce or forward to the Branch Registrar a certificate of his having passed a preliminary examination as required by the General Medical Council, and evidence that he has attained the age of 16 years, and has commenced medical study at an institution approved by the Council. The Branch Registrar shall enter the applicant's name and other particulars in the Students' Register and shall give him a certificate of such registration. Each of the Branch Registrars shall supply to the several licensing bodies, medical schools, and hospitals, in that part of the United Kingdom of which he is registrar, a sufficient number of blank forms of application for the registration of medical students. The commencement of the course of professional study recognised by any of the qualifying bodies should not be reckoned as dating earlier than 15 days before the date of registration. In nation in one of the following branches—namely: (1) Medicine; (2) Pathology; (3) Mental Diseases; (4) Midwifery and Diseases of Women; (5) State Medicine; and (6) Tropical Medicine. Any candidate for the degree of M.D. (except in branch 5) may transmit to the Registrar a thesis or published work having definite relation to the branch of Medicine in which he is a candidate, and if the thesis be approved by the examiners the candidate may be exempted from a part or from the whole of the written examination in that subject.

Master in Surgery.—The examination for the degree of Master in Surgery takes place twice in each year and commences on the first Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches: (1) Surgery; (2) Dental Surgery; (3) Ophthalmology; (4) Laryngology, Otology and Rhinology. A thesis may be submitted as for M.D.

Fees.—Matriculation £2 12*s.* 6*d.* for each entry. at provincial examinations an additional local fee is charged. First examination for Medical Degrees: £6 6*s.* for each entry to the entire examination. For re-examination in one subject the fee is £2 2*s.* In the second examination, Part I. £2 2*s.*, repeated on each subsequent entry: Part II. £8 8*s.* for the whole examination. Third examination: £10 10*s.* for each entry to the whole examination. M.D. Examinavion: £21; for re-examination £10 10*s.* M.S. Examination: As for M.D.

Full details of the prescribed curricula of study and the names of the recognised Internal and External Schools of the University, can be obtained free on application to the Principal Officer, University of London, South Kensington, S.W.

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON.[1]

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 for convalescent patients at Swanley. It receives over 8000 in-patients annually and its out-patients and casualties amount to more than 75,000 annually. Special departments have been organised for Diseases of Women and Children, the Eye, Ear, Larynx, and Skin, as well as for Orthopædic and Dental Surgery, and for Electro-therapeutics and X Ray work. Surgical operations take place every day at 1.30 P.M. and Surgical consultations are held on Thursdays at the same hour. Medical consultations are held on Thursdays at 3.15 P.M. The physicians and surgeons deliver clinical lectures weekly during both the winter and the summer sessions. Clinical lectures on all special subjects are also given. Wholetime Clinical Units under Professors of Medicine and Surgery have been established.

Ten house physicians and ten house surgeons are appointed annually, and are provided with rooms and board by the hospital authorities and receive £80 a year as salary. A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and board and receive a salary of £80 a year. Three resident anæsthetists are appointed annually, and receive salaries of £120, £100, and £100 respectively, with rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year. The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in-patients and to the out-patients, and the dressers in the special departments are chosen from the students. A residential college is attached to the hospital.

New Buildings.—The new buildings comprise residential quarters for the resident staff, casualty, medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre. A new chemical laboratory has been added to the Medical School, and a laboratory devoted to instruction in Public Health. A second new block is devoted to Pathology, and contains the post-mortem room as well as extensive laboratories for bacteriology, clinical pathology, pathological histology, and pathological chemistry. *The Medical School Buildings* include three large lecture theatres, a large dissecting room, a spacious library (containing 13,000 volumes), a well-appointed museum of anatomy, physiology, comparative anatomy, materia medica, botany, and pathological anatomy. The pathological museum is the most complete in the kingdom. There are laboratories for chemistry, physiology, pharmacology, physics, public health, and biology, giving ample accommodation in every department.

Special Classes for the Primary and Final F.R.C.S. are held twice yearly. *Instruction in Preliminary Science* is given to University of London students in chemistry, biology, and physics throughout the year. *Laboratory Instruction for the D.P.H.* is provided during the winter and summer sessions. Facilities for research work are afforded in the Clinical Units and the Laboratories of the pathological and other departments. The recreation ground of 10 acres is at Winchmore Hill for the use of the members of the Students' Union, which all students are expected to join. The Students' Union contains a large reading and smoking room, a committee and writing room, luncheon and dining hall, and a miniature rifle range.

Scholarships given in aid of Medical Study.—At this school various Scholarships, prizes, &c., are given. For five of the Scholarships and the Exhibition—namely, (*a*), (*b*), two Entrance Scholarships of the respective values of £75 and £100; (*c*) Entrance Scholarship in Arts, £100; (*d*) Jeaffreson Exhibition, £50; and (*e*) Shuter Scholarship, £50—a full or University course at St. Bartholomew's Hospital is required. The awards of (*a*) and (*b*) are made after examination in selections from the subjects of Chemistry, Physics, Zoology, Botany, Physiology, and Anatomy; (*c*) and (*d*) are awarded after examination in Latin, Mathematics, and Greek or French or German; (*e*) is awarded after competitive examination among Cambridge Graduates in Anatomy and Physiology. The remaining Scholarships and prizes are as follows:—Four Junior Scholarships—(*f*) No. 1, £30, Anatomy and Physiology; (*g*) No. 2, £20, Anatomy and Physiology; (*h*) No. 3. £25, Chemistry, Physics, and Biology; (*i*) No. 4, £15, Chemistry, Physics, and Biology; (*j*) Senior Scholarship, £50, Anatomy, Physiology, and Chemistry; (*k*) Kirkes Scholarship, £30 and medal, Clinical Medicine; (*l*) and (*m*) two Brackenbury Scholarships, £39 each, one in Medicine and one in Surgery; (*n*) Sir G. Burrows Prize, £10, Pathology; (*o*) Skynner Prize, 13 guineas, Regional and Morbid Anatomy; (*p*) Matthews Duncan Medal and Prize, £20, Midwifery and Gynæcology; (*q*) Luther Holden Research Scholarship in Surgery, awarded by election, £105; and (*r*) Lawrence Research Scholarship and gold medal in Pathology, awarded by election, £115.

Information may be obtained on application to the Dean to the Medical School: Dr. T. W. Shore. The Warden of the College is Mr. R. M. Vick.

CHARING CROSS HOSPITAL.—The Hospital, to which the School is attached, contains 300 beds. Over 3000 cases pass through its wards each year, and some 24,000 out-patients and casualties are treated. There are special departments for Mental Diseases, Midwifery, Diseases of Women, of Children, of the Skin, Ear, Throat, Nose, and Teeth, for Orthopædic Cases, X Ray work, and for Electrical Examination and Treatment.

Appointments.—In the Medical School Demonstratorships and Assistant Demonstratorships are open to students of the School. Medical, Surgical, and Obstetric Registrars to the Hospital are appointed annually. Six House Physicians, six House Surgeons, evidence of qualification. Registration entitles him, in the words of the Act of 1886 :—

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[1] For Ancillary Metropolitan Medical Schools see p. 443.

> "...... To practise medicine, surgery, and midwifery in the United Kingdom, and (subject to any local law) in any other part of [Her] Majesty's dominions, and to recover in due course of law in respect of such practice any expenses, charges in respect of medicaments or other appliances, or any fees to which he may be entitled ......"

These qualifications are enumerated in the Medical Register, printed each year under the direction of the Council, and the course of study necessary to obtain each of them is duly set out in the succeeding pages.

A number of diplomas granted in British possessions and in certain foreign countries entitle the holder to registration in the colonial or foreign list respectively of the Medical Register, and therefore to practise medicine within the borders of the United Kingdom. Some account of these diplomas is given on p. 477 and following pages. It should, however, be carefully noted that, where any local registration is required for legal qualification, it is essential that, before registration in the United Kingdom, evidence should be produced of registration in the country, province, or state in which the qualification was obtained.

Officers of the Council.

Norman C. King, Registrar of the General Council and of the Branch Council for England, 44, Hallam-street, Portland-place, W. 1.—T. H. Graham, O.B.E., Registrar of the Branch Council for Scotland, 20, Queen-street, Edinburgh.—Richard J. E. Roe, Registrar of the Branch Council for Ireland, 35, Dawson-street, Dublin. All communications should be addressed to "The Registrar" and not by name.

THE MEDICAL EXAMINING BODIES AND SCHOOLS OF THE UNITED KINGDOM.

A GUIDE TO THE FACILITIES FOR OBTAINING THE VARIOUS MEDICAL DEGREES AND OTHER QUALIFICATIONS FOR THE BRITISH MEDICAL REGISTER.

I.—ENGLAND AND WALES.

THE UNIVERSITIES.

UNIVERSITY OF OXFORD.

THIS University confers two degrees in Medicine, those of *B.M.* and *D.M.*, two in Surgery, *B.Ch.* and *M.Ch.*, and diplomas in *Public Health*[1] *and Ophthalmology.*

Only Graduates in Arts of the University are eligible for the Medical and Surgical degrees. The most convenient course for the B.A. degree for intending graduates in Medicine is to take Responsions, the Preliminary Science Examinations mentioned below, and the Final Honour School of Physiology. To obtain the degrees of B.M. and B.Ch. the following examinations must be passed: 1. Preliminary subjects: Mechanics and Physics, Chemistry, Zoology, and Botany. 2. Professional. (*a*) First Examination: Subjects—Organic Chemistry, unless the candidate has satisfied the examiners in Part I. Chemistry in the Natural Science School; Human Physiology, unless he has obtained a First or Second Class in Animal Physiology in the Natural Science School; Human Anatomy. (*b*) Second Examination: Subjects—Medicine, Surgery, Midwifery, Pathology, Forensic Medicine with Hygiene, Materia Medica and Pharmacology. The First and Second Professional examinations are held in June and December. The first B.M. examination may be passed at any time after the Preliminary Scientific examinations. Anatomy and Physiology must be passed at the same time—Organic Chemistry may be taken separately.

At any time after passing the First Examination, the candidate can, on producing certificates, present himself for examination in the subjects of Pathology, Forensic Medicine with Hygiene, Materia Medica and Pharmacology; but cannot enter for examination in Medicine, Surgery and Midwifery until the eighteenth term from his matriculation, nor until a period of at least twenty-two months has elapsed from the date of passing the First B.M. Examination. He must take Medicine, Surgery and Midwifery at one and the same time.

Before admission to the Second B.M. Examination, the student must produce certificates of having attended laboratory courses in Pathology, Bacteriology and Pharmacology either in Oxford or in a recognised medical school. He must also produce certificates of having acted as Clinical Clerk and Dresser, each for six months, in a medical school approved by the University, of three months post-mortem clerking, of attendance on Labours, of instruction in Infectious Diseases and Ophthalmology, and of proficiency in vaccination and the administration of anæsthetics.

The degree of B.Ch. is granted with that of B.M. after passing the above examinations. The degree of D.M. is granted to Bachelors of Medicine of the University who have entered upon their thirtieth term from Matriculation, and have submitted a dissertation which is approved by the examiners for the B.M. degree whose subjects are dealt with therein and by Professors in the Faculty of Medicine. The degree of M.Ch. is granted after examinations to Bachelors of Surgery in the University who have entered upon their twenty-first term, and who are Members of the Surgical Staff of a recognised hospital, or have acted as Dresser or House Surgeon in such a hospital for a period of six months. The examination, which includes Surgery, Surgical Anatomy and Pathology and Surgical Operations, is held annually in June, after the Second B.M. examination.

The examinations for the Diploma in Public Health[1] in two parts are held in Trinity and Michaelmas terms; that for the Diploma in Ophthalmology is held annually commencing on the third Monday in July. For the Diploma of Ophthalmology attendance at a course of instruction in Oxford, lasting two months, is obligatory. Candidates must be registered medical men, unless, being Bachelors or Doctors of Medicine of Universities outside the United Kingdom they have obtained special permission from the Board of the Faculty of Medicine.

Travelling Fellowship, Scholarships, and Prizes.—A Radcliffe Travelling Fellowship is awarded annually after an examination held in February. It is tenable for three years and of the annual value of £200. The examination is in Physiology, Pathology, and hygiene, and is partly "practical." Candidates must be graduates in Medicine of the University. The holder must travel abroad for the purpose of medical study. Application should be made to the Radcliffe Examiners, Radcliffe Library, University Museum. A Rolleston Memorial Prize is awarded once in two years to members of the Universities of Oxford and Cambridge of not more than ten years' standing for an original research in some Biological subject, including Physiology or Pathology. The Radcliffe Prize, founded by University College (1907), is of the value of £50 and is awarded biennially for research in some branch of medical science. The Theodore Williams Scholarships, each of the value of £50 a year for two years, are awarded annually in the subjects of Anatomy, Physiology, and Pathology. A King's College Hospital Burney Yeo Scholarship of £80 is awarded each year. The Scholarships in Science which are offered by several Colleges are open to those who intend to pursue Medicine. The value of these scholarships is usually £80 a year for four years. There are also Medical Scholarships of the value of £100 a year at University College and at Pembroke College. The Welsh Memorial Prize for Anatomical drawing is awarded annually, and is of the value of about £10.

In addition to the University Lectures and classes the several Colleges provide their undergraduates with tuition for all examinations up to the B.A. degree.

In the Radcliffe Infirmary and County Hospital clinical instruction is given by the Regius Professor of candidates under 21 years of age, to be awarded either in Arts or in Science, according to the discretion of the Examiners, and to the percentage of the marks obtained; (e) three scholarships, one of £80, one of £75, and one of £35, for students under 25 years of age who have completed the curriculum for, or passed the examination in, Anatomy and Physiology for a medical degree in any University of the British Empire, and have not entered as students in any Metropolitan Medical School. Subjects: Any two of the following: Anatomy, Physiology, Pharmacology, General Pathology, Organic Chemistry.

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[1] The regulations for the Diplomas in State and Tropical Medicine of the various Examining Bodies will be found on page 473.

In agreement with the practice of the Universities, an allowance will be made (1) for Military Service performed by candidates. the term " military service " meaning service in the Naval or Military Forces of His Majesty or of His Majesty's Allies during the war; or (2) in respect of other approved duties in connexion with national defence.

The Dean of the Medical School is Professor T. B. Johnston, from whom further information may be obtained.

UNIVERSITY OF LONDON: KING'S COLLEGE.—The medical department (Faculty of Medical Science) at this College only deals with Preliminary and Intermediate subjects, and instruction in these subjects is given in the College laboratories by university professors and their assistants to students entering the College directly and also to students of the following four hospital schools which prepare only for the final examinations—viz., King's College Hospital, Westminster Hospital, St. George's Hospital, and Charing Cross Hospital. The department is open to both men and women.

Fees.—(*a*) Entrance fee, £6. (*b*) Tuition fee of 12 guineas per term, or a composition fee of 35 guineas per annum if paid at the commencement of the session, or a composition fee of 100 guineas for the three years' course if paid at the commencement of the course. For prospectus and further information application should be made to the Dean of the Medical Faculty (Professor E. Barclay-Smith).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The advanced subjects in the curriculum are dealt with at the Medical School attached to King's College Hospital, which is situated at Denmark Hill, S.E. 5. The hospital stands in the midst of a South London population, from which an immense amount of clinical material is forthcoming. During the past year there were 200,655 attendances in the out-patient and casualty departments. There are 400 beds available for in-patients, and provision will ultimately be made for 600 beds. There are special departments for Bacteriology, Children, Clinical Pathology, Dermatology, Gynæcology and Obstetrics, Laryngology, Massage, Neurology, Odontology, Ophthalmology, Orthopædics, Otology, Physicotherapy, Psychological Medicine, Radiology, Rhinology, and Urology, each in charge of a specialist and his staff. Clinics are also held in applied pharmacology, cardiology, and medical chemistry. The appointments open to students are those of clinical assistant to the special departments: medical, surgical, obstetric, and pathological tutorships; resident casualty officers: resident anæsthetist; bacteriologist; clinical pathologist; pathological registrar; and medical, surgical, and obstetric registrarships. Fifteen resident medical and surgical officers are appointed half-yearly.

Scholarships and Prizes.—(*a*) Two Warneford Scholarships, tenable for four years, £30 each per annum: (*b*) Sambrooke Scholarship, tenable for two years, £25 per annum; (*c*) Rabbeth Scholarship, £20; (*d*) Medical Entrance Scholarships, £50 (Anatomy and Physiology), and £50 (Pathology and Pharmacology) open to students who (1) propose to take a degree at any British University, and have passed their University examination in Biology, Chemistry, and Physics, and who (2) will become students at King's College Hospital from date of entering upon Scholarship; (*e*) Two Medical Entrance Scholarships, one in Arts and one in Science, £50 each, tenable for five years, successful candidates to study at King's College and King's College Hospital; (*f*) Three Medical Scholarships, £40 for fifth-year students, £20 for third-year students, and £20 for second-year students; (*g*) Three Sambrooke Registrarships, open to matriculated students who have filled certain appointments in hospital; (*h*) Carter Prize, £15, Botany; (*i*) Tanner Prize, £10, Obstetrics and Diseases of Women; (*j*) Todd Prize, £4 4*s.* and medal, Clinical Medicine; (*k*) Two Burney Yeo Entrance Scholarships, £80 each, open to students of Oxford and Cambridge on the nomination of the Regius Professors. The Warneford and Sambrooke Scholars are required to take the subjects of the Preliminary and Intermediate Examinations at King's College, and the Final Subjects at King's College Hospital.

Athletics.—The King's College Hospital Clubs and Societies Union was formed in 1908, and consists of the Listerian and Musical Societies, the Students' Common Rooms, and the various athletic and sports clubs. Admirable playing fields, over six acres in extent, have been provided for the use of the students on Dog Kennel Hill, Lordship-lane, S.E., about ten minutes' walk from the hospital. There are also Tennis Courts in the grounds of the Hospital and of " The Platanes," the hall of residence for students belonging to the hospital.

Fees.—The composition fee for Hospital work and Final subjects of the curriculum is 93 guineas if paid in one sum, or 95 guineas if paid in two instalments, in addition to the Entrance Fee of 10 guineas. The Calendar of the School will be sent on application to either of the following: Dr. H. Willoughby Lyle, *Dean*; Dr. S. C. Ranner, *Secretary of the Medical School*, King's College Hospital, Denmark Hill, S.E. 5.

LONDON HOSPITAL.—The hospital, with its Medical College and Dental School, is situated in the Mile End-road, E. The hospital contains 950 beds, which are in constant use, and is the only general hospital for East London. During last year 21,639 in-patients and 120,886 out-patients received treatment, while 7804 major operations were performed. 41,973 out-patients attended the special departments for diseases of the Eye, Ear, Nose, and Throat, Skin, Teeth, &c.,and the Obstetric, Orthopædic, Venereal, Radiological, Electro- and Physico-Therapeutical and Inoculation Departments. The hospital presents, therefore, a large field for clinical instruction, and in its Wards and Out-patient Departments exceptional opportunities are afforded for acquiring an extensive and practical experience in all phases of disease.

The Clinical Units in Medicine and Surgery coördinate the teaching of their subjects in the Hospital. The directors and their assistants give practical instruction in Elementary Clinical Medicine and Surgery to all students before they are allowed to enter the Wards and Out-Patient Department. Senior Students are encouraged to work with the units. Special courses of lectures and demonstrations are arranged in Medicine and Surgery and their ancillary subjects. Opportunities for research will be provided under the supervision of the staffs of the units.

Owing to the large number of patients more appointments are open to students before and after qualification than at any other hospital. Holders of resident appointments have free board. Special classes are held for the examinations of the University of London, for the Fellowship of the Royal College of Surgeons, for the Membership of the Royal College of Physicians, and for other higher examinations. Special entries for medical and surgical practice can be made. A residential Hostel on hospital grounds is provided for the convenience of students. The Clubs Union Athletic Ground of over 13 acres is within easy reach of the hospital.

Scholarships and Prizes.—At this school the successful candidates for the first items in the list here shown must enter for the course subsequent to passing

Teaching Staff.—The teaching staff of the University is organised under two heads: 1. Appointed teachers—i.e., such as are appointed by, and are paid out of the funds of, the University. 2. Recognised teachers—i.e., those who have been appointed and are paid by the several schools of the University and other institutions at which instruction is given under the auspices of the University, and who have been recognised by the Senate as conducting work of University standard. Courses by non-recognised teachers may also be approved in schools of the University. The lecturers in the Medical Sciences and the professors in the Faculties of Medicine in University College, London, and King's College, London, will be found enumerated under their respective schools.

Internal and External Students.—All the examinations of this University are open to men and women alike. Matriculated students of the University may be either internal or external. Internal students of the University are students who have matriculated at the University and who are pursuing a course of study approved by the University, either (*a*) under the direct control of the University or a committee appointed thereby; or (*b*) under one or more of the appointed or recognised teachers of the University. Centres for preliminary and intermediate medical studies have been established by the University at University and King's Colleges. Internal students must pursue their studies at one of the above centres, or at one of the medical schools connected with the University. These are St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Guy's Hospital, King's College Hospital, the London Hospital, St. Mary's Hospital, the Middlesex Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital, and the London (Royal Free Hospital) School of Medicine for Women. The London School of Tropical Medicine and the Lister Institute of Preventive Medicine are also recognised as schools of the University in special departments. External students are all other matriculated students, and may pursue their studies at other universities and medical schools, presenting themselves for examination at the University.

Faculty of Medicine.—The Faculty of Medicine grants the joint degrees of M.B., B.S. (*Bachelor of Medicine and Surgery*), and the higher separate degrees of M.D. (*Doctor of Medicine*) and M.S. (*Master of Surgery*).

The curriculum for the Bachelor's degrees is now five and a half years from the time of matriculation, with certain exceptions which must be looked for in the official regulations of the University, to be obtained from the Principal Officer, University of London, South Kensington, S.W 7, and the examinations formerly known as the Preliminary Scientific, the Intermediate, and the Final Examination in Medicine are now respectively entitled the First, Second, and Third Examinations for Medical Degrees. Part II. of the former Preliminary Scientific Examination has now been made Part I. of the Second Examination.

A. *Internal Students.*—In order to be admitted to the Bachelor's degrees a student must normally, after registration as an internal student, have: (1) *Attended* prescribed courses of study for five and a half years in one or more schools of the University. (2) Passed the following examinations, under the conditions mentioned below: (*a*) The First Examination for Medical Degrees in Inorganic Chemistry, Physics, and General Biology; (*b*) the Second Examination for Medical Degrees: Part I., Organic and Applied Chemistry; Part II., Anatomy, Physiology, and Pharmacology, including Pharmacy and Materia Medica; (*c*) the Third Examination for Medical Degrees, or M.B., B.S. Examination; Medicine and Surgery, Midwifery and Diseases of Women, Pathology, Forensic Medicine and Hygiene.

B. *External Students.*—To be admitted to the Bachelor's degrees an external student must (1) have passed the Matriculation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously; (2) have passed subsequent examinations similar to those required of an internal student; and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Medical Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more recognised institutions or schools.

The First Examination for Medical Degrees (Inorganic Chemistry, Physics, and General Biology) will take place twice in each year, commencing on the Monday following Dec. 7th and on the first Monday in July. It must be passed not less than nine months after matriculation.

The Second Examination for Medical Degrees (Part I.): Organic and Applied Chemistry.—This examination will take place twice in each year, commencing on the Wednesday following the third Monday in March and on the afternoon of the Thursday following the second Monday in July. No candidate will be admitted to this examination within six months of having passed the First Examination.

The Second Examination for Medical Degrees (Part II.) takes place twice in every year, commencing on the Tuesday following the third Monday in March and on the Tuesday following the first Monday in July. No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I. of the Second Examination for Medical Degrees.

The Third or M.B., B.S. Examination.—The M.B., B.S. examination takes place twice in each year, commencing on the fourth Monday in October and on the first Monday in May. No candidate will be admitted to this examination uless he has completed the Second Examination for Medical Degrees, together with a course of study summarised below, nor within three years from the date of passing the Second Examination, Part II., in Anatomy and Physiology. The course of study comprises (1) Principles and Practice of Medicine; (2) Clinical Methods and Physical Diagnosis; (3) Clinical Medicine and Experience as Clinical Clerk; (4) Fevers; (5) Insanity (with clinical demonstrations at a recognised Asylum); (6) Therapeutics; (7) Vaccination; (8) Principles and Practice of Surgery; (9) Operative Surgery, Surgical Anatomy, Practical Surgery, and the Administration of Anæsthetics; (10) Clinical Surgery and Practice as Dresser; (11) Diseases of the Eye, Ear, Throat, and Skin; (12) Lectures and Demonstrations on Midwifery and Diseases of Women; (13) Practical Midwifery; (14) The Conduct of at least 20 Labours; (15) Experience as a Clinical Clerk in Gynæcological Work; (16) General Pathology, Morbid Anatomy, Bacteriology, and Chemical Pathology; (17) Work in the Post-Mortem Room; (18) Forensic Medicine; (19) Hygiene. He must have attended the Medical and Surgical Practice of a recognised hospital for two years and a course of instruction at a recognised Fever Hospital for two months. He must have had clinical instruction and must have held the posts of medical clinical clerk and surgical dresser for periods of six months each. Candidates will be examined in Medicine (including Therapeutics and Mental Diseases). Pathology, Forensic Medicine and Hygiene, Surgery, Midwifery, and Diseases of Women. The subjects may be divided into two groups—namely: (1) Medicine, Pathology Forensic Medicine, and Hygiene; and (2) Surgery, Midwifery, and Diseases of Women. These groups may be taken either separately or together. The list of candidates who have passed will be published in two parts—namely, an Honours list and a Pass list. Bachelors of Medicine of this University who graduated in or before May, 1901, may obtain the B.S. degree by passing the Surgical part of the M.B., B.S. examination.

Doctor of Medicine.—The examination for this degree takes place twice in each year, commencing on the first Monday in December and on the first Monday in July. Candidates may present themselves for examiin the school buildings, and large athletic grounds at Wembley. A subscription to the Amalgamated Students' Club is payable by all General and Dental students. Full particulars on application to the Dean, Middlesex Hospital Medical School, W. 1.

ST. THOMAS'S HOSPITAL.—This Hospital received its present charter from King Edward VI., but as a monastic institution was in existence prior to the year 1207. The building occupies a unique position by the river, opposite the Houses of Parliament, and contains 630 beds. The in-patients last year numbered 8362, whilst the number of attendances as out-patients, including the casualty and light departments, was 379,329. There are special departments for the treatment of women, children, the eye, ear, nose and throat, skin, teeth, and for Orthopædics. The Tuberculosis Department forms a part of the Lambeth scheme for treatment of patients and for instruction. The Venereal Department has been established as part of the London County Council scheme. Departments for light treatment. X rays, and the Physico-therapeutic Department are also special features. A speech clinic has been inaugurated in connexion with the Children's Department. Exceptional facilities are offered in the hospital laboratories for the study of general pathology, clinical pathology, chemical pathology, cardiology, and of treatment by serums and vaccines. Surgical operations take place in the main theatres every day except Saturdays at 2 P.M. Clinical teaching in the wards, out-patients' and special departments, is available every day of the week. Clinical lectures are delivered every Wednesday during the sessions. All appointments in the hospital are open to students without extra fee. Clinical assistants to all the special departments are appointed every three months. A resident assistant physician and a resident assistant surgeon, at a salary of £200 each, are appointed biennially; also four hospital registrars (medical, surgical, obstetric, and ophthalmic), the two former receive a salary of £250 and the latter £50. Three assistants in the clinical laboratory are paid, one at the rate of £400, and two at £250 each, per annum. There is also an assistant in the laboratory for chemical pathology, paid at a salary of £200. Appointments open to students before qualification: Clinical clerks and dressers for in- and out-patients are selected from students who have completed their third years' work. Every student acts as clerk in the post-mortem room and in one of the pathological laboratories, takes his turn on maternity duty under proper supervision in the maternity ward thus obviating any necessity for seeking instruction elsewhere. Students are instructed in the administration of anæsthetics by one of the hospital anæsthetists. The Students' Club comprises a spacious restaurant and smoking and reading room. There is no occasion for students to leave the hospital buildings during working hours. The curriculum is arranged to meet the requirements of all the Examining Bodies. Special classes are held for the examinations at the University of London and for the First and Final Fellowship Examinations of the Royal College of Surgeons of England. Tutorial classes in all subjects precede the various examinations. The hospital is easily accessible from all parts.

Fees.—The annual fees are: for first year (preliminary subjects) £25, and for each subsequent year £50. These fees cover all tutorial classes, but do not include instruction in infectious fevers, pharmacy, and vaccination. Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the medical secretary.

Scholarships and Prizes.—At this school there are five Entrance Scholarships—namely, two in Arts, equivalent to the tuition fees for the first medical examination; two in Natural Science, of the value of £150 and £60 respectively; and the University Scholarship of £100 in Anatomy, Physiology, and Chemistry. The value of all entrance scholarships must be taken out in tuition fees. The money value and subjects of examination of the remainder are as follows: (*a*) William Tite Scholarship for second-year students, £25; (*b*) and (*c*) Musgrove Scholarship or (alternately) Peacock Scholarship, each for third-year students and tenable for two years, £35 each; (*d*) Cheselden Medal, Surgery and Anatomy; (*e*) Mead Medal, Medicine, Pathology, and Hygiene; (*f*) Toller Prize, Medicine, Pathology, and Hygiene; (*g*) Bristowe Medal, Pathology, and Morbid Anatomy; (*h*) Solly Medal and Prize, biennially, Surgical Reports; (*i*) Cutton Memorial Medal in Clinical Surgery, biennial; (*j*) Wainwright Prize, Medicine, Pathology, and Hygiene; (*k*) Hadden Prize, Pathology; (*l*) Beaney Scholarship, £50 biennially, Surgery and Surgical Pathology; (*m*) Sutton Sams Prize, biennially, reports of cases in Obstetric Medicine; (*n*) Grainger Testimonial Prize, £31 10*s*. Anatomy and Physiology; (*o*) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology; and (*p*) Research Scholarship, tenable for two years, £200 per annum.

The Dean of the Medical School is Sir Cuthbert S. Wallace, and the Medical Secretary Dr. A. Elliot, from whom any further information may be obtained.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE.—University College has been constituted a University centre for the teaching of medical sciences. The College Faculty of Medical Sciences comprises the Departments of Physics, Chemistry, Botany, and Zoology (the Preliminary Medical Sciences); also the Departments of Anatomy, Physiology and Pharmacology (the Intermediate Medical Sciences), and the Department of Hygiene and Public Health (Post-Graduate Study).

Faculty of Medical Sciences.—Composition Fees.—For the courses required by the University of London. 1. For the First Medical Course, 35 guineas, entitling to one attendance and to the privileges of the Union Society for one session. 2. For the Second Medical (Intermediate) Course 80 guineas, payable in two instalments of 40 guineas each. This fee entitles to attendance at Anatomy and Physiology during three years and to one attendance at Organic and Applied Chemistry, Pharmacology, and Materia Medica, and to the privileges of the Union Society for two sessions.

For the medical education required by the Examining Board in England and the Society of Apothecaries. First examination, Parts I., II., III., 29 guineas, entitling to attendance for the First and Second Terms and to the privileges of the Union Society for one session; 35 guineas, entitling to attendance throughout the session and to the privileges of the Union Society for one session. First Examination, Part IV., and second examination, 80 guineas, payable in two instalments of 40 guineas each. This fee entitles to attendance during three years in all subjects but Practical Pharmacy and to the privileges of the Union Society for two sessions.

Scholarships and Prizes.—The first three items on the present list require a complete intermediate course at University College. The money value and subjects at examinations are as follows: (*a*) The Bucknill Scholarship, 135 guineas; (*b*) and (*c*) two Entrance Exhibitions, 55 guineas each, Chemistry, Physics, Botany, and Zoology; (*d*) Cluff Memorial Prize, £15 biennially, Anatomy, Physiology, and Chemistry; (*e*) Schäfer Prize in Physiology, £18 triennially; (*f*) Sharpey Physiological Scholarship, £105, Biological Sciences; (*g*) Morris Bursary for sons of deceased professional men, by nomination, tenable for two years, £16 a year; and (*h*) five Gold and five Silver Medals awarded annually in various departments.

Women students are admitted.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—Dean: Dr. G. F. Blacker. Vice-Dean: Dr. A. M. H. Gray. Secretary: G. E. Adams. Open to men and women students. Fees for Preliminary and Intermediate Course: See under University College. For the Final M.B., B.S. (London) Course, 112 guineas if paid in one sum, 115 guineas if paid in two instalments. as follows—first year, 70 guineas; second year, 45 guineas. This fee entitles to attendance on Lectures and Hospital Practice during three years and two Resident Obstetric Officers are appointed each year after competitive examination.

Primary and Intermediate Studies.—By an agreement with the University of London the School sends its Primary and Intermediate Students to receive their lectures and practical work at King's College, which is situated within four minutes' walk. This arrangement has proved successful.

Final Studies.—These are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for qualifying examinations. Departments are also available for other final subjects of Materia Medica, Toxicology, and Operative Surgery.

An Institute of Pathology with a whole-time staff of scientific workers and fully equipped Laboratories has been established in the School. Students receive their training in Preventive Medicine, Pathology, and Bacteriology here, and are encouraged to undertake Research. Special facilities for Post-graduate Research and Study.

The course in Ophthalmology is given in the Royal Westminster Ophthalmic Hospital. Special lectures and demonstrations are arranged for Post-graduates.

The *Museum* contains over 4000 specimens, including a notable collection of over 800 gynæcological specimens, "The Cuthbert Lockyer Collection."

Students' Club.—The social comfort and convenience of students are met by library, reading, and smoking-rooms, refreshment-room, &c. The Club, which is under the control of a Committee of Students, provides needful athletic recreation, and includes the Medical Society.

Women Students.—Women students are accepted by the School and Hospital upon the same terms and conditions as men, and after qualification are eligible for resident Hospital appointments. A separate common-room and a female attendant are provided, but beyond this no further distinction is made. This system of co-education, under which men and women are placed on terms of complete equality throughout the whole of the curriculum, has been found to work successfully and to their mutual advantage.

Fees.—An entrance fee of 10 guineas and 8 guineas is payable by full-course and final-course students respectively, and an annual fee of 35 guineas covers all other expenditure, with the exception of 7 guineas for vaccination, dispensing, and fever hospital attendance, which must be taken outside the hospital. Membership of the Students' Club is included in these fees.

Further information may be obtained on application to the Dean, Dr. W. J. Fenton, Medical School, Charing Cross Hospital, London, W.C.

ST. GEORGE'S HOSPITAL.—This hospital has a service of 436 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon. One ward is set apart for Diseases Peculiar to Women. Children's beds are placed in all the women's wards. Two wards are allotted to ophthalmic cases.

Entrance Scholarships and Endowed Prizes of a total value of £600 are awarded annually; a detailed list is placed below. The entire teaching and laboratories are now devoted to purely clinical subjects, and arrangements have been made with the University of London for students who enter during the first, second, or third year of the curriculum as students of St. George's to carry out the necessary courses of instruction at either University College or King's College. Students then complete their course, without payment of any entrance fee, in a school entirely devoted to Clinical work.

Eight house physicians and eight house surgeons are appointed annually. Special attention is directed to the following paid appointments, among others, which are open to students after they have held house office:—Resident Assistant Physician and Resident Assistant Surgeon, at £350 per annum each; Medical Registrarship at £200 per annum; Surgical Registrarship at £200; Assistant Curatorship of the Museum at £100; Obstetric Assistantship (Resident) at £50; the post of Resident Anæsthetist at £100; the post (2) of Senior Anæsthetists at £50; the posts (2) of Junior Anæsthetists, each at £30. The St. George's Hospital Club, with smoking- and luncheon-rooms on the hospital premises, and an athletic ground at Wimbledon. is an amalgamation of the Hunterian Society, the *Gazette*, and the chess, lawn tennis, boxing, hockey, rifle, and golf clubs. Students have the advantage of a library of medical and scientific books which is kept up to date.

Scholarships and Prizes.—At this school two entrance scholarships are given, the money value and the subjects of examination being as follows: (*a*) and (*b*) two University Entrance Scholarships, 90 guineas and £70 respectively. Anatomy and Physiology. The others are as follows: (*c*) William Brown Exhibition, tenable for two years and open to perpetual pupils having registrable qualifications, £135 per annum, Practice of Medicine, Midwifery, and Surgery; (*d*) William Brown Exhibition, tenable for three years and open to perpetual pupils qualified not more than three years previously, £49 per annum, Essay and Original Work; (*e*) Allingham Scholarship in Surgery for Students qualified not more than three years, £60, Competitive Essay; (*f*) and (*g*) two Brackenbury Prizes, one in Medicine and one in Surgery, £30 each, open to students of not more than five years' standing; (*h*) H. C. Johnson Memorial Prize, £15, Practical Anatomy; (*i*) Pollock Prize, £17, Physiology, Physiological Chemistry, and Histology; (*j*) Clarke Prize, £5; (*k*) Thompson Medal, £5, Clinical Reports; (*l*) Brodie Prize, £7, Clinical Reports; (*m*) Webb Prize, open to perpetual pupils, £30, Bacteriology; (*n*) Sir Francis Laking Memorial Prize £65, open to students having registrable qualifications.

Further information may be obtained from the Dean of the Medical School. Mr. R. R. James.

GUY'S HOSPITAL.—This hospital, founded by Thomas Guy in 1721 for the reception of 400 patients, and enlarged through the aid of a large bequest from the late William Hunt, contains at the present time 644 beds. The school buildings have been rebuilt and now offer very complete accommodation. Within the grounds of the hospital are situated the residential college, with accommodation for 60 students, the students' club, with reading, smoking, luncheon, and dining-rooms, a fives court, and swimming bath. The athletic ground and club house is situated at Honor Oak Park, and can be reached in 20 minutes from the hospital.

House physicians, house surgeons, out-patient officers and assistant house surgeons, obstetric residents, ophthalmic house surgeons, clinical assistants, clerks to anæsthetists, surgeons' dressers, medical clinical clerks, post-mortem clerks, extern obstetric attendants, and dressers and clerks in the special departments are appointed from among the students upon the recommendation of the Medical Council according to merit. The establishment of a Venereal Clinic, in accordance with the Scheme of the Local Government Board and London County Council. Lectures and clinical instruction are given, to which Medical Students and Practitioners are admitted without fee.

A Post-graduate Course is held in connexion with the Fellowship of Medicine.

The following new Clinics have been opened: Salomon's Welfare Centre (for Maternity and Children) Tuberculosis Department, and V.D. Department.

Scholarships.—Seven entrance scholarships are awarded annually as follows:—(*a*) one War Memorial scholarship, providing a free Medical Education for five years—the annual value is about £10, to be awarded either in Arts or in Science, according to the discretion of the Examiners and to the percentage of the marks obtained; (*b*) one Arts scholarship of £100 for students under 21 years of age, Latin, English, Greek, or French or German, Arithmetic, Euclid, and Algebra; (*c*) one Science scholarship for students under 21 years, £120, Inorganic Chemistry, Physics, and Biology; (*d*) a Scholarship of £50, open to (*b*) Science Scholarships: Natural Science Scholarship, £60; Chemistry and Physics Scholarship, £30 and Two Scholarships in Anatomy and Physiology, £50 each. Summer Session: Two Scholarships in Anatomy and Physiology, £50 each. During the period of study the following prizes may be competed for: Sturges Prize in Clinical Medicine, about £6, Notes of Cases; Clinical Surgery Prize, £5, Notes of Cases; Chadwick Prize £21 in books or instruments—Medicine and Surgery, including Pathology and Applied Anatomy and Physiology; Frederic Bird Medal and Prize, open to Fourth-year Students, £14 in medal and books or instruments—Midwifery, Diseases of Women, Medicine, Pathology, Forensic Medicine and Bacteriology, and Public Health and Toxicology; Abrahams Prize in Clinical Pathology, 5 guineas, a Paper and Tests in Practical Work; Alfred Hughes Memorial Prize, open to Second-year Students, about £5 in books or instruments—Anatomy; Huxley Memorial Prize, 3 guineas in books or cash, open to Second-year Students—Physiology; Carter Gold Medal and Prize for Botany, open to Students of not more than three years' attendance, gold medal and books of the joint value of £15; Jelf Medal awarded to Third-year Students; Second-year Scholarship, £20, Elementary Anatomy, Physiology, Histology, and Organic Chemistry; Daniell Scholarship, tenable for two years, £20, Chemistry; Rabbeth Scholarship, open to First-year Students, £20, Class Examinations in the Preliminary Scientific Course; and the Sambrooke King's College Scholarship in Science, value £25. The Dean is Dr. A. S. Woodwark, to whom inquiries may be addressed.

London (Royal Free Hospital) School of Medicine for Women, 8, Hunter-street, Brunswick-square, W.C.—The fee for the medical course for the degrees of the University of London and for the diplomas of the Royal Colleges of England and for other qualifications is £240 in five instalments. This sum includes library and laboratory fees.

The Royal Free Hospital contains 237 beds. Students also attend the in-patient and out-patient practice of the Elizabeth Garrett Anderson Hospital, Cancer Hospital, Hospital for Sick Children, Great Ormond-street, National Hospital for Paralysed and Epileptic, and Brompton Chest Hospital.

An agreement has been made under which a certain number of students of the school may attend full clinical courses at St. Mary's Hospital, Paddington (305 beds).

Special courses are arranged for the Primary Fellowship Examination of the College of Surgeons; also for dental students in conjunction with the Royal London Dental Hospital, Leicester-square.

Students after qualification can hold the posts of house physician, house surgeon, obstetric assistants, clinical assistants, assistant anæsthetist, medical gynæcological, and surgical registrars, assistant pathologist, and museum curator; and at the Medical School the posts of demonstrators in the departments of Anatomy, Physiology, Pharmacology, Biology, Chemistry, and Physics. Many other resident posts in London and elsewhere are also open to them.

The School buildings have been entirely rebuilt in recent years, and there are spacious, well-equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments.

There are residential chambers at 8, Hunter-street, 25, Gordon-square, 16, Brunswick-square, 5, Mecklenburgh-square, and 36, Tavistock-square, and the Warden can be consulted on the subject of other residences for students. The Students' Union arranges the social, athletic, and other clubs and societies.

Scholarships and Prizes.—(*a*) Isabel Thorne Scholarship, £30. (*b*) St. Dunstan's Medical Exhibition, £60 a year, tenable for three or five years. (*c*) Mrs. George M. Smith Scholarship, £50 a year, tenable for three or five years and next to be awarded in 1921. (*d*) Bostock Scholarship, tenable for two or four years, and next to be awarded in June, 1923, £60. (*e*) Mabel Sharman-Crawford Scholarship, tenable for four years, £20 a year. (*f*) Sir Owen Roberts Scholarship, £75 a year for four years. (*g*) Mabel Webb Research Scholarship, tenable for one year and renewable, £100, Physiology, Chemistry, or Pathology. (*h*) Fanny Butler Scholarship, tenable for four years; next award in July, 1922, £14 10*s.* (*i*) John Byron Bursary, tenable from two to four years, for students already in the School requiring assistance for the prosecution of their medical studies, application to the Secretary by March 31st; next award in March, 1922, £20. (*k*) Ellen Walker Bursary tenable for two years, awarded to a student beginning fourth year of medical study, £25 a year. (*l*) Helen Prideaux Scholarship, awarded every second year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £40. (*m*) Dr. Edith Pechey Phipson Post-graduate Scholarship of the value of £100, awarded annually in June. It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study. (*n*) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year; next award in 1923. (*o*) Dr. Margaret Todd Scholarship, tenable for four years, £37 10*s.* a year, awarded in alternate years; next award in July, 1923. (*p*) Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, tenable for four years, awarded every four years; next award in July, 1924. The Dorothy Chick Gift, £20, is awarded annually for efficiency in Practical Midwifery. Two Richardson-Kuhlmann Prizes are given each year, value £12, for proficiency in Clinical Obstetrics, value £8, for proficiency in senior subjects respectively. Two Evans Prizes of £2 2*s.* and £1 1*s.* are given each year on the results of the class examination in Midwifery. The Evans Prize for Operative Midwifery, value £5 5*s.*, is awarded yearly. The Edith Pechey Phipson Prize in Pharmacology, value £3 3*s.*, is awarded annually. There is also a small loan fund from which assistance can occasionally be given to students and to graduates who specially require pecuniary help. Prizes and Certificates of Honour are awarded in each class at the end of the session.

The Dean of the Medical School is Miss Aldrich-Blake, M.D., M.S.; the Honorary Secretary, Dr. May Thorne; and the Warden and Secretary, Miss L. M. Brooks, to whom inquiries may be addressed.

UNIVERSITY OF DURHAM.

Two Diplomas, one Licence, and seven degrees are conferred—viz., the Diploma in Public Health, Diploma in Psychiatry, the Licence in Dental Surgery, and the degrees of Bachelor of Medicine, Bachelor of Surgery, Doctor of Medicine, Master of Surgery, Doctor of Surgery, Bachelor of Hygiene, and Doctor of Hygiene.

For the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* there are four professional examinations. The subjects of the First Examination are—Elementary Anatomy, Elementary Biology, Chemistry, and Physics. The subjects of the Second Examination are—Anatomy and Physiology. The subjects for the Third Examination are—Materia Medica and Pharmacy, Pharmacology, Medical Jurisprudence, Public Health, and Pathology and Elementary Bacteriology. The subjects of the Fourth Examination are—Medicine, Clinical Medicine and Psychological Medicine, Surgery and Clinical Surgery, Operative Surgery, Midwifery and Gynæcology, Therapeutics, and Diseases of the Skin, of the Throat, Nose, and Ear, and of Children. It is required that at least one of the five years of professional education shall be spent in attendance at the University College of Medicine, Newcastle-upon-Tyne.

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age. He must also have obtained the degrees of Bachelor of Medicine and Surgery of the University of Durham and must have been engaged for at least two years subsequently to the date of admission to the first examination in Biology, Chemistry, and Physics. The value and the subjects of examination are as follows:—Price Scholarship £100, and one Entrance Scholarship of £50, subjects of First Medical Examination at the University of London; Epsom College Scholarship, free education, subjects of First Medical Examination as above; Price Scholarship, open to students of Oxford and Cambridge Universities, £52 10*s.*, Human Anatomy and Physiology; Buxton Scholarship, £31 10*s.*, subjects of Anatomy and Physiology; three Scholarships for Clinical Work, £20 each, Medicine, Surgery, and Obstetrics and Gynæcology; Sutton Prize, £20, Pathology; Duckworth Nelson Prize, biennial, £10, Practical Medicine, and Surgery; Letheby Prizes (2), £25, Chemistry and Chemical Pathology; eight Dressers' Prizes, amounting to £40, zeal, efficiency, and knowledge of Elementary Clinical and Minor Surgery; Hutchinson Prize, triennial, £40, Clinical Surgery; two Practical Anatomy Prizes, £6 and £4 respectively; Andrew Clark Prize, biennial, £26, Clinical Medicine and Pathology; James Anderson Prizes (4), £20, Elementary Clinical Medicine; Arnold Thompson Prize, £15, Medical and Surgical Diseases of Children; and Liddle Prize, triennial, £120.

Medical Research Funds.—Research Funds of over £26,000, including the Eliza Ann Alston Endowment Fund for Medical Research, provide valuable scholarships for men wishing to undertake research or desirous of preparing Theses for University degrees.

Dean: Professor William Wright, London Hospital Medical College, E.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—The Hospital and Medical School are situated close to Paddington station (G.W.R.) having on one side a poor district of 500,000 persons, and on the other side the residential district of Kensington and Bayswater. The hospital contains 305 beds and, by a scheme of affiliation, for teaching purposes, of the Paddington Infirmary, Paddington Green Children's Hospital, and Maida Vale Hospital for Nervous Diseases, the teaching facilities extend over 1000 beds. The Athletic ground (10 acres) is situated at Wembley and can be reached in 30 minutes by a constant service of trains.

Clinical Facilities.—Clinical Units in Medicine and Surgery were established in 1920, and have now been formally recognised by the University Grants Committee. St. Mary's being one of the six Medical Schools in London which enjoy this privilege. Lying-in beds have recently been added, and provide special facilities for the teaching of Practical Midwifery.

Institute of Pathology and Research.—Students specially interested in Pathology and Bacteriology have singular advantages at St. Mary's. The institute comprises seven special departments, the whole being under the personal direction of Sir Almroth Wright, F.R.S.

Appointments.—Three Research Scholarships of £200 each are awarded annually to students working in the departments of the institute; and preparation is being made to open 13 research beds. Clerkships in Pathology and Bacteriology, lasting for a period of three months, are open to students of the fifth year, and enable them to carry out the Pathological and Bacteriological investigations of the wards, and learn the necessary technique under supervision. Sixty-four of these posts are available annually.

Complete Curriculum.—The Medical School provides complete courses of instruction, and students can join at once on passing a Preliminary Examination in Arts. Terms begin in October, January, and April.

Entrance Scholarships.—Five Scholarships (value £100, £52 10*s.*, £52 10*s.*, £50, £25), are awarded annually by competitive examination in September.

Fees.—Composition Fee for entire curriculum (5½ years) £200 in one sum, or £210 by five annual instalments. Composition Fee for Clinical curriculum (2½ years) 90 guineas in one sum, or 95 guineas by two annual instalments. As an alternative, students may pay an annual fee of 40 guineas with an entrance fee of 10 guineas.

MIDDLESEX HOSPITAL.—The hospital contains over 450 beds, with special wards for Cancer, Maternity and Gynæcological and Ophthalmological cases, and for Diseases of Children. Other special departments include those for Diseases of the Eye, Ear, Nose and Throat, and Skin; Nervous diseases, Orthopædic cases, Diseases of the Rectum and Venereal Diseases. There is also an Electro-Therapeutic department. The Cancer Charity, containing 92 beds and Special Investigation Laboratories, offers unrivalled opportunities for the study of Cancer, both in its clinical and pathological aspects. In the Electro-Therapeutic Department, students obtain instruction in the Treatment of Lupus and Cancer by the X ray method of treatment.

The Medical School, which now includes the Bland-Sutton Institute of Pathology and the Cancer Research Laboratories is fully equipped for the theoretical and practical teaching of all the subjects of the medical curriculum, and for the Diplomas in Public Health, for which two courses are held yearly, commencing in April and October. Ample laboratory and class-room accommodation is provided. The teaching staff includes 5 Professors, 29 recognised Teachers, 8 Demonstrators, 4 tutors. The Bland-Sutton Institute of Pathology is completely equipped for routine hospital investigations, teaching and research work, and contains a new lecture theatre and large pathological, bacteriological, and clinical laboratories, also smaller laboratories for individual research work. A well-equipped Anatomical and Pathological Museum and Reference Library offer every facility for study.

Other features of interest are: the institution of a course in Medical Radiology and Electrology, under the direction of the "Joel" Professor of Physics. The D.P.H. course, under the direction of Dr. Charles Porter, M.O.H., St. Marylebone, will commence on Oct. 4th. Primary F.R.C.S. class will resume on Sept. 5th. Final F.R.C.S. class begins in Mid-September.

Special classes are held to prepare students for the Intermediate Examinations of the Universities.

Hospital Appointments.—All appointments are made without fee of any kind, and the following are appointed at intervals annually: six house physicians, eight house surgeons, two obstetric and gynæcological house surgeons, two casualty medical officers, two casualty surgical officers, one resident anæsthetist, and two resident officers to the special departments. The medical and surgical casualty officers are appointed twice a year. The medical, surgical, and obstetric and gynæcological registrars are appointed as vacancies arise. Non-resident qualified clinical assistants are appointed to assist in the various out-patient departments. Clinical clerks and surgical dressers are also appointed in every department.

Scholarships, Prizes, &c.—(*a*), (*b*), and (*c*). Three Entrance Scholarships, value £100, £50, and £25, and (*d*) a University Scholarship, value £50, are awarded annually in September. The successful candidates are required to become general students of the school. (*e*) A Freer Lucas Scholarship for Foundationers or Council Exhibitioners of Epsom College is awarded annually on the nomination of the Headmaster. There are also, (*f*) and (*g*), two Broderip Scholarships, value £60 and £10 respectively; (*h*) the Lyell Gold Medal and Scholarship, value £55 5*s.*; (*i*) the John Murray Medal and Scholarship, value £25 (awarded every third year); (*k*) the Freeman Scholarship, value £30; (*l*) the Hetley Clinical Prize, value £25; (*m*) the Leopold Hudson Prize, value 11 guineas; and (*n*) the Second Year's Exhibition, value 10 guineas. There are also numerous class prize examinations.

Fees.—The fees are arranged on a basis of an annual payment of approximately £42 for the five years of the curriculum. After five years, if the student is not qualified, the annual fee is £21.

The Amalgamated Students' Club includes the following: the Medical Society, the Common Room Society, Musical Society, the cricket club, the football clubs, the athletic club, the rowing club, the musical society, the chess club, the lawn tennis club, and the hockey club. There are a restaurant and gymnasium

Degrees of Bachelor of Medicine and Bachelor of Surgery.—The student must have passed the Matriculation Examination of the Joint Board or an examination accepted in lieu thereof. All communications respecting the Matriculation Examination, and examinations accepted in lieu thereof, must be sent to the Secretary to the Board, Joint Matriculation Board, 315, Oxford-road, Manchester. First Examination.—Chemistry and Physics and Elementary Biology. Second Examination.—Anatomy and Physiology. Third Examination.—General Pathology and Bacteriology, Materia Medica, and Practical Pharmacy. Fourth Examination (at the end of the fourth year).—Forensic Medicine, Toxicology, Public Health, Therapeutics, and Special Pathology. Two years' hospital work must have been accomplished. Final Examination.—Medicine, Surgery, Midwifery, Diseases of Women, Mental Diseases, and Ophthalmology. Attendance at a general hospital for a year after the passing of the fourth examination will be required, also attendance at a fever hospital three months, maternity hospital one month, and mental hospital three months. Vaccination instruction must be taken out and courses of Ophthalmology, Medical and Surgical Anatomy, and Operative Surgery.

Degrees of Doctor of Medicine and Master of Surgery.—At the end of one year from the date of having passed the final M.B., Ch.B. examination the candidate will be eligible to present himself for the higher degrees of either Doctor of Medicine or Master of Surgery or both. Candidates have to present a thesis on some subject embraced in the medical curriculum, and pass a general examination in Principles and Practice of Medicine for the M.D., and one in Principles and Practice of Surgery, including operations on the cadaver, for the M.Ch. A thesis of exceptional merit may exempt from any part of these examinations.

Degree of Ph.D.—The Degree of Doctor of Philosophy is conferred upon candidates who possess a medical degree of a British, Colonial, or other university approved of by the Senate of the University, and who have been engaged, to the satisfaction of the Medical Faculty, in advanced study and research for a period of not less than two years, either in a laboratory of the University or in one or more of the hospitals associated with the University. After the first year of the course candidates may carry on research elsewhere, under approved conditions, and on completing the course present an original thesis on the subject and to submit themselves for oral and possibly written examination.

Fees.—Matriculation, £2; First Examination, £2 10*s.*; Second Examination, £2 10*s.*; Third Examination, £2 10*s.*; Fourth Examination, £2 10*s.*; Final Examination, £10; M.D. or Ch.M., £12 10*s.*

At the University of Birmingham the following Scholarships are awarded:—(*a*) Myers Travelling Studentship of £150, tenable for one year, awarded by vote of committee to M.B., Ch.B. Birm., B.Sc. candidates, tenable at some University or Hospital not in Great Britain or Ireland; (*b*) Ingleby Scholarship of £10, awarded to the candidate at Final Examination obtaining highest "first-class" marks in the subjects of Midwifery and Diseases of Women; (*c*) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners; (*d*) Sands Cox Scholarship of £42, tenable for three years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the July Matriculation; (*e*) Dental Scholarship of £37 10*s.*, Open Competitive Examination in subjects learned during apprenticeship: (*f*), (*g*), (*h*), and (*i*) Four Queen's Scholarships of £10 10*s.* each. In the Second and Fourth Examinations the Scholarship is awarded respectively to the student taking the first place and obtaining "first-class" marks. In the Third Examination the Scholarship is awarded to the student obtaining the highest "first-class" marks in Pathology and Bacteriology, provided that such student passes at the same examination in the subjects of Materia Medica and Practical Pharmacy. In the Final Examination the Scholarship is awarded to the candidate taking the first place in the examination—that is, obtaining the greatest aggregate number of marks—provided that in each of the subjects of Medicine, Surgery, and Midwifery he gains not less than 60 per cent. of the total available marks; (*j*) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology; and (*k*) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases. The "Arthur Foxwell Memorial Medal" (Gold Medal) is awarded annually to the candidate passing the Final M.B., Ch.B., who obtains the highest marks in Clinical Medicine, provided the marks so gained be not less than 60 per cent.

Clinical Instruction.—The medical students of the University receive their clinical instruction by attending the amalgamated practice of the General Hospital and the Queen's Hospital under the direction of the University Clinical Board. The hospitals possess more than 500 beds, treating annually over 8000 in-patients and 100,000 out-patients. The curriculum is adapted in the first place to the University of Birmingham, but it also meets the requirements of the examinations of other licensing bodies. At the General Hospital there are open to the students the following appointments: A surgical registrar, £200 per annum; a resident medical officer, elected annually (£155); a resident surgical officer, elected annually and eligible for re-election for three years (£180); a resident pathologist, elected for six months (£100); three house physicians and four house surgeons hold office for six months, receiving board, residence, and salaries at the rate of £100 a year; two house surgeons to the gynæcological, ophthalmic, and aural departments are elected every six months, receiving board, residence, and a salary of £100 a year; two assistant house surgeons are elected every three months, receiving board, residence, and salaries at the rate of £40 a year; a resident medical officer at the Jaffray Hospital, who is elected annually but is eligible for re-election, and who receives £150 a year; and a resident medical assistant at this hospital, who is not necessarily qualified, is provided with board and residence, and holds office for three months. At the Queen's Hospital there are open to the student the following appointments: Three house physicians, three house surgeons, and one obstetric and ophthalmic house surgeon, who hold office for six months and have salaries at the rate of £90 a year. Thirty-eight other appointments of varying value are at the City Workhouse and Workhouse Infirmary, at the Birmingham General and Branch Dispensaries, at the Birmingham Mental Hospitals, at the City Fever Hospitals, at the Children's Hospital, at the Birmingham and Midland Eye Hospital, at the Orthopædic and Spinal Hospital, at the Maternity Hospital, and at the Ear and Throat Hospital.

Post-graduate Courses.—A "Lectureship in Psychotherapy" was established in 1919 in the University, and courses of lectures are given annually by specialists in the subject. The "Ingleby Lectures" on some subject in connexion with "Diseases of Women and Children" are given annually by specially appointed lecturers. Other post-graduate courses are also arranged from time to time.

BIRMINGHAM GENERAL HOSPITAL.—374 beds are in daily use, 6930 in-patients per annum. Special wards for children, gynæcological, septic and infectious cases; special beds for eye, ear, and skin cases. About 50,000 out-patients per annum. Laboratories for bacteriology and morbid histology. Separate rooms adjoin the medical and surgical wards for clinical pathology. Five operating theatres (one for out-patients), all designed and fitted on the most modern lines. In addition to clinical teaching given in the wards and out-patient department by the honorary staff, medical and surgical tutorial classes are held and to one attendance on Practical Pathology and Practical Surgery. Vaccination and attendance at a Fever Hospital are not included. This course of instruction is also suitable for the corresponding examinations at the Universities of Oxford, Cambridge, and Durham, and for the medical education required by the Examining Board in England and the Society of Apothecaries. There are over 300 beds in the hospital.

Medical and Surgical Units.—Whole-time Directors of medical and surgical units have recently been appointed. They are responsible for the systematic teaching of the principles of medicine and surgery and are assisted by whole-time assistants. The teaching of practical medicine and surgery and of their special branches continues to be conducted by the honorary staff of the hospital.

The school has recently been the recipient of a large donation from the Rockefeller Foundation, which will enable it largely to increase its facilities for clinical and pathological study and also to establish an obstetrical unit on similar lines to those of medicine and surgery.

Special Departments, Clinical and Laboratory Facilities.—Those who are desirous of carrying out original research in Pathology, including Morbid Anatomy, Bacteriology, Experimental Pathology, and Chemical Pathology, are admitted to work in the laboratories of the school by the Professor of Pathology, and under certain conditions can receive grants from the Charles Graham Medical Research Fund. A special course of instruction is given in conjunction with University College for preparation for the examinations for Diplomas in Public Health of the various universities and examining bodies. In the Dental School in Great Portland-street, formerly known as the National Dental Hospital, there is afforded the opportunity for attending lectures and practical instruction in diseases of the mouth and teeth.

Appointments tenable by Students.—Clerkships and dresserships to the physicians, surgeons, anæsthetist, and pathologist are allotted amongst the students of the hospital. Maternity students are appointed each month and reside in the Students' House connected with the Medical School and Hospital. Eight house physicians, eight house surgeons, four senior and four junior obstetric assistants (of the total number of resident officers not more than three may be held by women students at any one time) are selected annually by examination from among the senior students who have a medical qualification. The house physicians and house surgeons reside free in the hospital for six months, and the senior obstetric assistants for three months. In addition to these posts there are certain special appointments which are vacant from time to time and are filled by senior students of the hospital: 1. The Resident Medical Officer. This officer is appointed for a period of two years and is chosen from amongst the more senior recent residents of the hospital. 2. The two Surgical Registrars are also chosen from among the more senior recent residents of the hospital. 3. The Obstetric Registrar. 4. Harker Smith Registrar. 5. Two Casualty Medical Officers and a Casualty Surgical Officer are appointed, each for a period of six months. 6. Assistant in Ear and Throat Department, appointed for one year. 7. Assistant in Ophthalmic Department, appointed for one year. 8. Registrar in Anæsthetic Department, appointed for one year. 9. Deputy Anæsthetists. During the absence of one or another of the Anæsthetists in the summer months a senior qualified student is appointed as a substitute and is granted a special certificate.

Museum of Pathological Anatomy.—The Museum is open for study from 9 A.M. to 5 P.M. Microscopic sections of most of the specimens in the Museum have been prepared and are available for the use of students on application to the Curator. The Museum contains 1100 admirable paintings by Sir Robert Carswell and Sir Charles Bell and a collection of old surgical instruments formerly belonging to Robert Liston.

The Anatomical Museum of the University of London, University College, is open to all students of University College Hospital and Medical School on the recommendation of the School Committee.

The Medical Library is open daily for the purposes of study to every student of the Medical School from 9 A.M. to 5 P.M., Saturdays 9 A.M. to 1 P.M. It contains about 13,500 works on medical subjects, including all the current text-books and works of reference required for study or research.

The Medical Society of University College Hospital Medical School exists for the dual purpose (1) of promoting the study of Medical and Surgical Science, and (2) of promoting social intercourse among its members. All Students of the Medical School are eligible for membership. Meetings are held once a fortnight for the purpose of discussing subjects connected with the study of medicine. In its social aspect the society includes various athletic clubs and superintends the gymnasium and squash racquet court in the Medical School. The Athletic Ground, which is used in conjunction with the Union Society of the University of London University College, is situated near the G.W.R. station at Perivale.

Scholarships and Prizes.—At this School the first two Scholarships (*a*) and (*b*) entitle the holder to a complete course at University College and University College Hospital Medical School; the second two (*c*) and (*d*) entitle to a final course at the Medical School. The money value and subjects of examination are as follows:—(*a*) Entrance Scholarship, Bucknill, 135 guineas, Chemistry, Physics, Botany, and Zoology; (*b*) Epsom Free Medical Scholarship, subjects of Preliminary Scientific Examination and Nomination by Epsom College; (*c*) and (*d*) two Goldsmid Entrance Exhibitions, 112 guineas each, Anatomy and Physiology; (*e*) Graham Scholarship in Pathology, £400 per annum for two years, awarded by the Senate of the University of London; (*f*) Atkinson Morley Scholarship, tenable for three years, £45 per annum, Surgery; (*g*) Atchison Scholarship, tenable for two years, £55 per annum; General Proficiency in Medical Studies; (*h*) Magrath Clinical Scholarship, about £100, Clinical Cases; (*i*) Percival Alleyn Scholarship, about £60, Surgery; (*j*) Filliter Exhibition, £30, Pathology; (*k*) Erichsen Prize, £10 10s., Practical Surgery; (*l*) two Senior and two Junior Fellowes Clinical Medals for Clinical Medicine; (*m*) two Liston Gold Medals for Clinical Surgery; (*n*) Alexander Bruce Gold Medal for Pathology and Surgery; and (*o*) Tuke Silver and Bronze Medals for Pathology. (*p*) Radcliffe Crocker Travelling Scholarship for Dermatology. (*q*) Leslie Pearce Gould Travelling Scholarship for Surgery.

Residence of Students.—University College Hall, Ealing, is recognised by the Medical School authorities as a residential hostel. The Students' House in University-street contains large and comfortable rooms. The Maternity Students occupy them on payment of a moderate charge. Gentlemen who desire assistance in their studies should consult the Dean or Lecturers.

WESTMINSTER HOSPITAL.—The hospital contains 215 beds and affords relief to upwards of 1600 in-patients and 25,000 out-patients annually. There are separate departments for Diseases of the Eye, Ear, Skin, Teeth, and Throat, for Orthopædic practice, for Diseases of Women, for Diseases of Children, for Radiography, and for the Light Treatment. The Anatomical, Pathological, and Materia Medica Museums are open to all students of the school.

The usual registrarships and house appointments are open to male and female students.

By a scheme for the concentration of the teaching of the preliminary and intermediate subjects of the curriculum, which has the support of the London University, an arrangement has been made by the Westminster School for the teaching of these subjects at King's College. Students, however, may join the Westminster Medical School as formerly and may compete for Entrance Scholarships as heretofore.

Scholarships and Prizes.—The following Entrance Scholarships are offered for competition: Winter Session: (*a*) Arts Scholarship, the "Guthrie," £80.

Public Health Department.—This is located in a separate building, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards.

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool.

VICTORIA UNIVERSITY OF MANCHESTER.

Four degrees in Medicine and Surgery are conferred by the University—viz., Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). A Diploma in Psychological Medicine is awarded by examination to registered medical practitioners.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Before admission to the degree of M.B. or Ch.B. candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation and that they have pursued the courses of study required by the University Regulations during a period of not less than five years subsequently to the date of their registration by the General Medical Council, two of such years having been passed in the University and one year at least having been passed in the University subsequently to the date of passing the first M.B. Examination. All candidates for the degrees of Bachelor of Medicine and Bachelor of Surgery are required to satisfy the examiners in the several subjects of the following examinations. (These are now under revision.)

The First Examination.—(1) Inorganic Chemistry and Physics; (2) Biology; and (3) Elementary Organic Chemistry and Biochemistry. Candidates must have attended during at least one year courses both of lectures and of laboratory work in each of the above-named subjects. The Examination is divided into three parts: Part 1, Inorganic Chemistry and Physics; Part 2. Biology; Part 3, Elementary Organic Chemistry and Biochemistry. The candidates may pass in these parts separately under certain conditions.

The Second Examination. — (1) Anatomy and Histology; (2) Physiology, including Physiological Chemistry. Candidates may pass in (1) and (2) separately under certain conditions.

The Third Examination.—(1) Pathology; (2) Pharmacology and Therapeutics. These subjects may be taken separately under certain conditions.

The Final Examination.—(1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases of Children); (2) Surgery, Systematic, Clinical, and Practical; (3) Obstetrics and Gynæcology (including Clinical and Practical); (4) Forensic Medicine (including an Oral Examination); (5) Hygiene and Preventive Medicine. The Final Examination is divided into two parts.

Candidates for the Second Part of the Final Examination must have completed the fifth year of medical study.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates may elect either (1) to present an original dissertation; or (2) to undergo an examination. The dissertation must embody the results of personal observation or original research, either in some department of medicine or of some science directly relative to medicine. The examination, which will be written and practical, is in the Principles and Practice of Medicine, in Pathology, and in some other subject to be selected by the candidate.

Degree of Master of Surgery.—Candidates are not eligible for the degree of Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. The degree is conferred in the following branches: Surgery (Branch I.), Gynæcology (Branch II.), Ophthalmology (Branch III.), Laryngology, Otology, and Rhinology (Branch IV.).

Scholarships, Fellowships, and Prizes.—At this University there are 22 Foundation Scholarships, 12 Exhibitions, five being for subjects connected with medical study, a Surgical Prize, a University Fellowship (Leech Fellowship, £100), Research Fellowships in Public Health, and Honorary Research Fellowships. 13 Entrance Scholarships are tenable for Medical courses; one Scholarship is offered in Surgery, Biology, Physiology, and Diseases of Children respectively, and one General Medical and Surgical. Exhibitions are offered in Physiology and Anatomy, and one for French and German. "The Dumville" Surgical Prize is awarded on the results of the Final Examination in Surgery in the Summer Term, £15. The Leech Fellowship (£100) is for the encouragement of study and research, and is open to persons who have graduated M.B., Ch.B., in the University not more than 18 months previously. The Honorary Research Fellowships, tenable for two years, conferring the right of free use of the laboratories, are awarded generally in October on application, with evidence of capacity for independent investigation.

There are many entrance scholarships, the examinations for which are held in the month of May. Full particulars can be obtained from the Registrar.

The Medical School.—This medical school, largely extended in 1920, is provided with dissecting-rooms, physiological laboratories, private laboratories, and work-rooms, besides lecture-rooms, a museum, and a library. A special laboratory is equipped for experimental work on the central nervous system. In the pathological laboratories ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research. The Helen Swindells Laboratory is specially equipped for cancer research and investigation in general pathology. Ample facilities for investigation are provided in Anatomy, Physiology, and Materia Medica. In the public health department, which is lodged in a separate institute in York Place, near the Royal Infirmary, suitable laboratory accommodation is provided for the study of sanitary chemistry, physics, and practical bacteriology in the departments of chemistry and physics and in that of pathology.

Clinical Studies.—The clinical and practical departments of medical study are taught partly in the Medical School and partly in the Royal Infirmary and St. Mary's Hospitals for Women and Children, a fever hospital, a lunatic asylum, and a convalescent home, and other special hospitals. Medical and Surgical Clinical Classes are conducted in the Infirmary, which together with the associated hospitals at Cheadle contains 1109 beds, exclusive of those reserved for military cases, and separate instruction is afforded in the elements of Medical and Surgical Physical Diagnosis, in Obstetric Medicine, Ophthalmic Surgery, and Pathological Anatomy by the different members of the staff of the Medical School and Infirmary.

Clinical Instruction.—THE MANCHESTER ROYAL INFIRMARY.—The Royal Infirmary is built on the pavilion system, near the University, and has accommodation for 628 patients. The medical side consists of five units, each unit having a testing room for the scientific investigation of morbid products and a class-room. The surgical beds are also arranged in five units, each unit having its own operation theatre, with anæsthetising, recovery, sterilising, testing, and apparatus rooms, and its own class-room attached. All of these units are occupied. The fine educational block provides very handsomely for the wants and comforts of the students, there being separate suites of rooms for the men and the women, and also a large common reading room, a lecture theatre, and a museum. The present annual average number of in-patients is 13,650, of out-patients 27,000, and the list of casualties in the accident room has averaged 17,000 per annum. About 9000 operations are performed annually in the operation theatres. Associated with the infirmary are: (1) the Convalescent Hospital at Cheadle, containing 136 beds;

these degrees in research work, or in attendance on the practice of a recognised hospital, or in the naval or military services, or in medical or surgical practice. The candidate for the M.D. degree may present an essay or undergo a special examination in the Theory and Practice of Medicine. The subjects of examination for the M.S. are:—Principles and Practice of Surgery, Surgical Pathology, Surgical Anatomy, Surgical Operations, Clinical Surgery.

Doctor of Medicine (without residence).—The University of Durham has instituted a special examination whereby the degree of Doctor of Medicine may be obtained without residence. Candidates shall not be under 40 years of age and shall have been in active practice for 15 years as registered medical practitioners. They shall produce certificates of moral character from three registered members of the medical profession. The fee will be 50 guineas, of which 20 guineas will be retained if the candidate fails to satisfy the examiners.

Candidates for any of the above degrees, diplomas or licence, must give at least 28 days' notice to Professor Howden, Registrar, College of Medicine, Newcastle-upon-Tyne. In the case of the M.D. (essay) examination candidates must send in their essays before the 1st of April.

Scholarships and Prizes.—In connexion with this University the following Scholarships and prizes are awarded:—(*a*), (*b*), (*c*), and (*d*). Four Scholarships of £25 a year each, tenable for four years; the examination will be the September Matriculation Examination. Candidates must take English, Latin, Arithmetic, Euclid, Algebra, Geography, English History, and one, or two, of the three languages—French, Greek, German. (See College Calendar for special books.) Open to candidates desirous of being admitted as Medical Students. The successful candidates must take out their entire curriculum at the University of Durham College of Medicine, Newcastle-upon-Tyne. (*e*) Pears Scholarship of £50 a year (when vacant), tenable for three years; Matriculation Examination.—At the College of Medicine are: (*f*) Dickinson Scholarship, interest on £400 and gold medal; examination in Medicine, Surgery, Midwifery, and Pathology. Open to full students of the College of Medicine who have passed the third M.B. Examination. (*g*) Tulloch Scholarship, interest on £400; examination in Elementary Anatomy, Biology, Chemistry, and Physics. (*h*) Charlton Memorial Scholarship, interest on £700; examination in Medicine. Open to full students of the College entered for the class on the Principles and Practice of Medicine. (*i*) Gibb Scholarship, interest on £500; awarded annually as a Scholarship in Pathology to full student who passes the best examination in that subject. No student is eligible after completion of his curriculum. (*j*) Luke Armstrong Memorial Scholarship, interest on £680: Original Essay in Comparative Pathology. Open to all Graduates in Medicine or Hygiene and candidates for these degrees who have spent six months at the University and whose age does not exceed 30 years. (*k*) Stephen Scott Scholarship, interest on £1000; Original Essay on any Surgical subject. Open to any graduate in Medicine or Surgery of the University or any student of the College of Medicine. Student's age must not exceed 30 years. (*l*) Heath Scholarship in Surgery, of the value of £200, awarded every second year. All Graduates in Medicine or Surgery of the University are eligible. (*m*) Philipson Scholarships (2). The interest on £1800 to the candidates who obtain the highest marks in the Final M.B., B.S. Examinations held in March and June respectively. (*n*) Gibson Prize, interest on £250 stock; examination in subject of Midwifery and Diseases of Women and Children. Open to students who have attended one course of lectures on Midwifery and Gynæcology. (*o*) Outterson-Wood Prize, interest on £250, in Psychological Medicine. (*p*) Turnbull Prize and Medal; examination in Surface Anatomy. Open to students at end of their second winter session.—At the Royal Infirmary is (*q*) Goyder Memorial Scholarship, interest on £325; awarded annually to student who most distinguishes himself in Clinical Medicine and Clinical Surgery at the Royal Infirmary. For further information apply to Professor R. Howden, Registrar of the College.

THE COLLEGE OF MEDICINE, Newcastle-upon-Tyne.—Clinical instruction is given at the Royal Victoria Infirmary, containing about 600 beds. In it adequate accommodation is provided for the study of the various special subjects, in addition to the ordinary clinical work. Post-graduate classes are held.

NEWCASTLE-UPON-TYNE ROYAL VICTORIA INFIRMARY.—The Infirmary was founded in 1751, but has been entirely rebuilt, the new hospital being opened by His late Majesty King Edward VII. in 1906. The number of beds is 550. The number of in-patients annually is 10,000 and of out-patients 84,000. The medical students of the University of Durham attend the practice of this hospital. Clinical Lectures are delivered by the Physicians and Surgeons weekly and ward demonstrations are given daily. Tutorial classes are held by the Assistant Physicians, Assistant Surgeons, and Surgical Registrars weekly, and demonstrations are given in the several out-patient departments daily. Pathological demonstrations are given by the Pathologist daily or as opportunity occurs, and in the new buildings nothing has been spared in perfecting scientific equipment. In addition to medical and surgical in-patient and out-patient departments the following special departments are fully equipped for teaching students: Ophthalmic, Throat, Nose, and Ear, Skin, Gynæcological, and Electrical. The hospital building contains the following laboratories: 1. Special Pathological Laboratory, attached to the post-mortem rooms. 2. Bacteriological Laboratory, in which all clinical bacteriological investigations are carried out—opsonic indices estimated with a view to treatment by vaccines and serums, &c. 3. There is in addition a Clinical Laboratory attached to each ward and to the out-patient department. There are five operating theatres in use in the hospital. The surgical practice is especially good. The session opens on April 17th and Oct. 2nd of each year. Applications for detailed information should be made to the Dean, Dr. Horsley Drummond, at the hospital.

There are other institutions in addition to the Royal Victoria Infirmary at which the student of medicine of the University of Durham can receive clinical instruction. Practical Midwifery can be studied at the Newcastle Lying-in Hospital. Instruction is given in Psychological Medicine at the Sunderland Mental Hospital, Ryhope. A special course of instruction is given in the City Hospital for Infectious Diseases by the City Officer of Health. Ophthalmology is further taught at the Northumberland, Durham, and Newcastle Infirmary for Diseases of the Eye. Secretary: Mr. Richard Smith, 61, Westgate-road, Newcastle-on-Tyne.

Post-Graduate Courses.—General and Special Post-Graduate courses are held under the joint auspices of the Council and the College of Medicine, the honorary staff of the Royal Victoria Infirmary, and the British Medical Association.

UNIVERSITY OF BIRMINGHAM.

The University of Birmingham grants the degrees of M.B., Ch.B., M.D., Ch.M., and Ph.D. (for Research Study), and also a degree and a diploma in Public Health. The course for the Bachelors' degrees extends over five years from the date of commencement of professional study. As a rule the first four of these years must be spent in the University, but the Senate has power of recognising attendance at another University as part of the attendance qualifying for these degrees and of recognising examinations passed at such other Universities as exempting from the examinations in Chemistry, Physics, and Elementary Biology. In the case of such students at least three years must be spent in attendance upon classes at the University. The fifth year may be spent at any other medical school recognised by the University.

all subjects at the same examination. Candidates must have completed the fifth year of professional study.

Degree of Doctor of Medicine.—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the professor of medicine, and must pass an examination in the Principles and Practice of Medicine.

Degree of Master of Surgery.—Candidates must have taken the M.B, Ch.B. at least one year previously, and must since have held for not less than six months a surgical appointment in a public hospital.

The subjects of examination are Systematic, Clinical, and Operative Surgery, Surgical Anatomy Surgical Pathology, and Bacteriology.

Scholarships, &c.—At this University, in addition to four Edgar Allen scholarships of £125 a year for three years, holders of which can take the courses in the Faculty of Medicine, there are 8 scholarships and a Town Trust Fellowship. Full particulars as to curriculum, scholarships, &c., may be had on application to the Registrar or to the Dean of the Medical Faculty.

The Medical School.—The new buildings of the University opened in 1905 are situated at the west end of the city, adjoining Weston Park, and the Medical Department occupies the entire north wing of the University quadrangle. The various athletic and other students' societies are under the management of a Students' Representative Council, elected annually. There are large and comfortable common rooms both for men and women students. A refectory is open daily at the University where students may obtain refreshments, lunch, dinner, &c., at extremely moderate prices. The University journal, *Floreamus*, edited by a committee of staff and students, is published each term. The University Halls, "Oakholme," Clarkehouse-road, and "Tapton Cliffe," Fulwood-road, are recognised by the Senate as halls of residence for women students; full particulars may be obtained of the tutor for women students.

Clinical Instruction.—The University is within easy reach of the various hospitals with which it is connected for clinical purposes. These are as follows: The ROYAL INFIRMARY (Secretary, Mr. J. W. Barnes), containing 326 beds, with an annual average number of over 3800 in-patients, over 11,500 out-patients, and over 23,000 casualties; the Royal Hospital (Hon. Sec., *pro tem.*, to the medical and surgical staff, Mr. Vincent Townrow), with 191 beds, and an annual number of 3000 in-patients, over 20,000 out-patients, and nearly 20,000 casualties; and the Jessop Hospital for Diseases of Women, with 80 beds, about 900 in-patients, and about 3057 out-patients; also a Maternity department, with about 450 in-patients per annum and about 700 out-patient cases attended. Special courses on Fevers are held at the City Fever Hospitals (600 beds) and on Mental Diseases at the South Yorkshire Asylum (1610 beds.) For purposes of clinical practice the practices of the Royal Infirmary and Royal Hospital are amalgamated, giving a total of 511 beds for the treatment of medical, surgical, and special cases. There are special departments for the treatment of Diseases of the Eye at each institution, with wards assigned to them. In addition to these the Royal Infirmary has special departments for the treatment of Diseases of the Skin and Ear, with beds assigned to them, whilst at the Royal Hospital there are special out-patient departments for Diseases of the Throat, Ear, Skin, Orthopædics, and Mental Diseases. Instruction is also given at the South Yorkshire Asylum (1694 beds). During the last year over 6000 patients passed through the wards of the two institutions, while those attending as out-patients numbered over 45,000. The department of Pathology and Bacteriology in the University is fitted with every requirement for the most advanced work in these subjects.

Fees.—The Composition Fee is £36 a year for each of the five years.

UNIVERSITY OF BRISTOL.

In the Faculty of Medicine there are the following degrees:—Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.). There are also the following diplomas: Diploma in Public Health (D.P.H.), Diploma in Dental Surgery (L.D.S.), and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine, Surgery, and Dentistry are required to pass an examination called the School Certificate Examination, or to pass such examination as may be regarded as equivalent by the Senate. All courses, degrees, and diplomas are open to men and women alike.

Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five and a half years, of which three shall have been passed in the University, and two of these three subsequent to pass in the second examination. All candidates for the degrees of M.B., Ch.B., are required to satisfy the examiners in the several subjects of three examinations.

The First Examination.—The subjects of examination are: Chemistry (Inorganic), Physics, and Biology, the courses pursued being those for the time being approved for the intermediate part of the B.Sc. curriculum. This part of the curriculum shall extend over one year. (Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination and will be regarded as having completed one year of study.)

The Second Examination.—The subjects of examination are: Organic Chemistry and Elementary Anatomy (Part I.) and Advanced Anatomy and Physiology (Part II.). Parts I. and II. may be passed separately or together.

The Final Examination.—The subjects of examination are: Materia Medica and Pharmacy, Pharmacology and Therapeutics, General Pathology, Morbid Anatomy, and Bacteriology (Part I.); Special Pathology, Forensic Medicine, Toxicology, and Public Health, Obstetrics (including Diseases of Women), Surgery (Systematic, Clinical, Practical, and Operative), Medicine (Systematic, Clinical, and Practical, including Mental Diseases) (Part II.). Candidates may pass I. and II. together, or separately, and Forensic Medicine and Toxicology may, at the option of the candidate, be taken either with Part I. or Part II.

Degree of Doctor of Medicine.—Candidates shall be Bachelors of the University of not less than two years' standing as such and may elect either (1) to pass an examination in General Medicine, or (2) to pass an examination in State Medicine, or (3) to present a Dissertation. The candidate who elects to pass the examination in State Medicine must hold a diploma in Public Health of some University or College, and the candidate who elects to present a Dissertation may be examined in the subject thereof.

Degree of Master of Surgery.—Candidates shall be Bachelors of not less than two years as such, during which period they shall have attended the Surgical Practice of an institution approved for the purpose. They shall pass an examination in Surgical Anatomy, Pathology, and Bacteriology, and Operative, Clinical, and General Surgery, and present to the University a Dissertation on some subject of Surgery.

Clinical Instruction.—The allied hospitals (BRISTOL ROYAL INFIRMARY and BRISTOL GENERAL HOSPITAL) have between them about 600 beds and extensive out-patient departments, special clinics for Diseases of Women and Children and those of the Eye, Throat, and Ear, in addition to large and well-equipped departments for Dental work and large outdoor Maternity Departments.

At each of these institutions there are well-arranged pathological museums, post-mortem rooms, and for senior and junior students. Clinical instruction in all the special departments. The Jaffray Branch Hospital contains 56 beds.

QUEEN'S HOSPITAL (Beds 223).—Similar arrangements for clinical teaching are made here, and the material also is excellent. Ward and tutorial classes and post-graduate courses are regularly conducted by the staff, there are daily clinics in the out-patient department, while teaching duties are definitely assigned to the house physicians and house surgeons. There are also special departments for gynæcology and ophthalmology, radiography, bacteriology, massage, electricity, whirlpool baths, electro-cardiograph, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—This hospital possesses 120 beds, and there is an average daily attendance of out-patients of 250. Students attending for a period of three months will be granted certificates which will qualify for the University and Conjoint Board examinations. Post-graduate courses are available on various subjects when a sufficient number of graduates are present. A limited number of Non-Resident Clinical Assistants posts are available to qualified practitioners, particulars of which can be had on application to the General Superintendent.

UNIVERSITY OF LIVERPOOL.

The degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Master of Hygiene (M.H.), and Master of Orthopædic Surgery (M.Ch.Orth.).

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for the degrees of Bachelor of Medicine and of Surgery must have attained the age of 21 years on the day of graduation. At least two of the five years of medical study must have been passed in the University, and one year at least must have been passed in the University subsequently to the date of passing the First Examination. The other three years may be passed at any college or medical school recognised for this purpose by the University. Candidates must pass three examinations entitled respectively: the First Examination, the Second Examination, and the Final Examination. The fee is £5 for each examination. The subjects of the First Examination are: (1) Chemistry, Inorganic, Organic, and Physical; (2) Biology (Zoology and Botany); and (3) Physics. The examination is divided into two parts—namely, (1) Chemistry and Physics, and (2) Biology; and candidates may present themselves in these parts separately. The subjects of the Second Examination are (*a*) Anatomy and Physiology (including Physiological Chemistry and Histology), and (*b*) Materia Medica and Pharmacy and Pharmacology. Candidates may present themselves in (*a*) or (*b*) separately. The subjects for the Final Examination are: (1) General Pathology, Morbid Anatomy, and Bacteriology; (2) Forensic Medicine, Toxicology, and Public Health; (3) Obstetrics and Diseases of Women; (4) Surgery, Systematic, Clinical, Operative, and Practical, including Ophthalmology; (5) Medicine, Systematic and Clinical, including Mental Diseases and Diseases of Children, and Therapeutics. The Final Examination is divided into three parts, the first consisting of subject (1), the second of subject (2), the third of subjects (3), (4), and (5). Candidates may present themselves in these parts separately. Candidates for the third part must have completed the fifth year of medical study.

Degrees of Doctor of Medicine and Master of Surgery.—No candidate will be admitted to the degree of Doctor of Medicine or Master of Surgery unless he has previously received the Degrees of Bachelor of Medicine and Bachelor of Surgery, and at least one year has elapsed since he passed the examinations for those degrees, or, in the case of the degree of Doctor, unless, having obtained substantially equivalent degrees in an approved University, he has subsequently spent two years in the University or in the Clinical School in the performance of research or the conduct of systematic clinical observations. Candidates for the degree of Doctor of Medicine are required to present a dissertation embodying the results of personal observations or original research, either in some department of medicine or of some science directly relative to medicine: provided always that original work published in scientific journals or separately shall be admissible in lieu of, or in addition to, a dissertation specially written for the degree. Graduates of the University who are candidates for the degree of Doctor of Medicine may be admitted by examination alone.

The University has recently established a Diploma in Medical Radiology and Electrology—Part I., Physics; Part II., Radiology and Electrology. The parts may be taken at one examination or separately.

At this University the following Scholarships and Fellowships and Prizes are awarded:—(*a*) and (*b*) Robert Gee Entrance Scholarships, two annually, of £25 each, tenable for two years, Joint Matriculation Board Examination held in July, open to First M.B. Course Students; (*c*) Lyon Jones Scholarship, No. 1, of £21 per annum, tenable for two years, Competitive Examination among Junior Students in First M.B. Subjects, Perpetual Course at the University; (*d*) Lyon Jones Scholarship, No. 2, of £21, Competitive Examination among Senior Students in Anatomy, Physiology, Pharmacology, and Materia Medica; (*e*) Derby Exhibition of £15, Competitive Examination among Fourth- or Fifth-year Students in Clinical Subjects, and Clinical School Exhibition of £15 annually for Fourth- or Fifth-year students; (*f*) University Scholarship of £25 for one year, awarded on results of Second Examination for the degrees; (*g*) Holt Fellowships, Physiology and Pathology, of £100 each, for one year; (*h*) Gee Fellowship, Anatomy, of £100, for one year; (*i*) John Rankin Fellowships in Anatomy, two, each of the value of £120, tenable for two years; (*j*) Johnston Colonial Fellowship, Bio-Chemistry, of £100, for one year; (*k*) John W. Garrett International Fellowship, Bacteriology, of £100, for one year; (*l*) Thelwall Thomas Fellowship, Surgical Pathology, of £150, for one year; (*m*) Ethel Boyce Fellowship in Gynæcological Pathology, of £100, for one year; (*n*) Mary Birrell Davies Memorial Fund Scholarship, of the value of £60, tenable for four years, offered for competition in alternate years; open only to women students who will have attained the age of 19 on the first day of October next following the award; (*o*) Rankin Exhibition in Practical Anatomy, of £25, for one year; numerous prizes and medals.

Medical School Buildings.—Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation. All the laboratories and class-rooms are situated close together, communicating with one another, and are made up of four large blocks of buildings which form one side of the College quadrangle. There are the Johnston Laboratories for Experimental Medicine and Biochemistry; the Medical School for Anatomy, Surgery, Toxicology, and Ophthalmology; and the Thompson-Yates Laboratories for Physiology and Pathology. A new building for Tropical Medicine has recently been opened.

Clinical Instruction.—The Clinical School of the University consists of four general hospitals—the ROYAL INFIRMARY, the DAVID LEWIS NORTHERN HOSPITAL, the ROYAL SOUTHERN HOSPITAL, and the STANLEY HOSPITAL; and of five special hospitals—the Eye and Ear Infirmary, the Hospital for Women, the Royal Liverpool Children's Hospital, St. Paul's Eye Hospital, and St. George's Hospital for Skin Diseases. These hospitals contain in all a total of about 1134 beds. The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with a field for clinical education and study which is unrivalled in extent in the United Kingdom. All the hospitals are within easy access of the University. There are a large number of appointments to house physicianships and surgeonships both at the general and special hospitals which are open to qualified students of the school.

£3 3*s.*: re-examination in Physics, £2 2*s.*; re-examination in Biology, £3 3*s.* Second Conjoint: This examination is in two parts—viz.: Part I., Anatomy and Physiology; Part II., Materia Medica and Pharmacology. A candidate must have attended at a recognised medical school, lectures on Anatomy, Physiology, and a course of Practical Physiology and Histology, and have dissected for twelve months during the ordinary sessions. He must also attend three months' lectures or demonstrations in Pharmacology and receive instruction in Practical Pharmacy. Part II. may be passed at the same time as Part I., or before or after that part, provided the conditions of admission to the whole examination have been fulfilled. The study of Anatomy and Physiology before passing in two of the three subjects of the first examination is not recognised. If rejected, a candidate before being admitted to re-examination must continue his studies at a recognised medical school for not less than three months.

Second Examination: £10 10*s.*; re-examination in Part I., £6 6*s.*; re-examination in Part II., £3 3*s.*

The subjects of the *Third* or *Final Examination* are: Part I., Medicine, including Medical Anatomy, Pathology, Therapeutics, Forensic Medicine, and Public Health. Part II., Surgery, including Pathology, Surgical Anatomy, and the use of Surgical Appliances. Part III., Midwifery and Diseases Peculiar to Women. Candidates may present themselves for Parts I., II., and III. of the examination separately or together at the expiration of not less than two years (24 months) from the date of passing the Second Examination on production of the certificates of study required for the respective parts, provided that the examination is not completed before the expiration of five years from the date of passing the Preliminary Examination.

The fees for admission to the *Third* or *Final Examination* are as follows: Third Examination: £21; re-examination in Part I., Medicine, £6 6*s.*; Part II., Surgery, £6 6*s.*; Part III., Midwifery and Diseases of Women, £4 4*s.* Members of English, Scotch, or Irish Universities £5 5*s.* for first admission to the examination and £36 15*s.* for the diplomas.

A candidate referred on the *Third* or *Final Examination* will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection and will be required, before being admitted to re-examination, to produce a certificate, in regard to Medicine and Surgery, of having attended the Medical and Surgical Practice, or the Medical or Surgical Practice, as the case may be, during the period of his reference; and in regard to Midwifery and Diseases Peculiar to Women a certificate of having received, subsequently to the date of his reference, not less than three months' instruction in that subject by a recognised teacher.

Students of recognised universities in England, Scotland, and Ireland, who have passed examinations for a degree in Medicine at their universities in the subjects of the First and Second Examinations of the Examining Board, may enter for the Final Examination at the expiration of two years from the date of passing in Anatomy and Physiology on production of the required certificates.

Members of certain recognised Indian, Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First and Second Examinations of the Examining Board may present themselves for the Final Examination under special conditions. The Board also grants Diplomas in Psychological Medicine, in Ophthalmic Medicine and Surgery and in Tropical Medicine and Hygiene. Candidates must hold a Medical qualification registrable in the United Kingdom or be Graduates in Medicine of a recognised Indian, a Colonial, or a Foreign University. Particulars and conditions of admission to all examinations, fees, &c., may be obtained from the Secretary of the Examining Board, Examination Hall, Queen-square, Bloomsbury, London, W.C.

ROYAL COLLEGE OF PHYSICIANS OF LONDON:
THE MEMBERSHIP AND FELLOWSHIP.

The College confers two separate diplomas—the *Fellowship*, a purely honorary distinction, and the *Membership*, obtained by examination.

Membership.—Every candidate must have attained the age of 25 years, and be already registered or have passed a qualifying examination in accordance with the Medical Act of 1886, or obtained the degree of Doctor or Bachelor of Medicine at a University in the United Kingdom, in India, or a British colony, or foreign qualification, for which the courses of study and the examinations have been adjudged by the Censors' Board to be satisfactory. The nature and extent of this examination will, in the case of each candidate, be determined by the Censors' Board. All other candidates must produce proof of having passed the examinations required for the Licence of the College. The examination is directed partly to pathology and partly to the practice of medicine and may be modified in circumstances to be ascertained by application to the Registrar. The fee for admission as a Member of the College is 40 guineas, except when the candidate for Membership is a Licentiate of the College, in which case the fee already paid for the Licence shall be deducted from the 40 guineas. The fee for the examination is £6 6*s.*

Fellowship.—The *Fellows* are selected annually from the ranks of the *Members* by the Comitia of the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND:
THE FELLOWSHIP.

The Royal College of Surgeons of England confers its diploma of Fellow upon a few distinguished persons in an honorary capacity. Two Members of long standing may also be elected to the Fellowship annually. But the bulk of the Fellows obtain the diploma as the result of examination.

Fellowship.—The examination for the Fellowship is divided into two parts—viz., the First Examination and the Second Examination. The subjects of the First Examination are Anatomy and Physiology, and those of the Second Examination are Surgery, including Surgical Anatomy and Pathology. The examinations are partly written and partly vivâ voce and include the examination of patients and the performance of operations on the dead body. The First Examination will in future years be held in June and December and the Second Examination in May and November.

The fees for examination are:—First Examination, first admission 8 guineas, and for each re-admission 5 guineas. Second Examination, each admission, 12 guineas. Of such examination fees 20 guineas will be reckoned as part of the fee payable upon admission to the Fellowship. The fee to be paid upon admission to the Fellowship is 30 guineas, except when the candidate is a Member of the College, in which case the fee is 20 guineas.

A Member of the College is admissible to the First Examination at any time after receiving his Diploma of Membership. A candidate who is not a Member is admissible after passing the First and Second Examinations of the English Conjoint Board, of the equivalent examinations in his University, on the production of certificates of attendance upon certain prescribed courses.

A Member of the College is admissible to the Second Examination at any time after having passed the First Examination, on producing satisfactory evidence of having been engaged not less than six years in the study (or study and practice) of the profession.

A candidate who is not a Member of the College must possess the registrable surgical and medical degrees of universities recognised by the Council and must have been engaged in the study (or study and practice) of the profession for not less than four years subsequent to the date of obtaining the recognised

(2) the Royal Lunatic Hospital at Cheadle, accommodating with its branches 430 patients; and (3) the Central Branch in the city for casualty and out-patient work, and 50 beds for pensioners. The Associated Hospitals thus contain 1244 beds and are under the same management. Women students are admitted on the same terms as men.

Fees.—Medical Practice: Three months, 7½ guineas; six months, 12 guineas; 12 months, 18 guineas; full period required by the Examining Boards, 60 guineas.

Two Entrance Scholarships in Medicine of the value of £100 each are offered annually by the Council of the Manchester University and the Medical Board of the Manchester Royal Infirmary for proficiency in Arts and Science subjects respectively. Other scholarships and prizes are mentioned in the College Syllabus. Numerous annual appointments and junior appointments may be held by those who have attended the practice of the Infirmary.

The Dean of Clinical Instruction is Dr. T. H. Oliver.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, Gartside-street, Manchester, and St. Anne's-on-the-Sea.—The hospital contains 190 beds and 28 in the Convalescent Home, St. Anne's-on-the-Sea. The medical staff visit the hospital daily at 10 A.M. Clinical instruction is given by the medical staff at the Hospital and Dispensary. A new Massage and Electro-therapeutic Department is to be opened shortly. Out-patients are seen daily at 9 A.M. at the new Out-patient Department, Gartside-street, Manchester, Secretary: Mr. W. M. Humphry.

THE MANCESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road, Manchester.—The hospital contains 70 beds. Out-patients are seen daily from 8.30 to 10 A.M.

UNIVERSITY OF LEEDS.

Four degrees in Medicine and Surgery are conferred—viz.: Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), also Degrees and Diplomas in Dental Surgery and Diplomas in Public Health and in Psychological Medicine.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—Candidates for these degrees are required to present certificates showing that they will have attained the age of 21 years on the day of graduation, and have attended courses approved by the University extending over not less than five years, two of such years at least having been passed in the University, one of which must be subsequent to the date of passing the First Examination. Candidates must also satisfy the examiners in the several subjects of the following examinations entitled respectively: the Matriculation Examination, or such other examination as may have been recognised by the Joint Matriculation Board in its stead; the First Examination; the Second Examination; and the Final Examination.

The First Examination.—The First Examination consists of: Part I., Physics and Chemistry; Part II., Zoology and Botany. Candidates will be allowed to pass the two parts separately.

The Second Examination.—The Second Examination consists of: Part I., Anatomy and Physiology; Part II., Materia Medica and Pharmacy. Candidates will be allowed to pass the two parts separately.

The Final Examination.—The Final Examination consists of: Part I., Pathology and Bacteriology. Part II., Forensic Medicine and Public Health. Part III., Medicine: Systematic and Clinical, including Mental Disease and Diseases of Children; Surgery—Systematic, Clinical, and Practical; Obstetrics, and Gynæcology—Systematic, Clinical, and Practical; Pharmacology and Therapeutics. Candidates will be allowed to pass Parts II. and III. separately or together, and they may present themselves for examination in Part I. at the end of the tenth term.

Degree of Doctor of Medicine.—Candidates are not eligible for the degree of Doctor of Medicine or Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery of the University (or of Victoria prior to December, 1904) and at least one year has elapsed since they passed the examination for those degrees. Candidates for the degree of Doctor of Medicine are required to present a dissertation and, if the dissertation be accepted, may be required to pass an examination.

The first term commences on Oct. 3rd. Prospectus, &c., can be obtained from the Dean of the Medical School.

Post-graduate work.—Practitioners wishing to attend Infirmary practice during short periods may do so on terms which may be obtained from the Clinical Sub-Dean.

Clinical Instruction.—THE LEEDS GENERAL INFIRMARY, in connexion with this medical faculty, has accommodation for 620 in-patients, including 88 beds at branch hospitals in the country. During the last year 9495 in-patients and 37,746 new out-patients were treated. Clinical teaching takes place daily in the wards, and Clinical lectures are given in Medicine and Surgery by the Physicians and Surgeons. There are Medical, Surgical, Ophthalmic, Aural, Electro-therapeutic, and Radiographic Departments, in each of which special instruction is imparted to students. A Gynæcological and Extern Obstetric Department, together with Laryngeal and Skin Clinics, are in operation. Several valuable prizes are given at the end of each session. Numerous appointments at the Infirmary are annually open to students after qualification.

UNIVERSITY OF SHEFFIELD.

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The courses and degrees in the Faculty of Medicine are open to men and women alike. Candidates must matriculate in the University or pass such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board.

Degrees of Bachelor of Medicine and Bachelor of Surgery.—A candidate must have attained the age of 21 years on the day of graduation and pursue the courses of study required by the University regulations during a period of not less than five years subsequently to the date of his matriculation, three of such years at least having been passed in the University, one at least being subsequent to the passing of the First Examination.

The First Examination.—The subjects of the examination are Chemistry, Physics, and Biology. The Intermediate B.Sc. Examination in these subjects will, on payment of the required additional fee, be accepted instead of this examination. Candidates must, after matriculation and registration as medical students, have attended courses of instruction (lectures and laboratory work) in chemistry, physics, and biology for one year each.

The Second Examination.—The subjects of the examination are Anatomy and Physiology.

The Third Examination.—The subjects of the examination are Pathology, Pharmacology, Applied Anatomy and Applied Physiology for students who start work for the degree now. A candidate entering for the first, second, or third examination, who shall obtain a certain minimum of marks in one subject of either examination and pass creditably in the other subjects, may enter for such one subject separately in a subsequent examination. Candidates must have completed the fourth winter session of professional study.

The Final Examination.—The subjects of the examination are Medicine (including Forensic Medicine, Public Health, Mental Diseases, and Disease of Children); Surgery; and Obstetrics (including Gynæcology). Candidates must satisfy the examiners in diseases of the eye, ear, throat, and nose, skin diseases, plastic surgery, medical electricity, radiography, and dentistry. Operations are performed every afternoon of the week (except Saturday) at 2.30 P.M. Clinical instruction, ordinarily including laboratory classes, and lectures are given in the wards and out-patient departments, laboratories, and lecture hall in connexion with the North-East London Post-Graduate College attached. There are four Resident Medical Officers, and Clinical Assistants are appointed under certain conditions. A special post-graduate course will be held from Sept. 26th to Oct. 8th. Further particulars in regard to the hospital may be obtained from Mr. H. W. Carson, Secretary to the Medical Committee, 111, Harley-street, W.; or from Dr. A. J. Whiting, Dean of North-East London Post-Graduate College, 19A, Cavendish-sq., W. Secretary: Mr. F. W. Drewett.

London Temperance Hospital, Hampstead-road, N.W. (Established 1873; Incorporated 1917).—The hospital contains 120 beds. The in-patients in 1920 were 1339, and the out-patients and casualties numbered 16,731 new cases. The medical and surgical practice of the hospital is open to students and practitioners. Operations: Mondays at 2 P.M., Tuesdays, Wednesdays, Thursdays, and Fridays at 9 A.M.

Hampstead General and North-West London Hospital.—The Hampstead General Hospital (Haverstock-hill) and the North-West London Hospital (formerly at Kentish Town) have been amalgamated since 1907. The Hampstead General Hospital (128 beds—viz., 102 free, 6 isolation, &c., and 20 paying or contributory) accommodates the in-patients from the districts hitherto served by both hospitals. The out-patients, with the exception of Hampstead casualty and emergency cases, attend exclusively at the Out-patients department, Bayham-street, Camden Town. Further particulars from the Secretary at the hospital.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—A number of the students of the London School of Medicine for Women work in the E.G.A. Hospital under the visiting staff, and in return for much valued clinical gynæcological teaching they perform the duties assigned to students in the wards of a general hospital. Post-graduate courses in the treatment of venereal disease are held in conjunction with the London School of Medicine for Women. Secretary: Miss Imogen H. Murphy.

South London Hospital for Women, South Side, Clapham Common, S.W.; Out-patient Department: 86-90, Newington Causeway, S.E.—This hospital, officered entirely by medical women, is a general hospital for women, girls, and small children of both sexes, and provides accommodation for 80 patients. All diseases are treated with the exception of acute infectious fevers and mental disease. There are Ophthalmic, X ray, Pathological and Dental Departments. The hospital is a centre for the treatment of venereal diseases under the Public Health (Venereal Diseases) Regulations, 1916. The provision of additional facilities for post-graduate training for medical women is one of the special objects of the hospital. The number of in-patients treated during the year 1919 was 1190. At the Out-patient Department in Newington Causeway 7071 new cases were treated during the past year, the total number of out-patient attendances amounting to 31,485. Clinical assistants (qualified women only) are from time to time appointed in the Out-patient Department. Two resident students act as clinical clerks in the surgical wards. Secretary: Miss M. E. Ridler.

French Hospital and Dispensary, Shaftesbury-avenue, W.C.—This hospital, which was founded in 1867 to afford medical treatment for poor foreigners who speak the French language, has 74 beds. The Convalescent Home and Retreat for Aged French People at Brighton contains 61 beds. Secretary: Mr. G. Pondepeyre.

Italian Hospital, Queen-square, W.C.—This institution was established in 1884 for the maintenance and medical treatment of Italian and Italian-speaking people, irrespective of their religious and political opinions, who may be suffering from sickness or bodily infirmity, but the sick poor of any nationality are also admitted for treatment. The institution also provides surgical and medical relief to Italians and others not being inmates of the hospital. It has 50 beds.

German Hospital, Dalston, E. 8.—This hospital was founded in 1845 with the object of supplying medical aid to poor people speaking the German language and for others in cases of emergency and accident. It has 124 beds and a sanatorium with 10 beds.

National Hospital for the Paralysed and Epileptic (Albany Memorial), Queen-square, Bloomsbury, W.C.—The hospital, with the Finchley branch, and branches in Bloomsbury and Clapham Park, contains 270 beds and cots. The physicians attend every Monday, Tuesday, Thursday, and Friday at 2 P.M. In- and out-patient practice at that hour. Clinical Clerks are appointed under the in-patient and out-patient physicians. Post-graduate Courses of Lectures and Demonstrations are held three times every year, usually commencing in January, May and October and lasting eight weeks. The hospital has been recognised by the Conjoint Board for England as a place where part of the fifth year may be devoted to clinical work. All communications concerning clinical appointments, lectures, hospital practice, and fees should be addressed to the Secretary at the hospital.

Hospital for Epilepsy and Paralysis, &c., Maida Vale, W. (85 beds).—Both in-patient and out-patient departments of this hospital are open free to students as well as to medical graduates. Secretary and General Superintendent: Mr. H. W. Burleigh. The out-patient department is open every week-day except Saturday at 2 P.M.

West End Hospital for Nervous Diseases.—Out-patient Department, 73, Welbeck-street, W. 1; In-patient Department, St. Katherine's Lodge, Gloucester Gate, Regent's Park, N.W. Graduates in medicine and senior students may attend demonstrations in the Wards and Out-patient Departments. The examination for the Savill Prize, open for competition among those who have attended twenty-five clinics during the year, will be held in July, 1922.

Bethlem Royal Hospital, St. George's-road, S.E.—This hospital is open for the admission of two Resident House Physicians who have recently obtained their diplomas to practise Medicine and Surgery. They are permitted to reside in the hospital for a term generally not exceeding six months, commencing May 1st and Nov. 1st, and are provided with apartments, complete board, attendance, laundry, and a salary at the rate of £100 per annum. They are under the direction of the Physician Superintendent and are elected by the Committee from candidates whose testimonials appear to be most satisfactory. The students of certain specified London Medical Schools receive Clinical Instruction in the wards of the hospital and qualified practitioners and other students may attend for a period of three months on payment of a fee. A department for nervous diseases has been instituted in a building quite apart from the main hospital. Neurological and early mental cases are dealt with. A Course of Lectures and Practical Instruction for the Diploma in Psychological Medicine granted by the various Universities, will commence early in October. For particulars apply to the Physician Superintendent.

Hospital for Consumption and Diseases of the Chest, Brompton.—The hospital contains 333 beds. The Sanatorium at Frimley contains 100 beds and 50 beds for paying patients. Six House Physicians reside in the hospital for a term of six months; their duties include attendance in the out-patient department. Pupils are admitted to the practice of the hospital: terms £2 2*s*. for one month; three months, £4 4*s*.; six months, £7 7*s*. Clinical Demonstrations are given throughout the year by members of the medical staff. Clinical Assistants are appointed to the Assistant Physicians in the out-patient department and Clinical Clerks to the Physicians in the wards.

laboratories for Morbid Anatomy. There are also laboratories for work in Clinical Pathology, Bacteriology, and Cytology, in which special instruction is given in these subjects. Departments are provided and well-equipped for X ray work, both for diagnosis and treatment, the various forms of Electrical treatment, including High Frequency Currents, Electric Baths, Finsen Light treatment, and Massage.

The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 140 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for clinical instruction is therefore about 750.

Daily Post-graduate Study.—For those who are able to devote several hours each day to hospital practice the University offers special facilities for Post-graduate work. Qualified medical practitioners may be appointed as Clinical Assistants for a period of one or more months. They may act as Assistants, if times permit, in more than one department and in any of the hospitals during their period of study. They will be entitled to the use of the clinical laboratories and medical library, and have the right to attend in all departments, including operations, post-graduate and ordinary clinical demonstrations, and post-mortem examinations. Fee, £3 3*s.* per month.

Post-graduate Clinical Work. — Demonstration courses with weekly lectures are held during May, June, and July. Fee, £2 2*s.* All inquiries and applications for admission should be addressed to the Director of Post-graduate Studies (Clinical Section), Pathological Department, University of Bristol, who can be seen on any day by appointment at the Pathological Department.

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine or the Registrar of the University.

UNIVERSITY OF WALES.

This University has the privilege of granting degrees in Medicine, and Diploma in Public Health. At the four constituent colleges of Aberystwyth, Bangor, Swansea, and Cardiff, there are Professors of Chemistry, Botany, Zoology, and Physics, so that the students of the University can obtain proper instruction in the ancillary subjects. The Welsh National School of Medicine is situated in Cardiff and attached to the University College there.

University College, Cardiff. Welsh National School of Medicine.—This School is staffed on the Unit System and whole-time Professors of Medicine, Surgery, Pathology, Tuberculosis, Preventive Medicine, Physiology, and Anatomy, have already been appointed. The Courses of Instruction which are open to both men and women students are adapted to meet the needs of those preparing for Degrees in Medicine and Surgery in the University of Wales, but qualify also for Degrees in other Universities, and for the Diplomas of licensing bodies.

In the past, after having spent two or three years in study at Cardiff and having passed the corresponding examinations, students have proceeded to London and elsewhere to complete their qualifying Course for a University Degree or for a Diploma. Now, however, the Welsh National School of Medicine is fully constituted, and a complete medical curriculum will be provided at Cardiff from the beginning of next session which opens on Oct. 4th, 1921. Hospital instruction is given at the King Edward VII. Hospital, Cardiff (450 beds), and at other Institutions. The attention of students about to matriculate is drawn to the numerous entrance scholarships offered for competition at the University College, Cardiff, most of which may be held by medical students. Full particulars of the examination for these may be obtained by application to the Registrar. Instruction is given in the department of Public Health, established in 1899, in Public Health and Hygiene for those preparing for the D.P.H. examination. Courses for the training of Health Visitors and in Sanitary Science have also been instituted. Prospectus of the Welsh National School of Medicine and the School of Preventive Medicine, and Department of Public Health, can be obtained on application to the Dean of the Faculty of Medicine, or to Mr. D. J. A. Brown, Registrar, University College, Cardiff.

Clinical Instruction.—KING EDWARD VII. HOSPITAL, CARDIFF: Founded 1837. 450 beds.—SWANSEA GENERAL AND EYE HOSPITAL: Hospital, 256 beds, 186 civilians, 70 (sailor and soldier pensioners); Convalescent Home, 26 beds. The accommodation is about to be increased by 50 beds.

ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Under this heading we give the regulations for the examinations enjoined by the Conjoint Examining Board of the Royal Colleges of Physicians of London and Surgeons of England and of the Society of Apothecaries upon students desiring their respective diplomas of qualification. We do not give any list of schools recognised by these bodies as eligible to prepare students for their examinations beyond mentioning that all the schools which we have already described (under the heading of the Universities to which they are attached) are recognised as suitable places of instruction by the corporations granting medical diplomas. The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations.

Professional Examinations.—There are three Examinations, called herein the First Examination, the Second Examination, and the Third or Final Examination, each being partly written, partly oral and partly practical. These examinations will be held in the months of January, April, July, and September or October unless otherwise appointed. Every candidate must give notice in writing to Mr. F. G. Hallett, O.B.E., Secretary of the Examining Board, Examination Hall, Queen-square, Bloomsbury, W.C., 14 clear days before the day of the examination, transmitting at the same time the required certificates.

The subjects of the *First Examination* are—Chemistry, Physics, and Elementary Biology. A candidate may take this examination in two parts at different times (Chemistry and Physics must be taken together until the required standard is reached in both or in one of these subjects, but a candidate will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other). A candidate will be admitted to examination in Chemistry and Physics, and in Elementary Biology on producing evidence of having passed the required Preliminary Examination and of having received instruction in these subjects at a recognised institution. A candidate rejected in one part or more of the First Examination will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection, and he will be re-examined in the subject or subjects in which he has been rejected. If referred in Chemistry, Physics, or Biology he must produce evidence of further instruction at a recognised institution. Any candidate who shall produce satisfactory evidence of having passed an examination for a degree in Medicine in any of the subjects of this examination conducted at a university in the United Kingdom, in India, or in a British colony will be exempt from examination in those subjects.

The fees for admission to the *First Examination* are as follows: For the whole examination, First Admission, £10 10*s.*; re-examination in Chemistry, Queen's Hospital for Children (*late North-Eastern Hospital for Children*), Hackney-road, Bethnal Green, E. 2. (Telephone 305 and 534 Dalston.) For the sick children of the poor under 14 years of age. Established 1867. 134 beds in London and 36 at the seaside branch, "Little Folks" Home, Bexhill.—During the past year 1713 in-patients and 56,322 out-patients (attendance 125,516) were received. The surgeons attend on Tuesdays at 1.45 p.m. and Wednesdays, Fridays and Saturdays at 9.30 a.m.; the physicians daily at 1.45 p.m., except Saturday, 9.30 a.m., and Wednesday and Friday, 9.30 a.m., as well as 1.45 p.m. The practice of the hospital is open to students by arrangement with the medical staff. Clinical demonstrations open to medical practitioners and students of medicine will be announced in the medical journals. Applications should be made to the Secretary, Mr. T. Glenton-Kerr.

Belgrave Hospital for Children, Clapham-road, S.W.—Clinical Assistants (men or women) are from time to time appointed to the members of the Visiting Staff attending in the Out-patient Department at this hospital, and facilities are given for attendance in the wards.

Alexandra Hospital for Children with Hip Disease, (late of) Queen-square, W.C.—At this hospital students who have obtained a recommendation from their teachers can attend to see the practice. In-patients, Swanley, Kent. Out-patients, St. Bartholomew's Hospital. Fridays, 1.30 p.m. Apply to the Medical Superintendent for particulars.

Royal London Ophthalmic Hospital (Moorfields, 1801–1899), City-road, E.C. 138 beds.—This hospital, known as Moorfields Eye Hospital, was moved in 1899 to larger buildings in City-road. Last year there were 2,882 in-patients, the out-patients were 50,615, of whom 43,989 were new out-patients, and the attendances were 119,219. Operations are performed daily from 10 a.m. to 1 p.m., and four surgeons attend on each day. Students are admitted to the practice of the hospital. Fee for six months, £3 3*s.*; perpetual, £5 5*s.* Special courses of instruction, which extend over a period of five months are given by members of the Surgical Staff; beginning in October and March. A composition fee of 24 guineas (£25 4*s.*) will entitle students to a perpetual ticket, and will admit them once to all the lectures and classes and to the examination for the hospital's full certificate. A special course is also held in the preliminary subjects (Anatomy, Physiology, and Optics) for the various degrees in Ophthalmology. The fee for this course is 12 guineas. Students of the hospital are eligible for the offices of house surgeon or clinical and junior assistants. Junior assistants are appointed every three months. Any further information will be furnished by Mr. Robert J. Bland, Secretary Superintendent.

Royal Westminster Ophthalmic Hospital, King William-street (next door to Charing Cross Hospital), Strand, W.C. 2.—The hospital contains 40 beds. Out-patients, who number over 13,000 annually, are seen daily at 1 p.m., and operations are performed in the theatre at 3 p.m. The practice of the hospital is open to both men and women practitioners and students. Clinical evenings, at which interesting cases are shown and discussed, are held twice each term at 8 p.m. In addition to the ordinary clinical instruction, a systematic course of Lectures and Practical Classes commences in October, January, and May. Lectures in this course are given daily (except on Saturday) at 4.30 p.m., including all subjects required by candidates for the D.O.M.S. R.C.P. & S. Eng., Part II., and practical instruction is given in Operative Surgery and Ophthalmic Pathology and Bacteriology. A course in the subjects of Part I. has been arranged at King's College, to be held each winter and summer session, covering a period of four weeks. Fees: One month, £1 1*s.*; three months, £2 2*s.*; six months, £3 3*s.*; perpetual, £5 5*s.*; composition fee for perpetual ticket and attendance at classes (except Operative Surgery and Pathology, for which fee in each case is £2 2*s.* per course), £10 10*s.* Fee for course for Part I., £10 10*s.* Students of the hospital are eligible for appointment as house surgeon, assistant house surgeon, refraction assistant, and senior or junior clinical assistant. Full details can be obtained on application to the Dean.

Royal Eye Hospital, St. George's-circus, Southwark, S.E. 1.—There are 40 beds and 2 cots. In 1920 there were 53,434 attendances in the Out-patient Department, the new patients being 22,229. Clinical instruction is given to students and post-graduates daily at 2.30 p.m., and Lectures, Demonstrations, and Laboratory Classes are arranged in preparation for examinations in Ophthalmology. Post-graduate students are eligible for appointment as Clinical Assistants and as Refraction Officers. Dean: Mr. A. D. Griffith.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—This hospital has 40 beds and clinical teaching is given daily. Classes of instruction in the use of the ophthalmoscope, with demonstrations on cases, and also classes on refraction and other subjects, to meet the requirements of the Conjoint Board for the D.O.M.S., and of the University of London for the M.S. in Ophthalmology, are given during the winter months, commencing in October. The out-patient work begins at 1 o'clock, and operations are performed daily between 2 and 4 o'clock. This school is recognised as a teaching institution by the Universities of London and Oxford, and the Conjoint Board of the Royal Colleges of Surgeons and Physicians. The school has also undertaken to receive a portion of the pupils of the University College Hospital for the purposes of ophthalmic training. The Pathological and Bacteriological Laboratories have been rendered available for the use of any ophthalmic surgeons who desire to send specimens for examination. A small fee is charged for a report. Secretary: H. R. S. Druce.

Western Ophthalmic Hospital, Marylebone-road, N.W.—16 beds. Out-patient attendances, 29,487. Both In-patient and Out-patient Departments of this Hospital are open to medical graduates. Fees £1 1*s.* per three months. Honorary Secretary: H. W. Burleigh.

National Hospital for Diseases of the Heart, Westmoreland-street, W. 1.—The practice of the Hospital is open to Post-Graduates and others. Clinical instruction is given daily in the Out-patient Department. Special Courses in Cardiology, with Lectures, Demonstrations, &c., are held periodically. Appointments as Clinical Assistants are open to Post-Graduate members of these Courses. Special instruction in Electro-Cardiography can be obtained on application to the Dean. Applications for membership of Courses or for further information should be addressed to the Secretary at the hospital.

Hospital for Diseases of the Throat, Golden-square, W. (with which is amalgamated the London Throat Hospital, Great Portland-street).—Clinical instruction in the diagnosis and treatment of disease is given daily in the out-patient department from 2 to 5 p.m., and on Tuesdays and Fridays from 6.30 to 9 p.m. The hospital contains 60 beds for in-patients. There is an annual out-patient attendance of over 60,000. Minor operations are performed Tuesdays, Wednesdays, and Thursdays, at 9.30 a.m. Major operations are performed on Tuesdays, Wednesdays, Thursdays, and Fridays, at 10 a.m. Also Thursdays and Fridays at 2 p.m. Practitioners and medical students are admitted to the practice of the hospital at a fee of £5 5*s.* for three months, £7 7*s.* for six months, or £10 10*s.* for perpetual studentship. From amongst the students junior clinical assistants are appointed periodically. For terms and further information apply to the Dean, Mr. Lionel Colledge.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—The practice of the Hospital is largely consultative. The Hospital is open daily to all qualified medical practitioners on presentation of their visiting cards. Demonstrations of the cases and clinical instruction are given daily by the chief surgeon of each clinique. Clinical Assist-qualification, one year of which shall have been spent in attendance on the Surgical Practice of a recognised hospital. The diploma of Fellow is not conferred upon successful candidates until they have attained the age of 25 years.

The Regulations may be obtained on application to the Director of Examinations, Examination Hall, Queen-square, Bloomsbury, London, W.C. 1.

SOCIETY OF APOTHECARIES OF LONDON.

The Primary examination is held quarterly in two parts. Part I. Elementary Biology; Chemistry, Chemical Physics; Practical Chemistry; and Materia Medica and Pharmacy. Part II. includes Anatomy, Physiology, and Histology. This examination cannot be passed before the completion of twelve months Practical Anatomy with Demonstrations, and these subjects cannot be taken separately except in the event of the candidate having previously passed in one.

The Final examination is held monthly except in September. It is in two sections. Section I. consists of three parts. Part I. Principles and Practice of Surgery, Surgical Pathology, and Surgical Anatomy, Operative Manipulation, Instruments, and Appliances. Part II. Medicine, Pharmacology, Pathology, and Morbid Histology; Forensic Medicine, Hygiene, Theory and Practice of Vaccination; and Mental Diseases. Part III. includes Midwifery, Gynæcology, and Diseases of New-born Children and the Use of Obstetric Instruments and Appliances. Section II. of the Final examination consists of two Parts. Part I. Clinical Surgery; Part II. Clinical Medicine and Medical Anatomy.

The course of study for the *Final examination, Section I.*, includes attendance on the Surgical and Medical Practice, with Post-mortem Examinations, at a hospital connected with a medical school for a period of two winter and two summer sessions, including a course of Practical Midwifery, with attendance on 20 Midwifery cases. The course of medical study must extend over 45 months, and the offices of dresser or clinical clerk must be held at a hospital or other institution recognised by the Society. Two years must elapse after a candidate has passed the examination in Anatomy and Physiology before sitting for any part of the Final examination.

The course of study for the *Final Examination, Section II.*, includes either attendance on the Practice of Medicine and Surgery at a hospital or other institution recognised by the Society for a further period of 12 months, or six months as above and six months as a pupil of a registered practitioner holding a public medical or surgical appointment, or attendance at two special hospitals for six months (three months at each hospital), and for six months at a general hospital, all such hospitals to be recognised by the Society. Evidence shall also be given of practical instruction in Infectious Diseases and in Mental Diseases (at a lunatic asylum or in the wards of an institution containing a special ward set apart for the treatment of mental diseases), and in any two of the following subjects: Ophthalmic Surgery, Laryngology with Rhinology and Otology, Dermatology, and Diseases of Children. Candidates intending to present themselves for examination are required to give 14 days' notice. The fee for the Licence is 20 guineas. Female candidates are admitted to examinations. The examination offices are open from 10 A.M. to 4 P.M.; on Saturdays from 10 A.M. to 1 P.M. All letters should be addressed to the Secretary, Court of Examiners, Society of Apothecaries of London, Blackfriars, E.C. 4.

METROPOLITAN ANCILLARY SCHOOLS AND HOSPITALS AFFORDING FACILITIES FOR CLINICAL OBSERVATION.

The institutions which follow provide to the medical student and medical graduate facilities for different forms of instruction and clinical observation. In each case further information can be obtained from the secretary of the hospital.

THE SEAMEN'S HOSPITAL SOCIETY possesses three hospitals—the *Dreadnought* Hospital at Greenwich, 250 beds, and the Branch Hospital in the Royal Victoria and Albert Docks, E., 50 beds: the Hospital for Tropical Diseases, Endsleigh-gardens, 50 beds, London, N.W. 1; King George's Sanatorium for Sailors, Bramshott, Hants, and the Angas Home, 30 beds. It has also a Dispensary in the East India Dock-road from which patients are transferred to the hospitals. Secretary: Sir P. J. Michelli, C.M.G.

WEST LONDON HOSPITAL, Hammersmith, W. 6.—This hospital has 160 beds, all of which are constantly in use. 2294 in-patients and 35,466 out-patients, whose attendances numbered 195,030, were treated last year. Attached to the hospital is the West London Post-Graduate College. The practice of the hospital is reserved exclusively for qualified men, no junior students being admitted. Instruction is given in the medical and surgical out-patient rooms and demonstrations are given in the wards every morning and afternoon. Lectures and demonstrations are given daily. Special classes are held in Diseases of the Throat and Nose, Skin, and Eye, and in Gynæcology, Medical Electricity, Operative Surgery, Bacteriology, Anæsthetics, Intestinal Surgery, Medical and Surgical Diseases of Children, Blood and Urine, Clinical Microscopy, Tropical Medicine, Cystoscopy, Venereal Diseases, and Operative Ophthalmology. The accommodation for post-graduates consists of a large lecture room, together with reading, writing, and class rooms, &c. The hospital has a fully equipped pathological laboratory at which instruction is given in elementary bacteriology, a class being held every month. The fees for hospital practice, including lectures, are £9 9*s.* for three months, or £23 12*s.* 6*d.* for one year. The certificate of the hospital is accepted by the Admiralty, War Office, Colonial Office, and India Office in cases of study leave. Further information can be obtained on application to the Deans, Dr. Arthur Saunders and Mr. Bishop Harman, at the Hospital. Secretary of the Hospital: Mr. H. A. Madge.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N. 7.—This hospital is recognised by the Examining Board in England of the Royal Colleges of Physicians and Surgeons as a place of study during the fifth year of the medical curriculum. Besides the Honorary Staff there are six Anæsthetists, Pathologist, Resident Medical officer, two resident House Physicians three resident House Surgeons, and resident casualty officer. The hospital contains 210 beds, which are fully occupied. There is also a ward for children under five years of age. The large rectangular and circular wards, each of which contains 25 beds, the observation wards, the two operation theatres, general and special out-patient and pathological departments, are specially designed with a view of offering the greatest facilities for clinical work. There is also a well-appointed physio-therapeutic department. The pathological department has been extended and is under the control of a Director of Clinical Pathology. The Reckitt Convalescent Home at Clacton-on-Sea belongs to the Hospital. It contains 30 beds. Special departments have also been established for the treatment of tuberculosis and venereal diseases. A Hospital of Recovery containing 60 beds has now been established at "Grovelands," Southgate, patients being removed from the main hospital by ambulance five or six days after operation. Medical practitioners are cordially invited to see the general and special practice of the hospital. Demonstrations are given daily in the wards and out-patients departments. Clinical assistants (qualified), clinical clerks, and pathological clerks are appointed in the general and special departments and may receive certificates at the end of their terms of office.

Further particulars from the Secretary of the Medical Committee at the Hospital.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham. This hospital is in the midst of a densely populated neighbourhood and contains medical, surgical, gynæcological, and children's wards, having 125 beds. There are special departments for gynæcological cases, pathological laboratory. Attendance on the practice of this hospital qualifies for all the examining boards. There is also a Private Nursing Staff attached to the hospital. For particulars as to fees, &c., apply to the Matron. A new wing was added in 1897. Arrangements may be made by which gentlemen in practice desiring to increase their qualifications may have the use of the museum and library and other facilities and by which students may attend midwifery. A new Operating Theatre was opened in 1906 (the gift of Mrs. Nosworthy of Newlands, Dawlish, Devon). The Electrical Treatment Department (the gift of Mrs. M. A. Sanders) was opened in 1907 by Lady Duckworth-King. A department was opened in 1917 for the treatment of genito-urinary diseases; there are three sessions per week, two for men at 3 P.M. and 7 P.M., and one for women at 3 P.M.

West of England Eye Infirmary, Exeter.—Secretary: Mr. W. W. Beer. The infirmary contains 64 beds. Students of the Exeter Hospital can attend the practice of the Eye Infirmary. Patients for the year ending Michaelmas, 1920, 2985. A ward is set aside for newly-born babies suffering from infectious eye diseases. The mothers are accommodated with their babies.

Gloucestershire Royal Infirmary and Eye Institution, Gloucester.—This hospital, which was granted the title of "Royal" on the occasion of King Edward VII.'s visit to Gloucester in the year 1909, has 140 beds. Secretary: Captain G. Hurford. In-patients, 1719; out-patients, 9062. An electrical and massage department has been established and venereal clinic opened. Also ear, nose and throat department.

North Staffordshire Infirmary, Hartshill, Stoke-on-Trent.—The New Infirmary, opened in 1869, is built on the pavilion plan, has accommodation for about 250 patients, including Children's wards, and a special department for the treatment of Diseases of the Eye, a special X Ray and Electrical Department, a special department for the treatment of Diseases of the Ear, Nose, and Throat, a special orthopædic department, and venereal diseases clinics, so that there are excellent facilities for acquiring a practical knowledge of the profession. During the last six years the sum of £35,000 has been spent on new buildings and alterations. A new Out-patient Department, costing £12,000, a new Children's Ward of 30 beds, a new Pathological Department, and a second large Operation Theatre are amongst the structural improvements already completed. The whole institution is now equipped in a thoroughly up-to-date manner. Secretary and House Governor: Mr. W. Stevenson.

Hull Royal Infirmary, Hull.—This Hospital contains 256 beds, and since its establishment in 1782 until the erection of the circular wards in 1907 has undergone steady additions and improvements. A branch convalescent home and sanatorium for consumption at Withernsea are special features of the charity.

Leicester Royal Infirmary, Leicester.—Instruction in the infirmary for first-year students is duly recognised by the various examining bodies. At the General Infirmary there are 233 beds, and at the Children's Hospital in connexion 70; venereal diseases, 17; total 320. A new wing containing 100 beds is in course of construction. A reconstruction scheme has been carried out, and £200,000 spent on bringing the accommodation of the institution to a modern standard of efficiency. This scheme has included the provision of two modern operating theatres, and self-contained out-patients' department. The Children's Hospital has been reconstructed and enlarged by the addition of a third ward at a cost of £14,500. Open-air balconies on all three floors are a feature. A central sterilising department has been provided. Pathological Laboratories and post-mortem rooms have recently been opened at a cost of £11,000, also an orthopædic out-patient department at a cost of £9500, £5000 of which was provided by the Freemasons of the province as their war memorial. The Nurses' Home is at present undergoing enlargement for 60 additional bedrooms. The Royal Infirmary celebrates its 150th anniversary this year and an effort is being made to raise a sum of £100,000 in commemoration. Funds are being raised for the foundation of a City University, and a splendid site was presented by the late Mr. T. Fielding Johnson, J.P., an ex-chairman of the Royal Infirmary. There are eight resident salaried medical officers at the Infirmary—viz., four house surgeons, one house physician, one assistant house physician, and two dressers. Dressers are given an honorarium. Students are encouraged to make full use of the facilities which exist to gain clinical knowledge in the wards. The hon. medical and surgical staff are wishful of affording instruction in a variety of conditions which an active and well equipped general hospital in a large commercial centre is called upon to treat. Chairman of the Board: Mr. T. Fielding Johnson, J.P. Deputy Chairman of the Board: Mr. C. J. Bond, C.M.G., F.R.C.S. House Governor and Secretary: Mr. Harry Johnson.

Northampton General Hospital, Northampton.—Two new wings were opened in 1904 and the old buildings entirely renovated and rearranged. The number of beds is 231, 34 of which are occupied by discharged disabled pensioners. Non-resident pupils received and have every opportunity of acquiring a practical knowledge of their profession. The fee is £10 10*s.* Pupils can be received at any time. An up-to-date Pathological Laboratory has recently been erected.

Norfolk and Norwich Hospital, Norwich.—This hospital has at present 300 beds. There is a convalescent home at Cromer. Students are admitted to the practice of the Hospital for a fee of £5 5*s.* for six months. Secretary: Mr. Frank Inch.

Nottingham General Hospital.—There are at this hospital 300 beds available for medical and surgical civilian patients, 60 for pensioners, and 40 beds are in the detached ward known as "The Cedars" Convalescent Hospital. The Medical and Surgical Staffs consist of two Honorary Consulting Physicians; 3 Honorary Consulting Surgeons, 1 Honorary Consulting Physician in Venereal Diseases; 3 Honorary Physicians; 4 Honorary Surgeons; 2 Honorary Assistant Physicians; 2 Honorary Assistant Surgeons; 2 Honorary Aural Surgeons; 1 Honorary Dermatologist; 2 Honorary Anæsthetists; 1 Honorary Surgeon Dentist and 1 Honorary Medical Officer in Charge of X ray and Electro-therapeutic department. The Resident Medical Staff consists of 2 House Physicians, 4 House Surgeons and 1 Casualty Officer. The special departments are the Ear, Nose and Throat, Skin, Dental, Massage and Exercise, X ray, Orthopædic, Electro-therapeutic. House Governor and Secretary: Mr. P. M. MacColl. Assistant Secretary: Mr. John S. Birbeck.

South Devon and East Cornwall Hospital, Plymouth.—This hospital contains 188 beds (12 of which are for Venereal Diseases in a separate building). There is also an Out-patient Venereal Diseases Clinic. There is a Pathological Laboratory, Special Departments for X ray and Finsen light, an Out-patient civil Orthopædic Clinic under the Ministry of Pensions, also a civil Orthopædic Department. Pensioners are also received as in-patients. The hospital is a centre for the treatment of Tropical Diseases.

Royal Hospital, Portsmouth (founded 1847).—The number of beds is 160. The hospital has X ray and Massage Departments. The hospital is a preparatory school of Medicine and Surgery; the attendance of pupils at this hospital is recognised by the Examining Boards. Particulars of the Secretary at the hospital.

Royal Berkshire Hospital, Reading.—This hospital, which contains 220 beds, has been recently enlarged, the additions including a new Out-patient Department, a Casualty Department, an X ray Department, Electro-therapeutic and Massage Department, a V.D. clinic, a Laboratory, an Eye Theatre, and Eye Wards.

The hospital has been recognised by the Conjoint Board for England as a place where six months of the fifth year may be spent in clinical work. The medical practice of the hospital is also recognised by the University of London, the Apothecaries' Society, and the Army and Navy and Indian Medical Boards. Dean of the Medical School: Dr. L. S. Burrell, from whom particulars of lectures, clinical appointments, and hospital practice can be obtained.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—During the past year 1068 in-patients have been treated in the wards. The out-patients treated during 1920 numbered 12,176. Address "Secretary of the Medical Committee."

Royal Chest Hospital (for all affections of the heart and lungs), City-road, E.C. (80 beds).—This hospital provides accommodation for 80 in-patients. Expenditure for 1920 £17,103, income £15,397. The attendance of out-patients averages 35,000 annually. Secretary: Mr. A. T. Mays.

The Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Heart, Northwood, Central Out-patient Department, Fitzroy-square, W.—The hospital contains 110 beds, Medical and Surgical. Number of in-patients, 400; out-patients, 2306. Resident Medical Staff. Clinical Demonstrations are given by the Visiting Medical Staff at the hospital at Northwood. Clinical assistants are appointed to physicians in the wards and in the out-patient department. Secretary: Mr. W. J. Morton.

Queen Charlotte's Lying-in Hospital and Midwifery Training School, Marylebone-road, N.W.—This hospital receives about 2000 patients annually, besides having a large out-patient department. Medical pupils are received at all times of the year. Pupils have unusual opportunities of seeing obstetric complications and operative midwifery, on account of the very large number of primi-parous cases—nearly one-half of the total admissions. Clinical instruction is given on the more important cases which present themselves. Special Lecture-demonstrations are given by members of the staff. Certificates of attendance at this hospital are recognised by all the Universities, Colleges, and licensing bodies. Pupil midwives and monthly nurses are received and specially trained. A Residential College provides accommodation for five men at a time, students and qualified practitioners, and is opposite the hospital, with which it is in telephonic communication. Arrangements have been made for Medical Students to receive the preliminary instruction in Practical Midwifery recommended by the General Medical Council. Women students are received. For further particulars application should be made to Mr. Arthur Watts, Secretary, at the hospital.

Hospital for Women, Soho-square, W.—The teaching in connexion with the above hospital has been greatly extended, and is available for Post-Graduates only, in limited numbers. Every facility is afforded them, by the teaching staff, of obtaining experience in diagnosis and treatment of Gynæcological diseases. The hospital contains 68 beds, and the out-patient attendances are over 14,000 per annum. Operations take place daily at 2 o'clock except on Saturdays. The X ray department is supplied with the latest installation both for diagnosis and treatment, and experience can also be gained in the treatment of malignant disease by means of radium. Incorporated with the hospital is the London School of Gynæcology, which has three Sessions in the year, each of eight weeks duration comprising attendance in Out-patients, operating theatre, Clinical lectures, demonstrations in Pathology and X ray treatment. For further particulars apply to the Dean, Dr. Sidney Forsdike.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Qualified practitioners are admitted as clinical assistants to both the in- and out-patient departments. Demonstrations are given daily in both departments. The fees, payable in advance, are £3 3s. for three months. Full particulars may be obtained on application to the Secretary at the hospital. There are 70 beds. Secretary: Mr. G. H. Hawkins.

East London Hospital for Children and Dispensary for Women, Glamis-road, Shadwell, E.—The hospital maintains 130 cots, and on an average 245 out-patients are seen daily. Clinical instruction is given by the physicians and surgeons to the hospital, which is recognised by the Conjoint Board for England as a school of medical teaching for students in the fifth year of the curriculum. All particulars may be obtained on application to the Secretary. Two clinical clerkships for qualified or unqualified students are open every three months subject to reappointment if desired. Clinical assistants (qualified men only) are from time to time appointed in the out-patient department. Any additional information may be obtained on applying to Mr. W. M. Wilcox, the Secretary.

The Hospital for Sick Children, Great Ormond-street, W.C. 1, contains 240 beds, besides 30 beds at the Branch Hospital, Highgate. The hospital having been recognised by the Conjoint Board for England as a place where, under the new curriculum, six months of the fifth year may be spent in clinical work, the practice is arranged to meet this need and is open to students of both sexes who have completed four years of medical study and also to qualified medical men and women. The medical staff are recognised by the University of London as teachers in Diseases of Children. Arrangements have also been made with University College Hospital and the London School of Medicine for Women for the routine admission of their students of both sexes to clerkships and dresserships in the wards. Appointments are made every three months to six medical clerkships, which are open to students of the hospital. Clinical instruction is given daily by members of the visiting staff. Fees for hospital practice, one month, £2 2s.; three months, 5 guineas; perpetual ticket, 10 guineas. Clinical Clerks, 1 guinea for one month. Ophthalmological Clerkships.—Clinical Clerks are appointed once a month. Fees £1 1s. for one month's attendance. Pathological Clerkships.—Facilities are afforded for obtaining theoretical and practical instruction in Clinical Pathology and Bacteriology in the Pathological Laboratories. Clerks attend for about four hours daily. Fees: For one month, £3 3s.; for two months, £5 5s.; for three months, £6 6s. A reduction is made in the case of those already holding tickets for general attendance at the hospital. Time so spent in clerking and dressing is recognised by the Universities of London, Oxford, and Cambridge, and by the Conjoint Board for England as part of the approved curriculum for students entering for a final examination. These appointments are open to students of all recognised medical schools. In addition, special lectures in post-graduate work are held throughout each term of the year, as well as routine post-graduate instruction daily. Details may be obtained by application to the Dean or Secretary at the hospital. The medical school is a constituent part of the new London Post-Graduate Association. Acting Sec.: Mr. James McKay.

Evelina Hospital for Sick Children, Southwark Bridge-road, S.E.—This hospital contains 70 cots and a very extensive Out-patient Department. About ten clinical assistants (either sex), to work with the Honorary Medical Staff for Out-patients, are appointed quarterly for a period of three months; there is no salary attached to these posts: but, on the other hand, no fees are charged. Secretary: H. C. Staniland Smith.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—The hospital contains 101 beds and has a large out-patient department (over 1200 weekly); the home at Broadstairs has 50 beds. Out-patients are seen as under:—Diseases of the Eye: Tuesday, 2 P.M. Diseases of the Skin: Wednesday, 1.30 P.M. Whooping-cough Cases: Friday, 2 P.M. Dental Cases: Thursday, 1.30 P.M. Medical and Surgical Cases: Mornings at 9.30 and 11.30. Accidents and urgent cases are admitted at any time. Secretary: Mr. D. St. John Bamford.

part in the Courses given under the auspices of the Edinburgh Post-Graduate Courses in Medicine. In the departments of the Faculty of Medicine, provision is made for research by students of graduate standing. In the University laboratories facilities will be provided for candidates for the Degree of Ph.D. whose applications to engage in research have been accepted by the Senatus.

The University of Edinburgh is especially rich in scholarships and prizes in medical subjects. Full particulars can be obtained from the Dean of the Medical Faculty.

SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, Edinburgh.—The number of students varies much in the classes and subjects. It is within the limit to say that about 1000 students avail themselves each session of the opportunity of attending the school. The lectures qualify for the University of Edinburgh and other Universities, the Royal Colleges of Physicians and Surgeons of London, Edinburgh, and Dublin, the Faculty of Physicians and Surgeons of Glasgow, and other Medical and Surgical and Public Boards.

The practical classes and laboratories will open and the lectures commence on Oct. 5th.

In accordance with the statutes of the University of Edinburgh one-half of the qualifying classes required for graduation may be attended in this school. The regulations require that the fee for any class taken for graduation in Edinburgh shall be the same as that for the corresponding class in the University. The whole education required for graduation at the University of London may be taken in this school.

Special courses of instruction for dental students are also included in the curriculum of this school.

The minimum cost of the education in this School of Medicine for the Triple Qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, including the fees for the Joint Examinations, is about £200, payment of which is distributed over the period of study. There is no composition fee.

Further particulars regarding the school, also its calendar (price 6*d.*) may be had on application to the Dean of the School, 11, Bristo-place, Edinburgh.

Clinical Instruction.—ROYAL INFIRMARY, Edinburgh.—This hospital has 921 beds and 42 cots for children. Courses of Clinical Medicine and Surgery are given by the physicians and surgeons to male and female students. Special instruction is given on Diseases of Women, Physical Diagnosis, Diseases of the Skin, Diseases of the Eye, the Ear, the Larynx, and the Teeth. Separate wards are devoted to Venereal Diseases, Diseases of Women, Diseases of the Eye, the Ear, Throat and Nose, and the Skin, and also to cases of Incidental Delirium or Insanity. There are also large and complete Medico-Electrical and X Ray and Bathing Departments. Post-mortem examinations are conducted in the anatomical theatre by the pathologist and his assistants, who also give practical instruction in Pathological Anatomy and Histology. The fees for hospital attendance are as follows—viz.: Perpetual ticket, in one payment, £12; annual ticket, £6 6*s.*; six months, £4 4*s.*; three months, £2 2*s.*; monthly, £1 1*s.* Separate payments amounting to £12 12*s.* entitle the student to a life ticket. No fees are paid for any medical or surgical appointment. The appointments are as follows: 1. Resident physicians and surgeons are appointed and live in the house free of charge. The appointment is for six months, but may be renewed at the end of that period by special recommendation. 2. Non-resident house physicians and surgeons and clinical assistants are appointed for six months. The appointment may be renewed for a like period by special recommendation. 3. Clerks and dressers are appointed by the physicians and surgeons. These appointments are open to all students and junior practitioners holding hospital tickets. 4. Assistants in the Pathological Department are appointed by the pathologist.

ROYAL HOSPITAL FOR SICK CHILDREN, Sciennes-road, Edinburgh.—This hospital contains 120 beds, and is fitted with every modern improvement. A fully equipped out-patient department (medical and surgical) is conducted daily in a building adjoining the hospital. Systematic courses of instruction, which qualify for graduation in the Edinburgh University and elsewhere, are given from time to time throughout the year by the staff. Students may enter at any time. Full particulars can be obtained from the Registrar at the hospital.

EYE, EAR, AND THROAT INFIRMARY OF EDINBURGH, 6, Cambridge-street, Lothian-road.—Clinical Lectures and Instruction are given in this institution, which is open at 1 o'clock daily for outdoor patients for Eye Diseases; Mondays, Thursdays, and Saturdays at 12 noon, and Tuesdays and Fridays at 4 P.M. for outdoor Ear, Nose, and Throat Patients. Special Practical Ophthalmoscopic Classes by arrangement. Patients whose diseases require operations or more than ordinary care are accommodated in the house. Secretary: Mr. J. P. Watson, W.S., 32, Charlotte-sq.

UNIVERSITY OF GLASGOW.

The University of Glasgow is both a teaching and a degree-granting body, but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations. Within certain limits instruction given by recognised medical schools and teachers may be accepted, but not less than one-half of the subjects other than clinical must be taken in this or some other recognised university, and at least two years of the course must be taken in Glasgow University. Six degrees, open both to men and women, are conferred: M.B. and Ch.B. (always conjointly), M.D. and Ch.M.; B.Sc. in Public Health; D.Sc. in Public Health; and B.Sc. in Pharmacy.

All information as regards the extent and standard of the Preliminary Examination may be obtained by application to the Secretary, Scottish Universities Entrance Board, 81, North-street, St. Andrews.

For the degrees of M.B. and Ch.B. a curriculum of five years is required. The candidate must, during his curriculum, have attended a course or courses of instruction in each of the following subjects of study, extending over not less than the number of terms specified in each case, and including such class examinations as may be prescribed in connexion with the several courses:—Chemistry (including Organic Chemistry), two terms; with Practical Chemistry, one term; Physics (with practical work), one term; Botany (with practical work), one term; Zoology (with practical work), one term; Anatomy and Practical Anatomy, five terms; Physiology and Practical Physiology, three terms; Materia Medica and Therapeutics (together or separately), each subject, one term; Pathology and Practical Pathology, three terms; Medical Jurisprudence and Public Health (together or separately), each subject, one term; Midwifery and Diseases peculiar to Women and to Infants, two terms; Surgery, two terms; Medicine, two terms. Candidates must attend for at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons. At least nine months' hospital attendance is required on both Clinical Surgery and Clinical Medicine, and the student must have acted for six months as clerk in medical and dresser in surgical wards, and must have had six months' outdoor practice; he must also have attended a course of Mental Diseases and of Practical Pharmacy (25 meetings), must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying-in Hospital. The University also requires further study in various special subjects.

There are four Professional Examinations, the first comprising Botany, Zoology, Physics, and Chemistry; the second comprising Anatomy and Physiology; the third comprising Materia Medica and Therapeutics ants are appointed and are expected to hold office for at least three months. They are required to attend twice weekly at 1.30 o'clock for the afternoon, and at 4.30 o'clock for the evening Clinics. Full syllabus can be obtained on application to the Dean.

THE METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL.—The hospital is in Fitzroy-square, W. The Out-patient Department is opened daily at 2.30 P.M. to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in-patients are performed on Tuesdays, Wednesdays, Thursdays, and Fridays at 10 A.M. Fee for one month's attendance at the hospital £3 3*s*., and for three months £5 5*s*. Clinical Assistants are appointed as vacancies occur, and have responsible duties. Applications should be made to the Honorary Secretary, Dr. Jobson Horne.

ROYAL EAR HOSPITAL.—This Hospital is now the Ear, Nose and Throat Department of University College Hospital, where all the clinics are held.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C. (Founded 1835.)—The hospital contains for men and women 54 beds. Operations are performed on Mondays, Wednesdays, and Thursdays at 2.30 P.M. Medical practitioners and students are invited to the operations and to the clinical instruction in the wards and in the out-patient department. Average out-patient attendances, 4464 per year. Average in-patients, 675 per year.

ST. PETER'S HOSPITAL FOR STONE AND OTHER URINARY DISEASES, Henrietta-street, Covent Garden. Established 1860. New Hospital opened 1882.—The hospital contains 30 beds for men and 2 beds for women and children. Medical practitioners and students are invited to the clinical instructions which are given in the wards and out-patient department daily, and to the operations in the theatre on Mondays, Wednesdays and Fridays at 2 P.M. Average beds occupied daily, 30; average out-patients seen daily, 100.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C. 2.—The in-patient department, 40 beds, is at 262, Uxbridge-road, W. 12. The out-patient practice is open to the medical profession every day at 2 and every evening (except Saturday) at 6. At the afternoon clinics demonstrations on the different diseases presenting themselves are given. Venereal Diseases, under the Government scheme, are admitted at all clinics. The X ray department is open every afternoon except Saturday. The Chesterfield Lectures are given on Thursdays at 6 P.M., October to March, commencing Oct. 6th. At the end of the course the Chesterfield medal may be competed for by those who have attended three-fourths of the lectures. Special laboratory courses in Pathology and Bacteriology of the Skin may be arranged for.

LONDON LOCK HOSPITAL AND RESCUE HOME.—In the Institution at Harrow-road, W. 2, there are 202 beds, and 691 patients were admitted in 1920. In the Male Hospital and Out-patient Department in Dean-street, Soho, W., there are 43 beds, which during 1920 accommodated 640 patients. 99,089 out-patients were treated. 12,000 injections of the substitutes for salvarsan were made in 1920. Male patients are seen at 91, Dean-street on Mondays and Tuesdays from 1 to 2 P.M., and from 6 to 8 P.M.; on Wednesdays from 6 to 8 P.M.; on Thursdays, 5 to 7 P.M. (female patients); on Fridays from 5 to 7 P.M. (female patients); and on Saturdays from 2 to 4 P.M. (males). Pathological Department, Mondays, Tuesdays, and Wednesdays at 6.30 P.M., Thursdays and Fridays at 5 P.M., and Saturdays at 1 o'clock. Days for intravenous injections, 91, Dean-street, W. 1, Tuesdays and Saturdays at 9 A.M. (men); women, Thursdays at 5.30 P.M. Fridays at 5.30 P.M. Female patients are seen at 283, Harrow-road, Paddington, Tuesdays, Wednesdays, and Thursdays at 2 P.M. to 3 P.M., and irrigations are given every evening from 6 to 8 P.M. The next Special Course of Lectures will be held in October. Secretary, Henry J. Eason. Head Office: 283, Harrow-road, W. 9.

ENGLISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

Under this heading we include all the hospitals which are recognised by the English Royal Colleges for a part of the required attendance on medical and surgical practice, for medical clerkships, and surgical dresserships. The list includes nearly every hospital of a general character in the country having more than 150 beds, though occasionally a large hospital is omitted because equally good opportunities are afforded to students at other institutions in its neighbourhood, while a small hospital may be included because no such facilities for study are present elsewhere. The list is arranged alphabetically as to the town where the hospital is located. Most of the larger general hospitals of the kingdom have already been noticed in connexion with the Universities.

BATH ROYAL UNITED HOSPITAL, Bath.—This hospital contains 130 beds, and possesses X ray and Bacteriological Departments, and a fine library. Secretary: Mr. J. M. Sheppard. V.D. Clinics are held on Tuesdays (for women), and on Fridays and Saturdays (for men) from 5 to 7 P.M.

BEDFORD COUNTY HOSPITAL, Bedford.—This hospital has 100 beds, with X ray and Pathological Departments, and a convalescent home at Aspley Heath, near Woburn Sands, in connexion with the institution. Secretary: Mr. Beauchamp Wadmore.

BRADFORD ROYAL INFIRMARY, Bradford.—This hospital contains 215 beds. The material passing through the surgical wards consists of major operations, chiefly abdominal, and gynæcological work, and affords excellent facilities for either students or post-graduates. There are special clinics for Orthopædic and Venereal cases. Plans for a new hospital of 382 beds have been adopted, and building operations will be commenced as soon as funds will allow.

ROYAL SUSSEX COUNTY HOSPITAL, Brighton (231 beds).—This Hospital affords ample facilities for students, possessing a large out-patient department, including Ophthalmic, Dental, Dermatological, Gynæcological, X ray, and Massage sections, and a well-appointed clinical research and bacteriological department. The hospital does not take resident pupils, but out-pupils may attend the practice of the hospital for any period not exceeding two years, on payment in advance of a fee, not exceeding 20 guineas, as the Board of Management shall direct.

KENT AND CANTERBURY GENERAL HOSPITAL, Canterbury.—The hospital contains 110 beds. Pupils of the staff are admitted to the practice of the hospital. Operations four days of the week. There is an Ophthalmic Department, a Venereal Clinic, an Orthopædic Department, &c. Secretary, Mr. F. P. Carroll.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry (established 1840).—This hospital contains 241 beds, and a new wing as well as theatre and kitchens have been added. Special clinics are held for diseases of the Eyes, Ears, Nose and Throat; Gynæcology; X ray and Electrical Treatment. There are also V.D. Clinics. Clinical students are received, and there are paying wards. Secretary: Miss R. Hooper.

DERBYSHIRE ROYAL INFIRMARY, Derby.—This hospital contains 320 beds. It was founded in 1810, and was entirely rebuilt and enlarged 1892–1915 on the most modern lines at a cost of over £111,000. There is a separate ophthalmic block of 33 beds, a separate children's block of 31 beds, and a special department for gynæcological cases. There are three resident house surgeons, a resident house physician, and an assistant house surgeon and casualty officer. There are also well-equipped orthopædic X ray, electrical, and venereal diseases departments. Registered medical students are admitted to witness the medical and surgical practice on payment of 10 guineas annually.

ROYAL DEVON AND EXETER HOSPITAL, Exeter.—The hospital contains 200 beds, extending to 250 in 1922 (including special children's ward) and has a good library, museum, post-mortem room, and

Royal Infirmary, Glasgow.—The ancient connexion between the University of Glasgow and the Royal Infirmary was revived in 1911, when four University Chairs and several University Lectureships were established at the infirmary. St. Mungo's College is situated in the infirmary grounds. The infirmary has. including the Ophthalmic Department, 700 beds. There are special beds and wards for diseases of women, of the throat, nose, and ear, skin, venereal diseases, burns and septic cases. The wards are open to Women Students. At the Out-door Department the attendances in 1920 numbered about 168,610. In addition to the large medical and surgical departments there are departments for special diseases—viz., diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. Five house physicians and 12 house surgeons, who board in the hospital free of charge, are appointed every six months. Clerks and dressers are appointed by the physicians and surgeons. As a large number of cases of acute diseases and accidents of a varied character are received these appointments are very valuable and desirable. There is a modern and fully equipped Electrical Pavilion, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. The fees for Hospital Practice, Clinical Lectures, Pathology and Bacteriology are in course of revision. Post-graduate Classes are held during September in Clinical Medicine, Clinical Surgery, Clinical Gynæcology, Diseases of the Skin, Venereal Disease in the Male, Diseases of the Throat, Nose and Ear, and in Diseases of the Eye. For information regarding fees and other particulars, application should be made to the Superintendent.

Glasgow Western Infirmary.—This hospital adjoins the University of Glasgow. Number of beds upwards of 600. Special wards are set apart for Diseases of Women, Throat, Nose, and Ear, and for Affections of the Skin. In the out-patient department there are special clinics for Diseases of Women and for Diseases of the Throat, Ear, Teeth, Skin, Venereal Disease, and Electro-therapeutics. The Clinical Courses are given by the physicians and surgeons, each of whom conducts a separate class, and students require to enter their names at the beginning of the session for the class which they propose to attend. Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class. All the courses of clinical instruction are recognised by the University of Glasgow and the other boards in the kingdom. In the Pathological Department the course is both systematic and practical, also post-graduate courses, and extends through the winter and following summer; these are likewise recognised by the University for graduation. Eighteen resident assistants are appointed annually, without salary, from those who have completed their course. The fee for hospital attendance is £7, and the fees for clinical instruction are £3 3*s.* for the Winter Session and £2 2*s.* for the Summer Session. A Clinical Laboratory has been opened, and students receive laboratory instruction from the lecturer on clinical methods. Secretary: J. Matheson Johnston, C.A., 87, Union-st.

A School of Massage, Medical Electricity, and Swedish Remedial Exercises has been established to qualify for the Certificate of the Chartered Society of Massage and Medical Gymnastics.

Royal Hospital for Sick Children, Yorkhill, Glasgow.—This institution, which was founded in 1882, consists of: (1) a hospital at Yorkhill containing 270 cots built on an elevated and central site close to the University and opened in July, 1914; (2) a Dispensary, or Out-patient Department, in West Graham-street, opened in October, 1888; and (3) a country branch at Drumchapel, Dumbartonshire, containing 30 cots, opened in 1903. Children treated must not be over 13 years of age and suffering from non-infectious diseases. In the hospital about 5000 children are treated annually. In the Out-patient Departments over 12,000 are treated annually, involving nearly 50,000 attendances. There are two lectureships in the University of Glasgow in connexion with the hospital, one on the Medical Diseases of Infancy and Childhood, and the other on Surgery and Orthopædics in Relation to Infancy and Childhood. These lectureships are held by the Visiting Physician, Dr. Leonard Findlay, and the Visiting Surgeon, Mr. Alex. MacLennan. The lectures are both systematic and clinical, but particularly and chiefly the latter. In addition special facilities are given for post-graduate study. Information with regard to clinical instruction, lectures, demonstrations, post-graduate study, &c., may be obtained from the Med. Superintendent.

The Glasgow Royal Maternity and Women's Hospital, Rottenrow.—The new hospital, which was opened in 1908, is in point of size the largest of its kind in Britain and has accommodation for 108 patients. A Maternity and Child Welfare Centre has been established in connexion with the hospital, consisting of a complete In-door and Out-door Ante-natal Department and an Infant Consultation Clinic. In 1920 3852 normal cases and 2919 abnormal cases were treated by the hospital in the In-door and Out-door Departments. Secretary: Mr. William Guy, 146, Buchanan-street. Full particulars as to fees and accommodation may be obtained from the House Superintendent at the hospital.

Royal Samaritan Hospital for Women, Glasgow.—This hospital, founded in 1886, is one of the largest purely gynæcological hospitals in Great Britain, possessing, as it does, over 90 beds. It offers excellent facilities for clinical instruction in the diseases peculiar to women, treating in the wards and in the out-patient department some 4000 cases per annum. The surgeons, four in number, visit the wards in the mornings. For further information application may be made at the Hospital, or to Thos. Macquaker, hon. sec., 149, St. Vincent-street, Glasgow.

Glasgow Lock Hospital, 41, Rottenrow.—The hospital contains 83 beds. During 1920 493 patients were admitted to the wards; 20,577 visits were made by out-door patients at the dispensary. Classes are held for the clinical instruction of medical students and practitioners. J. Neilson Gray, LL.B., secretary and treasurer, 65, Bath-street, Glasgow.

Glasgow Ophthalmic Institution, 126, West Regent-street (30 beds and six cots).—Clinical and systematic course of lectures for students during the winter and summer sessions. In-patients, 899, out- or dispensary patients, 13,918; daily average of attendances, 137; total attendances, 38,407. Operations on Wednesdays and Saturdays. This institution is the Ophthalmic Department of the Royal Infirmary. Clinical instruction is given during both summer and winter sessions to men and women students attending the University. During September post-graduate courses will be held in connexion with the Glasgow Royal Infirmary. Secretary and Cashier: R. Morrison Smith, C.A., 135, Buchanan-street, Glasgow.

Glasgow Eye Infirmary, Berkeley-street and Charlotte-street.—This institution, the largest of its kind in Scotland, was founded in 1824. The average number of new patients for the last ten years has been 26,965 and the total number of cases in 1920 was 25,952. The wards and dispensary are recognised by the University of Glasgow for the purpose of instruction in ophthalmology for graduation in medicine. A Venereal Centre has been established, and a Branch Dispensary has been opened in Clydebank. Secretary and Acting Treasurer: Harold John Black, 88, West Regent-street, Glasgow. The medical session opens in October. A Post-graduate Class will be held.

Glasgow Hospital for Diseases of the Ear, Nose, and Throat, 27 and 28, Elmbank-crescent.—12 beds and three cots. New patients, 6008. Attendances at out-patient department 20,339. Admitted to in-door department 408. Clinical instruction is given in connexion with Dr. Connal's course on Diseases of the Ear at Anderson's College and Dr. Syme's course on Diseases of the Throat and Nose at the Western Medical School. A course of post-graduate study has been conducted by the staff of the hospital. Secretary: Mr. P. T. Young.

SALISBURY GENERAL INFIRMARY, Salisbury.—This hospital contains 145 beds. The average attendance for six months is: in-patients, 102 daily average; out-patients, 830, including ophthalmic cases 102 and X ray cases 282; attendances on 1993 casuals. Secretary: Mr. S. B. Smith. These figures are for six months only.

ROYAL SALOP INFIRMARY, Shrewsbury.—This hospital has 160 beds. In-patients, 1543; out-patients, 1394; out-patients' attendances for the year, 22,688; accidents and casualties, 2228. A site has been purchased adjoining the present Infirmary structure, and it is proposed to erect an annexe for children thereon. Secretary: Mr. Alfred Sugden.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL, Southampton.—This hospital contains 130 beds. In-patients, 2255; out-patients, 9845. Secretary: Mr. T. A. Fisher Hall.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford.—This hospital has 102 beds. In-patients, 705; out-patients, 2623. Secretary: Lieutenant A. E. Collins.

ROYAL HANTS COUNTY HOSPITAL, Winchester.—This hospital has 180 civilian beds. Secretary: Mr. Herbert Maslen.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL, Wolverhampton.—There are 210 beds. Special departments for Children, Infectious cases, Gynæcology, Ear, Throat, and Nose Diseases, Electro-therapeutic and X ray, Venereal Disease, and Pathological departments. There is an excellent library. The resident officers are a resident medical officer, resident casualty surgeon and two house surgeons. Pupils are allowed to witness the whole of the practice of the hospital and to be present at operations and have every opportunity of acquiring a practical knowledge of their profession. A course of Practical Pharmacy is given by the dispenser. Fees on application. Applications should be made to the Secretary of the Medical Committee.

WORCESTER GENERAL INFIRMARY, Worcester.—This hospital has 132 beds (temporarily reduced to 70). Pupils are taken by members of the Honorary Medical and Surgical Staff. Number of operations last year 1078. New X ray and Electrical Departments have been erected and are now in use. Additional accommodation for the Honorary Staff and Out-patients and also an Outdoor Shelter in connexion with the Children's Ward have been built as a memorial to King Edward VII. In-patients, 947; out-patients, 3199. Secretary: Mr. E. J. Holland.

YORK COUNTY HOSPITAL, York.—This hospital contains 186 beds. There are balconies for outdoor treatment and two installations of X ray apparatus. A Venereal Diseases Clinic is held.

SCHOOL OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The subjects of the Qualifying examination of the Pharmaceutical Society are:—Part 1: (a) Chemistry; (b) Physics; (c) Botany. Part 2: (a) Materia Medica: (b) Pharmacy, including Posology and the Translation and Dispensing of *Prescriptions*; (c) the law relating to the keeping, selling, and dispensing of poisons and poisonous substances. Fee, 12 guineas; for each subsequent examination after failure, 3 guineas. The advanced or Major examination (for registration as "pharmaceutical chemist") includes botany, chemistry and physics, practical chemistry, and materia medica. Fee, 3 guineas. The courses of instruction given in the Society's school cover the entire ground for both examinations. Medical students are admitted to the lectures and laboratory work in any or all the courses. Certificates of instruction in the School are received by the Conjoint Board of the Royal Colleges and by the University of London. Courses have been instituted in certain technical schools to prepare students for the examinations of the Pharmaceutical Society. Application for admission to the school, or for further information, may be made to the Dean, Professor Greenish, 17, Bloomsbury-square, London, W.C. 1.

II.—SCOTLAND.

THE UNIVERSITIES.

UNIVERSITY OF EDINBURGH.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The degree of Bachelor of Surgery cannot be conferred on any person who does not at the same time obtain the degree of Bachelor of Medicine, and similarly the degree of Bachelor of Medicine is not conferred on any person who does not at the same time obtain the degree of Bachelor of Surgery.

No one is admitted to the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* who has not been engaged in Medical and Surgical study for five years.

Candidates for the degrees of M.B. and Ch.B. must have attended for at least three academic years the medical and surgical practice either of the Royal Infirmary, Edinburgh, or of a general hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons. They must have attended Clinical Surgery during a course or courses extending over not less than nine months, and courses of instruction in all the subsidiary subjects. They must have attended a course of instruction in Practical Midwifery and have personally conducted at least 12 cases of labour.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations have effect:—Two of the five years of medical study must be spent in the University of Edinburgh. The remaining three years may be spent in any University of the United Kingdom, or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teacher as may be recognised for the purpose by the University Court. Of the subjects of study—viz., Anatomy, Practical Anatomy, Chemistry, Practical Chemistry, Materia Medica, Physiology, Practical Physiology, Practice of Medicine, Surgery, Midwifery and Diseases of Women, Pathology, Practical Pathology, Physics, Botany, Zoology, Medical Jurisprudence, and Public Health—not less than one-half must be taken in the University of Edinburgh, which corresponds to the two years above referred to.

Women are admitted to graduation in medicine under the same conditions as men.

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery is £34 13*s*., and the proportion of this sum to be paid by a candidate at each division of the examination shall be as follows—viz.: For the First Division of the Examination (Botany, Zoology Physics, and Chemistry), £0 0*s*.; for the Second Division (Anatomy and Physiology), £7 7*s*.; for the Third Division (Pathology and Materia Medica and Therapeutics), £6 6*s*.; and for the Final Division (Surgery and Clinical Surgery, Medicine and Clinical Medicine, Midwifery, Clinical Gynæcology, and Forensic Medicine and Public Health), £11 11*s*.

Bachelors of Medicine and *Bachelors of Surgery* may proceed to the degrees of *Doctor of Medicine* and *Master of Surgery* after they have spent one year in the medical or surgical wards respectively of a hospital, or the Military or Naval Medical Services, or in scientific work bearing directly on their profession, or two years in practice. In each case an examination must be passed and a thesis submitted for approval of the Faculty. The fee to be paid for the degree of M.D. is £21, and the fee to be paid for the degree of Ch.M. is £21.

Post-Graduate Instruction.—Courses of instruction are given for the Degrees of B.Sc. and D.Sc. in Public Health and for the University Diplomas in Public Health, Tropical Medicine and Hygiene, and Psychiatry. These Diplomas are open to approved registered practitioners as well as to graduates in Medicine and Surgery of the University. The University also takes they must have attended courses of at least nine months in clinical medicine and clinical surgery, and have acted as clerk in the medical and dresser in the surgical wards of a hospital. Attendance is required on the practice of a dispensary or the out-practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem Examinations, Venereal Diseases, and other special subjects. The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases.

The fee for the degrees of M.B. and Ch.B. amounts to £23 2*s.* (Fees are to be increased from between 33⅓ per cent. to 50 per cent. commencing Session, 1921–22.)

Besides the Royal Infirmary, students have the opportunity of attending the following institutions: City Fever Hospital, Sick Children's Hospital, General Dispensary, and Lying-in and Vaccine Institutions, Royal Lunatic Asylum, Ophthalmic Institutions, &c.

Degrees of M.D. and Ch.M.—Candidates for either of these degrees must already hold the degrees of M.B. and Ch.B. of Aberdeen. A thesis has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be.

A diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination.

Application for further information should be addressed to the Secretary of the Medical Faculty.

Scholarships and Prizes.—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes:—Bursaries: about 15 Bursaries (competition and presentation) are open each year, of £15 to £30 per annum in value, most of them being tenable for three years. Scholarships: five Post-Graduate Scholarships, value £36 to £100 per annum. Prizes and Medals: 13 Gold Medals and Prizes for proficiency in special departments, &c.

Clinical Instruction is given in the Aberdeen Royal Infirmary (270 beds) by the physicians and surgeons on the staff.

ABERDEEN ROYAL MENTAL HOSPITAL.—Contains, with hospital attached to main institution and agricultural branch, about 950 beds. Clinical instruction is given to students during three months in summer. Clerk and Treasurer, Mr. A. Scott Finnie, 343, Union-street, Aberdeen.

SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

These Colleges have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three Bodies.

The three Bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery. Copies of the Regulations for the Single Licence of any of the Bodies may be had on application to the respective secretaries.

Professional Education.—The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction: Physics, three months; Elementary Biology, three months; Chemistry, six months; Practical or Analytical Chemistry, three months; Anatomy, during at least six months; Practical Anatomy, twelve months; Physiology, six months; Practical Physiology, three months; Materia Medica, three months; Pathology (including Practical Pathology), nine months; Practice of Medicine, six months; Clinical Medicine, nine months; Principles and Practice of Surgery, six months; Clinical Surgery, nine months; Midwifery, three months; Gynæcology, one course of not less than 13 meetings; Diseases of Children, one course of not less than 13 meetings; Medical Jurisprudence and Public Health, three months. The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll-calls. Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and Midwifery and to hold the offices of Clinical Medical Clerk and Surgical Dresser. He must also attend for two and a half months instruction in Practical Pharmacy; the certificate to be signed by the teacher, who must be a member of the Pharmaceutical Society of Great Britain, or the superintendent of the laboratory of a public hospital or dispensary, or a registered practitioner who dispenses medicines to his patients, or a teacher of a class of Practical Pharmacy.

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction and possessing distinct staffs of physicians and of surgeons. He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case, and receive practical instruction in administration of anæsthetics. He must attend for six months the practice of a public dispensary especially recognised by any of the above authorities, or the out-patient practice of a recognised general hospital or act for six months as pupil to a registered practitioner who either holds such a public appointment, or has such opportunities of imparting practical knowledge as shall be satisfactory to the coöperating authorities; this attendance should be made after the student has passed the First and Second examinations.

Candidates are also required to attend the following courses: Diseases and Injuries of the Eye, three months; Insanity, three months; Infectious Diseases, three months; Gynæcology, three months; Diseases of Children, three months.

The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations:—

First Examination includes Physics, Chemistry, and Elementary Biology.

Second Examination includes Anatomy and Physiology and Histology; and candidates may be admitted to this examination at the end of the second year of medical study.

Third Examination includes Pathology and Materia Medica with Pharmacology.

Final Examination.—The Final examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects:—Medicine, including Therapeutics, Medical Anatomy, and Clinical Medicine; Surgery, including Surgical Anatomy, Clinical Surgery, and Diseases and Injuries of the Eye; Midwifery and Diseases of Women; and, if not passed previously, Medical Jurisprudence and Public Health, but it is optional to candidates who have passed the Third Examination to be admitted to the subject of Medical Jurisprudence and Public Health on lodging certificates of having attended the necessary course in that subject at any time; but the subjects of Medicine, Surgery, and Midwifery shall be taken together at any time after the end of the fifth Winter Session, provided that a period of 24 months has elapsed since passing the Second Examination. All candidates shall be subjected, in addition to the written and oral examinations, to clinical examinations in Medicine and Surgery, which shall include the Examination of Patients, Physical Diagnosis, the Clinical use of the Microscope, Examination of the Urine and Urinary Deposits, Surgical Appliances, Bandages, Surface Markings, &c. The and Pathology; and the fourth or final, comprising Medical Jurisprudence and Public Health, Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases peculiar to Women and to Infants.

The degrees of M.D. (Doctor of Medicine) and Ch.M. (Master of Surgery) are higher degrees in Medicine and Surgery respectively, and candidates (not under 24 years of age) who have previously obtained the double bachelorship may be admitted to either M.D. or Ch.M. on completing the after course prescribed, including an examination in Clinical Medicine for M.D. and an examination in Surgical Anatomy, operations on the dead body, and Clinical Surgery for Ch.M.

In 1919 new chairs were instituted in Bacteriology, Organic Chemistry, and Physiological Chemistry.

Fees.—The Fees for M.B. and Ch.B. are £23 2s. The class fee in each subject of the curriculum for M.B. and Ch.B. is £2 2s., £3 3s., or £4 4s., and the present fee for hospital attendance is £7. The fee for M.D. is £15 15s., and for Ch.M. £15 15s. The University Court has given notice that all class and examination fees will be increased as from Oct. 1st, 1921.

The great majority of the students take their hospital course at the Western, Royal, or Victoria Infirmary, where clinical instruction is given by professors of the University and others. Clinical instruction on Fevers is given at Ruchill and Belvidere Hospitals, while special courses, largely of a practical nature and embracing work in Hospital or Asylum wards, are conducted by University Lecturers on the Ear, the Throat and Nose, Dermatology, Ophthalmology, Venereal Diseases, Tuberculosis, and Insanity. Queen Margaret College, sometime conducted as a separate institution for the higher education of women, was made over to the University in 1892, and in it medical classes for women are conducted under University professors and other lecturers appointed by the University Court, whilst for clinical instruction female students mostly attend the Royal Infirmary.

Post-graduate Medical Teaching.—Organised Post-graduate Medical Teaching is now available in Glasgow under the auspices of Glasgow Post-graduate Medical Association. This Association is composed of practically all the Teaching Institutions in Glasgow and the various teachers giving post-graduate instruction, and its business is managed by a Board elected periodically by them. The chairman of the Board is Principal Sir Donald MacAlister, and the vice-chairman Sir Hector C. Cameron. Weekly demonstrations for practitioners are given throughout the winter and spring, and comprehensive courses of instruction during the summer and autumn. Arrangements have also been made whereby a limited number of graduates may become attached to wards or out-patient departments nominally as clinical assistants for definite periods throughout the year. As such they work under the direct supervision of the physician or surgeon in charge, and carry out such detailed investigations as directed. Further information may be obtained from Dr. A. M. Kennedy, Secretary, Post-graduate Medical Association, University, Glasgow.

In this University Bursaries and Prizes to the annual amount of over £1000 are appropriated to students in the Medical Faculty, and there are also several Scholarships and Fellowships which may be held by medical students who have gone through the Arts course. A full list will be found in the University Calendar.

THE ANDERSON COLLEGE OF MEDICINE, Dumbarton-road, Glasgow, W.—Courses are given which qualify for all the licensing boards and for the Universities of London, Durham, Edinburgh, and Glasgow (the latter two under certain conditions). Candidates for the Licence in Dental Surgery can obtain the full medical curriculum in Anatomy, Chemistry, Physiology, Surgery, Practice of Medicine, and Materia Medica. The courses special to Dentistry are also conducted in the Anderson College of Medicine.

The buildings are situated in Dumbarton-road, immediately to the west of the entrance to the Western Infirmary, and adjoining the University. Extensive accommodation is provided for Practical Anatomy, Practical Chemistry, Practical Botany, Practical Zoology, Practical Physiology, Practical Pharmacy, Operative Surgery, and Public Health. Ample provision has also been made for the comfort of students.

Women students are admitted on the same terms as men.

The Carnegie Trust extends its benefactions to students of the Anderson College of Medicine. Full particulars may be obtained from Sir W. S. McCormick, the Carnegie Trust Offices, Merchants' Hall, Edinburgh.

Communications relating to the College to be addressed to the Secretary of the Medical Faculty, The Anderson College of Medicine, Glasgow, W. Communications relating to the Preliminary Examination in General Education to be addressed to Mr. Hugh Cameron, M.A., F.E.I.S., Educational Institute Office, 34, North Bridge-street, Edinburgh. Communications relating to the Triple Qualification to be addressed to Mr. Walter Hurst, Royal Faculty Hall, 242, St. Vincent-street, Glasgow.

The Winter Session will open on Monday, Oct. 10th, 1921.

ST. MUNGO'S COLLEGE AND GLASGOW ROYAL INFIRMARY.—The classes in St. Mungo's College qualify for the English, Scotch, and Irish Conjoint Boards and, under certain conditions, for the various universities, including the University of London. Students who have fulfilled the conditions of the Carnegie Trust as regards Scottish birth or extraction, age (16 years), and Preliminary Examination, are eligible for the benefits of this Trust during the whole course of their studies at St. Mungo's College. The classes are open to male and female students equally. The minimum fees for all the lectures, including hospital attendance, necessary for candidates for the Diplomas of the English or Scotch Colleges of Physicians and Surgeons, amount to £120. Further particulars can be obtained from a syllabus which may be procured free on application to the Secretary of the Medical Faculty, 86, Castle-street, Glasgow.

QUEEN MARGARET COLLEGE (*Women's Department of the University*).—This is an integral part of the University of Glasgow. The classes are taught by professors of the University and other lecturers appointed by the University Court, and it is governed by the University Court and Senate. The curriculum, regulations, and fees are the same as those of the male students, and the University degrees are open to women on the same conditions as to men. They have access to the University Museum and can borrow books from the University Library, besides having a library of reference in Queen Margaret College. The School of Medicine is a special feature of the College, and gives full preparation for the medical degrees of the University. In July, 1894, for the first time in the history of any Scottish University, women students graduated in medicine in Glasgow University. Over 350 women have now taken the degree of M.B., C.M., or M.B., Ch.B. of the University of Glasgow and 26 the degree of M.D. The women students attend classes in the various University Buildings at Gilmore-hill, Queen Margaret College, the Royal Infirmary, and the Western Infirmary. Excellent facilities for clinical work are given in the Royal and Western Infirmaries, in the Maternity, Royal Sick Children's, and other hospitals. The Arthur Scholarship is open every third year to students of first year; other Bursaries are open in Arts and Medicine; and by an ordinance of the Universities Commissioners women are admitted to certain University bursaries, scholarships, and fellowships. The Winter Session will open on Oct. 10th. New students of Medicine will be admitted in April, 1922. Applications for entrance at that date should be made before Feb. 1st, 1922.

Scientific Examination, including Physics and Chemistry, Botany, and Zoology. The Intermediate Medical, Part I., including Anatomy and Physiology, and Part II., including Applied Anatomy and Applied Physiology; and the Final Examination, which is divided into Part I., Materia Medica, Hygiene and Jurisprudence, and Pathology and Bacteriology; and Part II., Medicine, including Clinical, Surgery, Midwifery, Gynæcology, Mental Diseases, Operations, and Clinical Opthalmology. Part I. may be passed in the fourth year and Part II. completed at the end of the fifth year.

Doctor in Medicine.—A Doctor in Medicine must have passed all the qualifying examinations and must be a B.A. of three years' standing. He must also read and discuss a thesis before the Regius Professor of Physic.

Master in Surgery.—A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession. He must then pass a special examination.

Master in Obstetric Science.—A Master in Obstetric Science must be a Bachelor of two years' standing and produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years. He is then required to pass a special examination.

Diploma in Gynæcology and Obstetrics.—A post-graduate diploma is conferred upon registered medical practitioners who take a six months' course at the Rotunda Hospital, a six months' course in Trinity College, and then pass a special examination.

Bachelor in Dental Science and Master in Dental Science.—The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic.

All Degrees and Courses of Instruction are open to women students.

Clinical Instruction.—The hospital facilities for clinical instruction available in Dublin will be described below.

NATIONAL UNIVERSITY OF IRELAND.

Matriculation.—All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres. All students must pass in five subjects (three of which must be Irish, English, and mathematics). All students must pass in Irish except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation; but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University. The following are the subjects for examination:—1. Irish. 2. Latin or Greek. 3. French, German, Italian, Spanish, Portuguese, Welsh, or any other modern language approved by the Senate. 4. English. 5. Mathematics. 6. Latin, Greek, French, German, Welsh, Spanish, Italian, Portuguese, or any other modern language approved by the Senate, History and Geography (*as a composite subject*), Natural Philosophy, or Physics as an alternative, Chemistry, Botany, and for women candidates only, Physiology and Hygiene. Candidates who, under the regulations are exempted from the necessity of presenting Irish as one of their subjects, may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty of the University.

The medical degrees granted are:—

M.B., B.Ch., and B.A.O.; and M.D., M.Ch., and M.A.O., Ph.D.—Printed forms of application for admission to any medical examination may be had from "The Registrar, The National University of Ireland, Dublin."

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin; University College, Cork; and University College, Galway.

UNIVERSITY COLLEGE, DUBLIN.*—The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908. Former students of the Cecilia-street School of Medicine who graduated in the Royal University may become graduate members of the new College. The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and coöpted lecturers, a body of graduate members, and a body of student members matriculated in the University. The first professors and lecturers were appointed by the Dublin Commissioners Irish Universities Act, 1908.

Matriculation.—Almost all the students of the College are matriculated students of the National University of Ireland.

Universities Examinations in Medicine.—The First Examination includes Physics, Chemistry, Botany, and Zoology. The examination may be taken in two parts: Part I., Physics and Chemistry; Part II., Botany and Zoology. Honours may be obtained only when both parts are taken as one examination. The Second Examination includes Anatomy and Physiology. Both must be passed at the same time. The Third Examination includes Pathology, Medical Jurisprudence and Hygiene, and Materia Medica.

Degrees of M.B., B.Ch., and B.A.O.—The Examination in Medicine, Midwifery, Surgery, and Ophthalmology includes both the theoretical and the clinical branches. No student can enter for the M.B., B.Ch., or B.A.O. until the end of the fifth year when the curriculum has been completed. The course of study is as follows:—First year.—Winter: Anatomy and Practical Anatomy (required for the Second Examination), Chemistry, Practical Chemistry, and Experimental Physics (with Laboratory Course). Summer: Zoology, Practical Zoology, Botany, and Practical Botany. Second Year.—Winter: Anatomy, Practical Anatomy, Physiology, and Practical Physiology (physical and chemical). Summer: Anatomy, Practical Anatomy, Physiology, and Practical Histology. Third year.—Winter: Pathology, Surgery or Medicine, Hygiene, Medical Jurisprudence, and Practical Pharmacy. Summer: Materia Medica and Therapeutics, and Practical Pathology. Candidates are also required to attend a General Hospital for nine months (winter and summer). Fourth year, or fourth and fifth years.—Winter: Medicine or Surgery (the subject to be that not taken in the third year), and Midwifery and Gynæcology. Summer: Operative Surgery, Applied Anatomy, and Ophthalmology and Otology. Candidates are also required to attend a General Hospital for nine months (winter and summer), and to take instruction in Vaccination, and three months Fever Hospital. Fifth year.—If the Academic (Collegiate) Courses are taken as above, the Courses of the fifth year will be the following: Hospital Attendance, General Hospital, nine months; Clinical Ophthalmology and Otology, three months; Practical Midwifery and Gynæcology, six months; Mental Diseases, to be attended at a Lunatic Asylum, three months. (*Note.*—Practical Midwifery and Gynæcology may be taken in the fourth year after the Systematic Course of Midwifery, but it must not be taken concurrently with the period of attendance at Fever Hospital.) The degree of M.D. may be obtained either by examination or on published work.

UNIVERSITY OF ST. ANDREWS (UNITED COLLEGE ST. ANDREWS AND UNIVERSITY COLLEGE, DUNDEE).

Four Degrees in Medicine and Surgery are conferred by the University of St. Andrews—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), a Diploma in Public Health, and Diploma in Dental Surgery (L.D.S.).

The Preliminary Examination includes (*a*) English, (*b*) Latin, (*c*) Elementary Mathematics, and (*d*) one of the following optional subjects: (α) Greek, (β) French, (γ) German, (δ) Italian, (ε) any other approved modern language. A degree in Arts or in Science in any of the Universities of the United Kingdom and in some colonial and foreign universities shall exempt from the Preliminary Examination. The Preliminary Examination for graduation in Medicine and Surgery, Arts or Science, of the University of St. Andrews is accepted as equivalent to the Registration Examination required by the General Medical Council (the certificate to include the required subjects). Also the Final Examination for a degree in Arts or Science and the Final Examination for the Diploma of LL.A.

Degree of Bachelor of Medicine and Bachelor of Surgery.—Candidates must have been engaged in medical study for at least five years. In each of the first four years the candidate must have attended at least two courses of instruction in one or more of the subjects of study specified below, each course extending over a session of not less than five months, either continuous or divided into two terms, or, alternatively, one such course along with two courses, each extending over a session of not less than two and a half months. During the fifth or final year the candidate shall be engaged in clinical study for at least nine months at the Infirmary of Dundee or at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised for the purpose by the University Court. The candidate must have received instruction in each of the following subjects of study, including such examinations as may be prescribed in the various classes—viz.: Anatomy, Practical Anatomy, Chemistry, Materia Medica, Physiology, or Institutes of Medicine, Practice of Medicine, Surgery, Midwifery and the Diseases peculiar to Women and Infants, Pathology, Practical Chemistry, Physics (including the Dynamics of Solids, Liquids, and Gases, and the Rudiments of Sound, Heat, Light, and Electricity), Elementary Botany, Elementary Zoology, Practical Physiology, Practical Pathology, Forensic Medicine, and Public Health. The candidate must have attended for at least three years the Medical and Surgical Practice either of the Infirmary of Dundee or of a General Hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons and is recognised for the purpose by the University Court. Additional subjects of study are Practical Pharmacy, Mental Diseases, Practical Midwifery, Operative Surgery, Vaccination, Children's Diseases, Fevers, Ophthalmology, Diseases of the Ear, Throat, and Nose, Anæsthetics, Dermatology and Post-mortem Examinations.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations shall have effect:—1. Two of the five years of medical study must be spent in the University of St. Andrews. 2. The remaining three years may be spent in any University of the United Kingdom or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Women are admitted to graduation in Medicine, subject to certain provisions.

Professional Examinations for the Degrees of Bachelor of Medicine and Bachelor of Surgery.—Each candidate will be examined both in writing and orally, and also clinically where the nature of the subject admits, in the following divisions—viz., first, in Botany, Zoology, Physics, and Chemistry; second, in Anatomy and Physiology; third, in Materia Medica and Pathology and Forensic Medicine and Public Health; and fourth, in Surgery, Clinical and Operative Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and Gynæcology (Systematic and Clinical).

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery shall be 22 guineas, and the proportion of this sum to be paid by a candidate at each division of the examination shall be regulated from time to time by the University Court. The fee to be paid for the degree of Doctor of Medicine shall be 15 guineas, and for the degree of Master of Surgery 15 guineas. The whole medical curriculum can be taken in University College, Dundee, or the first two years in United College, St. Andrews.

For further particulars and details as to scholarships and bursaries application should be made to Prof. Charteris, Dean of the Medical Faculty, University College, Dundee.

UNIVERSITY COLLEGE, Dundee.—This College is one of the constituent colleges of the University of St. Andrews. In the medical buildings there are spacious and well-equipped laboratories. The complete medical curriculum can be taken in Dundee. For classes, fees, &c., see under University of St. Andrews.

ROYAL INFIRMARY, Dundee.—The Infirmary contains 408 beds, including special wards for the Diseases of Women, Children, Eye, Ear, and Throat, Skin, and for Obstetric cases. There is in addition an Extern Obstetric Department. There were during last year 16,997 out-patients and 727 home (maternity) patients. The Royal Infirmary offers facilities for practical work to students. *Appointments*: Seven qualified Resident Medical Officers (Male or Female) are appointed every six months and one Obstetric Assistant. Clinical Clerks and Dressers are attached to the Physicians and Surgeons, and students are appointed as assistants in the Pathological Department. There are in connexion with the clinical courses Tutorial Classes in Medicine and Surgery. Instruction is also given in Practical Pharmacy and Materia Medica. Further information can be obtained from the Medical Superintendent.

UNIVERSITY OF ABERDEEN.

The University of Aberdeen grants four degrees in Medicine and Surgery—viz., Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Medicine (M.B.), and Bachelor of Surgery (Ch.B.).

Degrees of M.B. and Ch.B.—Before commencing his medical studies each student must comply with the following regulations: "That (*a*) the Group Certificates of the Scottish Education Department, or (*b*) the evidence of satisfactory completion in Schools in Scotland of a curriculum of Secondary Education, as attested by the said Group Certificates or otherwise, or (*c*) the Leaving or other Certificates accepted as qualifying for admission to the Universities in the case of applicants for admission from outside Scotland, which shall be deemed to entitle applicants for admission to the Universities to enter upon a course of study qualifying for Graduation in the Faculty of Medicine, shall be the same as those which, under the Regulations for the time being in force, are deemed to entitle applicants for admission to the Universities to enter upon a course of study qualifying for graduation in the Faculty of Arts or, alternatively, in the Faculty of Science, for Degrees in Pure Science."

The curriculum for the degrees extends over a period of five years, during which attendance is required in the following subjects: Botany, Zoology, Physics, Chemistry (Systematic and Practical), Anatomy (Systematic and Practical), Physiology (Systematic and Pratical), Materia Medica and Therapeutics, Practical Pharmacy, Pathology (Systematic and Practical), Medical Jurisprudence, Public Health, Surgery, Medicine, and Midwifery.

Candidates must attend for at least three years the medical and surgical practice of a recognised hospital;

Cork District Hospital (Douglas-road; 1200 beds).—This hospital includes special buildings for fever and other infectious diseases (100 beds); for children's diseases (100 beds); and a Lock hospital, the only one in the South of Ireland (80 beds). It affords an extensive field for the study of all classes of diseases, acute and chronic, including special departments for gynæcology and diseases of the skin and nervous system. The physicians and surgeons visit the hospitals every morning at 10 o'clock. Lectures and clinical instruction are given daily in the wards by the physicians and surgeons. Further particulars may be obtained from Dr. W. E. Ashley Cummins, 17, St. Patrick's-place, honorary secretary, medical staff.

Cork Eye, Ear, and Throat Hospital (Western-road).—This hospital is open to students attending the University College and others. Certificates of attendance for three or six months can be obtained. The hospital contains 35 beds. Over 4000 cases are treated during the year. A course of Lectures on Ophthalmic Surgery is delivered during the session. For further information apply to Dr. Arthur Sandford, 13, St. Patrick's-place, Cork.

University College, Galway: School of Medicine.—The College contains a well-lighted and ventilated dissecting room and an anatomical lecture theatre; physiological, pathological, pharmaceutical, chemical, and physical laboratories; anatomical, pathological, gynæcological, and materia medica museums; as well as large natural history and geological museums and an extensive library in which students can read and from which they can borrow books. There are 12 Entrance Scholarships, value £25 each, for which Medical Students compete with other students on the Entrance Course. In the Second, Third, and Fourth years three Scholarships in each year, value £25 each, are reserved for Medical Students. Exhibitions of £10 and £5 are awarded on results of 1st, 2nd, 3rd, and Degree Examinations in Medicine. H. H. Stewart Scholarships (£10 a year for three years) are awarded by the University in Anatomy and Physiology at Second Medical Examination amongst Students of the three constituent Colleges. Travelling Studentships (£200 a year for two years) are offered by the University for competition amongst Medical Graduates of the three Colleges of not more than two years' standing. Women students are eligible for all College and University Degrees, Distinctions, and Prizes. There are extensive grounds, a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union. There are several student societies in the College, including a Biological Society. There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology, and Pathology departments. There are ample facilities for Women Students. Further information can be obtained from the Registrar of the College.

Clinical Instruction is given in the Galway Hospital and in the Galway Union and Fever Hospitals, containing on an average 200 patients.

*Galway County Hospital** (62 beds).—Founded by Act of Parliament.

Galway Union and Fever Hospitals (150 beds).—Clinical instruction is given in these hospitals to the Medical Students of University College, Galway. The regulations for Scholarships tenable in the College, and the regulations for degrees and for courses can be obtained from Messrs. O'Gorman and Co., Galway.

QUEEN'S UNIVERSITY OF BELFAST.

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), and Master of Obstetrics (M.A.O.), The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar. The degrees of M.B., B.Ch., and B.A.O. are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study. No student is admitted to the final examination for these degrees until he has shown: (1) that he is a matriculated student of the University; (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine by the General Council of Medical Education and Registration of the United Kingdom; (3) that he has passed the several examinations prescribed; (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate); and (5) that he has attained the age of 21 years. Every candidate for admission as a matriculated student of the University shall pass such Matriculation Examination or fulfil such other test of fitness as may be prescribed by the Senate, which may prescribe the conditions under which students who have passed the Matriculation or Entrance Examination of any other University or College approved for that purpose (or who have fulfilled such other test of fitness as may be prescribed) may be exempted from passing the Matriculation Examination of the University. For information as to Scholarships and Prizes inquiry should be made of the Secretary of the University.

Primary Degrees of M.B., B.Ch., B.A.O.—All candidates for these degrees must satisfy the examiners in the subjects of four examinations known as the First, Second, Third, and Fourth Medical Examinations respectively.

The First Medical Examination.—The subjects of this examination are Chemistry (Inorganic and Organic), Experimental Physics, Botany and Zoology. The examination will be divided into two parts which may be taken separately: I., Chemistry and Physics; II., Botany and Zoology.

The Second Medical Examination.—The subjects are Anatomy and Practical Anatomy, Physiology and Practical Physiology. Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year.

The Third Medical Examination.—The subjects are: (1) Pathology and Practical Pathology; (2) Materia Medica, Pharmacology and Therapeutics; (3) Medical Jurisprudence; (4) Hygiene. Candidates who have previously passed the Second Medical Examination may present themselves for this examination at the close of the third year. Attendance on a course in any subject of the Third Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the First Medical Examination.

The Fourth Medical Examination.—The subjects are: (1) Medicine; (2) Surgery; (3) Midwifery; (4) Ophthalmology and Otology. This examination may be taken in two parts: I., Systematic; II., Clinical, Practical and Oral. Candidates who have previously passed the Third Examination may present themselves for Part I. of the Fourth Examination at the close of the fourth year, provided that they have fulfilled the necessary requirements as to attendance, &c., on the courses of instruction in the subjects of examination. Candidates who have passed Part I. of this examination may present themselves for Part II. at the close of the fifth year, provided that they have fulfilled the necessary requirements as to hospital attendance on the various clinical courses in the subjects of examination. Parts I. and II. may be taken together at the close of the fifth year. Attendance on a course in any subject of the Fourth Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the Second Medical Examination.

fees payable for the Final Examination shall be—for the whole examination, £15, for re-entry after rejection, £5, and for the subjects of Medical Jurisprudence and Public Health when taken separately, £5, with £3 for re-entry in that subject.

There are four periods of examination annually: During the ensuing period, three in Edinburgh and one in Glasgow, in 1921–22. The Registrar in Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place, and the Registrar in Glasgow, Mr. Walter Hurst, 242, St. Vincent-street, to whom fees and certificates must be sent for the respective examinations, and from whom further particulars concerning fees can be obtained.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH: THE MEMBERSHIP AND FELLOWSHIP.

In addition to the diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates already possessing legal qualifications for professional practice.

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship.*

Membership.—A candidate, who must be a Licentiate of a British or Irish College of Physicians, or a graduate in medicine of a University, approved by the Council, and 24 years of age, is examined in medicine, therapeutics, and in any branch of the departments of medicine specially professed, such as general pathology, psychology, public health, obstetrics, gynæcology, diseases of children, tropical medicine, or medical jurisprudence. The fee for the Membership is £36 15*s.*, 15 guineas of which will be returned to any successful candidate who was already a Licentiate of the College at the time of qualifying for the Membership.

Fellowship.—The Fellows are selected from the ranks of the *Members.* The fee is £64 18*s.*

ROYAL COLLEGE OF SURGEONS OF EDINBURGH: THE FELLOWSHIP.

The Royal College of Surgeons of Edinburgh also admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British, Indian, or Foreign university or of any British College of Physicians, or of the Society of Apothecaries of London or Apothecaries' Hall, Dublin, granted under the provisions of the Medical Act, 1886, whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College, or to those who have passed a full examination for any of the above. Female practitioners are admitted to the Licence of the College and now to the Fellowship, and the regulations apply to practitioners of either sex.

The Royal College of Surgeons of Edinburgh grants a diploma of Fellowship after examination to the holders of the surgical degrees of diplomas of such British examining bodies, as well as of the holders of such surgical degrees of the Universities of Canada, Australia, New Zealand, and the Indian Empire as are recognised by the College.

The Fellowship.—Candidates for the examination must be 25 years of age and must have been engaged in practice for at least two years. The examination is of a practical nature, partly written and partly vivâ voce, and must include surgery and surgical anatomy, operative surgery, and clinical practice. One optional subject must also be taken, the range of these specialisms covering nearly every branch of medicine. The fee to be paid on entering for examination for Fellowship is £45, £10 of which is remitted to those who already hold the Licentiateship of the College. Candidates rejected at the examination obtain repayment of fee less £10 retained for examination expenses. One month's notice of intention to appear for examination must be given by the candidate to Mr. D. L. Eadie, 49, Lauriston-place, Edinburgh, clerk to the College, together with credentials signed by two Fellows of the College, one of whom must be a resident in Edinburgh, otherwise a special application, with six testimonials, must be made to the President and the Council of the College.

THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Like the preceding corporations, the Royal Faculty of Physicians and Surgeons of Glasgow grants a Fellowship and a Licence to be held as separate qualifications.

Fellowship.—The Fellowship of the Faculty is granted after examination in medicine or surgery, together with an optional subject, which may be anatomy or physiology or be selected from any special branch of medicine or surgery. Fourteen days' notice must be given by the candidate of his intention to present himself to Mr. Walter Hurst, the Faculty Hall, 242, St. Vincent-street, Glasgow. The fee for the Fellowship is £30, £10 of which sum are returned to any successful candidate who already holds the Licence of the Faculty. An additional sum of £20 is required in the case of candidates resident within seven miles of Glasgow. In certain circumstances Fellows may be elected as a mark of distinction.

Licence.—The Licence of the Royal Faculty is granted as a separate qualification to qualified practitioners in Medicine after examination in surgery, including surgical anatomy and clinical surgery. The fee is 15 guineas.

SCOTTISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

The hospitals which are recognised by the Scottish Conjoint Board, as places where professional study for their diplomas can be pursued are all those institutions which feed the medical faculties of the universities. In addition the Scottish Boards recognise all the places which are recognised by the English Conjoint Board (see p. 441) and the Irish Conjoint Board (see p. 460).

III.—IRELAND.

THE UNIVERSITIES.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE (SCHOOL OF PHYSIC).

Matriculation.—In order to join the School of Physic students pass a matriculation examination. University students take the Entrance of Trinity College and a Junior Freshman Term or a special Medical Preliminary; Extern Students, any examination recognised by the General Medical Council. The winter courses begin on Oct. 1st.

Degrees in Medicine (M.B.), Surgery (B.Ch.), and Midwifery (B.A.O.).—Candidates for these degrees must be of B.A. standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of matriculation. The Arts course may be taken concurrently with the Medical course, and the B.A. degree need not be taken before the final medical examinations, but the Medical degrees are not conferred without the Arts degree. The following courses must be attended:—(1) Lectures—Botany, Zoology, Physics and Practical Physics, Systematic, Descriptive and Applied Anatomy, Chemistry and Practical Chemistry, Histology, Physiology and Practical Physiology, Practice of Medicine, Midwifery, Pathology, Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene, Surgery and Operative Surgery; (2) three courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other recognised Hospital; (3) Practical Vaccination, one month's instruction; (4) Mental Disease, three months; (5) Practical Midwifery with Clinical Lectures, including not less than 20 personally conducted cases, six months; (6) Ophthalmic Surgery, three months. Three groups of examinations have to be passed. Preliminary

Fellowship Examinations.—Candidates for the Fellowship shall make application to the President and Council to be admitted to examination. They are required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations. The subjects for the Primary Examination are (*a*) Anatomy, including Dissections; and (*b*) Physiology and Histology. The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology. For admission to the Final Examination the candidate must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council; all such candidates must not be less than 25 years of age.

Further particulars as to fees and conditions of examination can be obtained from the Registrar of the College, Stephen's-green, West Dublin.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.

Every candidate for the Conjoint Examinations of the Colleges shall produce evidence of having before entering on medical studies passed a Preliminary Examination in general education recognised by the Royal Colleges. Each candidate before receiving his diplomas must produce a registrar's certificate or other satisfactory evidence that he has attained the age of 21 years.

Preliminary Examination.—The subjects for examination are identical with those prescribed for the Preliminary Examination by the General Council of Medical Education and Registration.

Professional Examinations.—Every candidate must pass four professional Examinations—at the end of the first, second, third, and fifth years respectively of his professional studies. No candidate shall be admitted to the Final or Qualifying Examination within three months of his rejection at the Final or Qualifying Examination by any other licensing body.

First Professional Examination.—Every candidate is required, before admission to the First Professional Examination, to produce evidence—(1) of having passed in the subjects of the Preliminary Examination; and (2) of having attended a course of—(*a*) lectures on Theoretical Chemistry, six months; (*b*) Practical Chemistry, three months; (*c*) Biology, three months; and (*d*) Physics.

The subjects of the First Professional Examination are the following:—1. (*a*) Chemistry; (*b*) Physics. 2. Biology. The fee for this examination is £15 15*s*.

Second Professional Examination.—Candidates are not admissible to this examination till they have passed in the subjects of the First Professional Examination, and they must produce evidence of having attended (*a*) anatomical dissections, six months; and Lectures on (*b*) Anatomy, six months; (*c*) Physiology, six months; (*d*) Practical Physiology and Histology, three months.

The subjects of the Second Professional Examination are the following:—(1) Anatomy; and (2) Physiology and Histology. The fee for this examination is £10 10*s*.

Third Professional Examination.—Every candidate is required, before admission to the Third Professional Examination, to produce evidence of having passed the Second Professional Examination, and certificates of having attended courses of instruction in (*a*) the practice of a medico-chirurgical hospital for nine months; (*b*) Pathology—(1) Systematic, (2) Practical, three months each: (*c*) Materia Medica, Pharmacy, and Therapeutics, three months; (*d*) Forensic Medicine and Public Health, three months. The subjects for the Third Professional Examination are the following:—(1) Pathology; (2) Materia Medica, Pharmacy, and Therapeutics; (3) Public Health and Forensic Medicine. The fee for this examination is £9 9*s*. Clinical instruction in Ophthalmic and Aural Surgery, three months. The examination in Ophthalmic and Aural Surgery may be taken immediately after passing the Third Professional Examination.

Final Professional Examination.—Before admission to the Final Examination candidates must have passed the Third Professional Examination and produced evidence of having attended in Division I. the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission in Division II.); the practice of a recognised fever hospital or the fever wards of a recognised clinical hospital, three months; clinical instruction in Mental Diseases, one month (12 attendances); lectures on Medicine, six months at a recognised medical school; of having performed the duties of medical clinical clerk in a recognised hospital for three months; of having attended a course of instruction in post-mortem examinations and demonstrations during one session. In Division II. of having attended the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission to Division I.); lectures on Surgery, six months at a recognised medical school; instruction in Operative Surgery, three months at a recognised medical school; of having performed the duties of surgical dresser in a recognised hospital for three months; of having attended a course of instruction in the practical administration of general anæsthetics. In Division III. of having attended a midwifery hospital or maternity and having been present at 20 labours, six months; instruction on vaccination, six attendances to be certified by a public vaccinator; lectures on midwifery (including diseases peculiar to women and to new-born children), six months at a recognised medical school. Candidates are recommended to present themselves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the Divisions I., II., or III., provided he has completed his curriculum as far as concerns the division in which he presents himself. The examination in at least one of the divisions must be deferred till the end of the fifth year.

The subjects of the Final Examination are: (1) Medicine, including Fevers, Mental Diseases, and Diseases of Children; (2) Surgery, Operative; and (3) Midwifery and Gynæcology, Vaccination, and Diseases of New-born children. The fee is £6 6*s*. Further particulars can be obtained from Alfred Miller, O.B.E., the Secretary of the Committee of Management, Royal College of Surgeons, Stephen's-green, Dublin.

Royal College of Surgeons in Ireland (Schools of Surgery).—The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century. They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued. The buildings have been reconstructed, the capacity of the dissecting-room nearly trebled, and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction. The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October; Summer Session in April. Scholarships and Prizes: Carmichael Scholarship, £15; Mayne Scholarship, £8; Stoney Memorial gold medal; Operative Surgery, gold and silver medals; Barker Prize, £26 5*s*.; H. Macnaughton-Jones gold medal in Obstetrics and Gynæcology; and class prizes and medals. Prospectuses and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's-green, W., Dublin.

Fees.—The fees for Courses may be obtained on application to the Registrar for the College publications.

Information concerning these, and the numerous scholarships and exhibitions of the College can be obtained from the Dean of the Faculty, Professor E. P. McLoughlin.

UNIVERSITY COLLEGE, CORK: THE SCHOOL OF MEDICINE.—The building is provided with a very large, well-ventilated dissecting room supplied with electric light, with physiological, toxicological, pathological and pharmaceutical laboratories, materia medica, anatomical and pathological museums, as well as a collection of surgical and obstetrical instruments and appliances. There are well-appointed physical, chemical, and biological laboratories, and a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden. The plant houses are well filled with plants and are open to the students in the class of Botany. The Library contains about 70,000 volumes and is open daily during term time to students. The Medical Museum occupies a large room erected at the northern end of the medical buildings. There are Students' Clubs for men and women students of the College and various athletic clubs, the last of these holding a public meeting once in each year in the Mardyke grounds.

All students who have been admitted as matriculated students are required to attend before the President and sign the Roll of Matriculated Students. Students who are candidates for degrees in the National University of Ireland must have passed the Matriculation Examination of that University or other recognised examination, and medical students must have passed a preliminary examination recognised by the General Medical Council. For information as to the conditions and courses of the Matriculation Examination application may be made to the Registrar, National University, Dublin.

Admission of Medical Students.—Students in the Faculty of Medicine who have passed the First Professional Examination of the Conjoint Examinations of the Royal College of Physicians and the Royal College of Surgeons in Ireland, or of the Royal College of Physicians and Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, or of the Royal College of Physicians, London, and Royal College of Surgeons, England, may be admitted to the rank of second-year students on making application to the Council and submitting a certificate of having passed the examination. Similarly, students who have passed the Second Professional Examination of the same Colleges may be admitted to the rank of third-year students; and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties, may be admitted to the rank of fourth-year students.

Residence of Students.—There is no accommodation for the residence of students within the College, but students not living at home, or with relatives or friends, sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, a list of which can be obtained from the Secretary. All students are required to register their addresses each session in the book kept for that purpose in the hall porter's office, and to notify immediately to the Registrar any change of address during the session. The Honan Hostel, adjoining the College, is equipped by private endowment. A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden. The Ursuline Convent, Blackrock, has a house of residence, quite separate from their Secondary School, for Catholic women students.

Clinical Instruction.—Students may attend the South Infirmary, Cork North Charitable Infirmary, the Mercy Hospital, the Cork District Lunatic Asylum, the Victoria Hospital for Diseases of Women and Children, the County Lying-in Hospital, the Cork Maternity, the Cork Fever Hospital, the Cork District Hospital, and the Cork Ear, Eye, and Throat Hospital.

Complete information with regard to class fees, scholarships, and prizes can be obtained from the Dean of the Medical Faculty, Professor A. E. Moore.

*South Infirmary and County of Cork General Hospital** (100 beds).—Clinical instruction is given daily in the wards. Special instruction on Diseases of Women and Children will be given in the special wards for such cases. Fee for nine months, £12 12*s.*; for six months, £8 8*s.*; for three months, £4 4*s.* Two resident pupils will be appointed by competitive examination.

Cork North Charitable Infirmary and County and City of Cork General Hospital * (112 beds).—Clinical instruction is given daily in the wards by the physicians and surgeons. Special instruction is given to Junior students on two days weekly. Fee for perpetual ticket, £22 1s.; for 12 or nine months, £9 9*s.*; for six months, £5 5*s.*; and for three months, £3 3*s.* Two resident pupils are appointed quarterly by the medical staff. All resident pupils are required to be registered pupils of the hospital. There is a special department for treatment of the eye, ear, throat, and nose, under the charge of Mr. J. Bowring Horgan, and a special dental department. The Hospital contains a fully equipped Pathological Department, and a large and extensive X ray Department has recently been added.

Mercy Hospital.—This hospital contains 130 beds for medical and surgical cases. There is also a daily extern for medical and surgical cases, as well as for diseases of the eye, ear, and throat. Extern medical attendances for 1920, 6657; surgical attendances, 2929; eye, ear, nose, and throat attendances, 17,174; intern patients, 1616. Major operations, 356; minor operations, 606. Minor accidents, 5720. Total extern free attendances, 32,188. Two resident students. Honorary Secretary to the Staff: Dr. D. J. O'Connor.

Cork District Lunatic Asylum.—Psychological Medicine: A course of Clinical Lectures on Mental Disease and Allied Neuroses will be delivered in the Cork District Lunatic Asylum on Mondays and Thursdays, commencing the first Thursday in May, by the Resident Medical Superintendent. All students wishing to enter for the course are expected to attend at the Asylum at 4 P.M. on that day. All information may be had at the Asylum from the resident medical superintendent.

Victoria Hospital (Incorporated) (Cork).—There are 75 beds. Clinical instruction on *Diseases Peculiar to Children* is given. The extern department is open daily at 9.30.

County and City of Cork Lying-in Hospital (Erinville, Western-road; founded 1798).—This hospital contains 22 beds, an Extern Midwifery Department, Gynæcological Department, Extern Department for Women, and Child Welfare Centre. Fee for six months' attendance, including clinical lectures, £5 5*s.* For further particulars apply to Lucy E. Smith, M.D., secretary to staff.

Cork Maternity (Batchelor's Quay).—Three resident pupils are taken into the Maternity. Poor women are attended at their own homes and there are 8 intern beds. A Child Welfare Centre and Clinic was established in 1919. Clinical lectures are delivered during the session. There is an extern department for the treatment of women's and children's diseases. Fee for attendance at clinical lectures and certificate, £5 5*s.* Honorary secretary to staff, Dr. Henry Corby.

*Cork Fever Hospital.**—Upwards of 500 cases of various forms of fever and zymotic disease are treated yearly in this hospital. The Resident Medical Officer gives instruction in Practical Pharmacy, a certificate of which is necessary for the National University and Colleges of Physicians and Surgeons of Edinburgh.

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* In each instance an asterisk indicates that no returns have been received up to the time of going to press.

Dressers are appointed every three months, and House Surgeons and Clinical Assistants are elected annually. Apply to Hon. Treasurer of Medical Board.

Mercer's Hospital.—This hospital, founded in 1731, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork-street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients. An electrocardiograph has just been installed. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction. There are special wards for the treatment and study of children's diseases. During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements.

Appointments.—A House Surgeon is appointed annually. There are six men and two women Resident Pupils, and Clinical Clerks and Dressers are appointed from amongst the most deserving members of the class.

Fees.—Winter, six months, £8 8*s.*; Summer, three months, £5 5*s.*; nine months, £12 12*s.*

For further particulars apply to Dr. Bethel Solomons, Hon. Sec., Medical Board, 42, Fitzwilliam-square, Dublin.

National Maternity Hospital, Holles-street, Dublin.—Established 1894. The hospital consists of an Intern and Extern Maternity, and a Dispensary for the treatment of Diseases of Women and Children. About 1035 cases are admitted and over 300 operations are performed annually. Every facility is given for the carrying out of practical work. Post-graduate and special courses are arranged for at any time. Certificates of attendance at this hospital are recognised by all the licensing bodies. Terms (three months' course) 6 guineas. Board £2 2*s.* per week. Medical men can take out Post-graduate courses by paying a fee of £3 3*s.* for the first month. If he wishes to remain a second month the fee is £2 2*s.* Clinical Lectures are given daily and Oral Lectures four times per week. During the past year over 30 Post-graduate students were admitted. The L.M. Diploma is given by special examination on arrangement with the Masters. Further particulars can be obtained from the Masters: Sir Andrew Horne, 94, Merrion-square, Dublin; Dr. Reginald J. White, 23, Merrion-square, Dublin; or from the Secretary, Holles-street, Dublin.

Richmond, Whitworth, and Hardwicke Hospitals (House of Industry Hospitals), Dublin.—These hospitals contain 330 beds—130 for Surgical cases, 80 for Medical cases, 78 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 42 beds. A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services. 20 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced students but also to those who are qualified in Medicine and Surgery. The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee. Women students are eligible for election as residents and special apartments are reserved for their use. For prospectuses apply to Mr. Adams McConnell, F.R.C.S.I., Hon.-Secretary, 69, Fitzwilliam-square, Dublin.

Rotunda Hospital, Dublin.—This institution is the largest combined gynæcological and maternity hospital in the British Empire. Over 4000 confinements are attended annually and 500 gynæcological patients admitted. Students can take out their necessary gynæcological and midwifery practical courses. The work of the hospital is carried on continuously through the year and consists of daily clinical instruction in the maternity department and examination and operations in the gynæcological department. Qualified students are given facilities for studying and assisting in the management of all abnormal cases so far as is practical. The appointments on the staff of the hospital are given to qualified past students of the hospital who have taken the L.M. and consist of Extern Assistants for six months, one being appointed every three months. From these the Assistants to the Master are appointed. Women students can reside in the hospital on the same terms as men. The L.M. is granted by examination after a six months' course. Fees for Intern students: one month £6 6*s.*, months other than the first, £4 4*s.* For further particulars apply to the Master.

Royal City of Dublin Hospital.—Founded 1832; enlarged 1851; rebuilt 1893. 130 beds. There is a special wing for the treatment of fevers and contagious diseases founded by the late Mr. Drummond. Secretary: Mr. A. J. Walkey.

Royal Victoria Eye and Ear Hospital, Dublin.—Established 1844. Incorporated 1897. 102 beds. In-patients, 1661; out-patients, 9181. Two house surgeons for Eye and one for Ear appointed annually.

Dr. Steevens' Hospital, Dublin.*—Established 1720. 250 beds. Patients, 12,834. Secretary: Mr. R. J. Ogden.

St. Vincent's Hospital and Dispensary, Dublin.—Established 1834. 200 beds. Clinical Lectures in Medicine and Surgery are held from October to June. Special classes for Juniors from October to December. Pathological and Bacteriological Demonstrations are given every Thursday and instructions in the use of laryngoscope and Otoscope for Senior students every Saturday. Medals and Prizes: the Bellingham gold medal in Medicine and the O'Farrell gold medal in Surgery are offered for competition at the end of the summer session, as well as junior prizes. In the coming term it is hoped that there will be opened a New Extern Department and a New Pathological Laboratory. Mr. Harry Meade, hon. secretary, 9, Fitzwilliam-place.

We take this opportunity of thanking the Deans and Secretaries of the various institutions for their kind coöperation in enabling us to bring the information contained in our Student's Number up to date.

Metropolitan Asylums Board: Diploma in Public Health and Instruction in Hospital Administration.—A three months' course of lectures and demonstrations will be given at the North-Western Hospital, Hampstead, N.W. 3, by Dr. E. W. Goodall, Medical Superintendent, on Tuesdays and Thursdays at 5 p.m., beginning on Tuesday, Oct. 4th, 1921. The fee for the course is £3 3*s.* Cheques should be made payable to the Metropolitan Asylums Board; medical men desiring to attend the course are required before attending at the hospital to pay this fee to the Clerk to the Medical Asylums Board, Embankment, E.C. 4, giving their full name and address.

The Chartered Society of Massage and Medical Gymnastics.—Incorporated by Royal Charter, June 9th, 1920, and amalgamating the Incorporated Society of Trained Masseuses and the Institute of Massage and Medical Gymnastics. The Chartered Society has been formed for the purpose of affording protection to the profession of massage and to its registered members: by improving the training and status of masseuses and masseurs, by providing and supervising independent examinations, by setting up registers of persons qualified to practice, by arranging post-graduate courses, lectures, and conferences, by supplying work for members (under registry regulations), and by working in all ways for the advancement and general welfare of the profession. Registration with the Chartered Society is open to all certificate holders of the Incorporated Society and of the Institute. Test examinations will be set up for the benefit of masseuses and masseurs of experience, holding certificates other than the abovementioned, who wish to register with the Chartered Society. Forms of application for registration and all information can be obtained from the offices of the Society, 157, Great Portland-street, W. 1.

Degrees of M.D., M.Ch., and M.A.O.—These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed. These degrees may be conferred by the Senate either (*a*) after an examination, which includes written, oral, clinical, and practical examinations; or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

The Medical School.—The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class-room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances. The Anatomical Department contains a large and well-lighted dissecting-room, a lecture-room, a professor's and demonstrator's room, a bone-room, and a laboratory for microscopic and photographic work. The Medical Museum is in the same building. The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology, and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms. The Musgrave Pathological Laboratory.—In this department opportunity is afforded for research in pathology and bacteriology. The department is in touch with most of the hospitals in Belfast, and there is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases. A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the corporation in connexion with water-supply, sewage disposal, meat- and milk-supply, the diagnosis of cases of infectious diseases, &c. The certificate issued to members of the class in bacteriology qualifies for the D.P.H. degree. The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines.

Clinical instruction.—The following institutions are recognised by the University as affording proper opportunities for clinical instruction: the Royal Victoria Hospital, the Mater Infirmorum Hospital, the Union Hospitals, the Belfast Hospital for Sick Children, the Belfast Maternity, the Ulster Hospital for Women and Children, the Ulster Eye, Ear, and Throat Hospital, the Belfast Ophthalmic Hospital, the Purdysburn Fever Hospital, and the Belfast District Lunatic Asylum.

Royal Victoria Hospital (300 beds).—Women students are now admitted as resident medical pupils the same as men.

Mater Infirmorum Hospital (200 beds).—Hon. Secretary Medical Staff: Mr. J. B. Moore.

Belfast Union Infirmary and Hospital (1600 beds).—Clinical courses are given biennially, and course for D.P.H. in Hospital. Intern Venereal Clinic in Infirmary under Corporation scheme. Particulars may be obtained on application, as to classes, to Dr. McLiesh.

Belfast Hospital for Sick Children, Queen-street.—Clinical instruction is given in this hospital. During the Winter Session two Courses of Lectures are delivered on the Medical and Surgical Diseases incidental to Infancy and Childhood. Demonstrations in Ophthalmology and Pathology are given, and ample opportunities are afforded in the wards (which contain 45 beds), and in the Out-patient Department, which is largely attended, for gaining a practical and theoretical knowledge of the diseases of Infancy and Childhood. This Hospital grants Certificates in Diseases of Children, which are recognised by the various Examining Bodies. A Gold Medal is offered for competition at the close of the session. Fee for the session—two guineas. For re-attendance—one guinea.

Hon. Secretary to the Medical Staff, Dr. John McCaw.

Incorporated Belfast Maternity Hospital, Townsend-street (32 beds). New Pre-Natal Clinics are being arranged in addition to the present ward clinics.

Ulster Hospital for Children and Women (44 beds).

Benn Ulster Eye, Ear, and Throat Hospital (30 beds).

Belfast Ophthalmic Hospital, Great Victoria-street (30 beds).—Practical demonstrations by the staff and occasional clinical lectures in the subjects of Ophthalmology, Otology, and Laryngology. Clinical instruction is given daily.

Belfast Fever Hospitals.—City Fever Hospital, Purdysburn (330 beds); Union Fever Hospital (200 beds). Clinical Classes are held during the winter and summer sessions. Post-Graduate (D.P.H.) Classes are also held. Lecturer: A. Gardner Robb, M.B., D.P.H.

Belfast District Lunatic Asylum (1000 beds).

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Register of the United Kingdom.

The Licence in Medicine.—The subjects of examination are: Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics.

The Licence in Midwifery.—Candidates must produce certificates of registration. A registered medical practitioner of five years' standing may be exempted from the examination by printed questions.

The Membership.—Examinations for Membership are held in February, June, and November. The fee for the examination is £21 to Licentiates of the College, or £36 15*s.* to non-Licentiates. Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, Kildare-street, Dublin.

The Fellowship.—Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years. There is a fee of £35 in addition to a stamp duty of £25.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The Licence in Surgery.—A candidate whose name is entered either on the Medical Register for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Conjoint Board of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland, preceded by the passing of an Examination in Arts recognised by the General Medical Council, may, at the discretion of the Council, be admitted to the Examination.

Candidates are examined in Surgery, Clinical Surgery, Operative Surgery on the subject, Surgical Appliances, and Ophthalmic Surgery.

Diploma in Midwifery.—A diploma in Midwifery is granted after examination to persons possessing a registrable qualification.

NAVAL MEDICAL SERVICE.

THE life offered to officers of the Royal Naval Medical Service is one that ought to appeal to a large section of recently qualified medical men. More, we have here a career which, in our opinion, many students should set before them as an object. The reasons for this opinion, we may say, are very similar to those which might induce a young medical man to enter any of the sister Services, and there is no intention in what follows, under this or the subsequent headings, to pit one Service against the other or to recruit in one direction more than in another. The particular regulations for each Service should suffice to give each man the necessary impetus for a decision.

In the Royal Naval Medical Service the young medical officer obtains these advantages. He sees the world in congenial company and with an assured position, the pay is good, the pensions are commensurate, and the opportunities offered now for scientific work are real, while, if they are taken, promotion awaits the officer on grounds of professional merit.

Rank of Surgeon Lieutenant-Commander will be granted to surgeons at the expiration of six years from date of entry, and the point upon which stress should be laid is that special promotion can be made in cases of conspicuous professional merit, which is thus placed on a par with general service. Six years later the period of promotion to Surgeon-Commander is reached, after having passed the qualifying examination, when again special promotions can be made for conspicuous professional merit as well as for distinguished service; but promotions are limited in number, save, of course, for gallantry in action. This recognition of professional attainment should prove a very real incentive to progressive scientific work. The same principle prevails in the higher ranks. Promotions to Surgeon-Captain and later to Surgeon Rear-Admiral are made strictly by selection, but are confined to officers who prove themselves to be fitted, both professionally and as administrators, for this rank.

In this connexion we cannot do better than repeat a communication from a Surgeon Rear-Admiral to whom it fell to interview a large number of medical officers who served with the Navy in a temporary capacity during the war. These men had had experience, and could give an opinion of the life, its scopes and chances, though only from the point of view of war service. But they had experienced the most trying side of naval life, and their views would expose any objections, if such there are, against the career of a naval medical officer as not giving adequate scope for a full professional life.

The first satisfactory thing to mention is that those who thought scope was wanting were mostly young men, fresh from the schools, and undoubtedly deprived of freedom or initiative through the exigencies of war. The older men who had experience of civil practice looked at the situation more broadly, for they had standards of comparison which they could employ. They were able to comprehend better what the words "professional work" implied, and did not conceive their scope limited because in ministering to the wants of a selected community of healthy men living under strict discipline there was necessarily much routine and some monotony. They looked steadily at the facts, and found that professional work in a modern battleship includes a large variety of medical and surgical cases, both acute and chronic, while emergency operations, such as those for abdominal conditions, may frequently occur. Naval life in these circumstances may lead to opportunities for putting into practice much of what has been learned in the clinical wards of a hospital. Further, the opening for preventive medicine is large and many-sided, while appointments to the large shore establishments enable medical officers to keep their work, of all kinds, up-to-date.

New chemical explosives, as well as the extraordinary behaviour of common articles under extraordinary conditions of stowage, furnish perpetual problems and surprises for the medical officer on board ship, and bring him into intimate connexion with his charges in a way that is particularly necessary considering the conditions of life. No medical officer can expect to succeed unless he secures the confidence of those committed to his charge, and the health lectures which he is bound to deliver will be much more fruitful if they are delivered to an audience which trusts him. Moreover, the delivery of official lectures does not end this side of the medical officer's duties. He must be ready to answer questions, sometimes of real acuteness, which are put to him by the modern blue-jacket, and he will find that his lectures will often afford a starting point of work that may develop into great professional interest. Thus, without his being necessarily a psychologist, his influence will be felt by both officers and men, until the well-being of the ship may be profoundly affected by the extent of his tact and skill; for example, small matters assume undue proportion under stress of confinement, and the medical officer should be quick to detect danger signs and warn his commanding officer. Numerous changes have been introduced during the last 20 years into the naval dietary, many of which were the outcome of representations and research by naval medical officers. The work wants carrying on, for much of it has gone to show that the food problem is very complicated. Every medical officer on board ship should make himself acquainted with food values and the human powers of assimilation under varying conditions of work and climate, and here there is ample scope for research. The modern requirements of gunnery and navigation necessitate precision in their use and have made ophthalmology a valuable subject for study in the Navy. The physical training of both officers and men is based on physiological axioms which are peculiarly the field of the medical officer; this training should be the subject of a watchful eye. There is no lack of scope here for professional work without making any reference to the vast problems which have to be faced when the medical officer has to arrange his particular department to the best advantage during or after an action. It is certain that he will not be able to do this unless in times of peace he gets himself ready by study. Lastly, there is the whole field of venereal and tropical disease.

The young medical officer need not be afraid that his work will be without scientific interest if he takes the opportunities offered him.

Conditions of Service.

For the time being the regulations for entry by examination into the permanent service are in abeyance, but a short service scheme providing for transfer to the permanent service has been inaugurated. The regulations for the entry of surgeon-lieutenants under this scheme provide for the usual qualifications of registration, good character, physical fitness, and age—the age not to exceed 30 years. The conditions of service are a three years' engagement with an option of a further year, to serve when and where required under the general rules of the service as regards discipline, and to rank with, but after, surgeon-lieutenants in the permanent service, and to receive two calendar months' notice of services being no longer required—that is, after two years and ten months' service.

The pay is £1 6*s*. 6*d*. per day, or £483 12*s*. 6*d*. per year, while there is a gratuity on discharge of £8 6*s*. 8*d*. for each completed month of service. A gratuity to officers invalided for causes not within their own control is payable, while the same allowances are received as are payable to permanent officers of similar rank, and lodging and provision allowances will be made and be subjected to revision from time to time. The rates mentioned are £80 a year when employed on shore without quarters, and £80 a year

APOTHECARIES' HALL OF IRELAND.

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations. The diploma of the Apothecaries' Hall of Ireland entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary's Licence. There are three professional examinations, the total fees for which amount to 30 guineas. Women are eligible for the diploma.

There are four examinations—primary, intermediate, Parts I. and II., and final. They are held three times a year, in March, June and December. The primary examination comprises biology, physics, theoretical and practical chemistry (with an examination at the bench). Candidates holding a Pharmaceutical licence are exempt from this subject. Intermediate, Part I., Anatomy and Physiology. Intermediate, Part II., Pathology, Medical Jurisprudence, and Materia Medica and Pharmacy. The intermediate examination comprises anatomy of the whole body (including practical dissections), physiology, practical histology, and materia medica. The final examination comprises medicine, surgery, and midwifery.

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years. The details of the course of education required and syllabus of the examinations will be supplied on application to the Registrar at 40, Mary-street, Dublin.

HOSPITALS AFFORDING PRACTICE RECOGNISED BY THE IRISH UNIVERSITIES AND CORPORATIONS.[1]

ADELAIDE HOSPITAL, Peter-street, Dublin.—Fee for nine months' hospital attendance, £12 12s.; six months, £8 8s Summer, three months, £5 5s. Two resident surgeons are elected yearly and four or more resident pupils half-yearly. At the termination of the session prizes in Clinical Medicine and Surgery and in Dermatology will be awarded.

Hudson Scholarship.—In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10, together with a silver medal, will be awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology.

The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom. Further particulars may be obtained from Dr. H. Bewley.

COOMBE LYING-IN HOSPITAL AND GUINNESS DISPENSARY FOR THE TREATMENT OF DISEASES PECULIAR TO WOMEN, Dublin.—This hospital contains 70 beds and consists of two divisions, one of which is devoted to lying-in cases and the other to the treatment of diseases peculiar to women. The practice of this hospital is one of the largest in Ireland. Lectures are delivered, practical instruction given, and gynæcological operations are performed in the theatres daily. There is a general dispensary held daily, at which instruction is given on the Diseases of Women and Children. There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynæcology is given. There is no extra charge for attendance at this Dispensary. There is accommodation for intern pupils who enjoy exceptional advantages of acquiring a thorough knowledge of this branch of their profession. Lady medical students can reside in the hospital. The residents' quarters are comfortable. Clinical assistants are appointed from amongst the pupils as vacancies occur. Certificates of attendance at this hospital are accepted by all licensing bodies. *Fees: Extern pupils for full* course of six months, £8 8s.; three months, £4 4s. *Intern pupils, one month, £4 4s.; each consecutive* month, £3 3s.; six months, £18 18s. Registration fee, in advance, 10s. 6d. Students can enter for attendance at any time, but preference is given to those entering from the first day of the month. Further particulars may be had on application to the Master or the Registrar at the Hospital.

SIR PATRICK DUN'S HOSPITAL, Grand Canal-street, Dublin.—Classes both in Medicine and Surgery are held each morning from 9 o'clock from Oct. 1st till the end of June. Special classes for junior students will be held in the wards during the months of October, November, and December. A Resident Surgeon, with salary, is appointed annually. Nine Resident Pupils are appointed each half-year. Six surgical Dressers and six Clinical Clerks are appointed each month. There are facilities for women students.

Prizes and Medals.—Clinical medals and prizes amounting to about £15 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev. Samuel Haughton, M.D., S.F.T.C.D. Candidates who fail to obtain these medals and prizes will be awarded special certificates in Medicine and in Surgery provided they show sufficient merit.

Fees.—Winter and summer session, £12 12s.; winter session (six months), £8 8s.; and summer session (three months), £5 5s. Special certificate in anæsthetics, £1 1s. The practice of this hospital is open to all students, and the certificates are recognised by Dublin University, the National University and Royal Colleges of Surgeons of England, Ireland, and Scotland.

Further information will be supplied by the Hon. Secretary to the Medical Board.

JERVIS-STREET HOSPITAL, Dublin.*—Founded 1718; rebuilt 1886. 130 beds. A new out-patient department has been completed and contains all modern requirements.

MATER MISERICORDIÆ HOSPITAL, Dublin.—This hospital, the largest in Ireland, containing 382 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction will be given by the Physicians and Surgeons at 9 A.M. daily. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary. Surgical operations will be performed daily. Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents. Instruction will be given on Pathology and Bacteriology. Three House Physicians, nine House Surgeons, and 16 resident pupils will be elected annually. Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff. Leonard Prizes will be offered for competition annually. For further particulars see prospectus. Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom. There is a Private Hospital for the reception of Medical and Surgical cases; also a Training School and a Home for Trained Nurses in connexion with the Hospital.

Terms of attendance.—Nine months, £12 12s.; six winter months, £8 8s.; three summer months, £5 5s. Entries can be made with any of the physicians or surgeons, or with the Registrar, Dr. John O'Donnell, 3, Merrion-square. A prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c., may be obtained from the Secretary, Medical Board, Mr. H. Barniville, 9, Merrion-square.

MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY.—This hospital was founded in 1753 and now contains 166 beds available for clinical teaching. A building containing 40 beds for the isolated treatment of fevers is attached to the hospital. The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom. Medical Clinical Clerks and Surgical Resident Pupils and we may say have proved a marked success, form a complete answer to such criticism, however just it was in the past. This scheme of creating Directorates permits specially selected men to rise from all ranks to Major-General on the strength of their scientific work. Hitherto, a few notable men being excepted, the rule in the R.A.M.C. has been that, whatever a man's qualifications or abilities, on attaining the rank of Lieutenant-Colonel, he must be prepared to go off into administrative work and leave his scientific duties to his juniors. If he preferred to remain working in bacteriology, in preventive medicine and hygiene, or in tropical diseases, for example, he could do so, but, except in extraordinarily fortunate circumstances for himself, he would find that his devotion to science had cost him all chances of further rise in his Service, promotion being reserved for the administrative billets. The arrangement was wasteful as well as mortifying. How could the younger men be expected to preserve their interest in their scientific studies if such was the outcome? And how could their seniors be expected to remain in touch with the scientific developments in whose working out they no longer had any personal share? This now has all been changed, largely owing to the work of Sir John Goodwin, Director-General of the Service, with the assistance of Sir William Leishman and Sir William Horrocks. The change has its expression in these Directorates. Time was found during the last year of the war to prepare a scheme of reform, and to-day all up to and including the rank of Lieutenant-Colonel can draw specialist pay and hold appointments carrying allowances. The following substitutions for Articles 360 and 361 in the Royal Warrant for Pay Appointment, Promotion, and Non-effective Pay indicate the position.

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[1] This list of the institutions recognised by the Conjoint Board of Ireland is supplemented in the regulations of the Colleges by those hospitals mentioned as recognised institutions in Scotland and England. The recognised facilities for clinical instruction in Belfast, Cork, and Galway have been described in connexion with the Belfast and National Universities.

Additional Pay and Charge Pay for Officers of the R.A.M.C.

The alterations, made under Army Order 411, 1919, became effective as from Jan. 1st, 1920:—

(1) In Article 360, *for* " officer under the rank of lieutenant-colonel appointed by Our Army Council as specialist.... 2*s.* 6*d.* a day," the following is substituted:—

" Officer not above the rank of lieutenant-colonel, while acting as specialist in a post considered by Our Army Council to merit the grant of additional pay, according to subjects or groups of subjects as under, within a limit of 5s. a day:—

Operative Surgery, advanced; Medicine; Ophthalmology; Gynæcology and Midwifery; Dermatology, including Venereal Disease, 5*s.* daily.

Otology, Laryngology, and Rhinology; Radiology; Anæsthetics; Mental Diseases; Hygiene; Pathology; subjects other than above, at the discretion of Our Army Council, 2*s.* 6*d.* daily.

Officers granted temporary higher rank while holding appointments in the services of hygiene and pathology will not be eligible for additional pay as specialists while holding such temporary rank."

(2) The following is substituted for Article 361 (*a*):—

" (*a*) Officer in charge of a hospital.—If the number of equipped beds, as certified by the Deputy Director of Medical Services, exceeds—

50 beds ..	2*s.* 6*d.* daily.	300 beds ..	7*s.* 6*d.* daily.
150 ,, ..	5*s.* 0*d.* ,,	500 ,, ..	10s. 0*d.* ,,

Officer in charge of a medical or surgical division of a general hospital with not less than 300 beds—half the above rates."

Further, an officer, graded as a specialist, and appointed to the charge of a medical or surgical division of a general hospital may be allowed to retain his additional pay and to draw the rate of charge pay laid down for the officer in charge of a medical or surgical division of a general hospital, provided that the total of additional and charge pay so drawn does not exceed the rate of charge pay drawn by the officer in charge of the hospital. With this exception charge pay and additional pay as specialist will not be issuable concurrently. It may be here pointed out that the distinction between scientific and administrative work is largely verbal. Take the conduct of a large hospital—is it possible to separate the scientific routine which is designed to ensure progressive therapeutics from the administrative work which provides and maintains the premises and service, and selects and oversees the personnel?

Under the conditions enumerated the possibilities for good workers is very great in the R.A.M.C.; they will attain to positions of proper trust and emolument by scientific work. This should much improve recruiting among the officers of the R.A.M.C. But there will almost certainly follow arrangements by which all special medical service will receive higher consideration in the Corps. Not only is there in the work of the Army Medical Department scope for original labour and research in tropical disease, in preventive medicine, and in bacteriology, as well as in the vast clinical field open to the specialist in medicine, surgery, or gynæcology, in venereal disease, in ophthalmology, and so on, but it is proposed to develop a scheme whereby child welfare shall be undertaken systematically by the R.A.M.C. A scheme of this sort is already running successfully at Aldershot, and we see in this direction a fine opening for preventive medicine, and one which should bring the officers of the R.A.M.C. into touch with the soldiers in a valuable and intimate manner.

The above schemes for the stimulation of purely professional work among officers of the Corps must not be taken to imply that instruction in administrative work has been overlooked. One of the lessons of the war was that good administration must exist for the fullest benefit to be obtained from the professional talent available. The necessity of training officers who may display capacity for organisation and administration has not been lost sight of, and there are many appointments of varying degrees of importance and responsibility open to officers who desire to take up this side of the Corps's duties. The inclusion of Officers of the Corps among those officers who are now detailed to undergo courses at the School of Army Administration, Chisledon, is a step of great importance in this connexion.

Rates of Pay and Pension.

The following table shows the

Total Emoluments: Royal Army Medical Corps.

Appointment.	Pay.			Rations.		Servant.		Married and *Unmarried.**						
								Lodging.		Fuel and light (average).		Furniture allowance.		Total (per annum).
	£	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	£
Lieutenant	1	2	0	2	1	2	0	3 *2*	6 *3*	1 *0*	0 *10*	2	0	594 *532*
Captain ..	1	7	0	2	1	2	0	4 *3*	6 *0*	2 *1*	0 *2*	2	0	722 *643*
After 5 yrs.	1	7	6	2	1	2	0	4 *3*	6 *0*	2 *1*	0 *2*	2	0	731 *652*
,, 6 ,,	1	8	0	2	1	2	0	4 *3*	6 *0*	2 *1*	0 *2*	2	0	740 *661*
,, 10 ,,	1	11	0	2	1	2	0	4 *3*	6 *0*	2 *1*	0 *2*	2	0	795 *716*
Major ..	1	15	0	2	1	2	0	4 *4*	6 *0*	2 *1*	0 *7*	2	0	868 *815*
After 15 yrs.	2	0	0	2	1	2	0	4 *4*	6 *0*	2 *1*	0 *7*	2	0	959 *907*
Lieut.-Col.	2	10	0	2	1	2	0	4 *4*	6 *6*	2 *1*	0 *7*	2	0	1142 *1098*
After 20 yrs.	2	12	6	2	1	2	0	4 *4*	6 *6*	2 *1*	0 *7*	2	0	1187 *1144*
,, 25 ,,	2	15	0	2	1	2	0	4 *4*	6 *6*	2 *1*	0 *7*	2	0	1233 *1189*
Colonel ..	3	5	0	2	1	2	0	5 *5*	6 *6*	2 *1*	10 *10*	2	0	1449 *1395*
Major-Genl.	4	15	0	2	1	4	0	11 *11*	0 *0*	3 *2*	7 *7*	2	0	2147 *2082*

* Rates for unmarried officers in italics.

Charge pay (2*s.* 6*d.*–10*s.* per day) and specialist's pay (2*s.* 6*d.*–5*s.* per day)—i.e., from £45–£180 per annum—in addition for a considerable percentage of officers.

Retirement and Retired Pay.

The following are the rates of pension and retired pay:—

1. Retired pay will consist of two parts: (*a*) a service element based on the officer's total service; (*b*) a rank

THE LANCET.

LONDON: SATURDAY, AUGUST 27, 1921.

The Numbers of the Profession.

At the last meeting of the General Medical Council Sir Donald MacAlister, in his Presidential Address, gave the figures relating to the registration of medical students for recent years, and pointed out that the number of students registered in 1920 was higher than had occurred in any previous year save in 1919, the tendency having been steadily upwards since 1913, when the number was 1480. In 1919 the registration of medical students rose to the abnormal number of 3420, to fall again last year to 2531, but this latter figure is 1000 higher than the figure for 1913, the last complete year before the war. There is no doubt that at last the position is being reached in which there may be a danger to professional education, and perhaps to professional careers, in the mere number of students who are entering. The plea that the medical profession is already overcrowded has often been put forward, but hitherto has not been found sound. Certain obvious professional hardships, generally in relation with salaries or fees, were attributed to overcrowding, but on scrutiny it has been seen, first, that the hardships often had other origin, and, secondly, that the medical profession, having regard to the average size of its membership compared with the figures of the population, was not overcrowded. Certainly there are centres where too many doctors are congregated, leading to local congestion of medical service and the evils of undue competition, but against these centres there may be set off rural districts where the inhabitants are far from thinking that they are too well supplied with doctors, and where shortage has led to an apprehension of the abuses of monopoly. Until recently those who averred that the profession was overcrowded had few facts behind them; but to-day the position is altered.

It must be regarded as a high tribute to our calling that the desire to enter it has become of late so much keener among young men and young women, finding support also among those who have to take thought for the future of their children and charges. There is no one cause for this attitude either among the juniors or the seniors; many things have played their part to bring it about. The events of the war count first, for our science and art emerged from that protracted and terrible struggle with steadily increasing credit. In medicine and in surgery discoveries were made of fundamental importance, while along all lines old techniques were tried, modified, improved, or rejected; and side by side with the advances in scientific equipment there was manifested by medical officers, in all the Services and under all the conditions of employment, a spirit of zeal and devotion which brought medicine before the public eye in a deservedly favourable way. These things have proved great inducements to enter the medical career, but already, and before the war had exercised any influence, the wishes of much of our youth were set in that direction. Added opportunities now make the ambition to become a doctor more easily realisable. The rise of provincial universities has led to a high standard of professional education all over the kingdom, and has brought entry into the profession—and entry amidst favourable circumstances unknown to the last generation—within the grasp of literally thousands of aspirants. Nor is the career any longer the pecuniary adventure that it was for so many who, in the last two generations, struggled into our ranks, often to have those struggles rewarded by a life of perpetual poverty, and sometimes by undoubted leadership among us. The National Insurance Act, that enormously criticised measure, has undoubtedly stabilised general practice in many directions. Obviously it has done away with the need to possess any large capital sum of money before embarking upon private practice; a certain livelihood can be made from the outset, and we refuse to believe that the conditions of that livelihood will not soon be much improved from the view-point of both medicine and the public. We are only as yet at the beginning of a domestic revolution, having for its object the maintenance of the health of the people; and when fuller coöperation between medicine and the public arrives, and when the doctrines of prevention in its larger sense have been learned, the life of the general practitioner, though ordered on a new pattern, will be seen in its proper place as the finest life which can be lived by those who would serve humanity. The institution of the Ministry of Health has familiarised the public with the aims of medical endeavour and the directions of medical thought; so that wise parents turn to our calling as a great future for their children.

Such are the factors which have been acting with greater or less force to bring about a steady increase in our students' ranks, and now we may fairly expect an addition to the roll of qualified medical men in the year 1925 of some 3000 practitioners, and of some 2000 more in each of the years immediately following. And we hesitate to say that even with these figures the medical profession will be overcrowded, for there is more work to do now than there ever has been, and more hearts, heads, and hands are required for its performance. The four great Services offer splendid chances of medical work and material success. Every development of medicine shows us that our profession can enter into relations with provinces of life from which it has hitherto seemed to be entirely detached—we have only to look at the multiplicity of medical questions which now come under consideration in both Houses of Parliament, and receive in each House marked attention, to be sure of this. With this expansion of work to do an increase in the number of those who have to do it will be necessary. At the same time prudence dictates the taking of measures to prevent too many people from seeking the same employment, thus lowering the conditions of that employment, and losing the public advantage that may now be derived from recruiting for medical work a fine section of young people. What does economy say? At first sight it does not seem to be a move towards economy to suggest that many more doctors are required than the community has hitherto felt the need of, while they must be better paid than their predecessors. But that is not the right way to state the situation. What really has come about is that an appreciation of the many sides of life with which medicine, especially in its preventive aspects, is concerned, has grown up. The necessity of medical counsel of a trustworthy character is being felt in new places, while it is perceived that money spent in securing adequate medical service is saved, and saved again, in man-power.

same concessions, if any, as may be granted to other officers in civil employ.

The rates of basic pay and pensions are given below:—

NEW RATES OF PAY.

(Given in rupees per mensem.)

Rank.	Year of service.	Basic pay.	Overseas allowance.	Total basic pay and overseas allowance.	Rank.	Year of service.	Basic pay.	Overseas allowance.	Total basic pay and overseas allowance.
		Rs.	Rs.	Rs.			Rs.	Rs.	Rs.
					Major	13	950	250	1200
Lieut.	1	500	150	650		14	950	250	1200
	2	500	150	650		15	950	250	1200
	3	500	150	650		16	1100	250	1350
						17	1100	250	1350
Captain	4	650	150	800		18	1100	250	1350
	5	650	150	800		19	1250	250	1500
	6	650	150	800		20	1250	250	1500
	7	750	200	950	Lieut.-Col.	21	1500	250	1750
	8	750	200	950		22	1500	250	1750
	9	750	200	950		23	1500	250	1750
	10	850	200	1050		24	1600	250	1850
	11	850	200	1050		25	1600	250	1850
	12	850	200	1050		Over 25	1700	250	1950
						On S.L.	1850	250	2100

S.L.—Selected List.

Charge allowances and second-in-command allowances for station hospitals will be admissible in addition to the above rates of pay at the following rates:—

(a) *Charge Allowance.*

	Rs. per mensem.
1st class hospitals ..	240
2nd class hospitals ..	180
3rd class hospitals ..	120
4th and 5th class hospitals	nil.

(b) *Second-in-Command Allowance.*

	Rs. per mensem.
1st class hospitals ..	120
2nd class hospitals ..	90

All existing general allowances paid to holders of professional and bacteriological appointments and certain other special classes of appointments on the civil side will be maintained.

Indian officers who have joined or may join the service after Dec. 1st, 1918, will draw, as from Jan. 1st, 1920, pay in accordance with the basic scale, unless they are already drawing pay at a higher rate, in which case they will continue to enjoy the benefit of that rate for so long as they would otherwise have done; but they will not receive any further increment until it is due to them under the basic scale.

PENSIONS.

The pension rates as now revised give £400 a year after 17 years' service, increasing to £800 after 27 years' service. Formerly the rate was £300 after 17 years' service, increasing to £700 after 30 years' service.

Pension Rates.

After 17 years' service ..	£400	After 23 years' service ..	£620
" 18 " ..	430	" 24 " ..	660
" 19 " ..	460	" 25 " ..	700
" 20 " ..	500	" 26 " ..	750
" 21 " ..	540	" 27 " ..	800
" 22 " ..	580		

Additional pensions for administrative officers:—

Colonel, after two years' active service as such	£125
After four years	250
Major-General, after one and a half years' active service as such	300
After three years	350

It is quite impossible to foretell how and to what extent the civil side of the I.M.S. will be affected by the Indian Reform scheme, the essence of which is the increasing participation of Indians in the government of the country. None the less, we consider it right to draw the attention of young medical men who are considering joining the Indian Medical Service to this aspect. At the same time we see no reason why the increased coöperation of Indian and European medical officers should not, if a sympathetic attitude is adopted, result in the benefit of both. The number of Indians in the I.M.S. in the days of the competitive examination varied from 8 to 12 per cent. In the two or three years before the war the percentage of successful Indian candidates varied from 12 to 30 per cent. At the present time European and Indian candidates are admitted by nomination in the proportion of 2 Europeans to 1 Indian. A strict system of selection is maintained and permanent commissions are only granted to candidates, whether Europeans or Indians, who have been recommended after a personal interview as suitable and desirable professionally and socially. Practically all the Indian candidates recommended so far have served in the field with distinction and have been recommended by two of their brother officers for the grant of a permanent commission.

A Board of Selection has been appointed in India for the recruitment of permanent officers for the I.M.S. in the manner indicated, consisting of the Director-General, I.M.S., the Director of Medical Services in India, and an Indian Officer, I.M.S. Candidates who may be summoned by the Board for interview will, if considered suitable for appointment, be placed in one of two classes, according as they have or have not received their medical education chiefly in England. The final recommendations as to the former will be made by the Selection Board in England, while the recommendations as to the latter will be sent direct from India to the Secretary of State, who will make appointments to fill the vacancies. The Selection Committee in England, in addition to considering applications from India of candidates who have mainly received their education in England, will review those of the candidates in the United Kingdom, but not the recommendations of the India Committee in regard to candidates educated in that country.

For full particulars intending candidates should apply to the Secretary, Military Department, India Office, Whitehall, London, S.W. 1.

WOMEN'S MEDICAL SERVICE FOR INDIA.

THIS service is open to properly qualified medical women of British or Indian nationality who desire to carry on work in India. The service was founded in 1913 by the Countess of Dufferin's Fund, the committee of which was granted an annual subsidy of 1½ lakhs (£10,000) by the Government of India for this purpose. The salaries first offered have lately been found inadequate, partly owing to the rapid rise of prices due to the war. Proposals for a substantial increase of pay have now been accepted by the Government of India.

Medical women proceeding to India to join the Women's Medical Service receive a sufficient sum for a first-class passage to India. On landing they are posted to one of the larger women's hospitals to gain Indian experience and to learn the language. During this period (from six months to two years) private practice is not allowed. For a further period they are appointed to act temporarily for medical women on furlough, during which time private practice is allowed. They are then definitely appointed to the charge of hospitals. Private practice is always allowed after the first two years, provided it does not interfere with official duties. The only exception is in administrative or educational posts, when an allowance in lieu of practice is given. The amount obtained from practice varies according to the station, but in most cases it forms a fair addition to the salary, varying from £150 to £1000 a year.

Excellent opportunities for surgery—especially gynæcological—are found in the Women's Medical Service. The prevalence of osteomalacia in some parts of the country leads to the necessity for frequent Cæsarean section, while uterine fibroids, ovarian tumours, and diseased tubes swell the number of abdominal operations. The number of large operations performed will vary with the surgical reputation of the medical woman, but in some cases it is considerable.

in lieu of rations when not victualled in kind, while arrangements are made for officers in temporary employment on shore. No unemployed or half pay is granted, but there are pensions for wounds or injury on duty, and in the event of death the officer's widow and children would fall under regulations applying to officers on the permanent list. There is an equipment allowance for ordinary uniform of £50, but the officer provides himself with a pocket case of instruments and a stethoscope.

A short service surgeon lieutenant after six months' service, on application to the Secretary of the Admiralty, may be considered for transfer to the permanent service on a satisfactory report being received from the senior medical officer of the Squadron Hospital or Depot in which he has served or is serving as to his professional ability, and a favourable report from his commanding officer as to conduct. Such candidates must have been under the age of 28 on joining for short service, and officers so transferred will not be eligible for the gratuities provided. They will be permitted to count their seniority from date of entry for short service for purposes of promotion and for increment of full pay, and similarly they will be permitted to count their service from the date of entry for purposes of retired pay, but for purposes of retiring gratuity on the permanent officers' scale their services will be reckoned only from the date of transfer to the permanent list, this date being that of receipt in the ship or establishment in which the officer is serving of the order for his transfer to the permanent list. Until that date he will retain his temporary rate of pay.

If a short-service lieutenant wishes to transfer to the permanent service he will then come under the following conditions of pay and pensions :—

RATES OF PAY AND PENSION.

—	Year of 365 days.			One day.		
	£	s.	d.	£	s.	d.
Surgeon Rear-Admiral ..	1916	5	0	5	5	0
Surgeon-Captain :						
On promotion	1186	5	0	3	5	0
After 3 years' seniority ..	1277	10	0	3	10	0
,, 6 ,, ..	1368	15	0	3	15	0
,, 9 ,, ..	1460	0	0	4	0	0
Surgeon-Commander :						
On promotion	821	5	0	2	5	0
After 3 years' seniority	894	5	0	2	9	0
,, 6 ,, ..	967	5	0	2	13	0
,, 9 ,, ..	1040	5	0	2	17	0
Surgeon - Lieutenant - Commander :						
On promotion	638	15	0	1	15	0
After 3 years' seniority	675	5	0	1	17	0
Surgeon-Lieutenant :						
On entry	438	0	0	1	4	0
After 3 years' seniority ..	529	5	0	1	9	0

On first appointment to the Service, Medical Officers will receive full pay from date of appointment, but subject to the provisions of Article 1347 of the King's Regulations, 1913.

Flag Allowances.

An allowance of 5s. 0d. a day in addition to full pay is granted to the Senior Medical Officer of a flagship bearing the flag of a Commander-in-Chief. An allowance of 2s. 0d. a day is granted to the Senior Medical Officer of a ship bearing other flags or broad pendants.

Rates of Pension.

Compulsory retirement will be as follows :—

(i) Surgeon Rear-Admirals retire at the age of 60 with retired pay at the rate of £900 per annum plus £22 per annum for each year's service over 27 years counting for retired pay, subject to a maximum rate of £1010 per annum. If, however, less than 27 years' service counting towards retired pay is rendered, a deduction of £22 per annum is made for each full year wanting to complete that period, subject to a minimum of £700 per annum.

(ii) Surgeon-Captains retire at the age of 55. Maximum retired pay, £900.

(iii) Surgeon-Commanders retire at the age of 50. Maximum retired pay, £600.

(iv) Surgeon Lieutenant-Commanders and Lieutenants retire at the age of 45. Maximum retired pay, £450.

Subject to these maxima, the rates of retired pay for Surgeon-Captains, Surgeon-Commanders, Surgeon Lieutenant-Commanders, and Surgeon-Lieutenants are as follows :—

Age on retirement.	Retired pay.	Period of service (years) counting towards retired pay.	(A)		Age on retirement.	Retired pay.	Period of service (years) counting towards retired pay.	(A)	
			Addition.	Deduction.				Addition.	Deduction.
	£ (p.a.)		£ (p.a.)	£ (p.a.)		£ (p.a.)		£ (p.a.)	£ (p.a.)
55	790	24	22	15	47	562	20	15	15
54	765	24	22	15	46	525	20	15	15
53	742	23	22	15	45	478	19	15	15
52	720	23	22	15	44	450	19	15	15
51	697	22	22	15	43	412	18	15	15
50	675	22	15	15	42	375	18	15	15
49	637	21	15	15	41	337	17	15	15
48	600	21	15	15	40	300	17	15	15

(p.a.) = per annum.

(A) Addition for each full year's service in excess of that specified in column 3 or deduction for each full year wanting to complete that period of service—addition or deduction limited to five years in each case.

ARMY MEDICAL SERVICE.

THE recent alterations in the conditions of service in the Royal Army Medical Corps, which constituted, as we said at the time, the greatest reform that has taken place in that Service for a generation, have well fulfilled their promise. For many reasons which are obvious and have been detailed on previous occasions, the Service can be thoroughly recommended to young medical practitioners. The Regulations should be obtained from the Army Medical Department, and carefully studied.

These are the things which the man who contemplates joining the Service should bear in mind. The rates of pay and allowances are good; the chances of seeing the world and the opportunities for post-graduate study are generous, and the work is nowadays varied, responsible, and interesting. At certain periods the young officer is relieved from all other duties for six months for the purpose of post-graduate study. During this period he is on full pay and the fees for his courses of instruction are paid by the State. His time is devoted to post-graduate work, and the leading clinical and scientific institutions are coöperating to secure that this post-graduate work shall be real and fruitful. Officers who show a marked aptitude for special subjects and have had previous practical experience in them are now selected to undergo a specialist course lasting for a further six months, thus giving these officers a post-graduate course of 12 months in place of the maximum of nine months that previously obtained. This is already resulting in better trained and more highly skilled specialist officers being turned out by the Royal Army Medical College. At the same time in districts where the privilege would be of the most practical value opportunities are forthcoming for young officers to attend the clinical practice of large local general hospitals.

By a Royal Warrant issued in September, 1919, medical and combatant officers were placed on the same footing as regards retired pay, and the fact that medical officers enter the Service after a long and expensive training some five years later in life than combatant officers was overlooked. This inequality of treatment has now been rectified, with the result that a medical officer of 20 years' service or over gets £75 per annum more pension than a combatant officer with the same number of years' service.

Once again let us deal with the most frequently repeated criticism of the Service—namely, that administration eternally takes the *pas* of science. The Directorates in Pathology and Hygiene which were recently created in the R.A.M.C., and which

An outfit allowance of £30 will be granted to officers if they have had no previous commissioned service. If they have had previous commissioned service in the Royal Navy, the Army, or the Royal Marines, but not in the Royal Air Force, they will receive an outfit allowance of £25.

Officers on entry are required to provide themselves with the regulation pocket case of instruments.

RATES OF PAY AND RETIRED PAY.

The rates of pay are as given below :—

Years of service.	Rank.	Rate per diem.
		s.
On joining	Flying Officer.	24
On promotion	Flight Lieutenant.	26
After 2 years in the substantive rank	,,	28
,, 4 ,, ,, ,, ,,	,,	30
On promotion	Squadron Leader.	34
After 2 years in the substantive rank	,,	36
,, 4 ,, ,, ,, ,,	,,	38
,, 6 ,, ,, ,, ,,	,,	42
On promotion	Wing Commander.	46
After 2 years in the substantive rank	,,	50
,, 4 ,, ,, ,, ,,	,,	52
,, 6 ,, ,, ,, ,,	,,	54
On promotion	Group Captain.	60
After 2 years in the substantive rank	,,	64
,, 4 ,, ,, ,, ,,	,,	68

Rates of pay in India :—

	Rupees per mensem.		Rupees per mensem.
Flying Officer ..	650	Squadron Leader ..	1050
Flight Lieutenant ..	750	After 2 years ..	1100
After 2 years ..	850	,, 4 ,, ..	1150
,, 4 ,, ..	900	,, 6 ,, ..	1250
		Principal Medical Officer	1950

The scale of retired pay for Group Captains and lower ranks is given below :—

Age.	Service counting for retired pay.	Rate of retired pay.	Addition for each extra year of service.*	Reduction for each deficient year of service.*
		£	£	£
55	24	790	22	15
54	24	765	22	15
53	23	742	22	15
52	23	720	22	15
51	22	697	22	15
50	22	675	15	15
49	21	637	15	15
48	21	600	15	15
47	20	562	15	15
46	20	525	15	15
45	19	487	15	15
44	19	450	15	15
43	18	412	15	15
42	18	375	15	15
41	17	337	15	15
40	17	300	15	15

* Limited to five years.

Group Captains retire at 55; maximum retired pay £900.
Wing Commanders retire at 51; maximum retired pay £600.
Squadron Leaders retire at 48; maximum retired pay £500.

There will be a minimum qualifying period for retired pay of 20 years.

Gratuities.

Short-service officers will receive gratuities at the rate of £100 for each of the first two completed years of service, and at the rate of £150 for the third and fourth completed year. (If granted permanent commissions these gratuities will not be payable, but the period of service under the short-service commission will count for retired pay.)

Medical officers holding permanent commissions may, at the discretion of the Air Council, be allowed to withdraw from the Service after ten years' service with a gratuity of £1250 or after 16 years with a gratuity of £2000 in lieu of retired pay.

Allowances.

The usual allowances will be payable to medical officers under the same conditions as to officers of other branches of the Royal Air Force.

COLONIAL MEDICAL SERVICE.

IN the self-governing dominions, Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland, medical appointments are made concerning which information can be obtained from the High Commissioners or Agents-General in London; appointments in Egypt and the Soudan are regulated from the Foreign Office; in Rhodesia the appointments are made by the British South Africa Company, London Wall Buildings, E.C.; in North Borneo application should be made to the British North Borneo Company, 37, Threadneedle-street, E.C., for appointments; and those in Sarawak are in the hands of H.H. the Rajah.

But in addition to all these there are a large number of important posts under the patronage of the Secretary of State for the Colonies. These concern East Africa (the East Africa, Uganda, Nyasaland, Somaliland and Zanzibar Protectorates); the Far East (Ceylon, the Straits Settlements, and Federated Malay States, Hong-Kong, Weihaiwei, Mauritius, and Seychelles); West India (British Guiana, Jamaica, Trinidad, the Windward Islands, the Leeward Islands, Barbados, British Honduras, and the Bahamas); Fiji and the Western Pacific, Cyprus, Malta, Gibraltar, St. Helena, Bermuda, and the Falkland Islands; and West Africa (Nigeria, the Gold Coast, Sierra Leone, and the Gambia). As a general rule, each Colony or Protectorate has its own public service distinct from that of every other, and it is usually only the higher officers who are transferred by the Secretary of State from one Colony to another; but there are two exceptions to this rule. The West African Medical Staff, which serves Nigeria, the Gold Coast, Sierra Leone, and the Gambia, form one service, and in practice the medical services of the Straits Settlements and the Federated Malay States may be regarded as one, as the officers may be and frequently are transferred from the Colony to the States, or vice versa. In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies are almost always filled locally by the appointment of qualified native candidates, or—in the case of some of the higher posts—by transfer from other Colonies. Appointments in Malta are all filled locally. Vacancies in the Hong-Kong Medical Department are generally filled by transfer from other Colonies. Medical appointments in the Bechuanaland Protectorate, Basutoland, and Swaziland are made only on the recommendation of the High Commissioner for South Africa, who usually appoints local candidates. In most cases the duties of a colonial medical officer are of a very general character, including medical, surgical and often public health work. It is only occasionally that a specialist is required.

Applicants must be between the ages of 23 and 35 and doubly qualified, and the choice will usually fall on those who have held hospital appointments. Before being definitely appointed candidates will be medically examined by one of the consulting physicians of the Colonial Office: Sir J. Rose Bradford, K.C.M.G., 8, Manchester-square, London, W.; Sir J. Hawtrey Benson, 57, Fitzwilliam-square, Dublin; Lieutenant-Colonel J. Arnott, I.M.S., 8, Rothesay-place, Edinburgh; and W. T. Prout, Esq., C.M.G., 14, Rodney-street, Liverpool.

East Africa.—There are now vacancies for Medical Officers and Medical Officers of Health in East Africa. It is usual to select Medical Officers of Health from among officers already serving as Medical Officers, and in the wording of the regulations the term "Medical Officers" covers "Medical Officers of Health," save where the context indicates otherwise. Medical Officers selected for appointment to East Africa are allocated to one of the following administrations: Kenya Colony and Protectorate, Nyasaland Protectorate, Somaliland Protectorate, Tanganyika Territory (late German East Africa), Uganda Protectorate, Zanzibar Protectorate. Whenever possible, a successful candidate is allocated to the Administration for which he expresses a preference. The conditions of service are here summarised: Appointments held by Medical Officers are on the permanent and pension-element for the rank from which the officer retires. An officer with less than 20 complete years' service will not be eligible for retired pay.

2. The scale will be as follows:—

(*a*) Service element.—£15 a year for each completed year of service.

(*b*) *Rank element.*—

Rank from which retired.	After completing 1 year's service in the rank.	After completing each additional year's service.	Maximum rank element.
	£	£	£
Major	12	12	120
Lieutenant-Colonel	150	30	240
Colonel	290	50	390
Major-General ..	410	50	540
Lieutenant-General	590	50	690
General	740	50	840

The retired pay of an officer retiring with less than one complete year's service in the rank from which he retires will be assessed as though he had retired from the rank below.

Maximum rates of retired pay (*a*) and (*b*) together:—

	£		£
Captain and Subaltern ..	300	Colonel	800
Major	450	Major-General ..	1000
Lieutenant-Colonel ..	600	Lieutenant-General	1200

Officers with 8½ and less than 20 years' service may be permitted to retire with a gratuity varying from £1000 to £2500.

Lastly, we may remark that arrangements are now being made to appoint Consultants in both Medicine and Surgery and the ranks of Colonel and Major-General will now be open to such Officers. The duties of these Officers are to visit all Commands and advise the Director-General, as the result of their inspections on the spot, with regard to the professional work being carried on in the hospitals, and the degree of efficiency attained by the personnel with whom they are respectively concerned. This should ensure a high standard of performance if only because of the satisfactory feeling that good work will not by accident remain unnoticed.

The present holder of the post of Consultant in Surgery is Colonel E. M. Pilcher, recently Professor of Surgery at the Royal Army Medical College. No officer has yet been appointed as Consultant in Medicine.

INDIAN MEDICAL SERVICE.

THE Indian Medical Service differs from all the other State Services in that it combines the attractions of a military and a civil career. It is primarily a military service, and all officers on first landing in India are detailed for service with Indian troops in Indian military station hospitals. After a period of military duty, which before the war varied from four to eight years, the majority of officers chose and were transferred to the civil side. While in civil employ they constitute the war reserve for the Indian Army. During the great war practically all officers not occupying administrative posts or filling essential civil duties were called up for military service.

The possibilities of medical and surgical work and the opportunities for research in all directions which the Service affords have always proved of great attraction, though in recent years the Service has lost its former popularity in the medical schools, and for some time prior to the war competition among highly qualified European candidates was not keen. Under the changed conditions in India the pay and emoluments were insufficient, and the terms of service were out of date. The whole constitution and organisation of the Service has recently been under examination by a Medical Services Committee. The report of this Committee has not yet been published, but it is understood that its recommendations are such as seem likely to restore the Indian Medical Service to its former high position and prestige among the State Services. Meanwhile, the pay, pensions, and leave reserve have been substantially increased, whilst questions relating to furlough pay, passages, status of administrative officers are in process of satisfactory settlement. The Station Hospital system has been introduced and command allowances and second in command allowances have been granted for charge of hospitals. These reforms, now happily ensured, have completely altered the outlook. Young medical practitioners can now join the I.M.S., being secure of a competency from the day they receive their commissions. A great career is open to one with the proper qualities and keenness.

During the first few years the young officer is trained in Indian military medical organisation. He acquires experience in dealing with the different races and castes which comprise the Indian Army. He learns the language and customs of the country. He familiarises himself with the practice of tropical medicine and surgery, and has leisure to pursue his further studies with time for recreation and sport in any direction his inclination may dictate. During these years he can make up his mind as to any special branch of study, and whether he is desirous of remaining in military employ throughout his service. Specialist appointments are available on both the military and civil sides.

On the civil side, and the majority of officers are civil surgeons in charge of districts and the civil district hospitals, the work is heavy and interesting, the bulk of it being surgery. There is no country in the world which offers better opportunity for the young surgeon once he has acquired the confidence and esteem of the inhabitants. Private practice is permitted, but it may be stated at once that the emoluments from this source, except in the Presidency or large towns, are generally negligible. Nevertheless, with the pay as it now exists, plus certain minor allowances, the civil surgeon is in a position to live reasonably in his earlier years, and can expect to be selected for the higher professional posts as a reward of merit, when a lucrative practice may be obtained. I.M.S. officers are eligible for the professorships at the Medical Colleges in Calcutta, Bombay, Madras, Lahore, and Lucknow in the various subjects comprising the medical curriculum. The bacteriological, sanitary and chemical examinerships, and the work asylums and jail departments open out careers of a varied and valuable kind for those who wish to devote themselves to scientific research or specialist work. The bacteriological laboratories and Pasteur institutes at Kasauli, Bombay, Conoor, Shillong, and Rangoon are splendidly equipped with provision for research workers. In addition to the scales of pay laid down, allowances are granted for service in these different directions.

Under the study leave rules officers are entitled during their service to a year's study leave in England. This period counts as duty, and is in addition to furlough. It is granted on the basis of one month's study leave for each year's active service up to a total maximum of 12 months. Most officers take it in two periods of 6 months each, and add it on to their ordinary furlough. During the period of study leave they are at liberty to pursue courses of approved study in any country. They receive furlough pay plus an additional lodging allowance of 12s. a day. The opportunity thus provided for continuing post-graduate studies for a period of six months twice in his service is invaluable both to the individual and the State.

Accelerated promotion of six months to the rank of major is granted to officers for approved study or for obtaining the higher medical qualifications.

As regards leave, the Secretary of State has undertaken to increase the leave reserve to 25 per cent. and maintain a 2½ per cent. study leave reserve in addition. These percentages when worked up to are considered ample.

The Secretary of State has further undertaken that officers of the I.M.S. on the military side will receive the same concessions as regards passages as combatant officers, while officers on the civil side will receive the are pensionable. There are at present 18 Medical Officers, three of whom are also Magistrates, in addition to a Chief Medical Officer (£700 a year, rising to £800), a Medical Officer of Health (£500, rising to £600), and a Senior Medical Officer (£450–£500). The medical services of Fiji and the Western Pacific are interchangeable. While serving in the Western Pacific Protectorates their duties may be of a quasi-magisterial nature, and they draw an extra non-pensionable allowance of £50 per annum.

Cyprus.—There is a Chief Medical Officer paid at the rate of £750 to £900 per annum, and three District Medical Officers paid at the rate of £500 to £600 per annum, all enjoying private practice (except the Chief Medical Officer, who is allowed consulting practice only) and receiving 2*s.* per diem forage allowance; these are the only medical appointments in the island which are open to English candidates.

Gibraltar.—There is a surgeon of the Colonial Hospital receiving £750 with fuel and light allowances, and private practice. He also receives £50 for medical examination of school children. There are also two Assistant Surgeons with a salary of £720 per annum, who are allowed private consulting practice only. Free quarters, unfurnished, are provided for all three officers.

St. Helena.—The Colonial Surgeon at present receives £300 per annum, £20 fees as Health Officer, and £30 horse allowance. Private practice is allowed. The Assistant Colonial Surgeon receives £550 a year and a horse, with forage allowance; but no private practice is allowed without special permission.

Falkland Islands.—There are two appointments. The Colonial Surgeon is paid at the rate of £600 per annum, with £25 as Health Officer. The Assistant Colonial Surgeon is paid at the rate of £500 per annum without quarters. Part of the salary is provided from private sources. Private practice is allowed to the Colonial Surgeon, and to a lesser extent to the Assistant Colonial Surgeon.

Leave and Passages.—In the East African Protectorates leave of absence on full salary is granted in the normal case after a tour of residential service (of not less than 20 nor more than 30 months) to an amount of five days for each completed month of residence (or 2½ days when for any reason the officer is not returning to East Africa) exclusive of the periods of the voyages to and fro. Officers serving in Uganda, Zanzibar, or in certain stations in the East Africa and Nyasaland Protectorates are allowed six or three days' leave respectively in respect of each month of service. In Somaliland special leave regulations exist which provide for an officer taking leave approximately every year. Free first-class passages are provided for the officer only. In the Malay Peninsula two months' leave of absence with full salary may be granted in respect of each year's service, and this leave may be accumulated up to a maximum of eight months. Additional leave on half pay may be granted on special grounds. If an officer on the occasion of his first leave is in receipt of a pensionable salary of less than £500 a year, he is granted a free return passage to the United Kingdom. In Hong-Kong leave of absence on half salary may be granted after 4½ years' service, and a portion of such leave may be commuted, if the Governor agrees, for half the amount on full pay. Leave of absence in excess of 10 months at a time will not be granted, but an extension may be allowed for ill-health or very urgent private affairs.

Subject to the necessities of the service, leave of absence on half salary may be granted to officers in other Colonies outside tropical Africa after a period of six years' resident service without any special grounds. Officers of the Fiji and Western Pacific service proposing to spend their leave in Europe may receive a grant in aid of passage expenses of £60. Leave may be given before the expiration of the due period in case of serious indisposition, or of urgent private affairs. In the absence of special grounds, the leave must not exceed one-sixth of the officer's resident service; on special grounds it may exceed that period by six months. In addition to the above, vacation leave on full pay may be granted, if no inconvenience or expense is caused thereby, not exceeding three months in any two years. In the case of Fiji and the Western Pacific and the Falkland Islands, 4½ months' leave may be granted in any three years.

On first appointment an officer whose salary and fees together do not exceed £700 a year will, except in the case of a few Colonies possessing Representative Assemblies, be provided by the Crown Agents for the Colonies with free passages to the Colony for himself and his wife and children, if any, not exceeding four persons besides himself. The officer so appointed will be required to execute an agreement binding him to repay the cost of the passage or passages so obtained in the event of his leaving the Government service within three years. This rule applies also to officers appointed to the Malay Peninsula and Hong-Kong. An officer taking leave out of the Colony has to provide his own passages.

Pensions.—Officers on the pensionable establishment in the East African Protectorates are at liberty to retire on attaining the age of 50 years. Earlier retirement in the event of ill-health is also provided for. Pensions are computed on the scale of one-sixtieth of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement, but for purposes of calculating pensions two years' service is reckoned as service for three years. In most of the other Colonies an officer holding a pensionable appointment may be allowed in the case of ill-health to retire on a pension after ten full years' resident service; otherwise he must have attained the age of 55. For ten full years' resident service fifteen-sixtieths of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement may be awarded, to which one-sixtieth may be added for each additional year's service; but no addition will be made in respect of any service beyond 35 years. For pension purposes absence on vacation leave counts as full service, and leave on half pay as half service. In a few cases the retiring age is 60, and the pension after ten years' service is ten-sixtieths instead of fifteen.

Applications should be made in writing to the Assistant Private Secretary (Appointments), Colonial Office, Downing-street, London, S.W. 1.

West African Medical Staff.

The medical services of the West African Colonies and Protectorates—namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories), and Nigeria—form one service under the above name. All the medical officers for the service are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion. As in other Colonies, applicants must be between 23 and 35 years of age and possess a double qualification, but preference is given to those over 25. The higher grades are usually filled by promotion from the lower. Camp outfit must be taken out by every medical officer, and an allowance of £30 is given towards its purchase on appointment.

The grades and emoluments of officers of the staff are as follows:—

The Director of the Medical and Sanitary Service in Nigeria receives a salary of £1700 a year, with a duty allowance at the rate of £340 a year.

Principal Medical Officer: The Principal Medical Officers receive salaries as follows: In the Gold Coast and the Southern Provinces of Nigeria £1500 a year, with a duty allowance at the rate of £300 a year. In Nigeria (Northern Provinces), £1500 a year, with a duty allowance at the rate of £300 a year. In Sierra Leone, £1350 a year, with a duty allowance at the rate of £270 a year. There is no Principal Medical Officer in the Gambia.

Deputy Principal Medical Officer: There are four appointments of this grade, two in the Southern Provinces of Nigeria and one each in the Northern Provinces and in the Gold Coast respectively. Salary at the rate of £1300 a year is attached to these appointments, together with a duty allowance at the rate of £260 a year.

Senior Sanitary Officer: There are four appointments of this grade, two in Nigeria, one in the Gold Coast, and one in Sierra Leone. Salary at the rate of £1300 a year is attached to these appointments, together with a duty allowance at the rate of £260 a year.

Provincial Medical Officer: There are seven appointments bearing this title (four in Nigeria, two in the Gold Coast, and one in Sierra Leone), with salary at the rate of £1200 a year, and duty allowance at the rate of £240 a year.

Senior Medical Officer: There are 20 appointments of this grade, with salary at the rate of £1000 a year, rising by annual increments of £50 to £1150 a year, and proficiency pay of £100 a year. The Senior Medical Officer of the Gambia draws staff pay at the rate of £120 a year, in addition to duty pay, but is not allowed private practice.

Sanitary Officer: There are seven appointments of this grade, with salary at the rate of £1050 a year, rising by annual increments of £50 to £1200 a year, and a duty allowance at the rate of £210 a year.

Medical Officer: The salary is at the rate of £660 a year, rising by annual increments of £30 to £720; and then by £40 to £960, with proficiency pay of £72 a year. Before passing £800 Medical Officers are required to take a special course of study for three months; if satisfactory they then continue to draw increments up to £960. A Medical Officer who has served for three years on the maximum of this scale (£960) is eligible to be placed on the same scale of salary as a Senior Medical Officer.

Special appointments: The Director of the Medical Research Institute, Lagos, and the Pathologist, Accra, receive a salary of £1300 a year, with a duty allowance of £260 a year. Salary at the rate of £800, rising by annual increments of £40 to £960 a year, with a proficiency pay of £72 a year, is attached to about ten posts (those of

To those who are not keen surgeons opportunities are likely to open in the future in connexion with maternity and child welfare. The high infant mortality and the suffering of women in childbirth, owing to the ignorance of the untrained hereditary midwives, provide a great field for such workers. Medical women with administrative ability are also needed for the inspection of women's hospitals and other medical institutions.

Rates of pay are as follows:—

Years of Service.	Salary per mensem.	English equivalent* per annum.
1 to 3	Rs.450	£360
4 to 6	Rs.500	£400
7 to 9	Rs.550	£440
10 to 12	Rs.600	£480
13 to 15	Rs.650	£520
16 to 18	Rs.700	£560
19 to 21	Rs.750	£600
22 to 21	Rs.800	£640
over 24	Rs.850	£680

*At rupee value 1*s.* 4*d.*

The above rates of pay are not so high as those of the Indian Medical Service. The fact, however, that furnished quarters are provided (these are not provided in the Indian Medical Service) represents an additional Rs.150 per mensem. It must be remembered, too, that the official duties of the members of the W.M.S. are lighter than those of the I.M.S., who while in civil employ, in addition to work in the civil hospitals have charge of the medico-legal work of the district, give much gratuitous attendance, and form a reserve to be drawn on in time of war.

The cost of living in India is much higher than formerly, but even now it is possible to live more cheaply than in England for the same measure of comfort. The cost of all goods brought from Europe is very high, but the cost of country produce is much less than in Europe. Meat, poultry, milk, eggs, &c., are sold at about half the price now demanded in England. It should be possible for a medical woman (with house provided) to meet actual household expenses for about Rs.200 per mensem, leaving the remainder of her salary for dress and personel expenses. To this must be added the necessary saving to meet additional expense for furlough and leave spent in the hills.

One month's privilege leave on full pay is granted each year. Furlough on half-pay at the rate of two months for every year of service is granted after every three years. Study-leave on two-thirds pay is granted to the extent of 12 months in the total service. There is a provident fund to which members of the service contribute 10 per cent. of their pay. The service contributes another 10 per cent. which accumulates at interest and is repaid on retirement.

Admission to the service is made by selection. Candidates in the United Kingdom should apply to the Hon. Secretary, United Kingdom Branch of the Countess of Dufferin's Fund, care of Sir Havelock Charles, India Office, Whitehall, London.

AIR FORCE MEDICAL SERVICE.

THE Royal Air Force Medical Service offers a career for medical men which should prove both attractive and interesting. The rates of pay and allowances are good, and a new field of scientific interest is opened up by the manifold problems which the circumstances of aviation produce. The physical and mental fitness for, and reaction to, the varied conditions under which the flying personnel perform their functions provide much scope for research. As promotion to the higher ranks of the Service is to be entirely by selection, and as a certain proportion of the higher ranks will be reserved for purely scientific, as opposed to administrative, appointments, it will be seen that there are excellent prospects for the young medical officer who exhibits ability and energy in scientific research, as well as for those who develop a talent for administration.

The establishment will consist partly of permanent and partly of short-service officers. Short-service officers will be admitted by direct entry for a period of two years, which may be extended to four years at the discretion of the Air Council on recommendation of the Director of Medical Services. Those who are not selected for permanent commissions will pass into the Royal Air Force Medical Reserve at the expiration of their period of service on the active list, and will then receive the gratuity to which their service entitles them.

Short-service officers who are approved for permanent commissions, but for whom there are not vacancies in the Royal Air Force Medical Service, may, under certain conditions, transfer to the Royal Army Medical Corps, counting their time served in the Royal Air Force towards increments of pay and retired pay in the Royal Army Medical Corps.

Officers who have been selected for permanent commissions will be granted leave for a period not exceeding nine months for post-graduate study in general medicine and surgery, tropical and preventive medicine, and other special subjects. Such leave will be granted during the first six years of permanent service, and during such leave officers will remain on full pay and allowances.

New entrants into the Royal Air Force Medical Service will be commissioned as Flying Officers (Medical) and will be eligible for promotion to the rank of Flight Lieutenant (Medical) after two years' service. Officers selected for permanent commissions will be promoted to the rank of Squadron Leader after 10 years' total service. Accelerated promotion may be carried out, in a limited number of cases, of officers who show exceptional ability after the completion of eight years' service. Promotion to the rank of Wing Commander will be by selection at any period after 16 years' total service, and to that of Group Captain by selection at any period after 22 years' service.

There will be no competitive examination on entry; candidates must be under 28 years of age, be nominated by the Dean of a recognised medical school or teaching hospital, and will be interviewed personally by the Director of Medical Services, Royal Air Force, before acceptance. Each candidate must produce—

1. Birth certificate.
2. Medical registration certificate.
3. A declaration containing the following information:—

(*a*) Age and place of birth.

(*b*) That he is of pure European descent, and the son of a subject of the British Empire.

(*c*) That he labours under no constitutional or mental disease or disability which may interfere with the efficient discharge of the duties of a medical officer in any climate in peace or war. (All candidates will be required to pass a medical examination as to their physical fitness before acceptance to ensure that they fulfil the standard laid down in this declaration.)

(*d*) That he is ready to engage for general service at home or abroad as required.

(*e*) The qualifications he is possessed of, and what medical or other appointments he has held (if any).

(*f*) That he is willing to fly whenever called upon to do so, and to qualify in such aviation tests as may be required.

If the applicant is in possession of a certificate of training in an Officers' Training Corps this should be submitted.

An applicant who at the time of application holds, or is about to hold, a resident appointment in a recognised civil hospital may be seconded for the period not exceeding one year, during which he holds such appointment. Whilst seconded he will not receive pay from Air Council funds, but his seniority will count from the day on which he is seconded to the civil hospital.

Uniform and Equipment.

Medical officers will be required to provide themselves with the uniform of their rank and with the distinguishing badges of the Royal Air Force Medical Service. They will be required to provide themselves with service dress and mess dress. The provision of full dress is entirely optional.

Engineering, Vital Statistics. The examination is in two parts, which may be taken together or separately; but Part I. must be passed either before or at the same examination as Part II. The fee for admission to the examination is £10 for each part. Successful candidates are entitled to receive the Diploma in Public Health.

The First Part of the examination will comprise (*a*) written papers of three hours each in (i.) Chemistry and Physics, and (ii.) Pathology and Bacteriology; (*b*) a three hours' practical and vivâ voce examination in Chemistry and Physics; (*c*) a three hours' practical and vivâ voce examination in Pathology and Bacteriology.

The Second Part of the Examination will consist of the following parts:—(*a*) Two written papers, each of three hours, dealing with General Hygiene (including Sanitary Engineering, Vital Statistics, and the Laws relating to Public Health); (*b*) a practical and vivâ voce examination in General Hygiene; and (*c*) a three hours' practical and vivâ voce examination in Pathology and Bacteriology.

Candidates in Part I. of the examination will be required to produce certificates (1) of Laboratory Work in Chemistry as applied to Hygiene, and (2) of having had Practical Instruction in Bacteriology, and the Pathology of the Diseases of Animals transmissible to Man.

Candidates in Part II. will produce the following further certificates: (3) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration; and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration. All the above degrees are now open to Women Students, and particulars of Scholarships, &c., may be obtained from the Principals of the various Ladies' Colleges. The names of candidates must be sent to the Assistant Registrar of the University, Clarendon Building, Oxford, to whom applications for any further information should be addressed.

University of Cambridge.—Two examinations in so much of State medicine as comprised in the functions of medical officers of health are held during the year. The examination is divided into two parts and demands proficiency in all the branches of study which bear upon the duties of medical officers of health. The examinations in both parts will be oral and practical, as well as in writing. Candidates may present themselves for either part separately or for both together at their option; but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts. Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) general principles of hygiene; (2) bacteriology; (3) chemistry in Part I. of the examination; or (4) the second part of the examination, which has reference to State Medicine and to the applications of Pathology and Sanitary Science. Every candidate will be required to pay a fee of £6 6*s.* before admission or readmission to *either part* of the examination, but candidates who have presented themselves before the year 1896 will be readmitted to either part on payment of a fee of £5 5*s.* Candidates must before admission to either part of the examination produce evidence of having satisfied provisions (1), (2), and (3), and before admission to Part II. having satisfied provision (4), above mentioned.

For Part I. of the examination courses of lectures and laboratory instruction are given in the University by Mr. J. E. Purvis on Hygiene, Chemistry, &c., and by Dr. Graham-Smith on Bacteriology. Prof. G. H. F. Nuttall gives a course of lectures on Protozoal Diseases, and on Animal Parasites. For Part II. Dr. A. J. Laird, the Medical Officer of Health for Cambridge, gives courses on Practical Sanitary Administration and in the Administrative Methods of the Infectious Diseases Hospital, and Dr. F. Robinson, the Medical Officer of Health to the Cambridgeshire County Council, on Sanitary Laws, School Hygiene, Epidemiology, Vital Statistics, &c. These courses are open to non-members of the University.

A Diploma in Hygiene is granted to medical graduates whose qualifications are not registrable in England.

All applications for further information respecting examinations and the courses of study should be addressed to Mr. Purvis, Chemical Laboratory, Pembroke-street, Cambridge.

Two Examinations in Tropical Medicine and Hygiene are conducted yearly by the State Medicine Syndicate of the University of Cambridge. The examinations are held in Cambridge early in August and at the end of December. Each examination will extend over four days.

Any person whose name is on the Medical Register is admissible as a candidate to the examination provided (I.) that a period of not less than 12 months has elapsed between his attainment of a registrable qualification and his admission to the examination; (II.) that he produce evidence, satisfactory to the Syndicate, that he has diligently studied Pathology (including parasitology and bacteriology) in relation to Tropical Diseases, Clinical Medicine, and Surgery at a Hospital for Tropical Diseases, and Hygiene and Methods of Sanitation applicable to Tropical Climates. As evidence of study and attainments a candidate may present to the Syndicate (1) any dissertation, memoir, or other record of work carried out by himself on a subject connected with Tropical Medicine or Hygiene; (2) any Certificate or Diploma in Public Health or Sanitary Science he may have obtained from a recognised Examining Body. Such evidence will be considered by the Syndicate in determining whether he is qualified for admission to the examination and by the examiners in determining whether, if admitted, he shall be included in the list of successful candidates.

The examination will be partly in writing, partly oral, and partly practical and clinical (the clinical part will be conducted at a hospital for tropical diseases, at which cases will be submitted for diagnosis and comment), and will have reference to the nature, incidence, prevention, and treatment of the epidemic and other diseases prevalent in tropical countries. Every candidate who passes the examination to the satisfaction of the examiners will receive from the University a diploma testifying to his knowledge and skill in tropical medicine and hygiene.

The fee for the examination is £9 9*s.*, and applications should be addressed to Dr. Graham-Smith, Medical Schools, Cambridge.

University of London.—Candidates for the M.D. degree may offer State medicine as a subject in which to graduate. They must send to the Academic Registrar with their forms of entry certificates (i.) of having, subsequently to having obtained a registrable qualification to practise Medicine, attended a course of practical instruction in a laboratory or laboratories, British or foreign, approved by the University, in which chemistry, bacteriology, and the pathology of the diseases of animals transmissible to man are taught; such course to extend over a period of not less than six months and to consist of at least 240 hours, of which not more than one-half shall be devoted to practical chemistry. (ii.) *Either* of having, subsequently to having obtained a registrable qualification to practise Medicine, during six months (of which at least three months shall be distinct and separate from the above-mentioned period of laboratory instruction) been diligently engaged on not less than 60 working days in acquiring a practical knowledge of the duties, routine and special, of Public Health Administration under the supervision of a person recognised by the University as entitled to grant certificates. *Or* of having held for a period of not less than three years an appointment as Medical Officer of Health of a Sanitary District within the British Dominions, and having a population of not less than able establishment. Medical Officers serve for 3 years on probation, and leave is granted with full pay after every tour of service, the length of a tour being normally 30 months in East Africa. If an officer is not returning for further duty the leave for which he is eligible is the period of the voyage home and 2½ days in England for every month of service; if returning for further duty, the leave for which he is eligible is the period of the voyage home and back to East Africa and 5 days in England for every month of service in East Africa, but at certain stations service qualifies for leave at 3 and 6 days instead of 2½ and 5 days respectively. A free first-class passage is provided by the Government on first appointment and on leave. Quarters (with furniture) are provided free of rent, or if quarters are not available, an allowance is given in lieu. Travelling allowance is paid to officers travelling on duty in East Africa in accordance with local regulations. Private practice is permitted subject to the proviso that it must not interfere with the officer's Government work, but this privilege is not granted to Medical Officers of Health. An Officer is eligible to retire on pension at the age of 50. Pension is calculated on the basis of 1/60th of pensionable emoluments at the date of retirement (i.e., salary and the value of free quarters) for each year of service, 2 years of service being reckoned for this purpose as *three* years. Medical Officers may, however, retire with gratuity, if they wish, instead of waiting to retire at the retiring age on pension. The gratuity is: After 9 years' service, of which not less than 6 years must be resident service in East Africa, £1000; after 12 years' service, of which not less than 8 years must be resident service in East Africa, £1250. Prior to appointment, candidates are required to attend a course of instruction in tropical medicine at the London or Liverpool Schools of Tropical Medicine; if this cannot be arranged, such a course must be taken during the first leave, before a Medical Officer can be confirmed in his appointment. Details of payments made by the Government in respect of these courses are supplied when a candidate has been provisionally selected. The Grades and Salary of the Medical Establishments are as follows:—East Africa Protectorate and Tanganyika Territory and Uganda Protectorate: Principal Medical Officer, £1200; Deputy Principal Medical Officer, £1000; Principal Sanitation Officer, £1000; Senior Medical Officers, Sanitation Officers, £800–£25–£900; Medical Officers and Medical Officers of Health, £600–£25–£900. Nyasaland Protectorate: Principal Medical Officer, £1000; Senior Medical Officer, Sanitation Officer, £800–£25–£900; Medical Officers and Medical Officers of Health, £600–£25–£900. Somaliland Protectorate: Senior Medical Officer, £800–£25–£900; Medical Officers and Medical Officers of Health, £600–£25–£900. Zanzibar Protectorate: Principal Medical Officer, £1000; Sanitation Officer, £700–£25–£800; Medical Officers and Medical Officers of Health, £600–£25–£900. All Medical Officers of Health receive a special non-pensionable allowance of £100 or £50 per annum according to their station in the Protectorates.

Straits Settlements and Federated Malay States.—The services of 33 Medical Officers are required here, the salary offered being $140 a month for the first year, $160 for the second, and $180 for the third year. In all cases the appointments are on probation for the first three years; after which Medical Officers may be placed on the permanent and pensionable establishment. Subject to passing a strict efficiency bar before rising above $600 per month, salaries will thenceforward be at the rate of $500 a month, rising by annual increments of $25 a month to $800 a month. Promotion to posts above this maximum will be by selection. Officers having specialist qualifications of an approved type will enter the scale of salary at $550, rising by $25 a year to $600 per month during the first three years; after which, if their appointments are made permanent and they pass the efficiency test, their salary will rise, as in other cases to $800 a month. No duty allowance is paid. There is at present a strictly temporary increase to meet the increased cost of living; 15 per cent. for unmarried officers; 30 per cent. for married officers. The exchange value of the dollar is fixed by Government at 2*s.* 4*d.* This rate is liable to alteration but has remained constant for the past 11 years, and, so far as can be at present foreseen, no change is anticipated. Candidates must be graduates of one of the British Universities, or hold the qualifications of the College of Surgeons and Physicians of London, Edinburgh, or Ireland, and in some cases a diploma in Public Health. If they have not already done so, they will be required to attend a course of instruction at the London or Liverpool Schools of Tropical Medicine, either before embarkation or during their first leave of absence in Europe. Their whole time will be at the disposal of the Government, and no private practice is allowed. The duties will be generally to take charge of one of the hospitals in the Malay Peninsula, and any other duties on which in the public interest it may be desirable to employ them. Free passages (second class by mail or first class by other vessel) are given, with half salary from date of embarkation. Candidates of over 37 years of age will not be considered for appointment on the above terms. They may, however, be engaged on three years' agreement, renewable by consent of both parties, with salaries commencing at $600 to $700 a month (according to qualifications), and rising annually by $25 a month. Such appointments will not be pensionable and no prospect can be held out of promotion to the highest posts in the Medical Service. A bonus of two months' salary, however, will be payable for each completed year's service on termination of agreement or extended agreement.

Seychelles.—There are four medical appointments. The Assistant Government Medical Officers receive Rs.5000. The holders of these appointments have free quarters. Private practice is allowed.

Weihaiwei.—There are two non-pensionable Medical Officers on salaries £400–£25–£500, with free quarters.

British Guiana.—There are 20 posts at £500–£600, and 8 posts at £600–£700 per annum, and 6 posts at £900. There are several public hospitals and asylums; medical officers attached to these institutions receive plainly furnished bachelor quarters and an allowance in lieu of private practice. There are also many posts as resident surgeons in charge of districts. In these cases a travelling allowance is granted, and in some instances also a free house. A first-class passage to the Colony is provided. Vacation leave of absence on full pay not exceeding three months may be granted by the Governor during and in respect of any two consecutive years' service. Subject to the necessities of the Service, leave of absence on half pay may be granted without any special grounds after six years' resident service from first appointment in the colony, and on special grounds at an earlier date.

Trinidad and Tobago.—In Trinidad and Tobago there are over 40 appointments. Officers are appointed in the first instance on two years' probation as supernumeraries and are eligible for appointment as Government Medical Officers at the end of this period. Applicants must be unmarried and must remain unmarried whilst supernumerary Medical Officers. Supernumeraries receive a salary of £250 per annum with furnished quarters, and are usually attached to the Government hospital. Government Medical Officers receive salary at the rate of £250 per annum with quinquennial increments of £50 accruing from the date of first appointment as supernumerary Medical Officers. Most are employed as District Medical Officers, with private practice, a residence or a rent allowance of £50, a horse allowance, except in one district, and in some cases other allowances for institution work. All officers are required to contribute 4 per cent. of their salaries towards the pensions of the widows and orphans of public officers.

Windward Islands (Grenada, St. Lucia, St. Vincent).—The 25 appointments are, with few exceptions, district appointments with the right to private practice attached; the salaries paid by Government vary from £315–£375, plus bonus, and with allowances in certain cases. The Governor has the power to transfer a medical officer from one island to another at his discretion. The appointments are pensionable.

Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).—The 21 appointments are of the same nature as in the Windward Islands, but are not pensionable. An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary of £375 or £400 according to station, and the Governor decides as to the district which is to be allotted to him. He is liable to be transferred to any medical district in the Islands, and in certain districts he may be required to perform magisterial duties. The medical officers receive fees for successful vaccinations, post-mortem examinations, attendance and giving evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also, as a rule, allowed private practice.

British Honduras.—There are seven medical appointments (besides the principal post of Colonial Surgeon) each carrying a salary of $1011 to $2430 per annum. Unless they already possess a Diploma of Public Health, medical officers are liable to be required before they join the Colony to undergo a course of instruction at a laboratory of public health or analogous institution. The dollar=about 4*s.* 2*d.*

Fiji and the Western Pacific.—In Fiji the Government Medical Officers receive a salary of £400, rising by annual increments of £25 to £500, with partly furnished quarters, or a house allowance of £50. In some districts a medical officer is also a magistrate with a combined salary of £500, rising to £600, with free quarters. They are allowed private practice, so far as is consistent with the proper discharge of their duty to the Government, but in most districts the private practice is very small. In districts where there is no private practice, an allowance of £50 a year is granted. They are required either to take charge of hospitals or of districts, at the discretion of the authorities. The posts the Second Part are: Public Health and Epidemiology, Sanitary Law, Vital Statistics, and Sanitary Reporting.

University of Edinburgh.—Two degrees in Science in the Department of Public Health are conferred by the University of Edinburgh—viz., Bachelor of Science in Public Health and Doctor of Science in Public Health. A Diploma in Tropical Medicine and Hygiene is also granted. Candidates for the degree of B.Sc. in Public Health must be graduates in Medicine of a recognised University, and must pass two examinations, for the first of which they must, after graduation in Medicine, have worked for at least 20 hours per week during a period of not less than eight months, of which at least five consecutive months must be in the Public Health Laboratory of the University of Edinburgh and the remainder either there or in a laboratory recognised by that University; they must also have attended courses of instruction in Physics and Geology in some Scottish University. Candidates are not admitted to the Second Examination sooner than six months after having passed the First Examination, nor sooner than 18 months after having taken their degree in Medicine, and they must have attended two separate courses in Public Health in some University of the United Kingdom or in such medical school or Indian, Colonial, or Foreign University as may be approved for the purpose by Edinburgh University, each course consisting of 40 lectures at least; one of which courses shall deal with medicine and the other with engineering, each in its relation to public health. The subjects of examination include Laboratory work, Physics, Geology, Medicine in its application to Public Health, Sanitation, Sanitary Law, and Vital Statistics. Graduates who have held the degree of B.Sc. in Public Health from the University of Edinburgh for a term of five years may offer themselves for the degree of D.Sc. in Public Health in that University. They must then present a Thesis and pass an examination in Public Health. The fees are £4 4*s.* for the First and £5 5*s.* for the Second B.Sc. Examinations, and £15 15*s.* for the degree of D.Sc.

University of Aberdeen.—The Diploma in Public Health (D.P.H.) is conferred only on graduates in Medicine of a University in the United Kingdom not less than 12 months after medical graduation. Every candidate must produce evidence of having complied with the following requirements: (1) A course or courses of instruction consisting of not fewer than 50 meetings dealing with public health in relation to the administrative and other duties of a medical officer of health, such course or courses to be given by a teacher or teachers in the department of public health of a recognised medical school. (2) Practical instruction within a laboratory or laboratories approved by the University, in (*a*) Bacteriology, (*b*) Physics and Chemistry, (*c*) Parasitology, such instruction to extend over not less than six months or two academic terms. (3) Practical Instruction, Clinical and Administrative, within (*a*) a hospital for general infectious diseases—not less than thrice weekly; (*b*) a hospital or sanatorium or treatment centre for tuberculosis—not less than once weekly; (*c*) a hospital or treatment centre for venereal diseases—not less than once weekly; such instruction in each group to extend over three months. (4) Practical instruction and experience during not less than three months in the duties, routine and special, of public health administration, under the personal supervision of a medical officer of health or other medical officer, or, alternatively, that the candidate has held, within the British Dominions, for a period of not less than three years, an appointment as medical officer of health of a sanitary district with a population of not less than 15,000. (5) Practical instruction in: (*a*) Mother and Child Welfare at a Centre or Centres in a Welfare Scheme conducted or approved by a Local or Sanitary Authority—not fewer than ten meetings; (*b*) School Hygiene and Medical Inspection of School Children—not fewer than six meetings; (*c*) Drawing and Interpretation of Plans—not fewer than six meetings. The fee for the examination is £4 4*s.* for each part, or £8 8*s.* for the whole examination.

University of Dublin (Trinity College).—The Diploma in Public Health is conferred, after examination, on the following conditions. The candidate must be a registered medical practitioner and have obtained a registrable qualification at least nine months before the second part of the examination. The candidate must have completed, subsequently to obtaining a registrable qualification, four months' practical instruction in a chemical and bacteriological laboratory, or laboratories, approved by the University, must have studied practically outdoor sanitary work for six months under an approved officer of health, and must have attended for three months at a fever hospital where opportunities are afforded for the study of methods of administration. A special prospectus and a list of recognised laboratories may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

National University of Ireland.—At this University there is a Diploma in Public Health, a B.Sc. in Public Health, and a D.Sc. in Public Health. The Diploma may be granted to matriculated or non-matriculated students of the University who shall have completed approved courses of study and shall have passed the prescribed examinations, provided that it shall not be granted except to a registered medical practitioner. Candidates may present themselves for the examination after an interval of not less than 12 months from the time of obtaining a registrable qualification. The curriculum extends over a period of not less than nine calendar months. Every candidate must produce a certificate that he has attended practical instruction in a laboratory, approved by the University, in Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man. The examination consists of two parts, which may be passed separately or together. Part I. comprises the following subjects: Chemistry, Meteorology and Climatology, and Sanitary Engineering and Architecture. Part II. comprises the following subjects: Bacteriology, Hygiene, Sanitary Law, and Vital Statistics. The examination in each part will be oral and practical as well as written.

For the B.Sc. in Public Health a candidate shall not be admitted unless he (*a*) shall have received the degrees of M.B., B.Ch., and B.A.O. at least one year previously; (*b*) shall have pursued an approved course of study in the Faculty of Medicine; and (*c*) shall have passed the prescribed examination. In addition to D.P.H. course the candidate will be required to take up (1) a Special Course of Pathology; (2) Bacteriology: and (3) Advanced Course in Hygiene. Each of these courses lasts three months.

University of Belfast.—A Diploma in Public Health is given by examination. Every candidate must produce evidence that, after obtaining a registrable qualification, he has during six months received practical instruction in an approved laboratory in which Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man are taught. After obtaining a registrable qualification every candidate must produce evidence that he has attended during three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. The examination must have extended over not less than four days, one of which shall have been devoted to practical work in a laboratory, and one to practical examination in, and reporting on, subjects which fall within the special outdoor duties of a medical officer of health. The examination will be held in two parts, in March and in June. The first part of the examination will have reference to the general principles of sanitary science and the second part to State Medicine and to the applications of Pathology and Sanitary Science. The fee for each part is 1 guinea.

Assistant at the Medical Research Institute, Lagos, and Medical Officers of Health at various places), irrespective of the seniority of the officer holding the appointment. Staff pay at the rate of £150 a year is also attached to these posts; and the holder of the appointment draws half of the staff pay during leave of absence, the remainder being drawn by his locum tenens.

Leave and Passages.—The ordinary tour of residential service is 18 months, followed by leave with full pay during the voyages to and from England, and for four or two months clear in England, according as the officer is returning for further service in West Africa or not. Leave granted on the understanding that an officer will return is known as "return leave," and any pay drawn in respect of such leave is liable to be refunded if he does not return. Leave may be extended with half pay for a period not exceeding four months on the ground of ill-health, or without pay on that or other grounds. Free passages are given to all officers who are granted leave, and free passage is also given on first appointment, subject to the officer signing an agreement under which he is liable to refund its cost if he relinquishes his appointment for any other reason than physical or mental infirmity, or is removed for misconduct, within three years from the date of his arrival in West Africa. Half pay is given during the voyage out on first appointment.

Private Practice.—All officers of the Staff, except Principal Medical Officers, Deputy Principal Medical Officers, Provincial Medical Officers, Sanitary Officers, and a few other officers holding special appointments, are at present allowed to take private practice, provided that it does not interfere with the efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable. Private practice does not exist at the majority of stations, and as a general rule, subject to the exigencies of the service, stations where there is private practice are allocated to senior members of the staff.

Pensions and Gratuities.—These vary in accordance with the regulations of each Colony, but generally speaking an officer on attaining the age of 50 years, or after 18 years' service (of which at least 12 must have been residential) is qualified for a pension calculated at one-fortieth of the last annual[1] salary for each year of service. If invalided after a minimum of seven years' service, he is qualified for a pension calculated at the same rate. If invalided before completing seven years' service, he is qualified for a gratuity not exceeding three-quarters of a month's salary for each six months of service; provided that he has been confirmed in his appointment. For the purpose of calculating the amount of these pensions and gratuities, leave of absence without salary is not counted, while leave with half salary is counted at the rate of one month for every two months of such leave. An addition, representing the value of free quarters, is made to the officer's salary. This addition is as follows: To salaries of £400 a year, an addition of £10; to salaries above £400, but not exceeding £500, an addition of £50; to salaries above £500, but not exceeding £700, an addition of £60; to salaries above £700, but not exceeding £900, an addition of £70; to salaries exceeding £900, an addition of £80. In addition to the ordinary regulations, an officer of the West African Medical Staff enjoys the following special privilege. At the end of nine years (of which not less than six must have been residential) he will be permitted to retire with a gratuity of £1000, or at the end of 12 years (of which not less than eight must have been residential) with a gratuity of £1250. All claims to pensions are, however, forfeited on the receipt of such a gratuity. In the event of an officer dying in the service after completing the period of residence qualifying him for the smaller or the larger of these gratuities, a sum equal to the gratuity in question will be paid to the credit of his estate. Officers are not allowed to take their wives out with them until they have acquired experience of the local conditions, and have obtained the sanction of the Governor. Passages for wives and children are not provided.

Candidates for medical appointments in West Africa are allowed to express a preference for any particular Colony or Protectorate, and their wishes in this respect will be borne in mind and met as far as possible, but they are liable to be posted in the first instance, or transferred afterwards if necessary, to any other West African Colony or Protectorate at the discretion of the Secretary of State. Candidates who wish to be posted to the Northern Provinces of Nigeria should be able to ride. Candidates should on no account apply for, or accept, a West African appointment in the expectation of ultimately being transferred elsewhere, as the number of such transfers is exceedingly small. No applications for transfer can be entertained until an officer has served for five years in the West African Medical Staff, and officers desiring to be transferred must be prepared to find that medical salaries in other Colonies are lower than in West Africa. Only a small proportion of applicants succeed in obtaining a transfer. Officers who may be transferred to pensionable appointments under the Crown elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement, provided they have been members of the Staff for at least 12 months.

Instruction in Tropical Medicine.—Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for two or three months either at the London School of Tropical Medicine, Endsleigh-gardens, Euston-square, N.W. 1, or at the Liverpool School of Tropical Medicine at the University of Liverpool. The cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £3 a week will be paid to them monthly in arrear for this purpose. A daily allowance of 5*s.* (but no salary) will be paid to each candidate, monthly in arrear, during the course, and may be continued subsequently up to the date of embarkation. These payments must be refunded by the candidate if he declines to accept an appointment in any of the Colonies or Protectorates for which he may be selected, if he fails to obtain a certificate showing that he has satisfied the school authorities, or if he relinquishes the West African service for any other reason than mental or physical infirmity, or is removed for misconduct, within three years of the date of his arrival in West Africa. If at the end of the session there exist no vacancy in the staff to which a candidate can be appointed, he will be placed in a Reserve and granted an allowance at the rate of £200 a year until the occurrence of a vacancy.

Course of study for higher scale of salary.—The approved course of study is the three months' course of the West London Post-Graduate College or the London School of Clinical Medicine, Greenwich, in clinical medicine, clinical surgery, and pathology. Officers are allowed to substitute for this course either the course of study and examination for a recognised diploma or degree in public health, sanitary science, or State medicine; the course of study and examination for a further medical or surgical diploma or degree; or if the Governor, on the recommendation of the Principal Medical Officer, approves—a course of study in some special branch of medical or surgical practice (e.g., ophthalmology, dermatology, genito-urinary diseases), or an advanced course at the London or Liverpool School of Tropical Medicine. Whichever of these courses of study is selected, the necessary tuition and examination fees will be paid by the Colonial Government except in the event of an officer's deciding to enter for a further medical or surgical diploma or degree.

Owing to the wastage of war and the lapse of periods of service there are many vacancies in the Colonial service, so that the age limits laid down for Colonial appointments are not always insisted upon. In the near future opportunities may be given to Colonial officers for research work, and their coming into line with the conditions in the naval and military services is very much needed.

DIPLOMAS IN STATE AND TROPICAL MEDICINE.

As usual we include in the Students' Number of THE LANCET an epitome of the instruction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science, public health, State medicine, and tropical medicine.

Resolutions, designed with a view of ensuring "the possession of a distinctively high proficiency, scientific and practical, in all the branches of study which concern the public health," have been adopted at various times by the General Medical Council from 1902 to 1911. Certain universities and corporations grant qualifications in Tropical Medicine which have not as yet been made registrable by statute.

University of Oxford.—An examination, conducted partly in writing, partly vivâ voce, and in each subject partly practical, is held in Michaelmas and Trinity Term in the following subjects:—General Hygiene, General Pathology (with special relation to Infectious Diseases), the Laws relating to Public Health, Sanitary

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[1] Except that the pension of an officer who has been promoted within three years of his retirement is calculated on the average of his salary for the last three years.

University of Melbourne.

The University of Melbourne[3] was incorporated by Act of the Victorian Legislature in 1853. The Medical Act of 1890, substantially amended in 1906, set up the Medical Board of Victoria to register legally qualified medical practitioners. A five years' graded course is required with legal qualification given in a country which permits Australian graduates to register without further examination. All persons registered in the United Kingdom are entitled to register on personal attendance. Fee £5 5*s.* Certificate 10*s.* 6*d.* extra.

Preliminary Examination.—All candidates must possess the School Leaving Certificate, which is based on education in a secondary school during four years. The Intermediate Certificate must have been taken at least a year before the School Leaving. English is compulsory at the higher standard; Latin and geometry with trigonometry at the lower.

M.B., B.S.—The course extends over five calendar years, and is divided into two equal parts, hospital practice being confined to the second half. The first year (Division I.) is devoted to natural philosophy, chemistry, zoology, and botany; the remainder of the first half (Division II.) to anatomy (including histology) and physiology (including biochemistry). Two complete courses of dissections are compulsory. Hospital practice extends through Divisions III. and IV. The general hospitals ranking as clinical schools are the Melbourne Hospital, the Alfred Hospital, and the St. Vincent's Hospital. The recognised special hospitals include the Women's Hospital, the Children's Hospital, the Eye and Ear Hospital, the Infectious Diseases Hospital, the Receiving House, and Acute Mental Hospital. A full clinical curriculum is arranged, both general and special, with clinical lectures. In Division III. (lasting one year) courses of lectures are given in pathology (with practical work in histology and in bacteriology), in therapeutics, public health, materia medica and pharmacy, and regional and applied anatomy, and examination in all these subjects follows immediately. In Division IV., lasting a year and a half, systematic lectures are almost entirely confined to the first year and include medicine, surgery, and forensic medicine. Lectures on obstetrics and gynæcology are given in Division III., but the examination in these subjects is postponed till the final at the end of the course, which also includes the subjects of Division IV. Short courses of lectures are given in venereal diseases, anæsthetics, and medical ethics. Clinical medicine and clinical surgery rank as separate subjects in the finals.

Honour examinations with exhibitions are held in nearly all subjects of Divisions I., II., and III., and there is a final honour examination with scholarships in medicine, in surgery, and in obstetrics and gynæcology.

The yearly fee payable to the University is £23, with a sports fee of 1 guinea and a club-house fee of 1 guinea. The hospital and pharmacy fees in Divisions III. and IV. amount to £69 6*s.* The total fees are £194 16*s.* The degree fee for M.B., B.S. is 7 guineas.

The number of students for the full course in 1920 was 732. Provision is also made for instruction to dental students, massage students, single subject students, &c.

M.D.—Candidates must be Bachelors of Medicine of two years' standing. They may proceed either by thesis or by examination. The thesis must be a substantial contribution to medical knowledge. The examination includes medicine, with either obstetrics and medical gynæcology, or diseases of children, or diseases of the nervous system, including insanity. Subject to a dispensing power in the case of theses of great merit, all candidates must pass an examination in clinical medicine. The fee for examination and degree is 10 guineas.

M.S.—Candidates must be Bachelors of Surgery of two years' standing. Part I. of the examination includes surgical anatomy and surgical pathology. Part II. includes surgery in all branches. The two parts may be taken together or separately. No candidate can pass in Part II. who has not passed in Part I. The fee for examination and degree is 10 guineas.

Diploma of Public Health.—Granted under conditions agreeing with those in the United Kingdom. Fees for instruction are 32 guineas, apart from fever hospital practice. The fee for examination is 10 guineas, for diploma 3 guineas.

Diploma of Tropical Medicine.—Candidates must be qualified medical practitioners, and must have passed Part I. for D.P.H. or have undergone a special training is lieu thereof. They are trained in tropical medicine at the Australian Institute of Tropical Medicine, Townsville, Queensland, having a three months' course of theoretical and practical instruction, followed by a three months' clinical course in the Townsville Hospital. The examination is conducted at the Institute. Fee for preliminary course is £2 2*s.*; for course at institute, 10 guineas; for examination and diploma, 5 guineas.

Affiliated Colleges.—Trinity College (1872), Ormond College (1879), Queen's College (1888), and Newman College (1918) are affiliated to the University and have medical tutors.

University of New Zealand.

The University of New Zealand was established by Act of the New Zealand Legislature in 1870. The Medical Act of 1908 provided for the registration of medical practitioners. The University has no fixed home or buildings; it is an examining body with four affiliated colleges—namely, University of Otago, Dunedin; Canterbury College, Christchurch; Auckland University College; and Victoria University College, Wellington. The degrees of M.B., Ch.B., M.D., and B.D.S. are conferred, and the subjects of study are Biology, Physics, Physiology, Medicine and Surgery, Ophthalmology, Chemistry, Bacteriology and Public Health, Anatomy, Pathology, Midwifery and Gynæcology, and Dentistry. The agent in England is Mr. J. W. Joynt, M.A., 88, Gower-street, London, W.C. 1.

University of Sydney.

The University of Sydney[4] was incorporated by Act of the New South Wales Legislature in 1850. The Medical Practitioners Act of 1898 provides for the registration of legally qualified medical practitioners.

Matriculation Examination.—English, Mathematics, Latin and another language other than English are required, three at the Higher standard.

M.B., Ch.M.—The course of study extends over a period of five years. Five degree and a final examination are held; (1st year) in physics, chemistry, botany and zoology; (2nd year) in anatomy and physiology; (3rd year) in the entire subjects of anatomy and physiology, every part of the body having been dissected at least once; (4th year) in pathology, surgical anatomy and operative surgery, materia medica, and therapeutics; (5th year) in medical jurisprudence and public health; (final) in medicine, surgery, obstetrics, and gynæcology. Certificates of proficiency in vaccination and anæsthetics are required. The fee for each degree is £10. The number of students attending degree courses during 1920 was 991—860 men and 131 women.

M.D.—Candidates must, after obtaining the degree of Bachelor, have spent at least two years in medical or surgical practice or in approved study. Examination is written or oral in one of the following subjects: medicine, medical jurisprudence and public health, surgery, obstetrics and gynæcology; or in any of the scientific subjects included in the medical curriculum.

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[3] The University Registrar is Mr. J. P. Bainbridge, J.P. The Melbourne University Calendar (1921) is a volume of 956 pp., printed for the University by Ford and Son, Drummond-street, Carlton, Melbourne. Price 3*s.*

[4] The University Warden and Registrar is Mr. H. E. Barff, M.A. The Calendar of the University of Sydney is printed for the University by Angus and Robertson, Ltd., Sydney. Price 2*s.* 6*d.*

15,000. (iii.) Of having, subsequently to having obtained a registrable qualification to practise Medicine, attended at least twice weekly during a period of not less than three months a practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. In connexion with this degree the various metropolitan medical schools hold regular classes under teachers of Public Health and Sanitary Science, such instruction being also used to obtain the various diplomas of other Universities and of those Royal Corporations which grant them.

University of Durham.—Candidates for the degree of Bachelor of Hygiene (B.Hy.) must be at least 22 years of age, registered, and a graduate in Medicine of a recognised university. They must spend six months at Newcastle-upon-Tyne studying Comparative Pathology, Practical Bacteriology, Sanitary Chemistry, and Physics, and have to pass an examination in Sanitary Chemistry, Physics, Comparative Pathology, Sanitary Legislation, Vital Statistics, Nosology, Climatology, Meteorology, Distribution of Health and Disease, Sanitary Medicine and Practical Hygiene. The fee for the examination for the degree of B.Hy. is £10 10*s.* and for the degree £6 6*s.* Candidates for the degree of Doctor of Hygiene (D.Hy.) shall be Bachelors of Hygiene of two years' standing, and shall be required to satisfy the Examiners that they have conducted original research in the subject of Public Health. The fee for the examination for the degree of D.Hy. is £20 and for the degree £10. The regulations for examination for the Diploma in Public Health (D.P.H.) are the same as those for the degree of Bachelor of Hygiene, except that the candidate is not required to be a graduate in Medicine of a recognised University and the course of study need not be passed at Newcastle-upon-Tyne. The fee for the examination is £10 10*s.* and for the diploma £3.

Victoria University of Manchester.—An examination in Public Health is held twice yearly. The examination is in two parts and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time provided that no candidate be admitted to Part II. unless he has already passed in Part I. No candidate's name will be published until he has satisfied the examiners in both parts of the examination. The fee for each part is £8 8*s.*, and must be paid on or before July 1st in each year. For any subsequent examination in the same part the fee will be £4 4*s.* Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health. The examinations will begin about the middle of March and the middle of July in each year. Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice.

University of Birmingham.—The University grants a degree of B.Sc. in Public Health and also a Diploma in the same subject on the following conditions: Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University. The examinations will be held in the months of March and June and will consist of two parts, each part being written, oral, and practical. No candidate will be allowed to pass Part II. until he has passed Part I. Candidates may enter for Parts I. and II. separately or at the same time. The fee for each part of the examination is £6 5*s.* Medical Officers of the Royal Navy who have attended courses in Hygienic Chemistry Bacteriology, and Public Health at the Naval Medical School, Greenwich, will be admitted to the examinations for the Diploma in Public Health, whether they have previously been students at the Birmingham School or not; and the same applies to officers of the Royal Army Medical Corps who have studied Chemistry and Bacteriology at the Staff College and pursued the further course of study approved by the General Medical Council.

University of Liverpool.—The University grants a Degree in Hygiene (M.H.) and a Diploma (D.P.H.), and every facility is afforded for training in Sanitary Science and State Medicine. The curriculum for the Degree extends over a period of two years, the first of which is devoted to laboratory instruction and practical classes (including those for the Diploma); the second being devoted to advanced study and research. The D.P.H. curriculum fees are: Chemistry, £7; Bacteriology, £7; Practical Sanitation, £15; Infectious Diseases, £4 4*s.*; Genetics and Environment, £3; Parasitology, £4 4*s.* The courses may be taken out at any time, and students are allowed to work daily in the laboratories.

The University grants a Diploma in Tropical Medicine. Three courses of instruction are given every year. Two of these last for three full months—the Lent Course from Jan. 6th to April 5th and the Autumn Course from Sept. 15th to Dec. 13th. The Third Course, an Advanced Course, lasts one month, from June 1st to the 30th. At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D.T.M.), which is open only to those who have been through the course of instruction of the school. The examination lasts three days and consists (1) of papers on Tropical Medicine, Tropical Pathology, and Tropical Sanitation and Entomology respectively; (2) of a clinical examination; and (3) of an oral examination. The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University. The fee for the full course of instruction is £18 4*s.*, with an extra charge of 10*s.* 6*d.* for the use of a microscope if required. Applications should be made to the Dean of the Medical Faculty, University of Liverpool. Two University Fellowships of £100 a year each are open to students of the school, amongst others. Accommodation for research work is to be had at the University Laboratory. The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine.

University of Leeds.—The University grants a Diploma in Public Health, and every facility is afforded for training in Sanitary Science and State Medicine. The examination, which is held twice in each year—namely, in June and December—is in two parts, and is written, oral, and practical. Candidates may present themselves for Part I. (Sections 1 and 2), Part I. (Sections 3, 4, and 5), and II. separately or at the same time, provided that no candidate be allowed to pass in Part II. unless he has already passed in Part I. *Fees*—The fee for each part is £6 6*s.*, and for any subsequent examination in the same part £4 4*s.* Instruction in Sanitary Chemistry and Bacteriology is given in the second and third terms. Practical work under arrangement with the Leeds City Council. Prospectus can be obtained from the Dean of the Medical School.

University of Bristol.—Diploma in Public Health. Candidates must be at least 23 years of age, shall be fully registered medical practitioners of not less than 12 months' standing as such, and shall have passed the examination prescribed by regulation. The examination is divided into two parts. The subjects of the First Part are Chemistry as applied to Public Health and Pathology and Bacteriology. Candidates for the First Part shall, during six months after having obtained a registrable qualification, have received practical laboratory instruction in Hygienic Chemistry, in Bacteriology, and in the Pathology of the Diseases of Animals Transmissible to Man. The subjects of with English and one modern language. This readjustment gives a final year confined to hospital work, including medicine, surgery, obstetrics, gynæcology, ophthalmology, oto-laryngology, pædiatrics, pathology, and dermatology. The third year now embraces anatomy (neurology), physiology, general pathology, bacteriology, chemistry (physiological and clinical), parasitology, pharmacology, and clinical microscopy. During this year students begin to visit the hospitals and receive instruction in small groups in the elements of clinical medicine and clinical surgery. Examinations are held in the subjects of each successive year. The total faculty fees for the medical course of six years are $1200, payable in six instalments of $200 each, or in 12 instalments of $102 each. The degree fee is $30. 724 medical students were enrolled in the session 1920–21.

D.P.H.—This course, cancelled during the war, has now been resumed.

New Brunswick, Council of Physicians and Surgeons.

The Council of Physicians and Surgeons of New Brunswick is empowered by the Medical Act to issue a licence (L.M.S.) conferring the legal right to practise. The usual matriculation examination is required and the graded collegiate course comprises five sessions of not less than eight months each. The examinations are held twice a year at St. John, N.B., the fee being $30. Candidates may appear for the primary examination at the end of the second year of study. The fee for the licence is $3 and the registration fee $40.

Nova Scotia, Provincial Medical Board.

A licence (L.M.S.), legally entitling to practise, is issued by the Provincial Medical Board of Nova Scotia to those who have satisfied requirements in respect to preliminary and professional education. After registration in the Medical Students' Register (fee $25) a course of at least five full years in medicine must be taken. Graduates of medical schools recognised by the Board who can submit satisfactory schedules of studies are admitted to the third (final) professional examination (fee, including registration, $75). All applicants for registration must take this examination except licentiates of the General Medical Council of the United Kingdom and of the Medical Council of Canada, who are admitted to registration without examination upon payment of a fee of $50. The registrar of the Board is Dr. W. H. Hattie, Halifax, N.S.

University of Toronto.

The University of Toronto,[8] Ontario, took its title in 1849, a Royal Charter having been granted in 1827. The Faculty of Medicine was re-established in 1887 under the Federation Act. Victoria College (1892), Trinity College (1904), and St. Michael's College (1907) are integral parts of the University.

Preliminary Examination.—The matriculation certificate of the University is required from entrants unless they are graduates in Arts of a Dominion or British University or possess a certificate of entrance into the Faculty of Education.

In the Session 1922–23 the standard of Entrance will be raised to Honour Matriculation in English, Mathematics and one language. In the first three years, the fundamental medical sciences, Anatomy, Physiology and Biochemistry, are thoroughly covered, while in the three final years, Medicine, Surgery and other clinical subjects, Pathology and Pathological Chemistry are taught. The final year is almost entirely clinical in character. Optional courses are supplied to enable students to do advanced work in special subjects. A Post-Graduate Course of one year has been arranged in Radiology, at the end of which a diploma is granted. The fee for the course is $150.

M.B.—Six examinations are taken in succession at the end of the session. The early years aim at giving such a training in sciences as is now exacted of those who desire to obtain a British as well as a Canadian qualification. The final year includes courses on anæsthesia, dentistry, medical ethics, history of medicine, and life insurance. The annual fee for regular students with one annual examination is $150. Combined courses of B.A., M.B. and B.Sc., M.B., lasting seven years, are also arranged. There is residence for about 150 men and three houses near to the University. Each male student proceeding to a degree must take physical training, the character to be determined by medical examination in the first two years of his attendance.

M.D.—One year must elapse after obtaining the M.B. degree and an approved thesis submitted.

D.P.H.—Candidates must be graduates in medicine of this or some other University. The curriculum extends over a winter session of eight months and a summer session of three months. The fee for the course is $150 and for the diploma $20.

NEAR EAST.

Registrable Degree.—University of Malta, M.D.

University of Malta.

The University of Malta (Valletta) was added in 1898 to the list of institutions recognised by the English Royal Colleges. Study in the Faculty of Medicine and Surgery[9] is open to matriculated students who have attended a three years' preparatory course in the Faculty of Science. Matriculation includes English, Italian, and Latin, while history is also necessary to comply with the G.M.C. regulations. The preparatory course in science comprises English and Italian literature, philosophy, physics, botany, zoology, inorganic chemistry, organic chemistry, human anatomy, general histology, and dissection. Medical botany is taught at the Botanic Garden. The academical course of medicine and surgery extends over four years, the first year being devoted to anatomy, physiology, histology and dissection, and the final year including clinical medicine, surgery, and midwifery, along with skin diseases, mental diseases, operative surgery, gynæcology, and forensic medicine, and continued attendance at the clinical laboratory and the hospital. The degree of *M.D.* is conferred at the end of the fourth year of the course, after a final written, oral, and practical examination.

FAR EAST.

Summary of Registrable Degrees.—Ceylon: Medical College, L.M.S. Hong-Kong: University of Hong-Kong, M.B., B.S., and M.D., M.S. India: University of Bombay,[10] (1) L.M.S., (2) M.B., B.S., (3) M.D., (4) M.S.; University of Calcutta, (1) L.M.S., (2) M.B., (3) M.D., (4) M.S., (5) M.O.; University of Lucknow,* M.B., B.S.; University of Madras,[11] (1) M.B., M.S., (2) M.B., B.S., (3) M.D.; Punjab University, (1) L.M.S., (2) M.B., (3) M.D., (4) M.S. Straits Settlements: King Edward VII. Medical School, Singapore, L.M.S.

University of Bombay.[12]

Candidates for the *M.B., B.S.* must have passed the first year arts examination or its equivalent, and be engaged during five University years in professional study at a medical college recognised by the University. Three examinations are held: the first, or preliminary scientific; the second, or intermediate; and the third, or final; each of them twice in the year. The two former are of the usual character. The final is divided into two parts, which may be taken together or separately two years after the intermediate. Part I. includes medicine, medical jurisprudence,

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[8] The Secretary of the Faculty of Medicine is Dr. E. S. Ryerson.

[9] Statute of the University of Malta, 1921, Government Printing Office, Malta, price 1s.

[10] If obtained after June 25th, 1912, the degree must have been registered in the Presidency.

[11] If obtained after June 1st, 1916, the degree must have been registered in the Presidency.

[12] The Registrar of the University is Mr. F. M. Dastur, M.A. The Bombay University Calendar (1920), vol. i., is a book of 662 pp., printed at the Government Central Press, Bombay.

Royal College of Physicians of London and the Royal College of Surgeons of England.—The following are the regulations for obtaining the Diploma in Public Health: The examination consists of two parts. The first part of the examination takes place in January and July, and the second part in January and July. The fee for each part is £10 10*s*., except for those who are diplomates of the Royal Colleges, who pay £6 6*s*. for each part. A candidate intending to present himself must give 14 days' written notice to the Secretary, at the Examination Hall, Queen-square, London, W.C. 1. He will be admissible to examination in Part I. on producing evidence (1) of having been in possession of a registrable qualification for at least 12 months; and (2) of having attended thereafter practical instruction in a laboratory recognised by the Examining Board in England for at least 240 hours during a period of six months. A candidate will be admitted to Part II. of the examination on producing evidence (1) of having been diligently engaged in acquiring a practical knowledge of Public Health administration during six months, which may be reduced to three months under certain specified conditions; and (2) of having attended during three months the clinical practice of a hospital for infectious diseases.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, Royal Faculty of Physicians and Surgeons of Glasgow.—All candidates for the Diploma in Public Health must have a qualification which has been registered under the Medical Acts. Candidates must have attended not less than four calendar months' practical instruction in Chemistry and Bacteriology in a recognised laboratory or laboratories, must have studied outdoor sanitary work for six months under a medical officer of health or other sanitary officer; and must give evidence of attendance for three months at the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration. The examination consists of two parts, and candidates may enter for both at one period or for either separately. The First Part includes (*a*) Laboratory Work (Chemistry and Bacteriology), (*b*) Physics and Meteorology; and the Second Examination embraces (*a*) Report on Premises visited, (*b*) Examination at Fever Hospital, (*c*) Examination at Public Abattoir, (*d*) Written and Oral Examinations on Epidemiology and Endemiology, (*e*) Vital Statistics and Sanitary Law, and (*f*) Practical Sanitation. The fee is 12 guineas for both examinations, or 6 guineas for either of them. A fee of 3 guineas is payable by rejected candidates for either examination. The examination is held twice yearly, in May and October. The published regulations provide detailed synopses of the subjects of examination. The Registrar for Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place, and for Glasgow Mr. Walter Hurst, 242, St. Vincent-street.

Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland.—Every candidate for the Diploma in Public Health must be a registered medical practitioner. He must subsequently to qualification (1) receive four months' laboratory instruction in Chemistry, Bacteriology, and the Diseases of Animals transmissible to man; and (2) during six months practically study outdoor sanitary work under a medical officer of health, and shall as an additional requirement attend a hospital for infectious diseases. Candidates are examined on four days, commencing on the first Monday of February, May, and November. The examination comprises the following subjects: Hygiene, Chemistry, Meteorology and Climatology, Engineering, Vital Statistics, Sanitary Law, and Bacteriology. The fee for the examination is £10 10*s*. For further particulars apply to Alfred Miller, O.B.E., Secretary, Committee of Management; Office, Royal College of Surgeons, Dublin.

REGISTRABLE COLONIAL AND FOREIGN MEDICAL DEGREES.

UNDER the Medical Act, 1886, a number of medical diplomas granted in British possessions entitle their holders to be registered without further examination in the Colonial List of the (British) Medical Register. The condition attached to such registration is that the holder of the colonial diploma obtained it when he was not domiciled in the United Kingdom or in the course of a period of not less than five years during the whole of which he resided out of the United Kingdom. Some account is here given of the diplomas and of the course of study required to obtain them.[1] The information has in most cases been supplied or confirmed by the authorities of the university or corporation, to whom our best thanks are offered.

AUSTRALASIA.

Summary of Registrable Degrees.—New South Wales: University of Sydney, (1) M.B., (2) M.D., (3) Ch.M. New Zealand: University of New Zealand, (1) M.B., Ch.B., (2) M.D. South Australia: University of Adelaide, (1) M.B., B.S., (2) M.D., (3) M.S. Victoria: University of Melbourne, (1) M.B., (2) M.D., B.S.

University of Adelaide.

The University of Adelaide[2] was established by Act of the South Australian Legislature in 1874. In 1883 Sir Thomas Elder gave £10,000 for the foundation of a school of medicine, and in 1897 a further sum of £20,000 under his will. The Medical Acts of 1844 and 1880 set up a South Australian Medical Board to issue certificates of legally qualified medical practice.

Preliminary Examination.—Before entering upon the medical course candidates must have passed the Senior Public Examination in at least five subjects, and the higher standard in physics, chemistry, and biology, either of the Higher Public Examination or first year Science.

M.B., B.S.—The five years' course includes five examinations held in November of each year. At the first the subjects are anatomy and dissections, physiology, organic chemistry, and physical chemistry; at the second, anatomy, physiology, and materia medica; at the third, medicine, surgery (including clinical), regional and surgical anatomy, bacteriology, public health and preventive medicine; at the fourth, medicine (including clinical), surgery (including surgical anatomy and clinical surgery), pathology, obstetrics, and forensic medicine (including insanity); at the fifth, medicine (all branches), surgery (including surgical anatomy and operative surgery), gynæcology, ophthalmology, otology and therapeutics. The fee for each examination is £3 3*s*. and for the degree £5 5*s*. Fees for the five years' course of study amount to £145 19*s*.

M.D.—Candidates must have been Bachelors for at least nine academic terms, which may be shortened on the recommendation of the Faculty of Medicine. The subject of examination may be selected from the following: General medicine, diseases of the nervous system, pathology, obstetrics, State medicine. A thesis may be submitted. Fee for the examination £15 15*s*., for the degree £10 10*s*.

M.S.—The conditions are similar to those for the M.D. Choice of subject may be made from: Gynæcology, the surgery of the abdomen, the surgery of the special senses and throat; in addition to examination in the principles of surgery.

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[1] Belgium no longer appears in this list as the Government of that country now requires British practitioners to obtain Belgian qualifications: consequently reciprocity between the two countries has come to an end, at any rate for the present. In the South African Union reciprocity already applies, but there are as yet no facilities for obtaining complete medical courses. In Spain there are good reasons for hoping that reciprocity may soon be an accomplished fact.

[2] The University Registrar is Mr. C. R. Hodge. The Calendar of the University of Adelaide (1921) is a volume of 534 pp., printed by W. K. Thomas and Co., Grenfell-street, Adelaide. Price 2*s*. 6*d*.

examination of the Science Faculty taking the medical student's group; it comprises anatomy, physiology, and materia medica, and the fee is Rs.30. The second examination is in pathology, forensic medicine, and hygiene, and is taken at the end of the third year; the fee is Rs.30. The final examination, for which the fee is Rs.40, is taken at the end of the fifth year and comprises the rest of the professional subjects.

King Edward Medical College, Lahore, trains students for the medical degrees of Punjab University. The college year consists of one long session of three terms. The course for the M.B., B.S. occupies five years, the fees being Rs.125, Rs.115, Rs.135, Rs.105, and Rs.110 in successive years. College scholarships are granted.

Registrable Foreign Medical Degrees.

Certain medical diplomas granted in foreign countries also entitle to registration in the foreign list of the Medical Register, provided that the holder is not a British subject or that, being a British subject, the diploma was obtained under domiciliary conditions similar to those attached to colonial diplomas.

Summary of Registrable Degrees (the date in parentheses being the year in which Part II. of the Medical Act. 1886, was applied to the country in question).—*Italy* (1901): Degrees of Doctor of Medicine and Surgery of all the Royal Italian Universities. *Japan* (1905): Degrees of Bachelor of Medicine (Igakushi) and Doctor of Medicine (Igaku Hakushi) of the Imperial Universities of Japan; and the Degree of Bachelor of Medicine (Igakushi) of any Government or Prefectural special medical college, or of a private special medical college designated by a Minister of Education of the Empire of Japan.

Italy.

The regulation for the medical diploma is fixed by Royal Decree dated August 9th, 1910, and is the same for each of the 20 universities and institutes where courses of study are arranged. These are in alphabetical order: Bologna, Cagliari (Sardinia), Camerino, Catania, Ferrara, Florence, Genoa, Messina, Modena, Naples, Padua, Palermo, Parma, Pavia, Perugia, Pisa, Rome, Sassari, Siena, and Turin. Camerino, Perugia, and Ferrara are "free" Universities, and supply a part only of the Medicine course.

The course covers six years, and embraces the following 20 constituent subjects: (1) experimental physics, (2) inorganic and organic chemistry, (3) botany, (4) zoology and comparative anatomy, (5) normal human anatomy (descriptive or systematic, macroscopic and microscopic), (6) physiology, (7) general pathology, (8) pharmacology and toxicology, (9) pathological anatomy and histology, (10) special medical (practical) pathology, (11) special surgical (practical) pathology, (12) medical clinics, general and special, (13) pediatric clinic, (14) surgical clinic, general, special and operative, (15) obstetric and gynæcological clinic, (16) ophthalmological clinic, (17) clinic of nervous and mental diseases, (18) hygiene and public health, (19) legal medicine, (20) dermatological and venereal clinic.

The distribution of these subjects over the six years varies somewhat at the different centres, but the official course at Siena may be taken as an example:—1st year: botany, zoology, normal human anatomy. 2nd year: normal human anatomy, general chemistry, experimental physics, embryology, experimental physiology. 3rd year: normal and topographical human anatomy, experimental physiology, bacteriology, general pathology. 4th year: materia medica, special medical and surgical pathology, pathological anatomy, medical and surgical clinic. 5th year: pathological anatomy, medical, surgical, ophthalmological, and dermatological clinic, hygiene and public health. 6th year: medical, surgical, nervous and mental, pediatrics, and obstetric clinic, legal medicine, operations, history of medical science. Twenty-six optional courses in special subjects can be attended by students of various years. The examinations are held in the latter half of October and June.

Japan.

The medical course is taken at the Imperial Universities of Tokyo, Kyoto, Kyushu and Tohoku, and at the Medical Colleges of Kyoto, Osaka, Chiba, Aichi, Nagoya, Okayama, Kumamoto, Nagasaki, Kanazawa, Niigata, Tokyo-Jikein, Formosa, Korea, and Mukden. Each includes institutes of anatomy, embryology, histology, physiology, medical chemistry, pharmacology, pathology, hygiene, microbiology, forensic medicine, diagnosis, medicine, surgery, ophthalmology, obstetrics-gynæcology, pediatrics, dermatology, oto-rhino-laryngology, orthopædic surgery, dentistry, psychiatry, and neurology. There is a four years' course of instruction, and yearly about 80 students graduate in medicine from each University or College.

DENTAL SURGERY.

University of Sydney.—A degree in Dental Surgery (B.D.S.) is granted after a four years' course following matriculation. A graduate in medicine is required to devote four terms to dental study before sitting for the degree of B.D.S.

University of Adelaide.—The four years' course for the B.D.S. is regulated by similar conditions to that for the M.B., B.S. Four examinations are held in November of successive years. The fee for each ordinary examination is £3 3*s.*, and for the degree £5 5*s.* Fees for the whole course amount to £95 11*s.* The subjects of the several examinations are set out on p. 185 of the Calendar.

University of New Zealand.—The dental degrees of this university carry with them the right of a place in the foreign list of the British Register.

McGill University, Montreal.—The degree of D.D.S. is granted on a four years' curriculum.

University of Toronto.—The degree of D.D.S. is granted on a five years' curriculum. Annual examinations are conducted under the joint auspices of the University and the Royal College of Dental Surgeons of Ontario.

University of Malta.—The University grants its diploma in dental surgery after examination to matriculated candidates producing evidence of four years' professional study and three years' instruction in mechanical dentistry.

TEACHING INSTITUTIONS IN DENTISTRY.

Dominions.

The Australian College of Dentistry, in connexion with the Melbourne Dental Hospital, trains candidates for the degrees of B.D.Sc. and D.D.Sc. Melb. Students indentured to the College pay £170 in two instalments of £85 each, or four instalments of £42 10*s.* The superintendent of the College is Mr. F. A. Aird, L.D.S., B.D.Sc.

United Dental Hospital of Sydney was established in 1901 to provide facilities for the students attending the University Dental School. The fee payable by University students for the dental practice of the hospital is £6 6*s.* per annum. The secretary is Mr. H. A. Clarke, F.I.A.A.

The Dental Department of McGill University, Montreal, was opened in 1903 at the request of the Dental Association of the Province of Quebec as a section of the medical faculty. An out-patient clinic in dentistry at the Montreal General Hospital provides the clinical material. Particulars from the Dean of the Dental Faculty.

Royal College of Dental Surgeons of Ontario has a school of dentistry in connexion with the University of Toronto. Practical work is carried out in the infirmary and laboratories of the College.

The conditions under which medical and dental practitioners with British qualifications may practise abroad are set out in the fifth edition (1921) of a report published for the General Medical Council by Messrs. Constable and Co., Ltd., 10, Orange-street, London, W.C. (price 2*s.* 6*d.*)

A thesis must be presented two months before the examination. The fee for the degree is £10.

Diploma in Public Health.—Candidates must be registered practitioners of not less than 12 months' standing. The examination is in two parts: (1) relating to the general principles of sanitary medicine; (2) relating to State medicine and to the application of pathology and sanitary science to public health. The fee is £10.

Affiliated Colleges.—Matriculated students are admitted to the following resident colleges—namely, St. Paul's College (Church of England), St. John's College (Roman Catholic), St. Andrew's College (Presbyterian), Wesley College (Methodist), the Women's College (undenominational), at which scholarships and bursaries are available.

Recognised Hospitals are the Royal Prince Alfred Hospital with medical school, the Sydney Hospital with clinical school, St. Vincent's Hospital, the Royal Hospital for Women, the Royal Alexandra Hospital for Children, the Glandesville and Callan Park Hospitals for the Insane, the Women's Hospital, the Renwick Hospital for Infants, and the South Sydney Hospital for Women.

BRITISH NORTH AMERICA.

Summary of Registrable Degrees and Diplomas.—Alberta: College of Physicians and Surgeons, Member. Manitoba: College of Physicians and Surgeons, Member; University of Manitoba, M.D., C.M. New Brunswick: Provincial Council of Physicians and Surgeons, L.M.S. Newfoundland: Medical Board, L.M.S. North-West Territories: College of Physicians and Surgeons, Member (when held in conjunction with the licence of Alberta or Saskatchewan). Nova Scotia: Provincial Medical Board, L.M.S.; Dalhousie University, M.D., C.M. (Halifax Medical College, M.D., C.M., if obtained prior to August 31st, 1911). Ontario: College of Physicians and Surgeons, Member. (To this can be added as additional qualifications the degrees in medicine of the Queen's University, Kingston; the Western University, London; and the University of Toronto.) Prince Edward Island: Medical Council, L.M.S. Quebec: McGill University, M.D., C.M.; Laval University, M.D.; University of Montreal, M.D. Saskatchewan: College of Physicians and Surgeons, Member.

Dalhousie University, Halifax, Nova Scotia.

The work of Halifax Medical College was discontinued in 1911, when instruction in all subjects of the medical curriculum was undertaken by Dalhousie University. The professional examinations are conducted conjointly by the university and the Provincial Medical Board of Nova Scotia (see below).

M.D., C.M.—In addition to the matriculation or preliminary examination candidates are required to pass five professional examinations. For admission to the classes of the third or any higher year the undergraduate must have passed in all the subjects of the preceding year. The curriculum for the third year still includes practical anatomy and advanced physiology, while the fifth (final) year subjects are given as: Surgical anatomy, operative surgery, clinical surgery, clinical medicine, clinical pediatrics, clinical obstetrics, practical obstetrics, clinical gynæcology, mental diseases, skin diseases, eye, ear, nose and throat diseases, dressing, clerking, vaccination, post mortems, hospital, medical ethics. To win distinction in any subject a mark of 75 per cent. or over is required. The total tuition fees in any year amount to $200 including registration, tuition, hospitals, laboratories, and the regular sessional examinations. There were 168 medical students of all years in 1920-21. Dean of the Faculty, John Stewart, M.B.Edin., LL.D.Edin. and Dal.: Secretary, Professor Fraser Harris, M.D., D.Sc. The regulations are subject to change owing to the institution of the six-year course beginning October, 1921.[5]

Queen's University, Kingston, Canada.

Queen's College, Kingston, was established by Royal charter in 1841, assisted by grants from the Presbyterian Church in Scotland. Classes in medicine were first held in the University in 1854. The Medical School, conducted for a time under the charter of the Royal College of Physicians and Surgeons at Kingston, became an integral part of the University in 1892. Kingston General Hospital (230 beds) is adjacent to the University buildings.

M.D., C.M.—Candidates for a degree must pass the Junior Matriculation of the University or its equivalent. The course comprises five sessions of eight months each. A combined B.A. and M.D. course may be taken in seven years. Foreign students must spend at least one full session in the University. Examinations are held at the end of each session. The average cost per session of eight months, including board and lodging, is $376–435. All students are expected to attend a church of the denomination to which they profess to belong.

D.Sc.—Granted on a thesis embodying original research of importance to medical science not earlier than two years after graduation. A reading knowledge of scientific French and German is required.

D.P.H.—The diploma is granted to those holding the M.D., or M.D., B.Sc., after examination following prescribed study, which includes six months with a recognised medical officer of health in the study of practical sanitation.

Laval University, Quebec.

Laval Catholic University[6] was incorporated by Royal Charter in 1852, absorbing the Quebec School of Medicine organised four years earlier. The first class graduated in 1855. The medical department was destroyed by fire in 1910.

M.B., M.D.—The entrance examination includes Latin, philosophy, and Canadian history, and its standard is prescribed by the College of Physicians and Surgeons of Quebec. The Faculty of Medicine confers a baccalauréat and a doctorat, the former after 2 years, comprising 6 terms of study, the latter after 3 further years. Examinations are held in June at the end of each year of study. The total fee for examinations is $15, for the diploma of bachelor $5, and for that of doctor $20. Fees paid by enrolled students for the medical course amount to $15 a term.

McGill University, Montreal.

The Faculty of Medicine of McGill University[7] arose out of the Montreal Medical Institution, organised as a medical school in 1823-24, and incorporated in the University in 1829.

Preliminary Examination.—Before registration an undergraduate in medicine must have passed the Matriculation Examination of the University or its equivalent. The examination is held twice yearly at McGill, and once at Calgary, Regina, Winnipeg, Toronto, St. John, and Truro. Also in June in London (apply to Secretary, Headmasters' Conference, 12, King's Bench Walk, E.C.). Latin, and either Greek, French, or German must be taken. For the Session 1922–23 Senior Matriculation, or one year in Arts covering English, History, Mathematics, Latin, French, German or Greek, Physics or Chemistry will be required for admission. Every student entering the University is required to pass a physical examination to detect defects and weaknesses amenable to treatment. Board and lodging can be obtained in private houses in the vicinity of the University at $40 a month upwards.

M.D., C.M.—The undergraduate course in medicine has been increased to six years by a pre-medical year devoted to chemistry, physics, and biology, paid by the student. In the hall of residence attached to the college lodging costs from $3 to $5 and board $8.40 a week, the hope being expressed that the last-mentioned figure may soon be reduced. Bequests have made it possible to reserve a "student's bed" at the College hospital, and to aid students in time of illness. A member of the board of the Woman's Hospital has given $1000 out of which small sums are paid as premiums to graduates and students of the College who invent or improve medical instruments or appliances. Furthermore, a prize of $50 is offered annually to the student, who on the vote of her colleagues and teachers best exemplifies the following qualities: "A good student, showing interest and industry in her work; reliability, cheerfulness, fairmindedness, tolerance, and capacity for team-work."

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[5] The Calendar is printed by Wm. Macnab and Son, Halifax.

[6] The Secretary of the Medical Faculty is M. Arthur Vallée.

[7] The University Registrar is Dr. J. A. Nicholson, M.A., LL.D. The Annual Calendar of the Faculty of Medicine and Department of Dentistry is a volume of 99 pp., printed by the Gazette Printing Co., Ltd., Montreal.

DIPLOMA IN RADIOLOGY AND ELECTROLOGY.

IN June, 1919, the University of Cambridge instituted a diploma in radiology and electrology to be taken after a course of study extending over a period of six months or more. The lecture course in Part I. consists of physics and electro-technics with photography; in Part II., of radiology and electrology, in each case with special reference to diagnosis and treatment. Six months' clinical experience is required in the electrical department of a recognised hospital. Lecture courses are arranged twice a year alternately in Cambridge and in London. Apart from examination the diploma may be granted to a medical practitioner of not less than ten years' standing and five years' experience in radiology on presentation of a dissertation. Application to the Secretary, Dr. Shillington Scales, Medical Schools, Cambridge.

Medical News.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—The following appointments have been made in the Faculty of Medical Sciences: Mr. R. A. Dart and Mr. J. Shellshear to be senior demonstrators in anatomy; Dr. C. Da Fano to be senior lecturer in histology; Dr. Elizabeth Fraser to be senior assistant in zoology; and Mr. E. B. Verney to be assistant in physiology.—In connexion with the University College and University College Hospital Medical School War Memorial two publications are now in course of preparation; the first of these, the Pro Patria List, now contains upwards of 3000 names, and the War Memorial Committee are anxious to make it as complete as possible. Alumni, or the relatives of alumni, who served in the war, who have not yet received the Pro Patria questionnaire are therefore requested to communicate with the committee at once. The second publication is the War Memorial Album, designed to contain the records and portraits of those alumni who gave their lives during the war. Owing to changes of address it has hitherto been impossible to obtain full particulars or portraits of some 80 men who are known to have fallen. It is hoped that relatives who have not yet received the War Memorial Album form will also inform the committee without delay.

The Primary Fellowship Course.—The course in anatomy at University College will be resumed on Thurs., Sept. 1st, at 10 A.M.; the course in physiology on Wedn., Sept. 21st, at 2 P.M. Dr. D. T. Harris will be glad to see all students intending to take the physiology course on Thurs., Sept. 1st, in order to advise them with regard to their preparatory reading.

THE CENSUS RETURNS, 1921.—A preliminary report of the Registrar-General, issued on August 23rd, gives the population of England and Wales in 1921 as 37,885,242, being an increase of 1,814,750, or only 4·9 per cent. on the population in 1911. There is an excess of 1,720,802 females over males.

THE LATE LIEUT.-GENERAL SIR DAVID HENDERSON.—Lieut.-General Sir David Henderson, K.C.B., K.C.V.O., D.S.O., who died at Geneva on August 17th, after a long period of ill-health, had held the post of Director-General of the League of Red Cross Societies from May, 1919. He had previously become famous as Director-General of Military Aeronautics, which post he held, from its creation in 1913 till October, 1917.

DANGEROUS DRUGS ACT.—The Home Office has announced a provisional regulation extending the application of the Dangerous Drugs Act to the Isle of Man.

CHILDREN'S COUNTRY HOLIDAYS FUND.—Mr. Francis Morris, chairman of the Fund, writes calling attention to the urgent need for donations. A gift of £1 will still provide a fortnight in the country for a child from a London elementary school. Cheques, payable to the Earl of Arran, hon. treasurer, may be sent to 18, Buckingham-street, London, W.C.2.

CONSTRUCTIVE BIRTH CONTROL.—A society with this name was recently formally constituted when the following officers and committees were elected: President, Dr. Marie Stopes; Hon. Secretary, Mr. H. V. Roe; and Hon. Treasurer, Mr. Aylmer Maude. Among the vice-presidents are the following medical men:. Sir James Barr, Sir W. Arbuthnot Lane, and Sir Archdall Reid. A medical research committee includes Dr. Jane L. Hawthorne and Mr. E. B. Turner. Active work is projected to commence next October and a League of Nations Committee and a Political Committee are to be appointed.

DONATIONS AND BEQUESTS.—Mr. T. H. Kirkbride, of Leeds, who left estate of the value of £10,746, bequeathed £500 to the Leeds Public Dispensary, £100 to the Leeds Tradesmen's Benevolent Institute, £100 to the Wesleyan Foreign Mission, £100 to Dr. Stephenson's Home for Children, and the residue of his property to the Leeds General Infirmary.—The late Miss Kate Fyfe Grant, of Cullen, who died on July 9th, has bequeathed the residue of her estate, amounting to over £2000, to the University of Aberdeen for the purpose of founding bursaries in the Faculty of Medicine, to be called the "Grant Medical Bursaries." Preference will be given to candidates born in or having a substantial personal connexion with the parishes of Cullen or Huntly. One of Miss Grant's brothers was the late Dr. George Grant, of Huntly, who died in 1867.

ABERDEEN HOSPITALS GALA.—A gala in aid of the local hospitals has taken place recently in Aberdeen. The proceedings commenced with a fancy dress cycle parade arranged by the engineering trades in the city. In the Duthie Park there were exhibitions of dancing by the Aberdeen school girls, a display of gymnastics by the boys from Oakland School, and an athletic sports meeting. On the River Dee an aquatic gala was given by the members of the Dee Swimming Club. Unfortunately the weather conditions were very unfavourable throughout. The Aberdeen Hospitals Gala Day Committee intend to carry on their work during the winter. It is proposed to arrange a great whist tournament over all the hospital area, and to organise concerts and other entertainments during the winter months. A flag day will be held on Sept. 10th. Various hospitals in the city have agreed to allow a number of nurses to assist in the collection.

Appointments.

HUNT, J. M., M.B. Glasg., has been appointed Honorary Dean to the Liverpool School of Tropical Medicine.

KENNEDY, W. N. W., M.D. Edin., D.P.H., County Medical Officer, Tuberculosis Officer, School Medical Officer for Selkirkshire, Medical Officer of Health, Burghs of Selkirk and Galashiels, and Medical Superintendent of the Child Welfare Schemes.

ODDY, H. M., M.B., B.Ch. Oxon., M.R.C.P., Medical Registrar to the Westminster Hospital.

TROTTER, G. C., M.D. Edin., D.P.H., F.R.S.E., Medical Officer of Health, Metropolitan Borough of Islington.

Certifying Surgeons under the Factory and Workshop Acts: **FRASER, R. J. L.**, M.B., Ch.B. Glasg., for the Milngavie District of the county of Dumbarton; **POWELL, J.**, M.R.C.S., L.R.C.P. Lond., D.P.H., for the Sennybridge District of the county of Brecon.

Births, Marriages, and Deaths.

BIRTHS.

ACHESON.—On August 15th, at Kenmuir, Ballymena, Co. Antrim, Ireland, the wife of Dr. S. Acheson, of a son.

MARRIAGES.

NELSON—BEAVEN.—On August 12th, at the Parish Church of Withyham in the county of Sussex, Thomas S. Nelson, B.M., M.R.C.S., was married to G. Mary Beaven, M.R.C.S., by the Rev. Henry Carter.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

pathology, and hygiene; Part II. surgery, midwifery, and ophthalmology. 628 medical undergraduates passed examinations in 1920–21. Candidature for the degrees of *B.Hy.*, *M.D.*, *D.Hy.*, or *M.S.* implies that the M.B., B.S. degree has been taken not less than three years (B.Hy., one year) previously.

Grant Medical College, Bombay, was established in 1845, to "impart through a scientific system, the benefit of medical instruction to the Natives of Western India," and recognised by the University in 1860. Attached is a laboratory for scientific medical research. The students are arranged in three classes: (1) graduates and undergraduates of the University of Bombay and other recognised Universities who are educated through the English language for medical degrees; (2) members of the European and domiciled European communities who are educated through the English language for the grade of military assistant surgeon; (3) undergraduates and others for the diplomas of the College of Physicians and Surgeons, Bombay.

University of Calcutta.[13]

For the degree of *M.B.* the preliminary scientific, first, and final M.B. examinations must be passed. The final is divided into two parts, major and minor, which may be taken together. The former includes medicine, surgery, and midwifery; the latter general pathology, medical jurisprudence, and hygiene. An examination for honours is held a week after the pass-list is declared. The fees for the three examinations are Rs.25, Rs.30, and Rs.50 respectively. The *M.D.* degree is granted after examination in medicine, pathology, and mental diseases not less than one year subsequent to the M.B. The fee is Rs.100. Degrees of Master of Surgery (*M.S.*) and Obstetrics (*M.O.*) are also granted. A diploma in public health is granted to possessors of the M.B. degree or L.M.S. diploma by examination after a prescribed course of a year has been carried out. The fee is Rs.100.

Ceylon Medical College, Colombo.

The Ceylon Medical College[14] began in 1870, and the curriculum and examinations were revised in 1901 in conformity to modern requirements. In 1888 the licence in medicine and surgery (*L.M.S.*) granted by the College was recognised by the General Medical Council of the United Kingdom. Lady students were first admitted in 1892. There are two departments in the College—viz., Medical and Apothecary. For admission to the Medical Department of the College candidates must pass Cambridge Senior Local or Senior School Certificate Examination or the London Matriculation Examination in the required subjects. The first professional examination is passed at the end of the first year, the second at the end of the third, the third at the end of the fourth, and the final at the end of the fifth. The fifth year's course includes, besides the usual final subjects, instruction in tropical medicine, skiagraphic demonstrations, and attendance at fever and leper hospitals. The total fees for the medical curriculum, including examination fees, amount to Rs.1423.50. Various scholarships and medals are awarded by Government and private donors.

University of Hong-Kong.

The Faculty of Medicine of the University of Hong-Kong (1912) had its origin in the work of the Hong-Kong College of Medicine founded in 1887. The School of Anatomy was opened in 1913 and special schools for physiology, pathology, and tropical medicine were opened in 1918 and 1919. The University confers the degrees of *M.B.*, *B.S.*, *M.D.*, and *M.S.* The subjects of the first medical examination are physics, chemistry, and biology; of the second, Part I., anatomy, physiology, Part II., general pathology (including bacteriology), and elementary pharmacology; of the third, Part I., surgery and midwifery, Part II., medicine and pathology, including hygiene and tropical medicine. The fee for each subject of each examination is $5, and for conferring the M.B., B.S. $25. The candidate for *M.D.* may present himself in two years and must take general medicine as well as one of the following: State medicine, pathology, midwifery, tropical medicine, physiology. The rules for *M.S.* are similar. The fee for each examination is $100 and for conferring the degree $100. The Registrar of the University is Mr. N. Teesdale Mackintosh, M.A. Oxon.

*University of Lucknow.**

The examination for the degree of *M.B.*, *B.S.* consists of three parts: preliminary scientific, first degree, and final degree. The two latter are held at Lucknow. The preliminary scientific examination in chemistry, physics, and biology is open to candidates who have passed in these subjects at the intermediate examination of the University. The first degree examination comprises anatomy, physiology, and materia medica and pharmacy; it may be taken after two years. The final degree examination comprises two groups: (A) midwifery, hygiene, and medical jurisprudence, taken after two years; (B) medicine, surgery, and pathology, taken a year later. Honours may be obtained in any subject. The *M.D.* and *M.S.* degrees are obtained within not less than one year on passing an examination in medicine and pathology. The fees for the M.B., B.S. examination are Rs.140, for the M.D. and M.S. Rs.£200 each.

King George's Medical College, Lucknow,* prepares students for the medical degrees of the University of Lucknow. The curriculum extends to five college years, each of three terms. Scholarships and bursaries are granted.

University of Madras.

A medical school was established in Madras in 1835, which became the Madras Medical College in 1851 and was affiliated to the University in 1877. The College was originally for supplying assistant surgeons and hospital assistants to the army, but now undertakes also the training of students for the medical degrees and diplomas of Madras University. Candidates for the degrees of *M.B.*, *B.S.* must have passed the Intermediate Examination in Arts of the University or its equivalent, and have studied medicine for not less than five years in a college affiliated to the University. Four examinations are held, the third (at the end of the third year) comprising general pathology and hygiene, and the fourth the other professional subjects. The examination fees are Rs.25, Rs.25, Rs.10, and Rs.50 respectively. The *M.D.* degree may be taken not less than one year after a first-class pass in either medicine, midwifery, pathology, or tropical medicine. The conditions for the *M.S.* degree are similar. The examination fee in each case is Rs.100. A degree in sanitary science (*B.S.Sc.*) can be taken in two parts one year after the M.B., B.S., the total fee being Rs.100.

The Madras Medical College includes a college department, an apothecary department, a chemists' and druggists' department, and a sanitary inspectors' department. The course of training for the M.B., B.S. is charged Rs.120 a year, or a lump sum of Rs.510 if paid in advance. Valuable scholarships are awarded by the Government and by the Dufferin Fund, and special Government stipends to women medical students.

Punjab University.

An examination for the degree of *M.B.*, *B.S.* is held annually in Lahore in May, and consists of three parts —first, second, and final. The first professional examination is open to candidates who not less than two years previously have passed the intermediate

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[13] The University of Calcutta Regulations and the Calendar are published by the University.

[14] The Registrar of the College is Dr. P. J. Kelly (Dr. L. D. Parsons, Acting Registrar). The Ceylon Medical College Calendar (1919–20) is a volume of 38 pp., published by authority and printed by H. R. Cottle Government printer, Colombo.

* The Medical Faculty of the University of Allahabad has been transferred *en bloc* to the new University of Lucknow, which is awaiting formal recognition of its qualifying examinations by the General Medical Council.

This licence expired at the end of June, 1921, and at the time of his death Mr. Hawker was flying without a licence. In all cases, both for the original grant of a "B" licence and for its renewal, a most careful medical examination is carried out, and it is unlikely that a person suffering from physical defects likely to interfere with his qualifications as a pilot would successfully pass this examination.

Compulsory Vaccination.

Dr. **M'DONALD** asked the Minister of Health if he would at the earliest possible date introduce legislation making it compulsory for all individuals who had been in contact with small-pox cases, and who had not been vaccinated within five years, to submit themselves to vaccination.—Sir A. **MOND** replied: I cannot undertake to introduce legislation for the purpose suggested.

THURSDAY, AUGUST 18TH.

Medical Staff at Chepstow.

Major **PRESCOTT** asked the Minister of Pensions the number of patients at the pensions hospital at Chepstow; the number of medical officers attached to the staff of that hospital; and if any reduction in the number of these medical officers was contemplated.—Mr. **MACPHERSON** replied: The number of patients at present in this hospital is 167. and the staff comprises five medical officers, including the medical superintendent. The hospital is for neurasthenic patients. I am now considering carefully the reduction of the medical staff in this hospital and in others.

Pensioners and Medical Boards.

Mr. **CHARLES WHITE** asked the Minister of Pensions whether he was aware of the many thousands of pensioners whose pensions had been reduced during the present year as a result of special examinations by medical boards; whether any special instructions had been given to medical boards that in the interests of economy examinations should be much more severe than hitherto; and whether he would take such steps as were necessary to bring to the notice of each pensioner the exact method by which he could appeal against the decision of the medical board which reduced or discontinued his pension.—Mr. **MACPHERSON** replied: As I have repeatedly stated no instructions in the direction suggested by my hon. friend have been issued by my Department, and this fact was confirmed most explicitly by the Departmental Committee of Inquiry whose report has recently been published. The fact that during the past twelve months the percentage of cases in which the assessment was unchanged or increased has risen from 52·5 to 61·8 is alone sufficient to refute the suggestion that any such instructions could have been issued. Pensioners are, I am satisfied, fully aware of their rights of appeal and exercise them; and I do not consider that any special steps, such as are suggested in the last part of the question, are called for.

Tuberculosis Patients in Sanatoriums.

Mr. **JOHN GUEST** asked the Minister of Pensions how many ex-Service men suffering from tuberculosis were now in sanatoriums without pension or treatment allowance of any kind; and if he was aware that many of these men were, prior to their war service, strong and healthy, and began that service as A1 men.—Mr. **MACPHERSON** replied: I regret that I am unable to give the information asked for in the first part of the question. I would remind my hon. friend that tuberculosis is a disease which is unhappily prevalent under ordinary civil conditions. The function of the pensions warrant is to compensate for disability due to war service only. If, however, a claim to pension is rejected on the ground that the disability is not of this character, the claimant has a right of appeal to an independent tribunal.

Yorkshire Pensions Administration.

Mr. **LUNN** asked the Minister of Pensions whether his attention had been called to reports of the meeting of the Yorkshire regional advisory council held in Leeds on August 15th, wherein the regional director was reported to have refused members of the council the right to ask questions relating to pensions administration within the area; was he aware that he also refused to place on the agenda important resolutions which had been sent in by members, and that, as a result, the meeting broke up without doing any business; and would he say whether the attitude adopted by the regional director had the approval of the Minister, or could he take steps to see that such pension committees would meet more regularly in the future and deal with any business relating to local pensions administration.—Mr. **MACPHERSON** replied: This matter has just been brought to my notice. I am giving it my personal consideration.

Income Tax and Hospital Subscriptions.

Captain **BOWYER** asked the Chancellor of the Exchequer whether he would consider the possibility of arranging that next year subscriptions to hospitals should not be liable to income tax, in order that by this means the hospitals of the country might once more be placed on a sound financial basis.—Sir R. **HORNE** replied: I regret that I cannot see my way to promise legislative proposals in the direction desired by my hon. and gallant friend.

Opium for Medical Purposes.

Sir J. D. **REES** asked the Lord President of the Council whether the League of Nations was now charged with the duty of deciding how much opium was to be grown in the world and how much was required for medicinal purposes and of preventing the cultivation of the poppy to any greater extent than would suffice to satisfy this need; and, if the answer be in the affirmative, could he say how the League proposed to enforce its decrees in foreign countries such as China and Persia.—Mr. **SHORTT** (Home Secretary) replied: Article 23 of the Treaty of Peace entrusts the League with the general supervision over the execution of the International Opium Convention of 1912, and any conventions on the same subject which may hereafter be concluded. One provision of the existing convention requires the signatories to enact effective laws or regulations for the control of the production and distribution of opium, but it does not rest with the League to decide how much opium is to be grown. The last part of the question, therefore, does not arise.

Foreigners and Lunacy Law.

Mr. **THOMAS GRIFFITHS** asked the Secretary for the Home Department whether the provisions in the Lunacy Acts for the release of an inmate of an asylum applied equally in the case of a Belgian incarcerated in this country, or whether any additional steps were necessary.—Sir A. **MOND**: The provisions for the discharge from the institution are the same in the case of an alien, but where it is proposed to remove an alien lunatic to his native country the procedure to be adopted is laid down in Section 71 of the Lunacy Act, 1890.

FRIDAY, AUGUST 19TH.

Discharge of Asylum Patients.

Mr. **ALFRED DAVIES** asked the Minister of Health whether the decisions of visiting committees re discharge of patients from asylums were subject, in the case of London County Council asylums, to interference or reversal by a central committee sitting in Arundel-street; whether he was aware that medical superintendents had at times exceeded their powers by opening, intercepting, or answering on their own authority applications addressed by relatives to visiting committees; and whether he would take steps to prevent the calling in of a doctor from the Pensions Ministry being used to reinforce, by the threat of the loss of half the patient's allowance, the refusal of a medical superintendent to comply with the next-of-kin's right to the discharge of a service patient under Sections 72–74 of the Lunacy Act.—Sir A. **MOND** replied: I understand that the decisions of London Asylums Sub-Committees with reference to the discharge of patients are not subject to reversal by a central committee, that letters addressed to visiting committees are always laid before them, and that in no case is an application to the committees for discharge dealt with by the medical superintendent. As regards the third part of the question I am informed that no case is known where an incident of the kind referred to has occurred.

St. Andrew's Hospital, Northampton.

Mr. **ROBERT RICHARDSON** asked the Minister of Health (1) whether he was aware that, in answer to repeated inquiries addressed to the Lunacy Board of Control concerning an order issued by a magistrate, William Tomes, on May 8th, 1917, for the reception as a lunatic of a voluntary boarder at St. Andrew's Hospital, Northampton, the Board had stated, in a letter dated August 11th, that they were not in possession of the information required, one item being the date of the above magistrate's death, which they had previously stated to have taken place; (2) whether he was aware that on Feb. 2nd and 9th, 1921, registered letters were addressed to the Board of Control in Lunacy by a sometime voluntary boarder at St. Andrew's Hospital, Northampton, urgently requesting information concerning grave irregularities officially admitted.—Sir A. **MOND** replied: I am informed by the Board of Control that these inquiries relate to matters which are the subject of judicial proceedings which are being taken by the patient in question against the hospital authorities. While proceedings are pending the Board cannot make any statement on questions in regard to which evidence may have to be given at a later stage.

THE President of the French Republic has conferred on Sir A. W. Mayo Robson the Cross of the Legion of Honour in recognition of services rendered to the French Red Cross during the war.

Annotations.

"*Ne quid nimis.*"

THE POSITION OF DENTAL SURGERY.

As all our readers know, the Dentists Act of 1921 s produced profound modifications in the practice dental surgery. The position of the registered ntists is to be altered by a dilution of their body plied by the addition to a register of 4000 of some ,000 names. It is impossible not to sympathise th those who, having undergone professional urses, spent money thereon, and passed standardising aminations, find themselves placed on a level with a dy of men, double their numerical strength, who ve incurred no such expenses and endured no such sts. But while we see the very real grievance of e dentists at present on the register, it was quite possible to leave things dental in the condition ich they had reached, and no other solution than at furnished by the new Act was likely to obtain rliamentary sanction. It was necessary to give a gular status to the body of men upon whom an ormous amount of professional work had necessarily volved, and whose services were in urgent need by e community, having regard to the presence of mpant quackery among us; and we must trust to me and good feeling to right such hardship and nfusion as the constitution of the first new gister may lead to.

The Royal Assent to the Dentists Act, 1921, has been ven, but no registration under its provisions can be fected until some time hence, as the Dental Board, ovided under the Act, is not yet constituted. For e time being, therefore, it is necessary for anyone actising dentistry in this country to be on the isting Dental Register or, of course, on the Medical egister. The regulations for the registration of ental students, and the special courses to be followed r the dental degrees and diplomas at the various niversities and corporations, will be published in HE LANCET at the commencement of the next edical session, by which time, we presume, the new ental Board will be constituted.

DIPLOMAS IN PSYCHOLOGICAL MEDICINE.

DIPLOMAS in Psychological Medicine, though of omparatively recent date, have been instituted at arious centres for some ten years, and affiliation of ental clinics to the teaching in general hospitals, hich has been much recommended, will probably ollow soon. When this takes place there should be o dearth of suitable applicants for posts at asylums, or many young men can then be trained to take up he work in a sympathetic milieu and in scientific pirit. But before the lunacy service can become ttractive, the views of the Board of Control, which ave been stated to the Visiting Committees of sylums, must receive practical expression by a eneral improvement in salaries, in accommodation or married officers, and by the provision in asylums or the more effective treatment upon modern lines f recoverable cases.

The following bodies have now arranged to grant iplomas in psychological medicine or psychiatry—amely, the Universities of Manchester, Leeds, Edinburgh, Cambridge, Durham, and London, and he Royal College of Physicians of London. The regulations for obtaining these diplomas point to much imilarity in the scope of the examinations, though here are differences in the duration of the courses nd the syllabus, details of which can be obtained from the various examining bodies.

The necessity for raising the standard of the training for assistant medical officers in asylums, and of affording facilities for such training, is very real. If the authorities give proper preference to the candidates for vacancies who possess diplomas or degrees in mental disease the status of this branch of the medical profession will be automatically raised, and pay and conditions of service will be made commensurate. There is now a strong feeling within the medical profession, as well as among the public, that the numerous barriers preventing the intelligent treatment of in-patient mental cases should be relaxed. The position of uncertifiable cases requiring mental treatment must be considered, for many of these cases pass from uncertifiable into certifiable, by which time they have become resistant to treatment. But new legislation is required before the treatment of the in-patient mental case can be improved in any broad way, and, in the meantime, the valuable, interesting and humane specialty of psychiatry is not as attractive as it should be to younger men. There is no doubt, however, that the necessary reforms will not be long delayed. The needs for schools of psychiatry have been stated many times during the last few years, notably in the annual report of the Board of Control three years ago, and the deficiencies in the arrangement for the treatment of persons suffering from mental disorder in its early stages are now widely recognised.

EDUCATION OF THE CHILDREN OF R.A.M.C. OFFICERS.

THERE remains in the hands of the War Emergency Fund a certain amount of money, while the applications for grants to enable medical men to restart in practice have mostly been satisfied, some £18,000 having been disbursed in this way. Dr. Newton Pitt, the hon. secretary of the Fund, wrote last week in our columns that those directing the Fund were prepared to turn their eyes in a very practical as well as a very kind direction when employing what money remains at their disposal. For they contemplate assisting in the education of the children of medical officers who have suffered financially through holding temporary commissions in the R.A.M.C. during the war. The Fund is already educating some 25 girls and boys, including several at Epsom, but the intention is to extend this admirable service and to provide subventions in special cases for some who are at medical schools and universities. This will be an admirable movement and one that should appeal especially to medical men who were in good practice before the war, and who may not even now have recovered their status. An educational grant may be of the highest value to parents who cannot be described, or desire to describe themselves, as poor, but who are none the less entirely unable to meet, as they would have been had they not left their practices during the war, the steady drain on income implied to-day by education expenses at our public schools and universities.

THE PREMIER WOMAN'S MEDICAL COLLEGE.

THE *Bulletin* of the Woman's Medical College of Pennsylvania for June is of interest to medical women for it makes the claim that this College, incorporated on March 11th, 1850, as the Female Medical College of Pennsylvania, was the first in the world to be regularly organised for the medical education of women. The College sent out the first woman medical missionary, Dr. Clara Swain, who graduated in 1800, and 121 others of the 1100 alumnæ have since followed her into the foreign mission field. The prospectus in this issue of the *Bulletin* shows that the Woman's College is not resting on its laurels. It has, for instance, the courage to refuse admission to any student who has not had small-pox or been recently vaccinated. The Alumnæ Association offers each year to a graduate of the College a fellowship of the value of $500 for post-graduate study; moreover, there is a trust fund of $5000, out of which loans may be made to students who cannot immediately pay their fees for tuition, which, it may be remarked, amount to $1275 for the four years' course. This is a large outlay for a medical student in America, where before the war less than a third of the actual cost of tuition was

To-day the reverse holds good; the coalminer carries home the colour-bar of his occupation, and no Sherlock Holmes is needed to recognise the cement-maker, the stoker, the cotton operative, the dock labourer, the tanner, or the man from the rolling mills on his way to carry the grime of his work to his artisan dwelling. Example, indeed, is stronger than precept. Not until tidiness, cleanliness, and fresh air, which are the breeding ground of good manners and good thought, are to be found in British industries can we expect to find them in British homes. Here, again, a duty is owed by industry to the community, and a debt the payment of which is long overdue. The community, being largely composed of industrial workers, must benefit by any action which benefits industry, and consideration of the importance of industrial medicine economically to industry must indicate at the same time its economic importance to the community. A few short sums in arithmetic will give help.

LABOUR TURNOVER AND LOST TIME.

A heavy economic burden upon employers and employed has now been recognised in the drift of workers from one place of employment to another. Employers suffer because workers newly engaged experience more accidents and suffer more sickness than the more permanent staff; they are also less productive units. Various estimates have been made of the cost of changing a worker, some place it as high as £5. Let us err on the safe side and put it at £2 10*s*. The worker himself, on changing employment, may be out of work for a while, then, when he does get work, at first he earns less and is more liable to sickness and accidents. He also loses not less than the employers, say £2 10s. on the average. That is to say, every change costs industry not less than £5. Labour turnover in some cases, according to various calculations made in America and in this country, has been placed at 400 per cent. Let us be content to place it at 100 per cent., which means that to maintain a personnel of 1000 workers at full strength every year 1000 workers require to be engaged to replace those who have left. In our factories and workshops alone are some eight million workers; then there are over a million miners with a similar turnover. These, together with those employed on the land, on the railways, and in transport service, as well as shop assistants, clerks, and the mercantile marine, make up not less than 20 million persons. A labour turnover on this total of 100 per cent. at £5 per head comes to 100 million pounds a year. This high labour turnover is unnecessary, as has been shown both in the United States and here; it falls to 30 per cent. where medical supervision of entrants and hygienic conditions of employment exist. This would mean a saving of 70 million pounds a year.

It has been established by careful inquiry that the underlying cause at the back of lost time is either certificated sickness or that condition of lowered health which precedes sickness. Various estimates of lost time have been made. In some cases it amounts to 20 per cent. of total possible hours; but when health conditions are favourable it may fall below 4 per cent. An average of 10 per cent. probably is not excessive for half the employed population; while 4 per cent. may be taken for the other half. Total possible working hours each year may be placed at a round figure of 2000. The loss of 10 per cent. means 200 hours, which at a wage of 1*s*. per hour comes to £10. The loss of 4 per cent. means 80 hours, which comes to £4. Ten million persons at £10 means £100,000,000. Ten millions at £4 means £40,000,000. The difference, £60,000,000, represents what may be easily attained by medical supervision in industry. On these two items alone there is a possible saving of £130,000,000 a year.

INDUSTRIAL CONVALESCENCE.

Another valuable contribution, connected with recovery from sickness, can still be made by industry to the community with benefit to industry itself. Sickness among industrial workers, whether due to accident or ill-health, is liable to be unduly prolonged for two reasons. In the first place, weekly wage earners tend to be unduly anxious about themselves and their symptoms, and unduly anxious lest if their invalidity is prolonged their place may be filled up. This anxiety tends at once to delay recovery and also to induce them to attempt to resume full-time employment before they are ready, when a second breakdown ensues. In the second place, these persons are in receipt of either compensation pay or sickness allowance; both are forfeited directly they start upon work of any kind. Convalescence can be expedited both mentally and physically by graduated activity of an interesting nature, and the best form of interest is remuneration for work done, which is to-day precisely the form of activity prohibited for the industrial convalescent. The result is that to-day enormous sums of money, which there are no means for estimating accurately, are expended in retarding convalescence. Instances of this kind of case can readily be recalled; the poisoned hand or injured limb, cured so far as the surgeon is concerned, for which short-time light employment is needed to restore functional usefulness; the consumptive discharged from sanatorium, but quite unfit to resume full factory hours; the nervous heart case for whom graduated exercise up slopes only gives opportunity for concentrating attention on the vagaries of cardiac behaviour to the detriment of convalescence; the dyspeptic who needs oxygenation resulting from exercise to rectify his gastric peristalsis; the great class of neurasthenias often called debility and suspected to be laziness, which after initial rest urgently need a period of short-time work. The list could easily be lengthened indefinitely. Each and all require—what to-day they cannot get—a period of short-time remunerative activity.

The permanently maimed in industry—to-day cast on to the scrapheap as unemployable, to be a permanent charge on industry or on the rates—still remain for consideration. Holman has estimated that annually 250,000 workers are permanently thrown out of employment through accident or preventable disease in the United States. There are no accurate statistics for this country, but a census taken in Wales in 1918 revealed that one in every 810 civilians had lost one or more limbs, and that in the industrial district of South Wales the proportion was one in every 695. Application of the former figure to the population of the United Kingdom gives a total of limbless civilians at any time of over 58,000. Few persons are ever maimed so that they do not retain some productive capacity. The Ministry of Pensions in this country—and similar evidence is forthcoming from France, America, and other countries—have shown what can be done through industrial re-education for maimed soldiers. Eighty per cent. of war cripples can be trained to carry on a trade without special equipment. The need for continuance of this work for those maimed while earning their livelihood—for assuredly peace has its victims no less than war—is clear. The duty, and also the benefit resulting, lie with industry in whose service the disability is sustained, just as the State has undertaken the duty for those injured in her service.

DEBIT AND CREDIT.

The proposition is put forward that industrial medicine properly applied can effect a saving each year on labour turnover of from 60 to 70 millions, on lost time of 50 to 60 millions, and through industrial convalescence of many millions more. Put the total at £140,000,000 on a conservative estimate. There are to-day something over 40,000 doctors in the kingdom; the cost, if industry employed half the profession and gave each doctor £2000 a year for whole-time work, would amount to £40,000,000 a year, leaving a handsome balance of £100,000,000 a year. Such wholesale engagement of the profession is not proposed, and indeed is not needed. The figures are only instanced to demonstrate that industry by developing industrial medicine has the promise of great profit while it fulfils a great social service.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Parliamentary Adjournment.

PARLIAMENT adjourned on Friday, August 19th, until Oct. 18th on the understanding that if necessity arises the Speaker of the House of Commons and the Lord Chancellor may, after consultation with His Majesty's Government, call the two Houses together within 48 hours in order to deal with an emergency situation. It was originally intended to prorogue Parliament until some date in the late autumn, but in view of the uncertain state of the negotiations in connexion with the settlement of the Irish question the Government have substituted an adjournment to a fixed date so as to avoid the delay connected with the opening of a new session in the event of Parliament being called together at short notice.

HOUSE OF COMMONS.

TUESDAY, AUGUST 16TH.

The Russian Famine.

ON the motion for the second reading of the Consolidated Fund Bill,

Mr. LLOYD GEORGE, in the course of a speech devoted to an examination of the matters which engaged the attention of the Supreme Council of the Allies at its recent meeting in Paris, referred to the Russian famine. He said that he feared that they were faced with the most terrible visitation that had afflicted Europe for centuries. Such news as the Allies had received from Russia pointed to a most appalling catastrophe. The Government had just received a telegram from Mr. Hodgson, their trade representative in Moscow, in which he said that in the districts bordering the Volga, which were normally the richest in Russia, the crops had completely failed, and the crops in the neighbouring districts were barely sufficient to satisfy local needs. His calculation was that 35,000,000 people would require relief. The inhabitants of the famine-stricken districts, seeing that there was no possibility of help reaching them in time to prevent starvation, were moving in large masses in different directions. They had no food-supplies and no shelters, and they appeared to be doomed to annihilation. Of these migratory bodies only some 20 per cent. were able-bodied, and more than 30 per cent. were children, whose condition was piteous. Many of them had been abandoned to their fate by their parents. The people were eating grass, roots, and other rubbish. Continuing, Mr. Lloyd George outlined the measures which were to be taken for relief for immediate suffering. A great appeal was made for food-supplies, particularly milk and flour, and waterproof material for temporary shelters at concentration points, and there was an urgent demand for medical supplies. There was no doubt that this would end in one of the greatest scourges that ever afflicted Europe—pestilence on a gigantic scale. There were not enough doctors as a very considerable number were killed in the war. The Supreme Council had decided to appoint an International Commission to study the possibilities of rendering immediate aid to the starving population in Russia. Great Britain would be represented on that Commission by Sir P. Lloyd-Greame, the Minister for Overseas Trade, Sir John Hewett, a man of great experience in dealing with Indian famines, and Mr. Wardrop, who was Consul in Moscow for some years, and who had a thorough acquaintance with Russia. In Paris there was only one sole desire—namely, how to save these millions of people, and of course how to prevent the spread of the epidemic which would inevitably follow. The best service which the Soviet Government could render at the present moment would be by an act that would at any rate partially restore confidence in countries outside Russia. He did not wish to use the famine as a means of getting recognition of debts that had been incurred. Merely to use the famine for that purpose would be diabolical; but he suggested that because he knew it was the shortest road to relief. There was only one way of getting the goods there and that was by restoring the confidence in the trading community that would make them feel that they could send their goods there without any danger of them being confiscated in the future.

The Bill was read a second time.

WEDNESDAY, AUGUST 17TH.

Army Medical Service.

On the motion for the third reading of the Consolidated Fund Bill,

Lieut.-Col. FREMANTLE directed attention to the medical or health services of the army. He urged the necessity for referring the subject to a Committee of Inquiry. Methods of increasing medical efficiency had been demonstrated in the late war, and he hoped they would be taken into account at any such inquiry as he had suggested. At the present moment they had gone back to the organisation which existed before the war which would result in a lack of coördination and that would last until the time of necessity came again, and a big scandal arose through the inadequate coördination of the different services which together brought the hospitals or the medical units into their proper place at the seat of war. The proposal which was originally vetoed but was afterwards passed—on the recantation of his opinion by Lord Esher—was for some one person on the Army Council to be responsible for the health of the service, and presumably that would be the Director-General of Medical Services. In the second place, an inquiry into the results of the war in this respect should embrace the question of inter-Imperial coördination—i.e., coördination between the medical services of the different Dominions. Thirdly, they required an inquiry into the possibilities of coöperation with the Civil Service both in peace time and on active service. He believed that was being inquired into at the present moment by the War Office, but there was not sufficient actual coöperation with the personnel of the Civil Service even for peace time services. Another suggestion which necessarily required to be considered at the present time with a view to economy was the very large saving which would be possible by obtaining proper coördination between the medical services, now run under 12 different departments of the Crown. As a reduction was necessary in the interests of economy as regarded the Territorial Army, he hoped that the reductions in the medical services should be only pari passu with the reductions on the combatant service. The medical units of the Territorial Army required to be trained, especially nursing orderlies, who did not exist as such in peace times, but had to be trained with a view to being utilised in war. If they were going to make the Territorial Army of any use in war their medical service should be kept efficient, and they must not reduce the medical units out of proportion to the reduction necessary in the combatant units.

The Bill was read a third time.

Tuberculosis Statistics.

Captain ELLIOT asked the Minister of Health the number of beds per 1000 of the population for the treatment of tuberculous patients in 1911 and 1920 respectively.—Sir A. MOND replied: The number of beds in institutions approved by my Department for the treatment of tuberculosis increased from 8888 (or 0·238 bed per 1000 of the population) in August, 1911, to 16,390 (or 0·470 bed per 1000 of the population) in August, 1920.

University Grants in Scotland.

Mr. JOSEPH JOHNSTONE asked the Secretary for Scotland the total Exchequer grant to universities in Scotland for the years 1890, 1900, 1910, and 1920 respectively.—Mr. HILTON YOUNG, Financial Secretary to the Treasury, replied: In the financial year 1890–91 the Exchequer grant was £42,000; in 1900–01, £42,000; in 1910–11, £63,000; in 1919–20, £225,500, of which £165,000 was described as recurrent and £60,500 non-recurrent.

Medical History and Statistics of the War.

Mr. RAFFAN asked the Secretary for War when the medical history and medical statistics of the war referred to by the Under-Secretary on March 10th, 1920, as being in preparation would be ready.—Lieut.-Col. Sir ROBERT SANDERS, Under-Secretary for War, replied: The medical history of the war is being prepared in a series of volumes dealing with the general history of the medical services during the war, the diseases of the war, the surgery of the war, and sanitary work of the war, &c. The first volume of general history is practically ready for publication, and the first volumes of surgery and diseases of the war respectively are practically ready for printing. The medical statistics of the war are being prepared by the Medical War Records Section, which is now under my right hon. friend the Minister of Pensions.

Air Pilots and Physical Defects.

Captain ELLIOT asked the Secretary for Air whether, in view of the coroner's verdict at the inquest held upon the late H. G. Hawker, which attributed the cause of the accident to the physical disability of the deceased and of the long history of tuberculous caries of the spine disclosed by the post-mortem examination, he could state if these physical defects were ascertained at the medical examination at the Air Ministry which took place on Dec. 31st, 1920; and, if not, would he state what further precautions were being taken to prevent the issue of class B pilots' licences to persons suffering from physical defects likely to be prejudicial to the safety of air navigation.—Captain GUEST replied: The fact that Mr. Hawker had had tuberculosis was known at the Air Ministry, but at the examination in December, 1920, in the opinion of the medical officer his state of health warranted the renewal of the licence.

Notification and certification by certifying surgeons is, on the whole, extremely satisfactory. As medical referee for industrial poisoning in the County of London I have a number of cases referred to me in which the certificate of the certifying surgeon is appealed against, and I have rarely found myself in disagreement with the findings of the certifying surgeon. This class of statistics may therefore be regarded as satisfactory.

2. Those arising in industrial processes not certifiable by the certifying surgeon in the district. Such cases are frequently seen by medical men who are unfamiliar with the symptoms of lead poisoning and who rely for diagnosis (not surprisingly) upon the history and occupation of the sufferer who seeks their advice. Further, the opportunities for obtaining knowledge on the differential diagnosis of many types of industrial disease is denied to a large number of men who annually qualify, and who have unfortunately little opportunity at hospital of studying the symptoms of occupational illnesses. This lack of knowledge may at times lead to extravagant and absurd statements, such as that made to the Departmental Committee on lead poisoning amongst painters; a noted physicist, told by his doctor that he had suffered from lead colic, thereupon concluded that the spectroscopic lines seen in drying paint vapour must be volatile lead, and committed himself to that opinion.

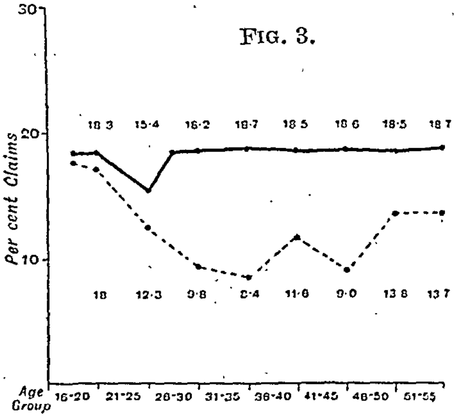
THE HEALTH OF PAINTERS.

The health of painters, the diseases from which they suffer, the processes of their industry that lead to disease, comprise a much-debated problem of industrial medicine at the present time, and I wish to draw attention to some points connected with the question. Complete agreement exists that dry rubbing down of old or new paint may produce lead poisoning and constitutes the painter's main risk. To obviate this risk one school of opinion suggests the total prohibition of lead as a paint. Another class of opinion argues that for one risk that can be easily obviated it is uneconomic to prohibit the use of materials whose manufacture affords occupation to a large class of industrial workers and for which there is no adequate substitute. The whole question, therefore, becomes one of industrial medicine.

Painting is an operation so widely performed that many medical men are acquainted with the curious symptoms following the inhalation of the vapours given off from drying paint. The most delicate tests applied to these vapours fail to show the presence of any lead, yet symptoms closely resembling lead poisoning are produced in susceptible persons, and there is little doubt that a large number of such cases are returned as painter's colic—hence lead poisoning; there is every likelihood that this class of case will increase, as since the war there has been a wholesale tendency to replace turpentine with various other forms of volatile dryers, some of them exceedingly poisonous. The attention of medical practitioners as a whole requires direction towards such forms of poisoning; clinical observation and careful inquiry as to the facts would lead to much useful information.

I have recently had the opportunity of studying the figures of illness suffered by painters belonging to the sickness benefit branch of the Hearts of Oak, and I have taken out the numbers of cases of various types of disease under four headings—respiratory, alimentary, muscular, and nervous. These headings are groups obtained from the short list of the Registrar-General. The respiratory diseases comprise influenza, phthisis, bronchitis, pneumonia, and other diseases of the respiratory organs. The alimentary diseases are colic, diarrhœa, dyspepsia, enteritis, gastro-enteritis, gastric catarrh, gastritis, hæmorrhoids, gastric fever, and gastralgia. Under the heading of muscular diseases I have placed rheumatism and rheumatic fever, myalgia, lumbago, gout, and ague as being likely in the painting trade to be associated together under the general term of "rheumatism." In the nervous division are included neuritis, neurasthenia, neurosis, and vertigo.

FIG. 3.



Sickness benefit in the Hearts of Oak, 1919, showing fewer claims from painters (lower curve) in proportion to general group (upper curve).

From the accompanying table it will be seen that the chief diseases from which the painter suffers are those of the respiratory tract. Now, except in dry rubbing down, the painter is not exposed to the inhalation of dust. The recent admirable paper by Prof. H. E. Armstrong and Mr. C. A. Klein (*Journal of the Royal Society of Arts*, July, 1921) has shown that the droplets of paint splashing are larger than any size likely to be inhaled, and that the amount of actual splashing which reaches the face is minimal and not likely to subject the painter to an intake of more than 0·7 milligramme of lead per working day of eight hours if he is engaged the whole day in stippling, and the high incidence of respiratory disease is possibly associated with the inhalation of vapours of the drying paint. More particularly is this likely to be the case as in the splashing produced in painting a vertical surface practically no splashes come beyond 15 inches from the foot of the wall. Most paint is now sold ready-made, and very little so-called "breaking down" of the dry white lead is done. It is interesting, further, to note that in this group of painters in the Hearts of Oak the actual claims for sickness over the various age-groups is less amongst

TABLE SHOWING PERCENTAGE OF CLAIMS FOR DISEASE IN PAINTERS COMPARED WITH ALL CAUSES.
(*From Hearts of Oak Figures*, 1920.)

Group of disease.	Age.											Total.
	16 to 20	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 55	56 to 60	61 to 65	66 to 70	
Respiratory	25	21·7	25·0	25·9	38·8	25·0	26·6	33·3	35·3	50·0	57·1	—
Alimentary	12·5	4·3	15·5	7·4	2·8	8·0	7·5	6·0	0·0	0·0	0·0	—
Muscular	6·2	11·5	12·5	22·0	13·9	12·5	20·0	36·0	11·8	0·0	0·0	—
Nervous	6·2	4·3	3·1	0·0	0·0	0·0	1·5	5·6	11·7	0·0	0 0	—
All causes..	16	23	32	27	36	24	30	18	17	8	7	238
Exposed to risk	89	187	325	323	312	266	218	131	95	41	26	2013

Two Addresses

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IMPORTANCE OF INDUSTRIAL MEDICINE TO THE COMMUNITY.

Papers read at a discussion on this subject held at the Section of Preventive Medicine with Industrial Diseases of the British Medical Association.

I.

By EDGAR LEIGH COLLIS, M.A., M.D. OXON.,

TALBOT PROFESSOR OF PREVENTIVE MEDICINE,
UNIVERSITY OF WALES.

THE stages of scientific progress are represented by thought, then by research resulting in knowledge, and finally by action. Where for any reason, as in the art of medicine, action based on empiricism has come first into existence, new knowledge based on research frequently finds some vested interest opposing action on new lines, or at least some vis inertiæ resulting from innate conservatism. New knowledge in medicine has recently been acquired through research, and practice is gradually changing accordingly. But in no branch is thought, research, and knowledge less hampered by action than in that of industrial medicine, because there is little or no action, and in no branch, possibly for that very reason, has the trend of thought been advancing more rapidly.

MEDICAL SERVICE: CHANGE IN THE OUTLOOK.

During the past 20 years there has been a change in the outlook of medical service. Previously treatment of the sick was the first consideration, and the public only came in contact with the profession in case of illness. Questions affecting the maintenance of health were impersonal and left to the public services concerned with water-supply, drainage, disposal of refuse, and the sale of wholesome food. More recently, however, the personal note has been sounded in relation to maternity and infant welfare, school medical service, tuberculosis, and venereal clinics. Notification of births has provided the information upon which infant welfare work is being constructed. Schools, by gathering together children for educational purposes, provide the opportunity for medical inspection of each child. Notification of tuberculosis again is of value for establishing, through the work of health visitors, personal touch with contacts—the preventive side of the tuberculosis campaign. Here adult life is just touched; but, generally speaking, means have yet to be found for bringing preventive medicine into direct personal contact with the adult. For this purpose industry, which gathers adults together, provides the means. The points for consideration are, whether the community would benefit if industry shouldered this responsibility, and whether industry itself would benefit by such action. The benefit to the community is closely interlocked with the benefit to industry, since the community is composed of constituent groups, among which the industrial group (using the word industrial in its widest sense) forms the greatest part. And if the industrial part of the adult population were sound in health there would not be need for much else.

The state of health of the industrial part of the community is the first thing to be ascertained. Appeal on the matter may be made to different types of data. First come the recent disclosures of the army recruiting examinations. Here only 36 per cent. of the male adults of age to bear arms were classed as Grade 1; but the numbers attaining this standard were found to vary widely according to occupation; the miner and the agriculturist provided a far higher proportion than other groups of industrial workers. Next, appeal may be made to mortality statistics. Here we find the agricultural labourer with a comparative mortality figure of 470; a standard set by the lowly paid and poorly housed agriculturist who works long hours is surely not too high to aim at. Yet the comparative mortality for printers is 773; for tailors, 709; for cotton operatives, 811; for shoemakers, 820; for iron and steel manufacturers, 837; for Lancashire coalminers, 941; for edged toolmakers, 1010; for costermongers, 1507; and for general labourers, 2301. Thirdly, age distribution gives us some information. Out of 1000 occupied agriculturists 225 are aged 55 and over; out of 1000 cotton operatives, 69; out of 1000 printers, 66; out of 1000 coalminers, 75; out of 1000 metal workers, 98; and in the building trades, 121.

None of these sets of data indicates a satisfactory state of affairs, and each brings out marked differences in different occupations. There is, then, a wide field of work before industrial medicine to establish the why and wherefore of these differences. There is an inclination to associate the subject of industrial medicine only with occupational diseases, such as poisoning from lead, mercury, or phosphorus, anthrax, miner's nystagmus, writer's cramp, or caisson disease. These peculiarities of industrial disease are important, both in themselves and in drawing public attention to the influence of occupation upon health. Moreover, through them the guide-post of industrial hygiene has been established—the guide-post which directs attention to prevention rather than to cure. The scope of work has enlarged much beyond the boundaries of occupational disease, but the guide-post is the same. To-day industrial medicine is recognised to be directly aimed at preventing disease and maintaining health. In industry more easily than elsewhere in the community can the balance be cast between the debit of sickness and inefficiency and the credit of health and productivity; this matter will be referred to again later. Here there exists a direct economic interest in maintaining health, an interest which up to the present has hardly been perceived by industry. Nor does the matter end here, for opinion is hardening towards expectation of fulfilment of a definite duty by those who employ labour. The State is now undertaking work upon which large sums of money are being spent in order to bring up from birth to adolescence healthy individuals. Those who thereafter employ these persons have to thank the State that this supply of labour is at their disposal and must in their turn maintain it in health. This opinion finds its expression in Workmen's Compensation Acts and schemes of unemployment benefit. The tendency in the past has been to shift the burden of responsibility on to some insurance agency; but the latest compensation scheme under the Workmen's Compensation (Silicosis) Act, 1918, places upon industry—the refractories industry in this case—the responsibility of shouldering its own insurance. Action on these lines will probably prove a direct incentive to industry to lighten the liability by actively pursuing preventive measures.

THE PERSONAL NOTE.

Allusion has already been made to the personal note in the application of modern preventive medicine. This note is not to be perceived to-day in factory life. Yet the community as a whole needs it. The State up to adolescent life is striving to instil the principles of health, and its efforts are yearly increasing in effectiveness. Then the youth passes into some occupation where his master, as judged by social standing and worldly wealth stands far above the school teacher, and is presumably more worthy of respect. But now the youth finds no attention paid to health and its maintenance. Is it a matter for surprise that he disregards the precepts of his former teachers as something only concerned with boyhood, something not needed in manhood, something it is manly to despise? There are here immense possibilities in industry. Fresh air, sunlight, cleanliness, and wholesome food are necessary to efficiency in the work of adults just as they are for children. Moreover, a standard set in these matters by the all-admired capitalist who rules industry would spread from the factory to the home.

cases, after subsidence of the acute symptoms, there persisted insomnia, restlessness, and definite mental changes which showed themselves in various degrees of moral obliquity. The nocturnal restlessness and diurnal somnolence which may follow encephalitis in children has received considerable attention. Roasenda,[9] Morley Fletcher,[10] and Findlay and Shiskin[11] have described such cases. But in these there was ultimate improvement and recovery; the condition appears to be a manifestation occurring in the stage of recovery from the acute symptoms, and not a permanent sequel. One of the most striking of the after-results of the disease is the condition of symptomatic paralysis agitans. Farquhar Buzzard and Greenfield[12] have described the condition in an adult; and Kinnier Wilson[13] has reported two cases, in which the resemblance to a case of Parkinson's disease was persisting 12 and 15 months after the acute stage of encephalitis. We have included in our series a similar case in a boy of 8 years.

Results in 25 Cases of Encephalitis.

In our investigations we have not concerned ourselves with the questions of the symptomatology or the pathogenesis of the disease. We have chosen 25 cases between the ages of 3 months and 11 years, in which the diagnosis of epidemic encephalitis appeared to be straightforward and incontrovertible. Each case was closely observed as an in-patient, either in the Hospital for Sick Children, Great Ormond-street, or in the children's ward, St. Thomas's Hospital. The diagnosis was reached, in each instance, only after examinations of the cerebro-spinal fluid had been made and the Wassermann reactions of the blood and cerebro-spinal fluid obtained. In each case the ultimate course of the disease was such as to confirm the diagnosis against the possible mistake of having included such conditions as brain tumour or brain abscess. And finally, in order that a proper estimate of the effect of the disease might be attempted, we have included as cases only those children who, before the onset of the illness, were of normal health and intelligence.

Mortality Results.

Of our 25 cases only one was fatal. This was a girl aged 1 year and 9 months. The onset of the illness in this case was sudden, with fever, delirium, and convulsive twitchings; coma ensued, and continued until death on the seventh day of the illness. The diagnosis was confirmed at a post-mortem examination. In comparison with the figures of other observers who have investigated the disease in adults a mortality of 1 in 25 must be considered a low rate. Economo[14] and Netter[15] have estimated the mortality in cases they have seen at 40 per cent. and 30 per cent. It would appear that in children the immediate mortality is less. In Findlay and Shiskin's series of 24 cases in children under 16 years of age two died.

The Effect of the Illness on Surviving Cases.

Of our cases, 24 survived the initial illness and are still alive. In the table of results are given brief descriptions of their present condition, based on recent clinical examination of the patients and on evidence of the mental condition given by parents and friends. In 6 of these children a complete recovery has resulted. They are as bright, intelligent, and active as normal children of their age; no sign of the illness remains. The remaining 18 children all show definite affections directly attributable to the original attack of encephalitis. These affections are so varied that some attempt at their classification is advisable.

Effect on Mental Condition.

The most apparent results are to be seen in the present mental condition of the children. Of the 18 cases affected, 7 are grossly mentally deficient and 11 show minor degrees of mental deficiency.

The seven grossly mentally deficient cases appear to be in a state of permanent and hopeless idiocy. Unintelligible, unable to recognise even their parents, grimacing and drooling from their lips, they present the typical picture of an idiot child, with all its abnormal gestures and actions. The eldest is now 7 years of age and is an inmate of a mental hospital; the remainder are probably destined to a similar existence. Two of these cases (Nos. 8 and 11 in the table of results) are, moreover, in a condition of spastic diplegia with "scissor legs" and contractures.

The second group of 11 cases includes those children in whom slighter degrees of mental deficiency—mere dulling of the intellect, or abnormal psychical symptoms—have resulted. In all of these the mental changes are greater than could be accounted for by the long period of ill-health, with its lack of teaching or other mental stimulus, through which they passed. They date from the illness itself, and must depend upon the organic changes resulting from the acute inflammatory affection of the brain substance. The worst cases, though able to recognise their parents and other familiar objects, are yet too dull to learn a simple lesson. The probability is that with training they will develop sufficient intellect to preserve themselves from danger, but will be incapable of earning their own livings, and will thus be classified as imbeciles in the usual meaning of the term. Others of this group we have classified as being slightly mentally deficient. Their parents usually describe these as dull and backward since their illness. We have also included in this group four important cases (Nos. 16, 17, 22, and 25 in the table of results) with a medico-legal interest. These children were normal before being affected by encephalitis lethargica. Since their illness they have regained their capacity for lessons, but definite affection and alteration of the moral sense has resulted. They are mischievous and untrustworthy, and some phrase such as "altered habits" is used by their parents to describe the change. One of these is so marked a case of moral imbecility, resulting from encephalitis, as to deserve a more particular description.

No. 25, in February, 1918, then aged 11 years, had encephalitis lethargica with confusion, stupor, and lethargy for five weeks. There was slight rigidity of the limbs and tremor of the hands during the stage of recovery. This case was described by Dr. Batten and Dr. Still in their paper on Epidemic Stupor. The boy appeared to make a complete recovery and was discharged from hospital. He was next seen by us in 1921, being then 14 years old. His mother, who has six other children, was emphatic in her description of the change the illness had wrought in the boy's character. Previously he had been a normal, intelligent, and docile child. Since his illness he has shown uncontrollable criminal tendencies. He has been convicted for theft on several occasions, and is regarded by the police as an incorrigible thief. His intelligence does not appear to be impaired. He could remember the name of the physician under whose care he was three years ago.

Another case, No. 22, has been similarly affected. Since recovery from his illness he has shown mischievous uncontrollable tendencies. It has been found necessary to remove him to an industrial school, in an attempt to check the moral changes which are showing themselves.

Effect on Physical Condition.

The children are all well nourished. They have preserved the ability to gain weight and thrive. Those who are grossly mentally deficient show that delay in the acquisition of normal actions usually seen in such children. They reach the age of 18 months to 2 years before they can sit up. The power of standing and walking is delayed in a like manner. In these cases the physical condition is a result of the mental backwardness and not due to organic paralyses. In seven of the cases there are, however, organic residual paralyses which have persisted since the original illness. Two of these (Nos. 8 and 11), now aged 2½ and 5½ years, are typical examples of spastic diplegia. With "scissor leg" gaits, spastic legs, and extensor plantar responses, they present a clinical picture indistinguishable from those cases of spastic diplegia usually ascribed to prenatal cerebral damage and birth injury. In one case (No. 24) the hemiplegia, which arose during the acute stage of the encephalitis, *The trend of thought to-day is against nationalisation of industries, but industries must realise that while maintaining their independence they take over at the same time certain responsibilities as regards those employed which under nationalisation would be undertaken by the State.* Recognition of these responsibilities and taking them up would entrench the position of industrial independence. Failure *in this matter, quite apart from economic waste,* must sooner or later cause those employed to demand reconstruction of modern industrial organisation. Such reconstruction might seriously dislocate the community with sufferings as a consequence such as Russia is *now experiencing, with no commensurate* advantage. To-day our profession stands too much aloof from such thoughts, and does not do enough to impress upon industry that there is a science of medical sociology the principles of which, if applied to labour unrest, would give results more certain, more sure, and more enduring than all the remedies evolved from the inner consciousness of political economists who may know somewhat of politics but know nothing of the economies of the human machine, and who give *lip service only to the truth that a* healthy body is necessary for a healthy mind. In very truth the community to-day greatly needs an *industrial medical service; it needs it in the interests* of health; it needs it in the interests of economy; it needs it in the interests of industrial efficiency; *it needs it in the interests of social contentment.*

II.

BY SIR KENNETH GOADBY, K.B.E., M.R.C.S., D.P.H. CANTAB.,

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DURING inquiry into the causes of the disabilities suffered in many industrial processes, more especially those in which lead is used or manufactured, one is constantly hampered by the perfectly frank and often good-willed obstruction offered by both employer and employee to innovations directed towards the improvement of health conditions. On the other hand, extreme measures may be proposed to combat an evil recognised by its effects, though its actual cause may be little understood, and the somewhat tempting but unscientific and uneconomical attitude expressed in the phrase, "I cannot away with it," is easily adopted. An instance of this no doubt perfectly genuine but misguided frame of mind is to be found in the controversy at present *raging* regarding the suggested prohibition of the use of white lead as a pigment in the arts and manufactures. It is well known that lead poisoning exists amongst the users of lead, and that its incidence has diminished, following the reduction of lead dust in dangerous lead processes; yet in *an extraordinary* document bearing evidence of the hand of the acute propagandist —the so-called questionnaire emanating from the *International Labour* Bureau at Geneva—dust as a cause of poisoning in the painting trade is dismissed with an almost contemptuous negative. Reference has only to be made to the excellent results obtained through the special Home Office rules in the white lead manufacture, in potteries, and in other trades—in the administrative application of which rules Prof. Collis had no small share—to see the fallacy of disregarding dust as the most important vehicle by which lead poisoning in industry is produced. In these industries the use of the deleterious material is still continued with comparative safety in processes in which it has been possible to reduce the amount of dust produced within innocuous limits; the quantity of soluble lead in pottery glaze has been reduced, but it is essential to point out that the glaze is still obtained by means of lead silicate, although the application is modified, in that the fritting or combining of the lead with the silica is carried out before the glaze is applied to the ware, in lieu of the formation of the lead silicate from a soluble salt of lead during the *process of firing the ware;* it is therefore not fair to argue from the diminution of the quantity of soluble lead present in a glaze that there is a diminution in the quantity of soluble lead present in a paint. This by the way. Prof. Collis has emphasised the necessity of the industrial individual acquiring a competent knowledge of the danger of any deleterious process in which he is engaged, and I would further add that as in microbic disease individual susceptibility varies within wide limits, so also the resistance towards varieties of industrial poisoning shows wide variations of tolerance and intolerance.

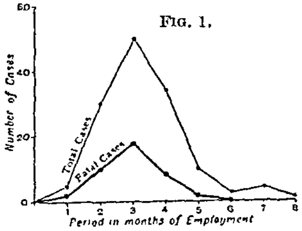
LEAD POISONING.

Prof. Collis has shown a curve (Fig. 1) demonstrating the presence of susceptibility and immunity towards T.N.T. (*Journal of the Royal Society of Medicine,* 1916), and in a recent paper (Royal Society of Arts, June, 1921) I was able to show that the largest incidence of lead absorption amongst workers in white lead factories occurs within the first six months of their exposure, and that by careful supervision, alteration of employment and suitable treatment, such susceptible persons *finally obtain a tolerance* which enables them to work over long periods without disability (Fig. 2). This important factor is well brought out by Prof. Collis's suggestion of a period of industrial convalescence for persons who have suffered from any type of *industrial disease;* at present the factory surgeon is often handicapped by the absence of facilities to carry out such procedure. Lead poisoning bulks largely as an industrial disease, but its statistics are sometimes regarded with some degree of suspicion, particularly as regards those trades in which lead poisoning is not a certifiable disease, and in which no special rules or medical *inspection* is extant. The statistics of lead poisoning may thus be divided into two categories:—

1. Those in which the case is seen by a certifying surgeon—a surgeon appointed with a special knowledge of the symptoms of the disease, and practising in the particular district in which the diseases are likely *to occur.* I regard the suggestion that the certifying surgeon should be superseded by a whole-time official *as not in* the highest interests of the working class population. A surgeon practising in a district is better *acquainted with the* general run of disease in that district than a whole-time officer not engaged in private practice, who has not the same *opportunity to estimate* the value of certain symptoms common to both lead poisoning and other diseases.

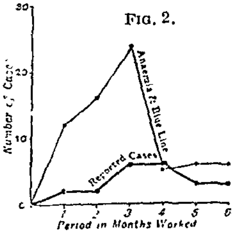
T.N.T. Poisoning.

FIG. 1.



Susceptibility *and Immunity.* Time of onset and fatal cases according to number of months worked (after Collis).

FIG. 2.



Final development of tolerance. Extracted from factory medical registers, *1911–1921.* Upper curve shows number exhibiting signs of absorption without definite symptoms of poisoning.

EFFECT OF CULTURE-MEDIA UPON AGGLUTINATION OF MENINGOCOCCI.

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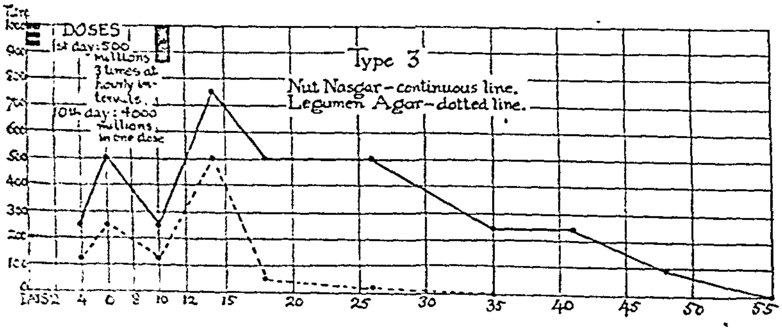
VARIATIONS in the rapidity of growth and size of colonies, or delayed appearances of typical characteristics due to the use of media differing in constitution or methods of preparation, are well known. That the antigenic and agglutinative features might also be altered was suggested during some of our previous work.[1, 2, 6] Victorson has shown that *B. paratyphosus B* shows differences in agglutinability when grown upon blood agar, Löffler's serum, dextrose broth, lactose broth, or potato.[8] Michaelis observed that the strain known as *X 19* was influenced in its agglutination titre by the nutrient media selected for its isolation and subculture.[11]

The present communication is concerned with the growth of meningococci upon varying media, especially with regard to the preparation of emulsions for the purpose of typing the several strains. The technique has been modelled as far as possible upon the criteria demanded by Tulloch.[6]

The material for the investigation was obtained from local cases examined during the epidemic of 1916. After isolation and type identification of the meningococcus, an aliquot portion of a counted emulsion of each strain was sown on plates containing equal volumes of warm 20 and 40 amino-acid nut nasgar, nut nasgar with buffer salts or ascitic glucose fluid, and legumen agar with, and without, the addition of blood. All the types of media were titrated to pH 7·6. After 24 hours' growth the colonies were emulsified in freshly prepared normal saline in distilled water, and then heated to 65° C. for 20 minutes. Two c.cm. of 5 per cent. pure phenol were then added for each 20 c.cm., and the whole emulsion standardised to contain 2000 meningococci per c.cm. The emulsions were transferred to sterile corked bottles.

CHART B.

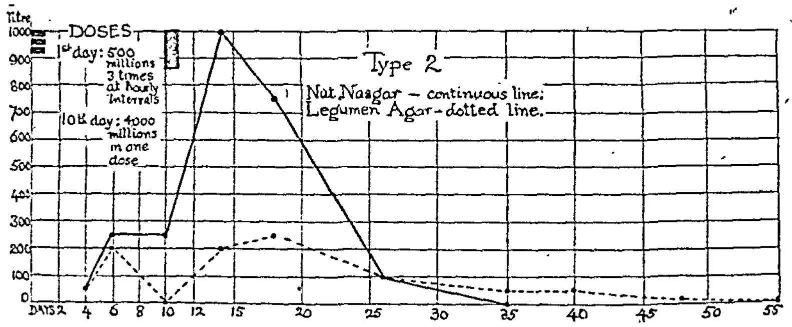


Owing to the pressure of war work, it was not possible at that time to make more than a few preliminary estimations. The numerous emulsions were stored in the dark, at room temperature, until the end of 1919, and in the ice-chest thereafter. In February, 1921, they were tested for sterility; no organisms were found in films other than meningococci, and cultures were sterile. When opportunity permitted, it was considered worth while to continue the original intention, in order to determine whether the agglutinability of the emulsions was altered by the long period of storage, and whether the agglutinogenetic capacities of the bacterial protein had been retained.

The "nut nasgar" differed from ordinary nasgar by the inclusion of pea-nut constituents, according to the suggestion of Mackenzie Wallis.[4] The pea-nuts were ground into a coarse powder, and kept in an airtight bottle. As the pea-nuts exposed for sale are derived from varying sources, we found it necessary to determine which varieties were best for the purpose, and what constituent of the nut acted as a stimulant to bacterial growth. The inquiry is still in hand. For the work now described, the same sample of nuts was available throughout. The preparation was as follows:—

A.		B.	
Pea-nut powder ..	10 g.	Lait-proto broth[2]	300 c.cm.
Hydrocele or ascitic fluid ..	100 c.cm.	Distilled water ..	300 c.cm.
Distilled water ..	200 c.cm.	Agar-agar	20 g.
		NaCl	3 g.

CHART A.



Boil B until agar melts, and A for 15 minutes, both in steamer. Cool both to 50° C. Add A to B, and add white of one egg. Autoclave and filter. Adjust amino-acid content to 20 or 40.[3] The lait-proto broth was previously adjusted to pH 8·0, and the final product made up to pH 7·6 with N/10 HCl.

The pea nasgar (or legumen agar) was prepared in accordance with the details given in the Medical Research Committee's report on Cerebro-Spinal Fever, 1916, and adjusted to pH 7·6 and 21 amino-acid content.

Agglutinability.

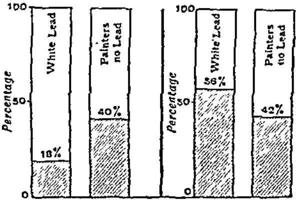
Each strain of meningococci was grown upon six media of differing composition. An emulsion was prepared from a 24-hours' growth. Finally, it was subjected to the action of standard type serums, kindly provided by Major J. Bell, R.A.M.C. Lab., Millbank, and set up with the usual controls. The results are stated in Table I. The standard sera were made up to a titre of 1000 for each type, so that the dilutions of each are comparable. The difference between the agglutinability of cocci grown on nut and pea nasgars is quite striking, but neither the amino-acid content nor the addition of buffer salts or glucose effects any change. The reduction of the original broth to 20 per cent. amino-acid content is quite compatible with good growth and agglutinability.

The two types of meningococci show similar differences with regard to the culture media, and the several strains exhibit a uniformity in titre. The painters than that of the total number of persons claiming benefit. (Fig. 3.) The absence of high incidence of disease of a type which might be attributable to lead—namely, those in the alimentary and nervous sections—together with the high incidence in the respiratory type, is a little difficult to reconcile with the supposedly high incidence of lead poisoning amongst painters as a whole, as it would seem that if lead poisoning were a serious feature in the painting trade it should show in a block of figures of this type.

WHITE LEAD WORKERS.

There is, therefore, an issue between these two points of view, and the community is entitled to inquire of exponents of industrial medicine the proper solution of such a dilemma. Recent work has to some extent suggested the direction in which this may be sought. Comparison of the disease occurring in white lead workers who work in lead alone, uncomplicated by the dust of angular particles, shows that while respiratory diseases are common in potters, who inhale flint dust and lead together, it is not so common amongst white lead workers who only inhale lead dust. The material of which the painter makes use is soft and not angular, and it is well known that persons exposed to baryta and other types of dust without angular particles do not show a high incidence of respiratory disease. The painter, on the other hand, is exposed to a risk to which neither of the other classes is exposed—namely, the inhalation of fumes of volatile products (turpentine and turpentine substitutes) which are known to produce respiratory effects in susceptible animals. In a recent examination of white lead workers and painters the average blood pressure of the painters in the same age-groups was found to be higher than that of lead workers. (Fig. 4.) This is a suggestive point; the constant inhalation of vapours of volatile fluids, among which are compounds of the benzine and paraffin series, is conducive to renal affection and high arterial tension. The higher arterial tension of painters is the more striking in that painter's work is much less severe, less muscular effort being required in using a paint brush than in carrying half-hundredweights of lead or huge baskets filled with wet tan.

FIG. 4.



B.P. above normal. | B.P. below normal.

Percentage of white lead workers and painters not using lead paint which shows blood pressures above and below normal for age 20–60.

One further statistical fact, culled from the 1911 figures of the Registrar-General's report, appears to corroborate the growing opinion that it is in the volatile portions of the paint rather than in its solid constituents that one must look for the cause of the disease. The birth-rate tables per 1000 males aged under 55 years gives a birth-rate per 1000 for the painters as 155, being actually higher than that of clergymen, barristers, solicitors, law clerks, farmers, and graziers (148), whilst the figure for all males is 162; such figures do not suggest severe lead absorption.

This short epitome of some of the facts of the painting trade controversy supports by a specific instance the difficulties underlying the problems of occupational disease outlined by the opener of the discussion, and emphasises the necessity of strictly scientific methods in dealing with problems of industrial medicine.

THE AFTER-EFFECTS OF EPIDEMIC ENCEPHALITIS IN CHILDREN.

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THE investigation, which forms the subject of this paper, was undertaken for the purpose of inquiry into the subsequent fate of such cases of epidemic encephalitis in children as had come under our notice in hospital during the early stages of the disease. It arose from a realisation of the difficulty in offering an accurate prognosis in this disease, and in answering the question, which invariably arose, as to what chance of complete recovery on the one hand, or of mental and physical impairment on the other, might be expected to follow it. This question was apparently present in the minds of those observers who, in the early days of the recent epidemic, were describing the disease. MacNalty,[1] in the Local Government Board report on Encephalitis Lethargica (1918), warned his readers that until more evidence was available a guarded opinion should be expressed as to the risks of after-effects in this disease, especially in regard to possible mental changes and persistence of residual paralyses. Farquhar Buzzard,[2] writing at the same time, was more certain that such results might be expected. "I am convinced," he wrote, "that a large number of cases of epilepsy, of mental deficiency, of hemiplegia, and of diplegia are the permanent results of attacks of encephalitis in childhood."

In spite of the widespread prevalence of the disease, this aspect of the problem has received comparatively little attention in the abundant literature which has grown up round the subject. It would have been useful had any record been made of the ultimate fate of those cases of encephalitis which occurred in the epidemics of the disease prevalent in Northern Italy in 1890, and in Germany in 1892. But we have been unable to trace any such record. Leichtenstern,[3] Nauwerck,[4] and others who investigated these cases confined themselves to a study of the symptomatology and pathology of the disease; and Chartier,[5] in a full review of the literature of the subject of acute encephalitis in 1907, provided no evidence of after-effects which may follow the disease.

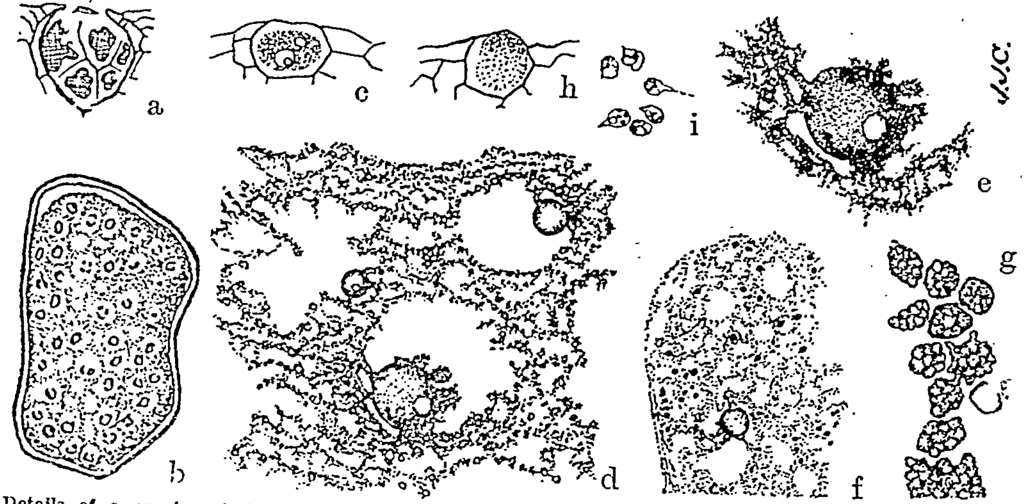
Permanent Disabilities.

More recent publications have indicated, however, that we may expect to find various degrees of permanent disability in many of the patients who have been affected during the past few years. Batten and Still's[6] original paper on "Epidemic Stupor" in children contains no reference to these sequels of the disease; but since we have had an opportunity of re-examining three of the four cases therein described, we can supplement this record. These are included in our series of cases, and it will suffice for the moment to say that each of them has been permanently affected. One, quite mentally deficient and incapable of recognising even her own parents, is now an inmate of a mental hospital; the second has become a dull, backward, and slow-witted child; the third, since recovery from his illness, has shown a strange alteration in habits and character; he is now an incorrigible kleptomaniac, and has spent most of the period since recovery under detention for theft.

Cruchet[7] has contributed valuable observations on the results of encephalitis lethargica in 32 cases. Of these, 12 were directly fatal. The remainder were all affected in some way, showing either the paralysis agitans syndrome, perverse irregular movements, or some degree of mental deficiency. Francioni[8] has recently published 20 cases illustrating a post-encephalitic syndrome in children. In these state in a chronic syphilitic lesion as shown in "Protozoa and Disease," Part II., Fig. 18.

Last year the conclusive settlement of a biological question was made public by K. M. Curtis,[4] who has found that the zoospores of a *Synchytrium* conjugate in pairs, the zygotes so formed alone being capable of developing into resting cells. C. Lundie and F. H. Goss have described observations[5] on bodies seen by dark-ground illumination in syphilis. Their Figs. 8, 9, and 10 of a bi-flagellate organism are probably of zygotes, which might have become spirochætes in favouring surroundings. The uniflagellate bodies described by several observers are probably the zoospores, Schaudin's bi-flagellate spirochæte (1905) being the zygote of the parasite which causes syphilis. Curtis does not mention multiplicative fission of zygotes of *S. endobioticum*, but it has been described in the Rhizomastigina, a group of protozoa which have affinities with the Mycetozoa.

FIG. 1.



Details of a species of *Synchytrium* in a thistle-leaf. *a*, sorus subdivided into sporangia; *b*, a sora sporangium, zoospores nearly formed; *c*, early stage of direct sporangium; *d*, part of *c* more magnified showing three nucleoli; *e*, a single nucleolus still more magnified; *f*, a stage later than *d*, a single nucleolus and grains of chromatin in a finely granular plasm; *g*, a stage later than *f*, protoplasm segmented prior to zoospore-formation; *h*, direct sporangium; *i*, part of *h* more magnified, zoospores. Magnification: *a*, *c*, and *h*, × 80; *b*, *d*, *f*, *g*, and *i*, × 1000; *e*, × 1500.

In view of spirochæte-like forms having been described in infective sarcoma of dogs by Mettam, in cancer of mice by Gaylord, in vaccine vesicles by Bonhoff, and in mammary sarcoma and in chorio-carcinoma by myself, it will be seen that a wide field for investigation is opened.

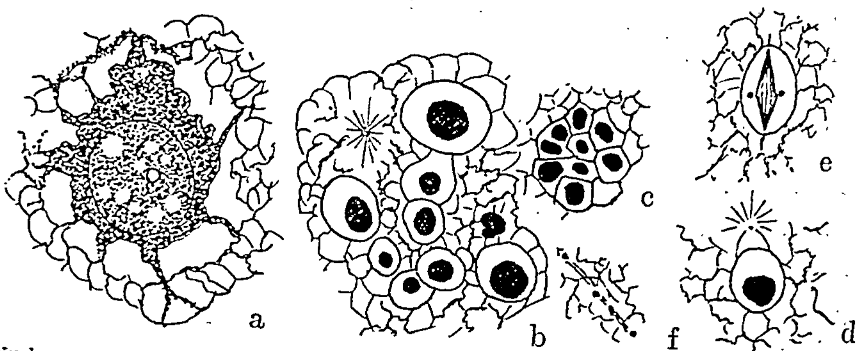
To look again at the nucleolus of the *Synchytrium* in the thistle (Fig. 1 (*e*)), from being composed of uniformly dense refracting material, to which Van Beneden's term plasson*[6] may be applied, it has pushed out buds with granules at their surface, which stain purple with hæmatoxylin. Some of the buds are continuous with the cytoplasmic net composed of linked stellate elements, like those of a mycetozoan plasmodium. The nuclear cavities are sap-vacuoles, and the nucleoli may be called metroplasts, the mother plasson.

Looking at Fig. 1 (*f*) it is seen that the plasmodium has changed, being finely granular with definite points of chromatin; from plasson it has become a chromidium. It might be supposed that the points of chromatin would become the nuclei of the zoospores, but, instead, the plasmodium would appear to change again, becoming coarsely granular, the granules staining purple; then to subdivide into rounded segments, in which the nuclei of the zoospores appear and, with much reduction in size, the segments become zoospores. These variations of form in a parasite are easy to recognise in the thistle with its simple cellular structure; in human tissues with a variety of cells it is not always so easy.

"*Plassomyxineæ.*"

In 1892 a similar succession of changes was described by myself in bodies in a squamous-celled cancer, and later in various cancers and sarcomas, in a secondary syphilitic lesion, in the vaccinated cornea, and in some other pathological conditions. Touching their biological position all that I could say was that they were of the same nature as Cobbold's psorosperms. I have never thought them to be Coccidia. I can now see that the bodies referred to are of the same class of organisms as this Synchytrian of a thistle. There are some points of difference, and the parasites which, with others, I have described in human and some animal diseases constitute a group

FIG. 2.



Nuclear processes in *Synchytrium decipiens*. *a*, large irregular nucleus without membrane, but with a large nucleolus; *b*, group of bird's-eye nuclear bodies with an aster; *c*, cluster of bird's-eye bodies such as are often seen in cancer; *d*, bird's-eye body with aster attached; *e*, mitosis, metaphase; *f*, mitosis anaphase. After F. L. Stevens.

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[*] This condensed nucleolus-like form may be distinguished by the qualification *pycno* in contrast to the extended or plasmodial form, which may be called *chasmatoplasson*.

Table of Results.

No. of case.	Age in years at onset of attack.	Character of illness.	Present condition of patient.
1	3/12	Severe case; S. 6 wk.: oph.; slow recy.	Now 2 6/12 yr.; unable to sit up or talk; idiot; perverse movements.
2	4/12	Severe case; S. and convulsive twitchings 4 wk.: slow recy., appearance spastic rigidity limbs.	Now 1 6/12 yr.: idiot; continually screaming, unable to sit up or recognise parents.
3	11/12	L., difficult to rouse for 1 wk.; ptosis.	Now 4 6/12 yr.; complete recy.
4	11/12	L.S. 6 wk.; oph.	Now 3 yr.; idiot; unable to talk or recognise parents; perverse movements.
5	11/12	L.S. 6 wk.; oph.	Now 2 8/12 yr.; idiot; unable to sit up, talk, or recognise parents.
6	1 1/12	L.S. 6 wk.	Now 2 7/12 yr.; mentally deficient; can recognise parents and say few simple words; cannot sit up, purposeless movements with limbs.
7	1 3/12	Sudden onset; convulsions, then S. 3 wk.	Now 4 11/12 yr.; mentally deficient; unable to walk; can recognise parents; purposeless movements with limbs.
8	1 3/12	Slow onset; L.S. 2 mth.; oph.	Now 2 6/12 yr.; typical picture of spastic diplegia; idiot; scissor legs and oph.
9	1 8/12	Sudden onset; unconscious, fits, hemiplegia; rapid recy.	Now 2 2/12 yr.; complete recy.
10	1 9/12	Sudden onset, fever, delirium, convulsions.	Death on 7th day of illness; diagnosis confirmed at P.M.
11	2 6/12	L.S. 4 wk.; oph.; rigidity of limbs on recy. from stupor.	Now 5 6/12 yr.; idiot; spastic diplegia: scissor gait; cannot speak.
12	2 10/12	Convulsions, L.S.	Now 5 1/12 yr.; mentally deficient: clean in habits; can say few words; knows his name, unable to walk; purposeless movements of limbs.
13	4	L.S. 4 wk.; oph.	Now 7 yr.; idiot; in mental hospital; unable to recognise his parents; rigidity of arms and legs, with purposeless movements.
14	4	L.S. 3 wk.; oph.; rapid improvement.	Now 4 6/12 yr.; complete recy.
15	5	L.S. 3 wk.; *ataxia of arms on recy.*	Now 6 6/12 yr.; complete recy.
16	5	L.S. 6 wk.; oph.	Now 6 yr.; good recy.; intelligence normal; restless, irritable, and altered in habits.
17	5	Fever, L.S. 4 wk.; oph.; slow recy., followed by ataxia.	Now 8 yr.; slightly affected; dull and backward, attends special school for mentally deficient.
18	6	Gradual onset; L.S. 4 wk.; oph.	Now 9 yr.; mentally backward, untrustworthy, emotional; otherwise normal.
19	6	S. 3 wk.; recy., with marked ataxia of arms and legs.	Now 7 yr.; complete mental recy., but still slight ataxia in gait.
20	6	Sudden onset with delirium; unconscious 2 wk.; hemiplegia and convulsions, rapid recy.	Now 8 yr.; attends school for mentally deficient; dull and backward, no paralysis; sleep-walker.
21	7	Sudden onset; severe *choreiform type.*	Now 8 yr.; symptomatic paralysis agitans syndrome; fixed attitude, mask-like face, pill-rolling movements of fingers; mentally backward.
22	9	Gradual onset; L.S. 4 wk.; oph.	Now 12 yr.; dull, mentally backward; ataxia of left arm; character altered; now in an industrial school.
23	9	L.S. 1 wk.; oph.; delusions during stage of recy.	Now 12 yr.: complete recy.
24	10	L.S., hemiplegia.	Now 12 yr.; mentally backward, right hemiplegia: contractures persist.
25	11	*Confusion and stupor* 5 wk.; slow recy.	Now 14 yr.; altered habits; kleptomaniac: good physical recy.

Oph., ophthalmoplegia. Recy., recovery. L., lethargy. S., stupor.

has persisted, and contractures have resulted. Three cases (Nos. 17, 19, and 22) have residual ataxia and incoördination of the arms, without any sign of an organic pyramidal lesion. In one case (No. 21) the symptomatic paralysis agitans syndrome has resulted. The boy is now 8 years old. The original encephalitis occurred 15 months ago, and was of severe "choreiform" type. On recovery from the acute stage of the illness the characteristic tremors and rigidity developed. He now presents the remarkable appearance of a well-marked case of paralysis agitans in a child of 8 years.

Effect of Age.

It will be seen on reference to the table of results how much more serious the results of encephalitis are in the infants and young children than in the older children. Of those affected before the age of 12 months only one has made a complete recovery, while four have become quite mentally deficient, and have remained in that condition up to the time of re-examination in July, 1921.

Severity of the Initial Illness.

The severity of the initial attack of encephalitis appears to be in direct proportion to the after-results which follow it. Some degree of mental deficiency may be expected to result from the illness if the stupor and lethargy persist for three or four weeks in a young child. On the other hand, a short illness, with stupor for a few days only, will probably result in complete recovery. No. 3 is an example. This child, aged 11 months, became ill on April 30th, 1918, and was admitted under the care of the late Dr. Batten, who was responsible for the diagnosis. For six days he was drowsy and could not be wakened. The symptoms began to pass off on the seventh day. The improvement was rapid. The child made a rapid recovery, and is now active and intelligent. This suggests that could some means of treatment be found which would limit the progress of the disease or shorten its course, the results would not be so drastic as we have found them to be.

Conclusions.

1. In the majority of cases epidemic encephalitis in children is followed by permanent after-results, which may affect either the mental or the physical condition.

2. In our series of cases only one-fourth made a complete recovery.

3. The mortality rate of this disease in children is low; 1 in 25 in our series of cases.

4. The results of the mental changes following encephalitis in childhood may vary from complete idiocy to slight mental deficiency. They may also show themselves as affections of the character and habits of the child.

5. The physical changes following encephalitis in childhood include spastic diplegia, hemiplegia, symptomatic paralysis agitans, muscular rigidity, and tremors.

6. The younger the child at the onset of the disease, and the longer the acute stage of the illness, the greater will be the degree of mental deficiency which follows it.

Our thanks are due to Dr. G. F. Still, Dr. F. J. Poynton, Dr. Robert Hutchison, and Dr. H. Thursfield, of the Hospital for Sick Children, Great Ormond-street, and to Dr. R. C. Jewesbury, of St. Thomas's Hospital, in whose wards we investigated the cases we have described.

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CASE 6.—B. O. A gunshot wound of the chest had been received; some evidence of fibrosis of the lung. In this case it would be a difficult matter to say positively that there was no tuberculous infection. All the cases are under observation.

One case gave a negative result; a second test of the same sample of blood gave a positive result. This case was a patient undoubtedly suffering from phthisis with tubercle bacilli in the sputum. The first time the blood was tested the hæmolysis in the tube containing antigen and 1½ M.H.D. of complement was not quite complete (for the significance of these remarks reference should be made to my paper containing a description of the technique of the test), but hæmolysis in the highest dilution of complement appeared well over 50 per cent.; hence a negative result was recorded. On repeating the test with the same sample of serum the hæmolysis in the tube containing 1½ M.H.D. was again nearly, but not quite, complete, but this time there was nearly complete fixation in the tube containing 1 M.H.D., and a positive result was recorded.

This serum had been split by Dr. Fleming into three parts, and the tubes re-numbered along with some dozen other bloods. All three parts gave a precisely similar reading. It appears reasonable to presume that the first time the test was performed, by some error in technique an excess of complement had been added to the third tube (i.e., the highest dilution of complement). On reviewing this case it would appear that the result should in the first place have been returned as "doubtful."

Cases Giving a Negative C.-F.T.

(1) In which there was no suspicion of tuberculosis. Giving the number of the case, initials, and clinical condition.

1.—H. A. Cardiac hypertrophy.
2.—P. T. Tabes dorsalis.
3.—A. C. Bronchitis.
4.—W. G. ,,
5.—W. O. ,,
6.—I. H. Hypertrophied heart; frontal sinusitis
7.—D. G. Colitis.
8.—T. I. Bronchitis.
9.—R. I. Chronic nephritis.
10.—K. I. Acute rheumatism.
11.—N. E. Aneurysm.
12.—T. V. Auricular fibrillation and coarctation of aorta.
13.—A. P. Gastric ulcer.
14.—A. M. Bronchiectasis.
15.—D. H. Asthma, eczema.
16.—E. J. Mitral stenosis, auricular fibrillation.
17.—W. I. Bronchitis.
18.—A. W. Acne.
19.—D. G. Aortic regurgitation.
20.—S. T. Asthma and infantilism.
21.—C. A. Boils.
22.—S. I. Arrested pulm. tuberculosis.
23.—D. G. Acne.
24.—J. O. Scabies.
25.—S. T. Tabes dorsalis.
26.—C. O. Eczema.
27.—L. I. Bronchitis.
28.—K. I. Psoriasis.
29.—W. V. Paralysis agitans.
30.—H. S. Bronchitis.
31.—Mrs. P. Healthy person.
32.—R. P. Rhonchi and crepitations all over both lungs; Wass. positive; sputum negative for T.B.
33.—L. W. Mitral stenosis.
34.—E. S. Bronchitis.
35.—E. M. Aortic and mitral disease.
36.—H. A. Intestinal stasis.
37.—D. V. Rheumatoid arthritis.
38.—M. A. Rheumatoid arthritis.
39.—J. S. Bronchitis.
40.—D. E. Rheumatoid arthritis.
41.—T. A. Bronchitis and asthma.
42.—F. O. Bronchitis.
43.—C. H. Healthy man.
44.—D. S. ,, ,,
45.—R. W. Bronchitis.
46.—H. W. Bronchiectasis.
47.—F. D. ? Aortic aneurysm.
48.—D. P. Healthy man.
49.—J. O. Auricular fibrillation.
50.—C. O. Bronchitis.
51.—Miss M. Healthy med. student.
52.—Miss F. M. Healthy med. student.
53.—Miss S. Healthy med. student.
54.—B. A. Healthy woman.
55.—W. Healthy man.
56.—E. L. Bronchitis.
57.—M. M. Bronchitis.
58.—D. F. ,,
59.—D. F. Healthy man.
60.—M. F. Bronchitis.
61.—M. A. Healthy med. student.
62.—J. O. Prolapsus uteri.
63.—K. I. Auricular fibrillation.
64.—P. C. Debility.
65.—M. N. Bronchitis and asthma.
66.—M. A. Bronchitis, slight cough; N.A.P.S.*
67.—C. M. D. Empyema, 1917; fibrosis of right lung; hæmoptysis, half teacupful.
68.—S. A. Bronchitis and asthma.
69.—T. I. Rheumatoid arthritis.
70.—E. T. Pharyngitis.
71.—P. D. Mitral regurgitation; Wass. pos.
72.—S. T. Aortic disease.
73.—C. C. Hæmatemesis
74.—L. C. Pneumonia.
75.—H. K. Bronchitis and asthma.
76.—H. A. Acne.
77.—B. U. Paratyphoid fever.
78.—B. A. Bronchitis.
79.—W. E. Aged 14; slight cough; N.A.P.S.
80.—H. O. Rheumatism.
81.—A. U. Tabes dorsalis; Wass. pos.
82.—B. E. Rheumatoid arthritis.
83.—B. A. Rheumatoid arthritis.
84.—K. P. Acne.
85.—W. T. Emphysema.
86.—A. C. Signs of unilateral fibrosis at lung; sputum neg. for T.B.
87.—K. P. Fibrosis left lung following pleurisy five years ago.
88.—B. V. Slight skin eruption.
89.—B. A. ? Actinomycosis of thigh.
90.—G. R. Slight cough; N.A.P.S.
91.—W. L. Syphilis: Wass-pos.
92.—J. P. Cardiac failure.
93.—B. C. Lumbago.
94.—W. M. Cardiac degeneration.
95.—W. S. Adiposity.
96.—B. S. Said to have had considerable hæmoptysis with pneumonia February, 1921; some evidence of bronchitis now.
97.—H. Acne.
98.—C. Acne.
99.—O. G. ,,
100.—E. T. ,,
101.—C. R. Mitral stenosis and regurgitation.
102.—J. G. Hydatid disease of liver.

* N.A.P.S. = No abnormal physical signs in chest.
T.B. = Tubercle bacilli.

(2) Cases in which there was a suspicion but no definite evidence of tuberculosis.

1.—W. H. Loss of weight; slight cough; no sputum; N.A.P.S.
2.—E. B. Anæmia; general malaise; slight cough; N.A.P.S.; sputum negative for T.B.
3.—C. R. Dry pleurisy three months ago; signs of thickened pleura; general condition very good; no symptoms now.
4.—F. Hæmoptysis, states half a teaspoonful; cough; sputum negative for T.B.
5.—A. H. Dry pleurisy January, 1920; no symptoms now; N.A.P.S.
6.—F. L. S. Cough; some loss of weight; sputum negative for T.B.
7.—M. U. ? Pleurisy seven years ago; slight cough, very little sputum; N.A.P.S.
8.—E. B. ? Hæmoptysis; N.A.P.S.
9.—W. O. Sputum streaked with blood; no evidence of tuberculosis clinically.
10.—A. D. Sent for examination; ? phthisis; no evidence clinically.
11.—B. O. ? Hæmoptysis, probably from throat; N.A.P.S.

Case 22, S. I., undoubtedly had phthisis with T.B. in the sputum a year ago. He now appears perfectly well with no symptoms of abnormal physical signs in chest. I sent this case to Dr. Gosse, with no reference to the result of the C.-F.T., asking his opinion. He replied, "I regard this as a case of arrested pulmonary tuberculosis," which was in agreement with the opinion I myself had formed.

One other case remains for special mention. This was a patient, V. F., who came to hospital complaining of cough, in whose chest I could find no abnormal physical signs. The first routine sputum examination was unexpectedly positive for T.B. The C.-F.T. was negative on two separate occasions. It appeared that this was an error in the test, and some slight error of 1 or 2 per cent. is to be expected in any laboratory test. On endeavouring, however, to confirm the presence of T.B. in the sputum, it was discovered that the patient's cough had cleared up after a week in hospital, and no sputum could be obtained. The possibility, therefore, of an error in the sputum examination cannot be overlooked, and such errors are inevitable. It is certainly very significant that in the only case in which T.B. were said to be present in the sputum which gave a negative result it was impossible to confirm their presence.

A Discrepant Series.

Finally, I should like to draw attention to a series of 50 cases dealt with at the Brompton Hospital in November last. These cases were sent to me by a physician at the Brompton Hospital with numbers only attached to the bloods; the results were returned by me to him, and at a later date I was informed of the clinical diagnosis that had been made. The results of these cases appear to be very contradictory. Of 18 bloods sent to me, and stated to be from patients suffering from phthisis with T.B. in the sputum, 13 were returned as positive and 4 as negative, and 1, three samples of which it appears were sent, was returned once as positive and twice as negative. Three cases gave a positive result in which it was stated there was clinical evidence of tuberculosis. Seventeen cases gave a negative result, in which there was stated to be no clinical evidence of tuberculosis. Eleven cases were returned as positive, in which there was no clinical evidence of tuberculosis.

These results are very different from my previous published results totalling 202 cases, which, though not done under a similar system of numbering the tubes, were nevertheless unknown till after the results had been recorded; and from the present series of 186, which have been done under comparable conditions, as described by Dr. Fleming. Moreover, I have performed the test at the Brompton Hospital upon some 450 other cases, in which the results were emulsions of type 2 (see Table I.) from nut nasgar are agglutinated to the full standard titre in four out of five strains, the fifth one yielding a 50 per cent. agglutination. The type 3 (see Table I.) coccus agglutinated in full. The emulsions from legumen agar gave one-tenth and one-third of standard titre only.

TABLE I.

Strains.	Type.	Media.					
		Nut nasgar (A.-a., 20 %).	Nut nasgar (A.-a., 40 %).	N.N. + buffer salt (A.-a., 40 %).	N.N. + ascitic glucose (A.-a., 40 %).	Legumen agar (A.-a., 21 %).	Legumen agar + blood (A.-a., 21 %).
3	2	500	500	500	500	300	100
16	2	1000 –	1000 –	500 +	500 +	100	300
8	2	1000 –	500	500	500 +	100 +	100 +
L.	2	1000	1000	1000 –	1000 –	100	500 +
6	3	500 +	500 +	1000 –	1000 –	100	300
9	2	1000	500 +	500	500 +	100	300
	4	100	—	—	100	—	—

A.-a., Amino-acid.

Agglutinogenic Capacity.

The differences in the agglutinability of meningococci grown upon varying culture media suggested an inquiry into the agglutinogenic capacity of the several emulsions. Two strains L (type 2) and 6 (type 3) were selected for the purpose. The injections were made into young rabbits weighing 1400, 1400, 1650, and 1750 g. according to the method of Hine.[7] On the first day three intravenous injections of 500 millions meningococci at hourly intervals. The emulsions were previously treated with normal rabbit serum with negative findings. Blood was abstracted from each animal on subsequent occasions. On the tenth day each rabbit received intravenously an additional 4000 millions in one dose. The agglutinations developed are recorded in the accompanying charts A and B.

After injection of type 3 the agglutinations developed from the nut and legumen media, both rose until the sixth day, and fell equally. The serum from the rabbit injected with nut emulsions yielded a higher titre. Similarly, a subsequent injection on the tenth day was followed by a rise, in which the "nut" animal maintained the higher titre. The titre from the "legumen" animal had fallen to zero by the twenty-sixth day; that from the "nut" rabbit was demonstrable up to the fifty-sixth day. Following the injections of type 2 the course of titre was in accordance with precedent, but on a low level, while that from the "nut" animal gave a steep curve, rising to 1000 by the fifteenth day. It had disappeared on the thirty-fifth day. That from the "legumen" animal was just demonstrable up to the fifty-sixth day.

Summary.

1. Variations in culture media are associated with changes in the agglutinability of organisms. Individual strains of meningococci when grown on nut nasgar media become more agglutinable than when they are grown on legumen agar, with or without the addition of blood. The observation may be a possible explanation of some of the "inagglutinable" strains of various bacteria.

2. The agglutinogenic substance in meningococci shows also a relation to the content of nutrient media. It is more active in coccal emulsions prepared from nut nasgar media than those obtained from legumen media. This may have a bearing upon the production of anti-serums.

3. Emulsions of meningococci in normal saline made with freshly distilled water heated to 65° C. for 20 minutes, standardised numerically, and then preserved with 0·5 per cent. phenol, have remained unchanged as to numbers, and sterile for five years. At the end of this period, the agglutinability and agglutinogenic capacity persist practically unaltered.

The expenses of this work have been defrayed by grants from the Medical Research Council and from the Bristol University Research Society.

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PROTISTA AND DISEASE:

A Preliminary Note.

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IN "Protozoa and Disease," Part IV., 1915, the chief thesis is that organisms closely akin to Mycetozoa exist in various human pathological states. Last year an amplification of the same view was contained in a new volume of the same series, and I found that I had misinterpreted some objects represented in one of the illustrations. Publication was delayed for me to correct the error, and its elimination left room for fuller notice of biological groups related to the Mycetozoa. The new matter, showing as it does that vegetable protists and not protozoa are the pathogenic agents in the diseases in question, calls for a new title for the work, which is now near completion with the same title as the heading of this article.

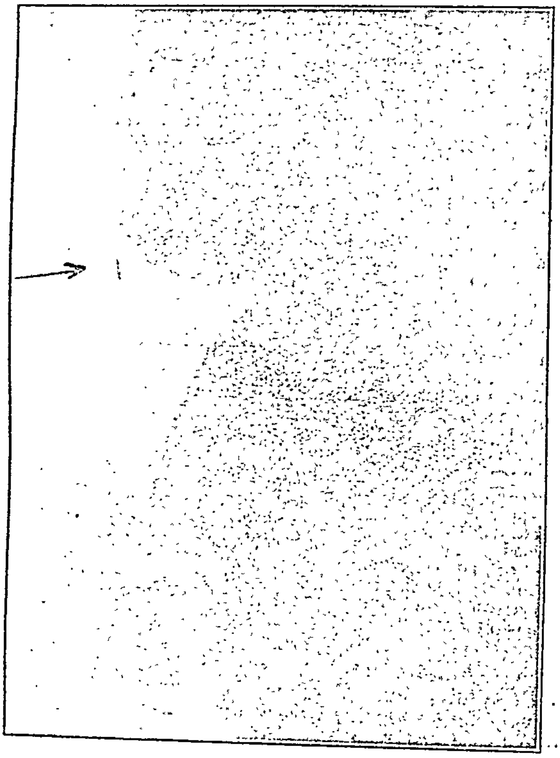
In studying the Chytridians I found that many facts that had arrested my attention in pathology are parallel in this important and interesting group. For instance, Cornu's work[1] on *Olpidiopsis saprolegniæ* showed me that the larger forms of this parasite are almost identical with phases of the parasites known in British pathology as "psorosperms" of cystic ureteritis. There are differences, but the points of accord are such as indicate a close kinship between Cornu's *Olpidiopsis* and Cobbold's psorosperms. Again, in Schroter's paper[2] on *Synchytrium* my attention was arrested by his drawing of interstitial substance between a group of sporangia; this suggested to me an explanation of what I have described as a framework, which appears in molluscum corpuscles in which the protoplasm is in circulation, a phenomenon that occurs about the fourth day in water-cultures.

Synchytrium in a Thistle-Leaf.

Most illuminating of all was the examination of sections of a thistle-leaf infected by a brick-red *Synchytrium*, which I owe to the kindness of Prof. V. H. Blackman and Assistant Prof. R. H. Tabor of the Imperial College of Science and Technology. The sections were made for me by Dr. H. W. Perkins, pathologist to the Hampstead Hospital. The chief features are shown in Fig. 1. The large nucleoli at *d* and *c* have all the characteristics of the intranuclear stage of parasites in the mammary sarcoma, of which a full ocular analysis is given in "Protozoa and Disease," Part II., and the groups of bodies, which in 1895 I demonstrated to the Pathological Society as spores in a secondary syphilitic skin lesion are nearly identical with those seen in this Synchytrian. (Fig. 1 (*i*).)

A wide range of nuclear forms and processes is seen in different species of *Synchytrium*. In 1907 Stevens[3] in three species found nuclear structures, some of which are reproduced in Fig. 2. At *b* and *c* are familiar bird's-eye bodies like those of cancer, and the presence of asters among them agrees with the origin of such bodies as I observed it in the living

She was always able to walk in comfort until August, 1920, when after walking the pain in the knee was much worse, being stabbing in character and deep-seated as though from bone; at the same time she experienced an aching pain in front of the right hip and thigh. The stabbing pain, after resting, became easier, but left the knee aching. The aching pain often kept the patient awake at night, but she never had "starting pains." The aching was worse in damp weather. After sitting in one position for a time the knee became stiff and any movement was very painful. Otherwise the patient was in good health.



X ray photograph of knee-joint, showing broken pointed end of a needle (indicated by arrow) situated apparently on internal border of ligamentum patellæ and posterior to it.

On examination, no swelling of the right knee was detected; no difference in measurement was found on the two sides; no creaking was felt on moving the joint, and both the hip- and knee-joints were freely movable in all directions. On pressure, transversely and laterally, at the lower end of the femur tenderness was elicited.

Drs. C. W. S. Saberton and C. G. Hitchcock X rayed the joint and found the broken pointed end of a needle situated apparently on the internal border of the ligamentum patellæ and posterior to it. The needle was removed by Mr. Gordon Taylor at the Middlesex Hospital in March, 1921. It was found in the extra-synovial fatty tissue round the joint. Since its removal the patient's symptoms have disappeared.

Manchester and Salford Radium Institute.—The institute has just issued its memorandum of association. Amongst other objects are to purchase or otherwise acquire radio-active materials, whether containing radium or mesothorium, or other radio-active substances of any description; to use the radio-active materials so purchased for the treatment of patients, and to supply, lend, or let the same on hire to hospitals, nursing homes, and other similar institutions and to medical practitioners in such form as the institute may determine. The executive will appoint an expert radiologist and a physicist. The scale of charges will be so adjusted as to secure that the undertaking shall be self-supporting.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF PREVENTIVE MEDICINE WITH INDUSTRIAL DISEASES.

WEDNESDAY, JULY 20TH.

Sir THOMAS OLIVER, the President, after welcoming the audience, which included non-medical visitors, briefly referred to some of the public health problems of Newcastle as typical of an industrial centre which had been greatly affected by war conditions. He then resigned the chair in favour of Dr. I. G. MODLIN, Vice-President, who urged medical men to take a more lively interest in the municipal work of the towns where they worked.

Capt. WALTER E. ELLIOT, M.P., then read a paper on

The Effect of Health Legislation on the Health of the People.

He opened by remarking that he was more than ever impressed with the value of prevention as against cure, and it appeared that prevention could only be secured by statutory compulsion. He went on to review public health legislation from the time of the first Sanitary Act in England, dealing with removal of nuisances, passed in 1388, up to the creation of the Ministry of Health, suggesting that the great increase in population after the unlocking of the coal-seams in the nineteenth century compelled the passing of sanitary legislation. Medical skill in treatment had not advanced in the same degree as legislation, and he attributed the remarkable decline in infantile mortality and in the deaths from infectious disease largely to Parliamentary action. The expectation of life among individuals of the community had increased by over ten years during the last half century, and that increase was entirely at the useful period of life, for the man of 70 to-day had still the same expectation as a man of the same age 50 years ago. The supply of water, first dirty and later pure, was one of the greatest examples of the effect of legislation on the health of people, for it first enabled them to wash their clothes and get rid of lice and so of typhus, and latterly had led to the almost complete eradication of typhoid. Turning to factory legislation, he said that it was in a large measure due to agitation by laymen, and especially by Lord Shaftesbury, whose deserts had never received due recognition. Reduction in the hours of work and improvements in working conditions were not to be expected to come spontaneously from large employers of labour; the State alone was capable of tackling such problems. The conditions under which the labouring classes were allowed to live in the North compared unfavourably with those in the South of England, and the children demonstrably suffered.

Dealing with the statistics of tuberculosis, Capt. Elliot said that the rapid post-war drop in the number of deaths had never been satisfactorily explained. Some said that the influenza epidemic, which swept the country like a broom, had cleaned out all the weak chests, but the fact remained that non-pulmonary tuberculosis had declined also and to a greater degree. Surely it was, at least in part, a result of the anti-tuberculosis campaign. Turning to the general problems of health legislation, he said that in spite of the great wave of unemployment the vital statistics of the country did not appear to be deteriorating, and therefore the out-of-work "dole" would undoubtedly come under the heading of public health legislation in its broadest sense. Speaking of the men crippled in the war, he hoped that the schemes evolved to train them would be modified and adapted to deal with the casualties of industry in the future. In conclusion, he said that future efforts towards the improvement of the health of people must be devoted to the enlightenment of the public, to the advancement of medical skill, and finally to certain definite compulsory measures, for as yet unplaced in biology. They require a name; and having in view their being a branch of the Chytridiales, hence belonging to the vegetable protists with an affinity to the Mycetozoa; and in view of their being in the plasson state at the initial stage of their intracellular life I suggest the name Plassomyxineæ.

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THE VALUE OF THE COMPLEMENT-FIXATION TEST IN PULMONARY TUBERCULOSIS.

A Report to the Medical Research Council from the Institute of Pathology and Research, St. Mary's Hospital.

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Introductory Note by
ALEXANDER FLEMING, F.R.C.S. Eng.

MY connexion with the experiments which Dr. Punch has detailed in this article has been that of a scrutineer and critic. I have had no part in the performance of the experiments, and no part of the credit that may accrue from this investigation belongs to me. When Dr. Punch began to perform these tests in the laboratories of the Institute of Pathology and Research at St. Mary's Hospital his first care was to convince me that the test was sufficiently good to be worth proceeding with; for this purpose he obtained bloods from a number of patients whom he knew to be suffering from pulmonary tuberculosis. These bloods, some 30 in all, were not disguised in any way, but in every case I saw the tubes at the time the reading was taken, and was thus able to check the results. At the same time these tuberculous bloods were tested there was mixed with them a certain number of normal bloods derived from workers in the laboratories or from patients attending for other diseases. In every one of these cases the result of the test corresponded with the clinical condition.

Having thus satisfied me that the investigation was worth while, Dr. Punch proceeded to deal with a more extensive series of cases, and in this series he had no opportunity of knowing the origin of the blood until the results of the test had been recorded. The procedure adopted was as follows:—

The specimens were collected, some by Dr. Punch, others by workers in this or other institutions. The serum was taken from these specimens and inactivated, the tubes were then handed to me, with a list giving the names and clinical diagnosis (including the information as to whether tubercle bacilli were present in the sputum). I then re-numbered the tubes, sometimes splitting a specimen into two or three parts bearing different numbers, and if there was any possibility of any tube being recognised by some irregularity in size, or by its being cracked, I changed the serum from this tube into another of ordinary appearance. The key to these numbers I retained till the tests were completed, and then I myself recorded on the key the results which Dr. Punch dictated to me, after which I compared the results with the clinical diagnosis with which I had been provided.

I am not here going to enter into any discussion as to the results; they are set forth at length by Dr. Punch. All I wish to vouch for is that Dr. Punch had no means of knowing which blood he was dealing with until he had completed the test, and I had recorded the results which he gave me.

DR. LISLE PUNCH'S REPORT.

The work contained in this paper has been carried out in the laboratories of the Institute of Pathology and Research at St. Mary's Hospital by the kind permission of Sir Almroth Wright. In September, 1920, I published in THE LANCET a method for the performance of the complement-fixation test in pulmonary tuberculosis, and the results of a series of cases upon which the test had been performed. This article consists of an analysis of a second series of cases, and offers further proof of the accuracy of the test when performed by this method. 185 bloods have been tested in this series in the manner described above by Dr. Fleming. On an average 12 sera were tested at each experiment.

Analysis of Cases.

The serum of 185 individuals was examined.

Group I.—C.-F.T. Positive Cases.

71 of the cases gave a positive result.

(A) Cases with tubercle bacilli in the sputum at the time of the performance of the test..	42
(B) Cases in which tubercle bacilli were found in the sputum subsequent to the performance of the test	10
(C) Other cases giving a positive result (these cases are considered in more detail)..	19

Group C.—Case, Initials, and Clinical Condition.

1.—E. J. Crepitations at both apices; a few weeks later a very loud pleural rub over left upper lobe; losing weight rapidly; sputum negative for T.B. on two occasions.

2.—A. L. Complains of cough and loss of weight; no sputum; crepitations at right apex; husband has phthisis, one brother died of phthisis.

3.—A. M. Crepitations both upper lobes; cavitation left upper lobe; tuberculous laryngitis; sputum only examined once as yet; negative for T.B.

4 and 5.—A. M. and D. G. Both apparently healthy save for acne; these and the next case, B.O., are discussed below.

6.—B. O. Gunshot wound of chest.

7.—B. M. G. Cough, no sputum, loss of weight; no abnormal physical signs in chest; father died of phthisis.

8.—B. A. Cough, sputum, hæmoptysis ½ pint two years ago; recent clots; no abnormal physical signs in chest.

9.—O. C. No symptoms or signs; dry pleurisy seven months ago; lost a good deal of weight then, subsequently regained it. Treated in sanatorium.

10.—H. A. Considerable hæmoptysis, no other symptoms; no abnormal physical signs in chest.

11.—L. B. Cough, sputum, crepitations left apex, signs of pleural effusion right base; sputum negative for T.B. on one examination.

12.—E. P. Sputum positive for T.B. in 1915; some cough and sputum at present; weight stationary; no crepitations now in chest; sputum not yet examined.

13.—A. J. Complains of cough, sputum, and loss of weight; sputum streaked with blood two months ago; no abnormal physical signs in chest.

14.—W. H. F. Complains of cough, sputum very slight hæmoptysis; crepitations at right apex.

15.—T. A. Complains of cough and sputum; pyrexia present; crepitations over right lung, especially at base; sputum negative for T.B. on two occasions.

16.—H. P. Cough, no sputum; swinging temperature to 103° every evening; extensive abnormal physical signs in chest.

17.—A. F. Complains of cough and sputum, and loss of strength; crepitations at both apices; sputum negative for T.B. on one examination.

18.—V. D. T.B. in the sputum a year ago; cough and sputum at present; no moist sounds at present in chest; sputum negative for T.B.

19.—L. K. T.B. in sputum a year ago; no symptoms or abnormal physical signs in chest at present.

CASE 4.—A. M. A patient in apparent health, save for some acné on the face; test performed on three separate occasions with three different samples of blood; on each occasion a positive result obtained. What exact interpretation should be put on this case is open to argument. In a series of 100 cases of apparently healthy people, or those suffering from diseases other than tuberculosis, this one (or, if Case 6 is included, two) gave a positive result. This patient may recently have suffered from a small undetected tuberculous lesion, or may be at present suffering from such a lesion, which has not yet given rise to symptoms. In any case it is not surprising that in dealing with so widespread and prevalent a condition as tuberculosis, a positive result should be obtained in a small number (in this series only 1 or 2 per cent.) of apparently healthy people.

CASE 5.—D. G. Also a patient suffering from acne; test performed twice on two different samples of blood; positive result on both occasions. On questioning the patient it was elicited that six months previously she had been treated for enlarged glands in the neck, and on palpation numerous small hard glands could be felt on the right side of the neck.

the statements as to causation of illness made by the patient. These are frequently misleading, as when a post-mortem on a painter certified to have lead colic revealed the presence of a ruptured gastric ulcer.

Dr. **D. W. Inglis** (Hebburn-on-Tyne) was not convinced that the factory door was so closely barred and slammed as had been represented. This opinion was oftener held by those who had not troubled to push against the door, which nearly always gave way if the handle was turned by a combination of tact and bluff. Most factories provided processes which could advantageously be used as sanatoriums for those convalescing from occupational risks, such as lead poisoning. He urged the need of greater knowledge in the profession of the work of the worker.

Prof. **Collis**, in closing a long and interesting discussion, confined himself to maintaining that unhealthy psychology is the outcome of unhealthy physiology, and that the key to industrial unrest lay in health. The medical profession held this key in the hollow of its hand, and owed to the community the service of turning it in the lock.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Thursday, July 21st.

The Section of Obstetrics and Gynæcology met at Armstrong College, Newcastle-on-Tyne, on Thursday and Friday, July 21st and 22nd, at 10 A.M., Prof. **R. P. Ranken Lyle** (Newcastle-on-Tyne), President of the Section, occupied the chair, and in opening the proceedings drew attention to the importance of the subjects selected for discussion. A discussion on the

Rôle of Cæsarean Section in Midwifery

was opened by Prof. **J. M. Munro Kerr** (Glasgow) and Dr. **Eardley Holland** (London).

Prof. **Kerr** observed that his remarks would be confined entirely to a discussion of the indications for Cæsarean section. The question of technique would be considered by Dr. Holland. Apart from, perhaps, the question of toxæmias, there was no subject in obstetric medicine which was more interesting than Cæsarean section. The modern operation dates back to the "eighties," when stitching of the uterus was introduced by Sänger. The name of Murdoch Cameron should also always be remembered in association with this early pioneer work. At that time contracted pelvis and tumours of the uterus and ovaries obstructing the birth canal were the only indications. In 1898 Lawson Tait suggested placenta prævia as an indication, a suggestion which fell almost as a bomb-shell at the time. In later years, grave eclampsia, accidental hæmorrhage, rigidity of the birth canal, prolapse of the cord, and many other conditions have been cited as indications. This is but natural, since the scope of any surgical operation extends as the technique becomes more perfect. He would like to enter a word of caution in this connexion: discretion must be exercised in selecting cases which are suitable. It should be remembered that after the operation the uterus is permanently injured and liable to rupture in subsequent labours. This very fact limits the scope of the operation. Take, for example, the case of the young primipara with eclampsia. Either she must be sterilised at the original operation, or she must run the risk of a ruptured uterus in a later pregnancy. Sterilisation is a crude procedure and not justifiable. Again, there is the case of the elderly primipara where a difficult forceps operation frequently results in the birth of a dead child and much injury to the mother. Cases such as this, where the indication is not absolute but relative, lead one to the conclusion that all obstetric work should be carried out in hospital or nursing home where every facility is available. Personally, the speaker was convinced that the time will come when all primiparæ and many multiparæ will be confined in institutions, as against the present practice. The argument has been put forward that the younger school of obstetricians are too surgically inclined. This he did not believe was the case. In fact it could hardly be so, as every labour was really a surgical operation.

Indications Discussed in Detail.

The speaker then proceeded to discuss in detail the present-day indications for Cæsarean section as shown by the results obtained from an investigation made by Dr. Holland and himself of the work of all practising British obstetricians during the past ten years. Apart from the question of pelvic contraction, which he had left for consideration by Dr. Holland, the indications for Cæsarean section appeared to fall into the following groups: Tumours obstructing the birth canal, eclampsia, placenta prævia, accidental hæmorrhage, malpositions and anomalies of the fœtus, malposition of uterus (post-operative), rigidity of the cervix and vagina, and maternal diseases.

As regards neoplasms, it is generally agreed that if a fibroid or ovarian cystoma produces obstruction to the passage of the child, the only course open is Cæsarean section. The only criticism against this is that occasionally a fibroid which apparently will cause obstruction is drawn up during the early stages of labour, and no difficulty is experienced. The maternal mortality of Cæsarean section under these circumstances is 8 per cent. and the fœtal mortality 19 per cent. The latter is accounted for by prematurity and malformations due to interference in the growth of the fœtus. In the case of ovarian cystomata, the Cæsarean operation is rarely necessary, as the neoplasm is generally removed during pregnancy, or may be displaced from the pelvis during labour. Eclampsia accounted for 236 cases, with a maternal mortality of 30 per cent. The speaker thought that this high maternal mortality might be lowered by operating earlier. The difficulty, however, lies in selecting appropriate cases, as so many recover by ordinary measures. Cæsarean section may be advisable in a few cases, but our practice should be rather to concentrate upon the prevention of eclampsia than to rely upon operation for its treatment. 70 per cent. of the cases are primiparæ and the fœtal mortality is 44 per cent.

With regard to *placenta prævia* Cæsarean section is essentially suitable for central and lateral cases, and should always be selected for central cases in primiparæ. The maternal results are about the same as for version, but the fœtal mortality is much less (15 per cent.). Personally, he had treated six cases of placenta prævia by Cæsarean section with entirely satisfactory results both to mother and child. *Accidental hæmorrhage* occupies an entirely different position from placenta prævia, inasmuch as the child is always dead. The best results are obtained by the treatment advocated by Gordon Ley—viz., rupture of membranes, extract of pituitary, and measures to combat shock. Cæsarean section is required in relatively few cases. In the case of concealed accidental hæmorrhage the maternal mortality of Cæsarean section is 20 per cent. Concerning *malpositions of the uterus*, such as that following *ventral fixation* or the interposition operation for prolapse, Cæsarean section is only occasionally required. It is unjustifiable in the case of *prolapse of the cord*, the fœtal mortality being 75 per cent. With regard to *abnormal conditions of the child*, Dr. Munro Kerr noted the following indications in his series of collected cases: Large fœtus (11), large head (4), occipito-posterior presentation (2), brow presentation (2), impacted breech (3). The total fœtal mortality of these cases amounted to 9 per cent. *Rigidity of the cervix and vagina* is not often considered to be an indication for the Cæsarean operation, but the speaker wondered whether we are correct in taking this view. The severe damage to the birth canal in the case of the mother and the resulting ill-health, together with the high fœtal mortality from forceps trauma, appear to point in favour of Cæsarean section as being a safer alternative. Here again the difficulty is to predict as to what will happen in any individual case.

comparable to my published results, but which I have not had the opportunity to publish.

I am quite unable at present to explain the indifferent results obtained with these cases, but the series which I have detailed in this article has convinced me of the accuracy of my previous published cases, and has also convinced me that the bad results of these 50 cases were dependent upon some fallacy not inherent in the test.

I should like to thank Dr. A. Fleming, Dr. A. H. Gosse, and the medical officers at the St. Marylebone Infirmary for the assistance they have given me in carrying out this work.

Conclusions.

It would appear that the above results are strictly comparable to those obtained by me previously and published, and that the conclusions drawn from the previous results are confirmed by the present series—namely:—

(1) That in the complement-fixation test we have a reliable means for the diagnosis of an active or recently active tuberculous lesion (pulmonary). It must be emphasised that it is the pulmonary form only of the disease that is dealt with in this paper.

(2) That a negative result is as reliable an indication of the absence of such a lesion as a positive is of its presence.

Clinical Notes:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

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TWO PROBABLE CASES OF AMBULATORY ENCEPHALITIS LETHARGICA.

By C. EUSTACE WILLIAMS, M.R.C.S. ENG., L.D.S.

THE following cases of what appeared to me to be encephalitis lethargica of the ambulatory type came under my notice during the early part of this year, and are chiefly interesting because the exact dates of onset of the initial symptoms were obtainable in both cases.

CASE 1.—The patient was a woman, aged 23, recently married. Up to Jan. 8th she felt quite well; on that day, however, she developed a feeling of nausea which lasted for three or four hours. This continued every day until the 21st, when she was attacked by a fairly severe frontal headache. The next day she consulted me and was given a mixture of tinct. gelsemii ℳv., soda bromide gr.v., and water three times a day. On the 25th the patient began to see double; after three days this suddenly passed off, leaving haziness of vision. On the 29th lethargy made its appearance, the patient feeling an overwhelming desire to sleep after tea; she slept each evening for about four hours, during which time it was possible to wake her up, but she would almost immediately go to sleep again. The medicine was now discontinued, and the symptoms continued until Feb. 9th, when the patient was again brought to me. She slept well at night time, was not refreshed on rising, could not remember things as well as formerly, and felt disinclined for work.

Examination gave the following details: Pupils equal and regular, pupillary reflexes slow; no ptosis, no Romberg; pulse, temperature, and respiration normal; no tremors of hands or tongue; no muscular twitching; cerebration slowed, heart and lungs normal. The patient was given hexamine gr.v., acid soda phosphate gr.x., and water three times a day, and instructed to go to bed. During the following week the temperature never rose above normal. The headache, disordered vision, and lethargy improved; on the eighth day patient was allowed to get up, and next day to go out. On the 25th vision again became blurred, and so she was sent to Dr. Fletcher Stiel, ophthalmic surgeon, who reported: "I certainly agree that she is a mild and suppressed case of lethargic encephalitis. Her actual vision is 6/6 in either eye and her fundi are normal, but her extrinsic muscles are entirely without coördination. I have carefully tested each muscle separately and the result is not that of an ordinary heterophoria at all. There is very definite paresis of third nerve on right side and of the sixth on left side."

Blurred vision continued; three weeks later patient complained of a return of intensified headache and said that her left arm jerked at night. The hexamine mixture was dropped and a strychnine and iron tonic recommended. This was continued, and patient made a gradual and uninterrupted recovery.

CASE 2.—The patient was a woman, aged 23, married, with one child. She was suffering from syphilis, and was having her second course of N.A.B. injections when she suddenly ceased attending the V.D. clinic. Shortly after she came to me with the following history: On the morning of Feb. 1st she woke up with a bad frontal headache and a feeling of heaviness behind the eyes. During that day she felt drowsy but did not actually sleep. Next day she complained of "pins and needles" in both arms and legs, and if she concentrated her vision on any object she seemed to go blind. She now found great difficulty in keeping awake, but could be roused to talk or take some food before going off to sleep again. These symptoms continued until she came to see me on the 14th, on which date she developed a feeling of nausea.

On examination patient presented a dull, heavy appearance, with face pale and practically expressionless; cerebration and speech were much slower than usual and she was in a somewhat lethargic condition. Physical examination revealed pupils equal and regular, pupillary reflexes rather sluggish; no strabismus, no nystagmus, no ptosis; pulse, temperature, and respiration normal, no Romberg, paralysis, or obvious paresis; slight tremors of hands and tongue, no skin eruptions, heart and lungs normal. Patient was given a hexamine mixture and sent to bed. Three days later she was feeling much better, so got up. Symptoms gradually passed off, lethargy being last to go, and by the 21st she was carrying on her ordinary household duties. She was now given a tonic, and for the next month, with the exception of occasional attacks of giddiness, was her normal self. She then resumed her treatment for syphilis.

The following note was supplied to me by Dr. W. P. White, medical officer to the V.D. clinics of Grimsby and Lincoln, with reference to Case 2:—

"The patient attended my clinic on Oct. 13th, 1920; her baby was suffering from congenital syphilis; her husband's blood gave a positive Wassermann reaction, and her own also gave a strongly positive reaction. Treatment was at once commenced, intravenous injections of N.A.B. being given once weekly with gr. i. of hydrarg. c̄ cret. by mouth t.d.s. The first course consisted of two injections of 0·15 g. N.A.B. and six of 0·6 g. Patient then had a month's rest, after which her blood again gave a positive reaction. The second course of treatment was then commenced; after the first three injections she ceased attending; this fact I attributed to ordinary slackness. The patient had told my clinic nurse that she found it very difficult to keep awake if she rested for a few minutes from her house-work. A few days later the patient's husband informed me that his wife was suffering from sleepy sickness. Later on I saw Dr. Williams, who informed me that he was attending her for encephalitis lethargica." This would point to the fact that N.A.B. and its allied arsenical compounds are not a cure for so-called sleepy sickness."

I have seen both patients within a few days of date of writing (June 21th); both are quite recovered, showing no trace of their recent indispositions.

A FOREIGN BODY IN THE KNEE-JOINT FOR 13 YEARS.

BY ALFRED C. SHARP, M.D. GLASG.

THE patient was a young woman, aged 20, who visited Harrogate for spa treatment in September, 1920, on account of pain in the right knee and thigh.

She stated that when she was 7 years of age her right knee was painful and swollen, and a splint was applied for three months. She considered the trouble originated with a knock when 6 years old. She was then all right for seven years, at the end of which period the pain and swelling returned. The knee was thereupon kept in plaster of Paris for six months with no improvement. Later the pain came on at intervals, and although she had several different treatments no improvement occurred.

Dr. **Walter Swayne** (Bristol) was of opinion that a collective investigation on the lines of that carried out by Prof. Kerr and Dr. Holland should be made every two years instead of every ten, as views and practice alter rapidly, and many valuable years are wasted whilst opinion is being moulded. In Bristol, contraction of the pelvis is not common, but other complications of pregnancy and labour, especially eclampsia, are very common. Statistics had brought out very clearly, he thought, the importance of antenatal care. At the same time, he considered the present-day practice to fly to Cæsarean section for any complication of labour essentially wrong.

Dr. **R. J. Johnstone** (Belfast) thought that the thanks of the Section were owing to Dr. Holland and Prof. Kerr for the very great amount of trouble they had taken in getting together the statistics upon which their opening papers had been based. He proposed that the expenses of the investigation be defrayed out of the British Medical Association funds set aside for research. The proposition was seconded by Dr. W. Robinson and carried unanimously. The President of the Section undertook to bring the matter to the notice of the Council of the Association. Dr. Johnstone also suggested that forms be supplied to every obstetric surgeon to complete at the time of operation. This would make the statistics more reliable and be easier for individuals. With regard to the points that had been raised in the discussion, he was of opinion that Cæsarean section was quite justifiable in most of the cases in which it was performed. Personally he had never regretted doing the operation, but he had certainly regretted not doing it. He was very interested in the technique described by Dr. Holland, but he could not agree that silk-worm gut or silk were the only sutures to employ. His practice was always to use continuous catgut in three layers, including the decidual layer. He also did not agree with Dr. Holland's remark on the musculature of the uterus, and thought that he was entirely wrong in what he had said about the muscle tending "to pull open" the uterus. Twenty-four hours after labour the consistence of the uterus was the same as that of the non-pregnant organ. The uterus, in other words, had tonus, but not undue contraction.

Mr. **Gordon Ley** (London) supported Dr. Holland's view with regard to the action of the uterine musculature after incision. A wound in the uterus, either made by Cæsarean section or by rupture, always gapes. It most certainly does so at labour and probably this is the tendency afterwards. A ruptured uterus tends, in fact, to herniate through the rupture. With regard to indications for the Cæsarean operation, Mr. Ley quoted a case of post-maturity in which the patient was aged 45 and her husband 72. He had performed Cæsarean section in this case with entirely satisfactory results.

Mr. **Beckwith Whitehouse** (Birmingham) referred to the technique of lower segment Cæsarean section. Subsequently to Prof. Kerr's paper at the Royal Society of Medicine in 1920, he had performed the operation twice, but on each occasion had had some difficulty. At the first operation there was much troublesome venous hæmorrhage. On the second occasion Mr. Whitehouse had had considerable difficulty in extracting the child. Apart from these criticisms, the operation appeared to be based upon sound principles and possibly his early difficulties would disappear with further experience of the method. He was much interested in the change of opinion that had taken place during the past ten years with regard to the treatment of placenta prævia. About ten years ago he was present at a discussion at the Royal Society of Medicine when Dr. Jellett expressed the opinion that although he did not consider the Cæsarean operation wrong for placenta prævia, he could not see the necessity for it. This was the opinion expressed by the majority of speakers at that discussion. To-day the position was reversed, and we were all, quite correctly he thought, advocating Cæsarean section as being the ideal operation for many cases. The difficulty lay in deciding upon the suitable cases for operation. Were all cases to be treated by section, and, if not, what was to be the deciding factor? Personally he limited the operation to cases at and after the eighth month of pregnancy where there was a reasonable chance of saving the child. The important thing for the medical profession to recognise was that version was by no means a safe operation for the mother and was, of course, most fatal to the child. At the Maternity Hospital, Birmingham, statistics over a period of ten years proved that version for placenta prævia was associated with a maternal mortality of over 4 per cent., and a fœtal mortality of over 70 per cent. This was deplorable, and he could not help thinking that Cæsarean section would show very different results. He would like it to go forth from the Section that placenta prævia is a complication of pregnancy which always requires nursing home or hospital treatment, and in which Cæsarean section will very probably be required in order to obtain the best results.

Dr. **J. W. Bride** (Manchester) called attention to the statistics of Manchester cases of Cæsarean section contained in Dr. Holland's report. 642 cases of Cæsarean section had been performed in Manchester in the period under review, with a gross maternal mortality of 7·7 per cent. In eclampsia the mortality had been high and in cases performed for contracted pelvis, 25 deaths had occurred, chiefly due to general peritonitis. The conclusions that obstetric surgeons had arrived at in Manchester were that Cæsarean section could be performed with very little risk to the mother except in infected cases, that it was not a suitable operation for eclampsia, but that it was attended with good results in placenta prævia, especially in primiparæ. Rickets was a very common disease in Manchester, 1000 cases occurring in female infants per annum. This probably accounted for the high proportion of cases of contracted pelvis in the Manchester report.

The **President** expressed the thanks of the Section to the speakers for the valuable discussion, adding that the exchange of views that morning would undoubtedly influence obstetric practice in this country. It was evident, for example, that in eclampsia the indication for operation was very doubtful, as the results were no better if as good as with the older treatment. In placenta prævia, on the other hand, the reverse was the case. One of the most salient facts, he thought, that had issued from the discussion was the importance of conducting obstetric work as far as possible in an institution. Probably in 10 or 15 years all maternity work will be carried out in nursing home or hospital. This, in association with pre-maternity work, will reduce both maternal and fœtal mortality and was the ideal to be aimed at.

Prof. **Kerr**, in reply, wondered if the unfavourable results quoted by Lady Barrett as seen in Vienna were due to the operation of lower segment Cæsarean section being performed for septic cases. This, of course, was the original indication by Thomas. There was an essential difference in advocating the operation for uninfected cases, the indication now being to secure a sounder uterine scar. Mr. Whitehouse had mentioned two difficulties in performing the operation. He quite agreed that difficulty in delivering the child did occur at times, especially if the head was deep in the pelvis. This was one disadvantage of the operation. The other complication of hæmorrhage was not so serious, as it could be controlled, and, furthermore, it occurred also in the classical operation. The point raised by Dr. Johnstone had been answered by Mr. Ley. A wound in the upper segment of the uterus did gape, although perhaps not quite in the graphic manner suggested by Dr. Holland.

Treatment of Advanced Malignant Disease of the Cervix.

Dr. **Arthur Burrows** (Manchester) read a paper upon the treatment of advanced malignant disease of the cervix uteri by means of radium. The speaker, although there was at present a wave of feeling against State interference of any kind, it would be tragic if this blinded the people to the great results of public health legislation in the past.

Discussion.

In the discussion that followed, Dr. T. EUSTACE HILL (C.M.O., Durham) said that whilst it was impossible to legislate in advance of it, he felt that some of our legislators had not felt the pin pricks of public opinion, as evidenced by their failure to get the Milk and Dairies Act put into operation and thus stop the supply of tuberculous milk. He urged the pressing need for reconsidering with a view to codification all the Public Health Acts.—Dr. A. E. COPE (Public Vaccinator, Westminster) said that public health administration was in advance of public opinion; the neglect of vaccination showed the need of education.—Dr. MILLER (C.M.O., Radnor) maintained that there were too many forms to be completed, too much correspondence, and too much "red tape" in connexion with health administration. The least possible interference was desirable.—Dr. D. A. COLES (Gas Light and Coke Co.) drew attention to the neglect of minor injuries in factories, and the lack of means to compel workpeople to use protective appliances.—Dr. DAVID MCKAIL (Glasgow) claimed that municipalities had shown the way to the State rather than the reverse, and contended that the fall in the infantile mortality rate was associated with the decline in the birth-rate.—Dr. W. F. DEARDEN (Port M.O.H., Manchester) thought that legislation had been slow. The medical staff of the Home Office was too small as compared with that of the Ministry of Health.

Capt. ELLIOT, in replying, said that the establishment of the Ministry of Health was too recent for results to be seen. He held that the provision of all funds for health purposes directly from London would be disastrous by discouraging local initiative. He thought that legislation had already done enough to warrant a continuance in the same path.

THURSDAY, JULY 21ST.

Prof. E. L. COLLIS opened a discussion on the *Importance of Industrial Medicine to the Community* in a paper which appears substantially at length in another part of this issue.

Dr. T. M. LEGGE (Home Office) sent a letter in which, while agreeing with the need for and the value to be gained from industrial medicine, he held that the door of the factory must be opened wider to the profession before it can be effectively established. He pointed out that the large sums of money demanded from employers for health insurance, the benefits of which may be a little dubious, may deter them from embarking upon preventive hygiene.

Sir KENNETH GOADBY (Medical Referee for Industrial Poisoning) expressed general agreement with the opinions stated by the opener of the discussion. An expanded version of his remarks appears in our original columns.

Capt. ELLIOT held that coöperation with labour was a necessity for establishing industrial medicine, since the industrial doctor must be a trusted personal friend just as is the family practitioner. He felt dubious as to whether the psychology which expressed itself as labour turnover and laziness was really pathological, rather than being the effect of monotony and specialisation; for the spirit of man revolts against eternal efficiency; man prefers to remain the eternal amateur. Parliament is concerned with big broad issues in labour matters, and he held that the problem of industrial health was a great issue with immediate bearing upon all industrial legislation. One important aspect was that of industrial convalescence; here the work of the Ministry of Pensions carried on for incapacitated soldiers provided the largest medical organisation in the country, with 1,200,000 patients under scientific control. Even so 10 per cent. were unrecoverable—i.e., 120,000 persons needed short-time employment. Thus an experiment on a great scale was in progress of untold value to industry. Industry should profit thereby, and persuade Parliament to maintain and devote to the needs of peace the activities of the Ministry of Pensions; but action must be taken soon or the time will slip past. The influence industrial medicine can exert upon labour unrest cannot be doubted: for the man broken in industry sitting at the rich man's gate provides an appeal, greater perhaps than the individual case justifies, but an appeal which must be heeded.

Dr. DEARDEN pointed out how industrial medicine had become a matter of public interest, and that development was needed. He advocated a medical service on the lines followed by Belgium, where with the reconstruction of industry has advanced pari passu a reconstructed medical organisation with an adequate and independent staff and laboratory facilities for research. We need efficient inspection of adolescents at work carried out by a semi-independent staff. At present the medical staff of the factory department was too small; it required increase and distribution in the industrial centres. In addition, the factory door must be opened to the general practitioner, who cannot give the service he is capable of unless he is acquainted with the industrial risks of his district. Arlidge in the past, and Prosser White to-day, are instances of the value of the general practitioner. He dwelt upon the importance of medical selection for work, instancing the folly of allowing a girl with poor eyesight to become a seamstress, and considered that defective eyesight unnoted was a prolific cause of labour wastage.

Dr. H. KERR (M.O.H., Newcastle) congratulated industry on the development of canteens for supplying operatives with food; but pointed out that, since kitchens were not factories, the industry of cooking was not adequately supervised; it fell between the two stools of factory inspection and the local public health service. He made out a good case for handing over this work to medical officers of health who already have other responsibilities in relation to food.

Dr. MCKAIL felt the need for the factory door to be opened wider to doctors; particularly he considered that examination of young persons for employment without the power of following up was an anomaly. The general practitioner would gain greatly by being brought more into public health work, both in schools and factories. The need for industrial convalescence was great; industry should carry responsibility for those whom it disabled; each worker should be "on the strength" of his industry, and his productivity, even when limited by disability, should be used to its utmost. Education of workers in the risks of occupation was urgently needed to minimise illness and prevent accidents.

Dr. W. DUNCAN (Regional M.O., Stafford) considered that the whole question of industrial medicine was one for the general practitioner. His interest is direct, for the healthier are the panel patients, the less work is there for the panel doctor. He must acquaint himself with the district industries by personal inspection. He must approach employers and get the goodwill of the workers. He must convince both that there is work which he can do which it is to their advantage to have done. The folly of prohibiting light employment needs to be pointed out to friendly societies. Indeed, in this matter the practitioner must act, and act quickly, or he will lose his position.

Dr. MILLER dwelt upon the value of juvenile advisory committees in introducing to work children as they leave school, and asked here for closer coöperation from certifying factory surgeons. He asked, not for the creation of more officials—there were enough already—but for the extension and improvement of the services already in existence.

Sir T. OLIVER was in agreement with extended use of the general practitioner, who to-day does not visit his patients while they are at work, and is not acquainted with their occupational risks. The results are often unfortunate, as he accepts without demur speaker had no belief in fissures and abrasions as being a common cause of dyspareunia. It is frequently nervous in origin, but may be due to an irritating leucorrhœal discharge and is curable by curettage. In the same way pruritus vulvæ, attributed to the nervous system, may often be cured by a thorough sterilisation of the vulva and vagina. Operations such as division of the cutaneous nerves appeared to be unnecessary. *Amenorrhœa* had long been known to be associated with a nervous element or nerve shock, especially in cases of fear of pregnancy, or desire for maternity. The same causes often account for examples of so-called "phantom tumour." It must not be forgotten, however, that enteroptosis may on occasion be the cause of this condition. Prof. Donald observed that he was no believer in the "mechanical cause of disease" as a whole, and quoted the case of large ventral hernias of immense size in patients without a single symptom. *The bladder* is very frequently associated with a train of nervous symptoms and diagnosis may at times be difficult. Incontinence in young women is often nervous in origin and without obvious cause. It is amenable to moral treatment. In middle-aged women, on the other hand, it is more usually due to cystocele. Retention of urine after operation is generally of nervous origin. Frequency of micturition may, on the other hand, be due to nervous causes or to a definite lesion of the bladder, such as cystitis of *B. coli* origin, a deep cervical laceration, or, in elderly women, to atrophic changes in the vagina. The diagnosis between symptoms due to a neurosis and those caused by actual disease must depend upon accurate knowledge gained from experience in bimanual examination. If any gynæcological lesion is discovered the question should be asked, "Will the symptoms be cured by removal of such a lesion?" Also, because a woman is in some respects neurotic, this must not be adduced as a reason for not treating any lesion present actually causing symptoms.

Prof. Donald, in conclusion, called attention to certain points of treatment. The use of specula in the consulting room, he thought, was unnecessary if the sense of touch is developed sufficiently. The uterine sound also in his opinion should be reserved entirely for use in the operating theatre. Pessaries he stigmatised as being useless and generally harmful. Most patients wearing pessaries had, he said, been educated to the use of them and could generally be educated out of them. Vaginal douching was harmful when no actual indication for its employment existed. Tampons also, he thought, had no curative effect. Massage and rest undoubtedly did good in some cases, but many neurotic patients rest too much. Exercise would be more beneficial. With regard to the question of operative treatment, the existence of the neurotic element should make the gynæcologist more guarded in his conduct. Objective symptoms are always more important in providing indications for operation than subjective. These remarks particularly applied to operations performed for fixing various organs. How many of these operations, the speaker asked, were performed without the least relief to the patient's symptoms? In a very large proportion of these women complaining of symptoms of neurotic origin, all that was required was a plain talk. It was often not a pleasant duty and perhaps not one liable to make for popularity, but it must on occasion be done. Prof. Donald observed that he had purposely made no reference to psycho-analysis. He had had no experience of it, and he considered it outside the sphere of gynæcology.

The Neurological View.

Dr. FARQUHAR BUZZARD (London), continuing the discussion, said that he should define neurasthenia as being a disorder of mind whereby the ordinary activities of life were rendered impossible. The normal mechanism controlling this had broken down. This morbid condition had no physical signs, but was nearly always associated with a group of symptoms of which the most important were depression, insomnia. irritability, restlessness, and a loss of the sense of proportion. With these symptoms, owing to the loss of a controlling influence, there was frequently in addition an exuberant growth of certain mental elements. Anxiety, fears, and various obsessions, for example, assumed proportions which on occasion were put down as being the primary cause of the condition. They were in reality but symptoms or disorders of function. This being so, it followed that mistakes of treatment were sure to follow the adoption of such an erroneous view. The gynæcologist, when confronted with a probable case of neurasthenia, must satisfy himself that no actual physical cause exists to explain the train of symptoms. Correct diagnosis must therefore guide his treatment. Some of the most difficult cases of neurasthenia were those in which the patient appeared not to have a care in the world. The cause was a very difficult problem to elucidate. There must, however, be a cause in every case, but it may be as trifling as the blow which in some sensitive individuals produces a large bruise. Many factors might be concerned, psychic, static, endocrinic, &c. The inherent factor was perhaps the most important, and individual differences should not be overlooked. The mental form of a woman differs as does her outward appearance, and every woman and girl is not equipped with the same power of resisting outside influences, pathological and otherwise. This very fact accounts for some of the nervous disorders occurring amongst school-girls, who with our present social system, are all forced to follow the same régime. At puberty and during adolescence the inherent factor occupied considerable dimensions. New instincts were being developed with the assumption of function of the genital organs, and a breakdown was very likely to occur in the combat between these primitive instincts and social ideals. Visceral sensations may and do assume a painful character when the higher powers are upset. There is no such thing as imaginary pain, and much of the so-called ovarian and other pain in women probably had a basis in the facts noted above. Fatigue, quite apart from pain, is often associated with sexual instincts in women, and restoration to health may be effected by rest alone. *Fear* and *fright*, on the other hand, are often the basis of neurasthenia, and so a vicious circle results. Many women from girlhood onwards live in an atmosphere of fear, often unexpressed. The onset of menstruation, sexual intercourse, pregnancy, lactation, and the dread of carcinoma are all factors in a woman's life, and in many cases provide an element of fear. This is often exaggerated from lack of education. It is inconceivable how great at times this lack of knowledge of the ordinary facts of life may be. The element of fear at times prevents a woman from expressing her symptoms to a gynæcologist, in case he should discover signs of serious disease—e.g., carcinoma. Rest in many patients suffering from early neurasthenia is all that is required. The speaker said that he had no sympathy with the surgeon who gets his patients up too soon after operation, or with the obstetrician who places a time-limit on the duration in bed after a confinement.

Dr. Buzzard thought that the habit of attributing nervous symptoms to certain ages, especially the climacteric, was to be deprecated. Many women pass through the so-called "dangerous age" without any troubles whatsoever. 35 to 45 was the commonest age for neurasthenia is women, and in many cases the actual menopause was not near. Both married and single women had individual causes of neurasthenia peculiar to their state. In point of fact civilisation had imposed certain penalties upon women that did not exist in the case of men, and this was probably responsible for the greater incidence of neurasthenia amongst women. The actual menopause may have an influence, but, as often as not, has none. This is confirmed by the absence of neurasthenic symptoms in a patient passing through an artificial menopause, unless a predisposing cause is also present. In conclusion, the speaker said that with regard to the endocrine glands, although a few years ago he had been biased in their favour, he now had no use for them. He could not recall any case of neurasthenia in which ovarian or mammary extracts had proved to be of any value.

The safest procedure is to have the patient in a home or hospital where operative treatment can be adopted at once without risk. Concerning severe *maternal constitutional disease*, the speaker noted 42 cases of cardiac lesions with a maternal mortality of 20 per cent. following Cæsarean section. Two cases of advanced tuberculosis had been treated by the operation with no death. Single cases of diabetic coma and chorea had proved fatal. In conclusion, he observed that it is impossible to lay down rigid and absolute rules in obstetric practice. The wise obstetrician is he who is not prejudiced. One thing was certain, however, and that is that our art is slowly progressing as the years pass by.

Technique and Risks of the Operation.

Dr. **HOLLAND**, continuing the discussion, said that many obstetric surgeons to-day were not satisfied with the classical operation of Cæsarean section and thought that there was an alternative procedure. What was required was to decrease not only the mortality but also the morbidity of the operation and so extend its scope. Forty years ago Cæsarean section had been standardised much as we do it to-day and the classical operation had deservedly stood the test of time. Its mortality had reached a very low level, and consequently its indications had been extended, and as many thought somewhat recklessly. A very striking contrast as regards mortality was evident in the older and more recent figures. Spiegelburg (second edition, 1882) gives a 50 per cent. mortality, with absolute pelvic contraction as being the only indication. In Amand Routh's important monograph statistics were collected over a period of 20 years, from 1891 to 1910, and the following figures were published relating to maternal mortality:—

	Cases.	Maternal mortality per cent.	
Not in labour	245	3·6	2·9
In labour—			
Membranes unruptured	224	2·2	
Membranes ruptured		10·8	
Frequent examinations		34	

Prof. Kerr and he had thought the time opportune for a further investigation relating to mortality and indication. They had been able to collect records of 5000 cases performed by British obstetric surgeons from 1911 to 1920. Of these, 3500 were cases of contracted pelvis. The results regarding mortality were as follows:—

	Cases.	Deaths.	Per cent.
Not in labour	1102	17	1·4
Very early in labour	338	7	1·8
Very long in labour	205	21	10
After forceps	102	27	26

The fœtal mortality after forceps was 27 per cent. due to intracranial injuries. Amongst the causes of death in the "clean" cases were general peritonitis (9), pulmonary embolism (3), paralytic ileus (1), intestinal obstruction (1), chronic bronchitis (1). Personally, Dr. Holland thought that the minimal limit of maternal mortality had been reached.

The disadvantages attaching to the classical operation might be classed under four headings: (*a*) risk of sepsis in infected cases, (*b*) risk of rupture of the uterine scar in subsequent pregnancies, (*c*) risk of intestinal complications from adhesion of intestine to uterine scar, (*d*) risk of general peritoneal adhesions. Rupture of the uterine scar has been shown by statistics to occur in 4 per cent. of all cases. This the speaker attributed to the structure of the uterine wall, the position of the incision in the uterine wall, and the liability to infection of the uterine incision. The uterus is a very powerful muscle and its contractions tend to interfere with subsequent healing of any wound made in its substance. The vertical incision as usually made in the upper segment in Cæsarean section tends to gape transversely and accurate approximation of the cut surfaces is difficult. The chief essential in healing is absolute rest, and this is far from being the case in the upper segment operation owing to contraction and retraction. As regards technique the speaker advocated the avoidance of all hurry. Interrupted sutures taking a wide bite of the uterine wall should be introduced, each suture being tied separately. Closure of the uterine peritoneum was most important, as sepsis arises not so much from infected liquor amnii as from a slow leakage through an infected scar. The uterus should be fully retracted before suturing is attempted. The best material to use is silkworm gut. Silk is the next most suitable. Catgut could not be recommended.

Dr. Holland next proceeded to discuss Cæsarean section performed through the lower uterine segment, an operation which had recently been revived by Prof. Kerr. The technique of the operation was described in detail, the speaker favouring a transverse incision through the uterine wall. He had performed the operation upon nine occasions and was very pleased with the results. The technique is certainly more difficult, but the advantages to the patient quite justify its adoption. The advantages which Dr. Holland and Prof. Kerr claim for the operation are as follows: (1) the uterine wound lies in an inactive area and healing is facilitated; (2) the uterine wall is thinner and suturing is more efficient; (3) the incision lies in a less vascular area and therefore there is less hæmorrhage during the operation; (4) adhesions cannot occur, since the wound in the uterine wall is covered by the bladder; (5) for the same reason infection of the peritoneum is less likely to occur; (6) there is less disturbance of the general abdominal cavity; (7) the uterine scar is in a safer area for a subsequent pregnancy and not so liable to rupture.

Discussion.

Dr. **WILLIAM ROBINSON** (Sunderland) said that the figures brought forward by the openers of the discussion made one thing quite certain, which was that practitioners should, in cases of expected difficulty, call in the services of a consultant before the membranes ruptured. The indications for Cæsarean section mentioned by Prof. Kerr were good, but the difficulty, especially in placenta prævia and eclampsia, lay in the fact that it was not possible to say which patients would recover without operation. Many undoubtedly did so. He quite agreed that all primiparæ should be treated in nursing home or hospital and not in private houses.

Lady **BARRETT** (London) said that the discussion was very useful in that all points of view could be expressed. She was glad that the relation of fibroids to Cæsarean section had been raised. Personally, she had on several occasions performed myomectomy at the fifth month of pregnancy and labour had subsequently been normal. With regard to eclampsia, the point had been raised that if the operation had been performed early the results would have been better. This was not always the case, as in a patient under her care in whom albuminuria and nausea developed with remarkable rapidity. She had performed Cæsarean section and eclamptic convulsions developed post-partum. The patient died, and yet other patients, apparently worse, got better after Cæsarean section. The whole thing was very puzzling. For placenta prævia, especially in primiparæ, Lady Barrett was quite sure that Cæsarean section was the ideal operation, and was of opinion that it is in this group that the mortality rate will be reduced. In the case of accidental hæmorrhage, on the other hand, she thought that Cæsarean section would largely disappear as a means of treatment. The operation may prove, however, to be very useful in the case of pregnancy complicated by severe cardiac disease. The results of this complication were at present very disappointing. With regard to the new technique, she was much interested in the facts put forward by the openers of the discussion. At the same time she had seen lower segment Cæsarean section performed frequently in Vienna before the war and was not impressed with the results. The majority of the cases died from sepsis. As to the question of less liability to rupture of the scar the operation must stand the test of time.

associated with the function of the ovarian internal secretion, and Bond believed the two to be antagonistic. Certainly the uterine secretion is profoundly influenced both in its physical and physiological properties by the presence of the ovary. Menstruation was a natural aid to fertilisation and pregnancy, with a means of control so elaborate that its balance was easily upset and anomalies of function were frequently encountered.

Cessation of Menstrual Hæmorrhage.

The machinery of the factors which normally caused cessation of menstrual flow—factors all-important in the production of pathological hæmorrhage—was undoubtedly complex. If the quantitative theory of ovarian secretion were accepted, it would be understood that when the fixed degree of concentration was reduced the stimulus was removed and the menstrual flow ceased. Similarly, if the ovarian hormone were regarded as a complex body requiring for its physiological action the aid of calcium, a stage must be reached when it became inactive owing to the outpouring of calcium salts by the uterine glands. Furthermore, the thrombokinetic function of the endometrium had to be considered; as soon as the uterine glands stopped secreting, the thrombolytic factor ceased and the endometrial vessels were immediately closed by rapid physiological thrombosis. Finally, the uterine muscular contractions taking place during "menstrual labour" exerted some influence in controlling hæmorrhage by limiting and regulating the supply of blood to the endometrium. Periodicity of the function was probably entirely dependent upon general metabolism, in which the whole "sex complex" took part. It was the product of heredity, evolution, and environment, and was comparable to the age of puberty or of the menopause.

Pathological Uterine Hæmorrhage.

If bleeding occurred at what was normally the active period of the menstrual cycle, the loss was customarily termed menorrhagia, and if during the so-called quiescent period, metrorrhagia. This classification was clinically unsatisfactory; for some time the speaker's practice had been to group cases under one of the following headings:—

1. *Menorrhagia.*—Excessive hæmorrhage relating simply to the quantity of blood lost at a menstrual period.
2. *Menostaxis.*—Excessive menstruation as regards duration of the flow; the loss in this case might not be excessive, but simply a long drawn out period.
3. *Epimenorrhœa* (a term introduced by Blair Bell).—Too frequent menstruation—i.e., alteration of rhythm. When a combination of (1) and (3) exists, Blair Bell had suggested the term "epimenorrhagia."
4. *Metrostaxis.*—Uterine hæmorrhage having no relation with menstrual bleeding, including all hæmorrhages before puberty and after the menopause, and all irregular bleeding during a woman's active sexual life.

This classification he had found very useful in practice. All excessive uterine bleeding was due either to general or local causes; speaking very generally, the former predominated in young patients and the latter in married and elderly women. By far the greatest number of cases of hæmorrhage requiring attention occurred either at the commencement or towards the close of active sexual life; a knowledge of the normal microscopical appearances of the endometrium at different stages of the menstrual cycle was essential, as diagnosis of the cause of pathological bleeding must be based upon abnormal appearances of fragments removed by the curette.

Abnormal States of the Endometrium.

There were three abnormal states of the endometrium which demanded consideration—hypertrophy (diffuse or localised), atrophy, and hyperactivity.

Hypertrophy was not uncommon in minor degrees and gave rise to pure menorrhagia; it was commonly a late result of septic infection of a parous uterus, but also occurred quite independently of this factor. In multiparæ it sometimes supervened upon rapidly repeated pregnancies, and in nulliparæ might be associated with chronic pelvic congestion from various sources and hyper-oöphorism. The diagnosis of hypertrophy was readily made by means of curettage; treatment depended upon the cause underlying it. Sometimes curettage alone effected a cure, at other times the intra-uterine application of radium, partial oöphorectomy, or even hysterectomy was required.

Atrophy produced hæmorrhage because of the absence of endometrial stroma with its associated thrombokinase. Normally, as the blood escaped into the tissues, it was brought into contact with a tissue favouring rapid clotting; if this tissue was deficient clotting was delayed or absent, and very profuse and prolonged hæmorrhage occurred which was liable to continue after the ovarian stimulus was withdrawn. Atrophy was often associated with chronic metritis and fibrosis uteri. Subinvolution, on the other hand, and true uterine hypertrophy, such as occurred in single women about the age of the menopause, were commonly combined with hypertrophy and œdema of the endometrium. The diagnosis of atrophy was confirmed by curettage; if with the curette small shreds of tissue only could be removed and the instrument came down immediately upon hard dense uterine wall, it could be concluded that atrophy was the cause of hæmorrhage. Mere curettage would not suffice to control the bleeding; and steps should be taken at the same sitting to control it permanently either by intra-uterine application of radium or by hysterectomy.

Radium in the Control of Uterine Hæmorrhage.

Radium was a very valuable agent for controlling uterine hæmorrhage due to ovarian and endometrial incoördination; he had so far been entirely satisfied with its effects. As far as the endometrium was concerned, radium appeared to produce atrophy both of glands and stroma, but especially of the former. Hence its great value in checking hæmorrhage due to hypertrophy. As regards the ovaries, radium appeared to destroy the Graafian follicles, but did not interfere with the stroma. This was a point of considerable interest, as it had a bearing, of course, upon the origin of the ovarian hormone.

With regard to hyperactivity, if sections were taken from various parts of a normal menstruating endometrium and examined under the microscope, it was found that all present practically the same appearance, both stroma and glands corresponding to the actual stage of the "period." On the other hand, if curettings are examined from some cases of metrostaxis or prolonged menstruation during active sexual life, it was found that all portions of the endometrium were not affected in the same manner at the same time. To this abnormality he thought the term hyperactivity might be applied; the term was only relative, as the endometrium was the reflector of activity of the ovarian and other hormones. In some cases of uterine hæmorrhage lasting from ten to 14 days the loss was often not severe, but the length of the period alarmed the patient; curettings from such a case showed that part of the endometrium was in the pre-menstrual stage and part in the post-menstrual. There had been a tendency to regard this appearance as a definite lesion of the endometrium, and to call it "endometritis," but there was no evidence of inflammation in the ordinary pathological sense of the word. Curettage would always give the clue to the cause of the bleeding if care were taken to examine several portions of the endometrium.

Endometritis as a Cause of Uterine Hæmorrhage.

In the older teaching much that was normal and a certain amount that was abnormal were grouped together under the term "endometritis." True endometritis—a definite inflammation of the endometrium set up by an infecting agent, bacterial or otherwise—was not so common as generally supposed, and was not necessarily associated with uterine hæmorrhage. The one cardinal symptom of true endometritis was the occurrence of a muco-purulent after drawing attention to the importance of distinguishing between radium emanations and the gas evolved from the element, described the technique he employed in treating cases of carcinoma too advanced for any radical operative treatment. A screen of silver, 1 mm. in thickness, was used. Seven tubes containing radium salt are employed and never less than 150 mg. for 24 hours were used. Fifty mg. of radium element were introduced well into the cervical canal under a general anæsthetic. Three other tubes, screened by brass and in the shape of stilets, were introduced into each broad ligament. The cervical tube was removed in 24 hours, but not the smaller tubes. The vagina was packed and douching employed daily after the removal of all tubes to keep the growth clear and to prevent vaginal adhesions. There is still some doubt as to the amount of radium that is actually necessary; but the results have been encouraging with the doses employed. Extremely advanced cases should not be touched. The prognosis appears to improve with the patient's age, the most unfavourable results being obtained in young patients. Involvement of the bladder is not a contra-indication. The best results are found naturally in those cases just past operability. Recurrences sometimes take as long as two years before appearance, and in one case where the opportunity occurred of examining the tissues post mortem six months after radium treatment, no microscopical recurrence could be detected. This was claimed as a cure. Dr. Burrows gave statistics of cases treated by his method dating from 1916 and covering a period of from 3 to 5 years. Two cases are alive and well 5 years after treatment. Six are well after 3 to 4½ years. Five were well 1 year after treatment but were then lost sight of. Six were rendered operable and radical operation was performed. Thirty-two were not cured but were made more comfortable. Twenty-six died quickly without any noticeable improvement. In other words, 6 per cent. of inoperable cases will probably be alive and well 4½ years after treatment, and 12 per cent. will probably live for 3 to 4 years after radium application.

Dr. W. ROBINSON said that if 12 per cent. of inoperable cases of carcinoma of the cervix were cured or relieved by radium treatment, the method should be adopted. He wondered if the cautery was of value in cases of advanced cervical disease. The results given by Burns in Kelly and Noble's "Gynæcology" seemed to challenge comparison with the extended hysterectomy performed to-day. Extension of uterine carcinoma appears to be by permeation, as not more than 30 per cent. of cases show glandular involvement post mortem.

Dr. CAMERON said that he had not had much experience in treating uterine carcinoma by radium, but it was surprising how rapidly superficial growths disappeared under treatment. He advocated very vigorous treatment, and the employment of from 250 to 350 mg. of radium bromide (150 to 200 mg. of element) at least. Such dosage had made inoperable cases operable. He was of opinion that the best results will be obtained by introducing the tubes directly into the tissues.

Mr. W. E. MILES (London) asked Dr. Burrows his grounds for deciding when a malignant cervix was inoperable. He was of opinion that it was impossible to tell unless the abdomen was opened. Because a uterus is somewhat fixed and a large growth present in the vagina the case is not necessarily inoperable. He thought that radium flattered for a time, but that eventually the growth recurred.

Mr. CECIL ROWNTREE (London) thought that Dr. Burrows was greatly to be congratulated upon the results which he had obtained, which almost equalled those of operative treatment. His experience had, however, been much the same as that of Mr. Ernest Miles, and he thought that although the growths shrunk for a time they were eventually attended by the usual fatal result.

Prof. A. DONALD (Manchester) said that he would like to confirm much that Dr. Burrows had said. As regards the cases described, they had been referred to Dr. Burrows by gynæcologists, and certainly they were inoperable.

Prof. KERR (Glasgow) said that he supported Prof. Donald in what he had said about inoperable cases being rendered operable by means of radium.

Mr. WHITEHOUSE asked if any instances of enteritis or colitis had followed Dr. Burrow's vigorous treatment. He believed that this had been the case with some observers, and certainly one fatal case had been recorded in the continental medical press. He congratulated Dr. Burrows upon the excellent results he had achieved in these inoperable cases.

The PRESIDENT said that his experience of radium therapy in uterine cancer was limited to ten or a dozen cases. The first two or three attempts had impressed him greatly and the growths disappeared as if by a charm. Recurrence occurred after six months. It was possible that if hysterectomy had been performed before recurrence was present, the lives of the patients might have been prolonged. He was convinced that we were working along the right lines, but perhaps we were not yet correct in our application.

Dr. BURROWS, in reply, said that large doses of radium should certainly be employed. He did not select cases himself. The question of operability rested with the surgeons who referred the cases to him. He had had no immediate ill-effects beyond one death from phlebitis amongst his earlier cases. This he attributed to sepsis and not to radium. Enteritis and colitis referred to by some writers had not occurred in his practice. Perhaps he had been fortunate.

FRIDAY, JULY 22ND.

NEURASTHENIC ELEMENT IN GYNÆCOLOGY.

Prof. A. DONALD (Manchester) in opening the discussion said that the subject was a difficult one to discuss on a scientific basis. Neurasthenia or nerve exhaustion was, of course, not limited to women. Cases of true neurasthenia and also hysteria were not often referred to the gynæcologist, but the neurotic woman with gynæcological symptoms was, on the other hand, a common type of patient. Only too often was she treated by the insertion of pessaries, specula, applications to the cervix, and so forth, and the speaker was of opinion that many neurotics were manufactured by such treatment. The periods of a woman's life when a nervous upset was most likely to appear were puberty, menstruation, and at the climacteric. Pregnancy, strangely enough, did not appear to be associated frequently with symptoms of nervous origin. Fear of the dangers and risks which pregnancy involves might reasonably be expected to produce in women symptoms akin to those that men exhibited in face of such stress as war. This in point of fact was not the case.

Prof. Donald then proceeded to discuss the value of certain symptoms and signs in relation to actual disease of the pelvic organs as distinguished from a pure neurosis. *Pain* is the commonest symptom of the neurotic, is generally referred to a wide area, and is unassociated with any organic basis. "Backache," if the only symptom present, is generally of nervous origin. Care must be taken, however, to eliminate such gynæcological causes for back-ache as pelvic peritonitis, metritis, chronic cervical catarrh, and rarely displacements of the uterus. So-called "ovarian pain," the speaker thought, was usually of nervous origin. The ovaries as a general rule do not cause pain. Prof. Donald also referred to right-sided abdominal pain often referred to the appendix. This organ at operation frequently appears to be normal in every way. Pain of a periodic character is usually dysmenorrhœal in type. The dysmenorrhœa of the neurotic, however, is never localised, never intense, and persists throughout the period. *Fatigue* is another symptom attributed frequently to neurasthenia. This may be the case, but it must not be overlooked that toxæmias, degenerating fibroids, and chronic metritis are often associated with profound fatigue. *Tenderness* on pressure, especially if general, is often due to neurosis. *Cutaneous hyperæsthesia* is not often marked, except as a cause of dyspareunia. The

Dr. Campbell, in reply, said that he would be very gratified if he could adopt the views expressed by Prof. Lyle. It would certainly save much trouble. He felt, however, that it was unfair to refuse a patient treatment unless she proclaimed her criminality to the world, and he wondered if the profession was justified in taking up such an attitude.

SECTION OF OPHTHALMOLOGY.

Wednesday, July 20th.

On the first day, Prof. J. D. Wardale, President of the Section, being in the chair, a discussion on the

Causes and Prevention of Blindness

was opened by Mr. N. Bishop Harman (London), based on an analysis of 4288 cases. Mr. Harman's figures came from three sources: (1) a home for blind infants, (2) L.C.C. schools and classes, (3) private case-books. In group 1 the conditions are as follows: out of a total of 63 blind infants, ophthalmia neonatorum is the determining cause in 31; congenital defects account for 19; while the remaining 13 are the result of a variety of diseases. The L.C.C. "myope classes" and schools for the blind (group 2) have furnished in the past 17 years 3300 cases of blind and partly-sighted children. It is not practicable to reproduce in full Mr. Harman's tables, in which he carefully analyses the causes operating to produce blindness or defective vision. Ophthalmia neonatorum is found to account for 299 blind and 68 partly-sighted—a total of 367; interstitial keratitis, due to congenital syphilis, for 362; and interstitial keratitis, in which the evidence of syphilis is not certain, accounts for 24; while disseminated choroiditis of syphilitic origin obtains in 210, together with 19 more in which the evidence of syphilis is not quite complete. This, however, is not the whole tale of syphilis. It appears as a causative agent also in buphthalmia or congenital glaucoma; in defects of the macula; in retinitis pigmentosa; and in irido-cyclitis. Cases of high myopia number 1235. Mr. Harman classifies them according to the mean of the four meridians of the two eyes. The method has obvious disadvantages, as Mr. Harman points out, but a less faulty substitute is difficult to devise. Group 3 consists of persons of all ages met with in private practice, and contains 925 persons. Cataract accounts for 94, and high myopia for 84 cases. Diseases of the uveal tract—iritis, irido-cyclitis, and choroiditis—are responsible for 133 cases; glaucoma for 55; and corneal diseases for 51. In this all-age group the syphilitic cases form the largest section of preventable disease—85, or 9·19 per cent. of the gross total. In infancy congenital defects and purulent conjunctivitis account for nearly all the blindness; amongst school children cases due to congenital syphilis hold first place; but in the all-age group the greater variety of causes operating, many of which mainly or only affect adults, lowers considerably the percentage of cases of blindness for which venereal diseases are responsible. From these returns it is correct to state that 50 per cent. of the blindness of *infancy* is due to ophthalmia neonatorum; that 50 per cent. of the blindness in *school children* is due to parental venereal disease; but the true figures for "*all ages*" are seen to be 2·5 per cent. from gonorrhœa and 9 per cent. from syphilis.

Mr. Harman then discussed prevention. For ophthalmia neonatorum he suggests treatment of the expectant mother combined with, in each convenient area, a mobile unit that could be rushed to every notified case after the manner of a fire brigade.

Dr. J. A. Wilson (Glasgow) considered Mr. Harman's figures not sufficient to gauge the causes of blindness in the general population, and alluded to the results of the inquiry of the Local Government Board in Scotland. He laid stress on the factor of heredity in myopia, and on the importance of seriously grappling with the problem of venereal disease prevention.

Mr. E. H. E. Stack (Bristol) pointed out that there was at present no method available of tackling amblyopia exanopsia. The school age was too late. To get binocular vision treatment should be begun at 3 or 4 years. He recalled that Symes, of Bristol, had drawn attention to the association of phlyctenular keratitis with erythema nodosum. He considered recurrent irido-cyclitis as the most troublesome of all his cases. He agreed with Mr. Harman that goggles should be worn more often by workmen as a protection against accidents, and suggested that light celluloid ones would be more comfortable.

Mr. A. S. Percival (Newcastle-on-Tyne) gave a simple method of preventing steaming of goggles—viz., rubbing the glass well with dry soap and polishing it afterwards. He also showed the tests that he now uses for determining light-sense, and states that the condition of the macula can be satisfactorily ascertained even in cases of cataract, in which the fundus cannot be directly examined. Thus it is possible to prevent the tragedy of a successful cataract extraction, but no resulting improvement in vision owing to Tay's choroiditis or other unsuspected macular condition. An account of his demonstration is given below.

Dr. H. Scurfield (late M.O.H., Sheffield) said that he was interested in ophthalmia neonatorum prevention from the point of view of a medical officer of health. He called attention to Dr. Janet Campbell's statement that ophthalmia neonatorum occurs in nearly 1 per cent. of births in lying-in institutions run by local authorities, and he strongly recommended the appointment of an ophthalmic surgeon to every lying-in hospital. He raised the point—would early skilled treatment always prevent blindness?

Dr. G. Foggin (Newcastle) pointed out that the success of the Créde method depended on the routine disinfection of every eye, and he suggested an association of general practitioners and obstetricians pledged never to attend a birth without disinfecting the baby's eyes. He also deprecated the apathy of education authorities regarding the provision of myope classes.

Mr. W. B. Inglis Pollock (Glasgow) emphasised the amount of preventable blindness due to glaucoma being frequently wrongly diagnosed as cataract.

Mr. J. V. Paterson (Edinburgh) has seen very few cases of ophthalmia neonatorum in private practice during the past 20 years, although he has had many severe cases in hospital practice. He points out how much more serious blindness in youth is than blindness in old age. He considers many lamellar cataracts to be due to syphilis, and that Tay's choroiditis is often progressive, the macular affection later involving the periphery.

Dr. Marion Gilchrist (Glasgow) states that trachoma is very common in Glasgow, possibly owing to a large population of Polish Jews, and preventive measures are urgently required. She emphasised the importance of very careful refraction work in myopia, and said that the prevention of blindness was bound up with the prevention of venereal disease.

Mr. Harman, in replying, said that, apart from the possibility of subsequent blindness, the closing of the eyes for the first three weeks of life on account of ophthalmia neonatorum often leads to non-development of the macula and nystagmus.

Early Operation in Squint.

Mr. Pollock read a paper similar in substance to that which appeared in The Lancet of June 18th.

Prof. Wardale considered occlusion of the good eye theoretically excellent but difficult to get done in practice.

Mr. Stack thought that after occlusion for even one month it is possible to tell whether or no there will be improvement in vision. He pointed out also how a man's prospects in life are improved by straightening a squint.

Mr. Pollock, in his reply, said that he practised tenotomy only in cases of 40° to 45°, and then incompletely and far back from the cornea.

Light-Sense Test.

Mr. Percival gave a demonstration of his light-sense test. This consists of two cardboard discs 9 cm. in diameter, one surface of each being blackened.

Discussion.

Dr. **WILLIAM ROBINSON** (Sunderland) agreed with the views put forward by Prof. Donald. Many diseases previously thought to be neurotic in character—e.g., paralysis agitans—had now been proved to be organic, and it was possible that in the case of hysteria some organic change will eventually be discovered. He hoped that in the future more would be heard of the relationship between neurasthenia and the endocrine glands, and instanced the association of some nervous prostration in Addison's disease and excessive fear in hypothyroidism.

Dr. **R. H. PARAMORE** (Rugby) called attention to the influence of intra-abdominal pressure upon neurasthenia. He did not think that the latter was entirely due to a disorder of mind. Many diseases he was of opinion could only be explained mechanically and were due to diminished pressure. If the heart did not receive sufficient blood the brain would not be nourished. Treatment by rest and abdominal support, he thought, confirmed his views. Dr. Paramore asked if neurasthenia ever occurred during pregnancy. If this was the case it would negative the views he had expressed.

Dr. **HELEN BOYLE** (Brighton) thought that a great difficulty existed in actually defining neurasthenia. Dr. Buzzard's definition was perhaps too wide to be practicable, and she suggested as an alternative the two words "weak nerves." Dr. Boyle asked the opinion of the meeting on the advisability of stopping lactation in the case of a patient exhibiting nervous symptoms. As a general rule, she thought that stopping lactation rather aggravated neurasthenia. She also drew attention to recurring attacks of neurasthenia at menstrual epochs and as a post-operative sequela. Suicidal tendencies may become manifest at the menstrual periods if depression is profound.

Dr. **R. J. JOHNSTONE** (Belfast) wondered if neurasthenia was due largely to lack of occupation. It was certainly more common in the better-class type of patient and must be distinguished from the nervous exhaustion of the poorer classes. Neurasthenia is a general lowering of tone of the whole organism, especially of the neuro-muscular system. For this reason he did not quite agree with the definition which limited it entirely to the nervous system. Dr. Johnstone entered a protest against the practice of fixation of the uterus in the "nervous" type of patient. He also deprecated the custom of attributing pelvic pain so frequently to the ovaries. If the ovaries were as easily examined as the testicles he was of opinion that much less would be heard of "ovarian pain." The mental shock consequent upon an operation is a factor which must not be overlooked as a cause of neurasthenia, and patients should, he thought, be treated as invalids for six months after a severe operation. A bad confinement in the patient's sense of the term falls under the same heading, and for this reason the early use of forceps and chloroform as soon as the os is sufficiently dilated is to be recommended. Dr. Johnstone did not agree with Prof. Donald's remarks regarding the use of specula and applications to the cervix. He thought that many patients were improved, if not actually cured, by "consulting-room treatment."

Dr. **MARY STURGE** (Birmingham) recorded a case of dysmenorrhœa in which nephropexy had been performed, and in her opinion the case had been cured by the operation. Symptoms associated with retroflexion of the uterus were also, from her point of view, often cured by replacement of the uterus by means of a pessary.

Dr. **F. BELL** (Humshaugh) concurred with Dr. Johnstone in the opinion that much of the neurasthenia in women is the result of fear and pain of labour. The early use of chloroform and forceps, and the employment of scopolamine-morphine narcosis will do much to remove it. The employment of midwives, on the other hand, must tend to increase neurasthenia from this cause.

Prof. **RANKEN LYLE** (Newcastle-on-Tyne) moved a cordial vote of thanks to Prof. Donald and Dr. Farquhar Buzzard for their valuable opening papers. The object of the discussion had been to differentiate as far as possible between the physical and the nervous in gynæcology and to define a limit between operative and minor treatment. Twenty years ago minor treatment, such as cauterisation of the cervix, the introduction of pessaries, &c., had a great vogue. It was followed by an era of endless minor operations such as Alexander's operation for backward displacement of the uterus. What was required now was to adjust a proper balance between these two schools. Concerning the points raised by various speakers, he was of opinion that pain in the iliac fossæ is of intestinal origin in all cases and may be verified by the administration of a bismuth meal. In 48 hours the meal will have reached the cæcum and pain will be present. Many of the symptoms in the so-called neurotic patient were actually hallucinations or delusions and, as Dr. Buzzard had said, had a basis in fear.

Prof. **DONALD**, in reply, was in favour of stopping lactation in cases where nervous symptoms were severe. If nervous manifestations follow a surgical operation, he thought that it was usually due to an error of judgment on the part of the surgeon in performing the operation at all. Operations *may* be necessary in patients with the neurotic taint, but should be avoided if possible. With regard to iliac pain, he was of opinion that it was not intestinal in origin but due to some uterine lesion.

Dr. **BUZZARD** said that he was glad exception had been taken to his definition of neurasthenia. It was a good thing that no definition could be found, as it only tended to narrow one's outlook. What we wanted was to widen it. Dr. Sturge had met with a case of cure following nephropexy and thought it wonderful. Of course it occurred. Everybody knew it and naturally there were many such cases. At the same time it did not alter the fundamental principles which he had tried to explain.

Mr. **BECKWITH WHITEHOUSE** (Birmingham) read a paper on

CURETTAGE AND THE TREATMENT OF UTERINE HÆMORRHAGE,

in which he expressed the wish to focus attention upon a few of those conditions where hæmorrhage was an important symptom, and where some difficulty arose in assigning a cause even after curettage had been performed; the problems introduced by pregnancy opened up a field too large for the present discussion. The problems of diagnosis and treatment were greatest in cases where gross physical signs were absent, and where the type of hæmorrhage might almost be termed functional. He had made an inquiry into the subject and had published his results in 1914[1]; since that date additional facts had been forthcoming,[2] but hitherto he had had no reason to alter the opinions then expressed. He regarded the menstrual function in the human female as analogous to the pro-œstrum of animals; it consisted of the products of digestion of minute coagula formed in the endometrium and uterine cavity, and mixed with secretion of the uterine glands. Under normal conditions hæmorrhage from the menstruating endometrium was a slow ooze, there being ample time for the blood to be brought into relation with the stroma cells which contain the thrombotic elements and the secretion of the uterine glands which effected thrombolysis.

The Menstrual Theory.

There was little doubt that the ovary was the prime factor in the production of menstrual hæmorrhage. Evidence was accumulating to show that the endometrium must be regarded as a ductless gland producing its own hormone and having a specific action upon the sexual economy. It was intimately tension be up he does paracentesis and treats ulcers associated with acne rosacea with magnesium sulphate lotion.

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[1] THE LANCET, Hunterian lecture, 1914, i., 877, 951.

[2] Practitioner's Encyclopædia of Gynæcology, 1921, edited by J. S. Fairbairn, Oxford Med. Publ.

Mr. Paterson replied, pointing out that the value of paracentesis lay in its replacing stale aqueous by fresh fluid rich in antibodies. The reduction of increased tension is important, as the hard cornea sloughs more readily. He considers that antiseptics on mucous membranes are of very little use; their sole value is the reaction they produce. Ulcers with yellow, deeply infiltrated margins need powerful chemical or physical agents. He gives internal drugs very little, and is sceptical of their value, but attention to diet is very important.

Short Papers.

Dr. J. A. Wilson (Glasgow) read a paper on Auto-intoxication in Ophthalmology. Sir Arbuthnot Lane has stated that in cases of intestinal toxæmia the eyes are always affected. In all bacteriæmias the synovial membranes, serous membranes, conjunctivæ, ciliary bodies, and iris become not so much secretory as excretory structures, and long ago Mr. Sydney Stephenson had suggested that toxins were excreted by the ciliary bodies. Dr. Wilson gave several instances of eye disease due to toxæmias arising from suppuration in joints, wounds, &c., and considers most non-suppurative, post-operative failures after cataract extraction to be endogenous in origin. Loss of accommodation due to toxæmia is not uncommon. He draws attention to the importance of studying eye conditions from the point of view of general medicine and approves of Dr. Rayner Batten's suggestion that ophthalmic physicians, as well as ophthalmic surgeons, should be appointed to the staff of every eye hospital.

Mr. E. C. Moore (Gateshead) described a case of Chronic Irido-cyclitis due to Gonorrhœa.

Mr. Percival described a case of Irido-cyclitis Associated with Stricture of the Urethra, which improved within three days after the operation of internal urethrotomy. He suggested the application of radiant heat as a diagnostic test before operating on suspicious cases. Reaction, as indicated by persistent redness, probably denotes occluded sepsis. The application should be repeated until no reaction appears, and then the case is safe to operate upon.

Dr. Traquair considers the difficult cases to be not those associated with venereal disease, but those arising from obscure infections. Morax regards all post-operative infections as exogenous, and keratitis punctata always indicates the presence of micro-organisms within the eye. The fact that one eye only is affected as a rule lends further support to the theory of exogenous origin.

Dr. A. MacRae (Corbridge-on-Tyne) read a paper on Nodular Keratitis of Southern Arabia. This condition is found chiefly in males of middle age or older. A group of nodules is present in the centre of the cornea or its lower half. The nodules are transparent, glassy, covered with normal epithelium, and set close together. There is no opacity, no vascularisation of the cornea or limbus, and the other ocular tissues are healthy or, if diseased, have no causal relationship to the corneal condition. The nodules vary in size; the largest is about 1 mm. in diameter, and projects about the same amount. In a few cases the cornea may be opaque or stain faintly in between the nodules. The group covers a roughly circular or oval area, but a ring form bounding a clear or opaque centre is also found. Dr. MacRae has found this condition in Somalis, Arabs, and Sudanese, whose work is on or by the sea. He has not found it among the inhabitants of the interior. He suggests that the salt-laden winds of the low-lying coast-land is a factor in its causation. The sand is impregnated with minute particles of salt, and is always being blown about in the coastal area. He thinks this condition is found in about one or two of every 200 cases of eye disease seen. Vision is affected considerably, and is better at night.

Reviews and Notices of Books.

The Psychology of Day-dreams.

By Dr. J. Varendonck, formerly Lecturer in the Paidological Faculty of Brussels. London: George Allen and Unwin. 1921. Pp. 367. 18*s*.

Whilst serving as interpreter at the front Dr. Varendonck became acquainted with Freud's writings, and, being already a practical psychologist, turned his attention to the study of his own day-dreams. The day-dream is not, in his usage of the word, the conscious musing which we call "building castles in the air," but is rather the work of that "fore-conscious" which lies just beneath consciousness, and may influence at any moment our thoughts and actions without our being aware of the processes concerned. All transitions are found, "from the fancy of the boy, who, riding his hobby-horse, plays the part of a general, or the poet who abreacts his unhappy passions in a work of art, or changes it into requited love, to the obscure hysterical sufferer or the schizophrenic." The author has trained his power of seizing upon the last link in the day-dream, whether it occurs during distraction or between sleeping and waking, and of following back the links in the chain so as to reconstruct the whole phantasy. This, being a subjective process, can only be fully understood by experience. Dr. Varendonck, after training himself to recall and record his day-dreams, has studied them by the methods that introspective psychologists have applied to conscious mental processes.

Professor Freud, to whose "Psychopathology of every-day Life" and "Interpretation of Dreams" Dr. Varendonck makes frequent reference, writes a short introduction indicating the importance of the work and its results, though he criticises the use of the phrase "fore-conscious thinking," and would prefer to speak of "freely wandering or phantastic thinking" in contrast to the intentionally directed reflection of our conscious life.

In the first half of the book the process of fore-conscious thinking is analysed: it may proceed by recollections, in which one memory recalls another, and each memory is associated with its own affect (i.e., its own emotional tone); in this type the dream is almost entirely visual, and the dreamer is rather a passive spectator than the actor. In a second type the dream is activated by a wish, and then the pictures are used as illustrations of a theme; the affect is associated more with an idea than with a memory, so that, for example, the recollection of being in a shelled village arouses no horror, though a feeling of interest is continually maintained; the "inner self" is too busy with acting to heed the spectacle. The pictures are not pure recollections, but new creations, which, on analysis, are found to be attempts to solve a problem, each new part being a new proposition, a new question, or a new answer. This type provides examples of creative thought directed by affect. Fore-conscious or affective thinking is able to draw upon memories in a way impossible to consciousness; its inventive faculties are active, and, whereas conscious thought involves the use of energy to exclude ideas judged irrelevant or distasteful, the fore-conscious is under no such restraint, and knows no ethical standard. The author frankly illustrates this by a day-dream in which he loses both legs through a shell explosion; this he does not recognise, until a fortnight later, as being activated by a wish to return to civil life and seek a professorial chair. His psychological blindness to this interpretation, which is a fairly obvious one to the psycho-analyst, is identical with the blindness of the hysteric to his own unconscious motives even when they are obvious to the onlooker. One asks—in all seriousness and with a knowledge that the answer would be valuable—why Dr. Varendonck did not develop a hysterical paraplegia.

or purulent discharge. Glandular and atrophic endometritis, as such, did not exist. In 50 cases classed clinically as endometritis by different observers, in which he had examined the curetted material, the following results were obtained: 33 patients gave a history of menorrhagia or menostaxis; 17 gave a history of metrostaxis; 31 showed hypertrophy of endometrium, especially of the glandular elements; 12 showed atrophy of endometrium, with diminution of both glands and stroma; 7 showed marked leucocytic infiltration and plasma cells. In other words, 43 exhibited evidence of those changes which recent investigation had shown to be due to many factors other than inflammation. Endometritis of septic origin did not appear to produce uterine hæmorrhage, with one or two exceptions.

Value of Curettage.

On previous occasions he had more than once entered a protest against the practice of indiscriminate curetting for all cases of obscure uterine hæmorrhage. The operation might do good, but the chances were equally against it if the cause of bleeding was not directly dependent upon pregnancy. As a diagnostic procedure, however, curettage was of paramount importance, especially when the microscopical appearances of the endometrium were considered in relation *to the history of the case and the character of the uterine* discharge. No report was of value unless submitted by a pathologist conversant with gynæcological pathology, and especially with the endometrium in all its phases. As a therapeutic measure, curettage for uterine hæmorrhage depended upon the cause of bleeding. If the latter was due entirely to the uterus, it might be curative; if it was the result of incoördination of various hormones, curettage would be only palliative, or would fail completely. Treatment, to be effective, must depend upon accurate diagnosis. Much disappointment and failure had resulted from reliance upon empirical methods.

Discussion.

Dr. JOHNSTONE expressed his appreciation of the paper and was much interested in the facts that had been brought forward. Mr. Whitehouse had broken a lot of new ground and the paper was one which required careful consideration at leisure.

Dr. W. R. GROVE (St. Ives, Hunts) thought that Mr. Whitehouse was correct in the views that he had expressed, especially as to the rôle that calcium played in the production of normal and abnormal uterine hæmorrhage. He referred to a paper which Dr. Vines and he had read before the Section of Therapeutics upon the relationship which the calcium metabolism had to varicose ulcers. Calcium salts when administered by mouth were not absorbed and practically the whole was recoverable from the fæces. A calcium deficient may, however, be cured by the administration daily of parathyroid (Burroughs, Wellcome and Co.) in doses of one-tenth of a grain. The calcium index becomes normal in the space of one week under this treatment. Thyroid gland itself did not in his experiments appear to have any influence upon the calcium metabolism. Symptomatic hæmorrhage can frequently be relieved by increasing the coagulability of the blood by the injection of calcium chloride into the gluteal muscles in doses of one grain of the salt dissolved in 4 minims of water.

Mr. GORDON LEY was in entire agreement with what Mr. Whitehouse had said, apart from the influence that the ovary had in maintaining menstrual hæmorrhage. He knew of at least half a dozen cases where uterine bleeding had persisted after removal of both ovaries, and did not think that these cases could be explained on the basis that ovarian tissue had been left at the time of operation. He wondered what was the explanation at the root of such cases.

Prof. LYLE expressed the thanks of the Section to Mr. Whitehouse for his valuable contribution to the work of the Section. Like Dr. Johnstone, he would require time to consider all the facts that Mr. Whitehouse had brought forward upon his subject.

POSITION OF THE MEDICAL PRACTITIONER IN CASES OF PROCURED ABORTION.

Dr. JOHN CAMPBELL (Belfast) read a paper upon the position of the medical practitioner called in to attend a case of procured abortion. He said that a doctor in such cases occupies a dual rôle. He has a duty to perform as a citizen in preventing crime in the interest of the community. He also as a doctor must preserve the secrets of his patient. If a patient did not divulge all the facts to her doctor such reticence might be a grave disadvantage to her. On the other hand, it placed the doctor in a difficult position, as he had to choose between his duty as a citizen and his obligation to his patient. When an illegal operation is contemplated a doctor can do nothing, but he thus becomes unwillingly an accessory to the crime. Dr. Campbell gave details of an instance of this kind occurring in his own practice, which very forcibly had brought the matter under his notice. Frequently the performance of an illegal operation is only discovered when a patient in extremis from either hæmorrhage or sepsis divulges the true facts. Under such circumstances he thought that a doctor must honour the confidence of his patient. Should death occur the doctor's obligation ceases and he is at liberty to expose the knowledge previously placed in his hands. The conclusions at which he had arrived were that a doctor must remain silent when an illegal operation is projected or when it has been done, when such knowledge is brought to him in the course of his professional capacity. After death, on the other hand, this obligation ceases. Dr. Campbell was of opinion that in the present position of British law a grave discrepancy existed, in that the abortionist is held to be solely responsible for the crime and punished accordingly, whereas the individuals who introduce the patient for an illegal operation are generally allowed to escape "scot-free," although being the prime movers in the affair.

Dr. W. ROBINSON said that all induced abortions, whether produced by drugs or instruments, were criminal. He did not consider it a doctor's duty to inform the police when such an abortion was produced by the patient herself. In the case of a single girl where an illegal operation had been done, it was a practitioner's duty to inform the parents or a responsible individual as to what had been done. He could recall several instances, however, where information of an illegal operation had been given, in one case to the Home Office, and no steps had been taken. In the case of information demanded by one of His Majesty's judges in court he was of opinion that facts must be divulged. After all it is only custom that has prevented a medical man from not telling, just as it is custom in the case of a Roman Catholic priest. In a court of law custom falls to the ground and a doctor must tell all he knows when asked by a judge.

Dr. J. D. DAVIES (Llanelly) thought that a doctor would be fully justified in giving information of a projected illegal operation and that he is not justified in becoming an accessory to a crime.

Dr. MORRIS (Cardiff) said that the question raised was a very large one, as probably 80 per cent. of the abortions in all married women are induced and so are criminal.

Prof. LYLE differed from the writer of the paper in the views that he had expressed. The duty of a doctor above all things was to guard his own reputation. For this reason he personally would not treat or have anything to do with such a case, unless the patient gave him permission to inform the police. By this refusal suspicion can never be cast upon a medical man. He should, in other words, take every step not to be involved in cases of this type. Only too often the abortionist does the operation and then transfers the case to a doctor. The medical man really therefore works in collusion with the abortionist. In Newcastle they were in the fortunate position that the practice he had advocated was universal. The result was that the abortionist in Newcastle knew that he could never receive any help from the medical profession, and such cases were never encountered.

LA MÉDECINE.

By G. H. ROGER. Paris: Masson and Co. 1920. Pp. 400. Fr.10.

THIS study of the principles of medicine from the standpoint of general biology is opportune, for amid a multitude of detail our conception of medicine as a whole is apt to become confused. The author starts from the text that every vital manifestation, psychic or somatic, normal or pathological, is simply a reaction, immediate or delayed, provoked by an external agent. He describes the evolution of medical science as occurring in three phases—the period of clinical observation, the anatomical period, and the biological period. This is particularly well seen in the history of nervous diseases, and is illustrated by the way that "locomotor ataxy" became "tabes dorsalis" and was finally attributed to a specific parenchymatous degeneration of the lower sensory neuron. His conception of the reaction of the body to disease may be paraphrased thus—an attempt is made to find a new position of equilibrium, which, however, is an inferior one, where the vital processes work with more friction. For if the new position were a better one than that existing in health it would tend to replace it in evolution and to become the normal. Though open to criticism in points of detail, throughout the book the outlook is broad, the exposition lucid, and the grasp of general principles maintained.

X RAY DIAGNOSIS AND THERAPY.

Roentgen Interpretation. A Manual for Students and Practitioners. Second edition. By G. W. HOLMES, M.D., and H. E. RUGGLES, M.D. London: Henry Kimpton. 1921. Pp. 228. 18s.

THAT a rather specialised volume such as this should have reached a second edition within two years shows the steadily increasing desire on the part of medical men for further knowledge and understanding of X ray appearances. It was our pleasure to welcome and recommend the first edition, from which the present one differs in no essential particular. The only changes appear to be the correction of minor errors, the omission of a few illustrations, and the addition of several others. These, with some alteration and rearrangement of the text, improve the volume.

As in most radiological publications at the present time, many of the reproductions of radiographs leave something to be desired. Possibly the collotype reproduction of a smaller number of carefully selected radiographs, and the more free use of diagrams, would enhance the value of the illustrations while keeping the cost of production within practicable limits.

Dosierungstafeln für die Röntgentherapie. By FRIEDRICH VOLTZ, Dr. Phil., Physical Assistant, Radiological Section, University of Munich Gynæcological Clinic. Munich: J. F. Lehmann. 1921. Pp. 94. 5s. 7d.

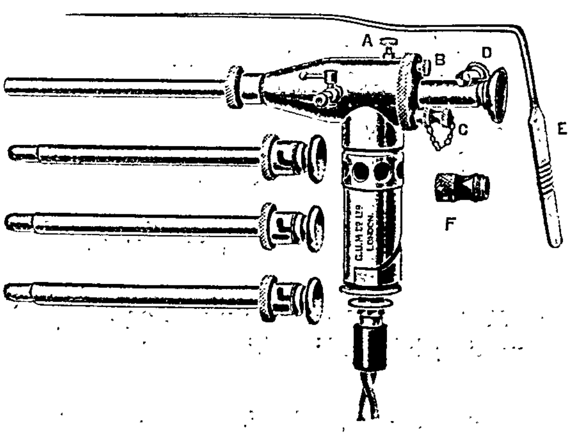
THE author has prepared these tables as a result of a large number of exact measurements and calculations, with the object of enabling a correct dosage in practical X ray work to be obtained without arduous repetition of measurements and calculations in each special case. The tables are based on the Seitz-Wintz system of biological measurement, using X rays filtered through 0·5 mm. of zinc, but they can be used with other systems having a dosage calculated on an exact physical and biological basis. The tables are divided into three groups—(1) dispersion, time and distance factors affecting intensity; (2) absorption, and field activity as influenced by the area irradiated; and (3) appropriate dosage for certain specified conditions. A knowledge of certain physical laws is taken for granted and explanations are given in a form readily understood. If these tables are studied and used by radiologists they will do much to put the subject of X ray dosage on a more scientific and satisfactory basis. A translation is apparently being prepared and will be available at an early date.

New Inventions.

A NEW AERO-URETHROSCOPE.

THIS urethroscope is an improved model of the one I introduced in 1914 (vide THE LANCET, Jan. 10th, p. 114); but the modifications now introduced are numerous and important.

The urethroscope proper consists of two tubes, fixed at right angles to each other, in the form of an inverted letter L (⅂). The vertical limb carries the lamp holder in its lower part, and a bull's eye condenser just below its junction with the horizontal limb. The lamp holder is a short cylindrical fitting, carrying the lamp on its upper and the "flex" from the battery on its lower end. It fits lightly within the vertical tube, and its motion is controlled by a stud which engages in a spiral slot cut in the wall of the tube. This allows the lamp holder to be instantaneously withdrawn for the purpose of inspecting or changing the bulb, and ample play is given for focussing the beam of light. Ventilation is provided just below the position of the condenser to enable the heat generated by the electric bulb to be quickly dissipated. The horizontal tube is tapered to its attachment with the urethral cannula, while its opposite end is closed by means of the "end-plate." It also carries the tap by which air is admitted to distend the urethra.



The end-plate is a flat plate of brass, surrounded by a deep collar, which is threaded internally, and is screwed on to an external thread cut on the horizontal tube. The inner surface of this plate carries a framework which supports the inclined mirror, while its centre is pierced by a hole 1 cm. in diameter. Into this hole the telescope (D) or the plain eye-piece (F) is screwed. The mirror is adjustable both in a vertical and in a horizontal direction; this is necessary because the filaments in the electric bulbs are rarely absolutely central. Vertical movement of the mirror is effected by turning the milled head (B), while horizontal rotation is obtained by loosening the clamping screw (A) and rotating the whole end-plate. The telescope is of the Galilean type, giving a magnification of 2½ diameters.

The operating attachment has been completely re-designed in this instrument. Below the telescope a small nipple (C) projects through the end-plate. This is covered by a perforated screw cap. Between the nipple and the cap is a rubber washer, and the tighter the cap is screwed down, the more the washer is compressed. Usually the hole in the cap is plugged by a metal pin, attached to the urethroscope by means of a chain. When operating, the pin is removed and the instrument is inserted through the hole. It passes below the mirror, the lower part of which is cut away. The shank of the instrument is grasped sufficiently tightly by the rubber washer to prevent air leaking past. This arrangement is similar to that used in catheterising cystoscopes for preventing water leakage along the side of the ureteric catheters. By this means minor operations can easily be carried out under air distension. At present I only use two instruments when operating through this urethroscope, a probe (E) and an electrolysis needle.

The urethroscope, including the telescope, has been made for me by the Genito-Urinary Manufacturing Co., 66, Margaret-street, London, W.

Wimpole-street, W. J. SWIFT JOLY, F.R.C.S. Eng.

On the white surface of one disc sectors of black 1 cm. long are marked, that nearest the centre representing in area 0·08 of the inner ring, the next 0·04 of the intermediate ring, and the outer 0·02 of the outer ring. On rotating the disc on a dissecting needle, three grey rings are seen on a white ground. If the patient sees all three rings his L.D. must be at least 0·02. On the blackened surface there are three similar white sectors, so that on rotation three dark-grey rings are seen. If the patient sees all three his L.M. must be at least 0·02. On the other cardboard disc the sectors are smaller, so that, when rotated, the inner ring denotes an L.D. of 1/50, the intermediate 1/100, and the outer 1/200.

THURSDAY, JULY 21ST.

Treatment of Corneal Ulcers.

The discussion was opened by Mr. PATERSON with some preliminary remarks on the structure and nutrition of the cornea and their influence on the peculiarities of corneal ulceration, after which he considered ulcers under two headings: (*a*) those in which the cause comes from without; (*b*) ulcers in which the state of the patient's health is the main factor. Taking the hypopyon ulcer as a type of class (*a*), he insisted upon the importance of early hospital treatment. The state of the tear passages should be carefully investigated and, in elderly patients particularly, the intra-ocular tension. Early cases readily respond to neutral saline bathing, atropine drops twice a day, and a silver salt such as argyrol, 20 per cent., thrice a day. The eye is never covered with any sort of dressing or shade at this stage, but a little sterile vaseline is applied to the lid margins. If the ulcer be progressing at the end of 24 to 48 hours it is touched with pure carbolic, well rubbed into the spreading margin, or even cauterised if it looks unduly threatening. Mr. Paterson generally uses the hand cautery and makes every application under a stereoscopic magnifier. If the ulcer be spreading actively, and associated with hypopyon when seen for the first time, it is immediately cauterised and the hypopyon afterwards evacuated by paracentesis from below. Mr. Paterson considers the Saemisch section very effective when the cautery has failed to check the spread of the ulcer, particularly in cases of small ulcers with a very purulent infiltration extending deeply into the corneal substance. He further often combines cauterisation with heat obtained by holding the cautery very close to less infiltrated parts of the ulcer. A small proportion of ulcers, generally found in old and somewhat feeble patients, apparently resist all treatment. On the whole, Mr. Paterson prefers the Saemisch section, though it, too, may fail. In Edinburgh it is the custom to leave eyes uncovered until the ulcer clears and re-infection is no longer to be feared. Then a pressure bandage may be useful, especially in cases of perforation with leakage from the anterior chamber. The chief complication in cases where there has been widespread corneal destruction is increased tension and staphyloma. Iridectomy is only of moderate value in reducing the tension in these cases, but trephining has given better results. In hypopyon ulcer in children Mr. Paterson has never used the cautery or carbolic. Atropine and the good hygiene and diet of a hospital ward are usually sufficient.

With regard to class (*b*), Mr. Paterson thinks strumous ulcer of the cornea much less common now than 20 years ago, and only a small fraction are of a really severe type. If the symptoms be acute the children are kept in bed, given a simple purgative, and put on small doses of grey powder or calomel. The chief error of diet seems to be an excess of starchy foods. Atropine is used locally and later in combination with dilute yellow oxide of mercury ointment. He seldom has recourse to tuberculin or other vaccine treatment, but has found it valuable in obstinate cases. Very often surgical treatment of tonsils or tuberculous glands is necessary. Herpetic ulcer of the cornea is treated by the application of absolute alcohol, followed by atropine and a bandage. This treatment is satisfactory also in the case of dendriform ulcer, but should always be made in a fairly drastic fashion. Mooren's ulcer often resists treatment of any sort, and the same is also true of the superficial recurring ulcer associated with rosacea of the face.

Dr. H. M. TRAQUAIR (Edinburgh), who has had considerable experience in the treatment of corneal conditions by ionisation, described the methods he has used. With a galvanometer current of ½ to 1 milliamperes and solid zinc electrodes he has had good results in the milder forms of severe ulceration, but in the very severe cases his results were not better than by other means. He emphasised the importance of fresh air and sunlight in the treatment of the strumous ulcers of children.

Mr. PERCIVAL spoke of the value of quinine drops in hypopyon ulcer. He uses a solution of the bihydrochloride of quinine (gr. viii.–℥i.), usually combined with atropine. The quinine treatment should be continued for at least one week after the cessation of the hypopyon. He pointed out that quinine solution goes through Descemet's membrane and quinine fluorescence can be demonstrated in the anterior chamber. He considers that there is danger of infecting a sterile hypopyon by doing a paracentesis where there has been no perforation.

Dr. D. M. MACKAY (Hull) thought carbolic had no bad permanent effect on healthy cornea, and that it was preferable to the cautery. He uses magnesium sulphate in saturated solution as a fomentation, and is satisfied with the results.

Mr. HARMAN was struck with the recommendation for open treatment, and quoted some Dutch experiments which went to show that the reparative powers of the avascular cornea are at their maximum under the influence of warmth. He thinks silver weakens tissue resistance, and uses hydrogen peroxide. He regards the actual cautery as too destructive, and uses instead phenol-camphor (phenol and camphor equal parts). He uses the cautery, however, to destroy the leash of vessels at the limbus in phlyctenular ulceration—a modified peritomy. He pointed out that Guthrie of Liverpool originated section of the ulcer now associated with the name of Saemisch.

Dr. N. B. B. FLEMING (London) recommended in sloughy ulcers five minutes' immersion in an eye-bath of magnesium sulphate lotion, and the subconjunctival injection of colloidal iodine in wound infections where the ulcer is situated near the limbus.

Mr. T. L. DE COURCY (Liverpool) spoke of the value of stock vaccines of conjunctival organisms in marasmic children. The cautery used close to the cornea, but not in contact with it, gave good results. Dionine, up to 5 per cent., combined with atropine, was useful; the results depend on the amount of reaction.

Mr. J. HERN (Darlington) referred to the treatment of a chronic form of ulcer with a clear base, common in middle age and tending to recur each spring after the depression of winter. He stitches up the lids and keeps the patient in bed. He has a high opinion of the value of the Saemisch section and uses 25 per cent. argyrol in septic cases.

Prof. WARDALE thought that the only virtue argyrol had was that it stimulates the patient or the patient's mother to wash out the eye thoroughly in order to remove all traces of it. Thorough irrigation of the eye is important. He uses a flat-pointed cautery to scorch the ulcer without touching it. To counteract photophobia in children he bandages the good eye, and in phlyctenular keratitis uses dionine in pure powder.

Mr. STACK stated that one group of ulcers gets well in 24 hours after the commencement of atropine treatment; another group, generally with a constitutional basis, is not affected.

Mr. POLLOCK also scorches the ulcer, and thinks paracentesis preferable to the Saemisch section. He lays stress on the importance of keeping down tension; he clears out the teeth of adults if necessary, and stops sweets in children.

Mr. H. P. BENNETT (Newcastle-on-Tyne) never ties up the eye, and uses hot bathing for 20 minutes every two hours and even at night, if necessary. If the

Ophthalmia Neonatorum.

In opening a discussion on the Causes and Prevention of Blindness at the Ophthalmological Section of the Newcastle meeting, Mr. N. Bishop Harman made some trenchant remarks on the prevalence of ophthalmia neonatorum. We entirely agree with him that more might be done to prevent damage to sight from this cause in spite of the optimism of the Ministry of Health, as shown in a recently issued report of the Principal Medical Officer:—

> "The good results reported, the large proportion of total cures (due in part to the number of slight or doubtful cases notified), the almost complete absence of total blindness, and the relatively few cases of damaged vision, speak well for the care with which the disease is treated and nursed."

The reference is to the reports of health officers for the year 1919, but the reports for 1920 tell a different story. Fortunately, if we may say so, the blinded infants in many cases do not survive. Even should local authorities be too optimistic, there is an army of child welfare workers in the field to remind them of the real position. And it may be added that the Second English-Speaking Conference on Child Welfare, held in London in July, unanimously passed a resolution drawing the attention of the Ministry of Health to the inadequate methods of prevention and treatment at present prevailing.

There are only three possible lines of defence: (1) treatment of the vaginal disease of the mother; (2) treatment of the eyes of the infant at birth; (3) early skilled treatment of the disease. Mr. Harman dealt with the first and the third of these, saying: "Prevention of the disease can be secured by the treatment of the vaginal disease of the expectant mother: this is the one and only certain means of prevention and it is within our power to accomplish this desirable end." It is no easy matter, however, to get hold of the expectant mothers for treatment; it may become easier as the work of antenatal clinics grows. Most ophthalmic surgeons pin their faith to the treatment of the infant's eyes at birth with a colloidal silver solution. At the Conference already referred to, Dr. Janet Campbell, senior medical officer for child welfare of the Ministry, gave figures for 50 unselected maternity homes which showed 74 cases of ophthalmia among about 9000 births, a highly unsatisfactory percentage. American representatives stated that systematic treatment of the infant's eyes had, practically speaking, abolished ophthalmia in certain districts of the United States, and it would be well that the procedure adopted should be made known in plain language and promptly. Mr. Harman's remarks on the third line of defence deserve special attention. "What is now needed," he said, "is the establishment of such medical arrangements that diagnosis and treatment can be made as swiftly as the fire-brigade can be brought in when there is an outbreak of fire in our homes." He would like to see established in the centre of every convenient area an ophthalmia unit. Prompt removal to hospital of mother and child is already a fact in Liverpool, while in London the benefits of hospital treatment are almost nullified by tardiness of removal.

This question of delay is crucial. Medical officers of health and ophthalmic surgeons know full well that there is frequent failure to secure skilled treatment at once. The case often reaches the ophthalmic surgeon after a spell of inefficient treatment during which irreparable damage to the eye has been done. The birth attendant may see so little of these cases as not to notice the danger signal or to recognise the need for a "fire-brigade." To some extent the medical schools and hospitals are at fault. The Ophthalmological Section at Newcastle passed a resolution in favour of the appointment of ophthalmic surgeons to all lying-in hospitals. If this suggestion be acted upon a great step forward will have been taken in the education of medical students and midwives on the serious nature of this disease; the means to be adopted for its prevention and the need for its prompt treatment in the event of a breakdown of the first two lines of defence will become apparent.

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The Combined Treatment of Malignant Disease.

The Council of the British Association for the Advancement of Radiology and Physiotherapy, of which Dr. Robert Knox is president, Dr. Alastair MacGregor and Dr. F. Hernaman-Johnson joint hon. secretaries, has taken up the reconsideration of the situation in regard to the treatment of internal cancer, suggested by a leading article in The Lancet of July 2nd. Earlier in the year we drew attention to the remarkable work on deep X ray treatment of uterine carcinoma at the Frauenklinik in Erlangen, work which for one reason or another had not attracted in this country the attention which it merited. Admittedly no new principle was involved, but Prof. L. Seitz and Prof. H. Wintz had been successful in applying to the diseased uterus quantities of X rays of a higher degree of penetration than those hitherto employed and in devising a careful system of measuring the dosage. The Council of the B.A.A.R.P. is in full agreement with us that this constitutes a real contribution to progress on the part of the Erlangen school.

But whilst thus agreeing with our statement of the merits of the Erlangen technique, the Association takes us to task for what it regards as an ill-advised pronouncement and disagrees with emphasis with the conclusions there expressed. "The time has *not* yet come," so runs the statement issued to the lay press, "when radiotherapy may be regarded as the first choice in the treatment of the majority of cases of cancer." We never said that it had, as any careful reader of the article in question may see for himself. Assuming the claims for the irradiation of malignant cases to be substantiated, the advantages to be gained will be readily appreciated. Cases would come under observation at an earlier stage. These were the actual words we used, and the statistics relating to the treatment of cancer by excision, whether or not supplemented by radiation, are not so rosy as to exclude the need for carefully exploring other paths. In a survey of these statistics given in the current number of *Medical Science*, over the initials of Mr. W. G. Spencer and Dr. C. Lillingston, it is stated that excision in cancer of the breast fails to cure in more than half the cases, while the plea that failure is attributable to the excision being done too late is suggested to be untenable in many cases. Statistical evidence in regard to the value of radiation is singularly wanting. Writing in 1919, Mr. Sampson Handley admitted that for the 14 preceding years every case of breast cancer upon which he had operated had received a prophylactic course of X rays, and he presumed that the rays were calculated to arrest the permeation of the disease through lymphatic

Affective thinking is incoherent and uncritical and often loses its end; its defects can be noted in some orators, and, the author might have added, in those psychasthenics—typified by Mrs. Nickleby—who lose conscious control of the verbal stream. In directed thinking we may commit mistakes, but they are criticised and corrected with a conscious aim in view. Distraction results when the fore-conscious wish is censored; but if the fore-conscious wish and the conscious aim are in agreement then affective and directed thinking are united for the fulfilment of the wish. We become aware of the end-result, but not of the preceding chain, and this end-result we call intuition or inspiration. Memory can be considered apart from awareness, and this allows the author to attribute memory to creatures near the bottom of the animal scale; there the affect rules, but in man the intellectual aspect has been so developed that we are able to act and think voluntarily by control of the affect. The primitive process, however, still goes on within us, and is manifested through absent-mindedness and distraction, in errors and mistakes of our daily life, as well as in hysteria and neuroses; inspiration borrows its mechanisms and it explains our behaviour whenever emotions prove stronger than our will.

It is difficult to estimate the amount of originality in this work; some of the material is a presentation of old facts under a new aspect, and some consists of re-statements of old observations. Dr. Varendonck, in assuming that "perception" has hitherto been used only in terms of consciousness, seems unaware that psycho-analysts have for long regarded the fore-conscious as having the power to perceive and retain on its own account. In a modest introduction the author says that he addresses himself to English readers because they, of all nations, show the greatest interest in psycho-analysis. He forgoes any literary claims, but he may be congratulated on his mastery of idiom and meaning; his sentences, however, are often awkward and involved, and a free excision of redundant phrases would help the reader. Other criticisms might be made, but the book is a record of spade-work carried out with honesty and insight, and should rank as an important contribution to psycho-analytical literature.

HUMAN PHYSIOLOGY.

By Prof. LUIGI LUCIANI, Director of the Physiological Institute of the Royal University of Rome. With a Preface by Prof. J. N. LANGLEY, F.R.S. Edited by M. S. PEMBREY, M.A., M.D., Professor of Physiology, University of London. Vol. V. London: Macmillan and Co., Ltd. Pp. 422. 30*s*.

THIS is the last and concluding volume of Luciani's *magnum opus* "Fisilogia dell' Uomo," the first volume of which in English garb appeared in 1911. The first volume of the second Italian edition was published in 1904. This volume deals with metabolism, temperature, reproduction, and so forth. Prof. Luciani also enters the no-man's land between physiology, psychology, and philosophy in the stages of life and death, dealing with maturity, virility, senility, the critical age, personality in the aged, and the author's theory of death. He distinguishes between the *primum moriens* and the *ultimum moriens*—the latter phrase aptly used by Oliver Wendell Holmes in referring to the decayed and decaying tall hat, when tall hats were the fashion, as the "*ultimum moriens* of human respectability." The last chapter of nearly 70 pages on "the human races" is really an appendix, written by Luciani's assistant, Prof. S. Baglioni, and deals with ethnology and anthropology in relation to physiology. In the chapter on "Exchange of Material," besides giving much more than the usual information, Prof. Luciani adds an account of "authenticated fasts."[1] Of vitamins in the Italian text there is no mention, but the British editor adds a note referring the reader to the special report (No. 38) on this subject issued by the Medical Research Council in 1919.

Prof. Luciani discusses in some detail the thermic economy of the organism and human nutrition. The generative system of the female, pregnancy, parturition, and puerperium, are dealt with at length on familiar lines, but in the section dealing with male organs no account is given of any work done since 1910, when F. H. A. Marshall's "The Physiology of Reproduction" was published. The observation on the condition of the epiphyseal cartilages in a castrated man as shown by the X rays ascribed to Lannois and Roy should read Launois and Roy, and the term "nucleus of Blecard" is unfamiliar to us. In dealing with old age, while mentioning Aristotle, Cicero, Camerario, Bacon, Charcot and several others, the work of Humphry of Cambridge seems to have escaped the author's wide outlook.

Throughout the work is written in the fascinating style of which Luciani was a master, and is illuminated by copious references to general literature. We are indebted to the editor, translator, and publisher for the opportunity of studying human physiology as expounded by one of its most eloquent and successful advocates, even though we had to wait a decade between the issue of the first and last volume.

REGIONAL ANATOMY.

By T. B. JOHNSTON, M.B., Ch.B. Students' Synopsis Series. London: J. and A. Churchill. 1921. Pp. 438. 12*s*. 6*d*.

Prof. Johnston has provided, in this little book, an excellent member of this well-known series of students' manuals. It is intended for use with the dissected parts, the object being to refresh the reader's memory rather than to fill him up with a mass of "examination" detail. Thus the volume cannot justly be described as a "cram-book." The descriptions are clear and good, if short in some cases. Prof. Johnston points out that he is writing for the average student, who will become the average practitioner, and therefore leaves out unnecessary details. We might disagree with him as to which details were unnecessary, but few would dispute the wisdom of including in this class the fissures of the cerebellum; we are therefore glad to see that, in the short and clear account of the central nervous system, no more space than is absolutely necessary is taken up by this at present sterile subject.

DISEASES OF THE LUNGS.

Lehrbuch der Lungenkrankheiten. Second edition. By ADOLF BACMEISTER, *Professor of Medicine at the University of Freiburg i.B., Superintendent of St. Blasien Sanatorium in the Black Forest.* Leipzig: George Thieme. 1921. With 103 illustrations and 3 coloured plates. Pp. 339.

Prof. Bacmeister's book on diseases of the lungs begins with an account of the anatomy and physiology of the chest, and the various methods for its examination. A single chapter is devoted to tracheitis, bronchitis, and broncho-pneumonia, and another to chronic bronchitis, bronchiectasis, and emphysema. Pulmonary tuberculosis is allotted three long chapters, and such important diseases as asthma and pneumonia are given the ample space they deserve. The author has arranged his material in so orderly a fashion that in spite of the size of his book it is easy to find any particular information that may be required. Thus the reader interested in little but the therapeutic aspects of disease will find all the information on this score tidily appended to each chapter.

Rightly or wrongly, German works of science labour under a reputation for turgidity and redundance. Prof. Bacmeister's book is a pleasure to read, not only on account of its intrinsic merits, but also because of his crisp and incisive language. Not a word is wasted, and yet sentence follows sentence with an easy fluency seldom found united with parsimony of words.

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[1] THE LANCET, 1888, i., 513.

Annotations.

"Ne quid nimis."

THE OPIUM TRAFFIC AND THE LEAGUE OF NATIONS.

IN THE LANCET of April 30th reference was made to the position in which the effectuation of the Opium Convention of 1912 then stood, both in regard to our own national undertaking in the matter of legislation and also, what is not less essential, the international aspect of the question. The regulations made by the Home Office under the Dangerous Drugs Act, 1920, as now revised, came into force on Sept. 1st. The report of the Advisory Committee of the League of Nations which met in May has been approved by the Council of that body, and will be laid before the Assembly which meets at Geneva this month. The official *Monthly Summary of the League of Nations*, issued from Geneva on June 1st, purported to give an account of the work so far accomplished towards putting the Opium Convention into force. It is there naively remarked: "Thus it seemed to the Committee that the Hague Convention had not been put into practice everywhere, and that, moreover, its recent application did not permit serious conclusions to be drawn as to its efficacy. While certain Governments had enacted rigorous measures of control, others had not yet adopted the Hague Convention." A questionnaire has been circulated to all the Powers with a view to ascertain what really has been done towards restricting the use and stopping the abuse of opium, morphia, cocaine, and other dangerous drugs. The replies, when received, will probably show that the statement that the Convention "had not been put into practice everywhere" might more correctly have been rendered, "the Convention has not been effectively put in force anywhere." We read of increase of acreage under poppy cultivation in recent years in China and India; of tons of British-made morphia being exported to the Far East; of the wholesale smuggling of morphia from Japan into China, as well as the manufacture of large quantities of morphia in Japan from Indian, Korean, and Japanese opium.

In THE LANCET of May 29th, 1920, we urged the need for "control at the source of the fabrication of these drugs," and pointed out that "over-production must inevitably lead to illicit consumption with its attendant social and moral degradation." We are accordingly glad to learn from the *Monthly Summary* for July that the Council has taken a step in advance of the Advisory Committee's report towards reducing production of these drugs to what is required for "strictly medicinal and scientific purposes," and to this end has invited the Committee to determine what amounts of opium, &c., are required for these legitimate uses. We further note in the August *Monthly Summary* that the delegate of India on the Advisory Committee seems to interpret the Convention as placing no restrictions on raw and "prepared" opium like those placed upon traffic in morphia, &c. He admits that the eventual "suppression" of the fabrication of and traffic in opium "prepared" for smoking was contemplated by the Convention, and that "medicinal opium" is to be restricted to "medical and legitimate purposes." The same restriction is apparently to apply to all preparations of opium containing more than 0·2 per cent. of morphia. It is not clear, therefore, whether the contention really is that, notwithstanding these restrictions on the derivatives of opium, no restriction is to be applied to the cultivation of the poppy in India or the raising from it of "raw opium."

On Nov. 25th, 1920, it was stated in the House of Commons that "exports of opium, morphia, and cocaine, and their preparations" to certain countries were only licensed "on production of a certificate signed on behalf of the Government concerned that the consignment is required exclusively for legitimate scientific or medical purposes," and that the extension of similar procedure to other countries was being negotiated. It will be interesting to know how far this system is now in effective operation, whether it applies to exports of opium from India, and what results have been achieved as indicated by the figures of exports and imports of these dangerous drugs compiled by the Board of Trade. Meanwhile it is satisfactory to learn that under the Postal Union Convention, recently signed at Madrid, it is prohibited to send by letter mails any of the narcotic drugs in question; and the parties to the Convention have bound themselves to propose to their respective legislatures to enact measures to inflict punishments for infringement of this regulation.

FIXATION OF COMPLEMENT IN TUBERCULOSIS.

A HANDY test for active tubercle would be a great boon to medicine and it is largely for this reason that, of the many interesting questions which centre around fixation of complement in tuberculosis, those which relate to its behaviour in diseases other than tuberculosis are the most practical. Before the war Besredka and Inman showed that with the antigen prepared by the former cross-fixation with syphilitic serums was liable to occur. Subsequent researches have now enlarged the issue and two separate questions are, in reality, involved: (1) Will the serums of patients suffering from diseases other than tuberculosis give positive reactions, and if so, what diseases? (2) Will other antigens give a positive reaction with tuberculous serums, and if so, what antigens? These questions have arisen in the past with regard to the Wassermann reaction and, inasmuch as bacterial infections are commoner in this country than are protozoal, they may be more difficult to answer in tubercle than in syphilis. Fixation in diseases other than tuberculosis has engaged particular attention in America, where large series of cases have been dealt with; and now the second question, that of the non-tuberculous antigen, is being raised. Urbain and Fried,[1] working in Besredka's laboratory, took known tuberculous serums and tested them against various bacillary antigens, including streptococcus, staphylococcus, pneumococcus, *B. anthracis*, *B. subtilis*, *B. diphtheriæ*, and members of the enterica group. One serum, that of an immunised horse giving a positive reaction with Besredka's antigen, gave uniformly negative results with these various bacillary antigens, whilst the serums from 20 tuberculous patients gave positive results in three instances with the antigen of *B. diphtheriæ* and in two instances with that of *B. subtilis*. In the next group Urbain and Fried used Besredka's tuberculous antigen and antiserums of horses immunised against various bacterial diseases, such as plague, tetanus, anthrax, and diphtheria. Antidiphtheritic serum was the only one which gave a positive result. In the third group Besredka's antigen was tested against human serums from patients suffering from various bacterial (enteric, erysipelas, osteomyelitis, diphtheria, &c.) and non-bacterial diseases (carcinoma, sarcoma, mental diseases, &c.). Significantly enough, the only serums to give positives in this third group were those of four cases of diphtheria, all of whom had recently had antidiphtheritic serum administered. In all instances, however, the positive results obtained do not appear to have been so strongly positive as the true fixation result with a tuberculous antigen and tuberculous antibody.

We print in our present issue a further report to the Medical Research Council by Dr. A. Lisle Punch, in which he records the results of complement-fixation tests made with the special technique described by him in THE LANCET last year (1920, ii., 647).

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[1] Annales de l'Institut Pasteur, 1921, xxxv., 294.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 3, 1921.

Industrial Medicine.

During the last 150 years universal changes in our mode of living have been the direct outcome of inventions and of their application in industries. Meanwhile, the environment of those industrially employed has undergone modification; and the study of how the human frame reacts to these changes of environment has arrived. This study, which constitutes industrial medicine, is entrancing, because industry frequently presents an unintended human experiment upon a large scale which can be seen and observed. Contrasts abound: from the hot humid atmosphere of tin-mines to the dry cold of food-storage chambers; from radiant heat emanating from molten metal, with its tendency to cause posterior cortical cataract, to the intense darkness of coal-mines with its attendant nystagmus; from the overcrowded workshop of the tailor, who experiences an excess of phthisis, to the open-air life of the farm labourer; from exaggerated atmospheric pressures, with risk of caisson disease if decompression is too rapid, to diminished atmospheric pressures in aviation, with cardiac, respiratory, and mental disturbances. Here the hearing of a boiler-maker is impaired; there, as in writer's cramp, neuro-muscular coördination has broken down; or some mason working in sandstone succumbs to tuberculous silicosis, while his fellow-worker in limestone escapes unaffected. Or maybe it is the skin which fails to withstand the action of fat solvents or of dehydrating substances; or the liver which undergoes atrophy under the influence of tetrachlorethane or trinitrotoluene. Ramazzini, the Paduan, were he still alive, would revel in the opportunities modern occupations present of investigating the occurrence and elucidating the causation of disease. Sir Arbuthnot Lane, discussing recently the influence exerted by our surroundings, maintained that the bony system of some labourers, in response to the needs of their occupations, differs more from the normal than does the normal from the skeleton of the higher ape. If physical strain can in this way modify the skeleton, exposure to the widely varying conditions enumerated above must assuredly modify the function of the more easily influenced organs of the body.

Considerations such as these more than justify the existence of a special section of the British Medical Association devoted to Industrial Hygiene. This section does not come together annually, but seized the opportunity of holding a meeting when the Association was gathered together in the industrial centre of Newcastle, and we report the consequent proceedings at length in our present issue. The President, Sir Thomas Oliver, whose activities in the field of occupational diseases have earned world-wide recognition, reviewed a century of legislation aimed at ameliorating the health of workers. He pointed to the wholesale reduction in lead poisoning and to the abolition of phosphorus necrosis. He called for further research into such subjects as industrial fatigue and its relation to ill-health, and into the chronic effects of carbon monoxide upon which he has himself already embarked. He stressed the need for the general practitioner to acquaint himself with industrial hygiene on account of his duties in connexion with compensation cases and to enable him to advise his patients and also their employers as to the effect of occupation upon the health of the worker. A notable point in the proceedings was the unanimity expressed and reiterated by Sir T. Oliver, Capt. W. E. Elliot, M.P., Prof. E. L. Collis, and Sir Kenneth Goadby in their papers, and by those who took part in the discussions, on the need for industrial convalescence. All agreed that the work carried out by the Ministry of Pensions on behalf of those incapacitated in the field of war should be continued for those disabled in the field of industry. Prof. Collis estimated that at any time there must be 58,000 limbless civilians needing occupational re-education; while a far larger number, still possessing some earning capacity, are precluded from full-time employment on account of different forms of ill-health and disability. These workers are for the most part ready to work so far as in them lies, and would willingly escape from the industrial scrap-heap to which they are relegated; they feel the ignominy of being a burden upon others and often upon the rates.

Prof. Collis presented, in the form of debit and credit, the value of medical services to industry. His argument is conclusive; but we suspect that he presents the case in this way rather to attract attention than with implicit reliance upon "the few short sums in arithmetic" which are given. The point is clear that employers of labour must not look upon their contributions to national health insurance as other than an expensive effort at patching up those who have broken down in health, and in no way as relieving them from the more directly paying proposition of maintaining in health and efficiency those upon whose productivity they rely. Sir Kenneth Goadby carried the discussion into one particular realm of industrial medicine, which is at present provoking considerable controversy—viz., the question as to whether the continued use of lead compounds in paints should be prohibited. Apart from its controversial aspect, his contribution is of value in disclosing the important part played by the volatile constituents of paints in causing ill-health among painters. The argument is probably sound that, if some non-poisonous material were substituted for lead compounds as the body of paints, this form of ill-health would persist; but Sir Kenneth Goadby does not consider the possibility of small doses of lead accentuating the action of these volatile constituents. There is a further point; if white lead were no longer used in paints, the manufacture of white lead itself would almost cease with its attendant dangers, and there would be some reduction in the amount of lead smelted. The consequent reduction in risk of plumbism in these industries, quite apart from the effect upon painters, is a matter of moment. Occupational hygiene will be benefited by the reliance of industrial managers upon expert statistical and medical advice. Few can doubt that health and contentment are closely correlated and that labour unrest is but the psychological expression of abnormal physiological functions. When once captains of industry perceive that the medical profession holds the key to labour unrest a demand for its services must arise which there are far too few trained to-day to meet.

in. At the height of the disease the Eustachian tubes were impermeable even on vigorous inflation. It was a remarkable fact that none of the patients had recently suffered from a cold in the head or a sore throat. Examination in some cases showed a slight chronic rhinitis, but no signs of acute inflammation or much swelling of the mucous membrane. On the other hand, purulent catarrh, with or without swelling of the adenoid tissue in the nasopharynx, as well as redness and swelling of the opening of the Eustachian tube, were frequently observed. Dr. Amersbach seems to have been discouraged from making any bacteriological examination by the fact that investigations of the kind undertaken by ophthalmologists on swimming-bath conjunctivitis had been inconclusive. He suggests that the involvement of the Eustachian tubes in swimming-bath tubal catarrh may occur in one of two ways—namely, either by infected lacrymal secretion reaching the tubes as the result of blowing the nose or swallowing, or directly by infection of the pharynx by the bath water. The affection is most frequent in young persons, but older individuals are not immune, as three of the cases were over 36 years of age. Treatment consisted in the application of the usual methods for dealing with catarrh of the Eustachian tubes.

THE VISCERAL SENSORY NERVOUS SYSTEM.

MORE attention has been given by investigators to the efferent nerve paths through which impulses reach the viscera from the central nervous system than to the afferent sensory paths from viscera, and to the consequent remarkable reflex effects that one viscus may exert on one or more of the other visceral organs. A recent systematic study[1] from the University of Chicago fills in this gap to some extent. In it A. J. Carlson and A. B. Luckhardt record a series of observations on several classes of vertebrates, beginning with amphibians and reptiles. Starting from the fact that in man strong contractions of the empty stomach can produce reflex effects on the cardiac and vasomotor centres, the authors propose to determine the effects which the afferent visceral system exerts on the skeletal muscles, the respiratory, intestinal, and urinary systems, and on the heart and blood-vessels. In frogs, *Rana pipiens* and *catesbiana*, tonus is well marked, and under certain circumstances rhythmical contractions may occur, and even the entire lung be emptied of its air. Section of the sympathetic nerve alone has no effect on the lung tonus, but section of the vagus caused sustained hypertonus of the corresponding lung, and on electrical stimulation of the peripheral end of the vagus the tonus is inhibited and the lung returns temporarily to the normal condition, the rhythmical contractions disappearing. The authors conclude that in the frog the inhibitory fibres in the pulmonary branches of the vagi are in continuous or tonic activity, and thus limit the peripheral motor lung automatism; for, if these influences are cut off, the lung falls into a state of sustained or continued tetanus or hypertonus. Stimuli of all kinds influence this pulmonary mechanism; reflex contraction of the lung can be brought about by stimulation of the skin of the upper jaw, slight mechanical stimulation of the anterior nares, the urinary bladder and cloaca, by electrical stimulation of the urinary bladder, mesentery, œsophagus, pyloric end of the stomach (but not the fundus end), and duodenum, and of the central end of the brachial nerve; indeed, stimulation of almost every sensory nerve is followed by contraction of the lungs. After section of the vagi nicotine causes the lung tonus to disappear for a moment owing to primary stimulation of the inhibitory mechanism. Large doses of nicotine, however, cause contraction, probably due to direct muscular stimulation. Atropin even in large doses scarcely, if at all, paralyses the inhibitory fibres, adrenalin at once arrests the rapid rhythmical contractions and the increased tonus.

The lung automatism and reflexes were then studied in the salamanders—Necturus and Axolotl. These, besides larger gills—their chief respiratory organs—possess two long muscular sacs or "lungs" which communicate by means of a small aperture with the pharynx. The results obtained correspond closely to those obtained with the frog. It is known that the lungs of reptiles respond to direct stimulation and that the lung musculature is under the influence of the vagus; indeed, one vagus may, in some species, influence both lungs, and rhythmical contractions of the lung have been observed as long as the vagi and bulb were intact, while in turtles the isolated lung may exhibit rhythmical activity. The authors investigated two varieties of turtles and one species of snake. Section of the vagus at once abolishes the normal contractions of the lung on the same side, but those on the opposite lung only temporarily, due to the fact that the connexion with the bulb on that side is still maintained. Strong stimulation of the peripheral end of the vagus in turtles causes contraction or even complete tetanus. The lung-vagus contains both motor and inhibitory fibres, so that stimuli affecting the lung may cause one or other effect. Stimulation of peripheral sensory nerves of the skin, intestinal canal, and urogenital system always causes increase, never inhibition, of the contractions of the lung, while the skeletal musculature involved in the respiratory act is often inhibited by the same stimuli. Much the same results were obtained in the snake investigated—*Eutenia elegans.*

Taken broadly, the influence of the central nervous system on the reptilian lung is chiefly motor, in the frog chiefly inhibitory, but also motor, whilst in the salamander it is exclusively inhibitory. In frogs and salamanders there is such a well-developed automatism of the lung that when the central inhibition is suppressed (vagotomy or destruction of the bulb) the lungs pass into a tetanic condition, while in reptiles lung automatism primarily depends on the motor impulses passing in the vagus, so that after decerebration or vagotomy the lungs are flaccid and quiet. The methods used are fully described in the text, and we look forward with interest to the results obtained in other classes of vertebrates.

FAMINE IN RUSSIA: AN INTERNATIONAL CONFERENCE.

Mr. Lloyd George described the famine in Russia as the most terrible visitation that had afflicted Europe for centuries. At the conference called by the joint council of the International Red Cross and the League of Red Cross Societies, which met in Geneva on August 15th and 16th, twenty governments and Red Cross societies were represented, in addition to several international bodies, leading relief agencies, such as the League of Nations, the International Labour Bureau, the Friends' War Victims and Relief Committee, the Imperial War Relief Fund, the Save the Children Fund, and the Parliamentary Relief Committee. The chair was taken by Mr. Gustave Ador, who was supported by Sir Claude Hill, the acting-director of the League of Red Cross Societies. The most interesting speeches came from the delegates representing the famine stricken countries. Mr. Chavichvily, the delegate of the Georgian Red Cross, painted a lurid picture of the sufferings of his country since the Bolshevist invasion. A population of over three millions is practically without food, people are dying in the street, and there cannot be found the means to bury all the dead. Suicide and epidemic disease swell the total of these. Among the first victims of cholera must be counted the Catholicos, the head of the Georgian Church. Dr. Bagotzky, the representative of the Soviet Red Cross at Berne, was present on the second day and transmitted a report through Mr. Paul Birukoff, at one time secretary of Leo Tolstoy and his official biographer, who represented at the conference the Pan-Russian spaces in areas immediately outside that of the excision, but up to the present time no statistical publication of results obtained in this country and extending over years is available. F. BLUMENTHAL's analysis of results at the Charité in Berlin did not show in 1919 an advance in the success of radiation over that obtained in 1915, and on the whole are not appreciably better than some series of results attained by excision alone. At the Surgical Section of the annual session of the American Medical Association held at Boston last June it was agreed that only 25 to 50 per cent. of patients survive excision of the breast for cancer more than three to five years.

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[1] American Journal of Physiology, vols. liv. and lv., 1920–21.

Hasty opinions on medical matters should certainly never be given wide publicity, and cancer, unfortunately, is a field in which public disappointment at unfulfilled promises may readily bring discredit on promising fields of treatment. But it is no good closing our eyes to the fact of a relative want of success in our surgical methods of dealing with a disease of increasing dimensions. A week or two ago we called attention to the picture drawn from the *Bulletin* of the League of Red Cross Societies of cancer as it really is. Radium may do something sometimes, morphia may help a little at the end, but knowledge, if it is given to the people in time, can save these lives and all this suffering. Our aim in publishing these articles was twofold: first to insist on the sufferer from cancer coming under medical observation at the earliest possible stage in the malady; and secondly, to ensure a thorough exploration of all the resources of medicine in dealing with the disease. Between the surgeon and the radiologist coöperation should be of the most intimate kind. Obviously the slightest antagonism would disadvantage medicine as well as the patient. Advancement of radiology, as the Association has clearly seen, is part and parcel of advance in medicine as a whole.

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The Census of 1921.

THE preliminary report on the census taken last June has been issued with commendable promptitude, and although only the simplest elements are yet available—enumerations by sex and area without distinction of age or civil state—the figures require some comment. The population of England and Wales enumerated in June, 1921, exceeds that of April, 1911, by 1,814,750 persons, corresponding to a decennial rate of increase of 4·93 per cent., the lowest rate yet recorded, less than half that of the previous decennium and not a third of the maximum increase which took place between 1811 and 1821. This rate of increase is, however, far greater than that of France, whose population, including that of Alsace and Lorraine, has diminished 5·5 per cent., and greater than that of Switzerland (an addition of 3·4 per cent.) but less than that of Sweden (an addition of 8·7 per cent., and a greater rate than in the previous decennium). The figures for three of our daughter States, the Australian Commonwealth, New Zealand, and the Union of South Africa, are available, and each shows a percentage increase of some five times the mother country's rate (Australia 21·8, New Zealand 20·8, Union of South Africa 19·2—in each case aborigines are excluded).

The war has, of course, been mainly responsible for the great slackening in the rate of increase, although, apart from the war, the declining birth-rate would have had an effect. The excess of births over deaths fell from just over 4 millions to just over 3 millions, and this is more due to a decline of births than to an increase of deaths; the former diminished by 1,015,233, the latter increased by only 21,135. The direct losses of the war fall, for the most part, under another heading, which, with perfect accuracy but to the lay reader with a grim humour, runs: "Loss representing balance of outward over inward passenger movement," and amounts to 1,193,750. We know whither the great majority of those outward moving passengers journeyed. The distribution of the population does not differ in broad categories from that of ten years since. In 1911 78·1 per cent. were enumerated in urban and 21·9 per cent. in rural districts; in 1921 the figures are 79·3 and 20·7. The report says that "the present rural district population is slightly less numerically than the similar 1911 population. The increase within the existing rural areas, however, is not seriously below the mean for the whole country, and indicates that the actual diminution is due merely to the normal growth of urban centres and not to any serious migration from country to town, such as that which took place during the latter half of the last century and which is reflected in the intercensal changes shown for the decennia between 1881 and 1901." This statement may ultimately need qualification if we give to the word "country" a less technical meaning. For instance, in the Administrative County of Essex the rural districts which return an increase of population are, with the possible exception of Billericay, either within the spheres of influence of industrial centres or, like Epping, outer suburbs of London. The strictly agricultural districts, such as Belchamp and Bumpstead, have declined.

The enumerated population of the Administrative County of London is less by 38,436 persons than in 1911, but Greater London has increased by 3·1 per cent. and now includes 7,476,168 persons. Amongst the great towns with smaller populations than in 1911 are, rather surprisingly, six manufacturing cities in Lancashire, Blackburn, Bury, Burnley, Oldham, Bolton and Rochdale; the reporters find it difficult not to associate these decreases with the prodigious increases found in Blackpool (64 per cent.) and neighbouring holiday resorts. A result of the war is an acceleration of the change in ratio of females to males, which was 1055 in 1881, 1064 in 1891, 1068 in both 1901 and 1911, 1095 in 1921. Sussex and Surrey return the highest (1273 and 1187), and Glamorgan and Monmouth the lowest (964 and 939) proportions of females. These are, perhaps, the most striking of the preliminary results. It would be idle to speculate upon the hygienic consequences of what has occurred in the absence of details which the subsequent reports will reveal. In particular, we refrain from either pessimistic or optimistic comments upon the increase. Much of the copious "literature" upon "race suicide" and "birth control" has no scientific value.

CANCER RATES IN EDINBURGH AND MANCHESTER.—The medical officer of health of Edinburgh, dealing with the city death-rates from cancer for every year since 1898, has shown that an incidence of 0·88 per 1000 of population for that year rose to 1·10 per 1000 in 1908, to 1·35 per 1000 in 1918, and to 1·39 per 1000 in 1920. Edinburgh is not peculiar in this respect. In an industrial district like Manchester 4 per cent. is almost exactly the annual rate of increase. In the country cancer is much more rare. The proportion of men to women sufferers is now 1 to 1·3, and in Manchester at present is 405 men to 403 women. Between 1899 and 1919 the death-rate in Manchester increased by 91 per cent., but there are certain factors which somewhat mitigate the disproportion.

boys. Cooks, bakers, stewards, and the barber had a daily bath by order. Such ratings as these got a short spell of physical drill daily. Dentists (contract) were coming in; the province Schleswig subscribed a fund which enabled a dentist to be hired to deal with the teeth of men in the *Schleswig*. This was very practical charity, and the principle might well be followed in this country. Suppose the city of Dublin annually sent money to the captain of H.M.S. *Dublin* to buy papers for the men and to help, for example, a man who had lost teeth, by an accident not attributable to the service, to get a new set. At Tsingtau crews of ships under refit were lodged in barracks ashore, an improvement often asked for on this side of the North Sea, and carried out at Bombay and Trincomalee. Latrine paper was served out for the use of diarrhœa cases which were, or might be, infectious, and a bucket of cresol solution was put near their closet for hand disinfection. *Scharnhorst* in hot weather gave her men two baths a day, and her stokers at Tsingtau got eight days' special leave by watches in a barracks up country for the good of their health. Bugs and cockroaches were being energetically pursued.

1913-14: Newspaper reading and smoking in the water closets made it necessary that the seats should be altered and made less comfortable. Some of the men paid to have their teeth put right and bought tooth powder from the canteen. A formalin disinfector was fitted in all flagships. Hand washing after work and before meals and cleaning of teeth were officially pressed on the men. Atropin was found useful for sea-sickness. Men's blankets were enclosed in washable covers to keep them clean. Amongst the drinks provided to win the men away from beer *Loreley* issued yoghourt, Bulgarian bacillus milk. This should have prevented indigestion; it was introduced by the medical officer—it is a pity the result is not stated.

RAT DESTRUCTION AND PLAGUE IN INDIA.

The epidemics of plague in India, for all practical purposes, may be said to be entirely dependent on epizoötic plague in rats. Measures for the eradication of this malady have therefore to be directed mainly to reduction of the rat population, either indirectly, by limiting their shelter and food and by fostering their natural enemies, or directly, by destruction of these rodents by means of traps, poison-baits, and the like. To produce the greatest results the methods of rat destruction should be applied in the plague "off-season," that is, in the interval between the decline of one outbreak and the commencement of another. The measures are particularly urgent in villages and in quarters of towns where there is reason to believe that epizoötic plague will persist during the off-season. For some years Major J. C. G. Kunhardt, I.M.S., and Assistant-Surgeon G. D. Chitre have been engaged in carrying out work of an experimental kind on the rat question in Poona and adjacent districts. Of late they have devoted attention particularly to effecting improvements in the methods employed for destroying rats and changes in the composition of poison-baits and their relative values. The results of these experiments, so far as they have gone, have been recently published in the *Indian Journal of Medical Research* (Vol. VIII., No. 3). It was demonstrated by these experts that rat-traps varied in efficiency, but by a judicious selection of material for baiting the traps their utility could be further increased. Experiments were carried out with various poisonous substances, including hydrocyanic acid gas. As regards the latter, it is pointed out that its use for fumigation purposes will not be found satisfactory until some method is discovered for rendering Indian houses more air-tight while they are being fumigated. Much time was occupied in experimenting with the various poisons, the material used for making up the baits, and with the different patent preparations advertised as efficient rat-killers, including "Rough on Rats," the "Common Sense Rat-Exterminator," the "Punjab Rat-Exterminator" (a phosphorus compound), and others. But after prolonged experiments it was demonstrated that the best rat-killer was barium carbonate, three grains of which will kill a rat of any size. In comparison with the 'Punjab' rat-exterminator it was found to be twice as poisonous, while it killed in a shorter time. The cost of the minimum lethal dose of the Punjab rat-exterminator is at least 60 times greater than the cost of the minimum lethal dose of barium carbonate. When this poison cannot be obtained the most suitable substitute is arsenious acid, if not otherwise contra-indicated. Like barium carbonate it appears to be tasteless. It is cheap and easily obtainable in India, but it has its drawbacks, and its use is not without certain dangers. Its lethal dose for an average-sized Poona *Mus rattus* is half a grain, but probably one grain would kill a rat of any size. The rat, being a sagacious as well as a suspicious animal, some ingenuity and care are needed in the preparation and laying of the poison-baits. By experiment the best material for making up poison-baits was found to be bajri (spiked millet) dough, this vehicle being six times more popular with rats than wheat, which formerly was commonly used for the purpose. The employment of sugar as an additional attraction to the bait, as was usually recommended, was found not only to be a useless extravagance but actually to diminish the amount of the bait consumed by about 50 per cent. Unfortunately these baits, made of three grains of barium carbonate and 12 grains of bajri dough, deteriorate rapidly and are practically useless on the second day. A dry mixture of barium carbonate and bajri flour, though less popular with the rats than the wet dough, does not deteriorate so rapidly. A rat when starving will probably eat anything from which nutriment may be extracted. In "go-downs," food stores, and such places rats are generally abundant and far from being underfed; to prevent the spread of plague by them it is urgent that these rats should be destroyed, and in such circumstances their powers of discrimination as to poison-baits require very careful consideration. It is believed that the use of the poison-bait described above will prove to be of higher efficiency in rat destruction than those formerly employed; and it is suggested that the real rate of efficiency in favour of the new bait may well be even greater in nature than it has been shown to be in the laboratory experiments. Finally, Major Kunhardt and Assistant-Surgeon Chitre express the opinion that the failure to eradicate plague in villages and towns at previous attempts was attributable to a large extent to the inadequacy of the measures employed for the destruction of rats.

THE PERIL OF THE AIR.

The airship disaster last week at Kingston-on-Hull has saddened two continents, and has drawn together the whole populations of America and England in a common bond of sympathy for the relatives of the 46 brave and distinguished men of the R 38 who perished by burning or drowning. Pioneers in a new enterprise are not prone to count their risk too exactly, or to set a price upon their lives, provided that the task is worthy of the risk. In this case no one except a few doctrinaires doubts the worthiness of the human aim to gain the mastery of the air by ships of light weight. Fragile and expensive they must needs be, but the onlooker is fain to ask whether the gas that supports the balloon need be capable of burning and exploding at all, and whether the oil that drives the machines need flash into flame at the slightest spark. Light petroleum has long been eliminated from ordinary household economy on account of its danger, and the heavier oils are already in use in certain forms of internal combustion engine. Of the group of inert gases discovered by Rayleigh and Ramsay, helium has an atomic weight of only 4, and the gas being monatomic is barely twice as heavy as hydrogen, and three times

Every laboratory worker will appreciate the difficulties encountered by Dr. Punch in devising a test containing five variables in such a way that the interpretation shall be unambiguous. Antigen, patient's serum with its varying anticomplementary power, guinea-pig's complement, hæmolytic serum, sheep's corpuscles—all of these possess complicated colloidal properties about which we, as yet, know little. Dr. Punch's present paper raises another group of questions—namely, the nature and right employment of controls. He records two separate groups of cases. In one series of 50 cases a colleague at Brompton made the clinical diagnosis, the author himself performing the laboratory test. In the other series of 185 cases the author again made the complement-fixation test, but the clinical investigator is not stated. The results in the two series are very different, and Dr. Punch himself offers no explanation of the divergence. If identical laboratory technique was used in both cases, presumably the explanation must be sought on the clinical side of the investigation. Should the same person make both the clinical and the laboratory tests he is faced with the possibility of subconscious bias in favour of one or of the other. Dr. Punch has eliminated what may briefly be called laboratory bias by asking Dr. A. Fleming to number the serums and retain the key to the numbering until the test was complete, so that he was unaware while estimating the complement fixation of the provenance of the serum. But he does not state what precautions were taken on the clinical side in this series of 185 cases, especially in regard to those in which the diagnosis of tubercle was considered doubtful. In a disease of such protean manifestations and ubiquitous distribution as pulmonary tuberculosis it is on the clinical side that difficulty in interpretation might be expected. The evolution of a test such as this is obviously expedited by placing both clinical and laboratory records in the hands of an assessor with a philosophic turn of mind.

DENTAL DECAY IN THE YOUNG.

IN another part of this issue we survey the main chapters in the report for 1920 of the School Medical Officer for the County of London. An important section in this report treats of dental decay in school children, a matter of urgent interest when we consider the far-reaching effects of this disease in after life. Dr. Hamer refers to the suggestion made by Dr. James Wheatley, of Shrewsbury, that the compulsory change in diet during the war—namely, the halving of the sugar ration, the partial elimination of sweets, the addition of offal to the flour, and the increased mastication of crusts and staler bread—produced a notable alteration in the condition of the teeth of the Shropshire school entrants, regretfully adding that the London figures lent no support to Dr. Wheatley's suggestion. Six months ago Dr. Wheatley himself, as the result of further investigation, admitted that the improvement fell far short of what his original figures indicated, although he still can trace some improvement, partly, he believes, resulting from the war conditions referred to, and partly owing to an educational campaign undertaken in the county.

Without trying to adjudicate whether or no Dr. Wheatley was over-sanguine, it is relevant to, discuss whether the plan of campaign conducted by Dr. Wheatley and Dr. Sim Wallace is on the right lines, and; if it is not, to formulate a better one. All of us, according to Dr. Hamer, hold dental decay to be a preventable disease, though there is no corresponding unanimity in respect of the methods to be used. We all recognise its evil effect on the physique of the nation, and the absurdity of establishing innumerable costly centres for treating, at the best, a fraction of the trouble. We are indeed almost forced into the position either of ceasing to talk about dental decay as preventable, or of formulating a complete campaign to prevent it. In an interesting paper read before the Central Counties Branch of the British Dental Association in June, 1920, Dr. Wheatley assumed general agreement on certain broad issues. His first two points were as follows: 1. That decay of teeth in its initial stages is caused by acid decomposition of carbohydrate food in contact with the teeth, and in no other way. 2. That vigorous exercise of the jaws is necessary for the proper development of the jaws, and consequently for the regular arrangement of the teeth. His fifth point was that there is reason to think that the development of the jaws and the enamel of the teeth is to some extent dependent upon the presence in the food of vitamin A, or something associated with it. Difference of opinion on the fifth point is not of vital importance, for babies ought to be breast-fed, and the breast-fed baby naturally gets its proper supply of vitamin and the vigorous sucking exercise necessary for the development of the jaw. Further, the weanling needs the right kind of fat to avoid rickets and other developmental disorders.

The campaign in Shropshire, which has been conducted by the Education Committee since 1911, has been founded chiefly on Dr. Wheatley's first two points. The main theme of the leaflet issued is that if starchy or sugary food can be prevented from sticking to the teeth there will be no decay, and the advice is on the following lines: 1. The giving of food to the weanling and little child that will need mastication; the avoidance of pappy foods, and of drinking between mouthfuls of food. 2. Sweets never to be given between meals, or as the last food of a meal. 3. Each meal, especially the last of the day, to be finished with a tooth-cleansing food. A list of starchy, sugary and tooth-cleansing foods is given at the foot of the leaflet. The Derbyshire Education Committee issues similar advice in the form of a card. In the paper already mentioned Dr. Wheatley makes a strong plea for the Ministry of Health to lead a national campaign against dental decay founded on our present knowledge, and to place the cause and prevention of dental caries in the forefront of its scheme of research work in order to clear up points of doubt.

Let no one think the campaign will be a small affair. It sounds simple—to keep our teeth free from starch and sugar between meals, and so get rid of perhaps the greatest cause of ill-health and inefficiency, but we shall be up against ingrained habits and pleasures. Anyone whose recollections go back 40 or 50 years knows how enormously the habit of sucking sweets has grown during that time. It may be argued that a habit which has increased so rapidly may decline as rapidly if good reasons can be given against it: but the reasons must be good ones, the Ministry of Health will have to give an effective lead, and medical practitioners and dentists present a united front.

THE SWIMMING BATH AND CATARRHAL OTITIS.

DR. K. Amersbach,[1] director of the University clinic for diseases of the ear, nose, and throat at Freiburg in Breisgau, remarks that though swimming-bath conjunctivitis was described as long ago as 1899 no connexion has hitherto been suspected between this condition and disease of the ear. Recently, however, during an outbreak of swimming-bath conjunctivitis at Freiburg numerous cases of catarrh of the Eustachian tube were seen at the out-patient department of the clinic. The patients chiefly belonged to a swimming club, and most of them were also suffering from conjunctivitis. The most striking feature about the tubal catarrh was its obstinate character and tendency to relapse. In almost all the cases the ear trouble developed about a fortnight after the onset of the conjunctivitis. The patients complained of a feeling of pressure in the ear, tinnitus of varying degree, autophony, and more or less impairment of hearing. The drum-membrane, which was otherwise quite normal in every case, was drawn

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[1] Deutsche medizinische Wochenschrift, August 4th, 1921.

HEALTH OF LONDON SCHOOL CHILDREN:

REPORT FOR 1920 OF THE SCHOOL MEDICAL OFFICER, L.C.C.

VOLUME III. of the annual report of the London County Council, which has just appeared, may be obtained from P. S. King and Son, Ltd. (No. 2104. Price 2*s.* 6*d.*). It contains in two parts the public health reports of Dr. W. H. Hamer, County M.O.H. and S.M.O., the second and longer part being headed "Education." It is this chapter which is here briefly summarised. The report, it may be remarked, has high literary merit and contains dissertations and digressions of a technical nature which add greatly to its interest.

General Progress.

Dr. Hamer opens with the statement that the results obtained during 1920, so far as school medical work is concerned, were favourable beyond all expectation. The figure of 76·9 per cent. of children found satisfactorily dealt with up to the time of the second re-inspection is the highest on record since the Council undertook to provide treatment for ailing children. In respect of physical conditions the great gains claimed during the year are those accruing from (*a*) medical oversight of continuation school young persons and of children coming within the scope of the new by-laws as to employment; (*b*) extended medical treatment scheme affecting elementary school children, secondary school children, and any young persons unable to obtain treatment save under the Council's scheme; and (*c*) materially improved methods of cleansing now being put into operation throughout London.

Tonsils and Adenoids.

An interesting event was the opening of a centre in Woolwich at which children operated upon for enlarged tonsils and adenoids are kept for two days subsequent to operation. After discharge from this special centre each child returns to the local centre for breathing exercises under the supervision of his own surgeon until finally discharged as cured. This is a great advance, as the results of these operations in out-patient departments without after-care have been unsatisfactory. It would be interesting to learn what interval usually elapses between the operation and the final discharge as cured, and whether the patients discharged as cured are able to breathe comfortably through their noses both when awake and asleep.

Nutrition, Cleanliness, Teeth.

Medical inspection during 1920 revealed a slight improvement in clothing, a continuation of the deterioration in nutrition which was noted in 1919 (following the war years during which there was a notable improvement), and a continual steady improvement in cleanliness. There has been, Dr. Hamer writes, a 30 per cent. improvement in seven years in verminous conditions, and this improvement has been accelerated during the last three years, during which a great forward campaign against infestation by vermin has been going on since the Council made addition for the purpose to the personnel of the school nursing staff.

Slight ground is said to have been gained as regards dental conditions. The report recognises the immense problem that remains to be solved. Forty-six dental centres have been provided and are working at full pressure, and although the numbers of children at the older ages with serious dental caries have been halved since provision for treatment began to be made, yet 40 per cent. of the children leaving school still have obvious dental caries. "Now," Dr. Hamer writes, "dental decay is held by all to be a preventable disease, and it is clear that in order to cope with this great mass of trouble all the aid that can be given by education and the practice of hygiene must be pressed into the service. Not by treatment of the worst cases, but by prevention at the outset, will success finally be achieved." No practical suggestion is offered in regard to prevention, and the report possibly does not mean us to infer that there is general agreement as to how dental decay is to be prevented.

Open-Air Education.

A hopeful account is given of the treatment of suppurating ears by ionisation. Satisfactory results are reported from the classes for stammering children. The difficulties encountered in following up children suffering from defects are set out at some length. Some interesting notes by Dr. C. T. Thomas on the medical examination of school children employed in entertainments are given. Definite progress has been made during the year in the provision for open-air education. During 1920, 2700 boys were admitted to the King's Canadian Camp School, Bushy Park (opened in August, 1919), with satisfactory results. Wanstead House Camp School, accommodating 64 girls, was opened in August. Of the 2000 places in open-air day schools estimated to be required in London for non-tuberculous children, 410 places have been provided and 600 are proposed; of the 2000 places needed for tuberculous children 290 have been provided and 100 are proposed.

We agree with Dr. Hamer that these open-air schools should not be closed for the summer holidays, "just at the time when the maximum benefit is being received by the children." In addition to the open-air schools, much good work has been done for ailing children by the establishment of open-air classes in connexion with elementary schools.

Physical Culture.

A noteworthy event of the year has been the establishment of a College of Physical Education for London teachers. Facilities for attendance at the College have been offered to teachers in the service and accepted by large numbers, so that ere long the effect of the College will show itself in improved physical training at the Council's schools. Special classes in physical exercises for children suffering from incipient deformities have given good results during the last few years, and it is hoped to increase the number of such daily classes to 100 during the coming year. An experiment is recorded at Vauxhall Street School, where the head teacher has endeavoured to found all the educational activities of the school upon a basis of physical training. The effects were shown by increased attendance and by the physical, moral, and mental improvement of the scholars.

There has been a considerable increase in the provision of meals as compared with the previous year. Thus in the last 12 school weeks of 1920, 191,514 elementary school children were fed, as compared with 113,747 during the corresponding period of 1919.

Dr. A. G. Wells deals with the difficulty of "diphtheria carriers," and is inclined to favour the view that the rules as to their exclusion from school may have to be relaxed. Other matters of interest dealt with are "School Holidays in Relation to the Spread of Scarlet Fever and Diphtheria," "Scarlet Fever and Diphtheria in Relation to Flea Prevalence," and "Diagnosis of Mental Defect."

The report is a record of useful work and progress during a year in which the general death-rate and infant mortality of London were lower than ever before.

WATER-SUPPLY FOR CARAVANNERS.—A Cheshire farmer was summoned at Birkenhead last week for failing to provide a sufficient supply of wholesome water to a caravanner who was renting a field from him. The obligation rests on a by-law made by the Ministry of Health under the Housing of the Working Classes Act, 1885. As it was the first case of the kind the farmer was let off with the payment of costs.

Committee organised in Paris. According to these statistics, the situation, especially as regards epidemic diseases, would appear to be less serious than some reports have stated. Officially there are 36,000 cases of cholera, of which 60 per cent. are in the towns. The typhus incidence has continued to fall throughout the summer, though it may be expected to rise again next winter. Although plague is rife in Persia, a strong sanitary cordon has up to the present preserved the immunity of Russia. As regards the famine it is stated that the annual excess of production of corn over the need in the Volga district amounting normally to 60 million poods, has this year been converted into a deficiency of the same amount; 120 million poods are therefore needed to meet the famine requirements. 150,000 people have left their homes. Of these 50,000 have been "repatriated" into Siberia and are now stabilised. The remainder will be "repatriated" into the less necessitous districts.

The resolutions adopted by the Geneva conference provide for the creation of a relief commission to coördinate the action of the official and voluntary relief agencies. In view of the magnitude of the task, emphasised by Sir Claude Hill, who has had experience of two serious famines in India, the coöperation of all governments was considered essential. The commission will therefore consist of delegates from governments as well as from Red Cross societies and voluntary associations. Dr. Nansen, Mr. Hoover, and a representative of Mr. Hoover nominated by him, were appointed high commissioners, with full authority to make the necessary preliminary agreement with the Soviet Government concerning the administration of relief. Dr. Nansen has already telegraphed his acceptance of this post. The Commissioners are instructed to work in close coöperation with the Russian Government and Russian voluntary organisations.

LATE EFFECTS OF GASSING OR TUBERCULOSIS?

Dr. J. B. Hawes has an important article on this subject in the *Boston Medical and Surgical Journal.* He points out that while we know a great deal of the immediate effects of the gases used in the late war, we know little of the late effects. We know that they have irritative and escharotic effects on the respiratory tract, and that contraction of the cicatricial tissue produced often leads to serious mechanical difficulties, both in the ingress and egress of air and in the pulmonary circulation. We also know that the gases have a certain selective action. Mustard gas affects chiefly the upper air passages; chlorine injures the entire respiratory tract; phosgene, though least severe in its immediate effect, often leads to serious injury of the lung tissue. The basis of the changes produced by the gases is a proliferative fibrosis, which destroys to a greater or lesser extent the protective powers of the bronchi, and leads to invasion by organisms. While tuberculosis may play a part in the invasion it is, in Dr. Hawes's opinion, a very minor one. The X rays show a characteristic picture—increase in the tissues round the hilus, especially peribronchial, extending towards but rarely into the parenchyma of the lung, and more towards the bases than upwards. The apices are usually clear. There are often localised areas of fibrosis. The signs and symptoms form two groups—pulmonary and constitutional. Among the first are cough, expectoration, hæmorrhage, pain, or a sense of constriction of the chest; dullness, usually at the bases and due to thickened pleura; diminished voice and breath sounds; râles of every variety. Among the second are loss of strength, shortness of breath, and a psycho-neurosis (a tendency to exaggerate symptoms with increased reflexes). Fever, wasting, anæmia, and other symptoms characteristic of tuberculosis are absent. Yet in Dr. Hawes's experience the majority of the cases are diagnosed as tuberculous. Another characteristic of these cases is sudden acute febrile attacks, often without cough or sputum, which disappear as suddenly, leaving intense lassitude for a considerable time. Out of 35 men definitely diagnosed as tuberculous, or suspected to be so, Dr. Hawes could confirm the diagnosis in only 8. Localised dullness with or without sticky râles at the bases of the lungs was the striking feature of physical examination. Additional evidence against tuberculosis was that the sputum was constantly negative for the bacillus. The treatment does not differ much from that of pulmonary tuberculosis, except that the patients should not be sent to a sanatorium or hospital. Dr. Hawes recommends rest away from a medical atmosphere, and sympathy and encouragement. These bring about the best results.

GERMAN NAVAL HYGIENE.

BEFORE the war the publication of the annual health report of the German Navy was quite an event for students of naval hygiene, as it always had an article stating the more important hygienic advances made during the year in the ships, and no other such article was published elsewhere. These reports were always published late, not, like those of the British Admiralty, shortly after the end of the period, and the books for 1911–14 have only recently come to hand; but they still have interest. In 1911–12 officers were again being accommodated aft in ships. Ozonisation of the air continued to give satisfaction. Low-pressure steam was preferred for heating, and radiators were being fitted that could be easily cleaned, to avoid the scorching of adhering dust, which causes smell. Electric heating was only employed in U-boats and in the Kaiser's suite in the new *Kaiser* battleship. Ice machines were being installed, and more refrigerating chambers permitted the men's food to be oftener fresh. When biscuit had to be issued it was made into puddings. Bakeries were to be on the upper deck in future. Men of the High Sea Fleet at sea usually drank 5 oz. of beer, each of them, daily. Other drinks like lemonade, Maggi's consommés, and cocoa were offered them in the canteen to wean them from beer. The widespread but evil habit of cigarette-smoking had spread so far that men took up on an average two cigarettes each per day, besides what they brought on board, but canteens sold chocolate, sweets, and buns cheap, which reduced tobacco sales. Nearly every man had a wash-hand basin of his own which he kept in his locker, consequently boils were fewer. Seamen used the stokers' bathroom one day a week, and the canvas bath was constantly rigged on deck. Permanganate solution was regularly issued as a mouth-wash; water was replacing oil in the sparge pipes of urinals. A second X ray apparatus was intended to be sent afloat, the first, in *Deutschland*, having been a success. U-boat crews got four weeks leave in the year (others probably only a fortnight). On hot stations men were allowed to sleep on deck, but they must wear night clothing with cummerbunds, and fruit was rarely allowed on board unless it could be dipped first in boiling water to sterilise its exterior. Extra closets were being fitted in ships with dysentery cases to secure isolation and lessen infection. At Tsingtau vessels under refit were disinfected, cleaned, and aired. At the Litsun dispensary at Tsingtau there attended 4254 Chinese out-patients.

In 1912–13 attention was being given to protect cabins and sick bays against heat and noise. Sick bays were to have a system of ventilation of their own, with supply and exhaust, independent of the ship's system, to keep them sweet though ports are closed in a sea-way. Metal filament lamps were being used to improve lighting. In the *Kaiser* class fresh water was piped to kitchens, bakeries, lavatories, and sick bays; individual wash-basins were being further issued, and tiles for bathrooms were approved. The canvas bath was constantly used. One ship fitted a steam hose, and in so doing was able to begin swimming instruction in the bath in May and taught far more tuberculosis may have a 33 per cent. chance of recovery, maintained for several years, if his artificial pneumothorax is big enough. But, as Dr. Saxtorph's figures suggest, a small, partial pneumothorax may even do more harm than good by keeping diseased foci in the lungs in a state of tension.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Encephalitis with Pregl's Solution of Iodine.

AT a recent meeting of the Vienna Medical Society Dr. Dattner reported on the results obtained by the administration of the new iodine combination worked out by Professor Pregl, of Graz. This solution was said to give off pure iodine in tissues pathologically changed. The results obtained in other places had been so satisfactory that the Vienna Clinic for Neurology was prompted to test the substance on cases of encephalitis lethargica; the cases were all of the acute type, and the effect was observed very shortly after the injection. The treatment consists of intravenous injection of large doses—100 to 300 c.cm. —up to a total of 1500 c.cm. of the liquid. Some of the cases had been treated without effect with urotropin and methylene-blue. The changes produced by the injections were: disappearance of the drowsy condition, of the Kernig's symptom, and gradual restitution of normal health. In chronic cases the disease (e.g., of the trophic centres) was of too long standing for much benefit to be obtained. In one case the patient was up and about again after 24 hours. The disadvantages of the injection are sometimes slight pain and urticaria, and sometimes thrombosis of the veins. It is advisable to use a large needle and syringe, as the liquid is rather viscous. The investigations suggest that the solution is, if employed early, a useful remedy against encephalitis. At the same meeting Dr. Hauer was able to report on the value of the same solution in dental work, for which it was originally intended. He used it in alveolar pyorrhœa, in implantations and re-implantations of teeth, and in operations on the maxillary antrum, with regular success as regards rapidity of healing.

The Results of Famine Relief amongst Children.

The chief officer of the Vienna Board of Health, Dr. Böhn, reported recently to the Medical Society on the results of the public feeding of children in this city. Of 195,000 children attending the public schools, no less than 171,000 were examined. Only 15 per cent. were found in January, 1920, to be normal in physical development, 40 per cent. showed more or less marked deficiency in weight and body measurement, whilst 45 per cent. were classified as severely underfed and lacking in development of bones. By the work of an excellent organisation, which ensured that each child really got the meal intended for it and really partook of it, the general condition of the prospective candidates for tuberculosis was so altered that they could overcome the latent tuberculosis from which the majority of them were presumably already suffering. The enterprise of English and American philanthropists has saved thousands of children in Central Europe from starvation. A few figures will help to show the actual situation: In 1912, the number of deaths in Vienna was 32.141; in 1918 it rose to 51,497. In 1919 it fell to 40,932, and in 1920 there was a further drop to 34,197. The drop is chiefly due to the saving of life in the age-periods from 5 to 15 years. Deaths from tuberculosis numbered 6358 in 1912, 9809 in 1918, and 7132 in 1920. The rapid recovery in general health, evidenced by the falling mortality figures, is ascribed mainly to the improvement in their nourishment aided by the temporary expatriation of so many children under the care of English, American, and Dutch committees. In 1920 42,000 children at a time were boarded out in Holland, Switzerland, Italy, and England. Institutes for the care of rachitic and tuberculous children were substantially aided by grants and gifts from abroad. At the height of the relief activity 29 central kitchens were engaged in the preparation of the 150,000 portions of meals required daily. Each portion contained the food value of 500 nem for infants, 1000 nem for school children, and 1500 nem for juveniles up to 16 years. The places of distribution numbered 534 in Vienna; throughout Austria 400,000 portions were distributed daily. The children were subject to repeated examinations, the last one taken in the winter 1920–21 comprising all the children fed by the famine fund. The increase in weight and length was on an average 5 per cent., but in many cases was as much as 12 per cent. The number of children to be classified as underfed has dropped to 22 per cent., whilst the number of well-fed has gone up to 35 per cent. of the total; the remainder are described as approximately normal—in short, an excellent result. Similar investigation of juveniles (14 to 16 years) is now going on, and the results will be published.

Unveiling of Tablet to Politzer.

On the anniversary of Prof. Politzer's death—the famous otologist was indirectly a victim of the deplorable conditions prevailing last year in our public life—a commemorative tablet was unveiled, in the presence of many of his friends and former pupils, in the lecture-room of the Vienna Otologic Clinic. Representatives of many German and American learned societies testified to the esteem which the deceased had commanded all over the world. Docent Dr. Ruttin formally accepted the tablet on behalf of the clinic.

Appointment of Prof. Kermauner.

With the appointment of Prof. Kermauner to direct the second gynæcological clinic (Prof. Peham is the head of the first clinic) an unsatisfactory state of affairs has been terminated. For more than a year students of gynæcology and obstetrics have had no instruction from a fully recognised first-class teacher; during Prof. Wertheim's illness both clinics lacked responsible guidance.

Drought and the Water-supply.

For some weeks the city of Vienna has enjoyed not only the benefits of a tropical heat but also an abundant supply of excellent water. The result is that the public health reports show a marked drop in the incidence of disease and in mortality. Catarrhal conditions of the respiratory organs are practically unknown at present, deaths from tuberculosis are comparatively few, and even the gastro-enteric conditions so often associated with summer heat are not as bad as in former years. It seems that the continuous sunshine has destroyed or weakened the toxicity of the microbic infection, whilst the wholesome water-supply increases the resistance of the individual. The water is obtained from the Alps, at a distance of some 150 miles; for each person in Vienna 100 litres a day is provided. Vienna is now perhaps the best supplied large city in the world as regards the purity and temperature of its water-supply. The only drawback of the heat wave is the fact that a large proportion of the milk arrives in a sour condition. Lately over 40 per cent. of the milk-supply was sour, and condensed milk had to be widely distributed amongst weanlings.

August 12th.

IN response to an appeal by the chairman of the board of the Bradford Royal Infirmary, a donation of £1000 has been sent by Mr. W. H. Shaw, of Bradford, for the purchase of an X ray plant for the treatment of internal malignant disease.

as light as ordinary coal gas. Helium is very widely distributed in nature, it is present in minute proportion in the atmosphere, and occurs to the extent of 1·5 per cent. or more in the natural gas of Kansas. It is vastly safe as a buoyant agent, for it is not only non-inflammable, but it has hitherto resisted every effort to make it combine with other elements. The terrible disaster will not sound the knell of the airship or prevent men from risking their lives in its further development, but it should and must turn the minds of our rulers to insist on every avenue of safety being explored, even if helium has to be fetched from America and new engines designed to consume heavier fuel.

SYPHILIS IN THE NEGRO.

Dr. Ernest L. Zimmermann,[1] of Baltimore, has undertaken a comparative study of syphilis in whites and negroes for the purpose of emphasising inherited racial differences in response to syphilitic infection. The paper is based on the study of 1843 cases in the Johns Hopkins Dispensary, a charitable clinic in which approximately 60 per cent. coloured and 40 per cent. white patients are treated. The race and sex distribution of the cases was as follows: 596 white males, 521 coloured males, 297 white females, and 429 coloured females. It was found that in negroes a much greater number of infections occur before the twentieth year than in whites. Over 50 per cent. of the female patients become infected before their twenty-first year, a fact explained by their early indulgence in promiscuous sexual intercourse, the greater frequency of syphilis in the negro race, and the sexual indulgence of the negro male in spite of the presence of primary or secondary lesions. No differences were noted in the character of the chancre in the two races, the more pronounced induration described by Morrison in the negro not being observed. Dr. Zimmermann's experience confirms that of other writers as to the rarity of extragenital chancres in the negro, only 5 out of 27 such chancres in this series being found in coloured patients. Secondary syphilis in the negro was characterised by marked polyadenitis, frequent and severe osteoarthritic symptoms, by the frequency of iritis, and by the high incidence of follicular and pustular syphilides. Though secondary lesions of the mouth and pharynx exclusive of diffuse erythema were commoner among the white patients, moist papules and condylomata were much commoner in the coloured race, especially in the female. The annular papular syphilide first described by Atkinson in 1882 under the name of syphiloderma papulatum circinatum was unusually frequent in the negro. Tertiary syphilis in the black race was characterised by the predominance of osseous lesions which were twice as frequent as in white patients in whom neurosyphilis was much commoner, and constituted about half of the late manifestations. Cardio-vascular syphilis, as had also been found by Osler and Janeway at the Johns Hopkins Hospital, was relatively more frequent in Dr. Zimmermann's negro patients with an incidence of two to one in coloured and white males respectively. Cerebro-spinal syphilis, including both the meningitic and endarteritic forms, was approximately of equal frequency in both races. Cerebral endarteritis was particularly frequent in black patients, being observed in 20 negroes and in only 9 whites. Tabes was diagnosed in 94 white and in 14 coloured patients, and general paresis in 24 white and only 4 coloured patients. Dr. Zimmermann concludes that there are inherited biological differences between white and negro patients as regards syphilitic infection. The negro develops intense reactions in the cutaneous and osseous structures, and is relatively free from tabes and paresis. In white patients absence of, or only slight development of, skin manifestations is more frequent than in the negro, but there is a greater tendency to tabes and general paresis.

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[1] Archives of Dermatology and Syphilology, July, 1921.

THE MAUDSLEY HOSPITAL.

THE third course of instruction for the diploma in psychological medicine opens at the Maudsley Hospital on Monday, Oct. 3rd. On that day, at 2.30 P.M., Sir Frederick Mott gives the first of a series of six lectures on the Pathology of Mental Diseases, and at 5 P.M. Dr. Bernard Hart delivers the first of eight lectures on the Psychoneuroses. On Wednesday, Oct. 5th, at 2.30 P.M., Dr. F. C. Shrubsall lectures on the Practical Aspect of Mental Deficiency, and at 4.30 P.M., Dr. W. C. Sullivan commences a series on Crime and Insanity. On Thursday, Oct. 6th, at 2.30 P.M., Dr. C. H. Bond takes up the Differential Diagnosis and Treatment of Mental Disorders, and at 4.30 P.M. Dr. E. Mapother lectures on the Symptoms of Mental Disease. Six clinical demonstrations will be given on Tuesdays, 2.30 P.M., at the Maida Vale Hospital for Paralysis and Epilepsy, by Dr. F. Golla, commencing Oct. 4th, Sir F. Mott continuing the series. It should hardly be necessary to call attention to the importance of the Maudsley Hospital as a school of psychological medicine. In line as it is with the forward movement in mental medicine on its preventive side, this institution cannot be allowed to fall a victim to the very natural spirit of economy at present prevailing at the London County Council. Medical men in London will lose no opportunity of making their opinion effectively known in this regard.

EXPERIMENTS ON LIVING ANIMALS.[1]

UNDER this title a return has been issued over the signatures of Sir George Thane for England and Scotland, and of Dr. M. C. McKenna for Ireland. Full details are tabulated of the places registered for vivisection, of the licensees with their qualifications, and of the number and nature of the experiments performed. Sir George Thane in his report makes it clear that the utmost precautions must be taken by investigators to avoid pain and sepsis, not only in the interests of the animals, but in order to ensure successful results. It is unnecessary here to set out the limitations imposed on licensees working under the various certificates issued, as medical men are well aware of the strict supervision of all biological research. Most workers will have received unexpected visits from inspectors, and the tribute paid to licensees for their attention, not only to the actual requirements of the Act but to the suitable lodging and general well-being of the animals, will be received with satisfaction. Seven technical irregularities only are noted, six due to inadvertence or misapprehension, and in the seventh case only, where experiments needing Certificate B were performed by a licensee holding only Certificate A, was the outstanding application for the required certificate refused. Distortion of the true facts relating to experimental medicine can best be refuted by reference to official statements, and an accessible copy of the current report might well be on the medical man's bookshelf.

Sir Walter Fletcher will preside over the Section of Physiology of the British Association to be held at Edinburgh next week and will speak on the part played by physiology in the war.

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[1] H.M. Stationery Office. Price 6d.

RADCLIFFE INFIRMARY, OXFORD.—The successful post-graduate course held in October last year is being repeated this year from Oct. 3rd–8th. The subjects for discussion include the Cause of Diseases of Joints (Sir A. Garrod), Modern Views of Heart Disease (Dr. W. Collier), Some Cases in the Later Stages of Syphilis (Dr. E. Mallam), while the surgeons will operate at stated times, and demonstrations will be given in the wards and special departments. Dinner in Queen's College Hall on Saturday evening completes the week. Further information from Dr. Hugh Whitelocke, Secretary to the Committee, 6, Banbury-road, Oxford.

Public Health Services.

Size of Panel Lists.

THE prevalent notion that the average number of insured persons on a panel practitioner's list runs into thousands is dispelled by the figures given in the Health Minister's report. The regulations now, of course, impose a limit of 3000 as the absolute maximum for a doctor working single-handed. In one-third of the English areas the maximum is fixed at 2500 or under. On Jan. 1st, 1921, about 34 per cent. of insurance practitioners had less than 600 names on their lists, another 30 per cent. had between 600 and 1200, 22 per cent. had between 1200 and 2000, and only the remaining 14 per cent. (numbering some 300 doctors) had upwards of 2000 names. In the last group in many cases an assistant is employed.

Consultant Service in Wales.

Generally speaking rural areas are badly served with consultant advice, and the memorandum prepared by Dr. Ewen J. Maclean on the position of Wales in this respect is of interest at this juncture. The note appears as an appendix to the second report of the Welsh Consultative Council, to some aspects of which we have already called attention. In a mixed urban and industrial area, Dr. Maclean estimates that there may be 2000 inhabitants to one general practitioner, and 45,000 inhabitants to one consultant, using the term to include specialists as well as physicians and general surgeons in practice as such. He traces the natural history of the consultant, recording his own opinion that the competitive element in his career is of advantage alike to himself and to his patients. The number of consultants is necessarily proportionate to the number of status-giving hospitals, general and special, and the number of hospitals is grievously deficient in Wales, apart from Cardiff and Swansea. Facts brought to public notice by the School Medical Service, and by the Naval and Army Services during the war, have, in Dr. Maclean's opinion, produced a popular demand for extended preventive and curative treatment and therewith for more consultants. Under present circumstances therefore the customary long waiting period and its associated struggle for existence might with advantage be curtailed or eliminated. The cost of adequate whole-time salaries for all consultants is regarded as prohibitive, even if desirable, and remuneration is suggested on a part-time basis, with extra fees for special visits and certain operations. The memorandum has a close bearing on the National Health Institute and the four Central Institutes—namely, at Bangor, Wrexham, Swansea, and Newport—suggested as part of a complete scheme of medical and allied services for the Principality.

Canal Boat Hygiene.

The second annual report of the Ministry of Health has little fault to find with the habits of canal boat dwellers, a class not generally associated with any particular regard for hygiene. On the occasion of more than 19,000 inspections by Mr. Owen J. Llewellyn during 1920, boats were found without infringement of the Canal Boats Acts. In the same period 2182 delinquencies were found on 1602 out of a total of about 6000 boats, most of these of a trivial or formal character. Very few cases of overcrowding were found or of imperfect partition of cabin accommodation between the sexes. In a year's time, when the recommendation of the Departmental Committee to prohibit children of school age from living aboard during term-time comes into force, any occasion for overcrowding will be still further diminished.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Dewsbury.

Dr. O. M. Holden gives the Registrar-General's estimate of the population as 55,080. The birth-rate has gone up from 19·0 in 1919 to 23·07 in 1920. The death-rate was 14·23, "the lowest recorded since amalgamation." The infantile mortality, 110, is "still high," 69 of the 140 infant deaths occurred in the first four weeks of life; there were 56 stillbirths, being 4·2 per cent. of the total births. The maternal mortality in connexion with childbirth seems to have been high during the last six years. Dr. Holden reports a serious dearth of properly trained women to act as midwives in the borough; doctors are compelled to fall back upon the antiquated and unsatisfactory method of "handywomen" help. During 1920 the qualified midwives only attended 460 out of 1271 births, or a little more than one-third. In most industrial towns the proportion is more like two-thirds. "The chief occupations (of Dewsbury) are those connected with heavy woollen goods, coal, rags and rag flock, glass blowing, &c." Of 14,060 dwelling-houses, 4450, or 31·65 per cent., are "back-to-back" houses. Dr. Holden, of course, condemns the privy-middens and large ashpits. There are still 2374 privies. The number converted in 1920 was 102. It is to be hoped that the rate of progress will be increased in subsequent years.

Eighty-six observations of smoke emissions from mill chimneys were made, and 24 statutory notices served, but no mention is made of proceedings. Anything beyond a minute or two in the hour of black smoke from a mill chimney is quite inexcusable and a vigorous anti-smoke campaign is urgently needed in these mill districts.

The tuberculosis death-rate was not high, 0·671 for pulmonary tubercle and 0·255 for "other forms," giving a total of 0·92. The rates from 1911 to 1920 indicate that there was no war increase of tuberculosis in Dewsbury (though there has been a decrease since the Armistice). Is this because the war work of Dewsbury was its ordinary work, which included coal-mining, an industry little liable to tuberculosis?

Twenty-one cases of ophthalmia neonatorum were notified. One case died while the eyes were under treatment, in another the right eye was damaged, the eyes of the other 19 cases were ultimately found to be quite clear. Dr. Holden reports a considerable shortage of houses of the smaller type suitable for the average labouring class family. Owing to unemployment, families which applied for corporation houses a year or so ago now find themselves unable to afford them. Owing to high prices war arrears of repairs have not yet been made good. Dr. Holden wants legislation to strengthen the hands of sanitary authorities against careless and dirty tenants.

Tottenham.

The population of Tottenham Urban District in 1920 was estimated to be 156,020, the birth-rate was 26·04, the death-rate 9·3, the infant mortality rate 61·0, and the phthisis death-rate 0·85. Dr. David C. Kirkhope tells us that the infant mortality rate is the lowest on record. He also says: "At the end of the year the housing scheme, both at the Coombes Croft site and the Devonshire Hill site, had been commenced. So many inhabited houses had, during the war, fallen into a condition of serious disrepair, and even dilapidation, that arrears of sanitary reform have by no means been made up . . . ." and "The methods employed in Tottenham for the disposal of refuse leave much to be desired and it is to be hoped that the problem will receive early consideration and be met with an adequate solution." Under the heading ophthalmia neonatorum, we read: "Thirty-two cases were recorded during the year. These were promptly followed up. In one case, notwithstanding that the child was under medical care, the sight of both eyes was lost. This is the only instance of permanent injury resulting from ophthalmia neonatorum during the year." We should like to italicise "only," because if every population of 150,000 produced one blind child, the toll of damage from ophthalmia neonatorum throughout the country would be terrible.

The medical officer of health receives the notifications of tuberculosis, but the care of the tuberculous rests

TUBERCULOSIS.

The German Tuberculosis Congress at Bad Elster.

THE reports to hand of the German Tuberculosis Congress, held on May 19th to 21st inclusive at Elster, show that it was well attended, German and foreign visitors numbering about 700. The chief fault found with this congress was the omnipresence of the multiple tautologist. For lack of adequate rationing of these congress pests several delegates with messages to give were crowded out and received no hearing. Congress logorrhœa is a cosmopolitan evil which bids fair to smother medical meetings and to keep away speakers with something new and interesting to say. This state of affairs is the more deplorable as there are certain remedies open to the organisers of congresses animated by the ambition to suppress the congress bore.

In his opening address Kirchner, of Berlin, discussed the influence of the war on tuberculosis, showing how it affected different areas and different age-groups. In an interesting lecture on the part played by domestic animals in the spread of tuberculosis, Prof. Lydia Rabinówitsch referred to studies she had carried out on dogs and cats. Of 19 strains of tubercle bacilli cultivated from dogs, as many as 16 had been found to belong to the human type; only one belonged to the bovine type, and the two remaining strains were of a transitional type. Of five strains of tubercle bacilli cultivated from cats, three belonged to the human and two to the bovine type. Prof. Rabinowitsch was inclined to regard domestic animals as a fairly important source of infection of tuberculosis to man. Papers by Wassermann and Neufeld on immunity in tuberculosis were in a sense discouraging; neither believed in the existence of remedies which attacked the tubercle bacilli in the body, the only remedies which were effective being such as acted on the resistance of the tissues. Friedmann's turtle vaccine did not figure on the programme of the congress, but Klopstock interjected some comments on this remedy, which he had found to be useless in advanced cases and so uncertain in its action in early cases that the results achieved did not bear out the puffs of its promoters. Wassermann referred to it as not only useless but dangerous. Another remedy discussed in unflattering terms was the Deycke-Much partial antigen treatment. Neufeld declared that no experimental evidence had yet been produced in favour of the claim that Much's preparations were superior to other tuberculins, and his "partial antigen laws" were, in Neufeld's opinion, quite "up in the air" and bereft of any scientific foundation. Prof. Uhlenhuth's advice was to the effect that research in chemotherapy should be pursued, as he believed in the possibilities of destroying the tubercle bacillus in vivo by chemical agents. On the other hand, the most authoritative speakers adopted a sceptical attitude towards the possibilities of destroying the tubercle bacillus in the body by immunobiological methods. Perhaps the most useful function of this congress was the opportunity it gave leaders of the medical profession in Germany to chart for the benefit of their colleagues the blind alleys of the problems of tuberculosis.

Annual Report of the Trudeau Sanatorium.

The thirty-sixth annual report for the year ending Oct. 31st, 1920, is, like its predecessors, stimulating and hopeful without being heady. More and better work has been done than heretofore, an endeavour has been made to employ more exact methods in treatment and diagnosis, and every advance in clinical or laboratory work has been weighed carefully in its potential relations to the patient. By keeping up to date with the study of tuberculosis research all over the world the medical officers of the sanatorium are able to correlate their own investigations with research elsewhere, and by their system of coöperative and collective study they have rendered the diagnosis of tuberculosis untenable in an increasing number of cases. "The diagnosis of pulmonary tuberculosis, curiously enough, grows more instead of less difficult as time goes on." At the Trudeau laboratory, S. A. Petroff has nearly completed his researches into the distinctive features of different groups of the human tubercle bacillus, and he is also engaged in studies in iso-agglutination of the blood and the clinical value of the complement-fixation test. The value of acriflavine has been studied experimentally, and while found to prevent growth in the test-tube, it apparently hastened the death of the animals. Extensive studies have also been carried out on the value of vitamins in the tuberculosis of rats, and experiments have shown that the bovine tubercle bacillus grows best with vitamin B, the human type with vitamin A. Healing of tuberculosis being in part due to the deposit of lime salts about the tubercles, the laws governing such a deposit have been studied, many patients have been treated with an excess of lime salts in the form of calcium lactate, and the results obtained are shortly to be published. Equipment has recently been provided for a study of the basal metabolism in tuberculosis and for complete chemical examinations of the blood. Since the recent introduction of diagnosis of intestinal tuberculosis by the X rays, more than 700 cases have thus been investigated, and 5 or 6 per cent., some without clinical evidence of intestinal tuberculosis, have been found to suffer from this complication. "Our methods were studied to see if we could dispense with the X ray work in the diagnosis of this condition, but it was found impossible to make a definite diagnosis without it." Since the Trudeau Sanatorium was opened in 1884, 5586 patients have been admitted, and for the past 18 years an attempt has been made to communicate with each discharged patient each year. In 1920 only 5·5 per cent. of all the patients ever admitted to the sanatorium remained unaccounted for, and an analysis of 4975 patients, treated up to Oct. 31st, 1919, showed that 2240 were alive and well, 578 were alive but ill, 1894 were dead, and 263 could not be traced. The moral of this report is that a sanatorium which is inspired by restlessly dynamic forces can not only treat tuberculosis successfully, but may also advance our knowledge of the genesis of this disease.

Late Results of Pneumothorax Treatment.

Two of the most common and plausible objections to pneumothorax treatment are that its benefits are only palliative and evanescent, and that while it may be recommended to the "idle rich," it is unsuited to the working-class patient whose survival depends on his ability to support himself. In a recent paper Dr. S. M. Saxtorph[1] of the Danish Nationalforenings Sanatorium at Nakkebollefjord has attempted to meet these two objections by showing that, even several years after discharge, a considerable proportion of working-class patients treated by artificial pneumothorax may still be fit for work. This treatment has been adopted at Dr. Saxtorph's sanatorium for over ten years, and his paper deals with 200 patients whose disease qualified them for pneumothorax treatment. They were classified according as (1) a pneumothorax could not be induced, 58 cases; (2) only a partial pneumothorax could be induced, 34 cases; and (3) a complete pneumothorax could be induced, 108 cases. Two years or more after the discharge of these patients it was found that of the 58 in the first class 47 were dead, 6 were alive but unwell, and only 5 were fit for work. Of the 34 patients in the second class only 3 survived, and of these only 2 were fit for work. But of the 108 patients in the third class, in which the pneumothorax was comparatively large and unlimited by other than slight apical adhesions, 34 were alive and for the most part fit for work two to six years after discharge. It appears from these figures that a working-class patient in the third stage of pulmonary

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[1] Ugeskrift for Laeger, June 2nd, 1921.

VITAL STATISTICS OF LONDON, JULY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 10·3 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 8·7, 9·6, and 9·4 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Paddington, Chelsea, St. Marylebone, Hampstead, Holborn, and Wandsworth; and the highest in Stoke Newington, Finsbury, Shoreditch, Stepney, Bermondsey, and Woolwich. The prevalence of enteric fever was somewhat greater than in the two preceding months; of the 32 cases notified during the four weeks ended July 30th, 5 cases belonged to St. Pancras and 4 to Wandsworth. There were 27 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 10, 18, and 23 at the end of the three preceding months; the weekly admissions averaged 5, against 2, 5, and 4 in the three preceding months. The prevalence of scarlet fever was about 12 per cent. greater than in the preceding month; this disease was proportionally most prevalent in Stoke Newington, Finsbury, Shoreditch, Stepney, Bermondsey, and Woolwich. The Metropolitan Asylums Hospitals contained 3722 scarlet fever patients at the end of the month, against 3217, 3375, and 3621 at the end of the three preceding months; the weekly admissions averaged 567, against 411, 507, and 506 in the three preceding months. The prevalence of diphtheria was slightly greater than in the preceding month; the greatest proportional prevalence of this disease occurred in Hackney, Finsbury, Shoreditch, Bermondsey, Battersea, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2129, 2121, and 1896 at the end of the three preceding months, numbered 1969 at the end of July; the weekly admissions averaged 250, against 261, 241, and 235 in the three preceding months. Erysipelas was proportionally most prevalent in Hammersmith, Fulham, Finsbury, the City of London, Shoreditch, Southwark, and Deptford. Nine cases of encephalitis lethargica were notified during the month, against 77, 56, 24, 14, and 18 in the preceding months of the year; of these, 2 belonged to Southwark. The notified cases of cerebro-spinal fever numbered 7, against 12, 11, and 5 in the three preceding months; of these, 2 belonged to Lambeth. The 30 cases of puerperal fever included 6 in Islington, 3 in Fulham, and 3 in Stepney.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended July 30th the deaths of 3394 London residents were registered, equal to an annual rate of 9·8 per 1000; in the preceding months the rates had been 12·6, 11·2, and 9·4 per 1000. The death-rates ranged from 6·6 in Hampstead, 7·1 in Fulham, 7·4 in Wandsworth, 7·9 in Hackney, and 8·1 in Battersea, to 11·7 in Finsbury, 12·1 in Stoke Newington, 12·3 in Shoreditch, 12·5 in Kensington, and 13·2 in Stepney. The 3394 deaths from all causes included 247 which were referred to the principal infectious diseases; of these, 3 resulted from enteric fever, 12 from measles, 15 from scarlet fever, 40 from whooping-cough, 53 from diphtheria, and 124 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Chelsea or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Fulham, the City of Westminster, St. Marylebone, Holborn, Finsbury, and Battersea; and the highest in Hammersmith, Stepney, Poplar, and Bermondsey. The three fatal cases of enteric fever were 2 fewer than the average in the corresponding period of the five preceding years. The 12 deaths from measles were one-fifth of the average; of these, 3 belonged to Stepney, 2 to Islington, 2 to Poplar, and 2 to Southwark. The 15 fatal cases of scarlet fever exceeded the average by 4; of these, 4 belonged to Bermondsey, 2 to Stepney, and 2 to Camberwell. The 40 deaths from whooping-cough were one below the average; of these, 6 belonged to Camberwell, 4 to Islington, and 3 to each of the boroughs of Fulham, St. Pancras, Lambeth, and Wandsworth. The 53 fatal cases of diphtheria were 15 in excess of the average; the greatest proportional mortality from this disease occurred in St. Pancras, Islington, Stoke Newington, Poplar, Bermondsey, Greenwich, and Lewisham. The 124 deaths from infantile diarrhœa exceeded the average by 66; this disease was proportionally most fatal in Hammersmith, Shoreditch, Stepney, Poplar, Deptford.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1921.

(*Specially compiled for* THE LANCET.)

		Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.										
CITIES AND BOROUGHS.	Estimated civil population, 1920.	Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	4,531,971	32	—	—	2350	1001	129	9	9	7	30	3567	10·3	3	—	12	15	40	53	124	247	0·7	3394	9·8
West:																								
Paddington ...	149,673	—	—	—	58	21	4	—	1	—	—	84	7·3	—	—	—	—	2	—	4	6	0·5	101	8·8
Kensington... ...	164,177	2	—	—	79	19	3	—	—	—	—	103	8·2	—	—	—	—	1	2	3	6	0·5	157	12·5
Hammersmith...	136,200	1	—	—	85	32	6	1	—	—	1	126	12·1	—	—	—	—	1	2	7	10	1·0	94	9·0
Fulham	158,621	1	—	—	56	32	7	—	1	—	3	100	8·2	—	—	—	1	3	—	1	5	0·4	87	7·1
Chelsea	62,987	—	—	—	15	5	—	—	—	—	1	21	4·3	—	—	—	—	—	—	—	—	—	53	11·0
City of Westmin'r	132,615	2	—	—	63	18	2	—	—	—	2	87	8·6	—	—	—	—	—	—	2	2	0·2	104	10·2
North:																								
St. Marylebone...	101,856	1	—	—	29	21	4	—	1	1	—	57	7·3	—	—	—	—	1	—	—	1	0·1	71	9·1
Hampstead ...	91,519	—	—	—	18	13	2	—	—	—	—	33	4·7	—	—	—	1	1	1	1	4	0·6	46	6·6
St. Pancras... ...	228,178	5	—	—	98	41	4	1	—	—	1	150	8·6	—	—	—	—	3	4	2	9	0·5	159	9·1
Islington	335,907	1	—	—	168	92	5	—	—	—	6	272	10·6	1	—	2	1	4	7	5	20	0·8	260	10·1
Stoke Newington	52,934	1	—	—	62	12	2	—	—	—	—	77	18·9	—	—	—	—	—	1	1	2	0·5	49	12·1
Hackney	225,372	—	—	—	117	65	5	—	—	—	1	188	10·9	—	—	—	—	2	2	8	12	0·7	136	7·9
Central:																								
Holborn	39,676	—	—	—	6	11	—	—	—	—	—	17	5·6	—	—	—	—	1	—	—	1	0·3	33	10·8
Finsbury	78,291	2	—	—	64	24	8	—	—	1	—	99	16·5	—	—	—	—	—	1	1	2	0·3	70	11·7
City of London...	14,447	—	—	—	9	4	1	—	—	—	—	14	12·6	—	—	—	—	—	—	—	—	—	10	9·0
East:																								
Shoreditch... ...	102,044	1	—	—	100	44	5	—	—	—	2	152	19·4	—	—	—	—	—	1	6	7	0·9	95	12·3
Bethnal Green...	114,471	—	—	—	50	22	3	—	—	1	—	76	8·7	—	—	—	1	2	1	2	6	0·7	75	8·5
Stepney	[illegible]11,770	—	—	—	196	65	10	2	—	—	3	276	14·9	—	—	3	2	1	2	17	25	1·3	244	13·2
Poplar	159,766	1	—	—	110	31	5	—	—	1	1	149	12·2	1	—	2	—	—	3	11	17	1·4	138	11·3
South:																								
Southwark... ...	187,142	1	—	—	89	42	9	—	2	—	2	145	10·1	—	—	2	1	1	1	7	12	0·8	150	10·4
Bermondsey ...	129,189	—	—	—	112	49	3	—	1	—	1	165	16·8	—	—	—	4	1	5	4	14	1·4	113	11·4
Lambeth	293,572	1	—	—	125	39	9	3	1	2	2	183	8·1	—	—	—	—	3	3	9	15	0·7	234	10·4
Battersea	165,664	—	—	—	79	48	5	—	—	—	1	133	10·5	—	—	1	—	1	1	2	5	0·4	103	8·1
Wandsworth ...	346,990	4	—	—	97	67	9	—	—	—	1	178	6·7	1	—	—	—	3	4	6	14	0·5	196	7·4
Camberwell ...	284,712	2	—	—	145	54	9	2	1	1	1	215	9·8	—	—	1	2	6	3	5	17	0·8	219	10·0
Deptford	115,636	1	—	—	65	21	7	—	—	—	—	95	10·7	—	—	1	1	1	—	5	8	0·9	102	11·5
Greenwich... ...	102,403	1	—	—	60	32	—	—	—	—	—	93	11·8	—	—	—	—	—	3	4	7	0·9	73	9·3
Lewisham	174,438	2	—	—	77	37	—	—	—	—	1	117	8·7	—	—	—	1	1	4	4	10	0·7	114	8·5
Woolwich	141,666	2	—	—	116	40	2	—	1	—	—	161	14·8	—	—	—	—	1	2	7	10	0·9	107	9·8

* Including membranous croup.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Anthrax among Animals.

OWING to the uncommon drought this year, and to the consequent insufficient feeding of animals, the number of cases of anthrax is much greater than in corresponding periods of other years. In some parts of the country there is absolutely no grass or water. If the animals do not die of thirst their resistance is so reduced that they readily develop diseases, of which the most prevalent is anthrax. According to Roumanian sanitary law animals suffering from anthrax must not be treated at all, but immediately slaughtered and buried; but the peasants, in order to decrease their losses, take off the hide of the animals, for which they get almost as much as for the animal itself. Many recent cases of anthrax have resulted from this practice. Severe penalties have now been instituted for the infringement of these laws. In one village, near Satu Mare, five animals suffering from anthrax were buried, and the gipsies near the village exhumed the beasts, and ate meat cut from them. Naturally all were taken ill, three of them died, and the rest are being treated in the county hospital.

The late Prof. Genersich.

Dr. Gustav Genersich, professor of pediatrics at the University of Klausenburg (now Cluj), died on July 23rd in his fifty-sixth year. The chair of pediatrics at Cluj was his creation; his name and works are familiar wherever the diseases of children are studied. Prof. Genersich came of a medical family; his great-grandfather was a professor at the University of Vienna, his grandfather a very celebrated practitioner in Hungary, and his father was for more than a generation professor of pathology at the University of Budapest. He himself studied pediatrics at Vienna, Paris, and London. Among his more notable works were the following: "Hereditary Dilation and Hypertrophy of the Colon in Infants"; "Bacteriological Researches on So-called Septic Diphtheritis"; "Remarks on the Practice of Intubation"; "The Influence of the Cradle upon the Development of the Skull"; "On Infantilism"; "On the Spiritual Life of Small Children"; "The Relation of Tuberculosis to School"; and "Official Researches on the Fate of Illegitimate Children." He founded a school for mothers and created an association for the protection of children. During and after the war he turned all his activity towards the care of war orphans, and the considerable decrease of infant mortality in Transylvania is largely attributable to his efforts.

The Unimportance of a Negative Wassermann Reaction.

Dr. Ferencz Veress, professor of venerology at the University of Cluj, says in an article on the above subject that most unfortunate consequences attend the practice of attaching importance to a negative serum reaction. It is still worse if a patient goes directly to a laboratory and not to a specialist. Basing his statement on details of several thousands of cases, he asserts that a positive reaction is the sign of active syphilis, necessitating energetic treatment, but he is emphatic in warning against the drastic treatment of old latent cases of lues, where reaction should be gradually induced by means of mild treatment with mercury or iodine. A negative W.R. alone means nothing at all—the disease may be either non-existent or latent. The reaction can be negative in all stages of syphilis, whether mild or severe. In the estimation of cures clinical symptoms are to be relied upon, but not the negative W.R. It may be necessary to give a course of treatment even when the reaction is negative.

Enuresis and Organotherapy.

Dr. Konradi, specialist in diseases of children, has studied the treatment of enuresis for more than two decades. In 1910 he experimented with organotherapy, employing thyroidin, recommended by Williams, and the testicular extract recommended by Serralach, but was not satisfied with the results, and continued experiments to obtain a reliable cure. He came to the conclusion that the real cause of the disease was insufficiency of the blood-forming organs and endocrine glands, and introduced the application of thymus extract as advised by Ruhra in Baltimore and Firth in London. His results of combined treatment with thyroidin, testicular and thymus extracts leave little to be desired; children suffering from enuresis are given one tablet every day of each, thyroidin, thymus, and testiculin, with rapid and excellent results. Konradi maintains that this effect is a specific one. He had had no case where the three extracts combined did not give good results. In girls, instead of testiculin, ovarial extract is administered. He quotes a case in which a man wanted to divorce his wife on account of her enuresis; by means of his combined treatment Konradi cured the woman and removed all grounds for divorce.

Bucharest, August 18th.

THE HORSLEY MEMORIAL.

THE organisation formed in November, 1920, to secure in permanent form the recognition of the life and work of Sir Victor Horsley has now published a further list of subscriptions, promised and received, as follows:—

	£	s.	d.
Donald Armour, C.M.G., Dr. Ernest Clarke, Colonel Littlewood, C.M.G., W. Rushton Parker, Dr. C. E. Reynolds (Los Angeles), G. E. Twynam .. each	5	5	0
Sir N. M. A. Abbot-Anderson, M.V.O., C. S. Handley each	3	3	0
Dr. C. Bolton, Herbert H. Brown, Captain L. F. Hine, Dr. A. Jones, Edward F. Maynard, Dr. A. McCormick (Sydney), Dr. J. J. A. Neil .. each	2	2	0
Dr. J. Blamey, Dr. C. E. Evans, Dr. J. Lockhart Gibson (Brisbane), Dr. E. G. Goffe, F. P. Mackey, Dr. Nabarro, Prof. J. T. Wilson .. .. each	1	1	0
Dr. L. de Zilwa (Ceylon)	1	0	0
J. W. Papillon	0	7	0
National Hospital (Queen-square)	2	6	5

The total acknowledged in previous lists is £818; these lists appeared in THE LANCET, 1921, Jan. 1st, p. 46, Feb. 19th, p. 407, and May 7th, p. 988.

Further subscriptions, and those promised and still unpaid, will be gratefully received by either of the hon. treasurers, Sir Frederick Mott, K.B.E., Maudsley Neurological Hospital, Denmark-hill, S.E. 5, and Dr. H. H. Tooth, C.B., C.M.G., 34, Harley-street, W. 1, or the hon. secretaries, Sir W. Arbuthnot Lane, Bart., C.B., 21, Cavendish-square, W. 1, and Mr. Edward J. Domville, O.B.E., Symondsbury, Bridport.

JAMES WATSON ALLAN, M.B., F.R.F.P.S. Glasg., lately physician superintendent of the City of Glasgow Sanatorium at Bellefield, Lanark, was recently entertained by the staff of the Public Health Department, who presented him with a silver rose-bowl. Dr. A. K. Chalmers spoke warmly of Dr. Allan's work in building up Glasgow's first great fever hospital.

DEVONSHIRE HOSPITAL AND BUXTON BATH CHARITY.—At the annual meeting an appeal was made for increased financial support, it being pointed out that the total income for the past year was £22,985, or £775 0s. 0d. less than the previous year. Dr. C. W. Buckley, hon. physician to the hospital, called attention to the valuable research work done by the institution in regard to rheumatism. No other hospital in the world anywhere near the size of Devonshire Hospital, he said, was devoted to the work of rheumatic disease; there any method at all worth a trial was tried and tried carefully. The best method of all was the proper use of the Buxton mineral waters, but the literature on the treatment of rheumatism made little mention of the use of the Buxton waters. The work of such institutions as the Devonshire Hospital ought to be better known, and the results of the research work carried out should be widely disseminated among medical men.

Obituary.

HERBERT EDMUND CUFF, O.B.E., M.D. LOND., F.R.C.S. ENG.,

PRINCIPAL MEDICAL OFFICER, METROPOLITAN ASYLUMS BOARD.

A FORTNIGHT ago we briefly recorded the tragic death, at the age of 57 years, of Dr. H. E. Cuff. On the afternoon of August 16th, in an endeavour to save his daughters, aged 15 and 12 respectively, who had got into difficulties while bathing at Burnham Overy on the Norfolk coast, Dr. Cuff was drowned and his children with him.

Dr. Cuff received his medical education at Guy's Hospital, graduated M.B., B.S. Lond. in 1888, took the F.R.C.S. Eng. two years later, and the M.D. Lond. in 1891. After holding resident appointments at Guy's Hospital and at the Leeds General Infirmary, he entered the service of the Metropolitan Asylums Board, and in 1897 was appointed medical superintendent of the North-Eastern Fever Hospital, relinquishing that post eight years later on becoming a member of the head office staff. He became principal medical officer to the Board, devoting his whole time to his office, except for a period during the war when he was resident head of the Belgian Refugee Camp at Alexandra Palace; for this service he was awarded the O.B.E. Dr. Cuff was the author of a number of useful books for nurses, including his reprinted "Lectures on Medicine to Nurses," and he contributed a section on Infectious Diseases to Whiting's "Aids to Medical Diagnosis."

Dr. Lauriston Shaw, one of the medical members of the Metropolitan Asylums Board, writes as follows:—

> In the last few years I have seen a good deal of Dr. Cuff's work as principal medical officer of the Board. Having known him as a student at Guy's I expected to find him able and hard working. But the Board requires other qualities besides these in its P.M.O. In his dealings with the Board itself, its immense staff, both lay and medical, and its numerous and varied types of institution, this officer requires large stores of sympathy, tact, and common-sense, besides technical knowledge of many branches of his profession; all these Cuff had. His earlier work for the Board was carried out solely in the infectious fever service, but this did not prevent him from acquiring practical knowledge of, and maintaining a keen interest in, the various other departments of medical work—mental diseases, eye diseases, tuberculosis, venereal diseases, &c., which have been gradually added to the Board's activities. It was characteristic of Cuff's energy that when the Board was first entrusted with the administration of institutions for the treatment of tuberculosis he spent some portion of his well-earned vacation as locum tenens superintendent of a sanatorium in order to familiarise himself with the special medical and administrative problems of these institutions. It is therefore natural that the Board placed implicit reliance on Dr. Cuff's judgment in the advice he gave it with regard to the constantly recurring medical problems that arose in the course of its ever-extending work. His relations with his professional colleagues administering the institutions and treating the patients therein were as happy as those which subsisted between him and the members of the managing subcommittees. Each section knew that Cuff's advice would be inspired with a whole-hearted desire to do what was best for the afflicted persons entrusted to the Board's care. Though he was always busy he was at all times accessible to those needing his advice or assistance.

Dr. Cuff's sudden and tragic death at the height of his usefulness comes as a severe blow to many beside his associates at the Metropolitan Asylums Board. He leaves a widow whose terrible loss has elicited widespread sympathy.

JOHN WARRINGTON HAWARD, F.R.C.S. ENG.,

CONSULTING SURGEON TO ST. GEORGE'S HOSPITAL.

WE regret to announce the death in his eightieth year of Mr. John Warrington Haward, consulting surgeon to St. George's Hospital, which occurred on Aug. 20th, at his residence, Manor End, Berkhamsted.

John Warrington Haward was born in 1841, the youngest of the ten children of Mr. James Haward, of Great Baddow, Essex, and entered St. George's Hospital as a student in 1860, when Cæsar Henry Hawkins Prescott Hewett, and George Pollock were the leading surgeons of the institution, and when the demonstrator of anatomy was Henry Gray, whose death occurred from small-pox before he was elected to the staff. Haward was a successful student, being William Brown Exhibitioner in medicine and surgery, and on qualification proceeded to hold the office of house surgeon at Westminster Hospital, and later was resident surgical officer at the Great Ormond-street Children's Hospital. Here, after taking the F.R.C.S., he was elected assistant surgeon in 1870, and his experiences among children dictated his special line of surgical work as far as specialism was then carried in surgery. From 1871 to 1874 Haward discharged the duties of surgical registrar, curator of the museum, and demonstrator of morbid anatomy at St. George's Hospital, and in 1875, on the retirement of Sir Prescott Hewett, whose clinical clerk he had been, he was elected assistant surgeon to St. George's Hospital. He became full surgeon five years later, and he maintained his connexion with the hospital as surgeon, and later as consulting surgeon, until the day of his death.

During this long association with St. George's Hospital Haward gained the respect and affection of generations of medical students by unvarying kindness and courtesy, by the clearness and simplicity of his teaching, and by the high standard of conduct which he manifested—without talking about it. He was ever for essentials in surgery and he arrived on the scene as a hospital surgeon when the essentials themselves were in doubt, and when it was necessary for the teacher both to keep an open mind and to maintain authority; for the year in which he was appointed assistant surgeon to St. George's Hospital marked some of the keenest discussions as to the new antiseptic doctrines. Haward approached the situation from the point of view that caution was the best guarantee for real advancement in learning, and while pleading for the scientific use of the imagination and for the free play of the speculative as well as of the critical faculties, he was never tired of pointing out that the limits and criteria of authority must be considered. This attitude of mind lent to his teaching an old-fashioned flavour which in reality it did not possess; for other of his favourite themes were the value of prevention and the need for early diagnosis, and he advocated these things in words which might express the teaching of to-day. In the operating theatre he was quick to learn the lessons which Lister's discoveries were bringing home to the medical profession, and that he was no mere follower of tradition was shown by his treatise on orthopædic surgery, in which, while declaring that there could be no good reason for the separate practice of orthopædic surgery, he showed that the general body of the profession at his date were not well-equipped in the treatment of many simple cases of deformity.

Haward was a notable figure in the charitable world. He made few public appearances save in the cause of charity, but the esteem in which he was held by his own profession may be estimated by the fact that he had been a Hunterian Professor of the Royal College of Surgeons of England, and President of the Royal Medical and Chirurgical Society, as well as President of the Section of Surgery of the Royal Society of Medicine. He was on the Committee of the Charity Organisation Society, of the Mansion House Council on the Dwellings of the Poor, and of the Invalid Children's Association—of this body he had been president—while he was for a long time Treasurer of the Society for the Relief of Widows and Orphans of Medical Men. Sir Dyce Duckworth, in a letter to us regretting the loss of a life-long friend, alludes to Haward's "skill, wisdom, and high-mindedness," and in those three characteristics sums up the man.

Mr. Warrington Haward married the daughter of the late Dr. James Nicholls, F.R.C.S., of St. Columb, and leaves a widow and two sons. A son who was intended for the medical profession died young.

with the Middlesex County Council, a very unsatisfactory arrangement for a community of the size of Tottenham. The analysis of the infant deaths shows that 112 out of 248, or nearly half, occurred during the first month of life and brings out the fact that, as in other districts with low infant mortality rates, the neo-natal mortality is untouched and the reduction has been in the later months. Dr. Kirkhope draws attention to the need for further accommodation for the dental service and its extension to mothers—expectant and nursing—and to children under 5 years of age.

In his school medical service report Dr. Kirkhope says: "The impression gained by the examination of school children in this area is that the strain of war has left its mark on the 8–9 years age-group. These children appear to be smaller and less weighty than those your medical officers have been accustomed to inspect in previous years." Dr. Kirkhope puts forward as a probable explanation the lack of such foods as butter, eggs, and milk. The need for a skilled aurist to deal with cases of otorrhœa is mentioned. A method of dealing with verminous heads has been developed by which the worst cases of pediculosis capitis can be remedied in half an hour (provided there are no sores on the scalp) without cutting or damaging the hair. School medical officers who are interested should write to Dr. Kirkhope for details. The usual Table V. shows that a satisfactory percentage of treatment is being secured except for dental defects. The report of the newly-appointed dentist, Mr. Sainty, shows that the work was in arrears and also that the percentage of acceptances of treatment is low, seldom more than 45 per cent. for any school. Much propaganda work among parents is evidently required in Tottenham as elsewhere with regard to the importance of dental care and early treatment.

Chelsea.

The estimated population of this metropolitan borough for 1920 is given as 68,500; the birth-rate was 20·3, which is 7·0 greater than in 1919; the infant mortality rate was 52, the lowest ever recorded. Dr. Louis C. Parkes tells us that the maternity and child welfare work grows. The medical staff has been increased. A "home help" was appointed by the Council in October at a wage of £2 for a 44-hour week (with outdoor uniform). The Chelsea Red Cross Nursing Home for Babies, Edith-terrace, was opened in January and is intended for cases of malnutrition, wasting, &c., which are not usually admitted to ordinary children's hospitals. The general death-rate in Chelsea during 1920 was 11·3. The deaths from pulmonary tuberculosis numbered 73 (41 males and 32 females) and of these no less than 71 per cent. died in institutions. Seventeen cases of ophthalmia neonatorum were notified and 3 additional cases of eye trouble in infants were visited. "Of the total 20 cases, 18 made complete recoveries, 1 made incomplete recovery, and 1 infant remained blind of one eye."

Llanelly.

Dr. Laurence W. Pole tells us that Llanelly, the largest town in Carmarthenshire, is mostly situated on low-lying land on both sides of the river Lliedi, which flows into the Loughor estuary forming the southern boundary of the town. The river is polluted before it reaches Llanelly and the tidal estuary is polluted by the sewage and works of the borough. "The country surrounding Llanelly is mainly agricultural and is very beautiful where it has not been defaced by the sinking of coal pits or the erection of factories . . . . The chief occupation of the inhabitants is the manufacture of tinplate." Other industries are iron founding, copper smelting, tin stamping and enamelling, galvanising and de-tinning.

The estimated population for 1920 was 38,776. The death-rate was 12·9 and the birth-rate 21·8. The infant mortality rate was high—viz., 110. The tuberculosis death-rate was also high—viz., 1·23, which is to be compared with 0·88 for 1919. During the last six years there have been more female than male deaths from pulmonary tuberculosis—an unusual occurrence for a town. As in some other towns influenza was prevalent during March and April and 45 deaths were attributed to it during the year. "During the year 1920 20 houses were erected (compared with none in 1919, 2 in 1918, 9 in 1917, and 234 in 1913, the maximum)." Dr. Pole confirms the recommendation of his predecessor, Dr. Francis, as to the great need for a maternity home.

Dr. Pole's report as school medical officer shows that the education committee provide no treatment. Such treatment as is given is provided by the general practitioners of the district in return for monthly payments by the workmen. Table V. shows that 270 out of 318 minor ailments were treated and only 137 out of 261 defects of nose and throat; that 180 visual defects and 702 other defects were apparently left untouched; and that no action whatever seems to have been taken with regard to dental defects. Dr. Pole only took over his duties on Nov. 22nd, 1920, and no doubt hopes to report next year that the arrangements made for treating the defects found by medical inspection have been greatly improved.

SCHOOL MEDICAL INSPECTION.

Warrington.

In his report on School Hygiene in the County Borough of Warrington, for 1919, Dr. G. W. N. Joseph, the medical officer of health and school medical officer, classifies the elementary schools in the borough under four heads: four of them are modern, up-to-date schools; nine Church schools of an older type are fairly satisfactory; in eight schools, also of an older type, certain defects of lighting, heating, ventilation, &c., might be remedied; while three old schools, accommodating 1259 children, are "badly constructed, defective from a sanitary point of view, and should be replaced as soon as possible." Most of the schools need redecorating, and it is hoped that the worst will be dealt with "during the coming year." (The report is not dated.) There are still ten schools heated by close stoves, which are objectionable on several grounds. Measles (860 cases), mumps (1225), scarlet fever (96) and diphtheria (71) were the chief diseases prevalent during the year. The number of children examined at the routine inspections of the code groups was 4237, of whom 1783, or 42·08 per cent., were referred for treatment; in addition, 5873 children were examined as "special cases," either in school, or at the inspection clinics. The most numerous defects found in the systematic inspections were want of cleanliness (360), enlarged tonsils, or adenoids, or both (291), and defective vision (207). There were only five cases of organic heart disease, and only 11 of tuberculosis. With regard to nutrition, only 0·8 per cent. were found to be markedly defective, and a further 3·2 per cent. below normal. Of the 2532 children whose eyesight was tested, only 8·1 per cent. were considered to require treatment, but 12·2 per cent. were passed as having "fair vision, not less than $\frac{6}{12}$, and without eye-strain." Only 10 cases of pulmonary or other forms of tuberculosis were diagnosed among the code-group children examined, but as many as 218 school children are known to be suffering from the disease in one form or another, of whom 159 are attending school. Dr. Joseph remarks that "the need for a special institution for treating and educating many of these cases is fully recognised, and will have to be faced in the near future." At present there is no open-air school, nor are there any open-air class-rooms, though playgrounds and sheds are used in fine weather during the summer. With regard to physical training, there is no "organiser," and no special instructors have been appointed, but many of the male teachers have had special training in the army. It is to be hoped that these requirements in regard to open-air education and physical training may receive early attention.

remaining, though naturally, under such circumstances, it would be better to deal also with the physical side of the question. In the second place, and more important still, the question whether a psychic stimulus may not affect the sympathetic system and the glandular secretions to a much larger extent than is at present believed still requires more investigation. We know that under suitable psychic stimuli the salivary and gastric glands vary their secretions; that the same applies to secretions of the genital organs; that the emotion of fear will delay or prevent menstruation; and recently I have found that an artificially produced emotion of fear under hypnosis will raise the blood pressure and that such pressure will remain raised for a considerable period after all other signs or feelings of fear have disappeared in the patient.

Such facts as these are suggestive on the positive side; on the other side it is difficult to see how on Dr. Golla's theory a physical disturbance of mechanism constitutes the primary factor in all functional diseases when we consider some of the minor and commonplace examples. For instance, what physical disturbance can be suggested that should cause a woman to have a fear, amounting to horror, of birds when that same woman is not even afraid of rats or mice? Numerous other examples of minor phobias and minor obsessions might be given and I see no reason to doubt a similar cause for these as for major cases. On this side also one must not be dogmatic, and one should be prepared to examine the facts whether they are obtained in the laboratory or by psycho-analytic investigation. One cannot, however, too strongly emphasise the necessity of avoiding premature conclusions that psychical phenomena must have physical causes, and vice versa.

I am, Sir, yours faithfully,

PAUL BOUSFIELD,

Physician to the London Neurological Clinic.

August 21st, 1921.

Medical News.

UNIVERSITY OF MANCHESTER.—The Manchester Education Committee has awarded to Mr. Joseph Parness and Miss Muriel M. Edwards University Scholarships in the Faculty of Medicine of the value of £60 per annum for five years.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL. The Goldsmid Entrance Exhibitions of 112 guineas each have been awarded to A. E. Blake Pritchard, King's College, Cambridge; and N. L. White, St. John's College, Cambridge.

University College Hospital: Annual Dinner.—The annual dinner of Old Students of University College Hospital will be held at the Imperial Restaurant, Regent-street, London, on Thursday, Oct. 6th, at 7.30 P.M. The chair will be taken by Dr. Henry D. Waugh. The secretaries are Dr. A. M. H. Gray and Mr. Gwynne Williams.

"OUR DAY."—An appeal is being made by the Joint Council of the Order of St. John and the British Red Cross Society for flag-sellers on "Our Day," which this year will be on Oct. 1st. Ladies willing to sell flags are asked to send their names to 19, Berkeley-street, W. 1, as soon as possible, indicating the district which they prefer.

THE NEW HARWICH-ZEEBRUGGE ROUTE.—The thrice-weekly service opened this month between London and Zeebrugge via Harwich affords a comfortable and expeditious way of reaching the Belgian watering-places and the Flanders battlefield, as well as a starting-point for continental travel. The twin-screw steamship *Roulers* (late *Vienna*) leaves Harwich on Monday, Wednesday, and Saturday about midnight, returning from Zeebrugge on Tuesday, Thursday, and Sunday nights. Travellers can sleep six hours or more in two- or four-berth cabins and breakfast on board at the Belgian end of the journey if not pressed to catch the early train. It is possible by this route to leave Liverpool-street at 8.40 P.M. on Saturday, spend 18 hours in Belgium, visiting Blankenbergh, Ostend, and Bruges, reaching London again at 8 A.M. on Monday morning. No passport is now required by British subjects travelling by these week-end excursions. The only hardship is the stuffiness of the cabins, which apparently the most up-to-date navigation is unable to mitigate.

Sir Charles Bedford has been appointed honorary adviser to the Secretary of State for the Colonies on questions relating to power and industrial alcohol in the colonies and protectorates.

TRAINING FOR DISABLED NURSES.—The Ministry of Labour announces Oct. 31st as the closing date for applications under the training scheme. This scheme allows for the payment of training fees and maintenance allowance in addition to pension for nurses who, by reason of any disablement due to war service, are unable to return to their pre-war occupation. Applications for consideration must reach the Controller, Women's Training Branch, Ministry of Labour, St. Ermin's, Caxton-street, London, S.W. 1, on or before the closing date, except that nurses who may be demobilised after that date may apply within three months of demobilisation, and nurses who on that date are in attendance at a convalescent centre of the Ministry of Pensions, or as in-patients at a hospital of the War Office or Ministry of Pensions, may apply within three months of their discharge.

HEALTH WEEK.—The object of health week, which is to be held from Oct. 9th to 15th, is to focus public attention for one week in the year on matters of health, and to arouse that sense of personal responsibility for health without which all public work must fall far short of its aims. The chairman of the movement is the Lord Mayor of London, the vice-chairman is Prof. H. R. Kenwood, and Prof. A. Bostock Hill is chairman of the executive committee. The celebration of health week was instituted in 1912, and in 1914, at the request of a meeting of local authorities, the Royal Sanitary Institute appointed a committee to undertake the central organisation; but local celebrations in each centre are controlled by local committees. The programme is left in the hands of the local committees, which may take up a general health campaign or may attempt to concentrate public attention on some particular problem. Questions of a controversial nature are avoided, and stress is laid not on disease processes, but on the benefit to be derived from regard to the laws of health, and the saving of life and comparative immunity from disease which result from an efficient health administration and personal regard for health. Further information may be obtained from the Secretary, Mr. E. White Wallis, 90, Buckingham Palace-road, London, S.W.

DONATIONS AND BEQUESTS.—Mr. Sydney Webb, pharmaceutical chemist, Macclesfield, left £6578, and bequeathed £1000 to St. Dunstan's Hostel for the Blind, £300 to Macclesfield General Infirmary, and £200 to the Benevolent Fund of the Pharmaceutical Society of Great Britain.—The late Mr. Alfred Pointon, J.P., of Birmingham, has left by will £1250 to the Children's Hospital, Birmingham, to endow a bed in memory of his daughter; £2500 to the General Hospital, Birmingham; and £2500 to Queen's Hospital, Birmingham, for similar purposes; £1750 each to the Women's Hospital, Birmingham; the Orthopædic and Spinal Hospital, Birmingham; the Blind Institution, Birmingham; Eye Hospital, Birmingham; Ear and Throat Hospital, and the Skin and Urinary Hospital, Birmingham; £2000 to Middlemore's Homes, Birmingham; £1750 to the Deaf and Dumb Institution, Birmingham; £2000 to the Birmingham and District Crippled Children's Union; £1000 to Dr. Stephenson's National Children's Home; and £500 to the Birmingham Dispensary.—Mr. William Sutcliffe, a Manchester merchant, bequeathed over £12,000 for Manchester institutions, including amongst others £1000 to each of the following: Royal Infirmary, Salford Royal Hospital, Ancoats Hospital, and St. Mary's Hospitals for Women and Children; £500 to each of the following: St. Dunstan's Hospital for the Blind, Heywood Blind Aid Society, Northern Counties Hospital for Incurables; £300 each to Northern Hospital for Women and Children, Manchester Victoria Memorial Jewish Hospital; £250 to Manchester Children's Hospital; £200 each to Manchester and Salford Hospital for Skin Diseases, Royal Albert Asylum, Lancaster, National Library for the Blind, Christie Hospital (Cancer Home), Royal Schools for Deaf and Dumb; £100 each to St. John's Hospital for the Ear, the Ear Hospital, Adult Deaf and Dumb Institution. The board of management of St. Mary's Hospitals, Manchester, has received £1152 from the Hospital Sunday Fund.—The board of management of the Royal Infirmary, Manchester, acknowledges the endowment of two cots by the "A" and "D" Divisions of the City Police Force; the endowment in each case is provided by an annual subscription of 50 guineas.

WHOOPING-COUGH EPIDEMIC AT ST. KILDA.—Dr. Shearer, who visited St. Kilda on August 23rd to inquire into an outbreak of whooping-cough reported by wireless on August 19th, has forwarded his report to the Scottish Board of Health. He found that cases of whooping-cough had been occurring on the island from the end of

Greenwich, and Woolwich. In conclusion, it may be stated that the aggregate mortality in London during July from these principal infectious diseases was 14 per cent. above the average in the corresponding period of the five preceding years. The deaths from influenza in London during July numbered 15, against 149, 77, and 30 in the three preceding months; these deaths were less than a tenth of the average in the corresponding period of the five preceding years.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments have been made:—Surg. Comdrs.—C. V. Griffiths to the *Delhi*, as Senior Medical Officer and Squadron Medical Officer; and G. O. M. Dickenson to the *Victory*, addl., for Haslar Hospital. Surg. Lieut.-Comdrs.—F. J. D. Twigg to the *Pembroke* for R.N. Hospital, Chatham; and M. S. Moore to the *President*, addl., for Cambridge Naval School. Surg. Lieut.—T. Madill to the *Cornflower*. Surg. Comdrs. T. R. Shaw to the *Vivid* for R.N. Barracks (temp.); L. O. Rowan-Robinson to the *Blake*; E. T. Burton to the *Malabar*, addl., for H.M. Dockyard, Bermuda; and T. W. Myles to the *New Zealand* (temp.); P. F. Alderson to R.N. Hospital, Plymouth, for general duties and as Medical Transport Officer, Devonport; and C. R. Rickard to the *Lowestoft* as Senior Medical Officer and Fleet Medical Officer. Surg.-Lieut. J. W. Tighe to the *Espiegle*.

Surg. Lieut-Comdr. F. C. Alton and Surg. Lieut. A. G. Bee placed on Emergency List.

ROYAL ARMY MEDICAL CORPS.

Maj. J. S. Dunne relinquishes the acting rank of Lt.-Col.

W. L. Cowardin (Surg. Lieut.-Comdr., R.N., ret.) to be temp. Maj.

Temp. Capt. W. M. M. Jackson to be temp. Maj. whilst specially employed as D.A.D. of Hygiene.

Temp. Maj. N. H. Oliver relinquishes his commn. and retains the rank of Maj.

Capt. G. T. Baker resigns his commn.

Temp. Capt. E. E. Chipp relinquishes the acting rank of Maj.

Temp. Hon. Capt. D. E. Carter relinquishes his commn. and retains the hon. rank of Capt.

S. H. Woods, late temp. Capt., to be temp. Capt. whilst employed as a Dental Surg.

The undermentioned Capts. to be temp. Majs. whilst specially employed as D.A.D.'s of Hygiene: H. S. Milne and R. W. Galloway.

Capt. H. Bedingfield retires, receiving a gratuity, and is granted the rank of Maj.

The undermentioned temp. Capts. relinquish their commns. and retain the rank of Capt.: C. B. Dyson, S. H. Scott, and R. B. Jenkins.

Maj. E. McK. Williams, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ARMY DENTAL CORPS.

Temp. Capt. J. Duguid, Dental Surg., from Gen. List, to be Capt.

Temp. Capt. P. P. Hogan, Dental Surg., from Spec. List, to be Lieut., with the temp. rank of Capt., but without the pay or allowances of that rank.

Flight-Lieut. J. Wren, from R.A.F., Dental Branch, to be Lieut.

SPECIAL RESERVE OF OFFICERS.

Capt. T. Patterson relinquishes his commn. and retains the rank of Capt.

TERRITORIAL FORCE.

Lt.-Col. H. G. Smeeth having attained the age limit is retired and retains the rank of Lt.-Col. with permission to wear the prescribed uniform.

Capt. (Bt. Maj.) J. L. Joyce resigns his commn. and retains his rank.

Capt. A. W. Clarke resigns his commn. and retains the rank of Capt.

Maj. E. L. Gowlland to be Lt.-Col., and to command the 4th London Field Ambulance.

Capt. H. D. Davis to be Maj.

Capt. A. H. D. Smith (late R.A.M.C.) to be Capt.

Capt. F. A. E. Crew to be Maj., and command the Med. unit of the Edinburgh Univ. O.T.C.

Capt. S. S. Greaves vacates the appt. of D.A.D.M.S., W. Rid. Div.

Capts. C. G. Meade and W. Goldie resign their commns. and retain the rank of Capt.

Lieut. L. R. G. de Glanville to be Capt.

3rd Southern Gen. Hosp.—Capt. W. B. Secretan resigns his commn. and retains the rank of Capt.

TERRITORIAL FORCE RESERVE.

Lt.-Col. E. B. Dowsett from Gen. List, R.A.M.C., T.F., to be Col.

Maj. C. H. Welch, from R.A.M.C. (T.F.), to be Maj.

Capt. H. Foxton from R.A.M.C., T.F., to be Maj.

Capt. C. M. Smith from 1st Lond. (C. of L.) San. Co. to be Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

Lt.-Cols. G. H. Bowle-Evans and F. Wall to be Cols.

Bt.-Col. (now Col.) W. H. Ogilvie to be acting Col. while holding the appt. of A.D.M.S., 7th Ind. Bn., Mesopotamia and Egyptian Expeditionary Forces.

Maj. W. W. Jeudwine to be acting Lieut-Col. while commanding the Lucknow Casualty Clearing Station in France.

Temp. Capt. H. R. Shahane to be acting Lieut.-Col. while commanding a Combined Field Amb.

The King has approved the retirement of Lieut.-Col. de V. Condon, in consequence of ill-health.

Major J. McCoy, civil surgeon, Darrang, has been granted a year's leave. The services of Major P. S. Mills have been placed temporarily at the disposal of the Government of Bihar and Orissa. Dr. A. L. Mackenzie, of the Women's Medical Service, has taken over charge of the Bettiah Raj Dufferin Hospital. Major R. D. Saigol, ophthalmic surgeon, General Hospital, Rangoon, has been appointed temporarily to act as Lecturer in Materia Medica in the Burma Government Medical School. Capts. H. S. Anand and K. C. Dube have been appointed Deputy Sanitary Commissioners in the United Provinces. Lt.-Col. R. M. Carter, C.B., of Mesopotamian fame, has proceeded on leave, and during his absence an Indian graduate acts as Professor of Pathology and Morbid Anatomy and Curator of the Pathological Museum, and Major B. Higham as Dean, Grant Medical College, Bombay. Major Anderson, Agency Surgeon, has proceeded on leave. Major J. A. S. Phillips is transferred permanently and Capt. H. S. Anand temporarily to the Sanitary Department of the United Provinces. Lt.-Col. J. B. Christian acts as Surgeon Superintendent, St. George's Hospital, Bombay, vice Lt.-Col. A. Street who has proceeded on leave. Hon. Lt.-Col. R. Row, O.B.E., acts as First Physician and Professor of Medicine and Therapeutics, Grant Medical College, Bombay. Major M. J. Holgate has been appointed to Jail Department, Madras. Major J. H. Horne has been posted to Bombay Bacteriological Laboratory. Major C. H. Barber, civil surgeon, Alagarh, has proceeded on eight months' leave. Major A. Cameron, O.B.E., special malaria officer, United Provinces, has been appointed Civil Surgeon, Allahabad, in addition to his other duties. Lt.-Col. H. A. F. Knapton has been granted an extension of furlough, and on return acts as Surgeon Superintendent, St. George's Hospital, Bombay; and furlough has been granted to Lt.-Col. S. C. Evans. Major Crookshank has been appointed Assistant Director, The King's Institute, Guindy, Madras. Capt. Rowntree, Assistant Director-General, has proceeded on nine months' leave, and Capt. E. S. Goss officiates for him. Major Williams has been appointed to act as Deputy Director-General of the Indian Medical Service. Major J. A. S. Phillips has been confirmed in the appointment of Special Malaria Officer, United Provinces of Agra and Oudh.

DEATHS IN THE SERVICES.

Colonel William Henry Bull, A.M.S. (T.), who died on August 14th at Oswald's House, Stony Stratford, at the age of 69, had been a medical student at St. George's Hospital and qualified in 1874 with the M.R.C.S. Eng. He obtained the L.R.C.P. Lond. in the following year and the F.R.C.S. Edin. in 1882. An enthusiastic volunteer he was particularly interested in ambulance work. During the war he was chief organiser for the Midlands in connexion with the Medical Staff Corps and was responsible for the administration of the Birmingham District Voluntary Aid Detachment. He had been county director of Bucks and was formerly Commissioner of Medical Services under the Ministry of National Service and the Ministry of Pensions. Colonel Bull was a justice of the peace, deputy lieutenant for the County of Bucks, and Knight of Grace of the Order of St. John of Jerusalem, and an hon. surgeon to the King.

The Croix de Guerre has been conferred by the President of the Czecho-Slovak Republic upon Surg. Comdr. C. J. E. Cock, R.N., in recognition of services during the war. The King has given unrestricted permission to the officer concerned to wear the decoration.

Literary Intelligence.—Messrs. W. Heffer and Sons, Ltd., Cambridge, have in the press a volume entitled "The Autonomic Nervous System," Part I., by Prof. J. N. Langley, F.R.S.

Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.
Sheffield Royal Hospital.—Cas. O. Asst. Cas. O. Each £150.
Sheffield Royal Infirmary.—Asst. Cas. O. £150.
Stamford, Rutland, and General Infirmary.—H.S. £250.
Sunderland, Durham County and Sunderland Eye Infirmary.—H.S. £100.
Sunderland Royal Infirmary.—H.S. £200.
Taunton, Taunton and Somerset Hospital.—Female Res. Jun. H.S. £150.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Non-res. H.S. £150.
West London Hospital, Hammersmith-road, W.—Two H.S.'s. H.P. Each £100. Surgeon.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Somercotes and at Dunkeld, in the county of Perth.

Births, Marriages, and Deaths.

BIRTHS.

CLARK.—On August 17th, at Bayfield, Kent-road, Southsea, the wife of Dr. A. Erskine Clark, of a daughter.

COVELL.—On August 20th, in Constantinople, the wife (Oona Macleod) of Captain Gordon Covell, M.B., B.S.Lond., I.M.S., of a son.

DUNN.—On August 20th, to Rosamond, wife of G. Hunter Dunn, B.Ch., M.R.C.S., L.R.C.P.Lond., Red House, South Farnborough—a daughter.

HOLT.—On August 16th, at Heightside, Burnley, the wife of Lieut.-Colonel T. Holt, R.A.M.C. (T.F.), of a son.

MANFIELD.—On August 21st, at Cairo, Egypt, the wife of A. H. Manfield, M.R.C.S., L.R.C.P.Lond., of a son.

QUIRKE.—On August 22nd, at Brook House, Ullenhall, Warwickshire, the wife of Major M. J. Quirke, M.B., Ch.B. Birm., I.M.S. (retired), of a son.

REIDY.—On August 22nd, at 314, Commercial-road, E., the wife of J. Reidy, J.P., M.D., of a son.

REVELL.—On August 18th, at 4, Matlock-road, Norwich, the wife of Rowan W. Revell, M.D.Lond., D.P.H., of a daughter.

SCOTT.—On August 24th, at Rose Villa, Jesmond, Newcastle-on-Tyne, to Elsie, wife of J. McAlpine Scott, M.D.Glasg., Pensions Hospital, Shotley Bridge—a daughter.

TERRY.—On August 20th, at Barton-street, Gloucester, the wife of H. Cairns Terry, M.B., Ch.B.Birm., of a son.

MARRIAGES.

WARRINGTON—SAMUELS.—On July 22nd, at St. Michael's Church, Colombo, Thomas Warrington, M.R.C.S., L.R.C.P. Lond., to Dorothy Samuels, daughter of G. Young, Esq., J.P., of Culdaff, and widow of Captain A. P. Samuels, Royal Irish Rifles.

YEOMAN—YEOMAN.—On August 24th, at the Presbyterian Church, Neston, Lieut.-Colonel J. B. Yeoman, M.D., F.R.C.S.Edin., D.P.H., Barrister-at-Law of the Middle Temple, to Ida Isabel, widow of Dr. C. W. Yeoman, and younger daughter of the late Mr. James Fergusson, of Liverpool and Heswall, Cheshire.

DEATHS.

BROWNE.—On August 23rd, at Homewood, Hartford, Cheshire, Robert J. Browne, L.R.C.S. & P.I., L.M., late of the Beach, Hartford, aged 67 years.

DUNN.—On August 22nd, Rosamond, dearly-loved and loving wife of Dr. G. Hunter Dunn, Red House, South Farnborough.

NICOLL.—On August 15th, at Woodside-place, Glasgow, James Henderson Nicoll, M.B., C.M., F.R.F.P.S. Glasg., aged 57 years.

SHACKLETON.—On August 8th, on the voyage from Jamaica, of cerebral hæmorrhage, Thomas Francis Shackleton, M.R.C.S., L.S.A.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Short Comments, and Answers to Correspondents.

DEVELOPMENT OF MEDICAL SCIENCE IN VIENNA.

BY DR. MAX NEUBURGER,

PROFESSOR OF HISTORY OF MEDICINE AT THE UNIVERSITY OF VIENNA

THE reputation of Vienna as a focus of medical art and medical science reaches far back into the past. Such a reputation could be attained only by the harmonious combination of especially favourable factors—the innate national talent deeply rooted in the ethnological medley of Austria, and self-contained tradition, based on the experience of many generations, yet very susceptible to valuable ideas from abroad and to practical progress on foreign lines. Such cultural predisposition made sure of great development of young men transplanted from other countries. The history of the development of the Viennese school also shows that periods of eminence have always been coupled with liberal reforms in education, in conformity with the spirit of the times, in all branches of sanitary science. Lastly, the unhindered activity of highly gifted and energetic men assisted largely in maintaining the rank of Vienna in the scientific world.

The Vienna University was founded in 1365; ever since the days of humanism there had been certain excellent individual teachers of medicine and anatomy, great lecturers on the science of materia medica or the observation of the sick, but the raising of the entire standard was hindered by narrowness of mental development, opposition to the greater freedom prevalent abroad, the conservatism of the medical caste, a university constitution bound to antiquated routine, and want of the necessary institutes and buildings. Only when the State began to recognise its educational duties was a new epoch opened up.

The Work of Gerard van Swieten.

Gerard van Swieten, physician to the Empress Marie Theresa, who was summoned to Vienna from Holland in 1745, effected a signal work of reform and laid the foundations for the institution of a brilliant school. Provided with almost unlimited authority and energetically combating all opposition, van Swieten improved medical science and liberated university teaching from caste prejudice. He had a botanical garden and a chemical laboratory laid out, arranged the purchase of anatomical preparations, increased the facilities for performing dissections, and took steps to develop the almost totally neglected branches of surgery, obstretrics, and ophthalmology. By increasing both the number and the salaries of professors, by appointing eminent foreign scholars to such positions, and by systematically training a number of capable disciples from among native doctors and students, van Swieten succeeded, in hardly more than two decades, in attaining his object. Leyden, the school at which he himself had graduated, served as his model. The most important achievement, however, whereby this great organiser became the true founder of the Vienna medical school, was the institution of a permanent clinic, after the Leyden pattern, which under the management of Sylvius and Boerhaave came to be held in very great esteem. This small clinic in the "Bürgerspital," containing only six beds for men and six for women, was the first established on German soil, and it became the cradle of the world-wide renown of Austrian medicine.

Anton de Haen.

The first professor of this clinic, Anton de Haen, a former fellow-student of van Swieten's, invited from The Hague in 1754, gained by his medical writings high esteem for his school in the learned circles of Europe, whilst his clinical lectures attracted disciples from far and near. Like van Swieten, he stood for Hippocratism, and opposed the rash adaptation of theories and speculations in pathology. During the 22 years of his professional activity he successfully installed that sober system in which confidence is placed only in observations actually made at the sick bed. He encouraged his students to make diagnoses for themselves, and used post-mortem dissection for purposes of instruction and research. Much of the progress made in the recognition and treatment of illnesses is owing to de Haen, who introduced into the clinic, among other things, the systematic taking of temperatures with the thermometer. Of the disciples of this master, Störck, subsequently imperial physician, was the first to investigate methodically the effect of medicaments in experiments on himself, on animals, and by observation of patients.

Correspondence.

"Audi alteram partem."

ANÆSTHESIA WITH NITROUS OXIDE AND OXYGEN UNDER PRESSURE.

To the Editor of THE LANCET.

SIR,—An article with this title, published in your issue of August 13th (p. 326), is of peculiar interest to me, in that so long ago as June 28th of last year Dr. Otto Leyton attended the house committee of the London Hospital, Whitechapel, E., and explained a new method of giving anæsthetics under increased air pressure. He reported that a special theatre should be built, in which this increased air pressure, amounting to an atmosphere and a half, could be provided. He was questioned closely by the committee as to the effect of such conditions upon the surgeons, anæsthetists, dressers, and nurses working in the theatre. He finally reported that he hoped to be able to collect the total funds necessary for the building and equipment of such a theatre.

The question was referred by the committee to the Medical Council for their consideration and report. For the moment, the scheme was held up on account of financial difficulties which had overtaken all hospitals, but we still have hopes of installing this theatre, not only for the administration of anæsthetics on diabetic patients, in whom Dr. Leyton is particularly interested, but for any patient requiring long anæsthesia under nitrous oxide and oxygen.

I am, Sir, yours faithfully,

E. W. MORRIS,
House Governor, London Hospital.

Whitechapel, E., August 24th, 1921.

THE SUPPOSED EXTERNAL EFFECTS OF HUMAN VISION.

To the Editor of THE LANCET.

SIR,—As Dr. C. Russ has apparently taken some offence[1] at the audacity of my criticism, perhaps you will allow me to express my regret that his feelings should have been hurt, and to assure him that, far from intending disrespect, I consider that he himself is under-estimating the importance of his discovery, and consequently the scepticism it justifies. I cheerfully admit that I have no academic qualifications in physics (owing to economic circumstances he also deplores), and that far from verifying his experiments as they deserve I was guilty of typing my criticism immediately upon perusal of his paper. I was not, however, aware that there was any other sanction for comment than interest and relevancy; the publication of a paper in THE LANCET invites discussion by mere practitioners, independent of technical degrees, provided they be well-informed.

My letter was justified by the further information it elicited from Dr. Russ—namely, that the new force is reflected like light and is active in (some) inverse ratio to distance, fundamental facts that Dr. Russ had omitted from his paper. Further, I did not criticise any of his observations or experiments but, accepting his findings, drew certain obvious inferences from his work with a view to verificatory experiment. In particular I tried to show that it followed from his position that the force must be emanating from the macula only or chiefly; that it must be refracted like light; and that within the eye it must be of the greatest intensity since only a minute proportion can reach the objective. I further suggested crucial and inexpensive experiments—an artificial ametropia by interposition of lenses, even cycloplegia—to decide the refraction of the radiant force, and the employment of a patient suffering from a central scotoma (inactive fovea) to verify its macular origin, this suggestion being made to me by an eminent ophthalmologist.

These deductions, though theoretical, are vital to further induction. They point to a force emanating from the fovea, of great intensity and behaving as regards propagation (reflection, refraction, conduction, &c.) in the same way as light. Alternatively, so onerous an hypothesis throws doubt upon the data, especially in view of the complexity and delicacy of the experiments. My scepticism was aroused solely by these considerations, and by the fact that the optical significance of fixation had apparently been overlooked by Dr. Russ and the "leaders of science" he has consulted. This single oversight, following naturally from the methodological error of entering upon a research "in order to give my theory the support of some experimental evidence," leads inevitably to the artificial limitation he places upon his research, the treatment (from preconception) of vision as an un-analysable thing and the exclusion of the eye from consideration and experiment. His problem, even as he stated it, was the detection and demonstration of an obscure and doubtful concomitant of eye-functioning; yet he allowed, so far as can be judged from his paper, his attention to be wholly occupied by apparatus, to the neglect of the properties of this complex organ—the real object for his study. This is all that I meant by "experiment outrunning reflection," and though he errs in the fashion and in good company, neither titles nor seniority nor argumenta ad hominem can force me to recognise such thinking as anything but playing at science.

Finally, I did not introduce psychology—which is not a "force" though it may be "little-known"—to explain the phenomena. Dr. Russ made a psychological phenomenon his starting-point ("the fact that the direct gaze or vision of one person soon becomes intolerable to another person suggested to me, &c."). I merely gave to this psychological fact its psychological interpretation; he, by his own account, forced upon this a physical interpretation and entered upon his research for the purpose of substantiating this.

I must apologise for troubling Dr. Russ with questions that may have been answered at the Congress of Ophthalmologists; but, like many other readers of THE LANCET, I was not there, and like them would be glad to have the matter cleared up, as I for one am not yet wholly an unbeliever.

I am, Sir, yours faithfully,

Glasgow, August 15th, 1921. IAN D. SUTTIE.

THE OBJECTIVE STUDY OF NEUROSIS.

To the Editor of THE LANCET.

SIR,—In your leading article on Dr. F. L. Golla's Croonian lectures you emphasise the fact that the value of his researches into the physical side of functional nervous diseases resides less in his conclusions tentatively advanced than in the orientation they exhibit towards a sorely neglected side of practical medicine. You further make it clear that alterations in neuro-glandular mechanism, muscle tone, &c., do not necessarily afford proof that there is no psychogenic derivation in hysteria and other psychoneuroses and neuroses.

It is, however, essential that those working in this physiological field should not of necessity deduce that such physical changes are the cause of functional diseases, even should they find such changes in every instance. In pursuing research in the real scientific manner, that is, by attempting to find a truth, we must beware of attempting to prove theories which accord with our own beliefs and desires.

Hence in this particular field of work one must remember not merely that physical disabilities may exist independently of psychic disabilities in the same patient, but, and much more important, that two other explanations present themselves, each having a considerable amount of evidence in its favour.

In the first place, a physical disability may act as a stimulus to a psychic complex and produce a psychic reaction which may be cleared up by psychotherapeutic treatment in spite of the physical stimulus in 1840. Skoda was the first to ascertain the physical causes of the origin of the qualities of sound by acoustic experiments and by the study of anatomical conditions; he taught how anatomical alterations, and even the various stages of their development, could be recognised by percussion and auscultation. His "Treatise on Percussion and Auscultation," which appeared in 1839, is a milestone in the history of medicine. Rokitansky's demonstrations and lectures and Skoda's classes for physical diagnosis soon surrounded the two masters with a throng of disciples and adherents who published valuable works in the spirit of their instructors. The second Vienna school was now already an imposing power in the world of science. Amongst the foreigners who came to it for knowledge to last them a whole life-time were men who later themselves became pioneers of science, such as Traube, Kussmaul, or Wilde. The "Gesellschaft der Aerzte" in Vienna, founded in 1838, facilitated the profitable exchange of ideas; in the words of Schönlein, its history was intimately associated with that of medicine in general.

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[1] THE LANCET, August 13th, p. 362.

A reform of medical teaching, an up-to-date development of the hospitals and institutes, a reorganisation of university conditions in the way of autonomy for academical authorities, and free choice in teaching and learning were realised during the period from 1848 to 1850. The Conference of German Naturalists and Physicians in Vienna (1856) and the celebration of the 500th anniversary of the university (1865) showed the Vienna medical school at its zenith, containing at one time such names as those of Rokitansky, Skoda, Hyrtl, Brücke, Oppolzer, Hebra, and Arlt.

New specialties of medical science were rapidly developed—laryngology and rhinoscopy by Ludwig Türck, and Johann Czermak; otology by Adam Politzer, whose system of the introduction of air was soon known everywhere under his name; neurology and psychiatry by Türck, and later by Meynert; syphilology by Zeissl and Sigmund; obstetrics and gynæcology by C. Braun, and hydro- and electro-therapeutics by Winternitz and Benedikt respectively. It says much for the sagacity of Rokitansky that he should soon have recognised how much morbid anatomy requires to be supplemented by other branches of science, especially by medical chemistry and experimental pathology. Besides other theoretical professorships (for histology, embryology, and medical chemistry), a chair of "general and experimental pathology" was founded in the 'seventies. The first man to be appointed to it was Stricker, a pioneer not only in research but also in the organisation of instruction with the help of the electric lantern, the microscope, episcope, &c.

It is also worthy of mention that the "Josephinum" in the last stage of its existence numbered some very great teachers among its staff; of these we need only name the pathological anatomist Engel and the two physiologists Carl Ludwig and E. Hering. Several of the professors entered the staff of the medical faculty upon the dissolution of the Josephinum.

The Allgemeine Poliklinik: Theodor Billroth, Bamberger, and Nothnagel.

The circle of academical teachers had considerably increased in the course of decades. Since they could not always find an opportunity to teach in the General Hospital, or the other hospitals, a number of them united in the year 1871 to found a consulting institute called the "Allgemeine Poliklinik," which was also destined to serve purposes of instruction, particularly in certain special branches. The Poliklinik, subsequently enlarged by a small hospital and housed in a building of its own, very soon attracted students and graduates from far and near, and always included in its list of teachers names of the best repute.

When death, old age, or sickness had removed the founders of the second Vienna school and their most intimate co-workers from the stage of scientific life, it was not always possible to find the qualified men for the necessary renovation of the staff of teachers, nor yet to gain new laurels for the school. This was, however, achieved by the appointment of Billroth in 1867. This genius, sufficient in himself alone to gain a university world-wide renown, initiated an illustrious era in surgery. A master of operative technique and a surgical thinker of the highest rank, he was particularly successful in developing the department of intestinal surgery, and founded in Vienna a school of surgery of a very special character and extraordinary importance. His scholars became the ornaments of several universities, and in some of them his doctrines are still active at the present day.

In Oppolzer's successor, Bamberger, internal medicine acquired in 1872 a master of the first order by whom the old Vienna traditions, intensified by means of microscopy and chemistry, were carried on. We are indebted to his endeavours for the appointment, in 1882, of Nothnagel, who proved especially capable of forming a connexion between the German school (of Berlin) and that of Vienna, and who left lasting traces of his long activity. The fact that he was not only an excellent pathological anatomist and experimental investigator, but also devoted much attention to the effect of medicines, gave a clinical therapeutical character to his works, while his intense interest in neurology gave his teaching a general value by which the whole school subsequently profited.

Meynert and Others.

Soon after Bamberger, the number of ordinary professors of the Vienna medical faculty was augmented by the ingenious craniologist, Meynert, the excellent representative of forensic medicine Eduard Hofmann, who left at his death an incomparably fine and extensive museum of medico-forensic preparations, and Hebra's most eminent disciple, the great dermatologist, Kaposi. In the 'eighties we have the appointments of the surgeon G. Albert, of the oculists Eduard Jäger and Ernst Fuchs, of the anatomist E. Zuckerkandl, and of the psychiatrist Krafft-Ebing, who was especially active in promoting forensic psycho-pathology and the doctrines of hypnotism. From 1887 onwards, Max Gruber opened up a new era of hygiene. In 1890 von Schrötter, a master of laryngology, was allotted the newly erected third clinic for internal medicine, handing over the control of the laryngological clinic to his colleague Störk.

Predominance of Virchow and the Berlin School.

There is no denying that at the close of the 'sixties the sceptre of German medicine passed from Vienna to the Berlin school, which, under the guidance of Virchow, was progressing from one triumph to another; the disciples of Rokitansky and Skoda paid too little attention to what had meanwhile been achieved abroad, and continued too long in the old groove, showing great interest solely in morbid anatomy and physical diagnosis. Great innovations like antiseptics and bacteriology were taken up too late by the Viennese sceptics, the introduction was retarded of all those equipments which modern research work and modern sanitary measures require. Nevertheless, medicine in Austria succeeded in the course of the 'nineties in catching up that of Germany, and thenceforth contrived to keep pace with it.

Modern Progress and Conditions.

In this connexion, moreover, one should not forget, when comparing the past with the future, that the age of a universal medical centre, in the sense in which Vienna was formerly a centre, is probably past and gone for ever. Methods of scientific medicine have now become uniform everywhere, and new achievements are rapidly made known from place to place; but Vienna retains one of the leading schools of medicine, of which the achievements during the last 30 years will in the future be recognised as forming a large part of the total medical progress of that period. Great progress has been made at Vienna in the more delicate anatomy, especially that of the central nervous system, in the physiology of the organs of sense, in experimental pharmacology, in physico-chemical biology, in the science of serums, and the doctrines of internal secretions. There is hardly a chapter of internal medicine or pediatrics, of dermatology or syphilology, of neurology or psychology, that has not been enriched from the point of view of diagnosis or therapeutics at one of the Vienna clinics or infirmaries. A number of methods of investigation such as, for example, hæmodynamics, endoscopy, cystoscopy, œsophagoscopy, and rectoscopy, were founded or first practised here. The cutaneous reactions of tuberculin were discovered in Vienna, and electro-cardio-diagnosis is best represented here. A mass of diagnostic and operative technical progress in surgery, gynæcology, ophthalmology (which profited so much by cocaine, first employed in Vienna), and laryngology is connected with the Viennese school, which was also one of the first to raise urology, orthopædic gymnastics, and dentistry to a high scientific level. Rontgen's diagnostics found their chief centre in Vienna. The different forms of physical therapeutics, especially light therapeutics and radium treatment, as well as dietetics, enjoy particular attention here.

Conclusion.

The necessary extension and alteration of the old premises for research and instruction by new institutes, laboratories, and infirmaries, has been widely undertaken, and much has been done within the last two or three decades on the part of the authorities and in the way of private charity by the foundation of nursing homes, charitable establishments, and ambulance refuges. All services auxiliary to medical science have been placed at the service of the public, and war has been energetically waged against tuberculosis, syphilis, alcoholism, occupational diseases, infant mortality, and the decreasing birth-rate. The recent war and the events that followed upon it, the financial calamities of the State, have seriously impeded any great development for the time being, but the soil of medical Vienna is ancient and fertile and cannot be condemned to lie fallow so long as the spirits of humanity and scientific research endure.

July. In all but one of the 17 inhabited houses whooping-cough was present, the exception being that of Nurse Mackenzie, who had only returned to the island the night preceding his visit. Whilst cases were to be seen in different stages of the disease, from the late catarrhal to the late paroxysmal, no one at the time of his visit was seriously ill and in no case was there any complication. Dr. Shearer notes that there was a similar epidemic on the island 20 years ago. In the present epidemic no person over the age of 20 has developed whooping-cough, but of the 40 inhabitants under that age all but four have contracted it. These four are the nurse's two boys and a little girl, all of whom have just returned from a holiday on the mainland, and a young woman of 27 years, who had whooping-cough when on the mainland several years ago. Dr. Shearer suggests that this incidence would appear to be strong proof of the rarity of second attacks.

SALFORD MILK-SUPPLY.—In the annual report of the borough analyst of Salford (Mr. G. D. Elsdon) for last year it is shown that notwithstanding a fairly large number of adulterated milk samples taken during the year there was only one prosecution. This apparent leniency is explained by Mr. Elsdon as follows: "It is considered that the primary object of this department is to procure a pure milk-supply, and that legal proceedings should only be taken in cases of apparent fraud or where persuasion fails to cause an improvement. For this cause a somewhat new departure has taken place during 1920. A much larger proportion of the milk dealers have been personally interviewed, whilst in cases where farm samples have been unsatisfactory the farms have been visited with the object of finding the cause and, if possible, removing it." The farmers and dairymen have cordially accepted and acted on the suggestions made to them, and have shown their willingness to remedy the shortcomings. When the samples indicate a defective composition of the milk, new samples are taken by what is called an "appeal to the cow," and if the samples thus obtained show a deficiency in fats the farmer is advised as to improvement in feeding his cattle, with the result that frequently there is found an improvement in the quality of the milk. As a result of this novel method of procedure it is stated that "the milk-supply has been permanently improved, and the farmer or dairyman is left with a comfortable feeling that we are not trying to catch him on some technical point, but doing our best for the general public to get the pure milk-supply to which they are entitled."

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee held on August 9th, a sum of £266 was voted to the 17 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 49, of M.R.C.S. Eng. who practised in Hampshire and died in 1921. Owing to continued ill-health applicant's late husband was unable to make provision for his family, and they are now dependent upon the earnings of the son and elder daughter. Unfortunately, the daughter is now out of employment, and applicant and her three children are dependent on the son's money of £1 7*s.* 6*d.* per week. Voted £10.

Widow, aged 55, of M.B. Dub. who practised in Australia and died in 1919. Since husband's death applicant has had to earn her living as a domestic servant, as she was only able to buy herself an annuity bringing her an income of £60 a year. Owing to ill-health she has had to give up service. Her sister allows her 2*s.* 4*d.* a week. Rent £1 a week. Voted £18 in 12 instalments.

Widow, aged 42, of M.R.C.S. Eng. who practised in London and died in 1910. Applicant was left unprovided for, and after the death of her husband went to live with her mother until the latter's death in 1917; since then she has lived with her widowed sister, and they let unfurnished rooms for which they receive 25*s.* per week. Applicant receives £35 per annum from property left by a sister-in-law, also £10 from friends, and £6 10*s.* by acting as a companion for three months. Voted £15 in three instalments.

Daughter, aged 73, of M.R.C.S. Eng. who practised at Tunbridge Wells and died in 1847. Applicant is partially blind and consequently unable to work. Her sole income is derived as follows: £25 from investments, £20 from the Royal United Kingdom Beneficent Association. Rent and rates amount to £28 per annum. Voted £18 in 12 instalments.

Widow, aged 69, of M.D. St. And. who practised in Dover and died in 1911. Applicant has a boarding-house on the East Coast, but owing to heavy expenses and high cost of living she has not made any profit. Apart from letting her only income is £16 per annum from investments. The remainder of her investments she realised to pay the part purchase of the house, and she has to pay interest on a mortgage of £350. Voted £18 in 12 instalments.

Widow, aged 59, of M.R.C.S. who practised in Hampshire and died in 1913. Owing to enforced sale of house to pay off heavy mortgage, applicant has no means and has lived the last few months by selling her jewellery. She pays 15*s.* per week for board and lodging. This case has been referred to the Fund by the Portsmouth C.O.S. Voted £5.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., 11, Chandos-street, Cavendish-square, London, W. 1.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Sept. 5th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Bishop Harman: Eye Department. 2.30 P.M., Mr. Simmonds: Visit to Surgical Wards.

TUESDAY.—2 P.M., Dr. Burrell: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Addison: Operations. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards.

THURSDAY.—2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Simmonds: Orthopædic Department. Mr. D. Armour: Operations.

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

SATURDAY.—10 A.M., Dr. Burnford: Visit to Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M. In-patient, Out-patient Clinics and Operations.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Wednesday morning of each week, such information for gratuitous publication.*

BRUNTON, G. L., M.D.Edin., has been appointed Medical Superintendent of Nottingham City Asylum.

CALTHROP, LIONEL, C. E., M.B.Durh., M.R.C.S., L.R.C.P., Honorary Physician to the Royal Bath Hospital, Harrogate.

CLULOW, FLORENCE RUTH, M.B., B.S., M.R.C.S., L.R.C.P.Lond., House Surgeon at the King Edward VII. Hospital, Windsor.

MACMAHON, A. D., M.D., B.Ch.N.U.I., Assistant Medical Officer of Health for Wigan.

MITCHELL, A. PHILP, M.D., Ch.M., F.R.C.S.Edin., Surgeon-in-charge of Orthopædic Department, Ministry of Pensions Hospital, Craigleith, Edinburgh.

SHARPE, H., M.R.C.S., L.R.C.P.Lond., Medical Superintendent of King George's Sanatorium for Sailors, Bramshott, Hants (a branch of the Seamen's Hospital Society).

Certifying Surgeon under the Factory and Workshop Acts: KNIGHT, J. I. F., M.R.C.S., L.R.C.P.Lond., for the District of Tisbury, Wilts.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. M.O. £500.

Ayr County Hospital.—Res. H.S. £120.

Bedford County Hospital.—Asst. H.S. £150.

Birmingham, Queen's Hospital.—Third Surg. to Out-patients. £50. Surg. Registrar. £100. Res. H.P.'s, H.S.'s, and Cas. H.S. £90.

Bradford Royal Infirmary.—Res. Surg. Officer. £250.

Bristol General Hospital.—Two H.P.'s. H.S. Cas. H.S. Obst. O. H.S. to Spec. Depts. Each £175.

Cancer Hospital, Fulham-road, London, S.W.—H.S. £150.

Chester Royal Infirmary.—Asst. H.S. H.P. Each £150.

Derby, Derbyshire Hospital for Sick Children.—Female Res. M.O. £150.

Freemasons Hospital and Nursing Home, Fulham-road, Chelsea, S.W.—Res. M.O. £250.

Great Yarmouth Hospital.—H.S. £200.

Hospital for Diseases of the Throat, Golden-square, W.—Two Res. H.S.'s. £100.

Hull Royal Infirmary.—Asst. H.S. £150.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

Liverpool, Royal Southern Hospital.—Pathologist. £150.

London Temperance Hospital, Hampstead, N.W.—Res. Cas. O. £150.

London University.—Readership in Pathological Chemistry. £700.

Manchester, Baguley Sanatorium.—Third Asst. M.O. £300.

Manchester Children's Hospital, Gartside-street.—Asst. M.O. £200

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Hon. Anæsth.

Napsbury Mental Hospital, Napsbury, near St. Albans.—Asst. M.O. £125.

Notts County Council.—Tuberc. Officer. £750.

Oswestry, Shropshire Orthopædic Hospital.—H.S. £250.

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.

Royal Free Hospital, Gray's Inn-road, W.C.—Female Asst. M.O. in V.D. Dept. £1 1*s.* per session. Cas. O. £100.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. £100.

St. George's Hospital, S.W.—Cas. O. £200.

Salford Royal Hospital.—Cas. H.S. £150.

but loans for apprenticeship, tools, and so forth are greatly appreciated, and patients are most honourable in discharging their debts to the hospital. Numerous patients who are assisted in this way do not come under any category for which State aid is forthcoming, a fact which is perhaps not sufficiently realised by potential contributors.

The Samaritan Fund rented beds at various institutions as usual; during the year 1082 patients were sent away, 174 went to "free beds," the remaining 908 costing £2551 2*s.* 1*d.* There is still a great need for more homes for boys from 12 to 18 years, and it is still very difficult to find satisfactory boarding-out centres for the children. Surgical instruments were supplied to 307 in-patients and to 1794 out-patients at a total cost of £2528 5*s.* 8*d.*; of which sum patients' payments totalled £1515 16*s.* 11*d.*, to which the Samaritan Fund contributed £202 0*s.* 7*d.* There was an increased demand for ambulances and cars; the L.C.C. Ambulance Service is now free for the use of St. Thomas's patients. Much work is done in linking up patients in difficulties with the right sources of help and proper agencies. The report contains detailed accounts of the work of the speech clinic and of the tuberculosis, ophthalmic, maternity, venereal diseases, and physical exercise departments.

THE ÆTIOLOGY OF TYPHUS.

ON the headstone of a grave in Harrow-on-the-Hill Churchyard, at the east end of the tomb on which Byron was accustomed to recline, is the following inscription: "William Felkin Lambert. 4th son of Charles Lambert Eqr. of Fitzroy Sqr. London, who died on the 21st of November, 1825, from typhus fever brought on from sitting in School in damp clothes after [pla]ying at football."

SOCIETY FOR CONSTRUCTIVE BIRTH CONTROL.

THE objects of this Society, the full name of which is the Society for Birth Control and Racial Progress, as stated in the preliminary announcement, are (*a*) to bring home to all the fundamental nature of the reforms involved in conscious and constructive control of conception and the illumination of sex life as a basis of racial progress; (*b*) to consider the individual, national, international, racial, political, economic, scientific, spiritual and other aspects of the theme, for which purpose meetings will be held, publications issued, research committees, commissions of inquiry, and other activities will be organised from time to time as circumstances require and facilities offer; (*c*) to offer to all who still need it the full knowledge of the methods of control. We gave last week the names of medical men and women associated with the work of the Society.

WAR DISABLEMENT PENSIONS.

THE Ministry of Pensions calls the attention of officers, nurses, and men, and widows and dependents of deceased officers and men, who served in the war, to the provisions of Sections 5 and 6 of the War Pensions Act, 1921. In accordance with Section 5, any new claim to pension, grant, gratuity, or allowance in respect to disablement must be made within seven years after the date on which the claimant was discharged, or within seven years after the official date of the termination of the war (August 31st, 1921), whichever date is the earlier. No new claims will be considered after the expiry of the prescribed period. A person is deemed to have been discharged from the service at the time when his active service terminated. Under Section 6 any claimant who desires to appeal against the rejection of a claim to pension must do so within a period of 12 months after the date of the notification by the Ministry, to the claimant, of the rejection of the claim, or after the date of the commencement of the Act (August 19th, 1921), whichever is the later date.

SANITATION IN FLANDERS.

SOME of the more observant visitors to the Belgian battlefield and the pleasant resorts adjacent thereto have been distressed at the absence of sanitary conveniences and the apparently low standard of public hygiene in the disposal of excreta. The question naturally arises whether there is any greater prevalence of excreta-borne disease in West Flanders than in adjacent countries where the hygienic conscience is keener. Trustworthy statistics relating to West Flanders which, it should be remembered, suffered more severely than any other Belgian province during the war, are, however, not available, as the rates based on the estimated population are probably too low. The recorded death-rate from all causes in 1919 was 14 per 1000 of the population. The statistics of notified infectious diseases show an average of about five cases of typhoid or paratyphoid in West Flanders during each ten-day period of the present year. Between August 1st and 10th the notifications were 10 typhoid, 14 diphtheria, 10 scarlet fever. Between June 21st and 30th they were 12 typhoid, 14 diphtheria; and scarlet fever was epidemic. Two cases of epidemic dysentery were notified in the first week of July.

DANGEROUS DRUGS ACT, 1920.

THE regulations made under this Act came into force on Sept. 1st. No person may now have in his possession any morphine, cocaine, or heroin, or any preparations containing at least 0·2 per cent. (one part in 500) of morphine or 0·1 per cent (one part in 1000) of heroin or cocaine, or any medicinal opium, unless he is licensed by the Home Office, or is otherwise authorised by the regulations or by the Home Office, or unless it is supplied on a prescription given in accordance with the conditions specified in the regulations. A few preparations (including Dover's powder and gall and opium ointment) are exempted from the operation of the regulations, copies of which can be obtained from His Majesty's Stationery Office. The existing restrictions in regard to raw opium which have been in force under the Defence of the Realm Act remain, with modifications.

The *Chemist and Druggist* has brought out at the price of 1*s.* a useful wall-card summarising the regulations of the Act. The front contains in addition notes on the various special authorisations and tables showing the limits of safety dilution for salts of alkaloids. On the back are tables giving the proportion of dangerous drugs in various official and unofficial preparations. Finally, simple prescription calculations are added. The card is intended for the use of chemists, but would be equally useful to any dispensing doctor.

WINTER RESORT FOR CHRONIC RHEUMATISM.

To the Editor of THE LANCET.

SIR,—May I ask any of your readers who have experience of Mediterranean or other winter health resorts to advise me as to which places are likely to answer to the following requirements:—(1) Dry, sunny, bracing climate; (2) up-to-date facilities for treatment of chronic rheumatic affections; (3) en pension terms not exceeding £1 per day at quieter hotels; (4) lowest possible duties on imported cigars; (5) a reasonable amount of life and amusement.

Owing to residence in the East, I am unfamiliar with the essential points of difference between the winter resorts of Europe. I am, Sir, yours faithfully,

I.M.S.

August 25th, 1921.

FOREIGN POSTAGE RATE.

THE Postmaster-General complains of the number of insufficiently stamped letters sent to places abroad. These letters are duly forwarded, but are charged on delivery with double the amount of the deficiency, the surcharge being retained by the foreign post office. The prepaid rate of postage on letters from the United Kingdom to British possessions generally, the United States, Tangier, and H.M. ships and troops on foreign stations is 2*d.* for the first ounce and 1½*d.* for each succeeding ounce or fraction thereof. For all other places abroad the rate is 3*d.* for the first ounce and 1½*d.* for each succeeding ounce.

ORTHOGRAPHY IN UGANDA.

THE names in the clinical note on Human Anthrax in Buganda Kingdom, by Dr. W. L. Peacock and Dr. H. Lyndhurst Duke (THE LANCET, August 13th, p. 332) are not misprinted, as some correspondents have hastily assumed. The formation of the words Buganda, Muganda, Luganda, &c., is according to the Bantu language there spoken. The prefixes *Bu*, *Mu*, and *Ba* signify respectively the country, one of its inhabitants, and more than one inhabitant—i.e., the plural form. *Luganda* signifies the language. *Uganda* is the Swahili form, and *Buganda* the Luganda form, of the name of the country. In Luganda the use of prefixes modifies the meaning of substantives in the manner shown as follows: *embuzi*, goat; *gubuzi*, a huge goat; *kibuzi*, a fair-sized goat; *kabuzi*, a little goat; *wambuzi*, Mr. Goat, and so on.

THE AIRMAN'S PHYSIQUE.

THE aeronaut is exposed to various perils. In a recent issue of the *Military Surgeon* Major W. F. Bonner ascribes 2 per cent. of losses of American airmen in the war to enemy action, 8 per cent. to mechanical defects of plane or engine, 90 per cent. to the failure of the pilot himself, which should prove the great responsibility of the flight surgeon, who decides whether a pilot is fit to fly, and a series of tests to help in determining this question is given. In the same journal Lieutenant J. F. Neuberger, senior medical officer at the naval air station on Rockaway Beach, is of opinion that to pilot an aeroplane is a strenuous physical exertion, and that no airman should be accepted for it if under 5 ft. 7½ in., or with less weight than 10 st. 10 lb. His index of measurement is $P + p - T$, where P is the weight in kilogrammes, p is the chest measure in centimetres, and T is the height, also in centimetres. For the good average flier the figure is −20, but the less the result the better. Light weight is of no advantage to an airman. He is the brain of this delicate, valuable mechanism, and the brain should be, must be, sound. Also he must have great staying power.

Leopold Auenbrugger and Maximilian Stoll.

In the earliest years of de Haen's activity, one of the most important methods of diagnosis—percussion—was discovered by the Viennese doctor, Leopold Auenbrugger, and published in 1761 in a small but most momentous treatise called "Inventum novum." This achievement was not appreciated as it deserved to be until some 50 years later; and then, at first, only abroad. Subsequently, however, Auenbrugger, who had merely been active as a simple practitioner, became a recognised master in Vienna.

Temporarily, though not in an adequate measure, percussion came to be employed at the Vienna clinic before the end of the eighteenth century—i.e., at the time when de Haen's immediate successor, Maximilian Stoll, presided there. This eminent teacher and scholar, who devoted special attention to epidemiology, was recognised in all contemporary reports as the most celebrated clinical teacher then living. His activity was principally associated with the movements towards reform during the reign of the Emperor Joseph II., of which important results still survive.

Medicine under Joseph II.

The most successful of these was the foundation of the "Allgemeines Krankenhaus" (General Hospital), which still exists in commemoration of charity, bearing above its chief portal the words: "Saluti et solatio aegrorum." This famous hospital was opened in 1784; although its prime object was a centralisation of humanitarian institutes, the "Allgemeines Krankenhaus" also served from the very first for purposes of research and instruction through the incorporation of the clinic which was transplanted thither.

A less successful creation was the medical and surgical academy and institute, the "Josephinum," of which the chief object was the training of efficient army doctors, the institute possessing the right of conferring the doctorship of surgery. The institute, founded at the instigation of the imperial surgeon Brambilla, was housed in a very imposing edifice and came into possession of the necessary educational auxiliaries, such as a valuable library and precious scientific collections, the latter including the anatomical preparations in wax fashioned under the supervision of Fontana at Florence. The "Josephinum," opened in 1785, never thrived properly, was forced to close its doors twice on account of reorganisation, and was completely given up in 1873. Although it did not quite fulfil the purpose for which it had been intended, especially in regard to scientific research, it considerably promoted the secondary objects of its founder—i.e., the development of surgery, and the gaining of a better social standing for those that practised it.

The Emperor Joseph, untiring in work for the welfare of the people, knew the shortcomings of the science of medicine, and tried hard to remedy them. He encouraged young men of industry and talent to specialise, and furnished them with means for journeys abroad to this end. The most thorough of the young doctors thus favoured was Johann Boer, who took control of the obstetrical infirmary in 1789, and opened up a new epoch in this branch. Ophthalmology, too, began to develop conspicuously in Vienna, principally represented by Barth, who distinguished himself as a daring operator for cataract and as a master of the technique of injections. Among his scholars Ehrenritter shone as an anatomist, Georg Prochaska as a histologist and physiologist (reflex action, &c.), and Josef Beer as an oculist.

Johann Frank.

The chief representative of the Viennese school, however, at the end of the eighteenth century and the beginning of the nineteenth, was Johann Peter Frank, the founder of public hygiene as an independent science, a brilliant organiser of medical matters, and a gifted clinical professor. The early activity of Frank, whose "Manual of Internal Medicine" was a standard work for decades, had gained him a reputation which reached far beyond the confines of Germany. He united with abundant learning and medical capacity an unusual gift of administration; director of the Allgemeine Krankenhaus and head of the medical clinic from 1795 onwards, he left evidences of creative enterprise which are not yet obliterated. To him the clinic, now enlarged to 21 beds, was indebted for an organisation which has become a pattern. Many contrivances still maintained —e.g., the formal record of the patients' history according to a definite plan; the daily noting of their condition; their alimentation according to four dietary schemes, &c.—had their origin in his time. From the great stock of invalids in the hospital, Frank selected cases suitable for instruction; access to the clinic, and service therein, was exactly regulated; the visitors were divided into spectators and practitioners, the latter having patients who were allotted to them for treatment under supervision and upon whom they had to report to the professor. He also made chemistry and morbid anatomy clinically useful, and founded a pathological anatomical museum, to the control of which Vetter, an eminent assistant professor of anatomy, was appointed. This untiring scholar succeeded in a short time in forming by his own effort a valuable collection of 400 preparations.

The period of Frank's activity comprises many interesting medical events, chief among them being the introduction and official institution of vaccination, for which Ferro and de Carro had spread a lively propaganda from 1799 onwards. Vienna was the first town on the Continent to which Jenner's process found access. Besides the arguments for and against vaccination, the sensational debut of Gall with his theories of the skull agitated medical and non-medical circles at the close of the eighteenth and the beginning of the nineteenth century. It is well known that Gall—like Mesmer, the apostle of animal magnetism some decades earlier—was obliged to quit Vienna to find a more favourable soil for his doctrines abroad.

The First Half of the Nineteenth Century.

With the departure of Frank from his infirmary in 1804, the splendour of the older (first) Vienna school began to fade. After Frank's immediate successor Valentin von Hildenbrand, the author of the best book on typhus in those days (1810), internal medicine had no important official representative in Vienna until almost the middle of the nineteenth century. The political reaction, especially pronounced after the Vienna Congress, was reflected in the fate of the medical faculty, so long, that is to say, as the latter stood under the control of Andreas von Stifft, the omnipotent physician to the Emperor Francis. It was the golden age of bureaucratic decrees in sanitary and educational matters rather than of scientific progress, but again single brilliant representatives of special branches were not lacking. This may be said in the first place of obstetrics, which found a reformer in Boer; and of ophthalmology, two of the teachers of which, Josef Beer and Friedrich Jäger, attracted students from the whole world. Appreciative mention should also be made of the surgeon Kern, who greatly simplified the process of healing wounds; of Bernt, representing forensic medical science, and subsequently of the anatomist Berres, an early representative of microscopical research. A professorship for forensic medicine was founded in 1805, a surgical operating institute in 1807, a clinical ward for ophthalmology in 1812, an ordinary professorship for ophthalmology in 1818—institutions which gave the medical faculty of Vienna a considerable advantage over others.

The autobiographies or memoirs of several celebrated German and foreign doctors tell of youthful impressions gleaned from the scientific and anatomical collections, the infirmaries and hospital wards, in Vienna. The most interesting document of this kind is certainly Wunderlich's little book called "Vienna and Paris," published in 1841. In this work, by the Leipsic professor who was later to become so famous, the Paris school, with all its merits, is described as predominating during the first four decades of the nineteenth century, and then attention is drawn to the almost unnoticed rise of a new school in Vienna, and prophetic allusions are made to the future. After a long stagnation the time had come—so Wunderlich wrote—when "something was again to be learnt in Vienna, and things to be seen there that elsewhere would be sought in vain."

The "Second School" of Vienna.

A characteristic of the new, the so-called "second" school of Vienna was the reconstruction of all medical knowledge on exact foundations. Starting from the achievements of the French, the school of Vienna effected a complete breach with the half-speculative, half-empirical past of medical science, and a rejuvenation of German medicine. The necessary mass of material was found in the Vienna General Hospital, and suitable men appeared to undertake the work entailed.

Rokitansky and Skoda.

The men in question were two young Vienna doctors, Rokitansky and Skoda, both from Bohemia, associated in spirit as they were united in friendship, with common aims and of almost equal age. Rokitansky, who became assistant professor of anatomy at the General Hospital, and curator of the institute of pathological anatomy in 1832 and extraordinary professor two years later, sought to ascertain the causal connexion between certain types of anatomical changes and certain clinical symptoms, and by a whole series of post-mortem examinations to gain an insight into the causes and gradual development of the phenomena of disease. His famous manual, published in the years 1842–46, and almost unparalleled in the literature of the profession in the richness of its contents, completely established the anatomical idea in medicine and made pathological anatomy the basis of the science of healing.

Parallel with Rokitansky's research was the work of Skoda, who served as assistant doctor at the General Hospital from 1833 to 1839, after which he was appointed to the independent control of a section for consumptive patients adaptation or leads to final damage. But the well-nigh incredible demands made upon the machinery of man's body in and behind the battle-line, in all situations upon the land or under the earth, high in the upper air, in the sea or within its depths, by no means make up the tale. Our forces were engaged in every climate, from the Equator to the Arctic regions, and were faced by innumerable local or accidental variations of diet. Here again were required the applications of physiological studies of heat loss and of heat production to manifold practical problems of clothing and of diet. What would have seemed a fanciful fairy tale barely twenty years ago might in particular be told of the miracles wrought by the studied application of our knowledge of vitamins in diet, in saving from painful disease or death many thousands of men in diverse climates and fields of war.

LESSONS FOR CIVIL LIFE.

At home the bodies of the civilian population were exposed to many stresses, often hardly less than those of active service. Men and women alike were exposed to arduous toil, to dangerous occupation, to poisons of many kinds needed for munitions, and in all these dangers the guidance of the physiologist was needed for the avoidance of industrial fatigue and loss of output and for devising protection against industrial poisoning. The whole nation was threatened by the menace of starvation, and our escape from that, itself one of the governing conditions of our ultimate victory, was due to a system of rationing and of the management of food materials, animal and vegetable, which was based on accurate physiological knowledge, won by experimental methods.

I touch on these points here briefly and in outline only in order to draw attention to the special influence which, as I think, the war has exercised upon the position of physiology in this country. The physiologists gave no exceptional help to the nation during the war; the exponents of every branch of science were needed, were ready, and were used, in our national crisis. Hardly one division of science can be named the deficiency of which would not have made defeat inevitable. It is a truism and a commonplace to say that no bravery and no fortitude could have avoided defeat without the help of scientific men and of the fruits of experimental science, though that commonplace has not, I think, ever yet been enshrined in the addresses or thanks of Parliament or in the prayers and thanksgivings of our churches. But we may recognise, perhaps, that the nation as a whole, and those especially who have the government, public or private, of large groups of men in their hands, have learned that obedience to physiological law is a first necessity for the maintenance of the body machinery in health and for its effective and harmonious use. They have come to know, moreover, that the men who alone can guide them to this obedience are those who have learned in the school of investigation from nature herself. The nation has seen a minister fall whose control of the people's food was not based upon physiological law, and his successor gain renown whose adoption of the teaching of physiological experiment was early and faithful. Nor was this by any means an isolated object-lesson. There is no doubt, surely, that physiologists have a new vista before them of immense public usefulness, if they will hold themselves in readiness to give the same kind of service to the country in the stress of her industrial life during peace as they gave so freely and to such effect in time of war.

LESSONS FOR THE PHYSIOLOGIST.

But if the war brought these lessons to the general public, what lessons have come from it to the physiologist himself? I would only recall briefly here the considerations which were brought home with sufficient clearness to us all, I think, during and after the closing stages of the struggle. The war, in the first place, displayed before us new and gigantic fields of physiological study. Viewing these so far as we can, even at this distance, dispassionately, we see how the stresses and accidents of warfare in all their variety offered to our study a series of experiments made upon the human body, and on a gigantic scale. Only by disciplined study of the results at all stages of these trials of war in all their varying degrees of horror and distress could effective aid be given in palliation of suffering or its avoidance. It was inevitable that study of this kind and upon so great a scale should result—as, happily, it did result—in much permanent gain to physiological knowledge and to the beneficent power that all sound knowledge brings. New insight was given into the functional patterns of the nervous system and into the orderly hierarchies, so to speak, under which this or that function is brought into subordination to another of superior rank, and new knowledge was gained of the phenomena of separation and repair in the outlying nerve trunks. Accurate information was collected of the nutritional needs, quantitative or qualitative, of human beings under varying conditions; and, in particular, many special conditions of warfare brought to the test, established the fundamental usefulness, and stimulated the growth of that newest chapter in physiology already mentioned—that dealing with the elusive but potent accessory factors in nutrition—the vitamins. These examples must suffice where scores of others familiar to all of you might be given.

In the second place, the experience of the war has had wholesome effect from its tendency to remove the barriers that here and there had grown up between physiologists and the practical needs of medicine. Physiologists had valued, and justly valued, their academic freedom of inquiry within the universities, and, indeed, we know that practical utility could not be better served in the long run than by the detached pursuit of knowledge for its own sake. But, partly for reasons of hospital and professional organisation already touched upon, and partly because, to its obvious and immense gain, physiology had attracted from other paths men who were not, and had never become, medical men, there were some capital parts of the subject of which the chief explorers had never used the medical field of work or brought to medicine the weapons they had, perhaps unwittingly, at command. We can recognise already that this partial divorce has been changed by the war into a union likely to be increasingly fertile. Of the professorial chairs of medicine or directorships of medical units established since the war, for the advance of medical knowledge within hospitals in accordance with the university standards and ideals acknowledged in other subjects of study, it is remarkable that to the greater number of these there have already been appointed men whose training has been in the methods of the physiological laboratory, and who applied that training to urgent medical problems of the war. There is hardly any one of our schools of physiology, moreover, to which some piece of living experience has not been brought in these last years to enforce the old lesson of the value to science itself of bringing natural knowledge to its fullest utilitarian applications. The practical fruits of scientific labour are found, if our hands are put out to gather them, to contain within themselves, like the natural fruits of the earth, the very seeds from which new knowledge and new fertility will spring. Many of our leaders in physiology brought to the problems of war the accumulated knowledge of their lives, as patriotism and humanity dissolved at a touch the hedges of custom and use. I know of not one such who did not find in the application of his vision and training to the actual problems before him, first, a wholesome reminder of the limits of his knowledge and its clarity, and, second, new clues towards its advance, and that by no means only in a familiar or an expected direction. The stimulus of practical need here, as so often in experience, advanced the growth of knowledge beyond the point of immediate application to practice. Those who studied to find the best and most practical means of saving life threatened by severe hæmorrhage, or by the shock of wounds or operation, found in the course of meeting the immediate emergencies almost endless

UNIVERSITY GRADUATES.

THE preliminary report, just issued, of the Registrar-General gives in convenient form the number of graduates, men and women, of English Universities who were on the Parliamentary electoral register in the spring of the present year:—

University.	Number of electors.		
	Total.	Men.	Women.
Oxford	9,132	8,602	530
Cambridge	10,799	9,061	1,738
London	10,723	8,412	2,311
Combined Constituency	3,394	2,574	820
Durham	571	477	94
Manchester	1,388	1,050	338
Liverpool	536	351	185
Leeds	289	220	69
Sheffield	120	105	15
Birmingham	333	233	100
Bristol	157	138	19
Total	34,048	28,649	5,399

AN INSURANCE BROKER.

IT has come to our notice that an enterprising person, calling himself an "Insurance Broker," is calling upon medical men, and inviting their attention to the merits of life policies issued by various insurance companies, adding as an inducement to a medical man to take out the policy that he would be in a position to place a certain number of examinations for life insurance in the doctor's hands. This person then, we are informed, proposes to accept the doctor's first premium on some form of policy agreed between himself and his new client. In a certain number of cases medical men appear to have been so foolish as to have believed that a policy for life, accident, motor-car casualties, and so on, could be taken out in that manner, and to have paid premiums which, never having reached the insurance office, resulted in no policies. In one case a doctor does not seem to have been worried even by this; his worry commenced when he tried to draw compensation for a motor accident. Some medical men had enough knowledge of the world to refuse to part with money in that informal manner, and it was through such a medical man that one of the insurance companies in question found out what was happening, for the inquiry that reached them gave away the deception that was being practised. In some cases the policies have been duly put through, in which cases the medical men found themselves insured, though the companies may not have received the first premiums.

We tell the story to warn our readers against an ingenious and insidious deception which may be offered for their acceptance.

TWO NEEDLESS DEATHS.

Two inquests were held in London recently on the same day upon the bodies of persons who themselves must be held to have been responsible for accidents which proved fatal. In the one, a young man travelling with his friends in a train moving at 50 miles an hour, by way of a joke sat upon the ledge of the open window and fell out backwards. His friends managed to hold him by the feet until the train was stopped, and appeared at the inquest to ascribe blame to the railway officials because the train was not pulled up sooner in response to the communication cord. The deceased, however, was found to have sustained injuries to his head which might have occurred immediately after his fall, and the officials pointed out that at whatever moment the bell may have been rung a train moving fast cannot be pulled up suddenly without danger to all its passengers. The jury expressly found that no blame attached to the servants of the company.

In the other case referred to, a woman living in a flat in Marylebone was being taken up in a lift worked by a girl 15 years of age. When she reached the second floor, where she lived, and before the lift stopped, she herself opened the door on the landing, there being apparently no door to the lift, and began to step out. The lift was then about a foot below the landing, and the girl attendant said that the woman slipped and fell, and that she, the girl, pulled the rope to bring the lift level. Precisely what then happened is obscure, but the lift began to descend instead of rising, possibly because a hurried and more or less lateral pull at the cord had as its result the exerting of vertical pressure in the wrong direction. In any case the unfortunate woman, who was struggling to regain her feet, was caught with her head outside the descending lift and killed. In this case a verdict of accidental death was returned, and though the jury did not blame the girl attendant they added a rider to the effect that they considered her too young to have charge of a lift. It is to be pointed out as to this that young boys and girls are in charge of lifts in very many buildings, that where lifts are not in constant use it is hardly a "man's job," and that even a grown person is not always cooler in an emergency than one 15 years of age. Of course, an older person might have interfered to stop the passenger when she opened the door and tried to get out before she reached the landing, but even this is doubtful. The fault must be looked upon as primarily that of the passenger and she paid a terrible price for it.

No precautions can altogether prevent foolish actions by persons who choose to behave rashly. Some railway companies place bars across their carriage windows. This may cause loss of life for which they would be blamed if in the event of an accident persons trapped in an overturned carriage found themselves unable to escape. There are always dangers to be encountered in otherwise safe conveyances, and not only in trains and lifts, if those using them refuse to be guided by prudence and good sense.

THE REVENUE FROM PATENT MEDICINES.

ACCORDING to a return prepared by the Excise authorities the number of licences issued (at 5*s.* each) to makers or vendors of patent medicines in the year 1920 was, in England, 38,332, and in Scotland, 3339—total for Great Britain 41,671—on which the amount of duty collected was £10,421. These figures show an increase as compared with the years 1917–18–19, but are still below those of pre-war years. The licence duty does not extend to Ireland.

The stamp duty on patent medicines before the war varied from 1½*d.* upwards, according to the price charged for the medicine, but from Oct. 20th, 1915, the rates of duty were doubled, the minimum being fixed at 3*d.* The net receipts from this duty by the revenue authorities for the last ten years have been as under:—

Year.	England. £	Scotland. £	Total. £
1911	322,696	2,950	325,646
1912	324,861	2,996	327,857
1913	325,420	2,899	328,319
1914	357,750	2,627	360,377
1915	331,033	2,744	333,777
1916	617,876	9,575	627,451
1917	726,894	6,019	733,913
1918	797,366	6,449	803,815
1919	1,056,435	9,259	1,065,694
1920	1,322,054	10,007	1,332,061

ST. THOMAS'S HOSPITAL SAMARITAN FUND.

THE annual report for 1920 of the Samaritan Fund and the activities of the lady almoner's department of St. Thomas's Hospital has now been issued, showing that the work done has covered much old ground, gradually expanding as needs increased. The Samaritan Fund (founded in the year 1852) provides all necessary adjuncts to hospital treatment, such as convalescence, surgical appliances, temporary allowances, fares, extra nourishment, &c. That its assistance has always been of a varied nature is shown by the fact that in the first year's report one of the items of expenditure was the the redemption of tools. The Fund is, unfortunately, small in comparison to the size of the hospital and the needs of its patients, and this year subscriptions, except in special cases, have been unusually small. By means of careful administration and an immense amount of work the Fund has kept clear of debt, and the needs of no patient have been disregarded, but the outlook is not very encouraging.

Subscriptions are urgently needed, together with convalescent letters and free hospitality for patients who are not actually ill but need rest and fresh air. Considerable care is required lest the help afforded by such a fund should tend to lessen the independence of the patient and, in the end, render the family group weaker and less able to stand alone. Therefore, when help is required, be it convalescence, surgical appliances, or nourishment, the first source considered by the almoner is the patient, his family, and relatives, the Samaritan Fund subsidising their contributions. Naturally, such efforts depend on the state of the labour market and other social and economic considerations. During the earlier part of the year 1920 there was comparatively little unemployment, and patients' contributions towards convalescence and instruments amounted to £2981 3*s.* 2*d.*, partly paid in direct sums, partly by means of loans, faithfully repaid. At the end of the year the outstanding loans only amounted to £38 11*s.*, the whole of which will be gradually repaid, and the bad debts came to the negligible sum of £7 6*s.* 2*d.*, the total cost being £5079 7*s.* 8*d.* Of necessity, the patients often cannot repay other forms of assistance. A temporary allowance is given while the breadwinner is laid up in order to free his mind from anxiety and to keep up the standard of living of the family. The amounts granted are based on the family income,

A Lecture

ON THE

RE-EDUCATION OF THE BLINDED,

WITH SPECIAL REFERENCE TO THE BLINDED SAILOR AND SOLDIER.

Delivered at Moorfields Hospital

By Sir ARNOLD LAWSON, K.B.E.
F.R.C.S. Eng.,
OPHTHALMIC SURGEON AND LECTURER ON OPHTHALMIC SURGERY, MIDDLESEX HOSPITAL, ETC.

The problem of educating a child born blind and that of re-educating one blinded after the usual period of education has passed are two totally different matters. The former, broadly speaking, consists in finding some method by which the lack of one sense can be supplemented by extra training of the remaining senses. Thus a child who is born blind and has never seen a bird can be taught to appreciate the shape and characteristics of birds by the demonstration and handling of stuffed birds and models. All the intellectual faculties can be brought into play by side-route methods. Observation and concentration, the two most important desiderata of education, are developed by exercise of hearing, touch, and memory, whilst the expression of ideas by reading and writing after the blind methods are fairly easily acquired by the blind child of average ability when instructed by specially trained masters and mistresses.

For one who has already been educated on the lines of a sighted child, re-education after blinding is a problem of much greater difficulty, and previous to the recent war attempts to deal with it were incoördinated and unsatisfactory. A young adult blinded by accident or disease might ultimately learn to read Braille with facility—probably he did not. There were several most estimable societies devoted to the relief of such cases, but they, for the most part, worked by money grants and pensions, although others did excellent work in the maintenance of workshops, where the blinded could learn the trades of brush, mat, and basket making. It was not always an easy matter to get a person into these workshops, and if the person did not feel inclined to go there no moral pressure was applied. If the blinded boy or girl preferred to sit by the fire most of the day doing nothing, or to be led about the street playing a penny whistle or chanting some doleful ditty or hymn, or perhaps turning the handle of a piano-organ, there were few to say nay or to make any special effort to turn him or her into a useful member of society.

The rapid influx of men blinded in the war from its very commencement brought the problem of the re-education of the blinded very keenly to the fore. St. Dunstan's Hostel, the biggest work of private enterprise that the world has ever seen, has shown what can be done and how it can and should be done, and it is to the methods of training as exemplified by the work of St. Dunstan's Hostel that I intend specially to direct your attention to-day.

But before discussing methods of re-education let us see what are the special difficulties. In the first place the patients have already been educated through and by means of the eyes. Re-education means in fact commencing all over again on different lines at a period when maturity has been reached and the natural receptiveness and plasticity of the childish intellectual response to training is over. The child who is congenitally blind is much better off than the blinded adult. It cannot miss what it has never experienced, and all its faculties are trained easily enough to supplement what it lacks. In the case of the blinded man, the intellectual senses have been, to a very large extent, dominated by the eyes, and subservient to them. It is true that he has gained a very great deal by the experience won by means of his sight before it was lost; but the losing of it reacts against him in that he can no longer put his experience to the test of the eyes on which he was accustomed to rely. The blind child has never gained this experience of the eyes, but intuitively seeks to gain experience by other methods which come naturally to it, but which are totally unnatural to the sighted child.

DIFFICULTIES OF RE-EDUCATION.

That is the first great difficulty—the having to re-educate on totally new lines—and it becomes of increasing significance according to the patient's age, which is the second difficulty. For as we live and get older each one of us gradually becomes at first fixed in our methods of action and habits of thought, and then gradually less capable of absorbing fresh ideas, and less willing to try to absorb them. Thus we see that the re-education of a blinded person is only possible for a certain period of life. After that time has passed we must be content with an incomplete and increasingly inefficient result from our efforts. As we say at St. Dunstan's, the man is trainable or untrainable, and the former class should theoretically, though, alas, not practically, embrace all cases blinded up to the age of 40. From the age of 40 to about 50 years there may be a certain amount of effective re-education, but the amount gained by the patient is not in proportion to the effort made, and after the age of fifty, with the exception of a few who in the past have been highly intellectual, the re-education resolves itself in most cases to providing the patient with methods by which he may serve to pass the time pleasantly. The learning of Braille is a good instance of this, and it is found practically useless to instruct in this subject when the patient is over 40 years of age, though there are exceptions. The patient may master its technicalities at a much later age than 40, but it is rare to find one, who, commencing after this age, becomes sufficiently conversant with it to read Braille with real facility and with genuine pleasure.

The third difficulty is presented by the patient's individuality, which is a factor of enormous importance. It is very disappointing trying to re-educate a country bumpkin who has successfully resisted efforts to educate him when he had his sight. Such a one has passed the best educational time with his intellectual vision almost entirely subservient to the practical necessities of obtaining sufficient to eat and drink by unskilled labour. Only the simplest forms of re-education are applicable to such a man, although he may have attained manhood but a very short time, and even such simple training as may be applicable to his case may be extremely difficult to instil. On the other hand, a man who has received and proportionately absorbed the benefits of a good education in the past, may, under certain conditions, be capable, after he has been blinded, of resuming his usefulness as a citizen to as great or even greater extent than that to which he attained before blindness overtook him. Of that fact we have had many notable examples in history, and in most recent times the names of Arthur Pearson and Towse will go down to posterity as examples of what a blinded man can achieve. However great these two men were in their sighted life, whatever power of achievement might have been theirs had they retained their sight, the fact remains that their great services to their fellow men followed on their blindness, and that what the world would have called their disablement has proved their glory.

Thus it is seen that the re-education of the blind man must be conducted on individual lines, varying with the person. It is not possible satisfactorily to educate every child, blind or not, on the same individual lines, though it is constantly being attempted and is the one great difficulty of school life, but it is even less possible in re-education because the dominating individual characteristics of a grown man are infinitely more dominating than those of a child, and whereas it is possible to turn a child away from its

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Presidential Address

[ABRIDGED]

AIMS AND BOUNDARIES OF PHYSIOLOGY

Delivered on Sept 7th before the Section of Physiology of the British Association for the Advancement of Science

By Sir WALTER M FLETCHER, K B E M D,
D Sc Camb F R C P F R S
PRESIDENT OF THE SECTION AND SECRETARY TO THE MEDICAL RESEARCH COUNCIL

UPON the occasion of our meeting in this metropolitan city of Edinburgh the seat of an ancient university and a great centre of medical study and practice it has occurred to me that it may be profitable for us to consider the part which physiology should rightly take in its relation to national life, to learning and to medicine Not only the place of our meeting indeed but some special circumstances of the present time seem to make it fitting that we should here review the progress, the proper scope and the prospects of our chosen subject We are now just half a century from the time when physiology first came to take its present position in this kingdom as one of the great branches of university learning and as a vital part of medical education We have seen the close of a war which though it diverted and distorted the progress of the science yet brought it great opportunities of service in national life and taught us lessons here as in so many other directions of which we shall do well to take profit The passing of the war moreover has brought a period of change and unrest during which impulses towards reform are being chequered by the results of fatigue or reaction Both here and in America it may be said that while physiology has come from the war with enlarged outlook and responsibilities it is exposed to some new and perhaps dangerous influences in the present time of rapid resettlement It may well be worth while then to look now both forward and back to see the road by which we have hitherto been led and its relations to that which now lies before us

[The lecturer then sketched the rise shaping, and establishment of physiological knowledge during the past 50 years, through which period England led the rest of the continent in experimental results and in new ideas After brief reference to the developments which followed Harvey's discovery, he pointed to University College, London, as the home of modern physiology and to the great Sharpey as its father He showed how Sharpey, in touch with the best progress in France and Germany organised the study of physiology between 1836 and 1874 and he made sympathetic reference to the aid of the Prince Consort who was familiar with continental progress The work of Sharpey in its original home he said had been continued by Starling Bayliss, and their colleagues while from Sharpey's school were derived the sturdy branches of physiological study which have borne fruit at Oxford under Burdon Sanderson Gotch, and Haldane and at Cambridge under Michael Foster Langley Gaskell Hopkins, and Sherrington who has now transferred his services to the sister University In his consideration of the work of all these pioneers Sir Walter Fletcher was able to show that from British experimenters have come the root ideas in nearly all the great primary fields of physiological knowledge He gave as examples the nature of the heart beat modern conceptions of the central nervous system, the analysis of the functions of the sympathetic system and the detailed study of nutrition and respiration Sir Walter Fletcher also pointed out that at no time earlier than the war had the British physiologists either the menial assistance or the other resources which their colleagues abroad had commonly commanded He then proceeded —]

LESSONS OF WAR EXPERIENCE

Before 1914 physiology was being developed as we have seen in its still youthful status as one of the primary departments of knowledge, it had become a subject of independent university rank Large and important parts of this development had proceeded at one or other of the ancient universities out of touch with great centres of population and out of touch therefore with immediate medical needs In some degree this was not without advantage and for two main reasons Detachment from the pressure of need allowed the free pursuit of knowledge for its own sake and a full surrender to the hintings of nature wherever her clues might lead the inquirer Experience amply showed moreover that when physiology was presented among other university subjects for study it gained first as recruits and later as distinguished workers many able young men who were attracted to it often from other subjects by the fascination of its problems and without regard to any of its potential applications to medical or other practical ends These were great gains which it would be easy if it were not unnecessary to illustrate by many convincing examples Yet there were some heavy counterweights on the other side of the balance The practical and urgent needs of humanity as found at the hospitals were not brought with full or due effect to the notice of physiologists Those in charge of hospital patients were not selected to advance or habitually engaged in advancing medical knowledge and new physiological conceptions as they took shape in our laboratories only slowly and partially came to have effect in medical practice and medical study The physiologist to his own certain loss and to the no less certain loss of medicine held aloof from the bedside often when access was possible and remained immersed in his laboratory interests Little pressure indeed was ever brought to bear upon him by the physician to come to his aid Connected with the evils of this separation was the divorce which the accidents of development had set up between physiology and pathology as though the study of the damaged body could be separated from the science of the living organism and of its reactions to disturbance from the normal Yet while the physician had come to tolerate the approach of the pathologist to the bedside it occurred too rarely that he felt the need of the physiologist or made himself familiar with new devices of physiological investigation

If from a hospital in time of peace the most obvious call had seemed in the past to come from the side of infective disease or morbid process for the help of the pathologist in war the stress put upon the healthy human body made the physiologist and his methods indispensable Bacteriological work and studies of immunity had their prominent place of course in the detection and prevention of infective disease and wonderful were many of the achievements seen under this head But in a sense the more complete the prevention of infective disease the more apparent became the physical stresses of war The violences offered in modern warfare to the human body—whether through exertion and exposure by terror or excitement in physical damage by lead or steel or in chemical attacks by poison and not least through the incredible stresses of flying high and fighting in the air—all these brought many new and urgent calls for precise physiological knowledge and for new studies by the physiologist The results of pain and fear of haemorrhage of shock by wound or operation—all these needed further analysis before sound treatment could be devised or improved New studies were needed of changes in blood pressure and blood volume and in the qualities of the blood itself, new inquiries into the finer vessels of blood circulation and their relation to the nervous and other systems and new analyses of the chemical mechanisms of the body and of the modes by which want of oxygen is met by use of knife and fork when he finds out that this is expected of him, and that he is not allowed to be spoon-fed like a baby, a habit that the blind rapidly acquire if left to themselves. Of course a certain amount of aid at meals is essential, such as the removal of bones of fish and so forth, but nothing is worse for the patient, and so contrary to the spirit of independence, than hand-feeding by another person.

Then, again, the patient must regain interest in his personal appearance—the neatness and cleanliness of dress and appearance. Both these qualities have to be guarded by outside aid; the blind, if left to themselves, very speedily become indifferent to these points and slovenly in their habits. Shaving is easily taught and the patient quickly learns also to interest himself in the appearance of his clothes, his finger-nails, and the neatness of his general turn-out, especially when he is one of a community where these points receive attention and excite comment.

USES OF SOCIAL INTERCOURSE.

The social intercourse which is one of the great advantages of a community, will soon react on his attitude to outside affairs. He will begin to be less engrossed by his own misfortunes and to take more interest in what is going on round him. He will come in contact with others more advanced in re-education, whose experiences will prove of interest, whilst the knowledge of their difficulties similar to his own, and overcome, will stir in him the spirit of emulation to succeed himself. The old contemptuous proverb about "the blind helping the blind" is one that should be cut out of the wise sayings, for in very truth we know that the blind can and do help the blind, and that nothing is more helpful to the recently blinded man than the experiences of one who has gone through the mill himself and gained the victory. This was one of the special good works of Captain Towse in the war, and often have I heard of the comfort he brought to the bedsides of those who were sunk to the lowest depths of despair by the loss of all that seemed to make life worth living.

The advantages of social life are further exemplified by the relaxations, distractions, and amusements which are possible in a college for the blind. The greatest importance was attached to this side of re-education at St. Dunstan's, and rightly so. Firstly it is difficult for a blind man, especially if he is young, to obtain the physical exercise necessary to good health, unless he is specially taught; and, further, such exercise not only interests and amuses, but it educates as well; for it teaches the blind that many of the pleasures which seemed lost can be regained, and this knowledge has its moral value in bringing out the spirit of independence and in awakening and stimulating the desire to compete once more in the life of the world around.

PHYSICAL EXERCISES.

St. Dunstan's spared no pains to provide the men with all kinds of relaxation and amusement, and it was marvellously interesting to see how soon and with what keenness the inmates interested themselves. Perhaps the most popular of all the amusements was dancing. This was regularly taught and eagerly learned, and it was wonderful to watch the ability displayed by many of the men who were encouraged to compete for prizes given for grace and skill. Singing was another favourite amusement for those who possessed the necessary vocal ability, whilst, similarly, instrumental music found many adherents, and this progressed to the forming of a band of blind musicians. But besides indoor distractions, outdoor sports were in great request, and none more so than rowing and sculling, which furnished splendid exercise, whilst rowing races were eagerly anticipated and keenly contested. These are but examples of the kind of sport and amusement that all the healthy blind can do and do well. There are others, and perhaps some of them would seem utterly impossible. Thus I know of an excellent golfer who stuck to his game even after he had become completely blind. He found that after practice he could, aided by directions from a good caddie, continue to drive a straight ball and pitch fairly accurately to the green, and when there he would measure the distance from ball to hole and test the green by walking from one to the other, then proceeding to putt guided by the sound made by the caddie striking the tin with an iron club.

INTELLECTUAL AND ECONOMIC ASPECTS OF TRAINING.

Thus it is evident that a short time spent at a place like St. Dunstan's should, and generally does, succeed in revolutionising the outlook of one recently blinded and speedily prepares him for the more serious part of the training. The actual training must be considered from two points of view: (*a*) that designed to cultivate the intellectual qualities of the blinded man, and (*b*) that intended to provide him with a means of livelihood. The first chiefly comprises the learning to read Braille and writing by means of the typewriter. Possibly the optophone will eventually supplement Braille, but at present this instrument does not seriously compete with it. It is too expensive for the ordinary person and its difficulties are very great, even to one who is gifted with a musical ear. Braille, too, is disappointing in a very large number of cases. As an intellectual exercise it is excellent, but to read it with sufficient facility much practice and continued exercise of that practice is necessary. The learning of the very numerous contractions is essential, and, even when mastered, proficiency is only retained by constant exercise to prevent the memory from slipping. Thus those who are blinded at a comparatively late stage of life—i.e., after 40 years of age, can rarely acquire the art, and further, the young blinded man of the labouring class, whose education has been completed at the age of 14 years, and who has thereafter spent life in manual labour, has rarely either the intellectual ability required or the necessary delicacy of touch in fingers hardened and blunted by physical toil. Thus it comes about that whilst it is always desirable to include Braille learning as an essential factor in training, the final results of teaching are often disappointing, the pupil very frequently abandoning it when once set free to start life again in the world. One interesting point about Braille is that it seems to appeal very little to those whom one would imagine, at first hand, had most need for it. I mean that those who are busily employed in intellectual work—work requiring much mental concentration—do not seem to use Braille much. It takes too much thought and the man tired from brain work all day cannot, as a rule, be bothered with it at night as a means of relaxation. Typewriting, on the other hand, has not any serious drawbacks of this kind, and the blinded person of average intellect speedily acquires great proficiency. It is an exercise which seems to appeal to every blinded person, and the desire to become expert is stimulated at St. Dunstan's by the present of a typewriter to each man who succeeds in passing what is a very searching test examination of his powers.

Then as to the training the blinded with a view to earning a livelihood. Before the war workshops in which the blind of the labouring classes were taught mat-, brush-, and basket-making, did a great deal of useful work, not only in teaching trades, but in furnishing a market for the wares. There was also a struggling society to train the blind of a higher social standing in the art of massage, which is eminently suitable for the blind; the useful work of this society was much hampered by want of funds. For the comparatively small number of blinded members of the middle and upper classes there was really nothing open, and the teaching of Braille was practically the only effort made on their behalf. The advent of war stranded a number of blinded officers and educated men, and it became as important to provide a sustaining interest in life and often a means of livelihood for these sufferers as for the more numerous patients of lower social rank. A revision of the whole question promptings to further inquiries, to be followed then or later—inquiries into the physical, chemical, or biological qualities of the blood, into its relations to the vessel walls, and into the functional changes of the capillary blood-system and the factors affecting or controlling them. Those who fixed their attention upon the damage wrought in the respiratory organs by poison gases were led to many new studies of the fundamental physiology of the lungs. The lymphatic system of drainage of the lungs was re-examined, and wide new experimental studies of the modes of regulation of the breathing were undertaken which have thrown new and valuable light upon the normal mechanisms of respiration. An inquiry into the poisonous action of the high-explosive trinitrotoluene, and into the possibility that slightly abnormal forms of this substance, found as a small contamination of the normal form, might be specially toxic, led to a clear negative answer. But it led unexpectedly, it is both curious and useful to note, to the discovery that one of these abnormal forms was an effective reagent in the laboratory. By its means the chemical structure of a constituent of muscle substance known as carnosin was for the first time determined, and carnosin has now been synthesised artificially from simple materials.

In sum, then, we may gratefully recognise that the war in its horror and waste has not brought evil without admixture of good. We may be encouraged at least to hope that the active coöperation which the war established and fostered in diverse ways between the physiologist and the medical or surgical clinician may remain to bring lasting good, on the one side to the cause of learning and its advance, and on the other to medical education and to medical progress.

SYNTHETIC CONCEPTIONS.

[In the third section of his address Sir Walter Fletcher invited his audience to review the aims of physiology and the boundaries to which it should properly extend in its relations to other subjects of study. He said that the analysis of the separate functions of each part of the body showed an inevitable mental process, as the anatomist revealed more and more accurately the visible machinery of the body. But the pursuit of knowledge by particular technical methods had led to specialism, new named sciences growing up within the old. Step by step with progress in analysis there had been continual advance towards synthesis. Of this absorption of analytic data into synthetic conceptions he gave examples, dealing with the discovery of the hormones, recent additions to knowledge of the brain and spinal cord and of the functions of the various systems of fibres and cells involved, the analyses of the biochemist and the discoveries in the modes of regulation of breathing.

He closed this part of his interesting address with the following words of warning:—]

In the rapid growth of medical schools throughout the English-speaking world there are present signs that the essential part which physiology plays in medical education and study may wrongly masquerade as the only service physiology has to give to man, and may appear to fill the measure of her rightful status. In more than one of the great American universities physiology is treated either in theory or in practice as a subject within the Medical Faculty to be housed within the medical school, yet at the same time not as a subject in the Faculty of Arts or of Science, nor to be studied alone or with other sciences as part of a liberal and non-professional education. It is rare in the United States for physiology to be studied by any but professed medical students, and there is some reason to think that it is becoming rarer in Great Britain than it was a few years ago.

To my mind this tendency is to be deplored. It implies a reversal of that growth of physiology in freedom which began half a century ago and from which such good fruit has already been gathered. It has two chief evils among its inevitable results. Removed from its position among other university subjects by geographical separation that in some universities amounts to transportation and exile, it is deprived of the kinship and coöperation of the sciences touching its own boundaries—those of zoology, embryology, and botany, of agriculture, of psychology, of physics and chemistry. Assigned, if not limited, to a place in the medical curriculum, it is apt to be narrowed in its claims and outlook, and to lose not only its proper neighbours, but even parts of itself, whittled away in the organisation of a purely medical programme in the guise of pharmacology, neurology, toxicology, and the like, for which special funds may be available, separate places in the time-table reserved, and independent departments provided. But a second evil strikes more deeply. Any arrangements that give in effect a restriction of physiological studies to medical students alone must be doubly injurious. It is injurious to the general course of education, because it tends to cut away from the other university students the opportunity of possessing themselves, either as a primary or secondary study, of the knowledge and discipline of physiology which has educative value in the highest degree for the cultural or the practical sides of living. And here, secondarily, we may notice the loss to an applied study only less in importance to that of medicine; I mean the science and practice of agriculture. It is injurious, again, to physiology itself, because we know well from reiterated experience how many promising recruits for the future advancement of the subject have been brought to it, often, as it were, by chance, in the course of their university life, attracted to it whether from classical studies or mathematical, or from other branches of natural science. A notable number of the chief leaders in the science of the past and present generation have so been attracted, without any previous thought of medical studies as such, whether these have been added later or not; of these leaders, not a few whose names are well known to us all have never become, in the technical sense, students of medicine at all. They may have lost by this, but should we willingly have lost them?

I hope that what I have earlier said with regard to the great service that physiology has both to give to medicine and to receive from it will acquit me of any charge of desiring less, rather than much more, intimacy and intercourse between them. I believe that no better service can be done for the good of both than to increase their mutual offices and the ties between them. But we must see that, in uniting physiology to medicine, we do not uproot it from that soil in which alone it can abundantly flourish and bear fruit, the environment of a university with all that that connotes. If there be any serious doubt of the reality of the dangers I have indicated, I would point to the dearth of men fitted to promote and teach the subject among those coming from the schools in which physiology is regarded as a medical study and no more, and is not given its full university status. In the United States at present there is a grave and admitted dearth of suitable candidates for chairs of physiology, in spite of the remarkable work which has been done there in recent years and the fine material equipment in general available. I venture to offer my conviction that the prime cause of this shortage is the absence of the great recruiting possibilities of university life and the undue limitation of physiology to medical students. Men coming to physiology as a "preliminary subject" and nothing more are not likely to think of it as their life-work, but will pass through it not to return.

[In conclusion, Sir Walter Fletcher referred briefly to the high intellectual and æsthetic sanctions of physiological study.

U.S.A. GENERAL HOSPITALS AND T.B. PATIENTS.—The United States Public Health Service in a recent bulletin regards the opening of the general hospitals to tuberculous patients proposed at the Boston annual meeting of the American Medical Association as a step in the right direction. This hospitalisation will, it is believed, be largely preventive and in line with the medical tendency of the day to look to prevention instead of to cure.

quickly learn card games, and I have seen more than one good bridge player among the blinded.

The turning out of an expert blind workman must, therefore, be a comparatively long affair. The average stay of a man at St. Dunstan's is about a year; but very many of the wounded took a much longer time than that, and many had to spend long periods of rest at one of the convalescent homes attached to the Hostel.

SPECIAL DIFFICULTIES OF THE BLIND CRAFTSMAN.

When training has been completed the blinded man has to be launched out into the world to earn his living. Very little difficulty has been experienced with regard to those who have been re-educated in special work, such as massage, telephony, &c. These men are able to compete in the world's market on fairly equal terms with the sighted man, especially when there is a substantial pension in the background to help matters along. But in the case of those trained in handicrafts, as most of the St. Dunstan's men have been, the situation is different and bristling with difficulties. The blind handicraftsman cannot possibly compete on equal terms with the sighted. He cannot work so quickly, or continue to do so for such long hours. His work is apt to deteriorate in quality unless periodically supervised. Little mistakes creep into his work and pass unrecognised, so that the occasional fault is apt to become habitual unless there is someone to overlook the work and put matters right again. The purchase of raw material in the best and cheapest market and the disposal of manufactured goods to the best advantage require help. For these reasons the blinded handicraftsman on leaving St. Dunstan's is handed over to the great After-Care Department, which has done and is doing as much for the blinded of the war as the Hostel itself. This department is ably managed by a brilliant young officer, Captain Ian Fraser, who was blinded early in the war and has been specially selected and trained for the work.

AFTER-CARE.

Thinking over the matter, one would naturally say that the most simple way of surmounting the difficulties of the case would be to draft the handicraftsmen into communal workshops dotted over the country at large commercial centres such as London, Liverpool, Manchester, and Birmingham. Without doubt the principle of this arrangement would be ideal, but practically such a course was neither possible nor altogether desirable for blinded soldiers. The expense of starting and maintaining such workshops would have been prodigious. The existing blind workshop accommodation was and still is woefully inadequate for blind civilians, let alone blinded soldiers and sailors, and I believe I am correct in saying that at the present moment room can be found for only about one-third of the blinded civilians. Then, again, supposing the possibility of such workshop accommodation, it is doubtful if the blinded soldier, with his pension of £2 10s. per week, would work in harmony with the blind civilian whose work has specially to be subsidised to give him a living wage. It would not be fair to pay one hand a less wage for a given article than another, and on the one hand the civilian, unless he received special treatment in this respect, would be in a difficult position, and would resent the soldier with his pension being subsidised on equal terms; whilst on the other hand, the soldier in spite of his pension would probably refuse to work when he was paid at a lower scale than others engaged on the same job. Thus, the formation of large workshops for blinded soldiers and sailors being impracticable, it was decided to deal with the matter by settling the men in various localities where they produced their work at home. This arrangement necessitated (*a*) the formation of a large central depot, which is situated in London. and (*b*) the division of the United Kingdom into districts, each under the care of a specially trained and paid inspector. At the central depôt all the business of the After-Care Department is handled. Raw material is bought and stocked, and manufactured goods are stored for disposal. It is also the headquarters for the financial side, and the general reference centre for all correspondence, and all work connected with the welfare of the men. The local inspectors have much to do. Each man, when trained, is settled in his native district or as near as possible to any locality that he may choose, and it is the business of the inspector of his district to see to his being comfortably and suitably housed. Once there, he is visited at least once in every six weeks by his inspector, who supervises his work and points out mistakes if necessary. The inspector is also responsible for the supply of material and for the sending of his goods to be disposed of by the central depot.

The work is not directly subsidised, and quite rightly so, for with his pension the trained man can earn a very good living; but indirectly a very great deal is done to help each man. The material is supplied at actual cost price, and all expense connected with handling and storing material is charged to the department and is a direct financial loss to it. Thus, the more a man works the more he costs the after-care department, and so, indirectly, the man who works most gets most. Then, as regards sale of work, the man is paid by return of post at the highest market rate obtainable at the moment, and no charge is made for the carriage of his goods to London and for the storing of them. Very often the actual disposal of the goods is much delayed by overstocking, and in the meantime the price may depreciate, so that the department again stands to lose, sometimes very considerably.

In times of sickness, accidents, or business difficulties the department is ready to help. Special care is taken that the patient is well looked after, and, if necessary, money grants are made to help in tiding over times of trouble. When convalescent the patient is sent free of all expense to himself to one of four convalescent homes attached to St. Dunstan's. These are situated at Hastings, Brighton, Cheltenham, and North Berwick, and the home is prepared to keep him as long as necessary. These homes are also used to provide annual holidays, and every man is entitled to a fortnight's rest yearly at one or other of them.

Thus it is obvious that the work of the after-care department is very great and very expensive. It is reckoned that each man, when trained, costs the department about £17 per annum. Of this sum about £12 is expended indirectly in subsidising his work, whilst the remaining £5 represents the average cost from possible sickness, accidents, business difficulties, and holidays. At the present moment there are about 1200 handicraftsmen thus settled, costing the department roughly about £20,000 per annum. Unfortunately there remain about another 300 men to settle, so that the department has to face a considerable increase in expenditure for some time to come. It must not be thought that the department only looks after the handicraftsmen. It is ready to provide help for all those in special lines of work when required, and especially is its help needed with regard to sickness and holidays, but, as already pointed out, those in special work often earn very good wages indeed, and for the most part need no help except in cases of emergency.

THE UNTRAINABLE BLIND.

Mention must be made, too, of the great class of untrainable blind, those who on account of age, infirmities, mutilation, or some consecutive disease, such as tabes, cannot be trained to earn an independent livelihood. Men of this class need a modified course of re-education. For some a light occupation, such as brush-making or chopping sticks for firewood, may still be possible, whilst string-bag and netting, for them as for others, may help to pass away many weary hours. The Moon system of reading, which is very much simpler than Braille, may be taught to those who are too old to learn the latter, but the amount of available literature is limited, and reading Moon is a slow business and apt to become very tedious.

natural inclinations, it is generally not so possible in an adult.

The last great difficulty is one which is not constantly present but which may prove a great stumbling block. It is the mental attitude of resistance of some blinded persons towards attempts to re-educate them. I think it exists temporarily in almost every case as a natural sequel to the first losing of the sight. The sudden plunging of the sighted man into darkness by the havoc of a shell-burst or bullet must be, and is, followed by a period of mental depression, often of a most acute character, which persists in many patients for a long period. The shorter this period can be made the happier for the patient, but while it lasts the patient is apt subconsciously to resist any effort to ameliorate his position. The younger the patient the more easily and quickly will he usually react to outside influences to help him, but in the case of people who are blinded in the evening of their lives it is not unusual to find a persistent passive attitude of inability to take interest or to attempt to make the best of circumstances. Of course, when a patient has gradually lost vision by the progress of some insidious disease, the ultimate catastrophe, delayed perhaps for several years, loses the greater part of its horror—the patient has had time to become acclimatised as it were. It is the *sudden* or rapid loss of that upon which the beauty and enjoyment of life seem to hang, which causes the persistent melancholy from which so many old people fail to arouse themselves. Believe me, it is a far better thing to lose the sight in the spring or summertime of youth than in the autumn or winter of life. The natural sympathy of the world is for the blighted prospects of youth; all the might-have-been of life seemingly so utterly destroyed, the future so hopelessly dreary. After all, the elderly or old man has had his time of youth unblasted by blindness—not so many years of life still remain, and though blindness is always hard he cannot win the same intensity of the world's sympathy as the young blinded man. And yet the world is wrong. For one of the great blessings of youth is its inability as a rule to look too far ahead. Foresight is largely a matter of experience won by age, and youth is always ready and usually capable of reclaiming and retying the threads of life which have for a time parted and separated him from most of what makes life lovely and pleasant. An old man generally cannot pick up the threads at all; or if he can find them he cannot tie them correctly—he is confined by his experience and his powers of outlook. He cannot start all over again—it is too late to do so even if he were to try. The old man is in fact, as I have already pointed out, untrainable.

It was this spirit of youth that was the chief asset in the production of that wonderful cheeriness which so pervaded St. Dunstan's during the war, and so astonished all who went there. The society of comrades similarly maimed helped in a very great measure, but neither the society of comrades nor the sympathy and help of all who worked at St. Dunstan's would have brought that laughter and that brightness if St. Dunstan's had been peopled by old men instead of boys, as there they mostly were.

CATEGORIES OF BLINDNESS.

For the purposes of training, a man may be defined as blind when his sight is so bad that he is unable to earn an independent livelihood as a sighted man can do. Thus the blind can be divided into three categories or classes: (*a*) those who have completely lost their sight; (*b*) those who still retain fragments of vision but no useful sight, their powers being limited to bare light perception or to some sense of form or movement over the whole or part of their visual fields; and (*c*) those who still possess some useful sight, vision that enables them to get about without aid and to recognise large objects close at hand, but insufficient to enable them to earn their living as sighted men. This latter class, as we shall see later on, embraces the most difficult cases for training purposes, because it generally happens that a patient cannot be taught to learn without using the weak sight that is still retained and which is thereby very frequently endangered by the instinctive straining set up. Class (*a*) is the most satisfactory of the three, for those who have completely lost their sight most quickly become resigned and most easily are taught to do without it, and indeed fragmentary vision is of positive harm to many in that it gives no real comfort but rather tends to confusion and to increase the difficulties. I have often heard patients say that they were worried by the retention of a little sight in one or two corners of the visual field, and similarly have heard others rejoice when they had lost it. It was well recognised at St. Dunstan's that the completely blind were the easiest to train, and our experience there was that these were the most contented of the patients, and that grumbling and discontent and other little troubles, generally present in any community, seemed chiefly to emanate from those who still retained a little sight.

PRELIMINARY RE-EDUCATION OF THE MORAL SENSE.

Now before re-education in the sense of intellectual or manual instruction can be satisfactorily commenced there must be a re-education of the patient's moral sense. When sight is first lost the patient is plunged into an intellectual abyss from which there seems no way of escape. He finds, or fancies, himself completely dependent on others for everything. He cannot walk, eat, or amuse himself, and his every action seems to necessitate an appeal for help. He may at first try to be independent, but probably soon gives up such apparently futile efforts; he tends more and more to lose his sense of individuality and to rely entirely on the sympathetic help of those about him. The very first step in re-education consists in teaching the patient to recover his lost independence and to regard his difficulties not as disabling, but as inconveniences which can largely be discounted. That is one of the great secrets of the success of St. Dunstan's, for there the patient, removed from the environment of sympathising relatives and friends, only too willing to do all for the sufferer, whilst the sufferer gradually becomes entirely willing that all should be done for him, is brought into the midst of a large community where all are experiencing similar difficulties and learning to overcome them. The association of comrades in blindness, all of whom are there for the same purpose—viz., the overcoming of difficulties, combined with the companionship of teachers who help in the overcoming of them, soon begins to react on the patient, who finds out that all is not lost to him. With that feeling of reaction comes the desire to try to do what he can to help himself, and as soon as that advance is made the progress will be rapid. I think the experience of the last six years has shown conclusively that colleges or communities for the blind are the first essentials in re-education. It is not possible satisfactorily to train the blind by private instruction or by directly depositing them in workshops. Prior to everything else must come the learning of independence.

INITIAL TRAINING AT THE HOSTEL.

The patient having arrived and settled down at the hostel soon finds that while all are ready to help him it will be greatly to his advantage to help himself, and practical aids to do so are the next essential preliminary. Thus to enable him to find his way about the building narrow strips of carpet, the edges of which can be detected by the stick with which each blind man is provided, are laid along rooms and corridors, and handrails, where necessary, afford further help, whilst stairs are indicated by patches of rubber or wood which the feet instantly detect. With these aids the man rapidly acquires confidence in walking alone in places and buildings which he has learnt to know, and will soon progress with almost the same ease and confidence as the sighted man.

Feeding neatly has also to be learnt, and the patient will with some practice attain a proficient time we must not let them have undue weight in our subsequent investigations of the case. We must also admit that they may be fallacious. I could give details of the clinical history of a brain tumour in a boy who, between the ages of 6 and 20, was repeatedly examined by several neurologists. The question of tumour was often discussed, but the verdict was always in favour of a neurosis. At the age of 21 optic neuritis developed and slowly other symptoms appeared, and the diagnosis of an intracranial growth became certain. He lived five or six years longer; an autopsy could not be obtained. In this case the question arises, Had the tumour existed for over 20 years, or did its development begin about the time when optic neuritis was first observed, its presence and the symptoms of neurasthenia having little or no relation to one another?

Do we give adequate consideration to the analysis of subjective symptoms? Do we try to deduce as much as possible from a study of each individual symptom? The study of such a symptom as constant headache is perhaps not likely to reveal features peculiar to any particular disease, but the possibility may be admitted when we recall the characteristics of other pains; for example, the momentary pains of tabes dorsalis, which, as F. Buzzard [2] has recently pointed out, differ from other lightning pains in the fact that they seem to stab the limb at right angles to its surface.

Numbness.

This subjective sensation is a common initial symptom of affections of the nerves, spinal cord, and brain, and may exist for some time before any objective signs of disease can be detected. Its presence should put us on the alert for future developments; for example, temporary numbness of the face or hand may precede by several weeks an attack of hemiplegia, or the onset of the characteristic symptoms of disseminate sclerosis.

In testing for anæsthesia the use of the tuning fork must be remembered, for, as R. T. Williamson has repeatedly stated, loss of the vibratory sensation, all other forms of sensation being normal, is one of the earliest signs of an affection of the sensory tract.

In the Bradshaw lecture,[3] given in the year 1901, I described an interesting case of numbness affecting the outer side of the left arm, which had persisted for four years without the development of other symptoms; I remarked that the distribution of the numbness suggested a slight lesion of the fifth cervical root, possibly the constant action of some poison which had a preference for that region, and that the future development of signs of serious disease could not be excluded. Last year the patient consulted me again—that is, 23 years after the onset of the paræsthesia. The upper limbs, with the exception of the hands, were completely paralysed, and most of the muscles atrophied. The knee-jerks were exaggerated, there was ankle-clonus, with an extensor plantar reflex on both sides. The condition closely resembled amyotrophic lateral sclerosis, but there was slight anæsthesia down the outer sides of both arms, and this, together with the long duration of the case, made me think that the lesion was some rare variety of pachymeningitis with invasion and compression of the spinal cord.

Motor Disability.

Just as there may be paræsthesia without anæsthesia, so there may be motor disability without any paralysis, spasm, or incoördination of muscles. In disseminate sclerosis one of the earliest symptoms noticed by the patient is a feeling of weakness and heaviness in the legs. On examination no motor weakness can be detected or possibly only slight weakness of the flexors of one hip. In the occupation neuroses there is a defect in the coördination of muscles needed for the performance of some skilled acquired movement. In my experience, taking "writer's cramp" as an example, a careful examination has rarely revealed anything beyond the fact that the patient had imperfect control over the muscles used in writing, every other movement, as well as sensation, being perfectly normal. It must always be borne in mind that such disability in the performance of delicate actions may be the first sign of a cerebral growth, of paralysis agitans, or other grave disorder of the nervous system.

Before passing to a consideration of some positive signs of disease let me say a word about the terms "functional" and "organic." These terms are misleading and their abolition is desirable. A symptom, whether subjective or objective, is evidence of a disturbance of function, and nothing more. Anæsthesia or paralysis merely indicates a disturbance of the normal activity of the sensory path in the former case and of the motor path in the latter; an extensor plantar reflex, interference with the normal activity of the pyramidal system. Compression of the ulnar nerve at the elbow is followed by numbness and tingling and some anæsthesia of the two inner fingers; the impaired sensation persists as long as the compression is continued. There must be some tissue change caused by the squeezing. Is the condition to be called functional or organic? In my opinion every so-called functional disorder has an anatomical basis—a molecular or other change, however transitory that may be.

The Plantar Reflex.

The remissions and variations of the symptoms which occur in the early stage of disseminate sclerosis, followed by their partial or complete disappearance for months or even years, are well known and difficult to account for. Arthur Hurst[4] believes that many of the early symptoms are hysterical and that the periods of improvement are the result of some suggestion to the mind of the patient. He says that it is hardly conceivable that sufficient change should occur in the central nervous system to account for the conversion of complete paraplegia into slight stiffness and weakness of the legs, or of total blindness into slightly indistinct vision; that such results are best explained by the influence of some form of psycho-therapy.

But this explanation is scarcely applicable to the rapid and repeated interchange of the reflexes which sometimes occurs in this disease. A remarkable instance of this is recorded by Dixon Mann.[5] Six months after the onset of disease the legs were slightly spastic, the knee-jerks were exaggerated, there was well-marked ankle-clonus, and the plantar reflex on both sides was extensor. Ten days later ankle-clonus could not be obtained and the plantar reflex was flexor on both sides. A fortnight later the plantar reflex was extensor on the left side and flexor on the right. A week later it was again extensor on both sides. The patient improved progressively during the ensuing ten days and left the hospital able to walk with ease. She was readmitted when similar changes in the reflexes were observed.

In commenting on this case Dixon Mann says that responses so immediately contradictory were probably due to the direct action of a toxin on the neurones. He refers to the effect of certain narcotic drugs on the plantar reflex; for example, after an injection of scopolamine the extensor response can be obtained in from 15 to 60 minutes, and may persist for several hours.

Now if it be assumed that a toxin is the causal agent of disseminate sclerosis, and that in the early stages of the disease the toxin is produced intermittently, then we have an explanation for the rapid oscillation of many of the cardinal symptoms, the disturbance of function occurring in waves, corresponding to the intermittent evolution of the toxin and subsiding as each batch of toxin is exhausted.

Such an hypothesis will also explain the temporary duration of an ocular paralysis, which sometimes precedes the typical symptoms of disseminate sclerosis. These ups and downs are not peculiar to this malady. The clinical histories of tabes, general paralysis, and of other chronic nervous diseases are prolific in instances of arrested progress, and of alternating of occupations suitable for the blind was necessary, and not one of the very many wonderful gains in knowledge and experience acquired by the war has been greater than the vista of what can be done in the way of training the blind. The question now is not what the blind may be taught but rather what they cannot be taught, for there seem to be but few heights to which a blinded man, under suitable environment, may not rise, provided he is gifted with the necessary grit and determination to make good. Sir Arthur Pearson, himself a man blinded at middle age, endowed with great intellectual capacity and marvellous powers of organisation, has done nothing so great as this, in that he realised in himself that it was still possible for him to carry on after his loss as well and in some ways better than he had done before. His blindness led him to search his powers, and finding out that he was, as he himself expresses it, "not disabled, but only inconvenienced," he opened a home for blinded officers, and living with them himself he imbued them with the same spirit as himself and tried to show them that it was possible for each to make good in some way.

His efforts were crowned with marvellous success in a large number of cases, and I cannot do better than quote a few examples to show what I mean. One blinded officer, who had been manager in a large industrial firm, was taken back on trial by his firm and successfully proved his capacity to carry on his former duties. This gentleman was later sent to Australia to open and organise a fresh branch of the business, and has now returned after a completely successful trip. Two other officers, also totally blinded, started in company with a third sighted partner as insurance agents, and are doing very well. Another officer has resumed work as a barrister, whilst another endowed with an excellent voice was trained as a professional singer. Many others who had no special gifts were taught poultry-farming, whilst others again learned massage, and passed successfully the same examinations for diplomas as sighted candidates. It must be confessed, however, that the training of blinded officers was in some respects more difficult than that of the men. During the war commissions were given to all grades of society and as a result of their disablement a certain number of blinded officers found themselves in possession of an income considerably larger than they had ever had before. In other words, there was a lack of incentive, in some cases due to the feeling that work was not necessary. Others, again, had ample private means before disablement, and this again, but from a different point of view, tended in a few instances to counteract the desire to make good.

SELECTION OF LIVELIHOOD.

Reverting again to the training of the majority, those who belong to the humbler walks in life, the selection of a suitable livelihood for each requires considerable care. For those who have spent their previous life in manual labour the old trades of brush-, mat-, and basket-making cannot be improved upon, for they are easily acquired, and to these may be added the boot-repairing or "snobbing," as it is termed, the latter proving a great favourite at St. Dunstan's. Carpentry and even joinery, which at first sight seems almost impossible for a blind man, are also taught at St. Dunstan's, and I have seen some wonderful work done by men who had never learnt anything about joinery until they had been blinded. A wise provision at St. Dunstan's is the teaching of two trades of the simpler kinds. Thus the boot-repairer would also learn how to make mats or baskets or vice versa. The employment of blind instructors is a sound practice, because no one understands the particular difficulties of the blind pupil so well as one who has himself experienced them, and thus a certain number of pupils who can attain sufficient proficiency and possess the other qualifications necessary for teaching may obtain a good living in the future by becoming instructors themselves.

I have already alluded to massage and poultry-farming. The former is obviously only open to those who possess some social qualifications and refinement, and moreover, on account of the delicacy of touch required, is unsuited to those who have spent many years at manual toil. Further, there are stiff examinations to pass, and on this account those who have only the usual board school education behind them are unlikely to prove good pupils. The massage class at St. Dunstan's may be said to comprise the pick of the men from the point of view of refinement and education, and the success that has attended the classes has been extraordinary. For some time past there has been an Association of Certificated Blind Masseurs, and all recent reports show what an unqualified success the exploitation of massage for the blind has been, and no doubt will always continue to be. Poultry farming is another original and most successful experiment. At the outset this was personally superintended and taught by Captain Webber, himself totally blind for many years. Captain Webber discovered this as an amusement, and by practice attained a quite uncanny power of dealing with poultry, at which a sighted man could only marvel. In the poultry class the men are practically taught by lectures and demonstrations everything that appertains to a poultry farm. A farm was run in the grounds of St. Dunstan's and here the men learned to handle and appreciate the different kinds of fowls, to prepare them for table, the secrets of successful breeding and prolific egg production, and in fact everything that a sighted man might know on the subject. The success of the teaching has been abundantly proved by the number of blind men who are to-day successfully putting their teaching to the practical test of running their own farms.

Then, again, for those gifted with a musical ear, pianoforte tuning has for long been recognised as a suitable calling, but the field of employment is rather limited. Telephony has been a successful experiment for some of the better educated, and expert telephonists have been turned out. I have myself always hoped that cigar and cigarette making would come to be numbered amongst suitable employments, but so far I do not think this trade has been tried. I have no doubt as time goes on fresh fields of work will open out, for the interest of the nation has finally been aroused, as is shown by the formation of a Government Department devoted to the welfare of the blind. It is, indeed, as much to the good of the community at large as to the blind themselves that the latter should become good independent citizens.

DIFFICULTIES EXTRANEOUS TO LOSS OF SIGHT.

The training of the blind presents certain difficulties beyond those directly connected with loss of sight. Thus, owing to the more intense concentration of mind required, the hours of work must necessarily be much limited, especially at first. Later on as the work becomes more automatic the blind person can gradually extend the hours of continued labour, but if the work involves much mental exercise it is bound to tire and strain much more than would be the case in a sighted person. At St. Dunstan's, where of course a great many men had experienced severe head and face injuries, the inability to concentrate for more than a very limited period was apparent, and the work-time was limited to two hours in the morning and two hours in the afternoon, and even this proved too long for many of the patients. And as the hours of work must be shorter than normal, so the necessity of filling in spare time becomes of great importance. I have already dwelt at some length on the necessity and usefulness of these relaxations, and need say no further beyond that all St. Dunstan's people are taught string-bag making and netting, employments which need but little mental concentration and afford interest, amusement, and, if need be, some profit. Reading aloud is another great pleasure to many blind people, and good readers will always obtain an appreciative audience. Cards marked with Braille notation enable those fond of this amusement to capable of misinterpretation. It would be of no value to go over in detail the list of cases excluded; even if the reasons were given in every instance difference of opinion would still exist. But even if the results reached in this investigation may be attacked by the strict statistician they point to general conclusions of interest and value, and it will be shown that these conclusions do not materially depend on the selection and rejection of the cases.

Of the private cases, 134 were rejected as obvious or trivial, leaving a total of 660. None of the Institute cases were put aside, as all were of interest. Adding the 314 Institute cases to the 660 private cases we have 974 cases in all. It seemed to the Committee that this material was sufficient for our immediate purpose. It would be an easy matter to deal with all cases in future if we could devise some useful method of classification. The difficulty was to find some principle on which to proceed.

Two Classes of Case Presenting Special Difficulty.

At the outset two classes of cases which we had retained on our list presented a difficult problem.

1. *Cases of Pregnancy.*—In several instances the patient came for advice not because of pregnancy, but because of certain symptoms of which the explanation was not obvious. For the determination of pregnancy and the exclusion of disease careful examination was necessary. This surely is a type of successful diagnosis, not indeed of disease but of health, or rather of a physiological condition which sets up its own reflexes and is capable of disturbing many others. To what extent this disturbance may occur without some associated condition of ill-health may be beyond the possibility of definite determination; it is therefore a matter of individual opinion whether a pregnancy is strictly normal or not.

2. *Cases of Physiological or Functional Cardiac Murmurs.*—If a patient presents a sign or symptom suggestive of disease but now known to be compatible with perfect health, and if after the most careful examination no associated symptom pointing to disease is detected, the conclusion is reached that he must be regarded and treated as a person in normal health. That this is an invaluable type of diagnosis in view of the patient's future in life cannot be denied; it therefore finds a place in our classification. There is little doubt that in connexion with suspected disease in other organs there may be symptoms, now regarded as of grave significance, which in the future will be found to be of little or no importance; meanwhile we consider only cardiac murmurs, and in all cases where they were judged to be of no significance we have had the assistance of Sir James Mackenzie's special knowledge and wide experience in making the decision.

Consideration of these two classes of cases makes plain the constant possibility of error, and in fact difference of opinion occurs in a large proportion of cases. But for our purpose it is necessary to accept the opinion of the doctor concerned when he claims to have reached a diagnosis. It is inevitable that in an often necessarily brief consulting-room examination, some fact essential to a diagnosis will be overlooked from time to time; more frequently, no doubt, a diagnosis is reached which a more prolonged investigation would not have warranted. But it appears unlikely that in the present state of medicine there would be any great dissimilarity in the proportions of diagnosed and undiagnosed cases in many series of investigations such as we have made. The proportion depends not on the skill or training of individual practitioners, but on the unsatisfactory state of all medical knowledge.

Definition of Diagnosis.

What has been written so far is largely introductory. We now come to the difficult question: What is a diagnosis? There is no general agreement as to the meaning of the term. From its derivation it might be taken to mean either a complete knowledge or a knowledge sufficient for the purpose of separation or differentiation, according as we translate "dia" as "thorough" or "through." If no case can be regarded as diagnosed unless the physician has a thorough knowledge in all its aspects of the disease from which the patient is suffering, it is obvious that the percentage of cases diagnosed must approach the vanishing point. Diagnosis has been defined as "the discrimination of diseases by their distinctive marks," or "the differentiation of diseases by their distinctive symptoms." But such a definition is confusing, for we do not imply that the differentiation of diseases is impossible when we say that cases are undiagnosable. For the purpose of this investigation we define diagnosis as "the recognition in the patient of a known disease from the symptoms which are characteristic of it." If he exhibits a well-defined group of symptoms distinctive, so far as present knowledge goes, of one disease only, his case can be diagnosed. The physician fails in diagnosis if he does not recognise these symptoms when they are present, or if he assumes that they are present with insufficient evidence; it cannot be said that his diagnostic powers are at fault if the case shows no such characteristic symptoms. The differentiation of diseases has not gone far enough to enable him to understand or even to name the condition. The most prominent symptom may be chosen and the disease named after it, or a variety of symptoms may be selected and the patient shown to be suffering from a complication of troubles. The latter plan is tempting because it makes the difficulty of the case apparent both to the patient and to his friends, and explains the necessity for practically any variety of treatment that may be adopted. In these days, when the doctor is almost forced to give a name to the illness either by panel authorities or anxious relatives, such a multiplication of terms may be useful, but it is certainly demoralising.

Ætiology and Diagnosis.

There is another matter in regard to diagnosis which merits consideration. From the point of view of diagnosis, knowledge of the cause of the disease which has been recognised is not essential. With the question of ætiology diagnosis is not immediately concerned. If in addition to the well-defined group of symptoms the noxious agent causing injury to the organism is known, or if its nature can be reasonably inferred by analogy from other diseases showing similar symptoms and a similar course, our knowledge of the disease is much more satisfactory, but this question is not primarily one of diagnosis or recognition. Definite diseases have, in fact, in practically all cases, been separated by their distinctive symptoms, and their diagnosis made possible without error, before the nature of the agent at work has been discovered. Typhoid fever, for example, was diagnosable before the typhoid bacillus was found. It is the work of the clinician to separate diseases by their characteristic symptoms in order to give the chemist, bacteriologist, or other laboratory worker the opportunity of making his special investigations with regard to them.

Diagnosis and Treatment.

The relationship between diagnosis and treatment suggests itself at this point. The objects of diagnosis are prognosis and intelligent treatment, and for the treatment of any disease recognition of symptoms and interpretation of their cause are necessary from day to day. A sufficiently definite group of symptoms may be present to enable a perfect diagnosis to be made, but all the symptoms of a disease are not present at once; they must all be watched for, though some may never appear. A lesion may occur which, though itself a symptom, can produce secondary symptoms of its own and modify the whole outlook. In acute rheumatism symptoms of endocarditis may or may not be present, and are not necessary for the diagnosis; but the occurrence of endocarditis at any stage of the disease is a matter of the gravest importance as affecting both prognosis and treatment. In

Quite a number of elderly men past 50 years of age who volunteered for labour work during the war were blinded as the result of their unselfish patriotism, and for a certain number of these, together with some who were mutilated in other ways besides being blinded, a permanent and beautiful home has been found at Ilkley in Yorkshire. Here they are maintained in comfort and everything possible is done to mitigate their lot.

THE PROBLEM OF MARRIAGE.

There is one more point of real importance and much difficulty, and that is the marriage of the blind. Every young blinded adult of the male sex very badly needs a partner who can look after him and supervise the numberless details of life, such as dress, appearance, food, and cooking, &c., who, in fact, can make a home for him. And yet to marry a blind man is a very serious step for any girl to take. She probably has it in her power to make him happy or utterly miserable, and to attain the former she must be content absolutely to give up her life to him. There is no middle way, and, therefore, though marriage is highly desirable, the girl must be of the right sort, and the problem is to find her. Many marriages with blind men have taken place during the war, and though some no doubt are proving idyllic, yet I know of others much the reverse, and then the state of the blind partner, or perhaps of the sighted partner, is indeed desperate. I remember one instance where the girl, who had been engaged to the man before he lost his sight and who had married him from pity, told me that she had come to loathe her husband. She was desperately anxious to conceal the fact from him, and naturally was desperately unhappy; they had only been married 18 months and were both fairly young. For blinded girls the situation is rather different. As a rule there is not the same necessity for them to earn their living independently, and they can generally find a home and shelter.

For the young of both sexes who are unmarried, communal settlements run on the lines of clubs are the ideal thing, if there are no parents or relatives to provide a home. To dwell in dreadful isolation in lodgings is indeed a doom to inspire despair, and I hope that in the near future some attempt will be made to start Blind Clubs to shelter these unfortunates.

THE THIRD CLASS OF UNFORTUNATES.

And, lastly, just a word with regard to the third class of cases of which I made mention—viz., those who still possess some useful sight, but insufficient to enable them to earn their own living. A certain number of these cases are in some ways more unfortunate than those who are completely blinded. Many are the cases to whom I have had to refuse admission to St. Dunstan's simply because training would simply mean total loss of what they still had left. A person who can see cannot be taught to work without using his eyes. It is of no use to tell such a person not to look at the work or to bandage the eyes so that he cannot see. If the eyes are not bandaged they will inevitably be called into play upon every little difficulty—i.e., at just the very time when sight is most needed and when it will be especially strained. Bandaging the eyes makes matters rather worse, for the necessary mental concentration will of necessity produce the reflex physical concentration of the eye behind the bandage, and the ultimate result in a very short time is a headache and aching eyes. Then there are others of the same class who can learn a trade without any special harm to the sight, but whose sight gets quickly exhausted, so that it is impossible for the person to work sufficiently long hours to earn a living wage. One really does not know what is the solution for these cases. St. Dunstan's has in many of them come forward with pensions which provide a sufficiency with external help from other sources, such as friends, or the money that a wife may earn; and, so far as I can see, State pensions are in the future the only way by which many persons of this class can be kept from pauperism.

THE SIGNIFICANCE OF SOME EARLY SYMPTOMS OF NERVOUS DISEASE.*

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THERE is no study more fascinating than that of the early symptoms of disease, no problem more difficult to solve than that of their significance. At first it seemed an easy matter to collect out of my experience a series of cases which would enable me to draw some instructive conclusions, but in thinking over my observations I found that the undertaking was going to be difficult, entailing a reconsideration of the meaning of the terms "functional" and "organic," and of the respective significance of subjective and objective symptoms, and that the experience, largely derived since the year 1914, of a psychical factor and of the alleged rapid cures of many nervous disorders by psycho-therapy must be taken into account.

I will limit my remarks mainly to a consideration of pain, numbness, motor disability, and the plantar reflex.

Pain.

The significance of pain varies greatly, partly according to the situation of the lesion, but chiefly in consequence of the varying susceptibilities of the nervous system in different individuals. The course of an intrathoracic aneurysm or of a pyloric cancer may be unattended by pain, and one has seen cases of cerebral tumour in which headache was but slight and certainly far from constant.

Pain in the head, a prominent feature in many of the war neuroses, has been, in some cases, severe and constant, and in these respects indistinguishable from the typical pain of an intracranial tumour. In both instances there may or may not be tenderness on pressure over the painful area; the diagnosis must therefore be based on other aspects of the case. But it is necessary to remember that the presence of a growth may be expressed for a long time by subjective symptoms only, all objective signs of a nervous lesion being absent. Many years ago I had the opportunity of following from beginning to end a case of endothelioma,[1] growing from the dura mater of the right middle fossa of the skull. During the first 16 months, although repeated examinations of the patient were made, the symptoms were entirely subjective, the chief symptom being severe and almost constant headache, made worse by movement and noise. The patient suffered also from nervousness and giddiness; he slept badly and was troubled with horrible dreams. These symptoms are similar to or identical with those of some of the war neuroses, and it is possible that a psycho-analyst might have felt justified in undertaking the treatment. In the seventeenth month and onwards for the next three months till the patient's death, there were definite signs of an intracranial lesion—namely, of implication of the third, fourth, fifth, sixth, and eighth nerves on the right side, and of the seventh and twelfth on the left side. Vomiting and optic neuritis were absent from first to last. Many similar instances of long duration of subjective symptoms in serious disease without objective signs might be mentioned.

During an interview with a patient who complains of headache or other subjective symptoms, we receive, as a rule, impressions from his facial expression, the manner of speech, general behaviour, attitude and movements which unconsciously influence us to decide in favour of or against the presence of serious disease. It is important to subject such impressions to close scrutiny in the hope that we may discover adequate reasons for them; at the same

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* This communication was given at a meeting of the Association of Physicians in Birmingham.

The following is a complete list of Class 1; recognised causes are given in italics:—

Institute (34 cases).

Adenitis (*carious molar*).
Ascariasis.
Dysentery, 2 cases.
Diphtheria (exhaustion following).
Gunshot wound (shrapnel in neck: pain).
Hernia, 2 cases.
Headache (*refractive error*).
Headache (*involvement of nerve-endings in scar*).
Heart, congenital, 2 cases.
Laryngitis (*excessive use of tobacco*)
Neuritis—peripheral (*lead poisoning*).
Phthisis pulmonalis, 9 cases.
Pleurisy—traumatic, 2 cases.
Pulmonary impairment (*injury*).
Prolapse of uterus.
Rupture of spleen.
Renal colic (renal calculus).
Syphilis, 2 cases.
Systolic murmur—physiological, 2 cases.
Tuberculosis of bones.

Private (77 cases).

Alcoholism.
Alcoholism, gastritis.
Abscess of auditory meatus, 2 cases.
Adenitis (*carious teeth*).
Amblyopia (*tobacco*).
Abscess of toe (following *injury*).
Cartilage loose, semilunar.
Conjunctivitis (*burn*).
Contusion of chest.
Contusion of sternum.
Contusion of metacarpo-phalangeal joint, verified by X rays.
Concussion of brain.
Diphtheria, 2 cases.
Epididymitis, gonorrhœal.
Epididymitis (*tuberculous*).
Fracture of tibia, partial (X rays).
Fracture, greenstick.
Fracture of clavicle, 2 cases.
Fracture, old (X rays).
Fracture of patella, 2 cases.
Gingivitis (*carious teeth*).
Gonorrhœa, 2 cases.
Hernia, 4 cases.
Headache (*refractive error*), 2 cases.
Impetigo contagiosa, 7 cases.
Malaria.
Obstruction of parotid duct.
Pneumonia—Empyema.
Pneumonia, 2 cases.
Periostitis of tibia (*traumatic*).
Pregnancy, 6 cases.
Prolapse of uterus, 3 cases.
Phthisis pulmonalis, 5 cases.
Ringworm.
Sapræmia (following *curettage*).
Septic cellulitis (following *scratch*).
Synovitis of shoulder (*traumatic*).
Synovitis of knee (*traumatic*).
Syphilis, 5 cases.
Strain of muscle.
Systolic murmur—functional.
Talipes valgus.
Thrombosis (following *typhoid*).
Tuberculosis *of* glands of neck.
Tuberculosis of joints.
Ulcer of lip (*tooth*).

Class 2 (Fig. 4).—This is a small class. Included in it are trench fever, influenza, acute rheumatism, measles, and German measles. It would be considerably smaller but for the fact that we have included rheumatoid arthritis, a very doubtful decision. There are no cases of scarlet fever; many cases which formerly would have been diagnosed without hesitation as scarlet fever have probably been relegated to some other category. It might indeed be argued with some weight that scarlet fever is not a distinct entity at all. These matters are only mentioned to illustrate the fact that finality in classification is impossible. In this class are placed 7 (2·23 per cent.) of the 314 Institute cases, 13 (1·97 per cent.) of the 660 private cases, and 20 (2·05 per cent.) of the total 974 cases. The following is a complete list of Class 2:—

Institute (7 cases).

Encephalitis lethargica.
Poliomyelitis anterior acuta.
Rheumatoid arthritis, 4 cases.
Trench fever.

Private (13 cases).

German measles.
Influenza.
Measles.
Rheumatism, acute, 6 cases.
Rheumatoid arthritis, 3 cases.
Trench fever (pains in shins following).

Class 3 (Fig. 5).—This is a larger group, approximating in size to Class 1; the numbers are swelled by the inclusion of rheumatic cases—not all those cases which might be casually labelled as rheumatic, but those with a sufficiently definite picture, Prof. R. Stockman's definition being taken as the standard. To select such cases is very difficult: probably we included too many, as the term rheumatism is sometimes applied without sufficient investigation. Examples of other diseases in this class are Hodgkin's disease, exophthalmic goitre, asthma, epilepsy, gall-stones disease, and myeloid leukæmia. It is of some interest to note that herpes zoster, which we include in this class, is now thought by some to have a close relationship to chicken-pox, which would be placed in Class 2. Many of these cases showing interesting symptom-complexes were brought to the Institute for fuller examination, which accounts for the larger proportion on the Institute list. In Class 3 were placed 34 (10·82 per cent.) of the 314 Institute cases, 51 (7·72 per cent.) of the 600 private cases, and 111 (8·72 per cent.) of the total 974 cases. The following is a complete list of Class 3:—

Institute (34 cases).

Acidosis.
Asthma, 3 cases.
Epilepsy, 2 cases.
Exophthalmic goitre, 2 cases.
Gall-stones disease, 3 cases.
Habit spasm.
Herpes zoster, 4 cases.
Hodgkin's disease.
Hysteria.
Insanity (inhibitional).
Migraine, 2 cases.
Myeloid leukæmia.
Myxœdema.
Recurrent mania.
Recurrent vomiting of childhood, 2 cases.
Renal colic, 2 cases.
Rheumatism, 6 cases.

Private (51 cases).

Asthma, 6 cases.
Asthma and emphysema.
Convulsions of infancy.
Eczema, 3 cases.
Epilepsy, 4 cases.
Erythema multiforme.
Exophthalmic goitre, 2 cases.
Gall-stones disease.
Herpes zoster, 6 cases.
Migraine, 4 cases.
Myxœdema.
Pemphigus.
Rheumatism, 13 cases.
Urticaria—asthma.
Urticaria, 6 cases.

Class 4 (Fig. 7).—In this class we place end-results, by which we do not mean the concluding stages of known progressive disease, for example, phthisis, but conditions of permanent damage to organs or tissues, the original noxious agent, whether known or unknown, having ceased to be of importance and the damaged organ itself being now a noxious agent giving rise to symptoms of disease. Examples of this class are angina pectoris, auricular fibrillation, adherent pericardium, heart-block, and cases of malignant disease. At present we are unable to diagnose malignant disease in its initial stages, but it is necessary to detect the damage it has caused at the earliest possible moment in order to give the surgeon his opportunity. In this class were placed 45 (14·33 per cent.) of the 314 Institute cases, 14 (2·12 per cent.) of the 660 private cases, and 59 (6·05 per cent.) of the total 974 cases. The much higher percentage in the Institute cases is explained by the fact that few advanced cases requiring confinement to bed were recorded, and that the great majority of those able to move about were taken to the Institute for examination. The following is the complete list of Class 4:—

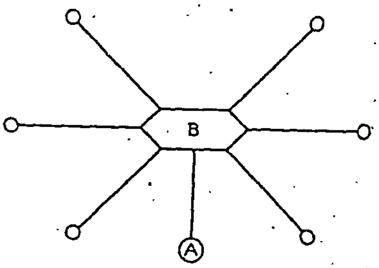

FIG. 7.—A represents the original noxious agent. B represents the permanently damaged organ or tissue. The circles at the periphery represent the symptoms or reactions.

Institute (45 cases).

Adherent pericardium.
Angina pectoris, 8 cases.
Arterio-sclerosis, 2 cases.
Auricular fibrillation, 5 cases.
Auricular flutter.
Cardio-sclerosis, 4 cases.
Heart-block, 4 cases.
Intermittent claudication with auricular fibrillation.
Malignant disease, 5 cases.
Senility—alcoholism.
Senility—rectal prolapse.
Spastic paraplegia, 2 cases.
Valvular disease of heart, 10 cases.

Private (14 cases).

Angina pectoris, 2 cases.
Aortic regurgitation.
Arterio-sclerosis—occlusion of posterior tibial artery.
Auricular fibrillation, 4 cases.
Epilepsy (following injury to head).
Heart-block.
Malignant disease, 2 cases.
Senile dementia.
Senile hemiplegia.

Class 5 (Fig. 8).—In this class are included cases in which a definite local lesion or morbid condition exists, giving rise to symptoms—the noxious agent causing the mischief being unknown, and no uncoordinated symptoms being present, so far as can be determined at the time of examination, indicative of more widespread disease. The lesion may be visible, or inferred with practical certainty, from the symptoms observed. Such cases form a large proportion of those met with in general practice, and among them the doctor meets with his greatest successes as well as his most grievous disappointments. His treatment is symptomatic, and he awaits the outcome to show whether or not his diagnosis, easily made because all these conditions have been labelled periods of improvement and breakdown. Surely such ebbs and flows cannot be put down to variations in psychical influences—important as such influences are in modifying the course of every disease—unless we admit that they may increase the output of antitoxins, or in some other way check the action of the toxic agent. I should be the last to deny the influence of minute lesions of nerve tissue in exciting an outbreak of hysterical symptoms in persons who have an abnormal suggestibility. There is also reason to believe, as I have stated in a previous communication,[6] that emotional disturbance is an important ætiological factor in maladies other than the neuroses; for example, cases of chorea, paralysis agitans, and pernicious anæmia have developed immediately or soon after a fright or other emotional shock. Indeed, we may admit the possibility that hysteria itself can initiate changes which progress into detectable lesions. Charcot assumed that lateral sclerosis might occur as a direct outcome of changes started by hysterical contractures of long duration. Moreover, if cutaneous blisters can be produced by "suggestion," as recently stated by Dr. J. A. Hadfield,[7] why not exudations into the spinal cord? Are we quite certain that a true extensor plantar response is never the result of the effects of hysteria? At the present time I have an hysterical patient whose knee-jerks cannot be elicited. The Wassermann reaction is negative, and there are no signs of disease, either of the nerves or of the central nervous system.

At the end of his charming little book, "On the Simulation of Hysteria by Organic Disease of the Nervous System,"[8] Thomas Buzzard says, "the figure of hysteria shrinks in proportion as the various forms of organic disease acquire greater solidity and sharper definition."

In contrast to this view the present-day psychotherapeutist might say: "The figure of hysteria enlarges in proportion as the various symptoms attributed to organic disease are found to disappear under the influence of psychotherapy."

Conclusion.

But whichever view is held, the danger of suggesting symptoms to the patient must not be allowed to hamper the close clinical investigation of all his complaints; full consideration must be accorded to transitory manifestations of disease, and if a decision is given in favour of hysteria, the possibility of future developments must not be overlooked; subsequent examinations of the patient must be as thorough as the first examination, and quite unbiased by the first diagnosis of hysteria.

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DONATIONS AND BEQUESTS.—Mr. Walter Beer, cotton merchant, Liverpool, left estate of over £190,000. The testator left £200 each to the Old Hebrew Congregation, Princes-road, Liverpool; the David Lewis Northern Hospital; the Royal Southern Hospital, Liverpool; and the Liverpool Royal Infirmary; £100 each to the Liverpool Dental Hospital; the Liverpool Hospital for Cancer and Diseases of the Skin; the Liverpool Eye and Ear Infirmary, Myrtle-street; the Liverpool Infirmary for Children; the Stanley Hospital, Liverpool; St. Paul's Eye Hospital, Oldhall-street, Liverpool; the Leasowe Sanatorium for Crippled Children; and the Liverpool Hebrew Ladies' Benevolent Institution.—Under the will of the late Dr. Charles A. Hingston, of Plymouth, the Y.M.C.A., of which he was a leader in the western counties, will benefit by the acquisition of property in Plymouth as well as by legacies of money. The testator, among other bequests, also left £2000 to the Convalescent Home, Crown Hill, Plymouth; £500 to the Plymouth and District Deaf and Dumb Institution; and £200 to the Plymouth Public Dispensary.—The Board of Management of the Royal Infirmary, Manchester, have received £2833 from the local Hospital Sunday Fund, a legacy of £200 from the late Mr. Joseph Core, of Manchester, and other sums from various sources to the amount of £626.

STUDIES FROM THE ST. ANDREWS INSTITUTE OF CLINICAL RESEARCH.

Preface by SIR JAMES MACKENZIE, F.R.S.,
DIRECTOR OF THE INSTITUTE.

THE prime object of research in this Institute being the prevention of the diseases common among the people, the question arose as to what might be these diseases. A preliminary inquiry had revealed the insuperable difficulty of obtaining this knowledge; a more elaborate inquiry was determined upon, but it was soon found impossible to arrive at a knowledge of the diseases themselves. The inquiry therefore took the form of an investigation into the state of medical knowledge concerning them. The three studies which follow are the outcome of the inquiry undertaken by the members of the clinical staff of the Institute, with Dr. Andrew Rowand as chairman, a complete report of which is to be published shortly.

I. PRESENT STATE OF MEDICAL KNOWLEDGE REGARDING THE DISEASES COMMON AMONG THE PEOPLE.

BY ANDREW ROWAND, M.B. EDIN.

The following paper is the outcome of the inquiry in what proportion of the cases met with in general practice it is possible to arrive at a diagnosis. A series of cases was taken from the records of general practice in St. Andrews; the series was consecutive, and no selection was made from the cases. The time and care given to them had been limited by the demands made on two general practitioners doing their routine work; the notes were made at the time the patients were seen, and were not afterwards elaborated. In the majority of cases the patients were seen in the consulting room, and so were not suffering from acute or advanced disease requiring confinement to bed. There was no epidemic at the time.

The cases examined numbered 896; as 102 of them had been referred to the Institute for more thorough examination, or for examination in the special departments, and so appear in the records of the Institute, they were deducted from the practitioners' lists and included in a series of 314 Institute cases which were examined in the same way. As the great majority of the private cases were able to move about there was a similarity between the two series, there being no beds in the Institute, but as many advanced cases were brought to the Institute because of some special interest in their symptoms, or for the benefit of examination in the special departments, fewer of such cases appear in the lists of the practitioners than would otherwise have been the case. There is no essential difference between private and Institute cases; the main object of the Institute is to assist the practitioner in the investigation of the early diseases and vague ailments which he meets from day to day. The terms "private" and "Institute" are adopted for convenience; all the cases are private patients.

Preliminary Selection of Cases.

The first step taken was to put aside from the private records a number of cases which might be regarded as so obvious that the diagnosis was self-evident, or so trivial as to be of no interest in the investigation. The selection proved to be a matter of extreme difficulty, and it is questionable if it was wise to attempt it. Each case was considered on its merits, so that in one case a condition has been excluded as obvious, while in another it has been retained. Hernia, for example, appears in the lists both of the selected and the rejected. A hernia is obvious when the patient is aware of its presence and comes to the doctor to have a truss adjusted; but it is a different matter when its existence is revealed on examination and is found to explain symptom

The marked difference between the proportions in the Institute and private lists is due to the large number of Class 4 cases brought to the Institute.

The following figures show the results obtained by retaining all the cases which passed under review and including in Class 1 all those previously rejected as trifling or obvious. We are now dealing with all the conditions on account of which the doctor is consulted, for notes were kept even of slight cuts, toothache, and wax in the ears. The Institute list is unaffected as none of the Institute cases were omitted.

	Institute.	Private.	Total.
Number of cases	314	794	1108
Cases diagnosed	120	289	409
Proportion diagnosed	38·21 %	36·40 %	36·90 %

Conclusions.

Although there is much room for difference of opinion with regard to the allocation of a particular case to a particular class, it was found that after much reconsideration of the cases and transferences from one class to another the proportions in the various classes varied to a very small extent. The most marked features in the results of the investigation are:—

1. The demonstration of the chaotic condition of the present classification of diseases.
2. The small proportion of diagnosed cases, even when these include all the cases in which the diagnosis was self-evident.
3. The small proportion of cases in Class 1, even when there are included in it all the obvious and trifling cases.
4. The very large proportion of cases in Class 6.

THE PSYCHO-PATHOLOGY OF PULMONARY TUBERCULOSIS,

WITH SPECIAL REFERENCE TO TREATMENT.

By D. G. MACLEOD MUNRO, M.D., M.R.C.P. EDIN.,
DEPUTY COMMISSIONER OF MEDICAL SERVICES, LONDON REGION, MINISTRY OF PENSIONS; LATE TUBERCULOSIS MEDICAL OFFICER, COUNTY COUNCIL OF MIDDLESEX; RESIDENT PHYSICIAN, ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH.

ALTHOUGH there is probably no disease in which mind and body are in such close co-relation, it is altogether surprising to note how little attention has been paid to this intimacy of association, more especially as affecting the treatment of pulmonary tuberculosis; while in the matter of prognosis the psychic make-up of the patient, and his mental outlook, are also factors of no small significance. In this connexion I do not now especially refer to that state of euphoria in advanced cases so dwelt upon by a certain type of novelist, and popularly known as the "spes phthisica"—which is not the mental habit of the average patient suffering from pulmonary tuberculosis—but to certain well-recognised and clearly defined psychic changes, which are the accompaniments of this disease. I am fully aware of the fact that there are differences of opinion on the question as to whether the psychology of the phthisical patient diverges to any greater extent from the normal than in the case of certain other prolonged and debilitating illnesses; but my own experience, and I think that of many observers, goes to show that there is what may be called a specific psychoneurosis in pulmonary tuberculosis. By some, this has been grouped under three headings: (1) The hereditary type; (2) chronic phthisical type; (3) advanced type. It has further been suggested—adopting Freudian terms—that in place of sex-consciousness, there is what has been described as a sense of "organ insufficiency." It is no part of my intention, however, in these remarks to elaborate this side of the question; I wish rather to call attention to certain well-marked features of the psychic state of the average phthisical patient, and to see in what way these bear upon, and can be influenced by, treatment.

In general the mental reactions of the phthisical patient may be said to indicate a reversion to the congenital or infantile type, and such suppression or modification of these as may have resulted from environment and education is largely abolished. While many become introspective, selfish, egocentric, weak-willed, and lacking in self-control, it must be added that not a few become morally stronger as a result of the self-abnegation called forth in the course of the long battle for health. It is not surprising indeed that, in a disease so protracted in the average case, we find undermining of the will-power and a less complete control of the emotional side. It is still an open question whether these changes indeed are to be regarded as a result of the debilitating effects of the disease, or as consequent upon the specific action of the endotoxins of the bacillus tuberculosis. It does not appear to me inappropriate, in this connexion, to refer to certain other very definite psychic and intellectual changes which in some instances are a marked feature of this disease. There seems no reason to doubt, for instance, that even in those of just ordinary intellectual attainments, there is at times a species of mental exaltation with an added keenness of intellect of which no adequate explanation has been offered unless we accept it as resulting from the prolonged intoxication set up by the endotoxins of the bacillus. In those of literary and artistic attainments this psychic and mental excitation has been found to occur in marked degree, and in the long and tragic roll of men and women of genius who have suffered from this disease nothing is more striking than the fact that the creative powers of the mind have been at their highest at a time when the disease was active and progressive. Art and literature would have been indeed impoverished without the names of Keats, Chopin, Charlotte Brontë, Stevenson, Symonds and Francis Thompson, to mention only a few of the army of stricken genius. Explain it how we may, there can be little doubt, I think, that in some remarkable manner, enhanced productivity, quickened intellect, and imaginative power, have marked the trail of the tubercle bacillus in such persons. Although possibly in the nature of a digression, these facts are of much interest in a study of the psychology of this disease.

"*Suggestibility*" *of the Condition.*

With the exception of the functional neuroses there is perhaps no disease in which susceptibility to suggestion is so high as in pulmonary tuberculosis—a point I wish to emphasise—and in few diseases can this "suggestibility" be utilised so potently for good or evil. As illustrating this perhaps two typical instances well known to everyone may be mentioned. The first which, for want of a better term, comes under the heading of "auto-suggestion," is seen in certain advanced cases with pronounced toxæmia and high temperature. In these cases the patient expresses himself as "feeling splendid," and is engrossed in plans for some big commercial enterprise, a trip round the world, or even a matrimonial venture. The other is a simple example of "hetero-suggestion" in the case of a patient who has been under treatment by tuberculin, and in whom the subcutaneous injection of sterile water is followed by a febrile reaction in all particulars identical with that produced by the administration of tuberculin.

Unfortunately this high degree of "suggestibility" has often opened the door for the exploitation of the victims of this disease at the hands of the charlatan with his infallible "cure" for consumption, and the "treatment" in these cases is too frequently carried out by the patient with a faithful, if pathetic, persistency. But are we as a profession entirely above reproach in this matter? What is to be said of the ever-lengthening array of remedies, from Koch's tuberculin onwards, which have from time to time been hailed as specifics? Have we not as a profession adopted and fathered them with a too easy credulity, sense it is itself a disease. The diagrams (Figs. 1 nd 2) illustrate this point.

We say that we diagnose the endocarditis from its wn characteristic *symptoms. The use of the word* n this secondary sense may appear to introduce onfusion, but it is unavoidable. It is, however, ecessary to keep clearly in view the distinction etween a disease and a symptom, and to hesitate to ccept as a diagnosis of disease what, even in the bscure light of our *present knowledge, is probably* nly the name of a symptom. As knowledge advances *many diseases now regarded as primary* will certainly be found to be secondary, and what is a primary diagnosis to-day may be a secondary diagnosis to-morrow. This matter will receive further consideration later.

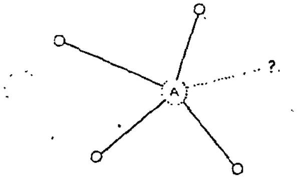

FIG. 1 shows the symptoms which enabled the *primary diagnosis* to be made, and indicates the necessity of watching for further symptoms.

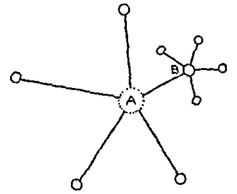

FIG. 2 shows in addition the presence of endocarditis.

In Figs. 1, 2, 3, 4, A represents the noxious agent. *The circles at the periphery represent* the symptoms or reactions.
B represents endocarditis with its own group of *symptoms.*

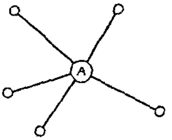

FIG. 3 represents a disease where A, the agent acting injuriously on the tissues, is recognised, and produces reaction or symptoms which are represented by *circles at the periphery.* Examples given by Sir James *Mackenzie are typhoid* fever and conjunctivitis due to a foreign body in the eye.

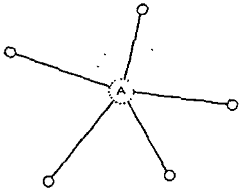

FIG. 4 represents a disease where, *while the symptoms* are recognised, the injurious agent A has not been recognised, though its nature can be inferred. The examples *given are* measles and scarlet fever.

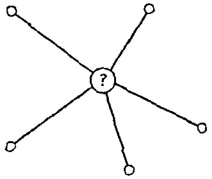

FIG. 5 represents a disease with a well-defined group of symptoms, but where the nature of *the* agent is not recognised. The examples given are migraine and convulsions. ? represents the noxious agent, the nature *of which is unknown. The circles* at the periphery represent the *symptoms or reactions.*

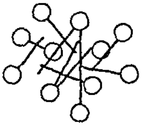

FIG. 6 represents the vast majority of diseases, where a number of *uncoördinated symptoms* are present *with no recognisable* cause.

Classification of Diseases.

Diagnosis is only possible in so far as diseases have been differentiated and classified. The differentiation of diseases is lamentably inadequate; some new basis of classification must be found to save us from the increasing complexity and confusion which are the despair of the medical practitioner. Sir James Mackenzie, in his study of "*The Theory of Disturbed* Reflexes in the Production of Disease," has separated diseases into four classes, as shown in *Figs. 3, 4, 5, 6.*

We regard all cases that can be grouped under the first three classes as diagnosed. Whether the noxious agent be known, inferred, or unknown, the disease can be diagnosed if it presents a distinctive group of symptoms. The cases which can be fitted into Class 1 are the most satisfactory in the sense that the diseases from which they suffer are the most thoroughly understood, but we *take as the criterion* of diagnosis the recognition of a perfectly definite group of symptoms belonging, *so far as* our present knowledge goes, to one disease and one disease only. Cases falling into Class 4 are undiagnosable.

We have extended this classification, not in order to amplify it as a classification of diseases, but to form a classification of the cases with which the doctor has to deal in his ordinary work. We have added two groups, and the question of diagnosis will be considered with regard to them also. Of the six classes, Nos. 1, 2, 3, and 6 are Sir James Mackenzie's four classes of diseases. There will inevitably be difference of opinion with regard to our allocation of cases to different classes, *but there is no finality* in any classification, and if this study of the subject of *diagnosis* does no more than bring this fact into prominence it will have served a useful purpose.

Class 1 (Fig. 3).—The standard example of diseases belonging to this class is conjunctivitis due to a foreign body in the eye. Few cases, apart from those generally regarded as obvious, approach this standard. Renal colic due to renal calculus is a good example, *and we include, of course,* the microbic infections. But the noxious agent in these cases may or may not be the primary cause of the disease: it is no doubt a necessary agent, but it may not stand alone or even be of chief importance. There must be some other element not *at present understood. The presence of the* pneumococcus in the respiratory secretions is no evidence that the patient is suffering from *pneumonia;* when the clinical symptoms of the disease are present it is superfluous to search for the germ. We have *little* idea of the conditions *under which the pneumococcus,* apparently ubiquitous and generally *innocuous,* can become malignant. Other examples of the class are tuberculosis, syphilis, dysentery, *malaria,* diphtheria, and ringworm.

As has been *already mentioned, we have included* many cases which, though simple in nature, cannot in our view be regarded *as necessarily trivial or obvious—for* example, an ulcer of the lip caused by the sharp edge of a tooth. We *also* include several fractures, injuries the nature of which was verified by the aid of the X rays, and a number of hernias. In Class 1 are placed 34 (10·82 per cent.) of the 314 Institute cases, 77 (11·66 *per cent.*) of the 660 private cases, and 111 (11·39 per cent.) of the total 974 cases.

THE USE OF LUMINAL SODIUM IN EPILEPSY.

By J. TYLOR FOX, M.A., M.D., D.P.M.,
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The history of the drug treatment of epilepsy is not an encouraging one. "There is scarcely a substance in the world," says Sieveking, "capable of passing through the gullet of man, that has not at one time or another enjoyed the reputation of being anti-epileptic," and it may appear rather an impertinence to report upon yet another drug to be eulogised, tested, doubted, and perhaps ultimately discarded like so many of its predecessors. This paper is, indeed, no more than a preliminary note on the use of luminal sodium, and much more extensive trials over long periods are required before the value of the drug can be finally estimated.

Method of Use.

Luminal was first tried in Germany in 1912, and has been fairly widely used, but I have not come across any record of the results obtained from it in England. Luminal is phenylethylmalonylurea, or a derivative of veronal in which one of the ethyl groups is replaced by a phenyl radicle. Luminal sodium is a soluble derivative of luminal, and I have given it in solution, with hot milk or water, in doses of 1 to 2 grains once a day, usually at bedtime. The dosage is small as compared with that of Continental observers, who consider that 3 to 4½ grains can safely be given to adults over prolonged periods, provided that the patients are under adequate supervision. For the purposes of investigation 16 cases of ordinary epilepsy in children or adolescents were chosen; the patients were all liable to major attacks at fairly regular intervals, and none showed signs of marked mental defect or deterioration. It is essential to confine statistical investigation to patients whose fits show a regular incidence, unless very long periods of time are under review. Most of the patients were taking bromide when the luminal was started, and the daily dose, which in no cases exceeded 30 grains, was continued. This course was, no doubt, open to some objection, but had it not been followed, it would have been impossible to say whether any modification of the fit incidence was due to deprivation of bromide or to the luminal sodium. In this connexion it is perhaps worth mentioning that I have known stoppage of bromide to be followed by a considerable lessening in the number of fits. All the patients were under the continuous supervision, both by day and night, of experienced nurses or attendants, so that the fit statistics should be complete. (See table.)

Table showing the Effect of Luminal Sodium upon the Fit Incidence of 16 Young Epileptics.

Initials.	Sex.	Age.	Daily dose of L.S. in grains.	Fit incidence. 6 months prior to commencement of administration.						First 3 months of administration.			Average fit incidence 6 months prior.	Average fit incidence 3 months of admn.	Lb. weight gained or lost.
A. E. S. ..	M.	18	2	1	8	5	4	5	3	1	1	1	4·3	1·0	+8
Y. L.	M.	22	2	7	3	0	12	10	9	0	0	0	6·8	0·0	+8
C. J. F. ..	M.	16	2	4	6	13	6	8	8	3	3	6	7·5	4·0	+8
A. E. C. ..	M.	17	2	10	13	11	8	5	11	3	0	4	9·7	2·3	+7
L. J. H. ..	M.	13	2*	4	8	2	1	4	8	1	4	5	4·5	3·3	+2½
E. G. T. ..	M.	21	2	6	5	5	7	7	6	0	1	1	6·0	0·7	−5½
C. W. [illegible] ..	M.	19	2	9	8	12	9	8	6	4	7	5	8·7	5·3	+7
L. T. H. ..	M.	15	2	1	5	9	5	9	10	0	0	7	6·5	2·3	+6
E. A. O. .	M.	11	1½	11	8	6	3	8	8	1	0	0	7·3	0·3	+5½
C. H. C. ..	M.	12	2	2	6	8	11	12	11	4	2	8	8·3	4·7	+5½
K. G. S. ..	M.	12	1½	4	4	3	4	6	4	0	0	0	4·2	0·0	+1
R. S.	M.	11	1½*	8	9	7	8	10	11	6	4	4	8·8	4·7	+5
N. E. P. ..	F.	14	2	6	6	7	5	7	5	3	4	5	6·0	4·0	+2½
L. C. D. ..	F.	15	2	5	5	5	5	9	8	4	5	7	6·2	5·3	+1
A. G.	F.	15	2	7	7	7	8	9	7	6	0	0	7·5	2·0	+10
H. H.	M.	20	2	3	3	2	2	3	1	2	0	0	2·3	0·7	+7

* Reduced to 1 gr.

Advantages of Luminal Sodium.

Attention may be particularly called to two points in the figures shown. In the first place there is a marked reduction in the fit incidence in every case. This uniformity of reaction to the drug places it, I believe, in a category apart from other anti-epileptic remedies. I have drawn up and published elsewhere similar tables dealing with the effects of belladonna, digitalis, and borax upon epilepsy, and they show no such uniformity of reaction. Borax, indeed, is the only one of the three which appears, when the figures are studied in bulk, to have any effect at all in the reduction of fit incidence. Various statistics of the fit incidence under the influence of bromide have also been published, but I have seen none with beneficial results so uniform as in this table. This point is worth stressing, because it is a matter of common knowledge that marked benefit, or even a complete arrest of fits, may follow the adoption of any new line of treatment, therapeutic or dietetic, or from a chance change in the environment of any individual patient. Secondly, the considerable increase in weight that occurred in almost every case can be no mere coincidence. The average increase of the 16 cases works out at just under 5 lb., and it will be noted that only in one case is a loss of weight recorded.

So much for the advantages of the drug. Are there any drawbacks to its use? Careful observation was made of the mental and physical conditions of all the patients. In no case was complaint made of headache or abdominal pain; nor were there any acute outbursts of excitement such as have been recorded by Continental observers. In 5 of the 16 cases the general mental condition of the patients was apparently unchanged; in 3 the patients were reported as rather more irritable than formerly, while in 4 they were evidently more cheerful and alert. One case, L. C. D., a girl of 15, has become distinctly more dull since taking luminal sodium; her speech is hesitating and she appears to have trouble in finding her words. It is to be noted that her fit record shows less improvement than that of any of the other patients, and that her increase in weight is correspondingly small. Two boys, L. J. H., aged 13, and R. S., aged 11, became sleepy after taking the drug for a few days. In both cases the dose was probably too large, and improvement followed on its reduction. Finally in the fourth month of administration one boy, C. H. C., aged 12, became very dull and lethargic, and could only with difficulty be persuaded to eat his food. The drug was stopped and the boy began to get back to his normal condition some days later; but as he had an exactly similar attack some time ago it does not seem reasonable to ascribe his condition to the luminal sodium.

Best Results in Cases with Major Attacks.

As in the case of other drugs, luminal sodium seems to give best results in cases liable to major epileptic attacks; cases who suffer from momentary losses of consciousness, or from periodic short attacks of altered consciousness with automatism, are notoriously inaccessible to drug treatment. Nevertheless there is recorded a diminution of momentary attacks in three as diseases, has been correct The *diagnosis* is therefore, purely *provisional* In many instances of this class the noxious agent, whatever it may be, appears to have a purely local action, and nature is able to get rid of it without damage, aided perhaps by approximate remedies But we know that these local conditions appear so commonly as symptoms of more generalised disease that we hesitate to treat them lightly, or to judge of their significance without prolonged observation

Bronchitis may be taken as a typical instance We do not include in this class recurrent bronchial catarrhs of children, which suggest some underlying weakness, or the chronic cough of middle and later life which is associated with degenerative changes, but cases are included in which no other signs of disease could be detected at the time of examination We know that attacks may pass off, leave no trace and never recur But everyone has found other symptoms appear at some later date, and has watched the gradual emergence of the typical picture of pulmonary tuberculosis (Fig 9) We have made the secondary diagnosis before the primary diagnosis and in this case the secondary condition was of comparatively trifling importance The diagnosis of acute rheumatism, followed by detection of endocarditis, was of a different order

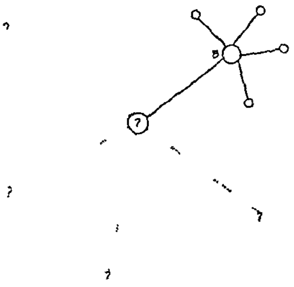

FIG 8 —? represents the noxious agent B represents the local lesion giving rise to a group of symptoms The dotted lines indicate that a watch must be kept for more generalised symptoms

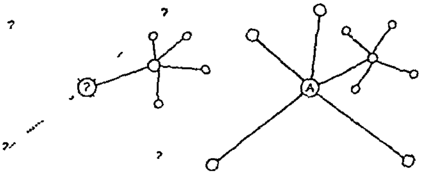

FIG 9 —Showing gradual emergence of the primary diagnosis

It should be noted that when a case assigned to this class alters its picture—except by addition to the group of symptoms explicable by the existence of the local lesion that is to say, when it becomes necessary to fill in any of the dotted lines and queries —it ceases to belong to that class and finds its place in one of the others We have included appendicitis and gastric ulcer, because with our present knowledge it is impossible to determine how far they are symptoms and how far diseases in themselves

In Class 5 are placed 62 (19 74 per cent.) of the 314 Institute cases, 155 (23 48 per cent) of the 660 private cases, and 217 (22 27 per cent) of the total 974 cases The following are examples from the lists

Institute (62 cases)

Appendicitis
Blepharitis
Bronchitis
Colitis
Constipation
Cystitis
Duodenal ulcer
Gastric ulcer
Hæmorrhoids
Intestinal adhesions
Intestinal catarrh—thread worms
Laryngitis
Nephritis
Occipital neuralgia
Pleurisy
Pyelitis
Sciatica

Private (155 cases)

Acne rosacea
Acne vulgaris
Adenoids
Bronchitis
Coccygodynia
Chronic rhinitis
Conjunctivitis
Constipation
Gastric ulcer
Glossitis
Mastitis
Nephritis
Otitis media
Pharyngitis
Phlebitis
Pleurisy
Sciatica
Synovitis
Tonsillitis
Ulcer of auditory meatus

Class 6 (Fig 6) contains the cases showing a number of uncoordinated symptoms with no recognisable common cause Most of our time at the Institute is spent in endeavouring to study such cases In going over the Institute records from the beginning we indexed all the cases under leading symptom ' and 'provisional diagnosis' and endeavoured to divide this undiagnosable class into groups, for example, intestinal toxæmia, neurasthenia, dyspepsia, &c It might be better not to employ such terms at all, as they are apt to give an unconscious bias in favour of one theory over another

Symptoms of toxæmia are very similar in all cases and to search for a correspondence in symptoms among the members of a group formed on no more sure basis than the existence of constipation, or the presence, or suspected presence, of ileal stasis may be a waste of time It would be more satisfactory to form no subdivisions until some definite grouping of symptoms has emerged from a general study of all the cases In Class 6 are placed 132 (42 03 per cent) of the 314 Institute cases, 350 (53 03 per cent) of the 660 private cases, and 482 (49 48 per cent) of the total 974 cases The following are examples from the lists —

Institute (132 cases)

Anæmia with history of tachycardia
Chronic *dyspepsia*
Dyspepsia—palpitation
Exhaustion
Intestinal stasis
Intestinal toxæmia
Gastro intestinal derangement
Malnutrition
Nervous disorder (functional)
Neurasthenia—dyspepsia
Toxæmia of unknown origin
Toxæmia—tachycardia
Toxæmia—toxic angina
Vasomotor instability

Private (350 cases)

Bilious attacks
Cough exhaustion insomnia
Dyspepsia—mental depression
Dyspepsia—palpitation
Exhaustion—abdominal pain
Exhaustion—extensive temporary *staining of skin*
Exhaustion following pyrexia *of unknown origin*
Exhaustion—giddiness
Exhaustion—headache—*dyspnœa*
Exhaustion—*palpitation*—constipation
Fainting attacks
Headache—cough—*exhaustion*
Headache—worry—dyspepsia
Nausea—epigastric tenderness
Menstrual irregularity
Neurasthenia

From this confused class will no doubt emerge in time not only cases of advanced disease the first symptoms of which are already present but not understood, but also cases proving in their progress the relationships of many diseases now regarded as entirely dissociated and even the common origin of many of them The undiagnosable cases are apt to cause despair to the general practitioner, but if they are viewed rightly they present him with an invaluable *field of study—the study of early diseases*—which is really *open to him alone*

Grouping of Cases

We are grouping *all cases seen at the Institute* under the six classes with the *object of noting what transference from one class to another may take* place during observation and treatment

The following tables give the numbers and proportions of cases in the various classes —

	Institute cases (314)		Private cases (660)		Total cases (974)	
Class	No	Per cent	No	Per cent	No	Per cent
1	34	10 82	[illegible]	11 66	111	11 39
2	7	[illegible]	13	[illegible]	20	2 05
3	34	10 82	51	7 72	[illegible]	[illegible]
4	45	14 33	14	2 12	59	6 05
5	[illegible]	19 74	155	23 48	217	[illegible]
6	13	42 03	350	3 03	482	49 48

We accept the cases in the first four classes as diagnosed, those in the last two classes are undiagnosed or undiagnosable We do not desire to place undue value on the diagnosis of a disease as compared with the detection and interpretation of a symptom

The following table shows the proportions of diagnosed cases in the various lists —

	Institute	*Private*	*Total*
Number of cases	314	660	974
Cases diagnosed	120	155	[illegible]
Proportion diagnosed	[illegible]	23 48 %	[illegible]

birth as a routine although too weak to suckle. Immediately after the establishment of lactation on third day breast pump was used and breast milk so withdrawn was given to child by pipette or spoon—a drachm every two hours for first few days—increased gradually in three weeks to six drachms every three hours.

Progress has been uninterrupted, as shown by the marked increase in weight. There has been no vomiting or diarrhœa since birth; stools have always been normal.

Weight.—At birth, 1 lb. 6 oz.; end of first week, not recorded; end of second week, 1 lb. 14 oz.; end of third week, 2 lb. 10 oz.; end of fourth week, 3 lb. ½ oz.

The whole case is interesting in that various authorities, including Budin of Paris, have stated that mortality of premature babies weighing under 3 lb. is 100 per cent., and also as emphasising the importance of breast feeding in premature babies. It is especially in the first few days of lactation that the child derives from mother's milk those immune bodies which are capable of protecting it against infections of all kinds.

A CASE OF

BULLOUS ERUPTION CAUSED BY MAY-WEED.

BY J. H. SEQUEIRA, M.D., F.R.C.P. LOND., F.R.C.S. ENG.,

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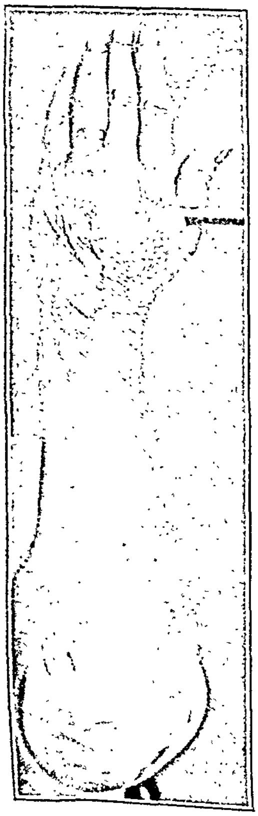
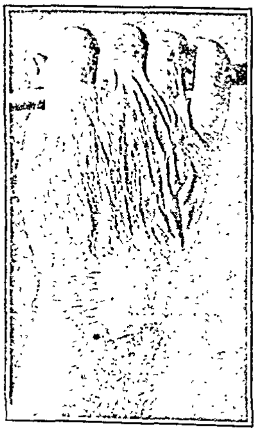
THE attention recently called to plant dermatitis and the fact that this is the first case of its type seen in my clinic at the London Hospital has led me to publish this note.

On June 30th, 1921, a married woman, aged 51, presented herself at the Skin Department at the London Hospital with a remarkable eruption of blebs on the left elbow and both wrists. She was a strong, healthy woman, and her face, forearms, and hands were deeply tanned by the sun. She had been engaged in pea-picking in Essex. It was difficult to get exact dates, but apparently the eruption for which she consulted me had come on acutely two or three days before. When examined she had an enormous, irregular, flaccid blister over the left elbow, extending down the back of the forearm for 3½ to 4 inches. A similar bleb, 3 inches in its long diameter and from 1 to 2 inches wide, was present over the ulnar side of the back of the left wrist, and a rather larger bulla over the ulnar aspect of the back of the right wrist. The fluid in the blebs was clear serum and there was no zone of erythema round them (Figs. 1 and 2). The patient complained of pain and some irritation. She ascribed the lesions to poisoning with May-weed, a common field-weed. Abrasions, produced by her occupation of pea-picking, apparently preceded the lesions. She described other cases amongst workers similarly employed, and on inquiry in South Essex I obtained a history of other cases in which individuals had been obliged to give up work for some weeks. Inquiries made for me in Kent elicited the same information.

FIG. 1. FIG. 2.
Showing the bullous eruption (1) on left forearm and hand; (2) on right hand.





The lesions were dressed with a powder of zinc, starch, and calomel and speedily healed.

Remarks.

In Bernhard Smith's work on "Poisonous Plants of All Countries" (p. 73) *Anthemis cotula* (May-weed) is included in the appendix of plants "reputed to be poisonous." In Maisch's "Manual of Materia Medica," seventh edition, p. 260, *Anthemis cotula*, May-weed, wild chamomile, belonging to the natural order Compositæ, Anthemidæ is described as having an unpleasant aromatic odour, bitter acrid taste. Its constituents are a volatile oil, valerianic acid, acrid fat. tannin, anthemidine (?), anthemic acid (crystalline, bitter, soluble in ether). Valerianic acid is classed as an irritant by B. Smith (loc. cit.).

I obtained some fairly fresh plants and rubbed the juice of the leaves and flowers into my forearm, both into the unbroken surface and into a scarified area. In the spots treated with the juice of the leaves a rather tender papule developed the same evening, both in the scarified and unbroken parts. The papules lasted for five days and cleared up, leaving no mark. There was no vesication. The specimen weed had been gathered 12 hours, and it is possible that the plant is more virulent at certain times than others.

A CASE OF

CONGENITAL ABSENCE OF RIGHT PECTORALIS MAJOR.

BY A. G. MILLOTT SEVERN, M.D. BRUX., M.R.C.S., F.C.S.,

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A POST-MORTEM examination performed at the Royal Sussex County Hospital on a man, aged 44 years, who died from perforated gastric ulcer, showed complete absence of the right pectoralis major, including both the pars sterno-costalis and the pars clavicularis. There was no remnant of muscular tissue or fascial band to be found; the ribs were normal, being covered only by the skin and subcutaneous tissue where the pars sterno-costalis should be; the condition may therefore be assumed to have been congenital. The right pectoralis minor and both the pectoral muscles on the left side were present and well developed, and there was no other muscular deficiency or abnormality of the thorax.

Absence of all or part of the pectoralis major on one or both sides is decidedly rare, but Bing and other anatomists have stated that variations occur more often in the pectoral group than in any other of the skeletal muscles—after allowing that abnormality of the pectorals is more easily detected than is the case with other smaller or less apparent muscles. Developmentally this group of muscles is among the last to be acquired, and therefore one would expect to find in them the most frequent variation. In this case the condition had apparently caused but little disability during life, for the man had followed a laborious occupation; in fact, in most of the recorded cases where pectoral muscle abnormalities were not associated with other deformities, no inconvenience or functional weakness was observed on account of the muscular deficiency—the deltoid and other shoulder muscles sufficing for all the movements of the arm.

These observations tend to show how good a functional result may be expected in a patient whose pectoral muscles have been removed for malignancy.

References.—R. Bing: Virchow's Arch., 1902, clxx., p. 175. J. Gardiner: Journ. Amer. Med. Assoc., Feb. 1915, p. 508. D. M. Greig: Edinburgh Med. Journ., 1912, N.S., viii., p. 248. J. Martirené: Rev. d'Orthopédie, Paris, 1903, p. 209. G. Variot: Bull. Soc. de Pédiatrie de Paris, 1907, ix., p. 2. W. Wendel: Mitteil. a.d. Grenzgeb. d. Med. u. Chir., 1905, xiv., p. 456.

accepting as "good results" of treatment what has really been a natural staying of the progress of the disease which would have occurred in any case? We have to acknowledge that so far we have discovered no remedy which is specific for tuberculosis in the sense that quinine is specific for malaria and salvarsan for syphilis; and that, in a disease so chronic in its incidence, so capricious in its ebb and flow, such a specific is still to seek.

Uses of Drugs.

But even if this is the case, it is by no means correct to assert, as some have done, that medication plays no useful part in the treatment of pulmonary tuberculosis, a point strongly emphasised by Rénon. The exhibition of certain drugs is of undoubted benefit in many cases; here, too, suggestion plays an even more important part than in most diseases. In this connexion Baudouin quotes some interesting observations of Rénon, which go to show that a comparison of the results obtained by the various methods of treatment in chronic pulmonary tuberculosis displays the same proportion of cases cured or alleviated, cases in which there was no improvement, and cases in which the disease had progressed in spite of treatment. He describes this as "the normal coefficient of amelioration" and enunciates the view that every new method for the treatment of chronic pulmonary tuberculosis, provided that it is harmless, will give satisfactory results. In other words, if the physician himself believes in the remedy, a psycho-therapeutic state is induced, and the medicament is merely the vehicle of suggestion. These remarks, however, must be qualified by the statement that, in my opinion, the abuse of certain drugs has been responsible for a good deal of that dyspepsia which is so often such a distressing feature of the disease. Truly it may be said that the phthisical patient fights for his life "upon his stomach," and that if this is thrown out of gear, his chances of recovery are materially lessened.

Psychotherapy and Organic Disease.

Have we then done all that is possible up to the present for patients suffering from this disease who are placed under our care in sanatoriums or otherwise? I do not think so. I believe we have in psychotherapy a remedy for the alleviation at least of many of the distressing accompaniments of this disease, and one which can materially assist our efforts for the patient's restoration to a moderate degree of health, with arrest of the progress of the disease. It may fairly be asked what part can be played by psychotherapy in an organic disease of this nature. Although Krafft-Ebing and Forel are stated to have carried out certain experiments intended to show that organic changes can be brought about by suggestion, they have had to admit that the results were not very satisfying; it is, I think, also generally acknowledged by psychotherapists that this form of treatment cannot *directly* affect morbid organic changes. But even if this fact is admitted, we should not, I think, strain the law of psycho-physical parallelism by assuming the close co-relation in disease of the psychic factor and the bodily functions—in short, by holding that psychotherapy can in fact react favourably upon the purely physical side of such a disease as pulmonary tuberculosis.

Psychotherapy in its Application to Phthisis.

I propose briefly to mention a few of the conditions for which psychotherapeutic treatment might be advantageously employed in phthisical patients. I have already alluded to the frequent and characteristic reversion to infantile mental reactions which occurs in these patients, in whom re-education of the will—and often restoration of the whole ethical code—is so necessary when in favourable cases the patient is again able to compete in the struggle of life. In some cases again a confusional state exists, with ideas of a persecutory character; while depressive states are by no means rare. The fear of hæmoptysis becomes almost an obsession sometimes, the unhappy patient daily scrutinising the expectoration with painful anxiety. Dyspepsias of a functional character, inability to take certain essential articles of diet, and sometimes insomnia, as well as the control of cough, also come within the scope of treatment by psychotherapeutic means.

In a certain proportion of cases there also exists, as might be expected—more especially in the intelligent and sensitive type of patient—a state of mental conflict which prejudices the treatment and retards recovery. In a few of these cases treatment by psycho-analysis may even be necessary; and I think this treatment can be most suitably carried out at a sanatorium. There are those who say that the sanatorium has outlived its usefulness, and has in many ways proved an expensive fraud; but is this in fact the case? There are certainly grave defects in our sanatorium methods which might be enlarged upon, but I am only here concerned with such defects or deficiencies as bear upon actual treatment.

Necessity of Individual Treatment in Phthisis.

Pulmonary tuberculosis is above all a disease requiring individual treatment, and the inevitable tendency to standardise everything in connexion with the patient in a large sanatorium—the administration of what may be called "massed" treatment—is from every point of view unsatisfactory. Speaking generally, this applies to medication, dietary, and exercise. Occupational therapy has been a step in the right direction from the point of view of re-education on the physical side; but, recalling the law of psycho-physical parallelism, re-education on the mental side for the psychic defects already enumerated is of no less importance. I am firmly of opinion that when a patient is admitted to a sanatorium, in addition to the ordinary medical history of the case, the fullest details of the patient's family and personal *mental* history should be sought. A fuller knowledge of the personality of the patient than is now ordinarily obtained is essential. This having been obtained, such treatment as may be found necessary after due observation, either in the form of mental exercise and relaxation, or more specifically as psychotherapy, and in certain cases psycho-analysis, should be duly instituted. The results obtained at the New Nancy School presided over by Edouard Coué, in which auto-suggestion is more specifically employed and in which a number of cases of pulmonary tuberculosis are included, provide remarkable proofs of the value of psychotherapy in this disease. There is certainly sufficient evidence to warrant a wider and more systematic use of this form of treatment in pulmonary tuberculosis. It is too much to expect that the medical superintendent of a large sanatorium, immersed as he is in the routine duties of his position, can deal with this side of the question even if qualified to do so, which he seldom is. The fact is that for the most part our sanatoriums, judged by the criterion of such an institution as the Loomis Sanatorium in America, are woefully understaffed. In the larger institutions one of the staff should possess the necessary qualifications for psychotherapeutic treatment in addition to his special knowledge of tuberculosis, and in the case of the smaller sanatoriums, such special knowledge on the part of the medical superintendent should be regarded as essential. It is to be assumed, of course, that in every case the physician in charge is himself equipped with the fundamental personal qualities of confidence in himself and his work, a spirit of cheerful optimism and of infinite patience, without which the management of the phthisical patient, always difficult, becomes well-nigh impossible.

By such means those who are able to leave the sanatorium with the disease arrested will again be able to play a part in the life of the community with renewed self-confidence, with will power restored, and with a broader and more optimistic outlook on life; while even those for whom our efforts are unavailing may be enabled to face with fortitude the termination of their sufferings.

affairs. Dante remains with us to tell us how false is such a divorce. Only by bringing the same clearness of soul to politics as to personal relations, only by rooting our politics in a great consciousness of the full value of life, can true peace be attained. How eagerly Dante was concerned with the literary and stylistic problems of his day, how far he was from scorning the humbler problems of language and syntax from the height of his towering majesty of thought, is made apparent by Mr. Gardner's essay on "Dante as Critic." Literary criticism of a most pertinent description is embedded in the "Divine Comedy," while the "Vita Nuova," apart from its anatomical analyses of the lyrical poems incorporated in it, contains a lengthy digression on the poet's licence for personalising abstractions. Dante's importance as a politician is further emphasised in Mr. Wicksteed's essay "Dante and the Latin Poets," wherein the noble name of Virgil is added to the list of pre-eminently political poets, while in Mr. Mackail's "Dante and Virgil" is quoted the verse of Dante which has been most used in political controversy these last days—

> "A Pola presso del Quarnaro
> Che Italia chiude e suoi termini bagna;"

than which denial of the "Italianità" of Fiume the very Serbs could not find a more decisive statement to give lustre to their case.

Mr. A. G. Ferrers-Howell in "Dante and the Troubadours" explains the theories of chivalrous and transcendent love which provided the shell of the "Vita Nuova," and shows to what an extent Dante owed his mastery of the short lyric to the study of the Provencal court poets.

As to the two remaining heads of criticism, the name of the work stands at the head of this review, but the branch of philosophy to which the whole belongs is a problem that would have puzzled Dante himself in the solution—and, for that matter, to what branch of philosophy would he have assigned his own immortal poem, of which this book is the shadow?

THE NEW STONE AGE IN NORTHERN EUROPE.

By JOHN M. TYLER, Professor Emeritus of Biology, Amherst College. London: G. Bell and Sons, Ltd. 1921. Pp. 310. 15*s*.

THE study of early races must always be a fascinating one, and innumerable books have been and continue to be written thereon. Professor Tyler's unassuming work is, as he tells us in his preface, prepared for young students, and is merely to be considered as a good host who introduces "intelligent, thoughtful, and puzzled readers to the company and viewpoint of the pre-historian." Hence the extensive bibliography, which will afford ample food for the student. Prof. Tyler discusses in his first chapter the coming of Man, refers to Pithecanthropus, and states that "we still lack foundations for any hypotheses as to exactly when, where, or how the erect ancestral ape-man emerged into real manhood." Anyway, primitive man appears to have started life in "the whole of the parkland zone curving around the western buttresses of the plateau of Thibet," a region which elsewhere Prof. Tyler calls the Iranian plateau. From this plateau early man migrated to India, to Northern Africa through what are now Mesopotamia, Palestine, and Egypt, through Asia Minor to the Ægean, and westward and north of the Caspian through Southern Russia to the Carpathians. From Africa he also passed into Europe by means of the then existing land bridges at Gibraltar and Sicily—South Italy.

It was at some time during the Glacial Epoch that man first arrived in Europe, when the ice sheet extended roughly as far as lat. 50° N. Then began the Eolithic Period, which was followed by the Early and Late Palæolithic Periods; the Eolithic and Palæolithic Periods correspond roughly to the Pleistocene Period of Geology. In succession followed the Neolithic Period, with which Prof. Tyler's book deals, but it was during the Late Palæolithic Period that that wonderful race, the Cro-Magnon people lived. The discovery of skeletons in 1868 of this race gave a check to the Darwinian theory that man got progressively more ape-like as one went further back in time, for the skeletons discovered were those of tall men from 5 ft. 11 in. to over 6 ft. That of the one woman, who was young, measured 5 ft. 3 in. The artistic powers of man were developed already, as is evident by the drawings in the cave dwellings of Southern France and the Pyrenees; but this brilliant race died out, and the Neolithic people succeeded them. These lived at the time when the ice sheet had retreated, for their remains are found in the shell heaps of places in Europe as far north as Denmark. Prof. Tyler gives a very readable account of Neolithic man and his ways, his habitations, his industries, and his migrations, concluding with a chapter on the Indo-Europeans, whose culture and life, he says, were a product of Neolithic experience and a blossoming of Neolithic growth. The book is a useful introduction to a very complicated study, and we would add one work to Prof. Tyler's bibliography, namely, Prof. Lionel Lyde's "Continent of Europe," especially the first ten chapters thereof.

CHEMISTRY.

The Chemistry of Enzyme Actions.

By K. G. FALK. New York: The Chemical Catalogue Company. 1921. Pp. 136.

THE publication of this volume marks an interesting departure in the literary activity of the American Chemical Society, its essential object being the development of a chemical literature in the English language without regard to the usual commercial considerations of book publishing. By an arrangement with the Inter-Allied Conference of Pure and Applied Chemistry in 1919, the society undertook the production and publication of scientific and technological monographs on chemical subjects. At the same time the American Physical Society became responsible for the publication of critical tables of chemical and physical constants. The object of these monographs is to present the knowledge available upon the chosen topic in a readable form intelligible to those whose activities may be along a wholly different line. A second purpose is to promote research in the branch of science covered by the monograph by furnishing a careful survey of the progress already made in that field and by pointing out directions in which investigation needs to be extended.

The author deals with his subject under the following heads: Velocities of Chemical Reaction—General Theory of Chemical Reactions; Catalysis; Chemical Reactions Catalysed by Enzymes, Physical and Chemical Properties common to Enzyme Preparations, Chemical Nature of Certain Enzymes, Mechanism of Enzyme Actions, Uses and Applications of Enzymes; Present Status of Enzyme Problem. To cover so wide a field in one small volume is an ambitious effort, and Dr. Falk has done a service to his brother chemists in coördinating the existing knowledge and presenting it in so readable a form. The last two chapters especially are of quite exceptional interest.

The Chemistry of Synthetic Drugs.

Third edition. By PERCY MAY, D.Sc., F.I.C. London: Longmans, Green and Co. 1921. Pp. 248. 12*s*. 6*d*.

THE author's object is to give an account of the main facts concerning the chemical nature of synthetic drugs and the principles guiding their production. New drugs are constantly being put on the market and whilst many of them are well known and widely used their chemical nature is often unknown. Before 1914 the manufacture of synthetic drugs was practically confined to Germany, but since then considerable progress has been made in this country. We hope a further impetus will be given when the Safeguarding of Industries Bill materialises; possibly, then, in the course of a few years we may possess something approaching the highly organised German organic chemical industry.

of the patients in the table who were liable to them; and one of the most satisfactory cases we have had is that of a boy aged 9 who was liable to very frequent psychic attacks with automatic movements, the number and duration of whose attacks have been very greatly diminished by three months of luminal treatment, and who has become, as a consequence, very much brighter mentally.

The modern view of the psycho-genetic origin of epilepsy has led some writers to discount the value of any treatment directed to reducing the fit incidence or arresting the fits. Fits are said to be protective reactions away from an environment to which the epileptic, with his egocentric sensitive temperament, cannot adapt himself, and to stop fits is to court further mental trouble. I have seen mental disturbance follow the sudden cessation of fits in an old-standing case of epilepsy, but more commonly the patient becomes more alert and cheerful when his fits stop, and I have no fear that in using a drug that will arrest fits we are doing the patient any disservice, provided that we are satisfied that the drug itself has no prejudicial effect upon him. It is, of course, not claimed that luminal sodium, or any other drug, has any curative effect upon the disease; at best it only arrests or lessens the frequency of the convulsive attacks.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

PURULENT PERICARDITIS SIMULATING ANGINA PECTORIS.

BY M. A. CASSIDY, M.D. CANTAB., F.R.C.P. LOND.,
R. O MOON, M.D. OXON., F.R.C.P. LOND.,
AND
F. LE Q. PELLY, M.B., B.CH. ABERD.

THE following case presented such difficulty in diagnosis that it seems worthy of record.

K. D., aged 42, a caterer by occupation, a hearty eater, but not addicted to alcoholic excess, and a very heavy cigarette smoker, had three separate attacks of gonorrhœa during the last two years; apart from this he had been in robust health till May 18th, when he was seen to be standing still, looking very white, and perspiring freely. He was assisted to his room, where he collapsed on the floor. Dr. Pelly arrived shortly afterwards and found him in an almost moribund condition. His face was ashy and sweating; no pulse could be felt, the heart sounds were barely audible, respiration was rapid and laboured; when the patient was able to speak he complained of agonising præcordial pain. There was very little change in his condition half-an-hour later when Dr. Cassidy saw him. The heart sounds were still heard with difficulty, and the pulse could not be felt; the heart was apparently beating feebly and irregularly at a rate of about 50. Strychnine and camphor were injected, with but little improvement, but there was prompt response to amyl nitrite, several capsules of which were administered. After this the pulse improved in volume and became regular, and the pain, which the patient was now able to describe as radiating down both arms, with greater severity in the left arm, diminished in intensity. ¼ gr. morphia and 1/100 gr. atropine were now administered hypodermically with further improvement. During the night he vomited freely, and again complained of severe præcordial pain, but next morning improved sufficiently to be moved into a nursing home. On the 20th he had a fairly comfortable day, but in the evening his temperature rose to 99·8°F. On the 21st he had two syncopal attacks, one associated with angina-like pain. When seen by Drs. Moon, Cassidy, and Pelly in consultation on the evening of the 21st the temperature was 100·4°, pulse 80, respirations 30; the radial artery was much thickened and the tension high. No increase of cardiac dullness could be made out, and the heart sounds appeared to be normal, though earlier in the day Dr. Pelly had heard pericardial friction. There was a little dullness and quiet breathing, with nasal voice sounds, at the extreme base of the right lung. He still complained of slight præcordial pain, but appeared to be in no great distress, could talk quite freely, and was able to sit up in bed for examination. At 11 P.M. that evening there was a sudden fatal syncope.

At the autopsy on the following day the pericardium was found to contain about 2 oz. hæmorrhagic sero-purulent fluid, and both the parietal and visceral pericardium were covered with punctate hæmorrhages and patches of lymph. The valves of the heart appeared to be perfectly normal, but there was well-marked recent atheroma of the aorta just above the aortic valves. The right lower lobe of the lung was congested and collapsed, but no other signs of organic disease were discovered. Unfortunately, no bacteriological examination was possible.

Remarks.

In this case the onset was typical of severe angina pectoris, and the subsequent syncopal attacks, one with pain, also seemed to support this diagnosis. In view of the condition of the root of the aorta it seems probable that he was in fact killed by angina pectoris, though this condition was excited by an unrecognised pericarditis. The pyrexia, furred tongue, and transient friction, coupled with basal pulmonary collapse (due, no doubt, to diaphragmatic arrest), should have led us to the correct diagnosis. In the absence of any other septic focus, it seems probable that the pericarditis was due to gonococcal infection.

NOTE ON EARLY PROGRESS OF AN INFANT OF ABNORMALLY SMALL WEIGHT.

BY F. CHURCHILL DAVIDSON, M.B., CH.B. EDIN.,
D.P.H. OXON.

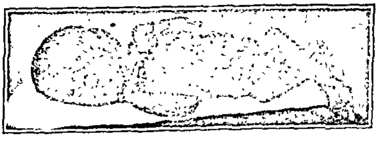
THE following case is of interest in that the infant weighed only 22 oz. at birth.

Mrs. X., a multipara, aged 34, who had been married ten years, gave birth on July 4th, 1921, to a male child weighing 1 lb. 6 oz. Calculating from the date of the last menstrual period, period of gestation was 31 weeks; but taking into consideration both the possible margin of error of 3 weeks—corresponding to the length of menstrual interval—and the appearances of the child at birth, this gestation period appears to have been over-estimated, and it is most probable that the period was only 32 weeks.

Previous history.—1. Miscarriage at third month in 1911. 2. A female child was born Feb. 10th, 1920, and lived for three days. Cause of death stated to have been "prematurity" (7 months). Both parents are apparently healthy.

Present history.—Labour was uncomplicated and completed in five and a half hours; normal head presentation.

Condition of child at birth. The weight was 1 lb. 6 oz., and the length 15 in. The arms and legs were nearly equal in length; umbilicus was situated close above pubis; sex characters (male) were fully developed; skin was wrinkled and of bright flesh colour; eyebrows and eyelashes were developed and eyelids opened occasionally; there was dark hair on head and downy hair on body. The following herniæ were present: slight umbilical hernia, R. inguinal hernia, large L. scrotal hernia (latter reducible and retained by wool truss). Phimosis was also present and dorsal incision was made on July 12th.



Photograph of child taken at end of fourth week.

Treatment.—The child was immediately covered with warm olive oil, wrapped in cotton-wool and placed in oven at temperature of 90°F. until extemporised incubator was prepared. This latter consisted of a wicker basket with three hot-water bottles placed round the child. A temperature of 85° was maintained, as recorded by bath thermometer placed between blankets beside child and checked from time to time. Hot bottles were refilled alternately.

Feeding.—For the first 18 hours the child was fed hourly with small quantities of a whey and cream mixture (3 oz. in 24 hours) and on third day feeding with breast milk was commenced. The child was laid to breast at feed times from

Psycho-Analysis.

Addresses on Psycho-Analysis. By J. J. Putnam, M.D., Emeritus Professor of Neurology, Harvard University. International Psycho-Analytical Press: George Allen and Unwin, Ltd. 1921. Pp. 470. 12*s.* 6*d.*

Dr. Putnam's leading position amongst American neurologists when, at the age of 66, he accepted the theory of psycho-analysis gives value to his writings on the subject, and this posthumous collection of essays has an intrinsic value of its own. Many of them are controversial, but kindly and persuasive, and throughout there appears not merely a desire for what he regarded as scientific truth, but for the happiness and well-being of his patients; sympathy and human understanding have plainly influenced his attitude, and the reader feels that Dr. Putnam's effort to convince his colleagues arose first of all from his belief that the treatment and cure of the neurotic sufferer demand the application of the principles he so vigorously advocated. Yet there is no attempt to shirk the fight; taking into account Dr. Putnam's age and position at the time, we must, whether we think him right or wrong, admit his courage when he wrote:—

> "If our spiritual life is good for anything it can afford to see the truth. No investigation is wrong if it is earnest. Knowledge knows nothing as essentially and invariably dirty. It is a piece of narrow intolerance, cruel in its outcome, to raise the cry of 'introspection' in order to prevent an unfortunate invalid, whose every moment is already spent in introspection of the worst sort, forced upon him by the bigotry, however well meant, of social conventions, from searching, even to the death, the causes of his misery, and learning to substitute the freedom, liberality, tolerance, and purity that comes from knowledge for the tyranny of ignorance and prejudice" (p. 18).

He comes out to meet his opponents in his address on "Comments on Sex Issues from the Freudian Standpoint." He speaks of the opposition as "a needless prejudice which a temperate reconsideration of the facts and arguments should remove," and bases his advocacy both upon scientific regard for truth and upon the needs of the patient.

> "One must be able to look squarely and without loathing at the facts, or one must say farewell to honest judgment. But no sooner do I ask for this fairness than I am forced to grant that it is hard to give. The details of that portion of one's life which has to do directly or indirectly with the function of reproduction are usually guarded either as something too sacred or too unpleasant to be talked about. And the worst part of the business is that the persons whose interests are most at stake—namely, the neuropathic patients—must inevitably, in the present state of public opinion and public ignorance, pass through a period of severe self-humiliation if they consent to lift the veil from their own memories, or to study the psychological mysteries of their own childhood" (pp. 132–133).

Controversy apart, the author's exposition of principles is aided by long experience of older methods of treatment, and he is able to point to the personal histories obtained from patients by analytical methods as being immensely different, both in detail and completeness, from those obtained before the new treatment was begun. His frank reference to his own resistance against accepting the new theory, and his comparison of results before and after his change of view, form a record which is not likely to be repeated. Although there is no attempt to instruct in the technique of analysis, yet his clinical accounts of cases show the utility of treatment and the way in which the whole previous life of the patient may be involved in the production of the psychoneurotic symptom. Psycho-analysts might regard his analyses as superficial, but this superficiality is no disadvantage to the general reader, who may be unacquainted with the more intricate theories of recent workers; it is remarkable that Dr. Putnam has, seemingly without effort, almost entirely avoided technical phraseology.

It would be a disappointment if we found that Dr. Putnam had given us nothing in the way of criticism of psycho-analysis. In "The Necessity for Metaphysics" he pleads for an extension of the field of psycho-analysis beyond the empirical acceptation of its own findings, so that the ethical motives which indicate man's higher destiny should find consideration; in his last address he returns again to this advocacy, when he quotes Freud's view that not moral estimates but knowledge was needed for solving the problem of human life and motives, and he regards this view as a testimony both to the strength and the weakness of the psycho-analytic movement.

The absence of direct relation between the different addresses, which are in chronological order, enables the book to be read during spare moments, and it is the kind of book to which the reader returns with pleasure. Whoever reads it will, whether he accepts the psycho-analytical view or not, realise that the current methods of attack upon psycho-analysis are of no avail against Dr. Putnam's presentation. A biographical notice by Dr. Ernest Jones gives personal reminiscences of Dr. Putnam, and a lengthy bibliography indicates his contributions to psychological literature.

Concept of Repression. By Girindrashekar Bose, D.Sc. Cal., M.B. Cal., Lecturer in Psychoanalysis and Abnormal Psychology, and Examiner in Experimental Psychology and Physiology, Calcutta University. Calcutta: Sri Gouranga Press. 1921. Pp. 223.

Dr. Bose in his preface speaks of his difficulties in the study of psycho-analysis, and of the fact that truths he found for himself turned out to be already widely known. He has presented these truths in his own way, largely by means of analogy and diagram, and their relation to the conceptions of psychoanalysis, as ordinarily expressed, can easily be seen; for instance, his diagram on p. 49, showing the alliance of two wishes to obtain expression by symbolism, gives an example of what is generally called over-determination. His explanations are not easy to follow, and the absence of clinical illustrations has just the effect that he anticipates in his preface; one feels that his theories are mere speculative products. His chief contribution to theory is the view that the development of any particular wish is always accompanied by a development of a wish of the opposite type; this is an advance upon the theory of ambivalency, by which a complex is regarded as possessed of two opposing tendencies—for example, sadism and masochism—but the view is dogmatically stated, and supported only by unconvincing analogies, so that proper criticism of it is impossible.

We feel that Dr. Bose's ability would be more fruitfully employed in giving records of his work in a sphere where social and family conditions are so different from those where clinical psycho-analysis has hitherto been carried on. His few remarks on the male attitude to the purdah system indicate that he can throw light upon the unconscious motive of people whose mode of life is different from ours.

Psycho-Analysis, Sleep and Dreams. By André Tridon. London: Kegan Paul, Trench, Trübner and Co. 1921. Pp. 161. 7*s.* 6*d.*

The medical reader may judge Mr. Tridon's book by his handling of "sleeping sickness," a title under which he groups trypanosomiasis, hysterical narcolepsy, and encephalitis lethargica, saying of the first-named that "imitation easily spreads the contagion, and this is probably the reason why entire villages are decimated by that curious malady." His statements that memories of recent experiences accumulate in our autonomic nerves (p. 43), and that the anxiety day-dream fills the body "with glycogen and a sense of power" (p. 114) show a similar rash dogmatism. On p. 28 he assumes that all neurotic complaints are transmitted through imitation. If this be true it destroys the whole psycho-analytic theory, and Mr. Tridon's assumption warns the reader that his views on psycho-analysis are to be

Reviews and Notices of Books.

SURGICAL THERAPEUTICS AND OPERATIVE TECHNIQUE

By E DOYEN English edition prepared by the Author in collaboration with H SPENCER BROWNE Vol III Operations on the Abdomen London Baillière, Tindall and Cox 1920 With 959 illustrations Pp 811 45s

THIS is the last volume of a great work. Doyen was a surgical genius, some of whose characteristics did not make for popularity amongst his professional brethren but no one can deny that he contributed largely to the advance of surgery by his inventive ingenuity, boldness and skill. He placed his stamp upon everything that he touched. Originality of method frequently and justly claimed in this volume for its author, has its drawbacks in that a method good in itself may be used on occasions when classical technique would be preferable. For example, the method of crushing pedicles was largely perfected by Doyen but to recommend the use of an écraseur to crush the prepuce prior to its removal in a simple circumcision is surely to ride a hobby a little too far.

The first half of the volume deals with operations on the abdominal wall the liver peritoneum, stomach and intestines, the second half treats of genito urinary operations in both male and female. The section on the stomach and intestines is by far the best, though the author gives a very meagre description of certain conditions, notably the hour glass stomach. The illustrations of the various forms of anastomosis are plentiful and clear. The section on liver and gall bladder is not so good. For example in connexion with liver abscess, we find the dogmatic assertion All punctures, even of an exploratory nature are dangerous whilst treatment of a liver abscess by aspiration is not even mentioned. Again Doyen recommends that where possible the gall bladder should be removed extra peritoneally by subserous decortication, a procedure which is either impossible or unnecessary if drainage be provided. In view of the usual instructions for performing cholecystostomy it is strange to find an illustration showing the mucous membrane of the gall bladder stitched to the skin (Fig 120). The section on genito urinary surgery in the male is less adequate than that dealing with the female. The only operation described for hydrocele is that of inversion of the sac. For ectopia vesicæ the method of reconstruction of the bladder by skin flaps is described and illustrated whilst the transplantation of the trigone and ureters into the sigmoid or rectum receives no mention. Concerning hypertrophy of the prostate the author states I prefer to total prostatectomy the removal of abnormal prostatic fibromata by the suprapubic route preserving the rest of the gland and wounding the urethra as little as possible. The section on pelvic peritonitis in the male is very interesting. Since the name of Doyen has for many years been better known in connexion with female genito urinary surgery than with any other branch, it is not surprising to find a long section devoted to this subject. The translator reminds us that here is much that is of historical interest. He might almost have added and only of historical interest" for the vaginal route has of late years been almost superseded by the abdominal route for dealing with most female pelvic disorders.

Taking the book as a whole it is an interesting and informative exposition of the methods adopted in abdominal surgery by one of the masters in technique though the sections are unequal in value and in some cases do not represent the best modern teaching. The illustrations excellent though they are, are almost too numerous. There are 11 nearly full page illustrations showing the suture of the abdominal wall after the sac of a hernia has been tied. To show the passage of the first deep suture the passage of the second deep suture, the first two sutures ready to be tied, and the first two sutures tied, as four separate and large illustrations improperly assumes a poverty of intellect and wealth of purse in the purchaser of a book on surgery.

We have nothing but praise for the translator, who has used clear and where desirable idiomatic English, while preserving the sense of the original.

DANTE ESSAYS IN COMMEMORATION 1321–1921

University of London Press 1921 Pp 25[illegible] 12s 6d

Dante, writing to Can Grande we learn from Mr Edmund Gardner's contribution to this book stated that the heads under which criticism of a book should be ranged are as follows subject agent form end, title of work and branch of philosophy. Dante's own classification may well be turned to account here. The ' subject is Dante the man and the writer treated from widely differing points of view as poet, critic politician philosopher, and lover and shown in relation to his own time our time and eternity. The agents are thirteen distinguished students of Dante, three Italian and ten English. The exterior form of the book is admirable its printing and illustrations (photographs of William Blake's and Botticelli's illustrations to Dante and a facsimile page of a fourteenth century manuscript) being of a quality rarely met with. As to its internal form, it is necessarily somewhat confused owing to the widely differing nature of the contributions which include fragments of translations notes on points of scholarly interest, excerpts from published books, and essays dealing generally with Dante's work or with particular aspects. The end of the publication is the celebration of the sexcentenary of Dante which is this year being observed in Italy and all civilised countries.

The title page bears the sub heading 1321 1921 but not many of the contributors have drawn their inspiration from the idea of the permanency of Dante's value or of its special application to present circumstances. Lord Bryce however, does attempt this and in a most interesting essay called Some Thoughts on Dante in Relation to Our Own Time discovers analogies between that distant age and our own. One was and the other is a period of disillusionment. The nobler souls of the thirteenth century felt bitterly the failure of the various attempts that had been set afoot to base the policy of Emperor and Pope, the two arms of Holy Church on a higher ground than that of mere interest. They had seen the great ideas that had animated S Francis and S Dominic and the metaphysicians of Bologna exert only a limited influence and fail to secure that rebirth of conscience and divine charity by which alone a better state of things could be compassed. In 1921 those who looked to the war to end war as a means of elevating world politics to a less debased sphere of action must feel a similar bitterness but Dante shines down through the ages with the message that hope and reason must finally triumph against unfaith and stupidity.

Signor Benedetto Croce's contribution is an excerpt from his recently published work La Poesia di Dante shortly to be published in English translation it is here printed in Italian. This chapter really needs the context of the whole book to be properly intelligible. Signor Croce emphasises the unity of spirit underlying the work of Dante he was a man who brought to politics to love to literature and to religion the same robust personality informed by the same cosmic doctrines and vigorously realising itself without loss of sincerity in any in all of these branches at the same time. How difficult one must reflect would it be to-day to evolve a standard or set of standards equally applicable to politics and to the life of the soul. In such an age as ours those who give themselves to politics succeed generally because they have no life of the soul while those who value an unsullied conscience keep well clear of the world's east. The French suffered about equally, and the Bulgarians had at one time 23,000 malaria cases in hospital.—Dr. W. Wallace completes his long and valuable discussion of "The Vision of the Soldier." He would like to see peep-sights fitted to the rifle for use at short ranges to allow ametropes to shoot at these ranges without spectacles; peep-sights are fitted for the long ranges. He wonders why head-masters at public schools do not have their boys' teeth and eyesight examined carefully, that defects may be put in order before military service is due or professional work begins. One of the great problems of a national army is the use that can be made of a man with defective vision. He must not be thrown aside. Where can he best be placed?—Captain T. O. Thompson relates the history of an officer who during the war began to suffer from pain about the kidneys, and became cachectic, so remaining for some years, in the course of which he was treated unsuccessfully with an autogenous vaccine of, it was stated, *B. coli* from his urine. When he again came under treatment in India another autogenous vaccine was prepared from his urine plated on Conradi plates. A pure culture of *Bacillus coscorobæ* was found, and he got 3,100,000 as a first dose. This set up a violent reaction lasting four days: temperature up to 105° F., intense pain and tenderness about the kidneys, and extreme bladder irritability; but patient thereafter felt much better. In about a fortnight he got a second injection, 400,000 only this time; a very slight reaction followed. Thereafter dosage was increased by a half each time. He became robust, put on fat, and considered himself cured. No mention of another case of coscoroba bacilluria could be found in the literature.

Parasitology. Edited by G. H. F. Nuttall, F.R.S. Vol. XIII., No. 3. June, 1921. C. F. Clay: Cambridge University Press. 15*s.* net; yearly subscription £2 5*s.*—This number opens with an article on the Life-history of *Helicosporidium parasiticum*, n.g., n.sp., a new type of protist parasitic in the larva of *Dasyhelea obscura* Winn. (Diptera, Ceratopogonidæ) and in some other Arthropods, by D. Keilin. It deals with a protist which differs markedly from all known protozoa and which is highly pathogenic to the larvæ of at least two species of Diptera (one being a fairly common midge) and to a mite. The hosts inhabit wounds in elm and horse-chestnut trees. The striking character of this new parasite is the spore containing three sporozoites and a spiral filament. In the dead body of the host the spores open and the spiral filament unrolls, liberating thus the sporozoites.—The article on the External Anatomy of the *Sarcoptes* of the Horse, by P. A. Buxton, contains an exhaustive morphological description of all the stages of *Sarcoptes scabiei*, var. *equi*, which is very similar to the human *Sarcoptes.*—In the paper on *Sarcoptes* of Man, P. A. Buxton compares *Sarcoptes scabiei* var. *equi* of the horse and *Sarcoptes scabiei* var. *hominis* of man, and concludes that it is at present impossible to separate these two species. In the same article he deals also with *Sarcoptes scabiei crustosæ*, which is the cause of a rare disease known as Norwegian itch, or crusted scabies.—In the Notes on *Rickettsia*, E. Hindle confirms the main observations of Arkwright and Bacot, who showed the association of *Rickettsia* with trench-fever. This micro-organism is only 0·3μ in diameter, it multiplies in the gut of the louse, and the infection of man takes place when the excreta of infected lice touch any abrasion in the skin of a healthy person. The paper contains a description of *Rickettsia* from other blood-sucking and not blood-sucking insects.—The article on the Anatomy and Biology of the parasitic *Aphelenchi*, by F. H. Stewart, deals with three species of nematodes parasitic in plants. In addition to the morphology, the paper contains an account of the life-history of these parasites, indications on the treatment of diseased plants and of prophylactic measures against spread of the disease.—A Supplementary Account of the Dipterous Larvæ feeding upon Molluscs, by D. Keilin, completes a previous list (*Parasitology*, Vol. XI.) of parasitic, [illegible] and saprophytic dipterous larvæ feeding upon molluscs.—The number is concluded with an article on the Nephrocytes of *Pediculus Humanus*, by G. H. F. Nuttall and D. Keilin, which deals with special cell aggregates disseminated in the body cavity of the louse, the function of which was unknown. The excretory function of these cells was demonstrated by a special method of injection of ammonia carmine into the body cavity of lice.—The number contains three portraits obtainable separately of: *Francesco Redi* (1626–1697), *Carolus Linnæus* (1707–1778), and *Carl De Geer* (1720–1778).

New Inventions.

A NEW TRACHEOTOMY TUBE AND FALSE MEMBRANE FORCEPS.

I have designed the tracheotomy tube here illustrated (Fig. 1) with the objects of facilitating cleaning and of preventing the pilot from stopping the child's breathing. Retention of the tube is also facilitated in the case of patients with fat necks.

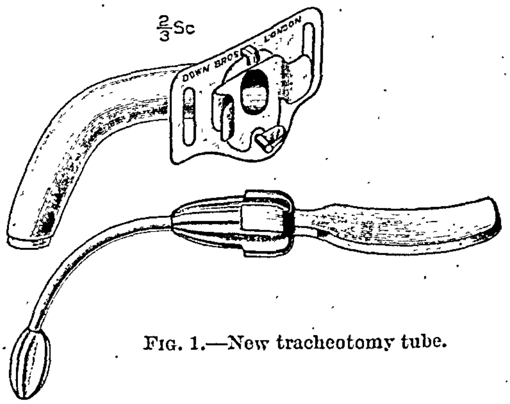


Fig. 1.—New tracheotomy tube.

Compared with the old form of Parker's tube, in the improved instrument the shield is made of stronger gauge silver and quite smooth except for the hook which retains the outer tube. and it has holes only for the outer tube and tapes. The outer tube has a small notch at one side near the front; the tube can be turned round, and as the hook passes through the notch the tube can be removed and properly cleaned. The catch in front of the outer tube, which turns and retains the inner tube, has always been a weak point in the Parker's tube; it was liable to become loose and sometimes came out. The catch is now strengthened. The inner tube is slightly longer to fit the outer tube and has no raised wire loops; these were only necessary on the Parker's tube in order to take the tube out; on my new tube the edges of flange on either side are extended and turn up, and are much easier to clean than the loops. The new pilot has the section of an X, and so leaves four spaces round it, allowing the child to breathe quite easily whilst it is being introduced.

The trachea forceps, which was designed by my late superintendent, Dr. J. McCombie, for withdrawing membrane or inspissated mucus, has been found too thick for going down the trachea of a small child. I have had the instrument made much thinner, as is shown in Fig. 2, and the joint brought nearer the handles. This prevents the blades from locking when in the trachea.

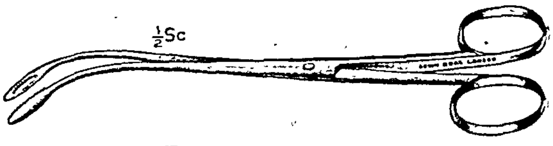


Fig. 2.—Trachea forceps.

Messrs. Down Bros., St. Thomas's-street, S.E., are the manufacturers of the instruments.

A. Cubley, M.R.C.S., L.R.C.P. Lond.
North-Eastern Hospital, Tottenham.

Dr. May's book will be read with interest both by the medical man and the chemical manufacturer; to the former will appeal the chapters dealing with the theory of the action of synthetic drugs, the chemical changes of drugs in the organism, narcotics and general anæsthetics, antiseptics, &c., and to the latter the method of preparation of the different substances. Many references to current and patent literature are included. The author is to be congratulated on having produced a most useful and up-to-date work. It appears at an opportune time and it should be of particular service to those manufacturers of fine chemicals who contemplate extending their activities to meet the home demand for synthetic drugs.

The New Methods of Blood and Urine Chemistry. Second edition. By R. B. H. GRADWOHL, M.D., and A. J. BLAIVAS. London: Henry Kimpton. 1920. Pp. 418. 30s.

THE authors state that they have collected much of the information which has appeared in the journals (mostly American) during the past three or four years. In most cases they have given one method for each test, that one being in their experience the most satisfactory for routine and research work. This frank admission of limitation rather disarms criticism. Otherwise the reviewer would be tempted to draw attention to the omission of many methods which are in common use in European laboratories. The volume is divided into three parts: Technic of Blood Chemistry, Chemical Analysis of Urine, Blood Findings and their Interpretation. It is profusely illustrated and full working details are given of the different tests. A perusal of the book leads to the conclusion that it will be more useful to the medical and chemical specialist on blood and urine than to the general practitioner or student.

AIDS TO OPERATIVE SURGERY.

By H. C. ORRIN, O.B.E., F.R.C.S. Edin. London: Baillière, Tindall and Cox. 1921. Pp. viii. + 236. 6s.

THE teaching of operative surgery can hardly be approached in any other way than by practical demonstrations or by well-illustrated and full printed descriptions. Prolonged experience in teaching and operating, and a natural aptitude for detecting the most essential points in an operation, are necessary preliminaries for the production of an unillustrated synopsis of such a subject. We cannot say that Mr. Orrin has completely succeeded in his task, but he has at least made a praiseworthy attempt to present a succinct epitome of the subject. He is wise in stating "that in no possible way can this little volume be used as a substitute for the classical text-books on the subject."

There are many points which might be modified in any future edition. Very few umbilical herniæ can be dealt with by an incision three inches long. It is certainly not the usual custom to irrigate the bladder with hot water during the enucleation of a prostate; the irrigation is reserved till the enucleation is complete. The Alexander-Adams operation for shortening the round ligaments is neither the only nor the best operation for the cure of retroflexion of the uterus. Halstead's method of approach to the pituitary body by turning upwards the nose is now out of date. Cushing's approach by submucous resection of the nasal septum or Frazier's operation by frontal bone-flap are the alternatives which should be described. War experience has shown the superiority of the frontal skin-flap for restoring the nose. Syme's operation provides no epithelial lining for the nose, which consequently shrinks. The injunction to "render the foot avascular" is impossible to fulfil, though one can easily make the foot bloodless by applying a tourniquet.

The book is well printed, can easily be slipped into the pocket, and should prove useful to the student revising his work after a course of operative surgery.

X RAY DIAGNOSIS.

Die Röntgendiagnostik der Inneren Erkrankungen. By Dr. HERBERT ASSMAN, Professor of Medicine, Leipzig. Leipzig: F. C. W. Vogel. 1921. Pp. 693. M.330.

THE general trend and development of X ray diagnosis in Germany since 1914, as exemplified in Dr. Assman's book, is instructive. The most striking developments would appear to have taken place in the investigation of diseases of the thorax, especially the heart, great vessels, and mediastinum. An outstanding feature of the volume is the free use of excellent reproductions of radiographs in collotype where the finest discrimination is needed, half-tone blocks for others, lucid diagrams, and side-by-side anatomical illustrations where they would help to make the subject more clear. Almost the whole of the book is devoted to the examination of the trunk and head, disorders of the skeleton and limbs occupying less than a hundred pages at the end. Dr. Assman's book is a highly valuable work on the subject of X ray diagnosis; the volume is rather insecurely put together in a paper cover, and its contents deserve a better binding.

A MANUAL OF BACTERIOLOGY, CLINICAL AND APPLIED.

Seventh edition. By R. TANNER HEWLETT, M.D., F.R.C.P., D.P.H. Lond., F.R.M.S., Professor of Bacteriology in the University of London. London: J. and A. Churchill. 1921. Pp. 808. 21s.

THIS work has long ranked among the best of the students' text-books on bacteriology, and the careful revision to which the seventh edition has been subjected ensures that its popularity will be maintained. Several of the chapters have been rewritten and modern work of proved importance has been adequately noticed. In the section on the standardisation of media the question of hydrogen-ion concentration is very clearly described; the chapter on the microscope has been rewritten and the methods of dark-ground illumination are dealt with; the technique of the Wassermann reaction is treated of at some length, the method of McIntosh-Fildes being the one described; and the various modern serological reactions have been incorporated in the appropriate sections. The book is carefully written, well illustrated, and reveals a sense of relative values, all going to make it one of the most readable and convenient of the text-books in this subject.

HUMAN EMBRYOLOGY AND MORPHOLOGY.

Fourth edition. By ARTHUR KEITH, M.D., F.R.S., LL.D., F.R.C.S. London: Edward Arnold. 1921. Pp. 491. 30s.

EIGHT years have elapsed since the last issue of this book, and we rejoice that Sir Arthur Keith has had the inclination and has found the time to bring the present edition up to date. A work by an author of such repute does not call for any criticism when it reaches its fourth edition, and we need only direct attention to certain points about this new issue. It contains 28 chapters compared with 22 in the third edition, and has been brought quite up to date, some parts being rewritten to a large extent. Full justice has been rendered to English writers and investigators, who are not handicapped by their nationality in this book. Mall's estimation of age of embryos is adopted. The account of early embryonic conditions has been extended, particularly from the comparative standpoint, and recent work of Elliot Smith and others has been incorporated in the description of central nervous development. Stress is laid on the developmental details from the evolutionary point of view, and the relation between structure and function is continually shown. The volume is larger, and some 80 new illustrations appear in it. The popularity and success of the previous editions will certainly be extended to this, which ought to be in the hands of every advanced English student of anatomy.

The Pathology of War Nephritis.

DEATH in the first fortnight of acute glomerulo-tubular nephritis is not common, and, as seen in civil practice, acute nephritis is often a complication of some other disease such as scarlet fever or tonsillitis. There has not, therefore, been abundant material for the study of the early histological changes in acute nephritis. The war has made good this deficiency through the epidemic of war nephritis that was observed in the armies in the field; and this disease, which is in all respects a true glomerulo-tubular nephritis, has been particularly convenient for study, since it is at the same time a primary nephritis and a single clinical entity; the cases also were so numerous that it could be studied in the several stages of its course. An article by Prof. K. HERXHEIMER recently published in Germany makes an important contribution[1] to the knowledge of what is there called Feld-nephritis. It is based on his own observations as well as on those of other German pathologists, and due reference is made to work done in this country. The author finds that when death occurs within eight days of the onset of the disease practically no changes that can be recognised by present methods of fixation and staining are visible in the kidneys. The earliest pathological change is found in the endothelial cells of the glomerular tufts, which swell and show slight fatty degeneration; their lumina become empty of red blood corpuscles and filled with a coagulum. Later there is a proliferation of endothelial cells, infiltration with small cells, and, to a slight extent, proliferation of the epithelial cells that form the visceral layer of Bowman's capsule. It would appear that in its earliest manifestation the lesion is limited to occasional loops of glomeruli; soon the lesion involves the whole or greater part of the tuft and affects the great majority of the glomeruli. Towards the end of the third week the epithelial cells of Bowman's capsule proliferate and the characteristic crescent-shaped masses of cells in the intercapsular space are seen; at the same time adhesion may occur between some part of the visceral and parietal layers of the capsule, and exudation of coagulum and migration of cells into the intercapsular space takes place. In this, the subacute stage, granular, hyaline, and fatty changes are observed in the epithelium of the tubules; the cells swell and desquamate, some of the cells lose their nuclei, and there is an increase in the size of the lumen. In the third, or sub-chronic, stage the fibrous connective tissue of the stroma increases, and fibrosis of individual glomeruli takes place. Prof. HERXHEIMER finds that the primary lesion is limited to the capillary loops of the tufts, and he regards the parenchymatous lesions as secondary to the vascular lesions. Having formed this opinion he looked for evidence of capillary damage outside the tufts, but the presence of minute extravasations of blood from the inter-tubular capillaries and small accumulations of cells in their neighbourhood provided unconvincing evidence of such damage.

The microscopical appearances in the glomeruli in war nephritis were described by SHAW DUNN and McNEE[2] in 1917, and though not worked out in the same detail for the different stages of the disease their work covers the ground traversed by HERXHEIMER; in addition, they made a more careful study of the changes in the body outside the kidney. They demonstrated important microscopical lesions in the bronchioles and infundibula of the lungs, which they compared with the lesions of phosgene poisoning. Their observations are of special interest, because they were able to demonstrate capillary changes in the neighbourhood of the pulmonary lesions, as well as in the brain and spleen. They suggested the possibility of miliary embolism as an explanation of the focal capillary damage observed. These observations were confirmed in their main features by TYTLER and RYLE[3] in 1918; these authors regarded the lesions in the lungs and spleen as the most characteristic lesions of the disease in its acute and early stages. They remark that the tissue changes seen in the glomeruli suggest a local inflammatory process affecting the vascular endothelium, and that while the kidney lesions are constant and characteristic they are not specific. These contributions to the study of the histology of war nephritis are in close agreement in observations of fact, and are authoritative pronouncements on the subject. It is established that war nephritis is a true glomerulo-tubular nephritis. Though none of the authors quoted press the view that acute nephritis is primarily an affection of capillary fields, their work lends some support to this theory. In fact, to quote the paradoxical phrase of Dr. P. AMEUILLE—"Néphrites aigues sans néphrite"—it seems conceivable that "acute nephritis" may occur without "nephritis."

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An Apology for Spas.

WE print in another part of this issue a series of articles on continental spas and health resorts, based upon a visit to Savoy and Switzerland by two representative parties of British medical men, the arrangements for the visit having been made by Sir HENRY LUNN with the managers of the resorts and railways concerned. From the glamour of the Alps and the generous hospitality of Swiss and Savoyard it is desirable to disentangle a critical estimate of spas and spa treatment. Although spa treatment is very ancient, most of the baths indeed being already in use in Roman times, the science of balneology is still young, and it has been said with some justice that equipment and technique have advanced far beyond the scientific basis upon which the treatment is based. While this may well be true, the statement would apply equally to modern surgical technique in which the knife, the incision, and the sutures are all marvellously complete and perfect, although the value of the operation may be in dispute. That health resorts heal and baths relieve is quite indubitable, even in the absence of any sufficient scientific explanation, and no one has put this better than a certain Dr. JOSENHAUS in a jeu d'esprit[4] on the discovery of radium in the Wildbad waters, the last stanza of which may be thus rendered roughly in English:—

> At last the learned world has come
> To think the Wildbad cure is real.
> Is this because its waters heal?
> No; they contain some radium.

At some of the spas, at all events, the medical staff is keenly alive to this implication of mere symptomatic treatment. Dr. L. DUVERNAY, of Aix-les-Bains, has recently set out in an able thesis the reasons for thinking that there is a habit of body, aptly expressed by the term arthritism, radically modified by the Aix cure, which therefore does far more than relieve the approached with as much caution as his views on medicine. His thesis that we sleep in order to dream, and his effort to instruct the layman how to analyse his own dreams, must not be regarded as contributions to orthodox psycho-analytical theory or practice.

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[1] Handbuch der ärztlichen Erfahrungen im Weltkriege. Vol. viii., Pathologische Anatomie. Edited by Ludwig Aschoff. 1921.

[2] J. Shaw Dunn and J. W. McNee: Brit. Med. Jour., 1917, ii., 745.

[3] W. H. Tytler and J. A. Ryle: Q. J. Med., 1918, xi., 112.

[4] Quoted in "The Principles and Practice of Medical Hydrology." By R. Fortescue Fox, M.D. University of London Press. 1913.

Repressed Emotions. By ISADOR H. CORIAT, M.D. London: George Allen and Unwin, Ltd. 1921. Pp. 213. 7*s.* 6*d.*

THIS is a popular exposition by the author of "What is Psycho-analysis?" and approximately represents the Freudian view, though the influence of Jung appears occasionally, as shown in Dr. Coriat's attitude regarding the value of the dream. There is some amount of carelessness both in statement and phraseology: that "in the savage there is little or no repression" (p. 79) is opposed to the views of most other workers, and is contradicted by the writer himself on pages 8 and 9. An account of a dream analysis contains the sentence "the analysis released the repressed omnipotence [and] symbolised it like a fairy tale," but even for one familiar with the technical usage of these words it is difficult to guess their meaning. The description (p. 176) of a case of kleptomania reads like an example of simple theft stopped by the old-fashioned method of implanting fear of punishment.

There is plenty of good material in the book, but the exposition of a subject still controversial needs to be handled with more clearness of thought and expression than is shown here.

THE WASSERMANN TEST.

Second edition. By CHARLES F. CRAIG, M.D., M.A., F.A.C.S., Lieut.-Colonel, Medical Corps, United States Army; Director of Laboratories, Army Medical School, Washington. London: Henry Kimpton. 1921. Pp. 278. 25*s.*

THIS volume gives a clear account of the author's method of performing the Wassermann test, incidentally one of the methods authorised for use in the hospitals controlled by the United States Public Health Service. In carrying out the test the hæmolytic power of the complement is standardised as a preliminary. The hæmolytic system consists of human red corpuscles and an anti-human amboceptor prepared from rabbits. In the actual test 2 units of amboceptor and 2 units of complement are used. This necessarily means cutting down the antigen to a relatively small amount, and is contrary to the idea generally favoured in this country, where the most accurate results have been obtained by using a hæmolytic system saturated with amboceptor. This allows of the use of a larger amount of antigen and gives a sharp end-result. The remainder of the volume is mainly concerned with the author's experience of the test and the influence of treatment.

As a monograph on the Wassermann reaction the book is disappointing, and by no means fulfills Colonel Craig's promise to incorporate everything of real value relating to the subject. This is particularly marked as regards British literature; for instance, no mention is made of the important publications of the Medical Research Council on the Reliability of the Wassermann Reaction.

THE SPLEEN AND SOME OF ITS DISEASES.

By Sir BERKELEY MOYNIHAN. Bristol: John Wright and Sons. 1921. Pp. 120. 21*s.*

Sir Berkeley Moynihan has done well to publish in permanent form his *Bradshaw lecture* on the spleen. The lecture at the time of its delivery was recognised as a lucid and learned disquisition on a subject which has given rise to much speculation as well as experimental work. In addition to his skill as an operator Sir Berkeley Moynihan possesses two faculties not always found in general surgeons—a critical faculty which can range over and adjudicate upon a vast amount of material, and an attractive manner of presenting his conclusions. A short chapter on the technique of splenectomy would have been a valuable inclusion; the technique is described in Sir Berkeley Moynihan's book on abdominal operations, but there are several points upon which his views may have changed with increased experience.

The monograph is an admirable summary of modern ideas on a subject of increasing importance, and will find a place on the bookshelf of medical men interested in diseases of the spleen from the medical and pathological as well as the surgical standpoint.

LECTURES ON SURGERY TO NURSES.

By ALAN H. TODD, B.Sc., M.S. Lond., F.R.C.S. Eng., Lecturer and Surgeon to Nursing Staff, Guy's Hospital. London: Edward Arnold. 1920. Pp. 270. 7*s.* 6*d.*

THIS book should be of inestimable value to all nurses anxious for an intelligent understanding of the principles underlying surgical nursing. The author's aim throughout has obviously been to prepare the nurse to become an "intelligent coöperator in everything that is done," realising that much of the surgeon's work can be frustrated in his absence unless those in hourly charge have grasped the fundamental principles of surgery. This is specially true with regard to fractures and dislocations and diseases of the joints and spine, and two excellent chapters on these branches of surgery should do much to increase the interest and understanding of the nurse in her care of these cases. The chief merit of this book lies in the fact that it has been written by a surgeon but from the nursing point of view, and it can be recommended to all nurses in training.

JOURNALS.

IN the *Journal of the Royal Army Medical Corps* for August there is commenced a series of articles on "Malaria in Macedonia," written by the officers of the Malaria Inquiry Laboratory, established at Salonica by the Director of Medical Services, Major-General Sir Maurice Holt. The series opens with a paper on "The Incidence and Ætiology of Malaria in Macedonia," by late Temporary Colonel C. M. Wenyon, who tells us that some 150,000 cases of malaria were reported there in the three years, 1916, 1917, 1918. The epidemic dates from June, 1916, when the force advanced to occupy the low-lying valley of the Struma, to the east of Salonica. All the hill country of Macedonia was malarious, the predominant mosquitoes being, in the low ground *A. maculipennis*, on the high grounds *A. superpictus*. Anti-malarial—i.e., anti-larval—measures could not be taken before the advance which was made into a district swarming with mosquitoes, and in which the malaria-infected inhabitants were nearly all carriers. In 1916 hope was based on quinine prevention, but there were 30,000 cases. The worst cases were sent home, but large numbers of carriers remained in the army. In 1917 much anti-larval work was done; still the unrestricted submarine campaign prevented the removal of the sick, and, partly because of their numerous relapses, 70,000 cases were reported, of which 16,000 in September. In 1918 the year started unfavourably with far more infected and carriers, but the total was 50,000 cases, and numbers decreased after June, because, Colonel Wenyon thinks, 25,000 were sent home through Taranto. This year, too, there was far more individual protection from mosquitoes for the soldier—nets for beds, head nets and gloves, also mosquito-proof wards for the treatment of the infectious sick. Nets must be properly used; Colonel Wenyon saw a patient who had crescents in his blood, and a patch of his bare skin touching his net was simply covered with anopheles. In an extensive, highly malarious area such as this, transiently occupied, protection of the individual men probably does most good. Anti-larval measures cannot go far enough afield to protect against mosquitoes which can travel two miles at is of interest. In the effects of X rays and of radium it is longer still—maybe some weeks.

The committee has established that these powerful searchlights are not less efficient when used with diffusion screens, and it is gratifying to learn that the Association of Kinematograph Manufacturers on its own initiative has given an undertaking to the Minister of Health that its members will not permit the use of open arc lights without filters in their studios. The Committee has accepted this undertaking, but wisely points out that research is needed as to the best type of lamp required.

A CONTROVERSY ON INDUSTRIAL ACCIDENTS.

THE publication in the United States of a *Public Health Bulletin*[1] dealing with the comparison of an eight-hour plant and a ten-hour plant has aroused considerable interest on account of the conclusions drawn from a mass of data carefully collected. Further, the authors have unexpectedly stepped out of their way to attack the conclusions come to in an investigation, made on behalf of the Health of Munition Workers' Committee in this country by Dr. H. M. Vernon,[2] into the causation of industrial accidents. The conclusions arrived at by Dr. Vernon were, briefly, that industrial accidents depend primarily upon industrial risk; in other words, varying speed of production is the factor largely responsible for variations in accident rates. Nevertheless, if the work is so unduly heavy, or so prolonged as to produce over-fatigue, the accident rate rises out of proportion to production, but still the variations in accident rate from hour to hour are in the main governed by variations in output. The American authors considered they had found evidence to justify them in placing greater stress upon the influence of fatigue and less upon risk. Hence the attack. But those who live in glass houses should not throw stones; and immediately the *Bulletin* reached this country, errors were pointed out in these columns vitiating the possibility of relying upon the deductions drawn by these authors, or of accepting the attack on Dr. Vernon as otherwise than unjustified. We pointed out that curves representing the hourly output of all classes of workers were compared with curves representing the hourly occurrence of accidents among the same workers; while data given elsewhere in the *Bulletin* showed that approximately 50 per cent. of the accidents occurred among 34 per cent. of the workers with less than six months' service; "the level of the accident rate varied inversely with the experience of the workers." In other words, output which was mainly contributed to by the 66 per cent. of workers with a service longer than six months—the level of output rate varies directly with the experience of workers—is compared with accidents which are equally contributed to by this 66 per cent. and the 34 per cent. with less than six months' service whose output, being less in absolute amount per man, cannot have materially influenced the general output curve; yet the hourly variations of output among the two groups cannot be expected to have tallied, indeed there is every probability of disagreement.

No attempt to explain this fallacy has been made, and, possibly for this reason, Dr. Vernon has wisely refrained from embarking upon a considered reply. The cudgels have, however, now been taken up in America, and a controversy has appeared in the April number of the *Journal of Industrial Hygiene*[3]; this controversy may have been occupying the full attention of the authors of the *Bulletin*. Here Dr. A. H. Ryan deals at considerable length with the statistical methods employed by the authors. His criticism is keen, but just. He clearly shows that fallacies have crept into the output and accident indices, substantial enough to invalidate the deductions drawn. He holds that "in view of the objections to the output and accident indices, neither can be accepted as valid, either for the plant as a whole, or for a sufficient part of either plant to be truly representative"; and, further, declares the evidence on lost time not to be conclusive, and the comparison between the two plants to be fallacious. Dr. Ryan disclaims being associated with the bulk of the *Bulletin*, and appears to regret that some of his own work, dealing with rhythm in industry, is included in this publication. Mr. P. S. Florence, one of the authors of the *Bulletin*, to whom this stringent criticism was submitted, essays a reply. But it begs the question and is consequently ineffective. He is driven to accept the criticism as well founded, and has to fall back upon being "doubtful whether the refinements which Dr. Ryan suggests would have made any material difference in the conclusions to be drawn." The authors of this *Bulletin*, which has received much notice, would have done well to submit it to much more careful examination before publication. The *Journal of Industrial Hygiene* has done good service in publishing this discussion.

IN DEFENCE OF THE BACILLUS BULGARICUS.

ALTHOUGH Metchnikoff's teaching as to the value of the lactic acid ferment in the large intestine has still many devoted apostles among laymen—especially on the continent—the results obtained and published by medical men who have used preparations of *B. bulgaricus* in their practice have brought little credit on this method of treating intestinal putrefaction. Prof. E. Doumer, of Lille, while he accepted the practical failure of this treatment, was not able to forget that Metchnikoff had to his credit some convincing experiments carried out in vitro. Why, then, did the same experiments inside the human intestine end so differently? His answer,[1] formulated after careful research, is that the bacillus is provided with a nourishing diet in the test tube, while in the intestine he finds himself deprived of all food in the midst of his enemies. Metchnikoff, it seems, had made the mistake of assuming that some starch would survive the action of both ptyalin and diastase, whereas in fact no starch does. Prof. Doumer therefore coats a proportion of starch with paraffin melting at 44°–45° C. Analysis shows that such a mixture provides available starch in the large intestine and the recorded clinical experience tends to indicate that the bacillus is not slow to take advantage of it.

OUTLOOK FOR PHYSICAL RESEARCH.

IMPETUS is being given to physical research in California by an annual grant of £30,000 made by the Institute of Technology for the current expenses of a new laboratory, the equipment of which is being provided by a private donor, at a cost of no less than £60,000. That manufacturers are keenly alive to the benefit accruing to them from physical researches is shown by the participation of the Southern California Edison Company in some of the new activities, for they are bearing the cost of apparatus required for investigations in the transmission of electrical power at high voltages.

Prof. R. A. Millikan has been appointed director of the new institute. A novel feature of the personnel is that Prof. Lorentz of Leiden is to be one of the staff for the winter months, and it is expected that some British experts will be invited to similar temporary appointments. This seems to be an extension of the idea of travelling professorships, and if a galaxy of talent is thus to be made available to the institute far-reaching results may be anticipated. Physical research has an ever-widening range of action and of

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[1] Comparison of an Eight-hour Plant and a Ten-hour Plant. Public Health Bulletin, No. 106. 1920. Washington.

[2] An Investigation of the Factors Concerned in the Causation of Industrial Accidents. H. M. Vernon. Health of Munition Workers' Committee. Memo. 21. 1918. Cd. 9046.

[3] Discussion of Public Health Bulletin, No. 106. By Dr. A. H. Ryan. And Reply by Mr. P. S. Florence. Journal of Industrial Hygiene. April, 1921.

[1] Le Scalpel, August 13th, 1921.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 10, 1921.

The British Association at Edinburgh.

THE British Association met again this week in the city where it had its origin; for the virtual founder of the Association was Sir DAVID BREWSTER (1781–1868), preacher, natural philosopher, and optical discoverer, whose great aim it was to make a permanent organisation with settled establishment, which should not merely come together year by year in a great social reunion, but should give a continuous impulse to every part of the scientific system. The Association met at Edinburgh in 1834 and again in 1850, 1871, and 1892, and Sir EDWARD THORPE in his presidential address on Wednesday evening last indicated some of the aims of his predecessors in the chair and their measure of fulfilment. BREWSTER'S wish to see established in Britain a national institution of resident members devoting themselves wholly to science is still unrealised, although since his time many scientific workers have obtained the place and station in society which he desired for them—respectable and independent—free from the embarrassments of poverty or the temptations of wealth; and the President recalled the claim made for BREWSTER on his death that the improved position of men of science was chiefly due to his exertions and his example. Lord KELVIN, presiding at Edinburgh in 1871, gave expression to the need for experimental research to become an object of national concern, and now in the establishment of the National Physical Laboratory some approach to this ideal may be seen. Industry, too, is beginning to realise that invention depends upon discovery, discovery on research, and research in its turn on training in science, with the result that a Department of Scientific and Industrial Research has come into being, which, while aiding the individual worker, leaves him free to pursue his inquiry as he himself thinks best.

Turning from the general to the special, Sir EDWARD THORPE opened up a question with which all of us are inevitably concerned, whether actively or passively. What is the inner mechanism of the atom? Until this question is answered, much of bio-chemistry must remain on an insecure basis. Although nearly a century since DALTON formulated the atomic theory, it is only within the last few years that our conception of the structure of the atom has become sufficiently precise to be of any service to the chemist. The discovery of the electron, the production of helium in the radio-active disintegration of atoms, the recognition of the existence of isotopes, all these are quite recent discoveries, and with them chemical philosophy has definitely entered on a new phase. One of the most puzzling discrepancies in exact chemistry—namely, the persistently fractional value of the oxygen standard of some atomic weights, while the majority were whole numbers—has recently been cleared up by the ingenuity of Mr. F. W. ASTON, who has shown a number of elements to be in reality mixtures of isotopes. Chlorine has repeatedly given a value of 35·46 and only by an extension of Sir J. J. THOMSON'S method of analysis of positive rays has this gas been compelled to admit that it consists of two isotopes of relative mass 35 and 37. Neon, argon, bromine, boron, silicon are equally complex, while fluorine, iodine, sulphur, phosphorus, and arsenic are apparently simple elements. This discovery has greatly cleared the way to the formulation of an actual physical basis for MENDELÉEFF'S astounding periodic law. Sir EDWARD THORPE made this basis crystal-clear in his address. Electrons appear to be arranged in the atom on the plan that the positive charge is at the centre with the negative electrons around it on the surface of a sphere. Take, he said, the case of the atom of lithium, which is presumed to have one electron in the outer layer. As each element has one more free electron in its atom than its predecessor, glucinum, the element next in succession to lithium will have two electrons in the outer layer of its atom, boron will have three, carbon four, nitrogen five, oxygen six, fluorine seven, and neon eight. As there cannot be more than eight electrons in the outer layer—when more than this the layer of electrons explodes and a new arrangement is formed—the additional electron in the atom of the next element, sodium, cannot find room in the same layer as the other electrons but will go outside, and thus the atom of sodium, like that of lithium, will have one electron in its outer layer. On this disposition depends the atomic number and the valency. Happy are the students to whom the facts of physico-chemistry can now be presented in such reasonable and attractive guise.

To the Section of Physiology Sir WALTER FLETCHER, secretary of the Medical Research Council, gave a short presidential address which those interested in the next stage of medical education will find suggestive (see p. 541). For the story of the rise of physiology, of its early connexions with anatomy, its subordination to specialism, and its later developments into a broad and general science, is a great example of the way in which the work of separate schools and separate individuals can, under an organised university system, become a homogeneous and forceful whole. And in this development and consolidation of the very foundations of modern medicine, the science of our own country has played a leading part, as could be insisted upon appositely in an address to the British Association. Sir WALTER FLETCHER referred to the synthetic tendency of modern physiology because of its practical bearing upon the present development of the subject in the universities and medical schools. There is no doubt that the whole conception of physiology to-day by teachers and by taught is larger and fuller. We all see that a knowledge of the general processes of life and of their interplay is necessary for the comprehension of the pathological problems, large or small, which present themselves, as serious or rare events in hospital wards and casualty rooms, and on everyday occurrences in routine practice. Through physiology and through physiology alone can be learned the guiding principles of treatment, while it is also to physiology that we now look for assistance in the development of preventive medicine made possible by early diagnosis.

POTT'S DISEASE IN ADULTS.

THE recent tragic death of Mr. H. G. Hawker in an aeroplane crash was a reminder that tuberculous disease of the spine is not a very rare condition in the fighting forces. In the *Archives de Médecine Militaires* for May Lieut.-Colonel Courboulès reported from a hospital at Metz 140 cases of Pott's disease under treatment among soldiers and ex-soldiers aged between 20 and 50, during the period from March 1919 to June 1920. He makes a convenient summary of the salient features of the disease. In soldiers it only rarely develops acutely; one man did over two years' service in the artillery without a day's illness, complained of a swelling in the abdomen which, opened 10 days later, was found to be associated with disease of the dorsal vertebræ. Eighteen were correctly diagnosed at once. Many had suffered from lumbago, rheumatism, or sciatica, with no pathognomonic localising symptoms even for as long as 15 months. Rarely they are ascribed to accidental injury. Hernia, chronic appendicitis, ischio-rectal abscess, even gastric ulcer were accused as causes of the condition. The signs are curvature, paraplegia, abscess; pain is rarer than in children, and loss of function comes on more gradually in the adult, whose disease begins most frequently in the lumbar region, which was concerned in over 100 of this series. One case sent in had really a lipoma over the dorsal region and a malignant tumour of pancreas and liver. Cold abscesses (abcès pottiques) existed in 109 cases, mostly lumbar, iliac, or femoral, but two were perineal and two were retro-pharyngeal. Their course was incalculable; one with a femoral fistula also opened into the bronchi, but that was in a child. The characteristic constrained attitude with stiffness of the back, obvious when a patient tries to pick up an object off the floor, helps in diagnosis, which X ray examination facilitates materially. The treatment is rest in bed, extension, and Sayre's plaster jacket. The abscess must be opened by puncture under stringent aseptic precautions. Cure may follow Carrel-Dakin treatment; 12 cases of such recovery are mentioned, but even that may fail. Some recover unexpectedly, the general condition having improved. A cure cannot be ensured under two or three years of immobilisation. There is hope in bone grafting along the sides of the vertebral processes, fusion of which is the natural cure. Mr. Tuffier has even planted a graft from the occipital bone along the cervical spines, but Colonel Courboulès commits himself to no opinion whether surgical treatment brings cure more quickly and more certainly than does immobilisation.

THE CHOICE OF DENTAL ANÆSTHETICS.

THE latest issue[1] of the National Anesthesia Research Society's bulletin, a periodical which bears constant testimony to the enthusiastic pursuit in America and Canada of improvements in anæsthesia, is largely occupied by a paper on dental anæsthetics. The author contrasts the advantages and disadvantages of nitrous oxide and oxygen with analgesia by local injection. He believes that the former is "undoubtedly the superior method in the vast majority of cases." He is, however, at pains to point out that more skill is required of the operator during the anæsthesia of nitrous oxide and oxygen than during the leisurely operating possible with an effective analgesia. We gather that dentists in America concern themselves with the administration of anæsthetics to a greater extent than is usual, at any rate in big towns, in this country. For the writer remarks that it behoves all dentists to "acquaint themselves with the correct methods of administering nitrous-oxide-oxygen." That the present practice is not altogether satisfactory, however, we deduce from the observations of the chairman of the National Dentist Association meeting. He observed that the regrettable accidents of the past were all due to anæsthesia, and that the "surgeon should insist that the anæsthetic be given by a professional anæsthetist and not by an interne or by someone who gives anæsthetics as a side line. We should only trust our anæsthetics to professional anæsthetists for the reason that they are not interested in surgical technique and therefore are not likely to neglect their patients." There are, of course, innumerable occasions when such an ideal arrangement cannot be carried out, and in this country many dental anæsthetics are given by practitioners without special experience. There is a growing tendency to recognise the fact that even these comparatively minor operations involve the patient, as far as the anæsthetic is concerned, in a certain amount of risk. The patient, however, naturally weighs risk against discomfort, and it is probably true that a number of people would greatly prefer to take a minute risk from gas rather than undergo the discomfort of local anæsthesia. The prodigious crunching noise, the anxiety engendered by previous experience or by the recitals of other sufferers, the prospect of swollen gums, these minor but still appreciable ills make "freezing"—as it still appears to be called—unpopular among those who take nitrous oxide well. Doubtless the more complete the anæsthesia, the more satisfactory and painless will be the operator's endeavours. But the last word has not yet been said on a choice in which the public is very keenly interested.

THE REGULATION OF THE REACTION OF THE BLOOD.

AN elaborate communication by Dr. C. Lovatt Evans to the current number of the *Journal of Physiology* describes experiments dealing with the relative parts played by various modes of buffering in the blood in regulating its hydrogen-ion concentration, this concentration being determined by the indicator method described by the author and Dr. H. H. Dale. The term "reaction of the blood" is understood to mean the reaction of the plasma (or serum), as it has been shown that there is no difference between the reaction of blood and that of its plasma under identical conditions. The methods used for the blood of man, goat, and horse are fully described. The view that the reaction of plasma, like that of a bicarbonate solution, is dependent on the ratio $NaHCO_3/CO_2$ is confirmed; it is shown that the actual reactions of the plasma and of a bicarbonate solution of identical bicarbonate content are not identical; the plasma is more acid than the bicarbonate solution at the same CO_2 pressure, the difference being due principally to the sodium chloride present in the plasma. The influence of the proteins of the plasma is very small, and there is no evidence of any buffering action by the proteins. Plasmas from different bloods and of different alkali reserves have CO_2 reaction curves parallel to one another. The carbon dioxide reaction curves for different bloods are not usually parallel with one another; the discrepancies are due to differences in the hæmoglobin content, and in the extent and range of the ionic interchange between corpuscles and plasma (secondary buffering), and to somewhat capricious chemical alterations in the corpuscles on standing, whereby the secondary buffering is liable to modification. The greater the hæmoglobin content (and the lower the alkali reserve of the whole blood) the flatter the reaction curve of the blood tends to become. Although the CO_2-fixing capacity of blood falls off on standing, it is the corpuscles which, at a given pressure of CO_2, are most affected. The reaction of a blood is that of its "true plasma." Owing to the secondary buffering, the reaction of the "true plasma" alters less rapidly than that of separated plasma when the CO_2 pressure is altered. Plasma and blood, like bicarbonate solutions, are at the same CO_2 pressure more alkaline at higher temperatures, owing to the reduced solupainful manifestations of rheumatoid disease A course of spa treatment may modify the terrain to such an extent that the body recovers its equilibrium And to the patient this equilibrium is the essence of health It has been contended again with some show of justice that the unsuccessful results of spa treatment are not reported In a country village the doctor s failures go about the only street on crutches, the failures of spa treatment, like those of fashionable quacks, are scattered far and wide and have no means of speaking with a common voice Still in the long run it must be on actual concrete results that success depends, as may be seen from the fact that within the larger resorts there are always smaller units which enjoy continuous patronage while success waxes or wanes around them, and this success must depend on a good report handed on from patient to patient by word of mouth A frescoed notice in an Upper Engadine bath runs

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[1] Current Research in Anesthesia and Analgesia, 1921, Bulletin No. 13.

The scientific individual adaptation of the prescription increases the efficiency of the cure uncommonly and several Engadine resorts have scientific workers of university standard among the practising doctors At St Moritz Bad Dr S HEDIGER is working out the effect of baths upon the volume of the pulse, using the sphygmovolumeter designed under Prof O VERAGUTH at the Zurich Institute for Physical Therapy At Tarasp Dr E LENZ who lectures on pharmacology at Berne has shown by exact observation that a week in a subalpine climate may act precisely like a digitalis cure

Health resorts have been known to cry up their own wares and decry those of others but there need we think, be no jealousy as between spa and spa There is a mass of relievable chronic ill health which does not necessarily show on any monthly mortality return, and which yet reduces in large measure the efficiency and happiness of the community Much of this can be mitigated or relieved by spa treatment, and there must be resorts for many different tastes Some undoubtedly possess such wealth of natural advantage that it is hardly human to expect an equally high standard of art others less favoured by Nature have built up a substantial and sufficient reputation by performing well all the adjuvants of treatment It may be recalled that the mere climate of the Black Forest in which the late OTTO WALTHER made the name of Nordrach world famous has little enough to recommend it As between home and abroad a little competition is good for both spa and patient, and it is open to our own resorts to cater for the outlander just as they do for us The captain of the Syrian host in lauding the virtues of his own home waters over the Jordan apparently was not speaking from actual personal experience of them We can hardly bring to the Welsh or Yorkshire uplands the blue sky and pellucid air of the south, yet the Aix massage, the Plombières douche, or the Nauheim bubbly bath may be equally effective wherever they are individually and skilfully applied

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A NEW HOSPITAL AT COLNE —On Sept 3rd Sir William P Hartley of Southport laid the foundation stone of the new hospital which he and Lady Hartley have presented to their native town of Colne Some years ago Sir William Hartley gave to the town a cottage hospital and the Hartley Homes in which aged natives of the town live rent free The new hospital is arranged for 50 patients and stands in grounds covering over four acres Sir William Hartley said the financial position of the hospital was assured by the adoption of a scheme of weekly contributions by the workpeople in addition to annual subscriptions Mr Wilson Hey F R C S, of Manchester also a native of Colne opened the subscription list with a gift of 100 guineas

Annotations.

Ne quid nimis

LIGHTING IN KINEMA STUDIOS

THE effect of ultra violet radiation on the eyes has interested ophthalmologists for many years, it was discussed at the International Congress of Medicine in 1913 and papers on the subject have appeared at intervals since Now the matter has again come into prominence owing to the results of the use of powerful arc lamps of American make in British kinematograph studios during last year Some of the actors and actresses developed a form of conjunctivitis after working in this intense light, and the matter was referred by the Minister of Health to the Committee on the Causes and Prevention of Blindness This committee has now issued an interim report

Each division of the spectrum is associated with certain characteristic effects—radiant heat with the infra red, light with the visible part and chemical effects with the ultra violet—but the visible part has thermal and chemical properties too as well as that of light Radiant heat induces erythema of the skin, which reacts and thereby protects itself by sweating The moist eyeball is similarly protected and the fluid media of the eye act as an absorbent screen Heat rays seldom reach the retina although they are refracted in the eye exactly as are light rays They do reach the lens when the eye is subjected to prolonged exposure, cataract in glass blowers is sufficient confirmation of this Visible rays in excess induce another protective measure—blepharospasm which is a characteristic feature of the typical albinotic facies The kinema actress however must usually voluntarily dispense with this protection, so many emotions are associated with sympathetic nerve stimulation and induce a wide palpebral aperture The most familiar protective result is a contracted pupil and the ocular pain complained of probably results from stimulation of sensory nerve endings in the iris

Dazzling is an interesting if distressing phenomenon Its usual cause is a corneal or lenticular opacity which scatters instead of refracting the rays of light But the normal cornea is not quite transparent and some diffusion occurs in the eye with ordinary illumination Under conditions of excessive illumination this increased diffusion will cause dazzling Excessive light also may enter the eye through less transparent structures such as the iris Indeed the position of the normal man in relation to intense light is that of the albino in relation to ordinary light Erythropsia is associated with a large pupil and with aphakia It is due to the visible rays, but the ultra violet rays if not essential to its production materially assist It is a common accompaniment of snow dazzling, and light reflected from snow is rich in ultra violet rays The lens absorbs ultra violet rays and it also converts them into waves of greater wave length, producing the phenomenon of fluorescence of the lens A large pupil is a sign of sympathetic stimulation and in the business of acting must be an almost habitual occurrence Erythropsia should be a familiar after effect of kinema acting in intense light, it might almost be taken as an index of the emotionalism of individual actors and actresses

The symptoms attributed to the intense lights used for the production of films are exactly those of snow blindness and electric ophthalmia and like erythema of the skin after exposure to unusual amounts of sunlight are due to the actinic or ultra violet rays After a latent period of half or one day follow redness of the lids injection and chemosis of the conjunctiva, photophobia, and pain Erosions of the cornea have been described after exposure to light from the arc used in electric welding and stress is usually laid on contraction of the pupils This is not due however, to the stimulus of light, for congestion miosis is common in all corneal and conjunctival inflammations The symptoms pass off in a few days The latent period animals. The chief medical officers, Dr. Marshall and Dr. S. Vassallo, will have the assistance of two junior colleagues, two veterinary surgeons, and a secretary, and the object of the mission is to carry out treatment of infected cases by the serum method, with such experimental variations in technique and general principles as may suggest themselves, and to make general observations on the pathology of the condition, with a view to prevention and immunisation in man and animals. As the expedition is to be organised on such a broad basis, we would suggest that attention be also paid to the action of trypanocidal drugs, such as the organic compounds of antimony, and to the remarkable new compound known as Bayer 205. Mayer and Zeiss[2] have shown that in experimental animals this drug has a direct action upon the trypanosome, whether given subcutaneously, intravenously, or into the stomach. They have also shown that the drug is comparatively non-toxic, and that it exerts a prophylactic as well as a curative action, though in vitro it exhibits no marked predilection for the trypanosome. It is claimed that this drug far excels all known trypanosome remedies, for it confers a protection against fresh infection which lasts for months. We understand that these somewhat astounding results are now being confirmed in this country, and that the minimal lethal dose is perhaps more than one hundred times greater than the therapeutic dose. It may be that upon these lines ultimate success will be attained, and it is perhaps in this direction that the new sleeping sickness commission will ultimately move. A concerted investigation will certainly stimulate fresh interest in this terrible scourge of Africa, and we wish the proposed expedition every success in its labours.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments have been made:—Surg. Comdr. J. S. Austin to the *Caroline*. Surg. Lieut. W. J. McB. Allan to the *Dolphin*.

Surg. Lieut. A. C. Anderson to be Surg. Lieut.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. J. B. Wilson retires on ret. pay.

Maj. W. Byam retires, receiving a gratuity.

Capt. J. E. Brooks is secd. for service under the Colonial Office.

Capt. A. R. F. Clarke is secd. for service with the Egyptian Army.

TERRITORIAL FORCE.

Capt. W. Barclay to be local Maj. whilst specially empld.

Capt. H. F. Humphreys to be Maj.

Lieut.-Col. J. McKie resigns his commn., and retains the rank of Lieut.-Col., with permission to wear the prescribed uniform.

Maj. R. B. Carslaw resigns his commn., and retains the rank of Maj.

Capt. J. W. Anderson resigns his commn., and retains the rank of Capt.

Capt. C. H. A. Alderton (late R.A.M.C.) to be Lieut.. and relinquishes the rank of Capt.

Capt. J. B. Bate and Capt. J. A. Cooke, having attained the age limit, are retired, and are granted the rank of Maj.

Capt. J. K. Lund to be Maj.

Capts. A. D. Low (late R.A.M.C.) and D. O. Macdonald (late R.A.M.C., Spec. Res.) to be Capts.

J. S. Pegum (late Unattached List, T.F., O.T.C.) to be Lieut.

Capt. R. A. Quinn (late R.A.M.C.) to be Lieut., and relinquishes the rank of Capt.

2nd N. Gen. Hosp.—Capt. A. L. Whitehead, having attained the age limit, is retired, and is granted the rank of Maj., with permission to wear the prescribed uniform.

1st W. Gen. Hosp.—Capt. H. Armstrong, having attained the age limit, is retired, and retains the rank of Capt.

ROYAL AIR FORCE.

Flight Lieut. H. J. Swan relinquishes his temporary commission on ceasing to be employed, and is permitted to retain the rank of Capt.

ALPINE AND SUBALPINE CLIMATIC TREATMENT.

I.—THE PLACE OF ALPINE SPAS IN MEDICINE.

By E. Bosdin Leech, M.D. Camb., F.R.C.P. Lond.,

HONORARY PHYSICIAN, MANCHESTER ROYAL INFIRMARY.

Switzerland abounds in spas; there are said to be 108 health resorts in this small country. When considering that small section of these which is visited by British patients, it is fair to remember the existence of the others. The Swiss spas correspond, so far as their waters are concerned, to those of the surrounding countries, and the medical officers of the spas of Switzerland only follow the suit of their colleagues in other countries when they recommend their own spas for nearly every type of illness. It is therefore essential in choosing a spa to sift the special from the general and to recognise that a place is not made by the exact amount of salt in its waters.

Two Great Assets of the Alps.

The Swiss spas possess, in varying degrees, two great characteristics, and it may be said safely two great assets, which stamp them and which cannot be neglected in estimating their value; whatever advantages accrue from the constituents of the waters, these are present in addition. One of these is altitude. Switzerland begins where other countries leave off. Baden-les-Bains (to be distinguished from Baden-Baden in Germany and Baden in Austria) lies at 1250 feet; St. Moritz, the highest, at nearly 6000 feet. We may choose a spa for its waters or its establishments, but a stay has only to be made at Tarasp, St. Moritz, or Montana, to realise what an asset is the freshness and sunshine of the mountain air. The advantage of high altitudes for tuberculous cases is proved by the records of Montana, Leysin, Arosa, and Davos; the advantage of high altitudes for other diseases is not so well recognised, but is present nevertheless for many of these. The other great claim of Swiss spas on the attention of the world is the beauty of the surroundings; the special beauty of what may be called the Swiss mountain type cannot fail to react favourably whether like hospitable Lucerne on the tourist or restful Pontresina on the invalid. This asset of scenery cannot be left out of count.

Any plan adopted would fail to place even the important resorts into exact groups, but the following rather rough classification will be helpful. The spas may be divided into: 1. Those which depend largely on their waters. 2. Climatic resorts (*a*) for tuberculous cases, (*b*) summer resorts, (*c*) winter resorts. The first class is mainly considered here, but a few points may be mentioned with regard to the others. Tuberculous patients should be sent only to those centres where the treatment of tubercle is paramount, and non-tuberculous patients should avoid places where tubercle is admitted, especially those places which, professedly simple health resorts, admit convalescent or "healed" tuberculous cases. On the one hand, phthisical patients are liable to relax the necessary discipline when they are in sports or tourist centres, and on the other hand compulsory disinfection of rooms is only carried out where the presence of tubercle is officially recognised.

General Character of the Spas.

Sanatoriums in the tuberculosis centres are thick on the ground and usually are well furnished and well managed. There are some institutions in non-tuberculosis centres for the exact diagnosis and treatment of digestive and metabolic diseases; the Chantarella at St. Moritz is an excellent example of these. Practically all the spas have a summer season only, early June to late September; only some of the upland places as Pontresina and St. Moritz have both summer and winter seasons, the former contemporaneous with the tourist season, the latter with that of winter sports. The sanatoriums cater for patients the application The whole problem of available power for the service of man is a question of the possible mode of transformation of the various forms of energy Physical research has shown the laws which govern these transformations but the new knowledge arising out of radio active and associated problems has pointed to the indisputable fact that within the atoms a vast source of energy exists The question that confronts the physicist to day is whether this source of energy may be made available Only a comparatively minute fraction of the atoms liberate any of their energy spontaneously, these being the radio active ones The probability of releasing energy on a large scale from the atoms which are the bricks of the structure we call the world, is difficult to estimate, but atomic studies are a necessary precursor to it Medical interest in physical research has received a great stimulus as electricity and the many forms of radiation become more and more wielded in its service

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[2] Arch. f. Schiffs u. Trop. Hyg., 1920, xxiv., No. 9, 257–294.

It is impossible to read of the many benefactions to research in all its forms in America without some regrets that these are such seldom events in this country Here the academic world is not at the present time getting the number of men it should to devote themselves to pure research Should this state of affairs continue it will be a bad day for physical research, and the British school of physicists will hardly maintain its proud record The need is not so much for institutes since excellent laboratories exist throughout the country, what is wanted is facilities whereby men can carry out researches after qualification and before taking up senior appointments which carry a livelihood with them.

OCULAR REACTIONS IN ANAPHYLAXIS

RECENT experiments have shown to what an extraordinary extent the excitability of the smooth muscle of the uterus intestine, blood vessels, and lungs can be increased in guinea pigs sensitised by anaphylaxis R Kodama[1] investigated the smooth muscle of the eyeball and its surroundings in guinea pigs sensitised by the injection of 0 01 c cm and in other experiments by injecting 2 5 c cm of horse serum under the skin The anaphylactic sensibility was after a few weeks produced by dropping the same serum into the conjunctiva, or by intra orbital, intravenous, or subcutaneous injection control experiments being made on non sensitised guinea pigs The palpebral fissure and pupil were accurately measured In both normal and sensitised animals the application of horse serum to the conjunctiva caused at once a dilatation of the palpebral fissure and pupil followed by narrowing of both In sensitised animals the reaction was both quicker and more marked The primary dilatation was due to the stimulation of the smooth elevator fibres of the eyelids and the dilator of the iris The secondary narrowing of the palpebral fissure and iris is due to two factors—decrease of the tonus of the tarsal muscle and dilator iridis and contraction of the sphincter iridis and congestion of blood The primary stimulation of the smooth muscle of the eyelids and dilator iridis requires only a very small dose of the anaphylactic poison, whilst the sphincter pupillæ is acted on later and is brought into action with more difficulty These reactions of the smooth muscles of the guinea pig seem to show that the terminations of the sympathetic nerve as well as those of the oculo motorius are affected by the anaphylactic state Injection of horse serum into the orbital cavity, as well as intravenous injection both in normal and sensitised animals caused increased secretion of the lacrymal and Harderian glands as well as vaso motor disturbances and sometimes hæmorrhage from the epibulbar and retinal vessels In anaphylactic death there was a sudden contraction of the pupil All the reactions occurred equally whether normal horse serum was used or serum that had been heated for some time at 56° C

THE INFLUENCE OF ARSENICAL PREPARATIONS ON CUTANEOUS TESTS

ARSENIC has a selective action upon the skin in a number of ways not yet clearly understood Dr Albert Strickler[1] professor of dermatology and syphilology at the Temple University Philadelphia has carried out a series of investigations to determine the influence of various arsenical preparations on the luetin Pirquet and anaphylactic food tests The influence of a repetition of the luetin test was first examined without any arsenical preparation being used Two Wassermann tests were made on each patient both of which had to be negative before the cases were regarded as eligible In the repetition of the luetin test positive reactions were obtained in three out of 14 cases Dr Strickler suggests that the positive reaction was due to sensitisation of the skin produced by the first inoculation of dead spirochætes The influence of intravenous injection of arsphenamin on the luetin test was then examined in 17 patients suffering from various skin affections two negative Wassermann tests as in the first series having first been obtained The patients were given from two to five injections of 0 4 g before the luetin test was repeated in each case Nine of the patients gave a positive luetin test on repetition and eight responded negatively Intravenous injection of cacodylate of soda acted in the same manner as arsphenamin only more feebly A study of the influence of the intravenous injection of arsphenamin on the Pirquet test showed that arsphenamin acted on the tuberculin test in the same way as it had acted on the luetin test as in three out of ten cases a previously negative Pirquet test became positive On the other hand, the anaphylactic food test made by either the endermic or scratch method did not seem to be influenced by the intravenous administration of either arsphenamin or cacodylate

SILVER SALVARSAN

Dr H E Michelson and Dr David M Siperstein[2] of the University of Minnesota discuss the therapeutic value of silver salvarsan or silver arsphenamin as it is known in America The drug was suggested by Ehrlich shortly before his death and first used clinically by Kolle in March 1918 since when it has enjoyed a considerable vogue in Germany, but does not appear to have been used to any extent in this country or in the United States From a study of the literature and their personal experience of a limited number of cases the writers conclude that silver salvarsan is an efficient spirochæticide which has a pronounced effect upon the visible lesions of syphilis A distinct advantage is the absence of the characteristic and often nauseating garlic like odour noticed by the patient when receiving other forms of salvarsan intravenously The effect of silver salvarsan on the Wassermann reaction is variable As a rule, however in recent syphilis a positive reaction becomes negative after the first course of from six to ten injections of silver salvarsan Authorities differ considerably as to the optimum dosage An initial dose of from 0 05 to 0 1 g for a person of average weight is best with a routine dose of from 0 2 to 0 25 g The following technique is recommended by the writers Dissolve the necessary dose in 10 c cm of sterile distilled water draw into a 20 c cm Luer syringe, puncture the vein aspirate about 10 c cm of blood and re inject the entire solution slowly The interval between the injections should vary from four to seven days and the number of doses in a series varies considerably There is apparently no reaction peculiar to silver salvarsan which has not been noticed with any of the other salvarsan preparation No authentic case of argyria has been reported Immediate reactions are about the same as with the other forms of salvarsan, but it is too early to speak with certainty of remote dangers

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[1] Jour of Infectious Diseases vol xxviii 1921

[1] Archives of Dermatology and Syphilology Aug [illegible] 1921

[2] Ibid

September, but the hotels in St. Moritz Dorf are open the whole year.

Pontresina, 5000 feet, not far from St. Moritz, is a health resort of the first order which owes its pre-eminence to the pure invigorating air and beautiful surroundings. It possesses no special waters, but is an ideal place in summer for convalescence or for an after-cure. The opportunities for winter sport are good and in this season it is likely to be frequented much by English visitors. Consumptives are not catered for.

Montana, about 4800 feet, lying above Sierre in the Rhone valley, on the open hillside and with a magnificent view, is becoming more and more a centre for tuberculosis. The proportion of English patients, who centre round the Palace Hotel, is a big one. Opportunity for the milder exercises, suitable for consumptives, is provided without the temptations of a recognised sports centre.

Arosa, 6000 feet, situated in a basin in the mountains of the Grisons canton, and thus effectively protected from winds, is a leading resort for tuberculosis. Sports, as at Montana, are within limits which are not likely to lead patients away to harm. The treatment of tubercle is taken wholeheartedly and the medical fittings of many of the sanatoriums are very good.

Davos, 5200 feet, in the Grisons, in a broad, smiling valley, is the oldest of tuberculosis centres. It possesses a great number of sanatoriums. One may mention the magnificent and well-managed sanatorium, the Schatzalp, and its kindly director, Dr. E. Neumann, and one may mention, too, with sadness the fine Queen Alexandra Sanatorium for persons of small means, restricted to English-speaking nationalities. Everything there is ready for further use, but it has been closed since the early part of the war and cannot be reopened for want of funds. Both these institutions lie well above the town. Davos is a centre for winter sports; there is a fairly large English population here.

Aix-les-Bains, Haute-Savoie, France.—This town possesses hot sulphur springs (113° F.). The baths are numerous and well-fitted. The renowned Aix douche involves simultaneous douching and massage and does not fail to quicken the circulation in the affected part. The surrounding country is beautiful with its mountains and lakes, and is historically interesting. The hotels are good; the casino and theatre help to make Aix, as is well recognised, one of the most typical and successful of continental spas.

II.—SWITZERLAND AND "NERVES."

BY S. A. KINNIER WILSON, M.D. EDIN., F.R.C.P.,

JUNIOR NEUROLOGIST, KING'S COLLEGE HOSPITAL.

PHYSICIANS, according to *Mr. Punch*, are divisible into two classes only—those who "run" their patients, and those whose patients "run" them. We all have encountered the type of patient, not exactly a rara avis, who meets every suggestion for treatment with a qualifying "but," and dominates her entourage, physician included, from her bed. Endowed with une faiblesse herculéenne she exhausts and annoys everyone except herself. In the bad old days before the Entente, an Englishman was once defined as "un monsieur qui gêne les autres chez lui, mais qui ne se gêne pas chez les autres," and, mutatis mutandis, the same is largely true of this type of patient in relation to his or her medical attendant. A positive nuisance such people may become, and that they should sometimes be cordially if secretly consigned to another place of residence need not occasion surprise. In contrast stands out the patient of the clinging type, who depends for sustenance on the mental and physical vitality of others, and who, parasite-like, digests what someone else eats. Both types are in reality "running" their doctor, and sometimes not much less than a mental earthquake is required to get them to see themselves as others see them. But the physician, properly so called, manages his patients as well as treats them: his savoir faire enables him to praise or blame, caution or encourage, accept or reject, not indiscriminately but with knowledge. We should cut a sorry figure were we to rack our brains for a convenient sedative or tonic for the love-sick maiden and fail to see the little god laughing at our discomfiture as he sits at the foot of the bed, or exhibit our favourite hypnotic for the city man's insomnia without taking the trouble to learn that he has a "deal" on, which may make or mar him for years.

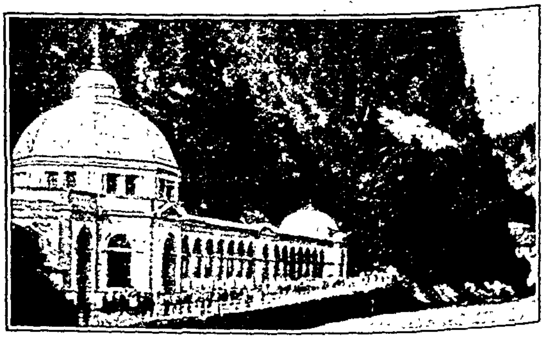
SUBALPINE CLIMATIC STATION.

Vitznau, a typical subalpine resort on the Lake of Lucerne, with the slopes of the Rigi behind.

THE HIGH ALPS.

General lie of the baths and health resorts of the Upper Engadine. St. Moritz Dorf above, St. Moritz Bad below, the lake between.

TYPICAL BATHS.



The pump-room and riverside promenade at Tarasp Vulpera in the Lower Engadine.

bility of carbon dioxide. In the same number of the *Journal* Dr. J. S. Haldane records attempts to produce an acidosis in man and to study the corresponding symptoms. He found that ingestion of ammonium chloride in man causes marked and prolonged acidosis. The symptoms include fall in the alveolar CO_2 and in the blood's CO_2 capacity, and increased excretion of acid, ammonia, and phosphates. This is probably due to the conversion of part of the ammonia into urea, thus freeing the acid which has been combined with it. The depression of alveolar CO_2 below a certain value is roughly proportional to the rate of excretion of acid plus ammonia. The ratio of acid to ammonia in the urine depends on the amount of phosphates available for excretion. This amount falls during acidosis.

THE REFRACTORY IRIS.

THE Vienna School of Ophthalmology recently celebrated the seventieth birthday of Prof. Ernst Fuchs in a special number of the medical journal.[1] Among the numerous articles on ophthalmic subjects is one purporting to answer a question which must often have puzzled those who do refraction work. Why is it that the action of homatropine as a mydriatic, though entirely satisfactory in the great majority of cases, is in a few uncertain? The answer suggested is that in the eyes of certain people the anterior surface of the iris is more or less devoid of the crypts that are normally present, that in these cases the surface is comparatively smooth, and further, that these exceptional irides are exclusively found in brown eyes. This formation of the iris, though it cannot prevent the absorption of atropine, may partially or in exceptional cases completely prevent the absorption of homatropine. Dr. G. Guist, the writer of the article, found that in 24 out of 9500 patients homatropine completely failed to paralyse the pupil, whereas atropine succeeded. Whether or not the reason suggested by him is the true one should be easily ascertainable if the attention of a sufficient number of workers at refraction is directed to the subject. Paralysis of the pupil of course is not the same thing as paralysis of the accommodation, but the two conditions are intimately connected. If the explanation offered is correct, stubbornness to homatropine should be far commoner among negroes than among white people, and, so far as is known, this appears to be the case. In confirmation of his theory the author cites three cases of heterochromia in which the blue iris was easily paralysed by homatropine, whereas the brown one remained resistant, or nearly so, to the drug.

KERATOMALACIA IN RATS.

EVERY physician knows the importance of an appropriate and adequate diet in certain diseases of the eyes and eyelids, and the study of deficiency diseases in recent times has shown an intimate connexion between a lack or want of vitamin A in the food and the occurrence of certain nutritive disorders of the eyeball. Observations in this connexion have been made by Knapp, Falta and Noeggerath, and T. B. Osborne and L. B. Mendel. The last-named workers have extended their observations,[2] and find in their feeding experiments on young rats that these changes in the eyeball—keratomalacia, xerophthalmia—occur *only* in the absence of vitamin A in the diet. Among 1000 rats, those fed on a diet free from vitamin A showed these pathological eye phenomena, whilst of other rats fed so as to be but poorly nourished, on food containing vitamin A, not a single animal showed keratomalacia. That this condition is not the consequence of simple malnutrition is further shown by the fact that the eye symptoms usually begin before there is a decrease in body weight. In 61 cases, 33 animals showed the phenomenon before there was any loss of body weight, 15 before the loss of body weight reached 10–20 g., and 13 before the body weight loss reached 20–30 g. A daily addition of 0·1 g. of butter fat or vegetable oil (extract of plants, grass, alfalfa, spinach), caused the diseased state of the eye to disappear in two weeks, and a local improvement of the condition in cases where death could not be prevented. Isabel M. Wason has determined the pathological histology and bacteriological condition of some of these cases of keratomalacia. In all there was hyalinisation or necrosis of the outer layers of the corneal epithelium, œdema and infiltration of the epithelium and stroma, and proliferation of the blood-vessels and fibroblasts. In advanced cases the anterior chamber and occasionally the posterior chamber of the eye were involved. Staphylococci, streptococci and pneumococci, and pseudo-diphtheritic bacilli, or "diphtheroids," were found in the conjunctiva. But, so far, there is no explanation as to how the absence of vitamin A in the diet brings about such localised and specific changes in the superficial structures of the eyeball.

THE TREATMENT OF SLEEPING SICKNESS.

THE serum treatment of trypanosomiasis is based upon similar work in syphilis of the central nervous system. Although this line of treatment was received with considerable enthusiasm some six or seven years ago, it is now generally admitted that salvarsanised serum exerts little or no action upon syphilitic lesions of this specialised tissue. The intrathecal injection of salvarsanised serum in trypanosomiasis was originally proposed by Andrew Balfour in 1913, and was tried by R. A. L. Van Someren in Uganda on a small scale with inconclusive results. To the *Deutsche med. Woch.* (1914, xl., p. 203) Reichenow contributed an account of inconclusive results in a considerable number of cases treated by this method in the German Cameroons; from private sources we learn that this form of treatment has also been given a trial on the Congo. Dr. C. H. Marshall has published some remarkable results; 52 natives and one European under his care were apparently cured of their infection by the intrathecal injection of varying quantities—from 1 to 10 c.cm.—of their own salvarsanised serum. These results were summarised in a paper read before the Royal Society of Tropical Medicine and Hygiene on May 20th, 1921, when an interesting discussion followed his paper. The advocates of this method of treatment are convinced that the presence of trypanosomes in the cerebro-spinal fluid is the main factor in the production of the sleeping sickness state, and that by the introduction of the salvarsanised serum into the spinal canal the parasites can be destroyed. They do not claim that salvarsan or its derivatives exercise any special trypanolytic action, but that such action is possessed by the serum abstracted from the patient's blood three hours after an injection of 0·6 g. of neokharsivan.

The assumption that trypanosomes are invariably present at some time or other in the cerebrospinal fluid is by no means generally accepted; their appearance in this situation may be entirely fortuitous. Stevenson has demonstrated to the Royal Society of Tropical Medicine and Hygiene these bodies lying outside the blood-vessels, in sections of the cerebral cortex and other organs of experimental animals. Very recently Clapier[1] has found them in large numbers in hydrocele fluid (in this instance it was not claimed that *Trypanosoma gambiense* was the cause of the condition, as these bodies may possibly invade and multiply in any collection of serous fluid). The arguments in favour of a serum treatment of trypanosomiasis have been ably put forward by Prof. J. W. H. Eyre and Dr. Marshall, and it is now proposed to apply this method on a much extended scale. The Colonial Office has approved of the proposals made by a recently formed body—The Tropical Disease Prevention Association—to send a special mission, at an outlay of £50,000, to investigate the serum treatment of trypanosomiasis in man and

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[1] Wien. med. Wochenschr., June 11th.

[2] Journ. of the American Med. Assoc., 1921, lxxvi., 905.

[1] Bull. Soc. Path. Exot., July 13th, 1921.

Rest and Change.

Of course, when we have the wit to see that our inventiveness in therapy is beginning to run dry we can always counsel a rest and a change, and if we can do this with the air of the pundit the suggestion may be hailed with acclamation. But let us beware of facility herein. It scarcely serves to recommend a long sea voyage for our neurasthenic patient, only to be told that he has followed the sea for years, or to enjoin the depths of the country to another in whose hair hayseed can almost be seen. Rest is indeed change of occupation; otherwise how can we explain the rejuvenating effect on the "t.b.m."[1] of the Ziegfeld Follies at midnight, on a roof garden in New York? Some folk like crowds and are refreshed thereby, witness the popularity of visits to the metropolis by those who live in the country and need a holiday. Seaside people go inland, while town-dwellers rush to the sea. Each one, in short, wishes a specific antidote for his particular variety of out-of-sorts-ness, and the finding of this antidote is for the physician in many instances. Marion Crawford has said somewhere that for the sensualist there is Aix in Savoy and for the sybarite Wiesbaden; for the American there is every conceivable kind of Bethesda at a hundred different "Springs" in God's own country, but for the white in India, whatever his ailment, there are only the "hills." Well, there are hills at home too, and hills nearer home for the Londoner than the Himalayas. The man whose diurnal routine consists, largely, of a crowded rush amid a jostling mass of humanity flowing at 9.30 and ebbing at 5.30, and who is not deaf to the call in his heart's core, can be reminded of

> "The silence that is in the starry sky,
> The sleep that is among the lonely hills,"

and can in such an environment find time to readjust his values and learn there are other things in life than the clicking of tape machines.

And yet much depends on the make-up of the individual. One man's meat is another man's ptomaine. A scramble over the crags and through the bogs of Glen Sannox may be life-giving to one, and half-kill another. Ill-balanced enthusiasm for the long-looked-for holiday may result in one's going away for a change and having to come back for the rest. Caelum, non animum, mutant qui trans mare currunt. To send the claustrophobic to a shut-in valley, however delectable otherwise, and the agoraphobic to the moors and wide prospects of the uplands, is to court disaster; what is fascinating to the one may be appalling to the other.

Appropriate Choice a Fine Art.

Thus the choosing of a suitable holiday for our neurasthenic patients, an appropriate change of scene and occupation, is indeed a fine art. The individual has, in a sense, to be prepared if he is to obtain the maximum benefit from the change that is advised, and quiet counsel beforehand may prove of equal value to the actual break that is made in the tired life. A man may lose his taste for Nature, or he may, from a certain attitude of mind, fail to see and to assimilate the beauties that surround him. It was said of Huxley, I believe, that

> "Primroses by the river's brim
> Dicotyledons were to him,
> And they were nothing more,"

and if we have lost the child's gift of wonder we are in a bad way. We may be so accustomed to these very wonders of Nature that we never hear the waves beating on the shore, the ripples lapping in the reeds, never feel the winds or see the clouds for ever going over us. Yet to know once more that

> ". . . . . there, among the flowers and grasses,
> Only the mightier movement sounds and passes;
> Only winds and rivers,
> Life and death."

is to feel an uplift of mind and body which is worth all else put together.

When, then, we are asked as physicians to advise in the matter of recuperation and reintegration by recourse to a thorough change and genuine rest, it behoves us to consider the individual patient, his likes and dislikes, his present manner of living and working, his capacity for appreciation, his ability to absorb and put to use the effects of externals on him. And, when we have appraised the different factors, we must be decisive in our conclusion. We must know the very place for him, we ought and should be able, further, to speak from some personal experience of what we recommend.

As a Scot, I should be a sorry specimen of the breed were I to belittle the claims of the north, or attempt to deny that I seem to breathe a larger and sneller air once I cross the Tweed at Berwick. In our perfervid praise of the country that bore us we sing of other, benighted, scenes that

> "None of them can possibly surpass
> *Our* weather and *our* heather and *our* sea,"

we speak of *our* Scottish bluebells, as though all these were unknown in other less favoured regions. Yet the finest heather I have ever seen was in Holland, and bluebells beside which the Scottish variety pales are to be found in Swiss uplands. And some Southrons may tell us that we can keep our weather.

A Rest-Cure de Luxe.

A recent visit, longer than on former occasions, to Switzerland, has given me the opportunity of seeing and learning more of the possibilities of the playground of Europe, not from the viewpoint of winter sport but as a country where may be found in prodigal variety all that gladdens the heart of the lover of nature, and that can be utilised in the process of dispelling the fatigue and revivifying the sensibility of the routine-deadened brain-worker. It is possibly because Switzerland is, in some measure, but Scotland on a larger scale that it makes its appeal to myself. Apart, however, from personal considerations that are scarcely pertinent, that country offers abundant occasion to the neurasthenic of regaining health and strength, and, from communion with nature, of coming to view life in its proper proportions. I do not mean merely that to step out in the morning to breathe an air like wine, to feel on one's face a wind like that in a ship's rigging, cold and hard and pure, or to bask in a sunny valley in a paradise of flowers, soaking in warmth and sweet scents, is all that la belle Suisse offers. No praise of mine is required to add to what many have known and loved for years. But, speaking more technically, the neurologist cannot regard it as a mere coincidence that some of the greatest names in psychotherapy and the cure of neurosis are Swiss, and he may be assured that the place has produced the men and its attractions the material, drawn from sources innumerable. From all quarters, north, south, east, and west, the current not only of pleasure-seekers but of health-seekers sets towards Switzerland, and no one who knows the country and its opportunities is likely to admit the possibility of disappointment. There are resorts, set like gems in the crown of the Alps, where every kind of technical treatment for functional nervous disease is carried out, as in the best of private homes and hospitals, and where, in addition, the neurasthenic may lie on a balcony and feast his soul on a panorama that has few equals the world over, where the low-toned tinkle of cow-bells, the smell of a new country, the sights and sounds that are unfamiliar, may each and all make an appeal through his sense avenues to aid in the general effect and lead to the general cure. Shall I say that it is a rest-cure de luxe? Amid a comparatively recent and occasionally somewhat ultra-enthusiastic drive in the direction of the psychological aspect of disorder of nervous function we are apt, as it seems to me, rather to minimise if not actually to forget what cures were obtained before psycho-analysis was born, and rather to look askance at any methodological technique that does not include rummaging in old, unhappy, far-off things. For some cases this is material, for others it is more than ordinarily immaterial. The vendor of patent powders advertises over his shop-door, "Leave

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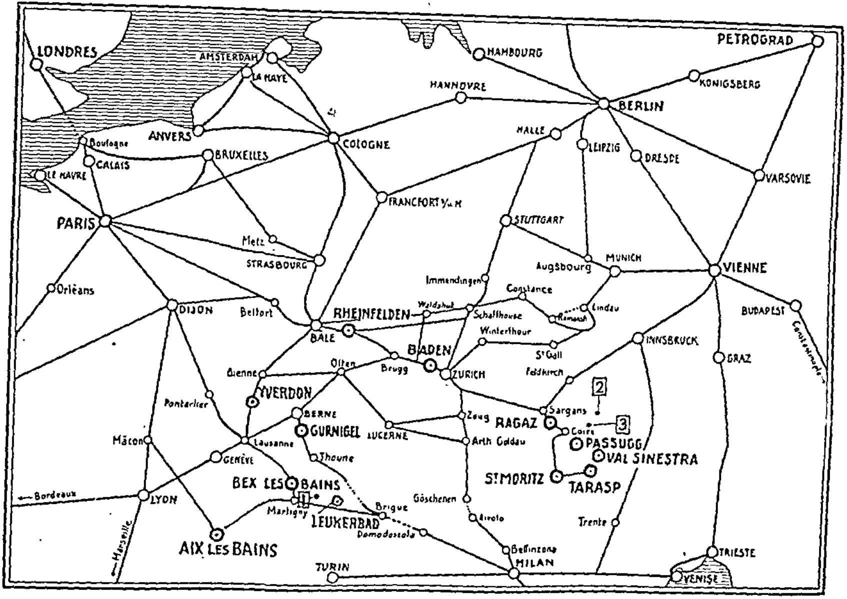
[1] American for "tired business man."



Railway map showing direct routes from surrounding continental countries to the climatic health stations of Savoy and Switzerland. The position of three Alpine tuberculosis resorts is indicated by a figure in a square frame: 1, Montana-sur-Sierre; 2, Davos (via Landquart); 3, Arosa (via Coire).

whole year round but are only largely patronised in winter.

In the spas the baths and fittings are generally good, though without the magnificence of Harrogate and Bath. Baths, douches, and electrical treatment of all the recognised types are in general use. Several of the waters are hot; perhaps the advantage of being treated by naturally hot waters is, for the patient, mental rather than physical, but in a country where coal may cost £20 a ton, hot springs and water-made electricity are important. Leukerbad, one of the lesser winter sport centres, promises a natural hot bath to the devotees of sport when the day is done. The cold springs generally contain CO_2, so that one of the factors of Nauheim treatment is at hand. The springs are generally only feebly radio-active, but the waters of Disentis (at the top end of the Vorder-Rhein valley) and Baden are the most active.

The Upper Engadine (St. Moritz and Pontresina) with its fresh air affords an excellent after-cure both for patients who have undergone treatment at Tarasp in the Lower Engadine and also for patients who have completed sojourns at the spas of other countries.

The principal Swiss spas, then, may be classified as follows; in parentheses some of the corresponding spas in Great Britain or on the Continent are given:—

Sulphated waters.—Tarasp. (Cheltenham, Leamington, Marienbad, Karlsbad, Kissingen.)

Alkaline carbonated waters.—Passugg. (Cheltenham, Vichy, Ems.)

Carbon dioxide waters.—St. Moritz, Tarasp.

Iron waters.—St. Moritz, Tarasp. (Tunbridge Wells, Pyrmont.)

Arsenical waters.—Val Sinestra. (Levico, La Bourboule.)

Sodium chloride waters.—Rheinfeld, Bex. (Droitwich, Nantwich.)

Sulphur waters.—Baden, Gurnigel. (Harrogate, Strathpeffer, Aix-les-Bains.)

Simple thermal waters.—Ragaz, Leukerbad. (Bath, Buxton, Plombières.)

Individual Features.

The following notes are largely based on personal experience:—

Tarasp, 3900 feet, situated in the river gorge which runs along the wide valley of the Inn; well protected from winds and with small rainfall. Waters used for bathing and drinking. Two springs are purgative with sulphates, another contains iron; all are cold and contain much free CO_2. The hotels both here and at the contiguous Vulpera are good; the baths are excellent. Schuls, which lies close by and depends on the same waters, is less expensive. There are many graduated walks suitable for invalids and mild heart cases. Summer season only.

Ragaz, 1700 feet, in the canton St. Gallen, close to the Upper Rhine and near the Austrian frontier. The water, which is very abundant, is brought from Pfäffers, which lies in a ravine in the mountains; it is hot, 98° F., and has a very small amount of solids; it is mainly used for bathing. The baths are good and of many types, including thermal swimming baths. Summer season only and most suitable in early and late summer when the weather is not too hot.

Leukerbad (Loèche-les-Bains), 1600 feet, at the head of a side-valley off the Rhone, surrounded by high hills. The waters are abundant from several springs and hot; one has a temperature of 123° F. Both the baths and hotels are less luxurious than in many other spas, but the hotels are quite comfortable and the baths are adapted for the special type of bathing practised, the patients staying in the water for six hours or even more. The treatment is largely used for chronic itching diseases of the skin. Besides the summer bathing season there is a winter sports season, December to February.

St. Moritz, 6000 feet, the highest of the big health resorts, magnificently situated in the open valley of the Upper Engadine, formerly accepted tuberculous patients but now does not cater for them. In addition to winter sports, which are well known, it possesses iron and CO_2 waters which are hardly known enough, and the resort merits more recognition than it has received for convalescent cases. The waters are cold and the CO_2 springs are said to be the strongest in Europe. The hotels are numerous and luxurious and the baths well up-to-date. The baths are frequented June to returning to the lowlands should be refilled to a higher pressure than usual before leaving.

The complications of artificial pneumothorax and those cases where a pneumothorax cannot be produced owing to adhesions are more thoroughly treated by surgery than is generally possible at present in this country. Various types of thoracoplastic operation, and the filling of cavities otherwise impossible to close, by paraffin wax or by transplants of fat, seem to be the operations mainly performed. I did not hear of any special operations for the division of adhesions. Most of the sanatoriums have now their own operating theatre, and practically all their own X-ray plant.

Tuberculin seems to be now used in a somewhat attenuated manner, and rather in those cases "which are strictly localised, and when the patient is 'sticking' and not getting on," to use the phrase of Dr. Bernard Hudson of the Palace Hotel Sanatorium at Montana, than as a routine.

A general impression of the Swiss resorts for tuberculosis suggests that though there may be many cases which would do equally well in this country, there are others where the undoubted climatic advantages of the Alps, the well-equipped sanatoriums to be found there, and the therapeutic renown of the mountains, are of inestimable service.

METROPOLITAN ASYLUMS BOARD:
A COMPREHENSIVE REPORT.

To the annual report[1] for 1920 of the Metropolitan Asylums Board is appended a note on the constitution and duties of this Board which traces its history and development in succinct paragraphs. It was established in 1867, under an Act which empowered the Poor-law Board to combine into districts the unions and parishes of the metropolis for the purpose of establishing "asylums" for the reception of the sick, insane, or infirm. Successively under the control of the Poor-law Board and the Local Government Board, the Metropolitan Asylums Board is now composed of 73 members, of whom 18 are nominated by the Ministry of Health. The extension of its duties from the reception and relief of paupers suffering from fever, small-pox, or insanity (1867) to the present important and far-reaching activities has been gradual but continuous, and is a proof of the public confidence in the discretion of the Board. As regards infectious diseases alone, since 1911 the admission to the hospitals under certain conditions of non-pauper as well as pauper patients suffering from measles, whooping-cough, puerperal and other fevers, as well as those attacked by more classical infections, has effected an enormous change in the public conscience as regards the spread of infection. Moreover, under these newer regulations there is seldom a month when at least one of the hospitals under the control of the Board does not number a medical student among its patients, and the advantage gained is mutual. The instruction of medical students and of candidates for the D.P.H. is an important part of the work of these hospitals, and valuable public service is also rendered by the research and statistical departments. In connexion with the evergreen topic of the doubtful value of medical statistics unchecked by experts, a summary (p. 68) of the cases of mistaken diagnosis admitted into ten hospitals is of interest. Excluding the 45 uncertified cases and the 60 "admitted with mother,"—it seems somewhat harsh to include these in a table of mistaken diagnoses—there were altogether 2847 cases admitted in which the diagnosis was not confirmed on admission or after a period of observation; since the total number of patients admitted during 1920 was 35,916, the percentage of detected error is just under 8. The seasonal rise in infectious diseases started in the autumn of 1920 from a fairly high level, and in November, 1920, there were in hospital 8669 patients, 1511 more than the highest previous record. From present indications it is anticipated that a very heavy seasonal rise may be expected this year, and steps are being taken to prepare for this possibility.

Second only in importance to the work of the Board in providing segregation and treatment for patients suffering from epidemic and sporadic infectious diseases is its recently acquired responsibility for the treatment of persons suffering from tuberculosis. On May 1st, 1921, sanatorium benefit ceased to be included among those conferred under the National Health Insurance Act, and the duty of providing institutional treatment having devolved upon the county and county borough councils, the Board has entered into arrangements with the London County Council under which it provides residential treatment for tuberculous patients in the county. A total of 1664 beds for adults in sanatoriums and hospitals is being provided by the Board and 1317 beds for children, including 883 for children sent through the boards of guardians. Inasmuch as the available accommodation approximates to the requirements independently estimated by the London County Council, the Ministry of Health has decided that the proposed extension schemes shall not be proceeded with for the present. The education, training, and after-care of tuberculous children is receiving special and expert attention, and suitable provision is being made also for the training of adults.

The present scope of the work of the Metropolitan Asylums Board is so vast and the reports on its various activities so enlightening, that it is difficult to choose for comment any special section. The classification of mental defectives and their segregation in various institutions according to grades, the residential treatment of women and girls suffering from venereal diseases, the isolation of cases of ophthalmia neonatorum in a special hospital, and the efficient ambulance service are described, and the functions of the Board with reference to these and other responsibilities appear to be efficiently administered. The source of the boys admitted to the training ships *Exmouth I.* and *II.* is not made clear, and the classification of tuberculous patients on different principles in successive tables (pp. 23 to 30) is confusing. Among the medical records included as appendices is one by Mr. T. B. Layton on the otological work done at the North-Eastern and Western Fever Hospitals, to which we shall have occasion to return; it is unfortunate that the concluding section of this important report, containing recommendations now under consideration, has been omitted. But considering the mass of material dealt with, the annual report of the Board is informative without oppressive bulk, and regret can hardly be felt for the omission of a certain amount of matter, however interesting, which has enabled it to be issued in such convenient form.

GUY'S HOSPITAL BIENNIAL DINNER.—This dinner will be held on Oct. 26th at the Connaught Rooms, London. Mr. Montagu Hopson will preside, and tickets, price 15s., exclusive of wine, may be obtained from the hon. secretary, Mr. Arthur W. Ormond, 7, Devonshire-place, London, W. 1.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—The syllabus of a special post-graduate course, to be held at the Prince of Wales's General Hospital, Tottenham, from Sept. 26th to Oct. 8th, has been issued. Lectures on all aspects of medicine and surgery and the special branches will be given in the morning by members of the teaching staff of the hospital, and from 3 P.M. to 4 P.M. students will have access to the general hospital work. From 4.30 P.M. to 5.30 P.M. daily lectures on special subjects will be given by Mr. C. J. Bond, Dr. F. G. Crookshank, Mr. James Berry, Col. L. W. Harrison, Mr. H. W. Carson, Lieut.-Colonel W. Byam, Dr. Arthur Giles, Mr. H. D. Gillies, and Sir William Willcox; these lectures are free to all qualified medical practitioners. The fee for the course, to those not members of the Fellowship of Medicine, is 5 guineas, or 3 guineas for either week. Names of those wishing to attend should be sent, not later than Sept. 22nd, to the Dean at the hospital (or at 19A, Cavendish-square, London W. 1), or to the Secretary of the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

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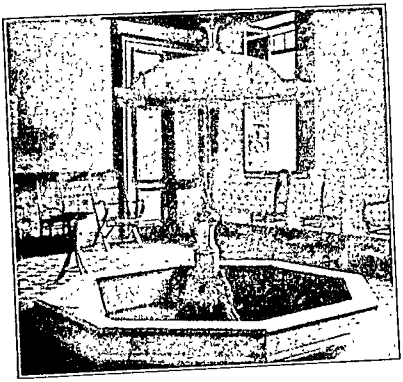
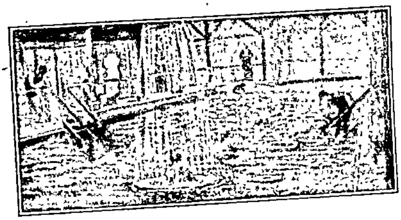
[1] Office of the Board, Embankment, London, E.C. 4. Price 5s.

TYPICAL BATHS.



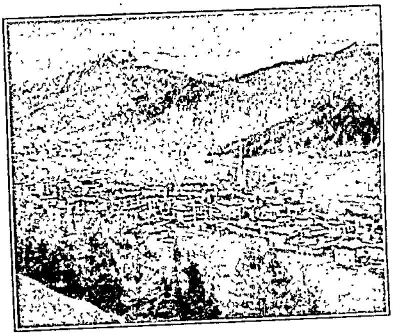
The inhalation room at Aix-les-Bains.



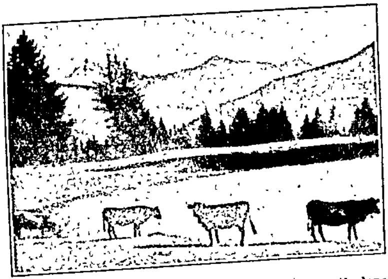
The old swimming-bath at Ragaz.

The great bath at Loèche-les-Bains.

HEALTH RESORTS FOR TUBERCULOSIS.



Sanatorium treatment in the Alps. A general view of the Davos valley showing the position of the sanatoriums.



Montana in summer, showing the plateau on the north slope of the Rhone valley with sunny exposure and wide prospect.

The private balcony of a sanatorium at Arosa with distant mountain view.

has received attention at the Birmingham Orthopædic Hospital, to which the Education Committee subscribes.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Salford.

THE annual report for 1920, by Dr. C. H. Tattersall, on the health of the county borough of Salford, extends to over 200 pages. With an estimated population of 235,239, the total number of births was 6441 (3282 males and 3159 females), equal to an annual rate of births of 27·3 per 1000—a decided increase from 18·3 in 1919—and the highest recorded since 1911. The death-rate is the lowest ever recorded, being 13·7 per 1000, which compares very favourably with 15·8 for 1919 and 16·8 for the five years 1913–17. The total deaths were 3133 (1646 males and 1487 females) and the excess of registered births over deaths was 3308. Special attention was given by the health committee to housing matters and to the two housing schemes at Lower Kersal and Weaste. The question of a central hot water-supply to the houses was abandoned on account of the greatly increased cost which would be entailed. The provision of shops on these two sites was included in the original plans, but up to the time of writing the Ministry of Health had not agreed to allow shops to rank for Government subsidy, and therefore the committee did not feel themselves justified in throwing the whole cost on the rates. The question of concrete houses was considered very carefully as a means of building economically, but the conclusion was arrived at that concrete houses, if properly constructed, would cost as much as brick-built. Electricity is to be installed for lighting and gas for cooking.

The erection of a new tuberculosis sanatorium, giving accommodation for 120 patients, has been commenced, and, it is hoped, will be ready for occupation in 1922. A scheme has been drawn up for providing 50 beds at Ladywell for female patients who require hospital as distinguished from sanatorium treatment. Scarlet fever and diphtheria have been more prevalent than during the past three years, but there has been no alarming epidemic. The conversion of the privy middens in the borough has been practically completed. A table is given showing the number of conversions made during the past 20 years and a comparison between the incident death-rate of enteric fever and epidemic diarrhœa respectively. In 1900 there were 23,000 privy middens, 7254 pail-closets, and 14,876 water-closets, the corresponding numbers in 1920 were 25, 800 and 49,206. As to enteric fever the attack-rate per 1000 living at all ages in 1894–98 was 1·80 and in 1916–20, 0·21; and for epidemic diarrhœa the death-rate per 1000 of population in 1894–98 at all ages was 1·70 and under 5 years of age 14·90, while in 1916–20 the corresponding numbers were 0·47 and 0·41.

Six cases of encephalitis lethargica were notified, but three of these turned out to be tuberculous meningitis. Forty-two cases of malaria were notified, of which 3 died; all the cases were found to have contracted the disease abroad. The total cases of syphilis treated were 680 and of gonorrhœa 606 at Salford Royal Hospital, and 260 of syphilis and 264 of gonorrhœa in outside institutions. In connexion with child welfare and supervision of midwives, 109 cases of ophthalmia neonatorum were notified during the year, 36 of these by the medical staff of the Royal Eye Hospital. Ninety-two cases occurred in the practice of midwives. In 52 cases both eyes were affected, and in 57 cases one eye only. Of the 109 cases, one died; 106 recovered completely with no injury to sight.

Ilford.

A large proportion of the inhabitants of the urban district of Ilford, with an estimated population in 1920 of 82,693, earn their living in London, which is only seven miles distant. The population is mainly lower middle class. There are a few industries: (1) photographic works; (2) paper mills; (3) manufacturing chemists; (4) electric battery makers; (5) nautical instrument makers. In the interests of efficient local government, a town of this size ought to have control of its own tuberculosis scheme, and midwives. The health statistics are satisfactory, as might be expected in a town like Ilford, the general death-rate is 9·0, the infant mortality rate 54, the rate for diarrhœa under 2 years per 1000 births is only 2·4, as compared with 9·5 for London and 8·3 for England and Wales. The death-rate from phthisis showed the usual rise during the war but for 1920 it was 0·50, the total death-rate from tuberculosis being only 0·69. A great improvement in the treatment of tuberculosis has been made during the past year by the institution of dental treatment for tuberculosis cases.

In 1919 Dr. A. H. G. Burton and the surveyor estimated that the council should provide at least 600 houses to meet local demands, and satisfactory progress has been made with four housing schemes, comprising 356 houses. In addition to this, the City of London have a scheme for 2400 houses on the Lonsdale estate, and the London County Council a scheme for 3200 houses at Dagenham, both in the Ilford district. Ninety per cent. of the diphtheria and 89 per cent. of the scarlet fever cases were treated in the Isolation Hospital. There has been some difficulty in obtaining nurses.

The infant mortality rate among illegitimate children was 230 and Dr. Burton is certainly justified in thinking that the supervision of foster children should be transferred from the guardians to the maternity and child welfare department, as suggested in the Ministry of Health's circular of Sept. 30th, 1919. Of the 90 deaths of infants, 45 occurred in the first four weeks of life. Two more health nurses have been appointed and overlapping is avoided and travelling time saved by these nurses performing the duties of health visitor and school nurse. Two antenatal clinics were opened during the year and a dental clinic is available for mothers and for children under 5. Ten cases of ophthalmia neonatorum were notified. In two cases the children were left with serious impairment of vision in one eye owing to corneal opacities. During 1920 169 women were admitted to the maternity home; the fee is two guineas per week, a portion being remitted when necessary.

Dr. Burton is also school medical officer and advocates great care before advising operation for tonsils and adenoids. "Most cases of enlarged tonsils are associated with carious teeth, which should first be treated. Many slight cases can be improved by suitable breathing exercises. . . . Further, the operation is by no means free from risk, especially when it is done, as is frequently, in an out-patient department, and the child allowed to return home the same day." Satisfactory arrangements are made for the treatment of minor ailments and the number of children seen at the school clinic has gone up from 962 in 1919 to 1763 in 1920. Of 4188 children inspected by the dentist, 3025, or 72 per cent., were found to require treatment. The report of the organiser of physical training points out the inadequacy of the swimming-bath accommodation.

Chelmsford.

The Registrar-General's estimate of the population of the borough of Chelmsford for 1920 was 21,666. The birth-rate was 20·8; the uncorrected death-rate was 11·9, the "corrected" 8·8. The infant mortality rate was 55·4 and the total tuberculosis rate 0·55. There were no deaths from infant diarrhœa. Dr. William J. Cox draws attention to the river pollution in the district. Under the heading "Maternity and Child Welfare," he mentions that "109 mothers (25 per cent.) suffered from carious teeth to a serious extent" and that in about 45 per cent. of cases no cot was provided for the baby. Overcrowding, he states, remains much the same as during 1919. "The conditions caused by overcrowding in this borough are undoubtedly serious." There are 120 houses calling for early demolition which cannot be dealt with your headache here," and as long as the consulting room remains true to its traditions it will similarly be the gateway to renewed mental and physical health for the neurasthenic, via Switzerland, Scotland, Skegness, or any place soever, provided its occupier has a knowledge of human nature and a lore not gained from books.

III.—SWISS HEALTH RESORTS FOR TUBERCULOSIS

BY A. NEVILLE COX, M.D. LOND., M.R.C.P. LOND.,
TUBERCULOSIS OFFICER, BRIGHTON

THE Swiss health resorts fall into two classes: (a) those which cater for patients suffering from tuberculosis, and (b) those which do not accept such patients. This arrangement has manifest advantages. The non-tuberculous invalid has no grounds for the fear, however unreasonable such a fear might be, that he runs risks of infection from other patients; and the consumptive has the satisfaction of knowing that he is among his kind, and that he is not shunned by others. It is not suggested, of course, that none but consumptives go to the tuberculosis resorts. That is far from being the case, and indeed several of these resorts attract healthy winter sport enthusiasts in large numbers. Some hotels at Davos and elsewhere do not accept invalids, and in some others a part of the hotel is reserved for the healthy visitors.

The Climate and its Advantages

All these tuberculosis resorts enjoy great advantages of altitude, abundant sunshine, and pure atmosphere. It is difficult to judge which of these factors is the most important, but it is undeniable that the combination of them produces remarkable improvement in cases of phthisis of the right type. It is obviously futile to send to the mountains consumptives with advanced progressive disease, intestinal ulceration, great dyspnœa, cyanosis, and the like grave symptoms. Hæmoptysis, on the other hand, is no contra-indication. Laryngeal cases also do well, if the pulmonary lesions are not too severe. Sanatorium physicians in Switzerland, as elsewhere, complain that patients are frequently sent to them too late.

It is not considered necessary for the patient, unless he is much enfeebled, to do the journey in easy stages as was formerly recommended. Arosa is now easily reached from Chur by electric railway, which takes the place of the old six-hour journey by diligence. Montana, similarly, is now connected with Sierre on the main Simplon line by funicular. Davos is reached from Landquart by the Rhaetian railway. Each of these places has its special attractions. Arosa lies well sheltered and delightfully among its wooded mountains. Montana is perched 5000 feet up on a plateau on the north side of the great Rhone valley, facing due south a grand distant panorama of Alps. It lies just within the French-speaking part of Switzerland. There is a sanatorium staffed by English doctors and nurses, and for the healthy there is the attraction of a fine golf course. Davos in its valley is quite different from both, but has a charm of its own. It has also the advantage, from the point of view of some patients, of possessing the shops and social amusements of a considerable town. Each of these places has its enterprising 'Kurverein,' which is ever ready to supply information to intending visitors, and does valuable work in developing the amenities of the place. At Davos, for instance, the damage done by the avalanche of a recent winter has been repaired, and steps have been taken at great expense to prevent the risk of similar accidents in the future.

Equipment and Outline of Treatment

Many of the great Swiss sanatoriums, even of those known as the "popular" sanatoriums, are planned on a lavish scale. This of course can be overdone, and is by no means essential to good treatment. But the ideal of extreme simplicity can also be overdone, and it is possible that in some cases in England cheapness in buildings and equipment is associated with cheapness in more important matters.

In regard to treatment at the Swiss sanatoriums one is struck by the amount of individual supervision of patients. Each patient is usually seen by the doctor twice daily, and, of course, oftener if he is seriously ill. The hours of rest and the amount and times of exercise are all laid down for strict observance. All this is implied in the general term "Kur." It is perhaps an unfortunate word, since it suggests that very different thing, the anatomical cure of the disease. When we hear of a patient coming for the "cure" several years in succession, it sounds like a contradiction in terms. May it not be the lack of this constant and careful supervision in some of our English institutions which has brought the whole system of sanatorium treatment into some disrepute among us of late? Genuine sanatorium treatment in the average case is nothing more or less than an unremitting attention to every detail of the patient's life, an attempt to eliminate as far as possible every adverse influence retarding recovery, and promote every favourable influence assisting it. This is not an art to be acquired in a few months, yet we frequently see medical appointments at our English public sanatoriums advertised at salaries which cannot possibly attract good men for long. Often, too, it is stipulated that applicants shall be unmarried.

In Switzerland much more importance seems to be attached to rest than to exercise, and the method of graduated labour does not appear to be in vogue. Walking is generally regarded as the best form of exercise. There is sometimes a difficulty in restraining the more energetic patients from taking too much part in winter sports, most of which are obviously unsuited. For the ambulant patients about five hours' rest daily, lying on long chairs on the balconies, seems to be the rule. Rest before meals is insisted on; rest immediately after meals is not encouraged, and it is thought better at those times to take a little walk. From two to four each afternoon is in many places kept as a time of complete rest, with no talking, reading, or any occupation whatever. Patients on admission are kept for about a week in bed, and if the pulse and temperature are satisfactory, are then allowed to begin getting up. The method used in some American sanatoriums of keeping even afebrile patients in bed for six to eight weeks does not seem to be practised.

Special Methods

Heliotherapy is everywhere condemned for pulmonary cases except for certain chronic pleurisies, which it relieves. In the ordinary pulmonary case it is said to cause "congestion" and to provoke hæmoptysis. This apparently is not the experience in some of the Scandinavian sanatoriums; one author there states that the incidence of hæmoptysis in his institution has strikingly diminished since actinotherapy was started. In surgical tuberculosis heliotherapy is, of course, extensively used with excellent results when properly applied. No more than a drug like digitalis can sunlight, whether real or artificial, be used in treatment with success if employed indiscriminately and without proper regard to dosage and idiosyncrasy. Dr. O. Bernhard, of St. Moritz, a pioneer in the scientific application of sun treatment, has summarised his experience in a recent article in *Tubercle* (August, 1921).

Of the more specialised forms of treatment, artificial pneumothorax is everywhere in considerable use, and is probably applied in a wider range of cases than is at present customary in England. At one sanatorium I was told that some 12 per cent. of cases are found suitable for this treatment. As a main indication, assuming a unilateral lesion, definite evidence of breaking down or cavitation of lung tissue shown, for instance, by the presence of elastic fibres in the sputum, was suggested to me. Patients in whom a pneumothorax is already established should go to the mountains just before a refill is due, so that the change in atmospheric pressure is not harmful; similarly, on

THE NATURAL HISTORY OF ENCEPHALITIS LETHARGICA.

To the Editor of THE LANCET.

SIR,—In regard to encephalitis lethargica I have a theory which I should like to put before the medical profession for their careful consideration, believing that if it stands the test of criticism and turns out to be true it may prove of considerable value. During the year 1918 I saw some 12 cases of this disease; they occurred mostly during the first three months of the year. Most of them were severe cases and very typical; about half of them died, and of those who survived one eventually found his way into an asylum, one took to drink, and one, a lad, became feeble-minded. A fourth, a child of about 8, still suffers from headaches, and is unable to make any progress at school or to get on happily with other children. In this year the disease was not a notifiable one, consequently statistics are not available. In 1919 I can only remember to have seen 4 cases; of these two died and two recovered, but one, a year later, was reported to be unable to attend school owing to headaches. Four other cases were reported. In 1920 I saw 3 cases, one of which was in December, but 7 others were reported to the Ministry of Health, making 10 in all. This year I have seen 12 cases and one other in which the diagnosis was somewhat doubtful; 11 others have been reported to the medical officer of health; one at least of these was doubtful. They mostly occurred in the first three months of the year and were then milder in character, but in June and July there were some fresh cases, and these were more severe ones. Those I have seen this year have conformed less to the type originally described than did those of 1918. These cases have been scattered all about the county. With the possible exception of the south-east corner, which I see but little of, no large area of the county seems to have been without one or more cases, yet hardly any case seems anywhere to have arisen in close proximity to any other case. They have occurred amongst rich and poor alike, and in remote country cottages and farms more often, I think, than in towns. The only point I would note, taking the four years together, is that an unduly large proportion have occurred amongst those whose work is connected with the railways.

All this suggests that the infection is very widely distributed. What are the connecting links between the cases? The two most probable suppositions are: (1) That the infection is spread by carriers—i.e., human carriers, who do not themselves show any symptoms of illness. (2) That there is a very widely spread and fairly common disease in our midst which only very rarely affects the central nervous system, just as tubercle only very occasionally causes meningitis or cerebral tumour. I believe the latter supposition to be the correct one. It certainly would account for the peculiar distribution of the disease far better than any other that has been suggested.

Now there has been this year another set of cases occurring in Shropshire very commonly, I believe, characterised more or less clearly by the following signs and symptoms.

1. Fever, sometimes sudden, sometimes gradual, or even insidious in its onset, of varying type, uncertain duration, and prone to recrudesce.
2. Sore-throat of a peculiar character.
3. Gastro-intestinal disturbances—generally vomiting and diarrhœa.
4. Broncho-pneumonia, with sharp crepitations at the bases of the lungs.
5. Often an erythematous rash on the body and legs, chiefly in the form of large red patches, but varying greatly and of short duration. This is by no means always noticed, possibly because of its transient nature and because it is not looked for.
6. Marked prostration and slow recovery.

The throat is characterised by slight swelling but very marked congestion of the fauces and pharynx; the colour is generally a deep crimson, but sometimes is almost vermilion. There is comparatively little swelling of the tonsils, but whitish patches of exudation are to be seen on tonsils, fauces, and pharynx. These patches sometimes look very like diphtheritic membrane and occasionally can even be stripped off, but in none of the cases has the specific organism of diphtheria been found. These throats tend soon to become dry, and are often associated with a red, bare, swollen, and dryish tongue. Curiously enough, the patients complain very little of any pain, and unless the fauces are very carefully examined the presence of the "sore-throat" is apt to be overlooked; the patients more often come before one as cases of gastro-enteritis or broncho-pneumonia than of tonsillitis. It is, I think, a very infectious illness, though often seen in much slighter forms in other members of the household.

Now I have seen a similar condition of throat in a number of the cases of encephalitis, and have pointed it out to my medical colleagues—sometimes even telling them beforehand that I expected to find it; but I think it has only been in those which I have seen in the early stages. I have also found symptoms of gastro-enteritis and broncho-pneumonia in these cases, and often albuminuria. I was particularly struck by its appearance in my women's ward at the Royal Salop Infirmary at a time when I had a typical case of encephalitis lethargica there. Two very well marked cases occurred; one was in a strong, healthy, hysterical girl who had been in for some weeks previously and who became very ill with it. The other was an elderly woman suffering from heart disease who had been in for many weeks and was at the time slowly recovering. She developed this illness and very nearly died from it. It was especially noteworthy that she made very little mention of any pain or soreness in the throat, though it was very markedly congested and unhealthy looking. We had a good many slighter cases of sore-throat in the ward. None of them showed any symptoms of encephalitis, but it was the fact that the patient with encephalitis had a similar condition of sore-throat when first admitted that made me suspect that she might have been the original source of the trouble.

Another case seen near Newtown, in Montgomeryshire, impressed me greatly. A country gentleman, aged 60, who led a very healthy, active life was suddenly smitten down after a day's hunting with a very severe illness, characterised by high fever, sore-throat, and intense headache, the pain being most severe behind the right eye. The glands of the neck were enlarged and tender; there was marked redness and slight swelling of the face, and a transient erythema on the body and limbs. The throat was a very marked example of the condition I have tried to describe, and showed the typical white patches of exudation. When I saw him he had broncho-pneumonia, with sharp crepitations at the bases; he also had gastro-enteritic symptoms, and his liver was palpable and slightly tender. He was certainly very acutely ill; but he was slowly beginning to show signs of improvement, when on the fifteenth day of his illness he had a rigor, the temperature ran up to 104° F., his face became ashy grey and sunken-looking, and his breathing became of the Cheyne-Stokes character. He became first drowsy, then more and more comatose, and he died three days later. This seemed to be a case of encephalitis lethargica in which the stress of the disease had fallen chiefly upon the medulla rather than upon the mid-brain or cerebrum, and it certainly began as a typical but very severe case of the illness which I have been trying to describe.

The theory which I wish to put forward is, therefore, that we have a very widespread disease in our midst, which is itself new in character, which is markedly infectious and therefore tends to be fairly common, and which occasionally attacks the higher nervous system and especially the mid-brain, producing the symptoms to which we have given the name of encephalitis lethargica. I think it is quite possible

Public Health Services.

SCHOOL MEDICAL SERVICE.

Sheffield.

Dr. Thomas Chetwood reports that the routine medical examination of 24,488 children showed 22·5 per cent. of them to require treatment. Sheffield would appear to be a health resort for children, since only 3 per cent. were noted as anæmic and 2 per cent. as rickety. Yet the average height in the elementary schools, which may be taken as an indication of the whole past history of the child, is below standard, and the average of weight, which reflects present conditions, is still more below standard. Conversely the secondary schools are well above the usually adopted standards. These averages as given for the largest groups comparable are interesting enough to reproduce here.

Age in years.	—	Boys.		Girls.	
		Height.	Weight.	Height.	Weight.
12	Elementary schools	137·21	31·94	138·48	32·23
	Secondary ,,	143·05	34·75	144·10	35·01
13	Elementary ,,	141·47	33·45	142·42	35·07
	Secondary ,,	146·19	37·56	148·40	38·83

Excellent and detailed work is recorded in every department; only the notes on "school hygiene" are perfunctory and not quite worthy of the rest of the report. Here surely in this great University city there might be coördination with the University, which is an untapped source of enthusiastic workers ready for training and experience. 25 per cent. of the children had sound teeth, 44 per cent. having less than four teeth decayed. 11 per cent. had nutrition under average, 0·5 per cent. being classified as bad. During the year 176,000 school dinners, 189,000 breakfasts, and 97,000 teas were served in school and feeding centres. The employment of a few more dental dressers, in addition to three dental surgeons, should ensure an excellent dental service. 10,858 children out of 12,784 examined were found to require dental treatment, and of these 4874 obtained it. One-seventh of the cases were cured with an average of five attendances. The two open-air schools by means of which Sheffield helped to educate this country are reserved for ailing children. There are no classes for dull and backward children, and no nursery schools.

Excellent reports are given of the school baths, each of which serves 4000 children weekly. Swimming is taken as a physical exercise in the public baths. It has been found that in the douche bath rooms, unless the hoppers of the windows are open outwards instead of inwards the valve-like action prevents the rising steam escaping. The report calls attention to another risk of bathing, as does Dr. Dan McKenzie in our correspondence columns.

> "Several cases have occurred during the year of serious infection to the nose and ears in children attending the swimming baths. The danger of this infection is mostly to children who already have some discharge either of the ears or the nose. It has long been recognised that the entrance of unsterilised water into the ears in cases of otitis media constitutes a grave danger. That this is so in cases of nasal discharge is not so generally recognised, but it is fully as important."

A good analysis of loss of attendance from various causes shows coughs, colds, and bronchitis as responsible for 30·4 per cent., infectious disease 10·1, contagious disease 6·7, sore throats 3·8, debility and anæmias (which last we have already seen is so rare) 3·6 per cent.; illness in the home 4·5 per cent., chiefly in the girls' department. "This is not to be wondered at, when the figure given for illness of mother is as high as 3·4 per cent." Of possible attendances 13 per cent. were lost.

Northampton.

The Northampton authority is to be congratulated on a live and heartening report, which shows a breadth of view and a grasp of essentials deserving close attention. Dr. G. H. Skinner gives a general survey of school hygiene, showing still existent small diamond-shaped windows, long desks with seats without backs, and 92·0 per cent. of 5-year-old children unvaccinated. Attention is drawn to the necessity for what is called individual ventilation—a single desk for each child, so that a definite free air space of several inches is ensured for each. No defect treated has been counted twice, nor has any unremedied defect been counted over again during the period in which it remains unremedied. The census of cripples showed 10 per cent. under school age. Dealing with dental decay, the report urges:—

> "It must be borne in mind that the toothbrush used indiscriminately in a septic mouth acts as a spreader of disease, and by friction may convert chronic inflammation into the acute form; this might promote healing had the cause of sepsis been removed, but might have serious results if it had not; and on this account I am of opinion that toothbrush drill in school may prove to be a mixed blessing. . . . Fortunately, on account of the diffusion of knowledge as to the importance of cleanliness of the teeth it is not so necessary as it may have been in the past. All attempts at food reform must come to naught as far as school children are concerned unless the teeth are put in such a state that mastication is painless, and reform will then be a natural consequence in most cases, as the human being, like most mammalia, has always shown a desire to exercise his teeth upon resistant substances unless hindered by unnatural conditions which prevent him obtaining the mixed diet to which his teeth are suited. By treating incipient decay at the earliest possible opportunity with silver nitrate, most infants would present, and by subsequent supervision would retain, at least a fairly satisfactory milk dentition, which would not contaminate the permanent teeth, would preserve the space for their successors, and would enable the child to masticate more solid food. Otherwise slops must be given or the solid food is bolted; one tender tooth will throw out of action the whole masticatory apparatus."

It is also pointed out that dental treatment of children under 5 would probably enable a dentist to overtake 10,000 children instead of 5000 as at present.

Successful arrangements have been made for the treatment of speech defects. Two experimental nursery classes have been established as a preliminary to a nursery school. The transference of the X ray work to the school clinic has resulted in the number of ringworm cases at the end of the year being the lowest recorded. The total number of ear defects requiring attention was 429, and of that number 261 received treatment at the school clinic, with an average of 18 attendances, 52 per cent. being cured. Altogether 5515 routine and 3734 special examinations were made, and of these 4118 children were found to have defects, the number of defects requiring treatment being 6126; 91 per cent. of these obtained treatment, and 70·6 per cent. were cured.

In its grasp of essentials and its curtailment of non-essentials this report reaches high-water mark.

Nuneaton.

The number of children examined at routine inspection was 2035. Of these, 29 per cent. were found to be vaccinated, as compared with 43·3 per cent. in 1919. Of the girls in the 13 senior departments, 57 per cent. had verminous heads. The term verminous is rightly applied to children with one or more nits or pediculi in their heads; consequently the percentage is higher than in most school medical officers' reports. There are no nursery schools, no school baths, and no voluntary body exists except the Society for the Prevention of Cruelty to Children. 30·6 per cent. of 2035 children were found with perfect dentition. The arrangements for the treatment of ringworm with X rays should result in a marked diminution in the number of cases of this disease, which is at present too high. Arrangements for building a cleansing station for the treatment of scabies are in hand.

Dr. Middleton Hewat reports that every school in this area has a playing field, and every crippled child suspicious case of diphtheria in a house in the poor industrial part of the town. I gave antitoxin, which the M.O.H. authorised me to purchase, and sent the bill in to the local council, which after discussion refused to pay, informing me that I must collect the money from the patient. The same week they refused to pay for antitoxin given by another practitioner for a similar case.

I give antitoxin for two purposes: (1) the benefit of the community, and (2) the benefit of the patient. If the local authority refuses to provide antitoxin, I endeavour to collect the cost from the patient; if I fail to do so, I then have to pay out of my own pocket for treatment which benefits the community. If this state of affairs is allowed to continue my dosage of antitoxin will depend on the length of the patient's purse or of my own. The suitability of patients for free antitoxin is surely a matter which must be left to the practitioners who enter the homes and know the circumstances of each case.

On placing the case before the Ministry of Health a letter was written to the council and elicited the reply, "that the case was one in which the council did not consider they should be called upon to provide antitoxin." The Ministry then informed me that they could do no more.—I am, Sir, yours faithfully,

August 28th, 1921. B. L. S.

THE GROSVENOR TELEPHONE EXCHANGE:

MEDICAL MEN'S NEW NUMBERS.

THE new Grosvenor exchange, opened on Sept. 3rd, at 39, South Audley-street, London, W. 1., involves the transfer of a number of medical subscribers from the Mayfair exchange. The new exchange lies within the 5-mile circle from Oxford Circus, and therefore within the local fee area of all exchanges within a radius of 10 miles from Oxford Circus. Arrangements have been made to transfer calls made for the old numbers with as little trouble and delay as possible, the callers being advised of the change in each case. We give a list of the names transferred from Mayfair to Grosvenor, and take the opportunity of adding a further list of intended transfers from Mayfair to Langham.

Transfers from Mayfair to Grosvenor. (Below the dividing line to take effect on Sept. 17th.)

Mayfair.	Subscriber.	Grosvenor	Mayfair.	Subscriber.	Grosvenor
65	Humphris, F. H.	2265	4880	Style, Mark	1629
210	Jennings, J. F.	1030	5117	Turner, Henry S.	1720
703	Brydone, J. M.	1733	5609	Shires, Bertram	1741
1125	Thomas, James H.	1125	5768	Hay, K. R.	1773
2076	Spitta, H. R. D.	2076			
2267	Blackett, E. J.	2267	964	Cautley, E.	1160
3099	Green, H. Melville	1230	1488	Griffith, A. D.	1488
3371	Rashleigh, J. C. S.	1240	2448	Moore, G. L.	2448
3455	Cobbledick, A. S.	1346	2995	Burroughes, H. N.	2995
3461	Wilson, C. M.	1350	4896	Armstrong, J. T. F.	1631
3608	Barnes, L. S.	1423	6338/9	Shields, Sir D. A.	2312/3
4620	Pratt, E. F.	1565	7136	Meyer, C. H. L.	2386

Transfers from Mayfair to Langham. (To take effect about Oct. 1st.)

Mayfair.	Subscriber.	Langham.	Mayfair.	Subscriber.	Langham
281	Mennell, J. B.	2827	4647	Bromley, Lancelot	2752
471	Milligan, E. T. C.	2828	6118	Lee, John Robert	2391
1633	Juler, F. A.	2689	6226	Ball, L. C. W.	1717
2440	Pennington, D.	2660	6508	Kadinsky, Z. S.	2394
2652	Hayton, C. H.	2693	6730	Jeremy, H. R.	2395
3684	Kelynack, T. N.	2713	7067	Scott, Eric A.	1337
4242	Fenwick, W. S.	2722	7081	Maudel, E. L. W.	1338
4460	Ferrier, Sir D.	2674			

These lists are inevitably incomplete, and we shall be glad to make any additions to which our attention is called.

Medical News.

FREE MILK IN INFANT WELFARE CENTRES.—The value of infant welfare centres has been considerably enhanced during the past few years by the supply of free milk to expectant mothers in the later months of pregnancy, to nursing mothers, and to artificially fed infants up to the age of 5 years. 50 per cent. of this expenditure has been met hitherto by a grant from the Ministry of Health. The decision to reduce this grant considerably is doubtless in response to the well-recognised need for economy in national expenditure. An adequate supply of milk is essential for expectant and nursing mothers and for artificially fed infants, and any measure that interferes with this supply is to be deplored. On the other hand, there is a possibility of abuse of this grant, and it is of the utmost importance that the milk should be granted only to deserving cases. It is to be hoped that by exercise of a vigorous scrutiny the welfare centres will be able to continue their valuable work, despite the proposed reduction in the State grant, and that at the same time the prospects of health of the next generation will not be impaired.

EPSOM COLLEGE.—Several exhibitions will shortly be awarded to the sons of such duly qualified medical men as shall in the opinion of the Council of the College be among the less fortunate members of their profession. Holders of these exhibitions pay only 50 guineas a year instead of the usual fee of 100 guineas. "France" pensions of £30 a year will also be awarded to several medical men not under 55 years of age, whose income, independently of any allowance from the College, does not exceed £100 a year. Forms of application can be obtained from the secretary, Mr. J. Bernard Lamb, 49, Bedford-square, London, W.C. 1.

THE death is reported on Monday from Rhosneigr, Anglesey, of Thomas Arthur Helme, M.D., F.R.S. Edin., M.R.C.P. Lond., consulting physician to the Northern Hospital for Women and Children, Manchester.

THE LATE DR. R. W. ALLEN.—Richard William Allen, M.D., B.S. Lond., who died on August 28th, was a native of Auckland and graduated M.A. New Zealand from Auckland College. He then had a distinguished academic career at Guy's Hospital. Formerly pathologist to the Royal Eye Hospital he became interested from the first in vaccine therapy, directing this department at Mount Vernon Hospital, and editing for a time the *Journal of Vaccine Therapy*. His book on Vaccine Therapy: its Theory and Practice, ran into four editions, and he was the author of a larger work on the Bacterial Diseases of Respiration.

THE LATE DR. A. J. MACCALLUM.—Alexander John MacCallum, who died in a nursing home at Aberdeen on August 23rd, was a native of Keith, Banffshire, and took his degrees of M.B., C.M. at Edinburgh in 1891, becoming F.R.C.S. Edin. in 1902 and M.D. in 1908. He practised at Kendal, and was particularly interested in epilepsy, being for some years physician to the Staruthwaite Epileptic Colony. A magistrate for Kendal, and for some time a County Councillor, Dr. MacCallum had many interests outside his busy professional life, and his death at the early age of 54 removes a figure well known throughout Westmorland.

THE LATE DR. ALFRED MACPHERSON.—Dr. Alfred Macpherson, the oldest practitioner of Uitenhage, Cape Province, died there on August 4th, after an illness of three months. He was one of the leading men of the district, having taken an active interest in educational, political, and other public matters. Dr. Macpherson, though he had refused all invitations to stand for election to the House of Legislative Assembly, was the leader of the local branch of the Unionist Party (now amalgamated with General Smuts's South African Party). Dr. Macpherson was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1880. He leaves a widow, one son, and three daughters.

THE LATE DR. T. H. MORTON.—Thomas Henry Morton, who died at his home at Nether Edge, Sheffield, on August 26th, in his 83rd year, was the doyen of the medical profession in the city. He became M.R.C.S. Eng. in 1861, L.S.A. in 1862, L.R.C.P. Irel. in 1874, and M.D., C.M. Aberd. in 1876. At one time President of the Sheffield Medico-Chirurgical Society he practised in Sheffield throughout his professional life, and was held in grest esteem by the workpeople. Although he had retired from practice for many years Dr. Morton remained a well-known figure on account of his wide interests, which included furniture, archæology, numismatics, ornithology, and photography; he was also keenly interested in politics and active in Church affairs.

owing to the acute shortage At the present time there is a waiting list of about 600 applicants for new houses under the corporation scheme The scheme, it seems, has been much hindered by the difficulties of obtaining building materials

Herefordshire

Dr Herbert Jones's report on the Herefordshire Combined District for 1920 covers the rural districts of Bromyard, Dore, Hereford, Ledbury, Leominster, and Weobley, and the urban district of Bromyard The estimated population of the 6 rural districts for 1920 was 47,086 The birth rate was 25 2, compared with 17 5 in 1919 The death rate was 13 5, the infant mortality rate 60 and the phthisis death rate 0 80 An endeavour is being made to pool the infectious hospital accommodation of the districts and that of the city of Hereford in the interests of efficiency and economy

Dr Jones reports on many primitive sanitary conditions such as cottages draining into road side ditches, obsolete forms of drain traps, and dip wells liable to pollution At the end of the report is a valuable leaflet on the economical construction of earth closets The combined district is just the area for their employment and it is disappointing that so few people living in the country have as yet taken the trouble to master the simple principles necessary for the maintenance of a sanitary closet In 1871, the State Board of Health of Massachusetts issued a report strongly recommending the earth closet as a substitute for that disgrace to civilisation, the country privy Dr W Ramsay Smith, head of the South Australian Public Health Department advocates them in a report published this year As Dr Jones says "Wherever there are a few perches of garden attached to a house it is possible to replace a foul smelling dangerous privy closet by a harmless inodorous earth closet" The public in general fails to appreciate the deodorising and purifying effect of earth suitably applied No stinking privy should be dignified by the name of earth closet Dr Jones's leaflet has been separately published by the *Medical Officer* and merits a wide circulation in country districts

IRELAND

(FROM OUR OWN CORRESPONDENT)

Irish Labour and the Public Health

IT is a healthy sign that in spite of the distracting elements in Irish public life at the present moment, all parties are showing an intelligent interest in the public health Under the auspices of Dail Eireann several of the local health authorities have been putting forward schemes of reform of the Poor law and Public Health Services which show evidence of careful consideration And now labour is devoting its attention to the same subject At the recent meeting of the Irish Trades Congress in Dublin the following resolution was unanimously passed —

> "That the National Executive be instructed to draw up for the benefit of Labour members of local authorities a comprehensive scheme of Public Health Service reforms towards the attainment of which all Labour members of local authorities could use their influence

In their deliberations the national executive of the Trades Congress should gain much help from a study of the report of the Irish Public Health Council

Cancer Research in Dublin

Ireland's high death rate from cancer is well known A concerted effort is being made to raise a sum of money to provide more adequate accommodation for cancer patients in the City of Dublin Hospital and to establish and equip a research department in connexion therewith The committee formed in London to assist this Cancer Research Fund has Mr J McVeagh M P, as its chairman and Mr Frank Spicer F R C S I, as hon secretary with an address at 58 Warwick street, S W

Household of the Lord Lieutenant

The following medical appointments have been made to the household of His Excellency the Lord Lieutenant of Ireland —Physicians in Ordinary E McD Cosgrave F R C P I, Sir James Craig, M D Surgeons in Ordinary Sir F Conway Dwyer, F R C S I, E H Taylor, F R C S I Physician to the Household Sir John Lumsden, M D K B E Surgeon to the Household Sir W I de C Wheeler, F R C S I Surgeon Oculist, H C Mooney, F R C S I

Correspondence.

Audi alteram partem

HYDROCYANIC ACID AND SANITATION

To the Editor of THE LANCET

SIR —An annotation in your issue of July 16th (p 116) refers to recent legislation in the *United* States, Italy, and Sweden on the use of hydrocyanic acid for *fumigation* of shops and buildings, based upon an article in the May issue of the *Office International d'Hygiene Publique* May I say that throughout South Africa this method is very commonly used for the destruction of bugs From time to time there have been an appreciable number of *fatalities and, as regards Johannesburg and several* of the Reef towns this was specially the case in the years immediately preceding 1913 In Simonstown some years ago a pigeon fell dead while flying past a window broken with a stone to permit the egress *of the gas after disinfection*

As our statutory list of offensive trades' includes charcoal burning and lime burning with which for this purpose cyanide *fumigation is sui generis I* recommended its addition to the list of such trades and the adoption of stringent controlling regulations This proposal was turned down as ultra vires by the then town clerk, but was eventually entirely upheld by the Government law advisers, and in January, 1916 regulations were *adopted Briefly*, these provide for the licensing of such disinfectors, for the safety and supervision of their methods, for 24 hours written notice *of intention* to disinfect (*a*) to the M O H, (*b*) to the occupier of the premises concerned, (*c*) to the occupants of any adjoining house unless *separated* by a *minimum* open space of 50 feet, for the evacuation of all apartments on the same or any upper floor for putting out of fires and removal *of all liquid or moist foods*, *for effectually* closing or caulking all openings and crevices in the room under disinfection for closing and locking it from the outside and placing upon it a conspicuous danger placard and for opening the windows from the outside at least one hour previous to entry *after disinfection* Every disinfector must be equipped with aromatic spirits of ammonia and with brandy, must be competent to apply *artificial respiration*, must *dispose* of the cyanide residue in such a way *as to* obviate danger therefrom (this is very important), and must keep under lock and key any cyanide stored *by him* Basements cellars &c which do not possess a door, window *pavement light, or hatch opening* directly to the outside air must not be *disinfected* with cyanide

These stringent regulations were at first resisted or ignored but as the *danger* was very generally recognized in Johannesburg, a number of prosecutions with heavy fines quickly brought the disinfectors to heel, and the results up to date have been quite satisfactory I may add that when framing these *regulations* I was unable to find any *other code* dealing therewith but derived assistance from an article by Dr Howard of the United States Department of Agriculture (*Bureau of Entomology*— Circular No 163 Nov 20th, 1912) Our regulations have now been widely adopted verbatim, throughout the Union —I am, Sir, yours faithfully,

CHARLES PORTER

Aug [illegible] 1921 Medical Officer of Health Johannesburg

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P.'s. £100.

Rotherham Hospital.—Jun. H.S. £150.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £100. Clin. Assts.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. £100.

St. Mary's Hospital Medical School, Paddington, W.—First, Second, and Third Asst. in the Med. Clinic. £750, £450, and £350 respectively.

Saint Pancras Dispensary, 39, Oakley-square, N.W.—Hon. Phys.

Salford Royal Hospital.—Res. Surg. O. £250. H.P. £200. H.S. £150. Cas. H.S. £150.

Salisbury General Infirmary.—H.S. £200.

Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.

Sheffield Royal Hospital.—Cas. O. Asst. Cas O. Each £150.

Sheffield Royal Infirmary.—Asst. Cas. O. £150. H.S. for Ear, Nose and Throat. £150.

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Jun. H.S. £175.

Sunderland. Durham County and Sunderland Eye Infirmary.—H.S. £400.

Sunderland Royal Infirmary.—H.S. £200.

Tunbridge Wells General Hospital.—H.S. £160.

West London Hospital, Hammersmith-road, W.—Two H.S.'s. H.P. Each £100. Surgeon.

Westminster Hospital, Broad Sanctuary, S.W.—Cas. M.O. £50. Temp. Cas. O. 50 gs.

Wolverhampton County Borough Education Committee.—Asst. Sch. M.O. £600.

Wolverhampton, Wolverhampton and Staffordshire General Hospital.—Res. M.O. £200.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at: Hoo (Kent); Knottingley (York, West Riding); Preston, West (Lancs.); Stevenage (Hertford); Catrine (Ayr); Carnoustie (Forfar).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Forfar. Applications for the post should be addressed to the Private Secretary, Scottish Office, Whitehall, S.W. 1, and should reach him not later than Oct. 1st.

Births, Marriages, and Deaths.

BIRTHS.

BETT.—On August 23rd, at Haslar, the wife of Surgeon Rear-Admiral William Bett, M.V.O., R.N., of a son.

CAPLAN.—On August 28th, at North End-road, West Kensington, the wife of Samuel Caplan, M.D., of a daughter.

FOULKES.—On August 29th, at Nelson-street, King's Lynn, the wife of Peter Gifford Foulkes, M.B., B.S. Lond., of a son.

HAWARD.—On Sept. 2nd, at the Wold, Woldingham, Surrey, the wife of Walter Haward, M.B.Durh., B.S., of a son.

HEFFERMAN.—On August 29th, at Namtu, Burma, the wife of L. W. Hefferman, M.R.C.S., L.R.C.P. (Joan Godfrey), of a daughter (Pamela Dorothy). (By cable.)

HOSKIN.—On August 29th, at Sheffield-terrace, Campden Hill, W., the wife of T. Jenner Hoskin, B.Ch.Camb., M.R.C.P.Lond., of a daughter.

MONTGOMERY.—On August 24th, at Beaumont-street, W., the wife of V. C. Montgomery, M.B., Ch.B.Belf., of a son.

PERN.—On August 28th, at Hildegarde House, Whitby, the wife of L. Pern, M.R.C.S., L.R.C.P.Lond., of a son.

PURCHASE.—On August 29th, at Warwick Mansions, S.W., the wife of Dr. W. Bentley Purchase, Barrister-at-law, of a daughter.

MARRIAGES.

FRANKLIN—WEIR.—On Sept. 1st, at St. Columba's (Church of Scotland), Pont-street, the Rev. Foster Franklin, M.A., Minister of the Parish of Kimlacolm, Renfrewshire, to Mary MacLean Weir, M.A., M.B., Ch.B. Glasg., daughter of Mr. and Mrs. John Weir, Catford.

GREVILLE—MOWAT.—On Sept. 3rd, at St. Andrew's Church, Frognal, Gordon Greville, M.R.C.S. Eng., L.R.C.P. Lond., to Marjorie Scott, daughter of the late Robert Mowat and Mrs. Mowat, Edinburgh.

MACKIE—COLLINGWOOD.—On Sept. 1st, at Yateley Church, George Mackie, D.S.O., T.D., M.B. Edin., to May Campbell Carnegie Collingwood.

WALLIS—ROFFEY.—On Sept. 1st, at St. Swithin's Church, East Grinstead, William Evershed Wallis, M.B., B.C. Camb., only son of Dr. W. Wallis, Groombridge, to Eileen Mary Constance, only daughter of Sir Walter and Lady Roffey, Thornhill, East Grinstead.

DEATHS.

ALLEN.—On August 28th, at Harley-street, London, W., Richard William Allen, M.D., B.S. Lond.

DAVIES.—On August 30th, after an operation, Hughes Reid Davies, M.R.C.S. Eng., L.R.C.P. Lond., of Gildredge House, The Goffs, Eastbourne, aged 62 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE PART PLAYED BY THE ENDOCRINE GLANDS IN THE EVOLUTION OF MAN.[1]

BY PROFESSOR L. BOLK,
DIRECTOR OF THE DEPARTMENT OF ANATOMY IN THE UNIVERSITY OF AMSTERDAM AND SECRETARY OF THE ROYAL ACADEMY OF SCIENCES.

THE invitation of the London University to deliver a lecture was accepted by me with great pleasure. By accepting it I intend to express my full approval of the aims of the Anglo-Batavian Society. The English and the Dutch have many psychical and physical characters in common. This resemblance is rooted in the identity of the racial composition of the population of both countries. As I have investigated the anthropology of my people during many years, it would have given me much pleasure to describe this resemblance to you in detail. Attractive as a lecture on this subject would have been, however, this evening I will direct your kind attention to another theme. The desire was almost irresistible to lecture in the country of Darwin, Huxley and Wallace, on the "Evolution of Man." This subject was chosen by me because I believe I shall be able to throw some new light upon this problem of problems.

I intend to describe to you human evolution as the effect of the agency of the endocrine organs. Now, I am aware that this theme is not quite new. The country, one of whose most famous poets—writing at a time when Darwin was still in his boyhood—once said: "And I am born where men are proud to be"—this country in later times also has brought forth biologists of uncommon intellectual power who, by their investigations, have added considerably to our knowledge of the evolution of man. I fear it would be too severe a strain upon the modesty of my colleagues, Prof. Elliot Smith and Prof. A. Keith, if I undertook to sketch their merits with regard to the deepening of our insight into the historical development of man. But in drawing your attention to the most recent publication of Prof. Keith, concerning the relation between evolution and the endocrine system, it will become clear to you that the side from which I approach this problem is not in all respects a new one. The time at my disposal is short, and I am obliged to treat my subject in a very condensed manner. I shall begin with a summary.

Functions of the Endocrine Organs.

It is certainly superfluous to enter into details as to the function of the endocrine organs. It is generally known that the secretions of these organs are in some obscure way correlated with the general condition of the organism. And it may be sufficient to mention that by this secretion the metabolism of the organism is regulated. This function being of a purely physiological nature will not be discussed in the present lecture. A second function of these organs, which undoubtedly stands in close relation to the one just mentioned, is of greater interest to the morphologist. The endocrine organs control the harmonic development of the body, they are the sources of the directing factors of morphogenesis. The different parts of the body do not develop in an autonomic way, independent of each other, but during development they stand in continuous interrelation. The maintaining of this correlation is that function of the endocrine system which I call their architectonic function. By virtue of this function they are the controlling factors of the development of the body; each morphological feature is subject to their influence. Thus it is clear that these organs are of the utmost significance for the ontogenesis of man. The question, however, which will be treated on in the present lecture, concerns their significance for phylogenesis, the historical evolution of the human body. And I intend to demonstrate to you that the endocrine organs have to a very large extent controlled this evolution also.

It may be accepted a priori that some interrelation must exist between phylogenetic development and the function of these organs. For in human individuals of that a far milder form of this disease is very common indeed, and that it is characterised by slight sore-throat and fever and some mild gastro-intestinal symptoms. Many of our nurses at the infirmary suffered from mild sore-throats at the time I spoke of, and sore-throats are not as a rule common amongst them; and if inquiries are made when a definite case of encephalitis occurs, one generally finds that others in the house, especially the children, have, or have had recently, slight colds or sore-throats.

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[1] A lecture delivered at the Royal Society of Medicine on May 12th, 1921, under a scheme for the exchange of Lecturers in Medicine between England and Holland arranged by the Anglo-Batavian Society in coöperation with the Royal Academy of Sciences in Holland and the University of London.

I cannot pretend to have proved my theory, but I think it is right to put it forward for others to criticise and possibly either to confirm or to confute; and I do so feeling that in some ways a man who practises as I do as a consulting physician in a wide and somewhat thinly populated country district is in a better position for observing what one might term the natural history of diseases than those who practise chiefly in our large towns.

I am, Sir, yours faithfully,
H. WILLOUGHBY GARDNER, M.D., F.R.C.P.
Shrewsbury, Sept. 1st, 1921.

THE SWIMMING-BATH AND EAR INFECTION.

To the Editor of THE LANCET.

SIR,—In addition to the simple Eustachian catarrh described by Dr. K. Amersbach, of Freiburg, in your last issue (p. 519), workers in throat and ear clinics are only too well aware of the occurrence of the much more serious purulent otitis media as a consequence of bathing. So regularly does every warm summer bring cases of ear suppuration due to this cause to our notice that it would scarcely be an exaggeration to describe the incidence as an epidemic to which all bathers may be at some time or another exposed, and it is noteworthy and regrettable that the infection is quite frequently of a highly virulent type, as the serious sequelæ show. I have just had two cases of cerebellar abscess and lateral sinus thrombosis, both of which followed an acute middle-ear infection induced by bathing.

To suggest a method of preventing such accidents is rather difficult. On a hot summer day the refreshment of a cool dip is irresistible, and so people will only smile at the very slight risk of ear infection. Sufferers from chronic otorrhœa, however, should always be warned that bathing for them does entail a very serious risk indeed. On the other hand, a person with an old, dried-up perforation in the membrane is probably not any more prone to middle-ear infection than a normal subject, since it is almost certainly through the Eustachian tube and not through the external meatus that the infection reaches the middle ear in most cases. This raises the question whether the water is itself to blame for the infection, or whether it is not rather due to the washing-up of the patient's own nasal and naso-pharyngeal secretions into the middle ear in the same way as when that cavity is infected by the sniffing up of liquids into the nose for cleansing purposes.

Nevertheless, that pyogenic organisms are present in the water people are habitually bathing in cannot be denied, and every effort should be made to render and to keep such water as clean as possible. This, we must admit, must often be a difficult ideal to realise, but the matter is one for consideration by public health authorities.

Fresh water swimming-baths should be emptied and refilled with clean water not once but several times in the course of the day when there are many bathers, although this naturally necessitates a plentiful supply of water.

This precaution should also be adopted if possible at public sea-bathing establishments. There seems to be a popular notion prevalent that sea-water has the property of keeping itself pure and free from germs. This, of course, is an error. Wyatt Wingrave has often told me that he has always been able to grow the *B. coli communis* from the sea-water on the beach of any of our seaside resorts. And if this is true of water open to the sea, how much more contaminated must water be when it is enclosed in a public bath, where, between one full tide and another, crowds of bathers of all kinds are splashing about, adding each his own quota to the sum total of the bacterial flora.—I am, Sir, yours faithfully,

Wimpole-street, W., Sept. 3rd, 1921. DAN MCKENZIE.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—I wish to disclaim any connexion with the publication of a paragraph in the *Daily Mail* of August 31st, in which my name occurs with reference to a case of Cæsarean section, and at the same time to protest against the exposure of such medical details in the lay press. On this occasion I am informed that a reporter visited the home in question and obtained such details as he required, in order to dish them up for the palate of the newspaper reader.

I am, Sir, yours faithfully,
BECKWITH WHITEHOUSE, M.S., F.R.C.S.,
Honorary Obstetric Surgeon, General
Hospital, Birmingham
Birmingham, Sept. 3rd, 1921.

LATE EFFECTS OF GASSING OR TUBERCULOSIS?

To the Editor of THE LANCET.

SIR,—Dr. J. B. Hawes's experience of the late effects of gas poisoning, the subject of an annotation last week, agrees with my own experience among tuberculous pensioners while tuberculosis officer for Carlisle. Patients suffering from the after-effects of gas poisoning do not show the usual constitutional symptoms associated with tuberculosis, but on the contrary are fairly well nourished. They complain of cough with a copious muco-purulent sputum in which repeated examination fails to reveal the tubercle bacillus. The chest is emphysematous in type, and in marked cases there is evident dyspnœa during rest, and sometimes asthmatical attacks occur at night. The physical signs which may be almost entirely confined to one lung consist of some impairment of the percussion note or definite dullness and faint breath sounds with prolonged expiration, accompanied by fine and coarse râles or rhonchi. The vocal resonance is also diminished. The condition remains practically unchanged under treatment. There is some amelioration during the summer, but the symptoms become aggravated during damp weather.

Such cases are referred by the Ministry of Pensions as tuberculosis, but I am of the opinion that the tubercle bacillus is in no way responsible for the condition which is one of chronic interstitial pneumonia. I am unable to state definitely the proportion of these cases, but I think I came across 5 among 70 pensioners referred to the tuberculosis dispensary.

I am, Sir, yours faithfully,
Eccles, Sept. 5th, 1921. J. E. SPENCE.

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—In your issue of May 21st Dr. Frederic Thomson emphasised the great practical importance of early diagnosis in diphtheria, and two weeks later Dr. S. R. Collier related the steps taken by the Public Health Committee of Wimbledon to ensure to the practitioner a ready supply of antitoxin. It certainly seems useless for teachers and authorities like Dr. Thomson to instil into students the need for immediate antitoxin treatment on the diagnosis or justifiable suspicion of a case of diphtheria, if we, as practitioners, are to be hindered from carrying out such treatment by laymen on local district councils.

I am practising in a home county town not 35 miles from London, and some time ago I had a pigmentation of the skin. You know that the cause of Addison's disease is an affection of the suprarenal body. And so the following facts may be stated. An affection of an endocrine organ causes a reappearance of the pigment in the skin of white man—that is to say, that an essential human character is lost by this affection, the individual reacquires a quality of one of his ancestors. And so it seems to me to be not a daring conclusion that the loss of pigment during the course of evolution was due to the suppressing influence of the suprarenal body. As soon as this organ is affected its normal function is modified, the check is removed which hinders the formation of pigment in the skin, and it becomes coloured again.

Orthognathy of Man.

I pass on to another human character. Man differs from the other Primates in a typical way by his orthognathous skull. In the nearest relatives of man, the anthropoids, the facial part of the skull is strongly developed, the massive jawbones predominate over the braincase, and the brow ridges overhang the orbits like penthouses. The anthropoids have a small facial angle. In man, on the contrary, the facial part of the skull is of slighter development, the jawbones are scarcely prominent, the brow prominences project but little, and the facial angle is a large one. Now, in judging the human form, I lay stress upon the fact that orthognathy is a fœtal character of all Primates. It is only during the second half of ontogeny that the facial part of the skull begins to project strongly. In man the embryonic condition persists, the development of the jawbones is a very slight one. Therefore the orthognathy of man must also be considered as the consequence of the suppression of a developmental potentiality. This suppression does not act equally strongly in all human races. And again, in the black races in general and the Australian natives in particular, the prominence of the jaws becomes least suppressed. As regards this characteristic also the white race, judged from my standpoint, is the most human.

Is there any indication of the endocrine gland by the agency of which the orthognathy of man may have come about? Certainly. For though the strong development of the jaws, especially in the white races, is suppressed, its developmental potentiality is not annihilated; it has become latent. There are known to all of you cases in which, in some individual, the jaws recommence to grow in an anomalous manner, and the brow prominences begin to project, this being one of the main symptoms of acromegaly, well recognised as a disease of the hypophysis. It seems as if in these cases the hormones of this endocrine gland act insufficiently and the latent potentiality reasserts its power. This occurrence is comparable to that in which the higher psychical functions of man are abolished, and the brutal instincts which are normally inhibited reacquire control of his actions.

The affection of the hypophysis causes yet another phenomenon in accord with the principle of my theory. In comparing the hand and foot of man with those of anthropoids, striking differences, specially of the foot, may be noticed. In anthropoids, as you know, the terminal part of the hind limb is hand-shaped. Again, I want to emphasise the fact that in its outer form the foot of man has retained its fœtal feature; the hand-like foot of the anthropoids is the differentiated form. So also in the outer form of man's foot an embryonic condition persists. But it is not only to this point that I wish to draw your attention. The anthropoid hands are clumsy and heavy, those of man slender and modelled after a more elegant pattern. And if I had sufficient time to do so I could prove to you that also the hand of man is of a more fœtal form than that of apes. Now I remind you of the fact that another acromegalic symptom is the enlargement and increasing clumsiness of hands and feet in man. It seems, therefore, that like his jaws the terminal parts of his limbs are freed from a suppressive influence in man; his pituitary body is affected, and a lost ape-like condition returns.

Closing of the Cranial Sutures.

The next essential characteristic of man which I shall discuss is of a more histological nature. As a rule the sutures of the skull close very early in apes, and there is a great tendency for them to unite in childhood. Some years ago I published a thorough investigation of this phenomenon, and demonstrated that, for instance in gorilla and orang, the sutures in the vault of the skull, as a rule, have disappeared before the spheno-occipital synchondrosis is closed. In man, on the contrary, the synostosis of the cranial bones is postponed to a very much later period than in anthropoids and the disappearance of the sutures seems to be more a symptom of senescence.

The sutures of the skull are the lines along which the enlargement of the cranial bones takes place, and this enlargement is requisite as long as the brain-case increases in size. The function of the sutures is terminated, therefore, as soon as the brain has attained its adult proportions, after which they can close without harm. This happens in all other Primates. The persistence of the sutures in man long after the brain is full-grown is again to be considered as the continuation of a fœtal condition; and like the other characteristics already mentioned, the persistence of the sutures also results from a retardation or suppression of a growth process—namely, the ossification of the fibrous tissue between adjacent bones. This retardation in the closure of sutures exhibits itself in yet another way—namely, the occasional permanence of the interfrontal suture. As a rule this suture is closed in man in early childhood, as it does also in anthropoids, whilst in lower Primates the frontal bones have become fused together even before birth. In a certain percentage of men, the interfrontal suture does not close—a phenomenon which is distinguished as "metopism." In an investigation published some time ago, I demonstrated that metopism is not at all due to increased intracranial pressure, caused by exceptional enlargement of the brain, as is asserted by some authors. Metopism is nothing but the result of the same process by which the sutures in man generally tend to persist.

Metopism is certainly one of the last acquired somatic human characters, and it is very remarkable also that this character is found more frequently in white men than in black races, and, further, that among the former it occurs most frequently in the Norvic race. In the latter it is found on an average of 8 or 9 per cent. Thus the race which is distinguished by the absence of pigment, by the high degree of prognathism, and also with regard to metopism, is found in the highest level of human evolution. Is there any indication as to the endocrine organ by the agency of which the ossification of the sutures in the skull was retarded? Certainly. And this indication is afforded again by pathological observations. It is more than a probability that this organ was the thymus, for the osteogenetic processes are regulated by this gland. This is not a mere supposition, for we know that extirpation of this organ in young individuals or destruction of the same by some affection causes a disorder in the normal osteogenesis. This disorder is recognised by the rachitic changes in the tissue of the bones. Now it is a matter of fact that one of the symptoms of a rachitic constitution is the premature and irregular closure of the sutures of the skull. Therefore we conclude that, since normal function of the thymus prevents premature closure of the sutures, the regular ossification of the sutures, and the time at which this process takes place depends on the agency of this gland.

Labia Majora and Hymen in the Human Female.

I will now proceed to discuss another essential somatic characteristic of man which also is a perpetuated fœtal feature, but of a nature quite different from the foregoing. Females of the human species differ from those of the other Primates by the possession of labia majora and of a hymen. I shall not discuss this latter formation, its ontogenesis being as yet a subject of much controversy. I lay special stress upon this difference between man and apes, because it is an anatomical characteristic, for which it cannot be claimed that its development was of any value to the individual in the struggle for life, or may have been acquired by the influence of some external factor. Many years ago this difference between man and apes was the subject of an attack made by Bischoff, the Munich anatomist, on the Darwinian doctrine. He maintained that the complete absence of labia majora proved conclusively that there was no relationship between man and the apes. Now Bischoff overrated the value of this argument, because he committed the mistake of examining only adult specimens. If he had extended his researches to fœtal material he would have destroyed the foundation of his argument against Darwinism. For—and this is an essential point for the present discussion—in the embryo and fœtus of other Primates there are also during a shorter or longer period a mons veneris and labia majora. As you know, the labia majora, together with the mons veneris, are differentiated from the outer genital folds. Now these folds appear in apes as in man. But whilst in apes as a rule they are flattened and disappear completely, in man, on the contrary, they increase; their ventral part surrounds and covers the genital papilla, or clitoris, so that this organ comes to lie deeper, whilst in apes it remains at the surface. The lateral parts of the external genital folds increase also, and form the labia. So the special structure of the external genitals in women is a persistent fœtal character.

Now it is very interesting that in anthropoids the tendency to this perpetuation is present. For in anthropoids the flattening of the outer genital fold is not as complete as in lower Primates. So in his monograph on the chimpanzee, Sperino remarks that on both sides of the entrance of the vestibule there is a slight prominence, caused by a thickening of subcutaneous fat; and there is also an indication of a mons veneris. Quite the same condition is noted by Deniker in

PORTLAND convict prison has been converted into a Borstal Institution making the fifth institution of the kind in England

THE late Sir George Henry Savage left his books on insanity to the Bethlem Hospital and his collection of minerals to the Natural History Museum, South Kensington

THE George Henry Lewes studentship in physiology, value £215 a year and tenable for one to three years will shortly be vacant Application to Prof Langley at the Physiology School Cambridge

WIGAN INFIRMARY—*During the 13 weeks of the coal strike the Wigan Infirmary lost more than £3000 by* the lapsing of the weekly subscriptions which the miners voluntarily contribute to the maintenance fund of the hospital A special effort week is being organised in the town with the object of wiping out the temporary loss of *subscriptions*

PRESENTATION TO A MEDICAL MAN—On the occasion of his resignation from the position of surgeon in charge of the Glasgow Orthopædic Institute Dr William Laird has received a presentation of silver plate As many as 14 000 cases of disabled soldiers have passed through Dr Laird s hands since the opening of the Institute He proposes to devote himself to private practice

THE Manchester Corporation have made grants amounting to £6000 to local hospitals including £1500 to the *Royal Infirmary and £1200 to Ancoats Hospital* The corporation have received Government grants for tuberculosis treatment £17,500, for maternity and child welfare work £13,500 and for treatment of venereal diseases £4161, in respect of estimated expenditure for the half *year ending Sept 30th*

DRUGS NEEDED IN RUSSIA—*A cablegram received* from the Russian Committee of the Friends Relief Committee (27, Chancery lane London W C 2) states that there is urgent need in the famine area for the following drugs—namely, atropine sulphate caffeine iodine, ipecacuanha root, *neosalvarsan potassium iodide and pilocarpine* hydrochloride These drugs can be put to good use if placed at the disposal of the Committee

VISIT OF SWISS MEDICAL STUDENTS TO VIENNA—On Oct 7th about 100 medical students accompanied by the professors from a number of Swiss clinics will pay a visit of inspection to *hospitals* and clinics in Vienna Special courses lasting a fortnight are being arranged The visit was proposed by Prof von Eiselsberg (surgery) of Vienna to his old assistant Dr P Clairmont now professor of clinical surgery at Zurich on a visit paid by the former to Switzer*land in July*

WINSLEY SANATORIUM—*On August 31st a large* number of representatives of Bristol and Bath Corporations and of the Wiltshire County Council visited the sanatorium at the invitation of the executive committee of the institution During an informal gathering which followed inspection of the grounds, various speakers expressed their sense of the excellent work now being carried on there and paid tribute to the pioneer efforts of Dr Lionel Weatherly whose labours were largely instrumental in the foundation of the sanatorium in 1903 and who became the first chairman of the managing committee when the buildings were opened in the following year

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FRIDAY—10 A M Mr D Buxton Dental Department 2 30 P M Dr Pritchard Visit to Medical Wards

SATURDAY—10 A M Dr Paterson Medical Diseases of Children 2 P M Mr Sinclair Surgical Out patients

Daily—10 A M Visit of Post Graduates to Wards 2 P M In patient Out patient Clinics and Operations

Appointments.

Successful applicants for Vacancies Secretaries of Public Institutions and others possessing information suitable for this column are invited to forward to THE LANCET Office directed to the Sub Editor not later than 9 o clock on the Wednesday morning of each week such information for gratuitous publication

SOWDEN G M D Brux M R C S L R C P Lond D P H Camb has been appointed Medical Officer to the Post Office for the North Western District London

Manchester Royal Infirmary J G HISLOP M B Ch B Aus R WILLIAMSON M B Ch B Vict and J W FORD M B Ch B Syd House Physicians A W HARLEY M B, Ch B Aus Senior House Surgeon A H SOUTHAM, F R C S Eng Surgical Registrar JOHN GOW, F R C S Eng Assistant Surgical Officer MARGARET DOBBIE M B Ch B Edin Medical Officer Central Branch ELIZABETH FORBES M B Ch B Edin Assistant Medical Officer, Central Branch

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Vacancies.

For further information refer to the advertisement columns

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Bristol Royal Hospital for Sick Children and Women—H S H P Each £1[illegible]0

Burnley Union Workhouse [illegible] M O £3[illegible]0

Cancer Hospital Fulham road London S W H S £150

Cardiff King Edward VII Hospital Hon Surg

Central London Ophthalmic Hospital Judd street St Pancras W C—H S £100 Jun H S £[illegible]

Central London Throat Nose and Ear Hospital Gray s Inn road W C—Registrar Asst Surg

Chester Royal Infirmary—Asst H S £150

Clifton York North Riding Mental Hospital—Sen Asst M O £100

Coulsdon Netherne Mental Hospital—Third Asst M O £[illegible]

Florence Nightingale Hospital for Gentlewomen 19 Lisson grove, N W—Part time M O £[illegible]

Great Northern Central Hospital Holloway London N—H P £150

Great Yarmouth Hospital—H S £[illegible]0

Hackney Union Infirmary—Jun Asst M O £3[illegible]

Hospital for Epilepsy and Paralysis Maida Vale W—Hon Ophth Surg

Hull Royal Infirmary—Asst H S £1[illegible]0

Leeds Public Dispensary—Sen Res M O £[illegible]

Lochgilphead Argyll and Bute District Asylum—Asst M O £3[illegible]0

Manchester Children s Hospital Gartside street—Asst M O £[illegible]

Napsbury Mental Hospital Napsbury near St Albans—Asst M O £[illegible]

North Middlesex Hospital Silver street Edmonton N—Asst M O [illegible] per an

Norwich Norfolk and Norwich Hospital—H S £2[illegible]0

Notts County Council—Tuberc Officer £[illegible]

Perth Murray Royal Mental Hospital—Asst M O £[illegible]

Relation of Endocrine Glands to General Retardation.

Finally, I will return to the principal problem of the present lecture and put the question: whether this general retardation, too, is in any way related to the agency of the endocrine system? That the rate of development generally is regulated by this system is sufficiently demonstrated by experimental researches of late years. Though these experiments are yet in an initial stage, we have already become acquainted with an endocrine organ, able to *accelerate* the development. This organ is the thyroid gland. I mention only the statement that feeding tadpoles with thyroid accelerates the metamorphosis of these animals. But, as far as I am aware, experimental investigations have not yet brought to light any element of the endocrine system able to retard the rate of development. I am convinced, however, that there must be such an inhibitory element in the human organism. And I have a strong belief that this is the pineal gland. This belief is based on the occurrence of well-known anomalous conditions. Every physician is acquainted with the very deplorable cases of so-called premature sexual development. This anomaly occurs in boys as well as in girls, but apparently more frequently in the latter. Several instances of this pathological condition, in which, for example, young girls of six or seven years become pregnant, are dealt with in literature. Now I believe these cases must be explained in this way, that in such individuals the arresting influence of the endocrine system on the function of the genital glands was insufficient, and the check which hindered the maturation of germ cells was removed too early. Considered from this point of view the premature sexual development appears as a physiological atavism. Observations of late years have shown conclusively what endocrine organ is responsible for this anomaly. You know it is the pineal gland. These observations justify my assertion that this organ is, and has been, the regulator of maturation and that it was principally by its agency that the general vital process of man was retarded.

Adaptation to Animal Food.

And now, in conclusion, only a single remark concerning the primary cause of this retardation. I consider this to be the adaptation of the human species to animal food. All other Primates are herbivorous or frugivorous, only man has accustomed himself to an omnivorous existence. This must thoroughly have changed his metabolism. The whole endocrine system functions as a unit. All its organs are physiologically associated with each other, and the effect of this association is an equilibrium. Now in each organism this equilibrium is in harmony with the chemical structure of the food, of the material which must be assimilated. If this material is exclusively or principally vegetable, the endocrine system must function in a somewhat different manner than when the material submitted to its regulating power is of animal origin. Therefore, by a transition from a vegetable to an omnivorous diet, the regulation of the metabolic processes must necessarily be modified. Is there any indication as to the nature of this modification? I think there is. I draw your attention to the very interesting fact that as a rule the development of carnivorous animals, mammals as well as birds, takes place at a slower rate than that of herbivorous ones. I consider this fact as an argument in favour of my assertion that the retardation of human development is in some way or other connected with the adaptation of man to animal food. I have not the slightest idea of the relation of cause and effect in this case; the question is more physio-chemical than morphological.

Conclusion.

I must finish. However much I may regret to be obliged to condense the treatment of my subject, I must come to a conclusion; and let me end with a general remark upon the endocrine system. There exists, as I have mentioned already, a close relation between all internal secreting glands; the whole endocrine system is an organic unit, it is a sort of controlling super-organisation in our somatic organism, an *imperium in imperio*. And this "imperium" fulfils its task in a stimulating or a suppressing manner. The endocrine glands are, so to say, the sense-organs of the autonomic system, sensitive only to chemical stimuli, as the sense-organs of the cerebro-medullar system to physical stimuli. These organs judge the quality and intensity of the chemical substances produced in the body, and regulate the nature and the quantity of the same by means of their hormones. And certainly it is not a mere chance that the principal organs of this system are derived from the epithelium of the foremost part of the alimentary tube. I believe that originally they controlled also the chemical nature of the food, before there were senses of smell and taste. By investigations and observations on the endocrine system during late years we have arrived at a very important point. It seems to me that we have reached a summit, and a large plain and wide perspectives lie open before us.

MEDICAL CONGRESS AT YVERDON.

A MEDICAL congress is being arranged for Oct. 8th and 9th to be held at Yverdon-les-Bains, which lies at the S.W. end of the Lake of Neuchâtel, 40 minutes by rail from Lausanne. The springs are of two kinds. One gives a supply of 12,000 litres an hour of a sulphur water, at a temperature of 24° C., analogous to that of Aix-les-Bains, Eaux Bonnes, or Cauterets. The other is a cold water containing $MgSO_4$. Both are used for inhalation as well as bathing, and among the special indications are mentioned arthritism, gout, obesity, diabetes, high arterial tension, plethora, and auto-intoxication. The season lasts from May until October.

AN EXAGGERATED REPORT.

UNDER this heading there appeared in our issue of June 11th, p. 1280, a démenti from our Geneva correspondent of the report current in the lay press that a certain surgeon had extracted a beating heart from a still living body. The accusations brought against this surgeon, who is none other than Prof. E. Kummer, by some of his junior colleagues at the university clinic, have formed the subject of a judicial inquiry nominated by the Conseil d'État. As regards the particular accusation referred to above, the court of inquiry find that the evidence refutes the "singularly hasty" reproach of homicide ("assassinat involontaire") which had been made. Prof. Kummer has emerged from the whole inquiry, whose scope was considerably greater than the clearing up of this one incident, with his reputation enhanced.

THE OLD "IMPREGNABLE."

THE old wooden battleship *Impregnable* has for so long figured as the least healthy of the boys' training ships that few will regret to see that she is to be broken up. She had 78 cases of pneumonia in 1913, 42 in 1914, 197 cases of mumps in 1913, 149 of measles in 1914, in each case the largest number shown by any ship in the training service. That they were not all attributable to this individual ship, but also to the sister ships associated with her, is doubtless true; still all old wooden ships are badly ventilated and likely to be overcrowded, and are consequently unsuitable for barracks. That another of them has gone from the Navy and may be replaced by a more modern ship gives hope for better health returns from the training establishment, in which *Impregnable* had a pneumonia incidence in 1913 ten times, and in 1914 five times as great as that of the general service.

ANOTHER CONSUMPTION CURE IN THE LAY PRESS.

WE have received a 12-page pamphlet containing extracts from several Queensland newspapers regarding a new specific treatment for tuberculosis stated by its inventor, Dr. De Luca, to be similar in principle to the Spahlinger cure. The exact nature of the remedy is not revealed, but it appears to be a tuberculo-protein administered as a vaccine, first by mouth and then subcutaneously. No clinical or pathological data have yet been given. Dr. De Luca is given in the Australian Medical Directory for 1914 as an M.D. of Naples, qualified in 1895, but he does not appear to have taken any registrable qualification in the country where he is now practising, or, at any rate, to have taken any steps for its registration. Nor has he communicated anything concerning his remedy to a medical society or a medical journal.

A NEW PROCEDURE IN OBSTETRICS.

UNDER the above title Dr. Lorenzo Diaz, of Toluca, Mexico,[1] describes how he treated a transverse presentation ("acromio-iliac right dorso-posterior") with prolapsed arm, in which the membranes had ruptured and all the amniotic fluid escaped before the patient was admitted to hospital. In the face of this difficulty Dr. Diaz took a large Nélaton catheter and inserted it behind the back of the fœtus (which was dead), and using the prolapsed arm to occlude the cervix he injected sterile water through the catheter from a 25 c.cm. glass syringe—sterile water was used because normal salt solution was not available. The result was in any case most happy; version was performed and the child safely delivered. The patient's temperature had fallen to normal two days after the operation, and she made an uneventful recovery.

THE name of the preparation "Chlorosan," made by the Institut Séro-Thérapique et Vaccinal of Berne, has been changed to "Phyllosan."

AN aged medical man's widow, nearly blind, is in want of a bath-chair. "A," 12, Park-lane, Tottenham.

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[1] Gaceta Medica Balear, July, 1921, vii., 9.

to-day the effect of their function is the development of a human body as it actually exists. But in earlier times, *in the ancestor of man*, there was built up under their influence a form different from the present, a form with more primitive, ape-like characters. So it follows that, if *the endocrine organs control* the development of the body, they must modify their function in accordance with the modifications in the structure or features of this body during the course of time. This fact gives rise to the following question of fundamental importance: What is the nature of the correlation between the morphological *modifications of the organism and the changes in the function* of the endocrine glands? There are two possibilities: either the endocrine organs have adopted their function to the modifications of the body, or the latter are the *consequence of a primary* alteration in the function of the glands. To determine which of these possibilities is the true one is of the utmost importance, for this decision determines our standpoint as to the more fundamental question whether evolution is the result of external factors only, or of those in conjunction with internal ones. This problem forms the general biological foundation of my lecture.

Results of their Suppressive Agency.

The somatic differences between a primitive form and its more differentiated descendant are of a regressive or of a progressive nature. In the first case some anatomical character of the ancestor is *absent* or *not so strongly* developed in the descendant—in other words, the potentiality for development of this character is suppressed or weakened in the course of phylogenesis, and the agency of the endocrine system *in this case was a suppressive one*. In the second case an anatomical character is more strongly developed in the descendant; the agency of the endocrine glands has, in this case, been a stimulating one. Now I intend to *make clear* to you that nearly all essential human characters are the result of a suppressive agency of the endocrine organs. How, you will ask, have you arrived at this conclusion? By two ways: that of embryology and that of pathology. Embryological and pathological phenomena, in combination with each other, throw a very *interesting* light upon the important influence which the endocrine organs have exercised on the evolution of the human body, as I will demonstrate to you. I believe it will be of great use to summarise beforehand the *essentials of my* lecture. I shall give this summary in the form of the following six conclusions:—

1. The essential characters of the human body are a *survival of fœtal conditions.* 2. This persistence of fœtal conditions is the result of a retardation or a suppression of the development of certain general characters of Primates. 3. This retardation or suppression is caused by the agency *of the endocrine organs.* 4. In morbid affections of the endocrine organs this suppressing agency is removed, *and the human body once more acquires* features of some ape-like ancestor. 5. The retardation of development concerns not only purely somatic features, but human development as a whole. The developmental rate of man is *retarded*, the succeeding phases of his life are protracted. 6. This retardation of the developmental rate of man is, perhaps, *caused by the change of the nature of his food*, the frugivorous ancestor of man becoming omnivorous *or carnivorous.*

Hairlessness of the Human Body.

These conclusions, which are so many chapters of a theory of the evolution of man, are *not speculative*, but are founded, as you will see, upon well-known *embryological* facts and pathological observations, with exception of the last of the series, which is merely a suggestion or presumption. The fourth *conclusion implies that diseases of the endocrine* organs influence in the first place the essential human characters. Now, the number of these is very small, and I shall begin by discussing one of the *simplest—namely*, the *hairlessness of the* human body. Many opinions as to the cause of the nakedness of the human skin have been advanced in literature *already*: *natural selection*, sexual selection, climatological influences, and so on. I refrain from criticising these ideas, but draw attention to the fact that nakedness of *the skin is a common fœtal character.* In the embryos of all Primates the hair appears rather late, the development of the hairy covering in this order of vertebrates seems *to be generally retarded.* This retardation is the initial phase *of the process* which resulted in the complete loss of the hairy covering in man, with the exception of the scalp. It is *maintained that* the presence of hair here is due to sexual selection. This assertion cannot be true, *as* I will demonstrate to you. In the skin of a nearly full-grown fœtus *of a chimpanzee* the *pigmentation is* yet wanting, a remarkable fact to which I shall return. But most remarkable is the hairlessness of nearly the whole body; *only* the *scalp bears long* brownish hair. This valuable specimen proves that *the mode* of distribution of hair on the surface of the human body is found already in principle in the anthropoids, and that therefore the agency which caused the nakedness of the human body is already active in anthropoids. Could you wish for more conclusive proof that this nakedness cannot be the result of natural or sexual selection, but is acquired by the influence of an internal factor, which suppressed almost completely *the development of the hairy covering of the* body and perpetuated a fœtal condition?

Now the question arises, what endocrine organ suppressed the development of the hairy covering of the human body? Some very suggestive pathological observations serve as a valuable clue. It is a well-known fact that affections of the pituitary body can influence the state of hairiness in a high degree. This influence does not always bear the same character, but, for the point under discussion, it suffices to recall to mind that it is demonstrated in some patients by the development of a dense hairiness specially all over the limbs and trunk. I am inclined to believe that in those persons the suppressive influence exercised by the hormones of the pituitary body is eliminated, so that the latent potentiality for hair-forming becomes active again.

White Skin of Some Human Races.

We shall now consider a second essential human character—*namely, the white skin of man. Though this be only* a racial character I will discuss it now, because it affords me the opportunity of demonstrating the significance *of the endocrine organs with regard to racial differences.* For it is obvious that if these organs have influenced the evolution of man as a species, the same holds true also, *in no mean degree, as to the differentiation of this species into its races.* The skin of all Primates is coloured by black or brown pigment, and in man some races agree *in this respect with the apes, but a considerable part of* man has a white or somewhat yellowish coloured skin. Many opinions have been advanced as to the means by *which man got his uncoloured skin. None of these will* be advocated here, because I shall throw light upon this phenomenon from my own standpoint.

It need scarcely be observed that of all Primates the fœtus passes a stage during which its skin, *as well as its* iris are free of all pigment. White skin and blue iris are, *therefore, properties of the primate-embryo in general.* But before birth the skin and iris of the ape-fœtus become coloured. *In man in some races these fœtal qualities—pale skin and blue eyes—have become perpetuated*—that is to say, the potentiality to form pigment in the deeper layer of the skin is suppressed. In other races, on the *contrary, this potentiality is preserved; skin and iris become* intensely coloured. But, as will not be unknown to you, this pigmentation of the skin happens after birth; the *negro-babe is born with a somewhat greyish or yellowish* coloured skin. It seems as if the internal factor, which suppresses the formation of pigment in *the skin of white races, exercises its influence already* in the black *races*, where the process of colouring is retarded.

Allow me in this connexion to draw your attention *to a parallelism between two facts?* The developmental factor causing the nakedness of man was already active in anthropoids, as shown in the fœtal chimpanzee with *naked trunk, limbs, and face*, and head covered with *long hair*, quite like a human baby. This is the first fact. And as to the pigmentation of the skin we have seen that the *developmental* factor, by the agency of which a part of the human species became pale-skinned, is active already in the other part; the negro-babe is white-skinned. This *is the second fact.* My conclusion *from these relations* is quite simple. By the preservation of his naked skin man occupies a higher level in the developmental scale *than the other Primates*; so by the permanence of the unpigmented skin *the white race* occupies a higher level than the black races. The race with white skin and blue eyes—the Nordic race—is a more progressive form of man than the black-skinned races. It is, so to say, the most fœtal *of human varieties.* Can it be possible that this assertion affords a key to the solution of the problem why also in other respects the negro is inferior to the white? As you see, my point of view perhaps opens some new perspective for the understanding of the inequality of human races.

After this digression we return *to the matter* in question. We have demonstrated that the paleness of the skin of the white races is due to the suppression of a developmental potentiality present in all Primates—namely, the formation of pigment.

And again we put the question: Which of the endocrine organs must be considered as the starting-point of this phenomenon? This question calls up in my mind the *name* of one of your countryman, Addison. It is superfluous to summarise the symptoms of the *disease named* after this renowned physician. Passing over the general constitutional symptoms, consider for a moment the most characteristic phenomenon of this disease—the

RESPIRATORY EFFICIENCY CONDITIONED BY HYGIENE AND SANITATION.

These figures show that the causes of physical inefficiency are to a large extent preventable. I do not wish to enter largely into details of sanitation and hygiene—as, for example, to point out the effects of insufficient or ill-chosen diets, overcrowding, back-to-back houses, and ill-ventilated workshops—but I cannot refrain from pointing out that, apart from the very important question of diet, these evils lead to a condition of respiratory and circulatory inefficiency largely involving the well-being of the individual. From this statement it will be seen that I attach great importance to the respiratory efficiency of the individual in the acquisition and preservation of physical efficiency. In particular is this the case in regard to bodily endurance. I have been led to this view by my work in connexion with the Royal Air Force. It has been my privilege to study the causes which lead to flying fatigue, and also to endeavour to study the bodily qualifications which must be sought for in the successful airman. To do this satisfactorily it was necessary in the first place to examine successful flying officers, as well as those suffering from various degrees of breakdown. As the results of investigations, with which I shall deal later, it became apparent that for efficiency in air work and for the prevention of physical endurance of the stress of flying respiratory efficiency was of particular importance. As the result of the examination of many hundred candidates for the Royal Air Force it has also become obvious that the same condition applies to all physical efficiency and bodily endurance, whether it be for air work or for work on the ground.

PRESENT KNOWLEDGE CONCERNING RESPIRATORY FUNCTION.

Before dealing in detail, however, with the results obtained in connexion with this work it is necessary to review the present state of our knowledge regarding the processes of respiration, since I believe that a considerable amount of the respiratory inefficiency of the present day may be attributed to the fact that the true significance of the mechanism of respiration is not correctly appreciated, and therefore that the fundamental physiological principles of respiration are not correctly taught and applied.

Broadly speaking, movements concerned in respiration are designed to serve three functions: (1) to provide the body with oxygen and to rid it of carbon dioxide; (2) to act as accessory pumps to the circulation, thereby aiding, particularly in the upright posture, the return of blood to the heart; (3) to massage the alimentary tract, thereby helping to preserve the muscle tone of stomach and intestines.

With regard to the movements of respiration, it is not proposed here to enter into the time-worn controversy as to the exact action of the various muscles engaged in the respiratory processes, nor as to exact movements performed by individual ribs. Too much time has already been wasted by hypothecating such actions and movements from minute considerations of the dead structures. There is a great difference between the living and the dead thorax. It is better for ordinary purposes to consider the movements of the thorax as a whole. Although the muscles concerned in respiration are so arranged that they can be coördinated in various ways to bring about the processes of inspiration and expiration, there is, undoubtedly, a most efficient way for each process, and for bodily efficiency and endurance it is important that this way be employed. The essential movements of quiet inspiration are the descent of the diaphragm and the raising of the lower ribs. When inspiration is deeper the movement spreads progressively in undulatory fashion from the lower to the upper ribs, so that the upper part of the chest is seen to rise. This upper chest movement is to be regarded as the accessory part of inspiration. On this account it becomes particularly prominent when breathing is greatly increased in depth by excessive exercise, or becomes laboured in disease, or when correct inspiration is impeded by occupation or clothing.

CLOTHING AND RESPIRATION OF WOMEN.

It may be argued that costal breathing is the normal type of breathing for women. This should not be the case when the clothing is properly adjusted. This does not mean that costal breathing is altogether due to wrong clothing. It is probable that women normally employ the costal element to a larger extent than men—since, as suggested by John Hutchinson, it forms the accessory mechanism for efficient quiet respiration during pregnancy. That such breathing, however, is in large part due to clothing is shown by the fact that in cases of complete hypospadias which have been wrongly regarded as females and clothed as such, the type of breathing has been observed to be what may be termed female in character, although the subjects were in reality males. It would be a mistake to teach that costal breathing alone is normal for the female. Young girls and women should be taught that correct inspiration is always associated with good diaphragmatic action, and that the upper costal element, however large it tends to be, should be regarded as the accessory element. The clothing of women, therefore, should be adapted to give free abdominal movement. I have not had sufficient opportunity to study widely what may be termed normal female breathing, but at a school of physical training I noticed that abdominal breathing was present.† As regards the male, however, it must be emphatically asserted that the time has come to abandon the idea that by striving after a large upper chest expansion the respiratory capacity is greatly increased. In this type of breathing the pit of the stomach is usually observed to move inwards instead of outwards during the inspiratory process, while expiration is accompanied by an outward movement in this region. Many observers have already noticed that this type of respiration is less efficient. In reality the vital capacity in such type of breathing is considerably less.

MEASUREMENT OF UPPER AND LOWER CHEST EXPANSION.

Radiographic evidence has also shown that in such breathing the diaphragm moves little if at all; indeed, in extreme cases the abdominal contents pass farther up into the thorax, so that in reality the apparently increased lung capacity consists of the pushing of the abdominal contents higher into the thorax. Although prevalent at one time in the army, this type of breathing has now been abandoned; possibly it attained a vogue owing to the frequency with which phthisis is found to attack the apex of the lung. As shown later, however, upper costal breathing is adequate only for the expansion of the anterior part of the upper lobes; the efficient expansion of the apex of the lung is largely dependent upon efficient diaphragmatic and lower costal breathing. As a guide to respiratory efficiency the measurement of upper chest expansion should be abolished or at least combined with a measurement of the increased size of the chest at the level of the lower ribs. This latter is the more important measurement. On deep inspiration there should be a movement out of the pit of the stomach, together with considerable expansion of the lower part of the chest. Correct inspiration, therefore, consists of the contraction of the diaphragm, attended generally by an upward movement of the lower ribs, full inspiration being attained by a wave-like movement which passes to the upper ribs. Observation shows that it is the type prevalent in individuals who possess the greatest bodily endurance. By its means the greatest respiratory capacity is attained, and by its means alone is the lung adequately expanded in all its parts.

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† Dr. Mina Dobbie, medical officer to the South-Western Polytechnic School of Physical Training, tells me that she attaches considerable importance to the increase of the abdominal measurement during inspiration over that during expiration as a sign of progress in efficiency. Her records certainly bear out this contention.

the gorilla. He writes verbatim as follows: "In accordance with my description the labia majora exist in the fœtus of the gorilla and the nymphæ are very like those of the human fœtus. These facts are in contradiction with the assertion of Bischoff." The same holds good for the orang, for this ape also possesses rudimentary labia majora. Thus we see that the disappearance of the outer genital fold is already incomplete in anthropoids. It seems as if the course of morphological evolution which resulted in the human form of external genital organs made its first progress in anthropoids, for the retarded flattening of this fold in apes may be regarded as a transitory stage to the persistence of the same in man. Now in man the individual variability of the labia majora is considerable. I do not know if this variability forms a difference between black and white races. The collection of the anatomical museum of the Amsterdam University contains only two examples of external genital organs of female negroes. Both are characterised by large labia minora and very scanty development of the labia majora. This is in accordance with what I expected to find, but if my observation be an exception or the rule, I cannot say.

Is it possible to ascertain what endocrine organ has effected the perpetuation of this fœtal condition in man? I think so. In some instances one observes an ape-like condition—that is, a very scanty development of the outer genital organs—in individuals of the white race. These pathological conditions again furnish a hint as to the endocrine organ by which the growth of the labia majora is regulated. This gland is the thyroid. I shall confine myself to enumerate only two facts in favour of this view. The first fact is that after extirpation of the thyroid the labia majora commence to atrophy, and the second, that atrophic or infantile female outer genitals begin to develop more strongly after injection of thyroidine. These facts justify my assertion that the development of the labia majora and mons veneris as an essential human character was due to the agency of the thyroid gland.

Position of the Occipital Foramen

Now there still remains a group of essential human characters of which it is easy to demonstrate that they are persisting fœtal conditions. For the sake of conciseness, however, I must confine myself to a simple enumeration and some brief remarks on these features, because I prefer to give you a somewhat complete survey of my theory of human evolution, and such a survey requires also an explanation of the fifth and sixth conclusion previously mentioned. One of the most characteristic features of the human skull is the central position of the occipital foramen. It is a rather common opinion that during the evolution of man this foramen is shifted forward, because in apes it occupies a more backward position. As the result of an extensive investigation I have come to a different conclusion. In the fœtus of all Primates the occipital foramen occupies during a shorter or longer phase a central position, as in man. In man this primitive position is fixed, whilst in the other Primates the foramen shifts backward. Therefore there is no question of a shifting forward in man, but the shifting backward, normally occurring in Primates, is inhibited in man. It is, however, very interesting that this displacement occurs also in man to a small extent between the seventh and twelfth year. Thus also the structure of the base of the human cranium appears as a persistent fœtal condition, like its prognathism and the high vaulting of its roof. As a further special human character I mention the shape of the pelvis, which is very primitive. In vain you will try to find in the human fœtus a transitory stage of this part of the skeleton similar in form to the pelvis of lower Primates. The broad short iliac bone is characteristic of an early stage of development. In man this stage is fixed; in anthropoids the beginning of this process is seen; in lower Primates it is transformed into the long, narrow bone common to many mammals.

Structure of Aortic Arch and Kidneys. Weight of the Brain

I will give further instances. The arrangement of the branches of the human aortic arch differs from that of apes. Now the manner of branching in man represents an earlier embryonic stage than that in apes. And to put it briefly, the same may be remarked with regard to the difference in the structure of the kidneys. Man possesses kidneys with a greater number of papillæ, a primitive condition; the other Primates, with exception of the American monkey Ateles, have kidneys with a single papilla. I regret that want of time prevents me from a discussion on these points, and also from a debate on the principal difference between man and apes—namely, the considerable weight of his brain. With a very conceivable scepticism you might ask me if this characteristic is also the result of an inhibition in the morphogenesis of man? It may sound paradoxical, but I answer this question in the affirmative. The considerable weight of the human brain is the result of the fixation of an early developmental relation between this organ and the body as a whole. In apes this relation is fixed in a more advanced stage of development, in which the weight of the brain has already become relatively smaller. The earlier the relation between brain and body is fixed, the larger the volume of this organ becomes. Viewed from this standpoint the considerable weight of the human brain appears to us as dependent on the function of the endocrine system. In the masculine sex the relation is fixed somewhat earlier than in the female; in the microcephalic idiot the relation is fixed too late. I restrict myself in giving you only the main line of my opinion as to the origin of the large volume of the human brain. The treatment of this subject would require a special lecture, and is surely worthy of one.

Retardation of Germinal Development in Man

In the foregoing I have given the principal arguments in favour of my assertion that each somatic characteristic of man is the result of a retardation or an arrest of a definite part of the developmental process. So the human body in its actual state gradually evolved by the successive loss of somatic features of the pithecoid ancestor. I cannot mention a single essential human character which is a new acquirement—an addition. Only the high differentiation of the facial and laryngeal muscles in man may be considered as such a really progressive feature; but this progression was a consequence brought about by his psychical evolution. Now I am convinced that this arrest or suppression of the development of somatic characters is the expression of a more general process—namely, the retardation of the vital process of man as a whole. The rate of development in man is retarded with the consequence that the infantile and puerile phases of his life are prolonged; the duration of man's life is extended. This general retardation concerns the somatic as well as the germinal part of his organism. For the sake of conciseness I restrict myself again to some remarks regarding the retardation of his germinal development. The generative glands of women have the very curious peculiarity that there is an interval of 10 to 15 years between the completion of the histological differentiation and the commencement of the physiological function of the organ. As far as I am aware this phenomenon is met with only in the genus Homo. The possibility, however, that there are other mammals—specially among those of larger dimensions—in which the same takes place is not to be denied. But it certainly is not a rule. As a rule the genital glands in mammals behave like other organs; function begins as soon as the histological differentiation is completed. The condition as found in man is not a primitive one. At the end of the second year the human ovary contains its final number of germ cells. There is no further increase. There follows a rather long period during which the ovary remains in a state of latency, as if it were dead though living. This condition lasts till the development of the somatic part of the organism has progressed far enough to undergo the consequences of the function of the germinal part—that is, conception and pregnancy. This period of latency of the genital glands, this prolonged state of childhood in man, must have been intercalated during man's evolution and can only be explained by an arrest of the vital process, by a retardation of his development.

And this very particular biological phenomenon, this alteration of the utmost importance in the vital process of mankind, has perhaps been the mightiest cause of the evolution of man as a social being. For by this retarded development the awakening to consciousness of man is delayed till long after birth, the time of life in which the human individual is able to support himself, when he can begin his struggle for life, is delayed till a rather remote epoch. During this protracted childhood he remains dependent on his parents, forming with them a biological community, a family in its most primitive form. And the family is the element of society.

Inequality of the Sexes

But not only the evolution of man as a social being is rooted in this arrest of his development, but in my opinion the undeniable inequality of the two sexes (with the superiority of the masculine) has taken its starting point from this arrest. If retardation of the developmental processes be the fundament of human evolution, then that sex has attained the highest level of human evolution in which this retardation is most pronounced. And without doubt this is the case with the masculine sex. A very interesting subject for a special lecture! He who proclaims the inequality of the human races must proclaim the same for the sexes. Yet there is a striking difference. The superiority of the white race above the negro is caused by the greater *extensity* of the process of retardation, the superiority of the masculine sex is caused by a greater *intensity* of the same.

circumference to the inner wall of the thorax by the negative intrathoracic pressure. Thus, when its two parts contract it acts like a true piston, moving in a forward and downward direction. The lungs, including their roots, follow this movement, which therefore tends to bring about expansion throughout the whole lung, including the apex, which would otherwise be ill-expanded. In quiet, normal breathing the amount of movement of the right dome is about half an inch, that of the left dome and of the central tendon somewhat less.

MOVEMENTS OF THE RIBS.

In general, two movements of the ribs have been recognised as taking place in inspiration—namely, (1) round an axis corresponding to the spinal articulation, increasing the back-to-front diameter of the thorax; (2) round an axis corresponding to the spino-sternal articulation, increasing the diameter from side to side. Owing to the variation in size, shape, inclination, and articulation of the ribs, such an explanation, while essentially true in a general sense, is imperfect. It is better, as Keith does, to divide the ribs into two sets: (1) the upper, the second rib to the fifth; (2) the lower, the sixth rib to the tenth. These two sets differ in their musculature, in the nature of their articulation and ligaments, in their shape and arrangement, and in their movements. The first rib is not looked upon as one of the costal series; together with the manubrium sterni it forms an operculum to the chest and performs a special movement of its own. The lowest two ribs, inasmuch as they are unattached in front, are essentially a part of the abdominal wall. It is on the movement of the upper ribs (second to fifth) that most of the observations upon rib movements and the action of the intercostal muscles have been made. The following view has been put forward by Keith as to the mode of action of the intercostal muscles. The purpose of the upper rib movement is the expansion of the upper lobe of the lung, particularly in its anterior part. When concerned in inspiration both sets of intercostal muscles act together, and draw up the upper ribs towards the operculum, which acts as a fulcrum. During the succeeding expiration the lower set of ribs are fixed and act as a fulcrum, the upper set being drawn down towards them by the intercostal muscles. There is some experimental evidence to show that the external intercostal muscles act during inspiration. The fibres slant from above downwards and forwards, and shortening, raise the ribs. The fibres of the internal intercostals, on the other hand, slant from above downwards and backwards, and shortening, lower the ribs. The two, acting together, make rigid the thoracic wall. The intercartilaginous fibres act with the external intercostals. The purpose of the movement of the lower ribs is primarily to expand the lower lobe of the lung. In this action the diaphragm is intimately concerned, aided by the ilio-costalis, and the action of the external intercostal and the interchondral muscles. The antagonistic muscles are the external oblique, the internal oblique, and the transversalis. During inspiration, owing to the mode of articulation of the ribs, the lateral and anterior part of each moves outwards more than the one above. At the same time, the lower ribs are raised, together with the sternum, so that the net result of the lower rib movement is to increase the transverse and back-to-front diameter of the lower thorax, and with the diaphragm moving downwards, the vertical diameter of the whole cavity.

The first pair of ribs and the manubrium sterni are intimately bound together and form a lid or operculum to the thorax. This lid is articulated behind with the spinal column, in front with the body of the sternum, the manubrio-sternal joint (Fig. 2). During inspiration there is a slight upward movement of the lid, allowed by the manubrio-sternal joint, which causes an expansion of the anterior part of the apex to the lungs. This movement is particularly marked in the thoracic type of breathing. In persons with ill-developed chests there is but little movement here. The posterior part of the apex of the lung is but little affected by the movement of the operculum, its expansion being secured by diaphragmatic breathing. Inspiration is, therefore, a very complex act, and it is owing to the complicated nature of the movements concerned that the lungs are divided into lobes. The upper ribs are chiefly concerned in the expansion of the upper lobes, the lower ribs in the expansion of the lower lobes, the diaphragm promoting the expansion of the whole lung. As already stated, expiration is controlled by muscular action; generally speaking, the extensibility and elasticity of the thorax are to be regarded as factors in producing expansion or compression of the lung only when the ribs pass into extreme inspiratory or expiratory positions.

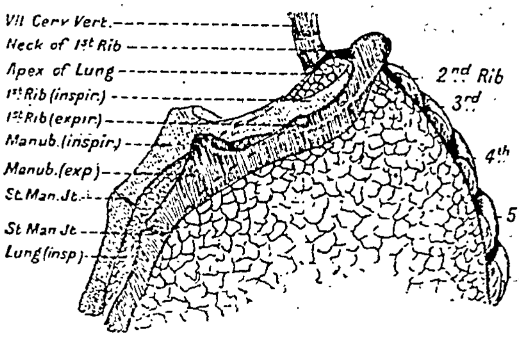

FIG. 2.—Diagram to show respiratory movements of the first pair of ribs and manubrium sterni, and the effect of these movements on the expansion of the apex of the lung (Keith).

MECHANISM OF CIRCULATION.

The mechanism of the circulation has been so contrived that it remains constant and efficient, not only in the horizontal position, but also when the living animal is ceaselessly shifting the position of his body. The hydrostatic influence of gravity had a most important bearing on the evolution of the mechanisms which control the circulation. In the upright posture the blood under the influence of gravity continually presses downwards, and would sink if the veins and capillaries of the lower parts were sufficiently extensile to contain it and there were no mechanisms to counteract the effect of gravity.[9] [10] Such is actually the case in the snake or eel; in them, as Leonard Hill has shown, the heart empties so soon as they are immobilised in the vertical posture. This does not occur if the snake or eel be immersed in water, since the hydrostatic pressure of the column of water outside them balances that of the blood within. During the evolution of man there have been developed special mechanisms by which the sagging of the blood to the lower parts is prevented and the assumption of the erect posture rendered possible. In fishes, amphibia, and reptiles there are venous valves for preventing regurgitation of the blood from the sinus venosus into the great veins. In the warm-blooded vertebrates, with the appearance of the diaphragm and the fusion of the sinus venosus with the right auricle, a venous cistern formed by the superior and inferior venæ cavæ and by the innominate, iliac, hepatic, and renal veins, takes the place of the sinus venosus. Six pairs of valves prevent regurgitation from this cistern—namely, those placed in the common femoral, the subclavian, and jugular veins (Fig. 3). The cistern, when filled, may hold some 400 c.cm. of blood. In the liver there may be some 500 c.cm. of blood. This can be expressed into the cistern by abdominal pressure. The portal venous system, when distended, may hold another 500 c.cm., which can be expressed through the portal veins and the liver into the cistern. There is thus a large volume of blood for the heart to draw upon during diastole, and this may be of particular value during the performance of a great

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The Milroy Lectures

ON

RESPIRATORY EFFICIENCY IN RELATION TO HEALTH AND DISEASE.

Delivered before the Royal College of Physicians of London

BY MARTIN FLACK, C.B.E., M.B., B.CH. OXON.,
WING COMMANDER, ROYAL AIR FORCE MEDICAL SERVICE.

LECTURE I.*

Dr. Milroy's desire in establishing these lectures was to "promote the advancement of medical science along with the interests of philanthropic benevolence and of social welfare."[1] As showing what was in his mind he states in the codicil to his will that—

> "*there is a vast amount of protracted malaise and suffering, disablement or lessened capacity for industrial work, and often, too, of slow but eventually fatal sickness* in almost every region of the world due to the multiform class of the cachexiæ or those chronic constitutional diseases which consist, according to Cullen's definition, in a depraved state of the whole or of a considerable part of the habit of the body without any primary pyrexia or neurosis combined with that state."[1]

It is my hope to show that this state of physical inefficiency is frequently associated with a state of respiratory insufficiency. Bearing in mind the vast amount of material at my disposal, it will be necessary for me to confine myself to certain lines of thought. In doing this I shall endeavour as far as possible to bear in mind the advice offered by Dr. John Brown.[2]

> "The physiology to be *taught* in schools and to our clients the public should be the physiology of common sense rather than that of dogmatic and minute science ...... and will make them understand enough of the fearful and wonderful machinery of life, to awe and to warn, as well as enlighten."

There can be no doubt as to the necessity of enlightening the public in regard to the correct application of physiology *to daily life*. The aims of *Dr. Milroy for the advancement of social welfare can therefore best be met by the exposition of views in such a form that they can be readily transmitted to the public and be easily understood by them.* The *views I wish to put forward in these lectures are the* result of my experience in the Medical Service of the Royal Air Force, where I have had the *opportunity* of testing and extending the observations *made by two of my former teachers*, Arthur Keith and Leonard Hill, to whom I take this opportunity of *acknowledging* my very great indebtedness. Their work has already been ably set forth by them, but I *desire to insist* upon the fact that it has been too little applied and that now is the time for its *application to* everyday life.

The publication of the figures of the war physical census *emphasises this point.*[3] During the 12 months preceding the armistice 2,425,181 medical examinations were conducted, the men being graded as follows :—

		Actual grading.		Keith's standard.
Grade I.	..	871,769 (36%)	..	1,697,595 (70%)
Grade II.	..	540,276 (22–23%)	..	485,010 (20%)
Grade III.	..	756,859 (31–32%)	..	181,902 (7·5%)
Grade IV.	..	250,280 (10%)	..	60,617 (2·5%)

In other words out of every 9 men called up 3 were placed in Grade I., 2 in Grade II., 3 in Grade III., and 1 in Grade IV., a figure sadly below what might be expected from a healthy nation. This is *seen* when comparison is made with Keith's standard, which is based on the law worked out in regard to *other* human measurements by Karl Pearson and his pupils. *Instead of every 1000 men examined yielding on the* average 700 Grade I., 200 Grade II., 75 Grade III., *and 25 Grade IV., the actual yield is* 359 Grade I., 226 Grade II., 312 Grade III., and 103 Grade IV. *The position may be summarised by saying that in* round numbers our physical census showed a shortage *of 825,000 Grade I. men, an excess of 61,000 Grade II.* men, and the alarming excess of no less than 575,000 *Grade III. men, and 190,000 Grade IV.* men.

When dealing only with the youths of 18 it might be expected *that the proportion of fit*, and consequently the index of fitness, would be considerably higher. Instead *of this it was found among the youths* who became 18 years of age during 1918 that there was: (*a*) A *deficit of nearly 13,000 Grade I.* youths among the 260,000 examined : (*b*) an excess of over 6000 Grade IV. youths, or, *in other words*, almost double the number of youths "totally and permanently unfit for any form of *military service*" which there should have been, judging by Keith's standard.

CAUSES OF DEFICIENCY.

As the official report says, "*Such a conclusion can only be regarded as exceedingly disquieting, and in itself throws a lurid light upon the effects of our civilisation upon the adolescent population.*" The chief causes given for this deficiency were : (1) *Poor* physique and presence *of physical defects* ; (2) tuberculosis ; (3) diseases and degeneration of the heart and blood-vessels, in *many cases due to various* infective conditions.

With regard to the *first* group, *a considerable* amount was due to preventable conditions in early life such as dietetic errors. *Apart from these*, however, a very important cause of defects of physique and of degeneration was the effect of *occupation* on workers. I quote from a lecture by Sir James Galloway[4] :—

> "*One of the most striking features of the report of grading* in the industrial districts is the rapid fall of the numbers of young men who could be placed in Grade I. at the age of 18 years compared to the numbers who could be placed in the same grade on being examined four or five years later."

This remark applied particularly to the young workers in the textile industries, *both in cotton and* wool. A medical officer in regard to the south-eastern areas of *Lancashire noted that the average* man there was for military purposes an old man before he reached the age of 40. *Of* 200 youths of 18 to 20 years of age examined and rejected in the north-western region of England *no fewer than* 85 were rejected on account of poor physique.

The second great cause, as *I have stated*, was tuberculosis. In London 3·1 per cent. of 160,515 examinations made were placed in Grades III. *and* IV., 2·6 being for tuberculosis of the lungs. As the result of 66,000 examinations made in *Liverpool from* Nov. 1st, 1917, to Jan. 31st, 1918, which were carried out in close association with the medical officer of health and his officials, about 1·75 per cent. were rejected on account of tuberculosis, the striking *fact emerging* that of 277 *cases proved to be tuberculous* 218, or 78 per cent., were previously unknown to the *health authorities*.

The third great cause noted was disease and *degeneration of the heart and* blood-vessels. Included in this category are the various forms of heart disease *due to rheumatic* inflammation of the heart. On these I do not dwell except perhaps to point out that *I hope to show* efficient respiration to be of great value in aiding to preserve the physical efficiency of *such cases*. On the other hand, one of the most important forms of circulatory troubles was venous varix *in some* form. The amount of this was surprising even to experienced medical men, especially in industrial districts and among older men. Varicosity of the veins of the lower extremities to an extent sufficient to disable or be dangerous was found to be very common. It may be pointed out that such diseases are largely associated with deficiency of the respiratory mechanism.

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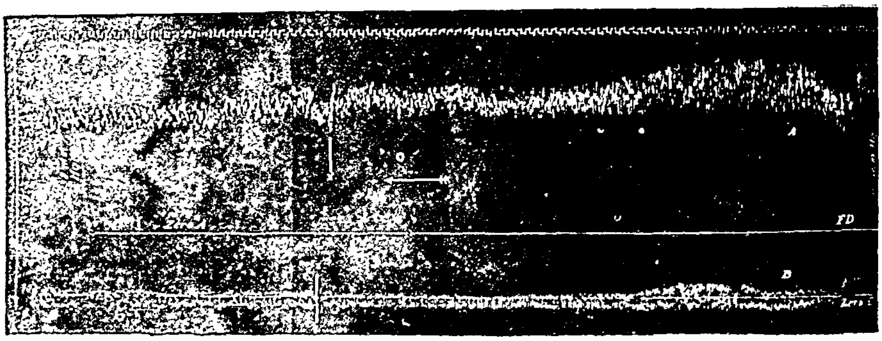
* Lectures II. and III. will be published in subsequent issues of THE LANCET.

great splanchnic area and of the musculature of the abdominal wall is lost, and the capacity of the abdominal vessels is thus greatly increased. On the animal, when lying in the horizontal posture, the total effect is a considerable fall of arterial pressure, and a marked diminution of the respiratory undulations of pressure; in the vertical feet-down posture, the arterial pressure falls rapidly, and may reach zero; the circulation is then at an end. Under the influence of gravity the whole of the blood collects in the great abdominal veins; it can pass rapidly through the dilated arterioles, there is no mechanism left for filling the heart, and the latter, empty of blood, continues to beat to no purpose. If the abdominal wall be compressed with the hand (B, C, Fig. 4), the capacity of the veins and splanchnic area is reduced, the right heart is once more filled with blood, the arterial pressure rises, and the circulation is renewed. On taking off the hand, the heart once more empties, the arterial pressure falls, and the circulation again ceases. When the animal is returned to the horizontal position, the influence of gravity is abolished, and the circulation becomes re-established. The effect of compression of the abdomen in the horizontal position is also evident (B, C, Fig. 5) but slight. In the feet-up position the aortic pressure rises under the influence of gravity, returning to normal as compensation takes place or when the horizontal position is resumed (Fig. 5). Such experiments prove that in the anæsthetised animal there are two chief compensatory mechanisms by which the hydrostatic effect of gravity is overcome—namely, the vaso-motor mechanism of the arterioles and the respiratory pump.



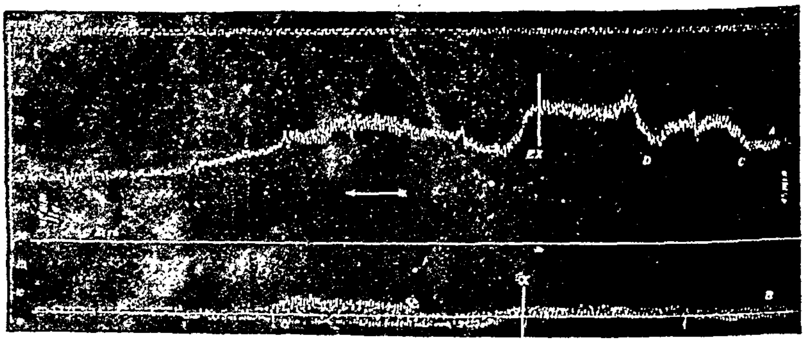


FIG. 6.—To show effect of gravity upon the circulation: carotid and superior vena cava pressures of dog (Hill). F D = Animal turned into feet-down position with cannulæ in axis of rotation. The arterial pressure fell in 50 minutes from 110 mm. Hg to 42 mm. Hg. From C to E X animal was immersed in a bath which was deepened to chin at D. Note increased effect of respiration on venous pressure after F D and again after bath. Note also fall of pressures at F D, and compensatory rise of arterial pressure, which gradually weakens.

COMPENSATORY MECHANISMS.

The vaso-motor tone of the arterioles splanchnic area can be abolished, without interference with the respiratory mechanism, by section of the splanchnic nerves through a lumbar incision. The result of this procedure in the vertical feet-down posture is that the arterial pressure falls very considerably; but, nevertheless, the circulation may remain efficient, on account of the action of the respiratory pump. By greatly increased respiratory movements, combined with powerful abdominal compressions, the diastolic filling of the heart is maintained and the velocity of flow through the splanchnic capillaries checked. Withdrawal of the support of the abdominal muscles by a crucial incision of the abdominal wall leads to dilatation of the splanchnic vessels, and the pressure falls to a further extent. Finally, opening the thorax causes the pressure to fall to zero and the circulation ceases. By compression of the abdomen, or by a return to the horizontal posture, the circulation can be once more renewed. Such an experiment shows that the respiratory pump can compensate for the influence of gravity when the vaso-motor mechanism is paralysed. The respiratory pump can be paralysed by itself, and without damage to the vaso-motor mechanism, by the injection of curari. The power of the heart may then be sufficient by itself to maintain the circulation in the feet-down position, so long as the capacity of the abdominal vessels is kept under control by the vaso-motor nerves.

In man measurements of arterial pressure likewise reveal the effect of gravity upon the circulation.[11] In a normal man standing upright the pressure in the post-tibial artery in the leg is higher than the pressure in the brachial artery by the height of the column of blood which reaches from one artery to the other, about 70 mm. Hg. (See Table I.)

In changes of posture, then, the pressure in the brachial artery—that is, in the root of the aorta—is maintained at practically a constant height by the tone of the splanchnic arterioles and action of the respiratory pump. If the splanchnic arterioles are in an efficient state of tone, and if the abdominal veins are supported by the tone of the abdominal walls, then the splanchnic vessels will not dilate under the hydrostatic stress of gravity. The nervous mechanism involved is probably of the simplest nature, for if the arterial pressure suddenly rise or fall at the moment of change in posture, the bulbar centres are thereby either directly or reflexly excited to increased or decreased activity. A sudden fall of arterial pressure provokes acceleration of the heart, amplified respiration, and increased vaso-constriction. A sudden rise of pressure, on the other hand, provokes a slow heart, shallow respiration, and vaso-dilatation.

When the compensatory mechanism is abolished by destruction, exhaustion, or inhibition of the bulbar centres the circulation fails and becomes inadequate to maintain life in the vertical posture. The blood passes into the capacious reservoirs of the toneless abdominal veins, the heart empties, and the

CORRECT EXPIRATION.

Just as correct inspiration is important so also is correct expiration. If inspiration be correctly coordinated, correct expiration naturally follows; this consists of a contraction of the abdominal muscles, especially those of the upper part of the abdomen together with a reposition of the ribs by virtue of muscular action. The fact that expiration is a muscular act must be emphasised. Inspiration and expiration are due to the coordinated action of groups of antagonistic muscles. When the leg is flexed, as Prof. Sherrington has shown, both the antagonistic flexors and extensors come into action in order to produce a finely coordinated movement. So in the respiratory movements the muscles of inspiration and expiration are antagonistically concerned. In inspiration, the inspiratory muscles in coordinated fashion overcome the expiratory; in expiration the expiratory overcome the inspiratory. From the beginning to the end of the movement each muscle concerned is balanced, steadied, and controlled by the action of its antagonist.

Reference to text books of physiology show that in general the act of quiet expiration is regarded as a non muscular act due to elastic recoil of the expanded lung and the return of the chest by its own weight. This view is undoubtedly based upon the classical work of Dr. Hutchinson[5] published in 1835, and, as Prof. Keith points out, is based upon an error of observation. Michael Foster,[6] in his text book, writes as follows:—

> In normal easy breathing expiration is in the main a simple effect of elastic reaction. By the inspiratory effort the elastic tissue of the lungs is put on the stretch; so long as the inspiratory muscles continue contracting the tissue remains stretched, but directly the muscles relax the elasticity of the lungs comes into play and drives out a portion of the air contained in them. Similarly the elastic sternum and costal cartilage are by the elevation of the ribs put on the stretch; they are driven into a position unnatural to them. When the intercostal and other elevator muscles cease to contract the elasticity of the sternum and costal cartilage causes them to return to their previous position, thus depressing the ribs and diminishing the dimensions of the chest. When the diaphragm descends, in pushing down the abdominal viscera it puts the abdominal wall on the stretch, and hence when at the end of inspiration the diaphragm relaxes the abdominal walls return to their place, and by pressing on the abdominal viscera push the diaphragm up again into its position of rest. Expiration then is in the main simple elastic reaction, but there is probably some, though possibly in most cases a very slight, expenditure of muscular energy to bring the chest more rapidly to its former condition. This is, as we have seen, supposed by many to be afforded by the internal intercostals acting as depressors of the ribs. If these do not act in this way we may suppose that the elastic return of the abdominal walls is accompanied and assisted by a contraction of the abdominal muscles.'

It will be seen that active expiration is allowed to be a supposition. Evidence will be adduced later to show that it should be regarded as a necessity, if properly coordinated efficient expiration is to take place.

THORACIC ANATOMY: EXTENSIBILITY OF THE LUNG.

To understand properly the movements concerned in the processes of inspiration and expiration, certain anatomical details in regard to the bony framework and the musculature of the thorax have to be considered. The varying extensibility of different parts of the lung has also to be borne in mind.[7] In the act of inspiration, owing to the varying degree of extensibility of the different structures of the lung, the organ expands in the manner of a Japanese fan—least in the neighbourhood of the great vessels and bronchi (the root of the lung), most in the outermost zone just beneath the pleura (subpleural zone). The infundibula are the essential distensible elements of the lungs. They vary in size in these different zones of the lung, being largest in the subpleural zone and smallest at the root of the lung (Fig. 1). The distensibility of any part of the lung depends upon the number and size of the infundibula in that part. The lungs do not expand equally in all directions; the two surfaces which are most expanded are the diaphragmatic and the sterno costal, or ventro lateral. In general, the apical surfaces remain almost stationary. It is only when the lungs are well ventilated that the parts most remote from these surfaces of direct expansion are brought properly into action. In people of sedentary habits, therefore, such parts of the lung tend to fall into a condition of disuse, and receive a poor supply of blood, with its immunising properties. This, as Keith suggests, explains why phthisis so frequently first attacks the apex of the lung.[8] The great fissure of the lung is of functional significance in providing for the adequate expansion of the lung in all its parts.

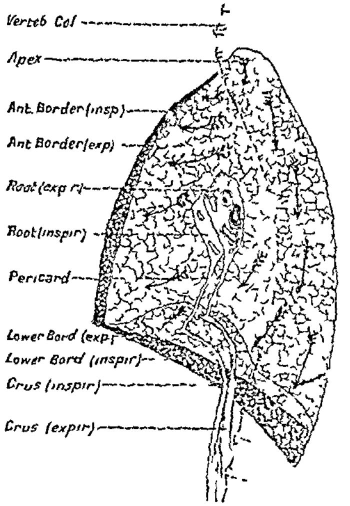


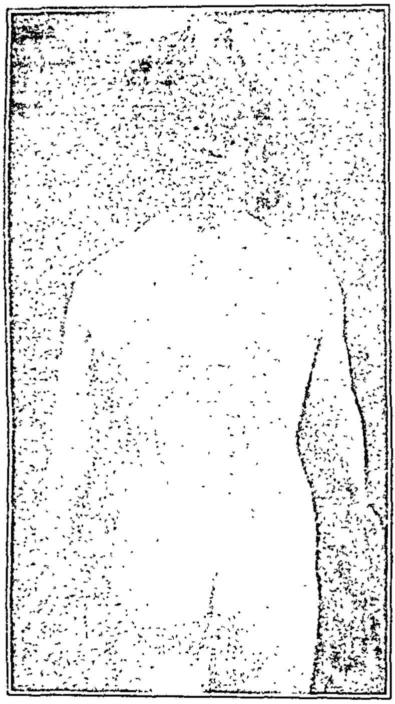
FIG. 1.—Mediastinal aspect of right lung to show respiratory movement of the root (Keith). The crus of the diaphragm is also indicated and its attachment to the root of the lung through the pericardium. Arrows indicate direction of inspiratory movement of various parts of the lung.

In the inspiratory movement the thorax is, or should be, expanded by the movement of the diaphragm and by the movements of the ribs and rib cartilages. There has been considerable speculation as to the exact nature of the movements performed by the diaphragm. The view commonly expressed is that this muscle, by its contraction, in association with muscles which fix the thorax, opens up the angle which it forms with the thoracic wall, thereby enabling the lung to expand in a downward direction. In such a movement the central tendinous portion is supposed not to participate. After contraction it is assumed that the diaphragm passively returns to the position of rest. Recent study of the diaphragmatic movement by means of the X rays has shown, however, that there is a forward downward movement of the whole diaphragm accompanied by a definite movement of the abdominal viscera.

The diaphragm may be regarded as consisting of two parts: (1) the spinal or crural, from the spinal column and arcuate ligaments to the back portion of the central tendon; and (2) the costo-sternal or anterior, attached to the front and sides of the central tendon and arising by several digitations from the ribs. The arch of the diaphragm rests upon, and is supported equally by, the abdominal viscera, and is at the same time kept constantly applied at the

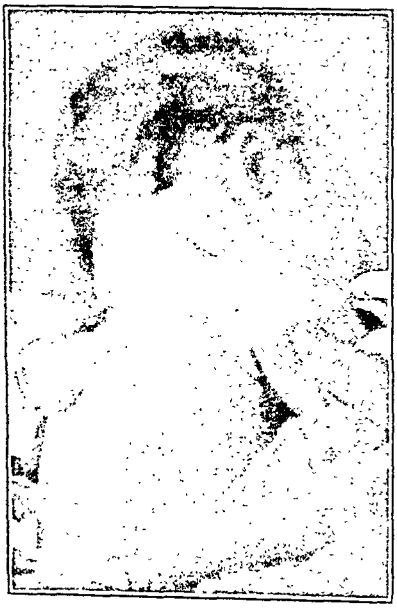
the spine shows a defect of the vertebræ. The third child is the subject of the photograph and had a large meningo-myelocele in the sacral region. This was operated on with the result shown in Fig. 2. The patient is quite well and without deformity, the only symptom present being that she is perhaps unable to hold her urine as long as usual. The fourth and last member of the family has the least defect, which is an exaggerated post-anal dimple.

FIG. 2.



Same patient as Fig. 1, aged 9 years.

FIG. 3.



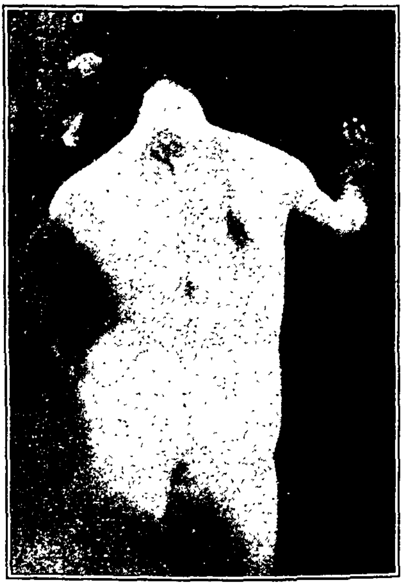
Pedunculated meningocele in the dorsal region. Child aged 2 weeks; a hair field is seen above the tumour.

Various Forms of Spina Bifida.

As before stated, the course of the case depends mainly on the variety of spina bifida present, and whether it is associated with hypersecretion of the cerebro-spinal fluid. Those in which the central canal of the cord opens on the surface do not survive many days owing to loss of fluid or infection. The other cases may die early from ulceration or rupture of the sac with similar consequences.

Spina Bifida Occulta.—Of the varieties of spina bifida the mildest occurs where there is some defect of the vertebral arches without protrusion of the contents. This form, the spina bifida occulta, is commonest in the lumbar region. The defect is often shown by a scarring and depression of the skin in the middle line. This may be covered or surrounded by a hair field (Figs. 3, 4, and 8). In other cases the defect may be covered by a nævoid condition of the skin or a lipoma which forms a definite swelling. This spinal defect may cause no symptoms or may be associated with other deformities at birth, such as club-feet. Later in life various forms of talipes may become evident, trophic lesions may appear on the feet or legs, and an actual paralysis may result owing to pressure or traction on the cord or nerves. In some cases a mild scoliosis or other spinal deformity may develop at the site of the defect.

FIG. 4.



Same patient as Fig. 3, aged 8 years. A hair field partly covers the operation scar. A spina bifida occulta is seen in the lower dorsal region.

Meningocele.—The next in order of severity is the meningocele, which is perhaps the least common. Here, in addition to the spinal defect, there is a protrusion of the membranes, the cavity of which is occupied by cerebro-spinal fluid. The tumour may be pedunculated (Fig. 3) and covered by normal skin, having a narrow pedicle which may become closed and a natural cure result. In other cases the sac may be large, sessile, and thin walled (Fig. 5).

Meningo-myelocele.—This, the commonest type seen in hospital, is associated with a protrusion of the membranes and some part of the spinal cord. It is, as a rule, larger than the former, having a broad base and larger defect in the spine. The coverings may be thin, scarred, and translucent; when the tumour is situated in the lumbar or sacral region the tip of the cord is attached to the summit of the tumour, the cord itself crossing the sac to reach this position. The spinal nerves also cross the sac on either side to reach the intervertebral foramina. In other region muscular effort. Although the aspirating action of the thorax tends to suck this blood into the heart in the upright posture, it is the descent of the diaphragm during inspiration and the efficient contraction of the abdominal muscles during expiration which play the greatest part in forcing blood onwards from the liver and cistern into the heart. The intra-abdominal pressure may be raised considerably on bending or straining. Under such conditions the pericardium protects the right side of the heart from being over-distended with venous blood. If a tame hutch rabbit with a large patulous abdomen be suspended and immobilised in the erect posture, death may result in from 15 to 30 minutes, for the circulation through the brain ceases and the heart soon becomes emptied of blood. If, however, the capacious veins of the abdomen be confined by an abdominal bandage no such result occurs.

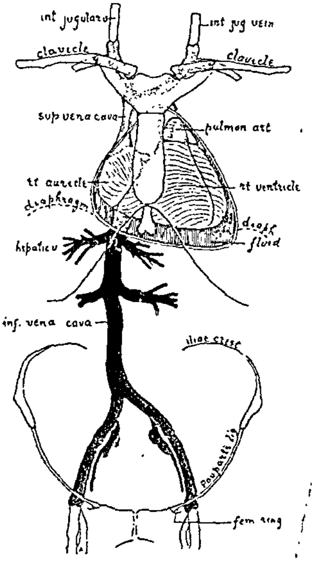


FIG. 3.—Diagram of the venous cistern from which the heart is filled (Keith). The abdominal or infra-diaphragmatic part of the cistern is indicated in black; the thoracic or supra-diaphragmatic is stippled. The heart is compressed upwards and backwards against its attachments.

In a man six feet high the hydrostatic pressure of a column of blood reaching from the vertex of the head to the sole of the foot is equal to 140 mm. Hg. But during the evolution of the upright posture man provides himself with an efficient abdominal belt wherewith to counteract this pressure. The splanchnic arterioles also are maintained in tonic contraction by the vaso-motor centre, and the flow of blood to the abdominal viscera thereby confined within due limits. The veins of the limbs are broken into short segments by valves, and these support the weight of the blood in the erect posture. Every contraction of the skeletal muscles compresses the veins of the body and limbs, for these are confined beneath the taut and elastic skin. Guided by the valves of the veins, the blood is by such means continually driven upwards into the venæ cavæ. In the hanging motionless arm the veins, as seen at the back of the hand, soon become congested. Forcible clenching of the fist or elevation of the limb demonstrates the great influence which muscular exercise and continual change of posture have on the return of blood to the heart. It becomes wearisome and soon impossible for a man to stand motionless. When a man is crucified, immobilised in the erect posture, the blood slowly sinks to the most dependent parts, œdema and thirst result, and finally death from cerebral anæmia ensues. In man standing erect, the heart is situated above its chief reservoir—the abdominal veins. The blood is raised by the action of the respiratory movements, which act both as a suction and as a force pump; for the blood is not only aspirated into the right ventricle by the expansion of the thoracic cavity, but is expressed from the abdomen by the descent of the diaphragm, and the contraction of the abdominal muscles. When a man faints from fear, his muscular system is relaxed and respiration inhibited. The blood, in consequence, sinks into the abdomen, the face blanches, and the heart fails to fill. He is resuscitated either by compression or by being placed in a head-down posture. Men and women with lax abdominal wall and toneless muscles take refuge in the wearing of abdominal belts. To maintain a vigorous circulation and digestion it is necessary to exercise the muscles daily, particularly those of the abdomen.

Leonard Hill studied the question experimentally by passing cannulæ down the external jugular vein and carotid artery into respectively the superior venæ cavæ and aorta of a dog, anæsthetised and placed upon a specially constructed animal table, made to turn round an axis passing through the body at the level of the cannulæ, so that upon turning the table any alteration in the level of fluid in the manometer tubing is avoided. On placing the animal in the feet-down posture, the arterial and venous pressures immediately fall (Figs. 4, 5, and 6). The venous pressure remains down until the horizontal posture is once more assumed, when the arterial pressure rapidly rises again to normal, and it may often be found to rise above normal. The respiratory undulations are frequently intensified while the animal is in the feet-down posture. If left long in the feet-down position the compensatory mechanism gradually fails and the arterial pressure falls. By division of the spinal cord at the level of the first dorsal vertebra, the influence of the bulbar centres on the parts below the section is removed. Abdominal and intercostal respiration is paralysed, and the breathing becomes purely diaphragmatic. The tone of the arterioles of the

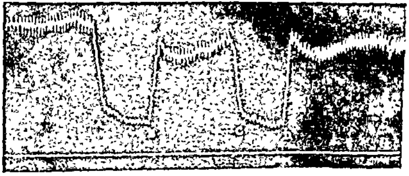


FIG. 4.—Aortic pressure (Hill). A = Vertical feet-down position. B C = Effect of abdominal compression. D = Horizontal position.

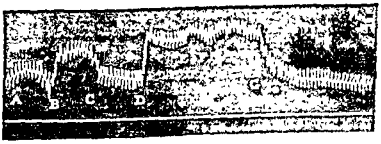


FIG. 5.—Aortic pressure (Hill). A = Horizontal position; B C = Abdomen compressed; D = Vertical feet-down position; E F = Abdomen compressed; G = Horizontal position.

motor nerves, anæsthesia, or trophic lesions such as perforating ulcer.

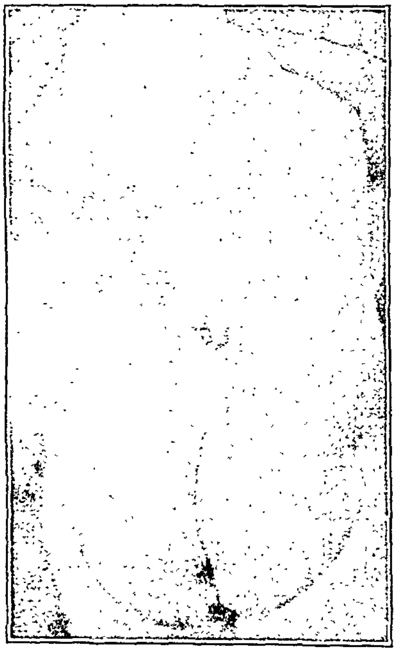
Selection of Cases for Operation.

Even of the cases submitted for one's opinion at hospital only a comparatively small number admit of surgical treatment, which should be limited to the most favourable types, and those who, after operation, are likely and capable of becoming useful members of society. It will, perhaps, be best to discuss each variety separately.

In spina bifida occulta operation is rarely required for the spinal defect. Surgical intervention may be required for the relief of symptoms due to pressure or traction on the spinal cord. In larger defects where static deformity shows itself some form of spinal brace may be necessary or a plastic operation to control this.

In all other cases certain general rules for the care of the patient may be given. It is important to keep the affected part clean, especially when situated in the sacral region, where it is too apt to become dirtied with fæces much to the detriment of its coverings. The surface or tumour should be protected from pressure and abrasion by a careful arrangement of wool round it, and its surface covered by an antiseptic dressing if thin. The lower margin of such dressing may be sealed down by strapping or collodion and so protected from the napkin area.

FIG. 8.



Spina bifida occulta.

The most difficult question now is the selection of suitable cases for operation. Most meningoceles require operation, but as a rule there is no urgency, especially when the tumour is small and has a narrow pedicle. Operation may be carried out at leisure any time during the first year, but parents are usually anxious for the children to be put right as the tumour is a source of anxiety to them and may prevent the child being nursed on its back.

In certain cases operation is contra-indicated. The presence of hydrocephalus should be considered a bar as after operation the head continues to distend —the cerebro-spinal fluid being robbed of a second outlet for the relief of tension. Other cases presenting gross bodily deformity or deformity of limbs not easily rectified should be included in this group. Certain technical difficulties may present themselves in dealing with some of these cases. Owing to the large size of the tumour, and especially if a considerable part is composed of thin translucent membrane, much difficulty may be experienced in covering over the raw surface after removal. In other cases, where a raw spinal area or ulceration is present, sterilisation of this surface may prove difficult, and if not effected leads to wound sepsis and often death.

Cases in which operation is of doubtful use are those of myeloceles and meningo-myeloceles where there is a large raw area. Even if operation is successfully accomplished, deformity is likely to become manifest as the patient grows older, and one such case has complete incontinence of urine and fæces and is a nuisance to himself and his parents. No operation should be undertaken if hydrocephalus is present, but if doubt is felt about this point the head may be measured at regular intervals and its rate of growth noted.

Method of Operation.

In performing the operation the child should be supported on a pillow and lie on its face with the head at a lower level than the trunk, to prevent the undue escape of cerebro-spinal fluid. The first step in the operation consists in exposing the neck of the sac by an encircling incision—designed to leave as much skin as possible for covering over the defect. The neck of the sac should now be isolated—this consists of the dura mater and needs to be cleared of fascia and other coverings obtained from the spinal muscles. In meningoceles, when the neck is narrow, it may be ligatured and the stump returned to the spinal canal; or it may be opened, the redundant sac being then removed and the opening in the neck closed by suture.

In meningo-myeloceles, after the neck is isolated, the sac is opened at one side and the contents inspected. The spinal cord is then separated from its attachment to the apex of the sac and returned with its nerves to the spinal canal. The redundant portion of the membranes is then removed, and the dura and arachnoid closed. In some cases it is impossible to pack the cord back into the spinal canal. In these cases it must be left projecting as far as necessary in the hope that with growth in length of the spine it will gradually be drawn into its proper place.

The third stage in the operation consists in repairing as far as possible the spinal defect. Where a small opening only is present it may, by small incisions undercutting the margins, be possible to draw these together and give sufficient protection to the cord and prevent further displacement of the contents of the canal. In cases where a larger defect is present incisions are made along the outer margins of the erector spinæ muscles through the lumbar fascia. This is dissected up on either side towards the middle line, and the flaps so formed turned over the gap and sutured together. In order to further supplement this covering similar portions of the erector spinæ itself may be used in like fashion. Following this the skin is brought together—a procedure which may require considerable undercutting or even flap formation.

In some cases an osteoplastic repair may be necessary. It has not been so in my cases, but in order to form a bony covering for the defect the spinous processes above and below the gap may be cut across at their bases and turned to meet one another and sutured over the defect. A further possible method is to expose and divide the laminæ of the affected vertebræ on each side and bring them together in the middle line. Where a considerable defect requires filling, and especially if some deformity has arisen or is likely to arise, bone grafting, after the method of Albee, would be suitable.

cerebral circulation ceases There can be no doubt that the control of this compensatory mechanism is one of the most important and necessary functions of the group of bulbar centres—a function which must have been evolved to its highest point, as man in his evolution assumed the erect posture During the course of each day the compensatory mechanism becomes fatigued especially is this so after severe muscular exertion By sleep and rest in the horizontal posture the compensatory power is restored In conditions of neurasthenia of weakness and exhaustion after bodily strain and disease, of shock after severe injury or hæmorrhage, this power may be greatly lessened

TABLE I

Posture	Pressure in mm Hg		Difference in mm Hg	Difference calculated from height of column in mm Hg	Height of column separating armlets in cm
	Brachial artery	Posterior tibial artery			
Horizontal	106	106	0	0	0
Standing	110	165	55	58	54
L posture legs up	115	85	30	33	44
Vertical head down	115	50	65	63	82

A useful clinical guide to the condition of the compensatory mechanism in man is afforded not only *by the pressures in the brachial artery, particularly* the diastolic pressure but by the rate of the pulse on change of posture If the heart greatly accelerates on rising from the horizontal to the vertical position, the mechanism is deficient From the above the importance of the respiratory movements as regards circulatory efficiency is clearly seen The downward plunge of the diaphragmatic piston during inspiration and the inward thrust of the abdominal wall during expiration are necessary for man s efficiency in the upright posture

Finally I would draw attention to the importance of the correct muscular movements of breathing in massaging the abdominal contents The descent of the diaphragm in inspiration the contraction of the abdominal wall in expiration provide massage mechanism which plays an important part in the preservation of the tone of the smooth muscle of the abdominal contents

One of the present day evils is constipation which does not occur when a good tone of the abdominal wall is preserved *Equally as important is the fact* that the state of semi constipation is abolished, the state in which the bowels although acting daily, act only in insufficient fashion without the use of occasional purgatives By what means good tone of the external abdominal *muscles induces good tone of* the smooth muscle is not *sufficiently known, nor* can it yet be adequately explained how conditions affecting directly the tone of the smooth muscle as for example enteritis bring about a relaxation of tone of the external muscles The fact remains however, that good *tone of the muscles constituting* the natural abdominal belt play an important part in preserving a healthy condition of the abdominal contents

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SPINA BIFIDA[1]

BY FREDERICK C PYBUS M S DURH, F R C S ENG,

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BY spina bifida we mean a congenital defect of the vertebræ, usually the *posterior arch associated,* in most cases with some protrusion of the spinal contents *The defect may involve a large or small area of the spine, but when a tumour is present this* is due to a protrusion of contents due to increase in the intraspinal pressure This increased pressure may be temporary, as such cases can be cured or may undergo spontaneous cure while others are progressive in character and are often associated or followed by hydrocephalus Probably various combinations of these factors account for the production and *different varieties of this condition* This defect occurs in about one in 1000 births and is often incompatible with life, at the best many cases succumb during their first year, and others exist for a time with various accompanying deformities

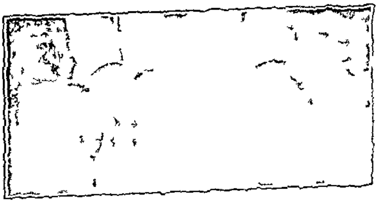
Development of Spine and Spinal Cord

Fully to understand the anatomy of the condition *it is essential to know the method of develop*ment of the spine and spinal cord Briefly it is as follows in the dorsal middle line a groove appears the neural groove, which sinks into the underlying mesoblast and subsequently its edges fusing it *becomes the neural canal This becomes separated* from the surface, the surrounding mesoblast forming *the spinal membranes* Round the spinal cord and membranes *thus formed the vertebræ are developed* Cartilage being *formed round the notochord and being in its turn replaced by bone centres of ossification* appear for the bodies and *posterior arches* The process of ossification for the bodies commences in the mid dorsal region and progresses up and down the spine while the centres for the neural arches commence in the cervical region the process extending backwards so that the lumbar and sacral elements are the last to have a bony roof Development may be arrested at any one of these stages and accounts for the different types *of spina bifida met with* clinically

Spina Bifida as a Family Defect

Spina bifida is met with almost equally in the two sexes and we can only suggest that it is due to some somatic defect *Occasionally it is a family defect* One member of such a family is depicted in Fig 1

FIG 1



Meningo myelocele in a *child at 14 months* a large thin walled translucent sac in the sacral region

Here all four children *had some degree of spinal* defect The eldest died at the age of 18 months with spina bifida the type of which is unknown and with hydrocephalus The second child now aged 10 years has a spina bifida occulta indicated by a scar and depression in the upper dorsal region and by slight scoliosis A photograph of this portion of

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[1] A postgraduate lecture delivered at the Royal Victoria Infirmary Newcastle on Tyne

II.—*The Special Symptom Sheets.*

Early in our work it became evident that certain well marked symptoms are common to many states of ill-health—for example, pain, exhaustion, &c. It was decided to attempt to differentiate the nature of each of these symptoms: (1) By careful consideration of the associated phenomena present in each case; and (2) by a systematic investigation of their mechanism.

The first step was to decide which phenomena associated with each leading symptom should be systematically recorded. As a result of many discussions sheets were drawn up embodying points considered essential for uniformity and accuracy. These sheets are still provisional and are regularly reviewed from time to time; only by a lengthy experience can they be brought to anything like perfection. All sheets filled up for any one symptom, common to a number of diseased states, are filed together, and compared and analysed. In this way types of exhaustion, breathlessness, headache, &c., characteristic of certain morbid states can be differentiated by consideration of the variety of the associated phenomena present in each case. The details of some of these sheets are recorded below with some comments on their objects and uses. The following is the sheet for recording pain.

Pain.

A.—*Subjective Phenomena.*

(*a*) Regions; (*b*) area and point of maximum intensity; (*c*) radiation; (*d*) character—dull, aching, sharp, lancinating, wave-like, &c.; (*e*) how induced, relieved, and aggravated; (*f*) relation to effort, posture, &c.; (*g*) time of onset and duration.

B.—*Associated Phenomena.*

1. *Subjective.*—(*a*) Faintness; (*b*) giddiness; (*c*) others—e.g., visceral reflexes such as vomiting, frequency of micturition, &c.

2. *Objective* (Physical Examination).—(*a*) Hyperalgesia of skin, subcutaneous tissue, muscle; (*b*) deep tenderness; (*c*) rigidity of muscles; (*d*) cutaneous reflexes: muscular, pilomotor, vasomotor.

Pain as a symptom calls so urgently for immediate relief that its careful investigation is frequently omitted and its diagnostic value lost. That it is induced by stimulation of definite afferent paths is undoubted; were these paths accurately known the seat of origin of their stimulus could be inferred. Direct experiments on animals give little information of the sensations evoked, and elucidation can only be effected by inference from the study of sensory phenomena in man. Pain is, nevertheless, the most useful and often the only symptom determining the locality of an abnormal stimulus. The frequency of reflex or referred pain has been demonstrated, and it is possible in many cases, as a result of accumulation of clinical experiences, to infer the locality of the stimulus. This inference is largely guided by the consideration of the associated phenomena present. The pain sheet has been devised with the object of bringing out the associated phenomena. The character of a painful sensation is of more importance than is commonly believed, the remittent character of pain due to disordered peristalsis of the hollow viscera, and the various qualities ascribed to it by patients, are all of importance, but apart from this the use of the word pain by a patient is frequently misleading. The term is used for any disagreeable sensation, and it should be the aim of the examiner to determine the exact character of the sensation complained of. What is described as pain after food is often in reality a sensation of fullness and distension. The associated phenomena to be specially recorded in this sheet are selected with the idea of differentiating the mechanism disturbed; the pain experienced in heart affections, for example, never seems to be associated with vomiting, while it is common knowledge that vomiting is frequently associated with the intense colics which occur in disease of some of the abdominal organs (gallstones, renal calculus, uterine contraction, &c.).

The following is the sheet for recording exhaustion.

Exhaustion.

Sensation of Exhaustion.—(1) Time of day felt; (2) variations in intensity; (3) relation to effort; (4) relation to food; (5) relation to posture; (6) relation to rest.

Associated Subjective Phenomena.—(1) Breathlessness; (2) palpitation; (3) giddiness; (4) sweating; (5) nausea; (6) faintness; (7) sinking in epigastrium; (8) chilliness; (9) headache; (10) mental phenomena, depression, loss of memory, irritability, lack of concentration, &c.

Associated Objective Phenomena.—Blood pressure, pallor, flushing, ocular phenomena, tache cerebrale, effect of abdominal compression on filling of jugular vein, reflexes, blood count.

Type of Exhaustion Present.—Exhaustion is one of the commonest sensations of which patients complain, and is frequently the first indication which comes to them of failure of health. Numerous early discussions, devoted to this subject, demonstrated how little is known about this important symptom; but as time went on it became clear, mainly through the researches of Dr. J. Orr, that it may be possible to differentiate certain types of exhaustion and to correlate some of them with certain types of disease. Great difficulty is experienced in locating the tissues to which the sensation of exhaustion is referred. In some cases the feeling of disability is mainly experienced with regard to muscular activity, but in the majority the sensation is more generalised and referable to all parts of the body.

Fatigue is believed to be caused by the action of chemical products upon the neuro-muscular apparatus. In our series of cases of exhaustion there is almost invariable evidence of the presence of toxæmia. It therefore seems possible that exhaustion is due to a process similar to the action of fatigue toxic substances upon nerve cells, nerve endings, or synapses. The present sheet on exhaustion is designed to bring out the associated phenomena present which appear likely to throw light upon the mechanism of its production.

The following is the sheet for recording response to effort.

Response to Effort.

Nature of limiting sensation (see below).

Is tolerance acquired by repeated effort? (Details of this.)

Describe response to (*a*) gentle continued exercise; (*b*) short sharp exertion.

Symptoms associated with limiting sensation: Pain, breathlessness, exhaustion, syncope, palpitation, giddiness, &c. (See special sheets.)

If limiting sensation occurs apart from effort (*a*) is it delayed? (*b*) is it totally unrelated to effort?

Amount of effort producing limiting sensation, with sensation produced: (*a*) On level at usual pace; (*b*) on hill or stair; (*c*) on level with accelerated pace; (*d*) before food; (*e*) after food; (*f*) on warm day; (*g*) on cold day.

Limitation of capacity for work apart from distress.

Present disability increasing, stationary, diminishing, or variable.

Patient's capacity for effort when in good health.

Directions for Study of Response to Effort.

Nature of limiting sensation: Pain, breathlessness, exhaustion, any other.

A. If effort limited by pain: (1) Fill up pain sheet with particular reference to site, radiation, &c.; (2) whether tolerance acquired by repeated effort; (3) if so, note minimum and maximum amount of effort; (4) whether associated with breathlessness or exhaustion; (5) any other associated symptoms.

B. If effort limited by breathlessness: (1) Note if associated with pain or exhaustion; (2) if so, note effect of (*a*) gentle continued exercise, and (*b*) short sharp exertion, on nature of limiting sensation; (3) whether breathlessness occurs, independently of exertion; (4) any other associated symptoms.

C. If effort limited by exhaustion: (1) Fill up exhaustion sheet; (2) note if associated with breathlessness or pain; (3) if so, inquire as to B. (2) above; (4) if exhaustion followed by rise of temperature; (5) any associated symptoms.

D. If effort limited by any other sensation, fill up appropriate sheet.

In all cases.

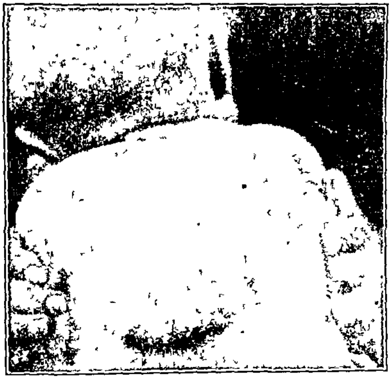
(1) Note amount of effort necessary to produce distress: (*a*) On level going at own pace; (*b*) on hill or stair; (*c*) on

the cord is attached by its dorsal aspect to the top of the sac, leaving the spinal canal to reach this attachment and passing down to the lower extremity of the sac to regain its normal position. In some cases the cord, at this area of attachment, may open on the surface or present a reddened and apparently ulcerated surface as is shown in Fig. 6. When the cord opens on the summit of the protrusion the condition is really a myelocele.

Syringomyelocele.—The fourth type or syringomyelocele resembles the above in many particulars, but the central canal of the cord is dilated, the distended cord occupying a portion of the sac. One such example was found at operation, and the finger could be passed readily into the dilated central canal.

Myelocele.—The myelocele is the gravest defect of the series. Here the posterior part of the spinal canal and cord is undeveloped and the central canal opens directly on to the surface at its termination or for a considerable part of its length. Indeed, the condition resembles the earliest stage of its development. The defect is seen as a red and vascular area at the bottom of which the central canal can be found. Naturally these cases do not survive long.

FIG. 5.

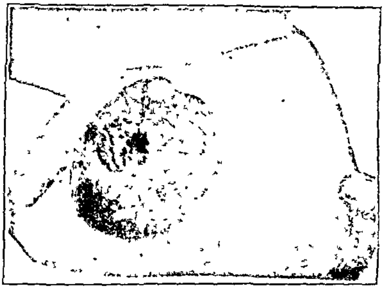


Large meningocele in the dorsal region.

Diagnosis.

The diagnosis is made on the history and appearances of the swelling. The condition is congenital, it is situated in the middle line over the spine, the surface is scarred or vascular, while in most cases a swelling is present. The covering may be natural skin, and the consistence of the swelling shows it to contain fluid. It has an impulse on coughing or straining, and if necessary fluctuation can be obtained between the tumour and the anterior fontanelle. To determine the variety present may be more difficult. Pedunculated tumours are usually simple meningoceles and are covered by normal skin. If the tumour is large, has a broad base, with scarring on the surface and transculent walls, a meningo-myelocele is probably present. In some of these three definite zones can be recognised, the apex a red vascular zone, surrounded by a thin translucent area, while at the base this merges into the skin of the back. (Fig. 6.) It is impossible to determine the syringomyelocele from external examination. The character and extent of the spinal defect can, in some cases, be determined by palpation, for the defect can be felt at the margins of the tumour. In other cases the protrusion overlaps the defect to such an extent that its edges cannot be detected. A radiograph will, however, reveal the defect if it is thought necessary to have this information. There are two conditions which may be mistaken for spina bifida. The first is a nævus in the middle line of the back, an unusual position. It can be lifted off the deeper structures and is not associated with any spinal defect. The second condition is that of sacrococcygeal tumour. Here the tumour may be solid or possess translucent cysts, but is situated at the termination of the spine, and involves the perineum and coccyx. No impulse is present on coughing or straining, and no fluctuation can be obtained with the anterior fontanelle. It should be mentioned that very rarely there may be a defect in the anterior part of the vertebræ, and that a protrusion may take place forwards into the pelvis or abdomen.

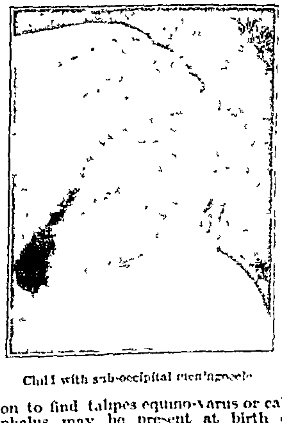
FIG. 6.



Meningo-myelocele in the sacral region showing a "raw area" in the centre of the swelling.

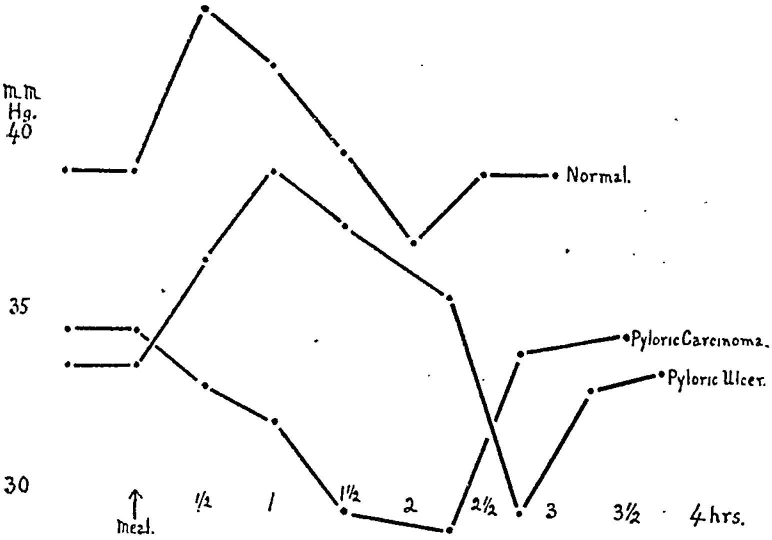
Congenital Malformations Accompanying Tumours.—In addition to a local tumour certain other congenital malformations may be present. Scoliosis may accompany the spinal defect, while it is not uncommon to find talipes equino-varus or calcaneus. Hydrocephalus may be present at birth or may supervene shortly afterwards and is the complication most to be feared. It has been mentioned that later certain nervous phenomena may appear such as paralysis due to involvement of the

FIG. 7.



Child with sub-occipital meningocele.

follows. Before the patient's breakfast two samples of alveolar air are collected. The patient expires as forcibly as possible into a long rubber tube; after full expiration he closes the end of the tube with his tongue, and a sample of the last air expired is drawn off from the tube into an evacuated receiver attached to the tube as near the patient's mouth as possible. Two samples are collected in this manner, one taken at the end of an inspiration, one at the end of an expiration. The percentage of CO_2 is then determined by analysis with Haldane's apparatus, the mean of the inspiratory and expiratory samples being taken to represent the tension. The patient then has a standard breakfast, composed of a glass of milk and three rusks. After the meal samples are collected and analysed quarter-hourly until the tension remains constant for two readings.



Three typical curves of alveolar CO_2 tension.

Conditions giving Characteristic Curves.

We find that the following conditions when investigated by this method give curves which are at least as characteristic as those obtained by the fractional test-meal: (1) hyperchlorhydria, (2) hypo- and achlorhydria, (3) rapid emptying of stomach, (4) carcinoma of stomach, (5) pyloric ulcer. When a result is obtained indicating the presence of any one of the first three of these it is important to remember that very wide variations in gastric secretion, ranging from extreme hyperchlorhydria even to achlorhydria, occur in quite healthy persons.[2 3]

Advantages of the Method.

The above curves provide examples of the very definite pictures yielded by this method in various pathological conditions. The following advantages distinguish it from other methods in use:—

1. The analysis of alveolar air does not cause the subject any discomfort whatever, hence it can be employed even in patients in whom nervousness, or some other general condition, forbids the passage of stomach tubes of any type. The insertion and retention of the stomach tube in the fractional test-meal produces in some few persons considerable discomfort, with nausea, retching, and salivation. It is difficult to believe that gastric digestion follows its usual course under these conditions; hence in such persons the test-meal must give misleading results. In the method described in this paper, on the other hand, the patient, if not informed, would not even know that his digestive system was under examination.

2. The method gives an index of the *total* amount of acid or alkali being secreted from the blood by the gastric or other digestive glands, and hence is independent of neutralising factors such as mucus and regurgitation which affect ordinary gastric analyses.

3. It gives a measure of secretory activity below the pylorus as well as that of the stomach.

4. The form of test-meal is immaterial provided that a fixed standard be selected, allowing comparisons with the curve shown by normal persons after the same meal.

A paper is in preparation in conjunction with Dr. Bennett dealing with a large number of pathological cases in which the results obtained by this method will be shown to be parallel with those obtained by the fractional method of gastric analysis.

References.—1. Variations in Alveolar CO_2 Pressure in relation to Meals, E. C. Dodds, Jour. Physiol., 1921; liv., 342. 2. The Gastric and Respiratory Response to Meals, T. Izod Bennett and E. C. Dodds, Brit. Jour. Exp. Path., 1921, ii., 58. 3. A Study of Gastric Secretion, T. Izod Bennett and J. A. Ryle, Guy's Hosp. Rep., 1921, lxxi., 286.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
MALIGNANT PUSTULE WITH MULTIPLE LESIONS.

By R. T. Grant, M.B., Ch.B. Glasg.,
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The following case is somewhat similar to one reported by Dr. W. T. G. Davidson in The Lancet of Jan. 19th, 1918 (p. 104), and is of interest in that it repeats several of the unusual features described by him.

K. E., a butcher, skinned on Jan. 22nd a bullock, which the following day was found to have died of anthrax. On hearing of this K. E. had his shirt and underclothes disinfected and washed his arms in disinfectant. He did not, however, have his outer clothes disinfected. On the 30th a small pimple appeared on the back of his right hand between the thumb and first finger. It was very itchy and irritable and there was a thin clear discharge from it. Condition was not diagnosed as anthrax until Feb. 2nd when the patient was admitted to this hospital.

On admission he was found to have a typical malignant pustule on the dorsum of the right hand between the first and second metacarpals, measuring half an inch in diameter and showing central eschar, ring of vesicles, and surrounded by a zone of inflammatory œdema. There was brawny œdema of the radial side of the hand, but this did not extend above the wrist, nor was there any lymphangitis or enlargement of lymphatic glands of the arm. A second, but much smaller pustule (which had not been noticed by the patient) was found on the radial side of the left forearm at the junction of the upper and middle thirds surrounded by a zone of œdema about five inches in diameter. Two small pimples were noticed lying to the outer and upper side of the latter, but these did not present the typical appearances of malignant pustule and were not surrounded by œdema. No lymphangitis or lymphadenitis of left arm. Patient's general condition was apparently unaffected and there was no pyrexia. Smears from the first and second pustules showed Gram-positive anthracoid organisms and staphylococci, the third and fourth pimples showed staphylococci only. The two pustules were excised on Feb. 2nd, and the patient was given 40 c.cm. of Sclavo's serum subcutaneously into the abdomen. On the following morning as there was some spread of the œdema on the left arm a further dose of 20 c.cm. of serum was administered. Patient made an uninterrupted recovery.

STUDIES FROM THE ST. ANDREWS INSTITUTE OF CLINICAL RESEARCH.

II CASE-TAKING METHODS.

By J. H. P. PATON, M.B , CH B. EDIN.

Introduction.

IN 1918 Sir James Mackenzie was appointed consulting physician to the St. Andrews Cottage Hospital. In that capacity he at once instituted weekly out-patient clinics, at which he saw patients brought to him by medical practitioners in the town These clinics took the form of meetings which attracted not only local practitioners but a number of doctors from the surrounding district; discussions took place on the special problems which confront the general practitioner, and on the need for systematic investigation of these problems. It became obvious that a vast amount of material for their solution was lost, or could not be utilised, under the present conditions of general practice. As a direct result of these discussions Sir James Mackenzie enlisted the support of all the local practitioners, and plans were drawn up for the creation of an Institute for Clinical Research The idea of founding such an institution had long been present in Sir James Mackenzie's mind, and he had made an attempt in that direction at the London Hospital, but it was found to be impossible to keep in touch with patients where the population was of so migratory a character, and he realised that the plan was only possible in a small town such as St Andrews with a comparatively stationary population.

As a result of his influence several personal friends of his own, who realised the possibilities of the scheme, offered to provide the necessary financial support for its initiation A council was formed, and a building was acquired on lease and suitably fitted up, containing consulting rooms and examination rooms and laboratories for radiology, chemistry, and bacteriology. The Carnegie Trustees made a grant for five years to provide the services of a fully-qualified chemist and also those of a bacteriologist. The general basis of the work of the Institute was set forth in the minute of the first general meeting of staff, held on Sept. 5th, 1919, as follows —

> "The main objects of research would be the early stages of disease, and the work would primarily consist of detailed observation of symptoms and the keeping of careful records Prolonged observation of cases would be carried out in order to discover the significance of early symptoms, and researches would be undertaken with a view of ascertaining the mechanism of their production"

This minute makes clear the two essential needs which justified the establishment of the Institute—namely, (1) The need of obtaining accurate records of the earliest symptoms of disease, at a stage prior to the occurrence of structural damage; (2) the need of following up each individual case from its onset to its termination.

Upon these essentials depends any advance in the early diagnosis of disease and in its accurate prognosis. It is true that the hospital records throughout the country are full of information regarding the symptoms of disease, but a little consideration will show that they cannot be records of those facts with which the staff of the Institute are attempting to deal. Advanced cases and cases of acute illness alone are admitted to hospital wards The symptoms recorded are those of fully established disease; the physician does not see in the hospital ward those early stages of disease which it is our purpose to investigate As soon as his patient has sufficiently recovered to resume work he returns to the care of his general practitioner, and all record of his case ceases. Hospital records do not provide first-hand information of the patient's earlier symptoms, habits, and environment in the stages when the necessary information may be acquired.

In the rush of a busy practice the making of accurate records is extremely difficult, and leisure for classification and analysis cannot easily be obtained. The St. Andrews Institute affords facilities to the general practitioner for making such records, and supplies means whereby when taken they are made permanent and systematically kept, so that information can be drawn from them and incorporated into the general sum of medical knowledge.

The first staff meetings were devoted to the consideration of a general scheme of case taking applicable to early cases of disease The following scheme was ultimately adopted, and a year's experience has convinced the staff of its suitability for the purpose.

I.—*General Scheme of Case-Taking*

Duties of the Doctor—(1) Elicit clearly the sensation which led the patient to the belief that he was ill, (2) elicit other sensations associated; (3) have a clear idea in mind as to the information to be elicited by questions, (4) never leave a particular symptom until fully investigated; (5) use questions suitable to the patient's understanding.

The Patient—(1) Details of main complaint, (2) associated sensations; (3) origin and history of present complaint; (4) general survey of each system or organ by questions, to elicit other associated sensations, (5) previous health; (6) family surroundings, home surroundings, habits, &c , (7) physical examination (*a*) general appearance (physiology, peculiarities of manner, &c), (*b*) physical signs (under systems), (*c*) urine, &c , (8) opinion, (9) treatment; (10) after-history.

Duties of Doctor.

It will be observed that the scheme is prefaced by certain directions of such simplicity that they are especially liable to be forgotten, but essential for detailed accuracy in recording the phenomena present before gross physical changes are perceptible. They differentiate clearly the leading symptom from associated symptoms, and discourage aimless and haphazard investigation In the fourth the complete investigation of every symptom is insisted upon. It was soon recognised by everyone that the doctor's conception of symptoms were in general so hazy that steps must be taken to obtain a clearer insight. Consequently, although the earlier notes were unsatisfactory, continued investigation into the nature of symptoms is rendering these notes daily of more value.

The Patient

It was early realised that for successful inquiry into the patient's sensations the element of possible suggestion by the examiner must be eliminated. Simple inquiries make clear to the patient that his own sensations of ill health are what we desire. It is the examiner's duty tactfully but firmly to suppress the numerous suggestions emanating from relatives and friends that appear in the patient's story at this stage Many pertinent symptoms may have been omitted by the patient as being of no importance; these should be elicited by careful inquiry. In order that the examiner may carry this out in an orderly and logical manner, it is essential that he should have previously obtained some general idea of the origin and history of the complaint. This, then, is taken before proceeding to the systematic inquiry into symptoms present (No 4) The remainder of the scheme proceeds upon conventional lines, but special care is taken to note all details in regard to family history, environment, diet, occupation, &c , factors which there is every reason to believe are frequently germane to the development and perpetuation of ill health

Perhaps the most essential part of the scheme is that dealing with after-history. Arrangements are made to ensure that each patient will be again seen from time to time, and the records of his condition and any subsequent illnesses are added to the case. In this way in the course of years the elements of a scientific system of prognosis will be built up—prognosis, that is to say, based upon the outcome of actual cases, and not upon the vague fears engendered by abnormal phenomena of whose significance we are ignorant.

swollen and covered with a circular patch about the size of a shilling. No gland was palpable, but there was some tenderness at the angle of the left jaw. A swab, taken and sent to the city analyst, was reported negative. Four days later, as the membrane appeared very resistant to local treatment, a second swab was taken, which was also reported negative. The membrane disappeared on the twelfth day, having apparently yielded to frequent applications of glycerine of tannin. On the 21st day the patient's friends noticed that the voice had become distinctly nasal, and two days later she noticed for the first time that liquids returned through the nose. Nasal and pharyngeal swabs were now taken, and these were once again pronounced to be negative. On three separate occasions the urine was examined and no albumin found.

There was an epidemic of diphtheria in the town at the time, but the failure to isolate the bacillus on three separate occasions, the strict localisation of the membrane to the tonsil, the absence of albuminuria and glandular enlargement, would justify one in pronouncing the case as non-diphtheritic tonsillitis.

Exeter.

A CASE OF SCURVY.

By R. S. McCLELLAND, M.D. EDIN.

SCURVY is sometimes seen among children in the British Isles to-day, but among adults it is very uncommon. The following case is therefore of interest.

B. C., a collier, aged 40, came to my surgery on July 29th of this year and complained that his teeth were bleeding. He looked ruddy and sunburnt, as most of our colliers are now. His breath was offensive, many of the teeth were carious, and blood was oozing out from the swollen and spongy gums. As fast as it was wiped away from the necks of the teeth it reappeared. Thousands of petechial ecchymoses were to be seen on the limbs and trunk. There were faint systolic murmurs in all the cardiac areas with a pulse-rate of 100, and a normal temperature. There was no albumin in the urine. The patient was seen on August 2nd, 4th, and 6th; the bleeding from the gums continued, while he also complained of weakness and headache. On the evening of the 6th he became unconscious. Deep coma, with stertorous breathing followed; and he died early on the 7th. Late on the 6th it was noted that the pupils were equal, but the right arm was very flaccid. Patient called vegetables "pig's food," and appears to have lived principally on bacon, bread, and tea.

It is not likely that members of the present Polar expedition will be attacked by scurvy. Modern knowledge has practically removed the dangers which in former times constantly attended ocean-going ships in this respect. Some idea of the ravages of scurvy may be gained from the losses sustained by Anson in 1740. The Admiralty, finding themselves short of fit men, ordered Anson to take with him 500 out-patients of Chelsea Hospital on his voyage to the South Seas, assuring him that these were "the properest men that could be employed on this occasion." Many of these elderly seamen escaped, but 259 were finally collected and marched on board. Not one returned. The "sea-scurvy" gripped them, their wounds reopened, their fractures recurred, and they died of wounds received a generation before. When Anson counted his men at Juan Fernandez he found that 626 had died out of a total of 961. It was Captain Cook who first realised the immense importance of fresh vegetables, fruit, and cleanliness, and much of his great success was due to the way he looked after his men. The moment signs of scurvy appeared he would fly from the Polar ice to warmer weather, and refit at some favourite island. Cook was fortunate in that Anderson, who in 1776 sailed with him as surgeon, appears to have been a very able man.

Dowlais, Glam.

FOOD POISONING AT CLITHEROE.—Between 50 and 60 cases of food poisoning, with one death, due it is believed to the consumption of potted meat-paste, have been reported to the health authorities in Clitheroe, Lancs, and neighbourhood. The first case was notified on Sept. 4th, the others in rapid succession. A representative of the Ministry of Health is investigating the outbreak.

Reviews and Notices of Books.

TUBERCULOSIS.

Tuberculosis in India: Its Prevalence, Causation, and Prevention. By ARTHUR LANKESTER, M.D., Officer for Tuberculosis, Government of India. London and Calcutta: Butterworth and Co. 1920. Pp. 317. 10*s*.

MANY books on tuberculosis give the impression that the author has set out on his task with that generous disregard for accuracy and detail which characterises the after-dinner speech. Dr. Lankester's book is in striking contrast to this type of literature; he has combined a great mass of detail with a broad and comprehensive survey of the main problems, and the result is a work which will prove a valuable source of information for many years to come. The author's task has evidently been complicated by his having not only to present new views and observations, but also to overtake and correct erroneous views. Writers on tuberculosis in the United Kingdom have glibly preached that in India surgical tuberculosis is rare, and that this purely fictitious state of affairs is due to the scarcity of bovine-tuberculosis in India. Chevers in his "Diseases of India" declared that he had never seen a case of strumous cervical glands in a native of the plains of India. Dr. Lankester, on the other hand, has found surgical tuberculosis extremely common, and with regard to the relation of surgical tuberculosis to the bovine tubercle bacillus has found their coincidence very rare. In large areas surgical tuberculosis is prevalent, although infection from bovine sources can be definitely excluded. One of Dr. Lankester's most interesting conclusions is that the freedom from tuberculosis enjoyed by cattle in India may be due to a natural resistance, and that it is possible by careful cross-breeding to convey this comparative immunity to other stock.

Although this book contains material collected under the auspices of the Research Fund Association of the Indian Government, the Association is in no sense responsible for the opinions expressed, which are those of Dr. Lankester alone. Having spent 23 years as a medical missionary in India he has brought to his task an intimate knowledge of the sociology of the country, and the value of his scientific appreciation of the peculiarities of the tubercle bacillus is greatly enhanced by his knowledge of its host. On such a subject as compulsory notification, for example, he speaks with authority, and he remarks that in Bombay, where tuberculosis has been a notifiable disease since 1903, notification has been practically a dead letter. In 1913, the notifications of phthisis numbered 84, while the total number of deaths from tuberculosis in this year was 2152. "Consumption is so much feared now in Indian homes that there is a great tendency to conceal its advent, thus the family doctor notifying a case would do so often against the wish of his clients and would lose them at once . . . . notification in India as far as private practice is concerned may be regarded as almost non-existent." Compulsory regulations do not make sanitation more acceptable to the people; and ". . . . in India, where every form of compulsion carries in its train the possibilities of unlawful oppression by subordinates for the purposes of gain, it becomes of special importance to reduce this feature in our campaign to the smallest minimum." In many such passages Dr. Lankester shows an intimate knowledge of human nature, and of the complexity of the problems of tuberculosis as they affect mankind.

Taschenbuch der Diagnostik und Therapie der Lungentuberkulose. Third edition. By Dr. H. GERHARTZ. Berlin: Urban and Schwarzenberg. 1921. With plates. Pp. 296. M.72.

THE most prominent feature of this compact little book is the remarkable tidiness with which the author has arranged its contents. All information capable of tabulation is most conscientiously tabulated; a table level if pace accelerated, and *note nature of distress produced*

(2) Compare amount of effort possible without distress (*a*) Before and after food, (*b*) *on warm and on cold day*, and note nature of distress produced

(3) If no distress complained of on effort, note if there is *any diminution in capacity for work*

(4) Endeavour to estimate for comparison the patient's capacity for effort while in good health

(5) *Note whether present capacity is increasing* stationary or diminishing

The Response to Effort

In addition to other symptoms of disease failure *of health is frequently indicated by a limitation in one* direction or another, of the capacity for effort Breathlessness and pain are the two *symptoms* which appear in patients as the first evidence of cardiac inefficiency Exhaustion, palpitation and giddiness on the other hand, indicate, as a rule, some extracardiac cause, where they occur alone—*apart* from breathlessness or *præcordial pain*—*the* efficiency of the myocardium is not at fault The organ whose efficiency is impaired can be ascertained in *any case only* by consideration of the associated phenomena present The object of the 'Response to effort sheet' is to ensure the recording of such associated phenomena as we at present consider of use in this direction

The impossibility of *fixing* a standard of effort common to all patients was early realised and the individual standard was adopted—i e, the amount of effort that could be undertaken by the individual while in health

This consideration is well *illustrated by the case* of a blacksmith who complained of breathlessness on *climbing a hill or a stair, while he felt no distress on* swinging his hammer in his daily work

It is, moreover true that the capacity of each organ to respond to effort must be *the* ultimate test of its efficiency The inefficient kidney, for example in its advanced *stages produces* symptoms forming a definite clinical picture One must suppose that these *symptoms* represent the terminal phase of a gradual development, and that the *accurate* observation of such cases in their early stages would elicit a definite symptomatology characteristic of the onset of inefficiency No doubt each organ reacts first to some *particular need* of the organism and it lies with the clinician to determine that need and the symptoms which indicate the failure of the organ to meet it

As all organs have periods of quiescence and periods of activity it is manifest that the first sign of failure will be a limitation of the field of response to effort Only by prolonged experience can we acquire a *knowledge of* the details essential for a proper inquiry into the significance of limitation of effort in the case *of each organ* This sheet *therefore even* to a greater extent than the others, is provisional and the directions by which it is accompanied serve to emphasise this

Methods Employed by the Institute for Securing and Investigating Material

Each practitioner on the staff has in the Institute a private room which is reserved for two hours in the day for the examination of research *cases* During the rest of the day he is at liberty to use it as his *private consulting room* He selects cases suitable for research from his private practice and investigates them during his research hours Each member of staff is at liberty to consult any of his *colleagues at* any stage in the case in order that the utmost benefit may be *derived from this privilege* each member of the staff makes himself specially familiar with the literature of one particular branch of clinical medicine—cardiology, neurology, and so on The necessary chemical bacteriological, hæmatological and radiological investigations *are carried out by* the special departments and with each specimen or *case full clinical* notes are supplied to the special department When the notes of each case are completed they are read at a full meeting of staff and discussed in detail Indices are kept *of all symptoms* recorded, and of the leading symptom and provisional *diagnosis of each case*, and arrangements are made to ensure the return of the patient at regular intervals Two full copies of each case are made and filed, one for the use of any member who is interested in any particular case and the other for permanent preservation *in a fireproof safe*

Finally each case is considered in detail by a special committee, whose duty it is to classify and tabulate the findings and to see that all cases are utilised for special investigations If this committee finds that a case taken by one member of staff has some bearing on special work in charge of another it is its duty to inform the latter of the fact This *committee also keeps a note of the date upon* which each patient should return, and at the beginning of each month a list is sent to each clinician of the patients whom he should arrange to see during that month In addition *to* the regular research work and the weekly reading *of* cases *one afternoon in each week* is devoted *to* the discussion of some subject of interest which is chosen by the clinical staff and is introduced by the member who happens to be specially interested in it

A NEW METHOD OF INVESTIGATING GASTRO INTESTINAL SECRETION

BY E C DODDS M R C S L R C P LOND,

ASSISTANT IN BIOCHEMISTRY BLAND SUTTON INSTITUTE OF PATHOLOGY MIDDLESEX HOSPITAL

THE purpose of *the present communication* is to draw attention to a new method of investigating the secretory activity of the alimentary tract in health and disease By taking samples of the alveolar air at intervals after a meal, the writer[1] was able to demonstrate that the tension of carbon dioxide undergoes certain definite changes in response to the amount *of secretion poured* out (*a*) by the stomach, (*b*) by lower portions of the alimentary tract In later work in conjunction with Dr T Izod Bennett [2] it was shown that in normal individuals of varying type the curve of alveolar CO tension so obtained corresponded closely with the curve of secretion of gastric HCl The variations in CO tension may be explained in the following way when acid is removed from the blood during gastric secretion the reaction of the blood tends to shift to the alkaline side This shifting is prevented by retention of the volatile acid CO_2 the tension of which rises in the blood and hence in the alveolar air Later when the alkaline intestinal and pancreatic secretions are poured out the reaction of the blood tends to shift to the acid side and hence acid in the form of CO must be eliminated This is brought about by a lowering of the CO_2 *tension* in the blood and therefore in the alveolar air

This method has now been applied to a number of pathological cases examples of which are given The figure shows three curves obtained (*a*) from a normal individual (*b*) from a case of pyloric carcinoma and (c) from a patient with pyloric ulcer respectively In the curve marked normal it will be seen that after *a meal*, the tension rose *4 5 mm returning to its* previous value in 1½ hours then fell 2 mm, and *finally returned to its original level in* 2¼ hours After this it remained constant The pyloric ulcer curve shows a greater and more prolonged rise (5 5 mm *lasting 2¼ hours*), on the other hand the curve obtained from the case of pyloric carcinoma shows no rise, but a *steady fall of 5 5 mm*

Method of Collecting Alveolar Air

For a description of the physiological processes of which these changes are the expression the reader is *referred* to the article by the writer and Dr Bennett [2] the present *communication* is not intended to be more than preliminary The samples of alveolar air were *collected* by the *Haldane Priestley* method, and the analysis was made with Haldane's gas analysis *apparatus* less delicate methods such as that of Fredericia, proving useless The technique is as admission that he has shown the importance of his subject, and has enriched clinical medicine. Dr. Stekel regards an increase of frigidity and of male impotence as a characteristic of the higher types of cultured people, confirming the view of some English writers that the relative infertility of our upper classes is due to other causes than deliberate restriction of pregnancy. With cultural development purely sensual love has become complicated by motives and tendencies of more subtle nature, which Dr. Stekel analyses with results surprising in their variety though conforming as a rule to psycho-analytical theory. To this theory he gives general adherence, whilst boldly attacking, modifying, or elaborating it in accordance with his personal views, as when, on page 172, he says that the ideas of infantile fixation have been grossly exaggerated and distorted to caricature by the school of Freud, or when he makes the criticism (pp. 221 et seq.), concerning a case treated for a long time by psycho-analysis, that the current sex trouble had not been discovered by the analyst.

The clinical value of his work is in the demonstration of the intimate and frequent association of serious "nervous" disorders with disturbance of the normal sex life, and he accepts with resignation the histories his patients give of long sanatorium "cures" for crippling disorders—hysterias, anxiety states, or compulsory ideas—with neglect of the underlying cause. We cannot, either as scientific men or as healers of the sick, shirk the admission that a great amount of nervous illness is bound up with intercurrent sex difficulties. Dr. Stekel's evidence is not obtained by esoteric psycho-analytical methods, but by simple investigations that can be carried out by any practitioner who has the necessary courage; his teaching in this respect is not new, but he offers such proof that we must either accept his conclusion or reject his clinical histories as unreliable.

Frigidity may be dependent upon causes peculiar to the patient, such as infantile fixations upon another member of the family, early experiences, the idea of self-punishment, the building up of a spurious love as a revenge upon a parent or former lover, or the fear of one's own desires; in short, upon any one of a multitude of causes. But Dr. Stekel makes the generalisation that the ultimate conflict is between "The will to power" and "The will to submission," with a refusal to sacrifice the personality to the demands of sex, a refusal upon which depends the whole modern attitude of the sexes towards each other and to society. "The patients hide 'I will not' or 'I dare not' under 'I cannot.' The unveiling of the 'Inner no' is the task of the psycho-analyst. . . . Sex difficulty shows us the progressive dissociation of civilised man, his division into a 'Willing' and a 'Not-Willing,' his inner tearing-asunder, his play-acting before himself and his battle with himself."

Dr. Stekel's independence and disregard for orthodoxy render useless any criticism of such statements as that on page 460: "There is no doubt whatever that an anti-sexual instinct has developed." Yet one would like to know what he understands by an instinct, for a definition is important even from his point of view. His material has a sociological value; the analyses of unhappy marriages, with the unfolding of the underlying causes, should be studied by all who feel called upon to pass judgment on the ever-increasing number of divorces.

While the material can be commended, the deductions expressed in the last chapter remain a matter for the individual judgment of each reader. They are ultra-feminist and iconoclastic, and the most ardent advocate of divorce reform in this country is left far behind by Dr. Stekel. One regrets that he opens battle on so wide a front; his clinical material is so valuable that it should be separated from views which, whether justifiable or not, are inacceptable to most English readers.

2. The "Beloved Ego" is a book of a totally different kind, containing less reference to sex than one finds in a family newspaper. Although the publishers describe it as "an excellent introduction to the study of psycho-analysis" it is really a psychological study of human error and weakness, and rather a conclusion than an introduction. A vigorous personal note prevails, and, since his thesis is a plea for recognition and guidance of all human desires, Dr. Stekel would perhaps unhesitatingly admit that in the preface his own beloved ego reveals its own self-love and will-to-power. He uses the neuroses to illustrate human failings—the double motive, the fears and doubts of "half-men," the kinship of love and hate, the pleasure that the unlucky dog obtains from his looked-for misfortunes—and confirms the suspicion raised by his other book that in his treatment there is much urging of the patient along the hard road to health, for in this analysis of the failings of mankind he shows more insistence than sweet persuasion.

A short study of "Mali-Mali" (the Malayan neurosis which we call *latah*) is typical of his handling. In this disturbance of the psychic life the sufferer must imitate the person under whose influence he falls; but we cultured people hide our weaknesses and attribute to free-will much which is only the effect of Mali-Mali. Mali-Mali shows us a common human phenomenon under the caricature of neurosis.

Dr. Stekel is a disturber of the peace, but he disturbs it with a cheerful breeziness and an easy style; accepted views are assailed from unexpected quarters, and every page is provocative. How far his philosophy is a legitimate development of psycho-analytical principles is open to question; his views often come near to those of Adler or even Nietzsche though the author's personality will never allow him to be merely the interpreter of the findings of other people.

The lay demand for psycho-analytical literature has led to a flow of books, good and bad; Dr. Stekel's "Beloved Ego," originally published in 1913, was written because he had something to say. In the two books just reviewed he draws a clear line between what the public may be expected to digest and what is requisite for a technical dissertation: psycho-analysis will benefit if this distinction is maintained.

THE LAW OF BIRTHS AND DEATHS.

A Study of the Variation in the Degree of Animal Fertility under the Influence of the Environment. By CHARLES EDWARD PELL. London: T. Fisher Unwin, Ltd. 1921. Pp. 192. 12*s.* 6*d.*

THE author's sub-title gives a clue to the object of his book, which in its main title is totally misnamed. There is no pretence at a study of mortality, and the author himself appears to have realised, at any rate by the time he reached p. 192, that his thesis concerning the fertility of females by no means deserves the dignified title of a law. This thesis is quite adequately summarised on p. 70 as follows:—

> "The variation of the degree of animal fertility in response to the direct action of the environment will be directly proportional to the intensity of the nervous charge until the optimum-point for fertility is reached; it will thenceforward bear an inverse proportion to the intensity of the nervous charge."

It will be seen that the application of this "principle," as the author calls it, depends upon a measurement of the "intensity of the nervous charge." If the reader looks hopefully for some new device for measuring this charge he is fated to disappointment. "The nature of nervous energy" says Mr. Pell, "is very obscure," and we confess that a perusal of the chapter devoted to this subject, and derived very largely from "The Physiology of Bodily Exercise," by Fernand Legrange, does not do much to relieve the obscurity. Starting from so conveniently nebulous a conception it is not difficult to discover the "principle" which derives from it at work in the animal and vegetable kingdoms.

But Mr. Pell has done a service in drawing attention to a subject which badly needs investigation. It is probable, as he says, that the use of contraceptives is an insufficient explanation for large reductions in the birth-rate. A recent article by Mr. Knud Stouman[1]

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[1] Internat. Jour. of Public Health, 1921, July-August, p. 417.

The anthracoid organisms were isolated and found to be true virulent *B anthracis* The animal inoculation was carried out by Dr J A G Burton of the Royal Infirmary, Glasgow, who reported the organism to be very virulent, *a small dose killing a guinea pig in 30 hours*

The unusual features of this case are (1) the long period intervening between the exposure to infection and the development of the first pustule, and (2) the presence of a second and younger lesion The incubation period usually given for malignant pustule is from one to three days but in this case eight days elapsed before the pustule appeared However, it is possible that although the patient changed his shirt and underclothes, spores had already been transferred from these to his jacket and infection of the skin may have taken place subsequently Clinically the second pustule was much younger than the primary one, and its development is probably to be explained by auto inoculation, as the patient admitted scratching the first one when it appeared *Also to be noted is the* absence of general symptoms and the slight local reaction, although the primary lesion had been present *for four days before admission and the organism* was proved to be very virulent to the guinea pig

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TWO UNUSUAL CASES OF

ABDOMINAL TUMOUR

By E C BEVERS, M B, B CH OXON,
F R C S ENG & EDIN,
HON SURGEON, RADCLIFFE INFIRMARY, OXFORD

BOTH these cases are of sufficient rarity in the surgery of the abdomen to warrant their being placed on record

CASE 1 *Large Splenic Cyst* —This patient, who had never suffered from any illness, was the mother of a boy aged 6 and twins aged 4 After the birth of the twins and when she got up she noticed that her figure was not quite as it *used to be, it was a little fuller on the left side than the* right The swelling on her left side gradually got larger during the next four years but she suffered no pain or discomfort She was admitted to the Radcliffe Infirmary in February, 1918, and examined by the late Sir William Osler and the notes which he dictated while examining the patient I give in his actual words

A healthy woman, aged 41 not anæmic pulse regular, arteries good *On examining the abdomen there is a large* irregular prominence *in the* epigastric left hypochondriac and left lumbar regions, which lifts the costal margin and bulges the left flank, there is also a marked prominence just above and to the left *of the umbilicus* The tumour crosses the mid line and extends nearly to the right mammary *line* and descends with inspiration No intrinsic movements could be seen, there is *slight diffuse* pulsation and coils of intestine are visible at the *navel On* palpation the mass occupies upper left quadrant of the abdomen it is irregular *and extends to level of left anterior superior* iliac spine and passes under left costal margin, the finger can be placed between it and the costal margin It is soft and elastic in front, there is no edge to *be felt* it is harder on the right side Where it is more irregular it descends freely with inspiration and the fingers cannot be placed above it Behind with fingers in *the renal region, it can* be pushed forwards and grasped between the hands and pushed down The colon cannot be felt over it the upper limit of dullness is in the mid axillary line on the seventh rib It feels soft, elastic, and mobile and is probably a soft elastic cyst hydronephrotic in origin the renal region is definitely occupied by the mass The right kidney is quite palpable and is not enlarged

Examination of Urine —Acid *specific* gravity 1020 urea 2 per cent, no abnormal constituent *Cystoscopy* —Both ureters secreting ureters catheterised and normal urine collected from each

Operation —March 5th 1918 A long para *rectal incision* was made on the left side, the tumour proved to be a cyst of the spleen about the size of an association football The spleen, much elongated, lay *on the* outer or left side of the cyst, and the splenic pedicle was stretched out over the convex cyst wall There were numerous adhesions of the cyst to the left vault of the diaphragm these were clamped divided, and ligatured some of them *with a little* difficulty, the splenic pedicle was divided and ligatured and the spleen removed

There was no difficulty with the operation except *in the* ligature of some of the strong vascular adhesions to the diaphragm The patient *made* a good recovery was discharged from hospital on March 31st 1918, and is in good health at the present date

The pathological report by Dr A G Gibson was as follows

Specimen consists of a spleen with large cyst wall attached, there is moderate fibrosis of the splenic tissue, the cyst itself is full of blood clot undergoing *degeneration This* is probably an infarction cyst

This case is an example of the real difficulty that often faces one in making a diagnosis of an abdominal tumour The tumour was without doubt a cyst, and the diagnosis of hydronephrosis was justifiable until after cystoscopy and catheterisation of the ureters; even then a cystic tumour of renal origin could not be excluded A splenic cyst was considered but one was unable to feel *anywhere* the *crenated border* of the spleen Moynihan[1] divides splenic cysts into (*a*) serous cysts blood cysts, lymph cysts, (*b*) hydatids; (*c*) dermoids This was a blood cyst and it is suggested that it may have been due to *an* infarct, which *appears* to have originated at the end of the last pregnancy, as it was directly after the latter that the swelling was noticed

CASE 2 *Large Extra peritoneal Fibro myoma* —D S a married woman aged 49, had noticed that her abdomen had been increasing in size for *the last nine years in fact* ever since she gave birth to her last child She consulted her medical man because of large veins in her legs chiefly the left and at that time *it was thought that she was pregnant, for the past two years she had suffered from frequency of* micturition and difficulty of control On July 10th 1919, she was seen by me *at the Radcliffe Infirmary, Oxford* On examination there was a large firm abdominal tumour springing apparently from the pelvis and reaching up to the umbilicus *The surface of the tumour was firm* hard, and non elastic and there was slight lateral movement On vaginal examination the uterus could be felt pushed back *behind the tumour it appeared to be of normal size and* to be separate from the tumour

Operation —A mid line incision was made between the pubes and the umbilicus *and in doing* so the tumour was slightly cut into, the peritoneal cavity could not be opened until the incision had been carried well above the umbilicus The tumour was found to be extra peritoneal and to be filling up the abdominal cavity by pushing the peritoneum in *front of it, the peritoneum had been raised in front as high* as the umbilicus The uterus and all its appendages were identified, they were normal and had been pushed down into the pouch of Douglas by the tumour

The latter was hard encapsuled and firmly attached to the *apex* of the bladder some of *the muscular fibres of the* bladder being divided during the process of separation, there was a second point *of attachment* at the umbilicus Elsewhere the tumour shelled out readily but some of the invaginated peritoneum had to be removed with it The gap in the *peritoneum was closed* and the abdominal wall sutured The patient's recovery was uneventful The tumour measured 10 in in its long axis the pathological report described it *as a fibro myoma* undergoing colloid degeneration It may have originated from the apex of the bladder or the urachus seeing that the tumour was firmly *attached to the apex of the* bladder and the umbilicus, the two attachments of the urachus it is reasonable to assume that it *originated* in the latter structure

Thomson Walker[2] states that fibromyomata of the bladder may be intra vesical, interstitial, and extra-peritoneal, *and* that about 20 cases have been collected This case may then be regarded either as an extra peritoneal fibromyoma of the bladder, or a fibromyoma of the urachus

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A CASE OF

PARALYSIS OF THE SOFT PALATE FOLLOWING NON DIPHTHERITIC TONSILLITIS

By J PEREIRA GRAY M D BRUX M R C S ENG

THE *following* case is of sufficient interest to merit permanent record

I W aged 10 consulted me on July 1st for a sore throat On examining the fauces the left tonsil was found patients with fever.—Experiments on the Regulation of the Blood's Alkalinity, by J. S. Haldane.[1]—The Action of Diuretics, by Arthur R. Cushny and C. G. Lambie. Diuretic drugs may act directly on the kidney itself, or indirectly through changes in the blood or in the circulation. Among the diuretics examined the increase in the urine appeared to depend directly on the blood flow through the kidney in only one instance—pituitary extract. Under caffeine the diuresis begins before the accelerated flow and lasts long after it has become normal. Its action is not dependent on changes in the blood, but on changes in the renal cells. The simplest view of the action of this drug is that it causes diuresis by reducing the resistance to filtration through the glomerular capsule by a specific action on its cells. The diuresis of salts and urea is not necessarily accompanied by acceleration of the blood flow, though this may accompany it in the beginning, and presumably favours its occurrence. Adrenalin lessens the blood supply and thus the secretion of urine, while section of the splanchnic nerve has the opposite effect in increasing the blood flow through the kidney and the amount of urine. Strophanthin had no diuretic action, nor did it alter the circulation through the kidney in moderate doses, while larger ones increased the blood pressure, slowed the renal blood flow, and lessened the secretion of urine. Rabbits anæsthetised with urethane 1·5 g. per kg. were employed.—The Coagulation of the Blood, Part II., The Clotting Complex, by H. W. C. Vines. According to this author, the inauguration of blood coagulation depends on the presence of a complex in which three substances are combined: a lipoid, calcium, and a protein. The lipoid and the calcium are essential. The calcium-lipoid combination does not yield calcium ions. The function of the protein is apparently secondary; it seems to render the lipoid compound more sensitive and may act by keeping the latter in a state of fine suspension. The compound described has properties resembling those of the thrombokinase of Morawitz rather than of the prothrombin of Howell.—The Effects of Respiration of Oxygen on Breathing and Circulation, by L. Dautrebande and J. S. Haldane. The authors sought to determine, by themselves breathing oxygen and air from two Douglas bags, whether there is any fall in alveolar CO_2 pressure when oxygen at increased partial pressure is breathed. They conclude that respiration of oxygen, particularly at increased barometric pressure, increases the breathing and diminishes the pulse-rate.—The Comparative Atrophy of the Skeletal Muscle after Cutting the Nerve and after Cutting the Tendon, by A. Lipschütz and A. Audova.

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[1] Sir B Moynihan Abdominal Operations

[2] J W Thomson Walker Genito Urinary Surgery

British Journal of Ophthalmology. July–September, 1921.—In the July number Colonel R. H. Elliot discusses the yielding of the optic nerve-head in glaucoma. The lamina cribrosa is derived partly from the scleral tissue and partly from neuroglia. Its density and its exact distribution vary considerably. Moreover, the density of the lamellæ is by no means necessarily uniform in different parts of the nerve-head. These points have been elaborated by Fuchs of Vienna, and the present paper is mainly a comment on his work. Its practical bearing on the formation of the glaucoma cup is important and the anatomical findings go far to explain the variations from the typical glaucoma cup of the text-books which are so frequently found. Light is also thrown on the meaning of the various forms of paracentral scotoma which are found clinically.

In the August number W. H. McMullen and M. L. Hine record some cases of chronic progressive ophthalmoplegia externa developing during childhood. They say that no very sharp dividing-line can be drawn between these cases and congenital cases on the one hand and cases developing in later life on the other. "All may be due to an 'abiotrophy' or 'lack of inherent vitality' of the specialised cells of the cranial nerve nuclei involved, the time of onset depending on the degree of vitality with which these cells were originally endowed."

In July and August Basil Graves describes a new instrument for contact-illumination in the examination of the cornea and anterior part of the eye. In using the corneal loupe the detection of fine changes is often rendered difficult by the reflex of light from the corneal surface. The contact-illuminator gets rid of this difficulty. For examination of the cornea it is placed on the scleral margin so that the illumination is lateral. One of the claims made for the instrument is that it is an aid in the early diagnosis of glaucoma, revealing a slight corneal haze after the instillation of cocaine when the tension is in any degree raised—a haze to be distinguished from that of cocaine drying which, as is well known, attacks the corneal surface when the lids are allowed to remain open after a too liberal use of the drug.

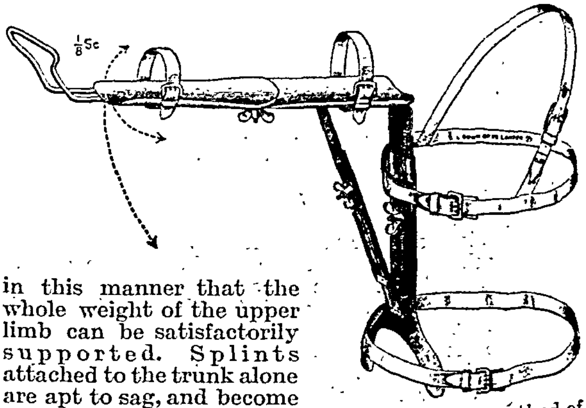
In August and September S. L. Ziegler discusses the Ocular Menace of Wood-alcohol Poisoning, on which we comment elsewhere.

The September number is largely taken up by an article by Priestley Smith on the Eye of the Ox and its Internal Blood-vessels. It is most beautifully illustrated by 46 figures from microphotographs of injected specimens taken by Mr. Frederick C. Lowe of Wednesbury.

New Inventions.

AN ADJUSTABLE ABDUCTION SPLINT FOR THE SHOULDER.

THIS splint is intended for use in all cases in which it is desired to abduct the shoulder-joint. Originally designed for use after dislocation, it has been found serviceable in paralysis of the deltoid from any cause, and after various injuries about the head and neck of the humerus, fractures included. The splint takes its "lift" off the pelvis, instead of off the soft tissues of the chest or abdominal wall, as it is only in this manner that the whole weight of the upper limb can be satisfactorily supported. Splints attached to the trunk alone are apt to sag, and become ineffectual. In standing at rest, the natural method of supporting the weight of the arm consists in placing the hand on the hip, and this is imitated by a small length of malleable metal, suitably curved, resting upon the iliac crest, and kept in position by a web band passing round the bony pelvis, at the same level as a truss-spring. The only other attachment consists in a Y-shaped band which passes above and below the opposite shoulder. The splint is adjustable for either arm; the range of abduction varies between half a right angle and a right angle and a half; the height can be adjusted; the elbow can be left free, or fixed at any desired angle by a butterfly nut; the wrist and hand are supported by a bar of copper wire which can be lengthened or shortened as required, and bent to any angle. Normally the splint is made of thin sheet-iron, and its weight is not irksome. For special cases, it is made of duralumin, a light but strong alloy of aluminium. Messrs. Down Bros. are the makers.



ALAN H. TODD, M.S., F.R.C.S., B.Sc.

of remedies for fever gives in different columns information as to name of drug, its composition, its formula, and dosage. In another table an attempt is made to classify the numerous preparations containing creosote and guaiacol; another table shows the reader what drugs to use for night sweats. Another table is an admirable summary of the various skin diseases due to the tubercle bacillus, showing the usual site, the appearance of the lesion, and giving hints as to the differential diagnosis; yet another gives much concentrated information as to the various tuberculins, serums, and other specific remedies. Lists are given of health resorts, showing the nature of their climates and the particular tuberculous conditions for which they are best suited. A further section of this work deals with first-aid to the over-treated consumptive, treatment for atropine and morphine poisoning, for example, being described. Much space is devoted to orthodox methods of examination and treatment, and no reader can fail to be impressed both by the wealth of information and the small compass within which it has been condensed. Here and there the author commits himself to such a sweeping generality as: "Atypical forms of phthisis invariably have an unfavourable prognosis." But, on the whole, his information is as truthful as it is full.

SEXUOLOGY.

A Young Girl's Diary. Translated from the German by EDEN and CEDAR PAUL. London: George Allen and Unwin, Ltd. 1921. Pp. 271. 12s. 6d.

THERE has recently been a change of attitude towards the discussion of sex matters, particularly in regard to venereal disease, concerning which men and women of dignity and position give support to propaganda which, a few years ago, would have been excluded from the pages of any newspaper. In this connexion the need for education of the adolescent is fully recognised; further, it is well known that withholding sex information from the child results in that information being acquired in fantastic form from unclean sources. Few people deny this, but custom is strong and there often exists between parent and child a barrier as strict as any taboo of primitive people.

"A Young Girl's Diary" (which we assume to be authentic, though the literary detective might find room for question) shows us what happens on the child's side of the barrier. The writer belonged to the pre-war upper middle class in Austria, and the diary presents an intimate record of school-girl doings and confidences; through it runs one theme—the pursuit of forbidden knowledge—accompanied by furtive speculation shared by school-mates, talks with crudely informed domestics, searches in encyclopædias, pride when some point is cleared up, fantastic ideas of married life and strange theories about venereal disease. If the power of taboo will allow us to admit that we also were the victims of the conspiracy of silence there is very little, except a "Peeping Tom" episode, that would not be acknowledged as having happened to many of us in childhood.

The diary shows how the barrier, originally erected by the parent, is carefully maintained by the child, who uses deceit and cunning to prevent intrusion by grown-ups into secrets shared only by chosen intimates. Many incidents described are of particular interest to students of child-life; to parents still guided by old custom the book will bring home what may be happening in the minds of their supposedly ignorant offspring. There is a danger, however, lest some people may judge that the taboo was in need of reinforcement and that the writer of the diary was an evil-minded girl who should have been punished for wanting to know.

The most thought-provoking thing in the book is a publisher's slip limiting its "study" to members of the educational, medical, and legal professions. It is not easy to understand why parents belonging to trades or other professions should not read it

Monographien zur Sexualwissenschaft. I. Band: *Sexual-Physiologie*. II. Band: *Sexual-Psychologie*. Von Dr. med. H. ROHLEDER, Sexualarzt in Leipzig. Hamburg: Paul Hartung. 1921. Pp. 104 and 100. M.12.50 each.

Onanie und Homosexualität. Second edition. By Dr. WILHELM STEKEL. Berlin and Vienna: Urban and Schwarzenberg. 1921. Pp. 528.

1 and 2. Dr. Rohleder, a sexuologist practising in Leipzig, gives in two manuals a good outline of the physiology and psychology of the human sexual life, showing himself sometimes an idealist, at others a materialist. Thus he believes in desire for offspring as a component of the sexual impulse, but follows Steinach's hormone theory of its source perhaps rather too readily. For while no contradiction of the striking animal experiments of this worker has been made, yet their application to human subjects, and his histological and pathological specimens, have lately been impugned by competent judges. The practitioner consulted on problems like sexual prematurity, sex-instruction, sterility and impotence, nymphomania, and so forth, will find here a safe and interesting guide. One must except, however, masturbation, as to which this sexuologist notoriously takes up an extreme attitude. According to the statistics he himself quotes, moderate masturbation in adolescence is very widespread; in fact, an English public school physician is mentioned as giving a percentage of 92. When, after this, onanism is styled a sexual disease worse than syphilis or gonorrhœa, to be combated as vigorously as they are, one is astonished at the tricks a clever man's mind can play him.

3. The mischief actually done by this barbarous attitude is impressively shown by Dr. Stekel, the leader of a section of the Freudian school, in his full and highly individual work. The large majority of medical men will be interested and convinced by his demonstration of the thesis that infinitely more harm has been done by preaching against masturbation than by the practice itself. The second and larger part of his book is a comprehensive psycho-analytic study of sexual inversion. On the larval forms of this abnormality much light is thrown; for instance, well-known phobias, as against syphilis or tubercle, are shown sometimes to symbolise dread of inversion in a bi-sexually disposed subject. Like every investigator of genuine vocation, the author is especially interested in ætiology, and here defends the psycho-genetic theory against the doctrine (of Steinach and Hirschfeld) of physically determined sexual intermediate forms. He does not deny the existence of these latter, though rating their significance lower than does his master Freud. It may be illogical to argue from therapeutics to ætiology, but nevertheless if inversion is claimed as the result of an avertable psychical maldevelopment, then one looks with interest to the success or otherwise of its psychical treatment. The benefits described are not striking, except in one case, specially mentioned as occurring in a race very susceptible to suggestion. This is in accord with the verdict of Hirschfeld, a clinician of unrivalled experience, who has for some time decried psycho-analytic cures of inversion.

Die Geschlechtskälte der Frau. Second edition. By Dr. WILHELM STEKEL. Vienna: Urban and Schwarzenberg. 1921. Pp. 400. M.90.

The Beloved Ego. By WILHELM STEKEL, M.D. Authorised translation by ROSALIE GABLER. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1921. Pp. 237. 6s. 6d.

1. MANY of us were once familiar with a text-book in which we read, concerning anomalies of sexual feeling: "The reserve which properly attends this subject prevents scientific investigation of it." Only by realising that the scientific approach to any subject necessitates a complete absence of 'reserve' can one become reconciled to Dr. Stekel's frank and sometimes brutally honest book, in which he devotes nearly 500 pages to the study of sexual frigidity in women. The wealth and significance of his material compel the

Some Toxæmias of Pregnancy.

Numerous theories have been advanced in explanation of the ætiology of the toxæmias of pregnancy, but none of them has as yet met with any general acceptance, and the problem must be regarded as still unsolved. The possibility of maternal intoxication by fœtal protein has attracted some investigators, and attempts, mainly unsuccessful, have been made to produce anaphylactic shock in the pregnant animal by injections of fœtal serum. Others have regarded damaged or infarcted areas of the placenta as the source of the toxin, and have drawn analogies with the action of poisonous products derived from degenerating muscular tissues, as seen in wound shock. Of possible toxic products of fœtal metabolism we have as yet no definite knowledge, nor do we know to what extent fœtal metabolism throws additional strain on the maternal excretory organs. That such additional strain is thrown upon certain maternal organs in pregnancy is suggested by the work of **Herring**, who found a marked increase in weight of the liver in pregnant rats, the kidneys, on the other hand, showing no hypertrophy. In the absence of any definite knowledge of the ætiology of the condition, no rational method of prevention is possible, and we can only hope that, by a study of the functional condition of the organs mainly affected in the toxæmias, we may be able to prevent danger to the mother. From a clinical standpoint, it is of the utmost importance to decide at what stage a pregnancy complicated by albuminuria, or other indications of toxæmia, should be terminated. Though recent advances in pathological chemistry have contributed greatly to our knowledge in many fields of medicine, they have not as yet aided us appreciably in our diagnosis or treatment of the toxæmias of pregnancy. The subject is reviewed by Dr. O. L. V. **de Wesselow** in the current issue of *Medical Science*, and modern work on acidosis, and on hepatic and renal function in eclampsia and albuminuria complicating pregnancy is summarised. The theory that the condition is caused, or at least accompanied, by an acidosis—a theory which originated with **Zweifel**, who believed that the causative factor was an over-production of lactic acid by the fœtus—has not been confirmed by later work. There does not appear to be any great reduction in the alkaline reserve of the maternal blood, as estimated by its combining power for CO_2. Though the liver lesions are so striking a post-mortem finding of the disease, we know of no definite alterations in the chemical composition of the blood or excreta which we can ascribe to failure of liver function, except the abnormal distribution of the urinary nitrogen. As is well known, the percentage of total nitrogen excreted as urea is frequently found to be much reduced in eclamptic cases, and this has been regarded as evidence of failure of the urea-forming mechanism of the liver.

The work of **Folin** and **Denis** suggests, however, that there is an efficient extra-hepatic urea-forming mechanism, and **Stadie** and **van Slyke** found in a case of acute yellow atrophy that, despite almost complete destruction of the liver parenchyma, a large proportion of urea was still formed. Chemical methods of estimating the functional capacity of the liver are at present so unsatisfactory that from a clinical point of view they may be disregarded. In testing renal efficiency we are on firmer ground, but here, too, the results in eclampsia have been disappointing. The marked accumulation of urea and other nitrogenous waste products, so frequently seen in acute and certain types of chronic nephritis, is absent in the toxæmias of pregnancy. The non-protein nitrogen and urea of the blood are frequently within normal limits. This absence of definite nitrogenous retention is indeed one of the most characteristic features of the disease, and serves to differentiate the true eclamptic from cases of uræmia due to chronic interstitial nephritis complicating pregnancy. The blood urea in the toxæmias of pregnancy is therefore of no value in prognosis. The urea-concentration test is probably more valuable in following the course and estimating the gravity of the condition, but the available data are at present scanty. The absence, until recently, of labour wards in our general hospitals, and the difficulty of keeping the healthy expectant mother under continuous observation probably account for the numerous gaps in our knowledge of the physiology of normal pregnancy and parturition. Even the relatively simple problem of the nitrogenous metabolism in pregnancy has attracted comparatively few investigators, nor have we much definite information as to the amount of protein necessary for the diet of the expectant mother. German experience, during the years of the war, suggests that the undernutrition of the population led to a marked fall in the incidence of eclampsia. Of the effects of the lowered standard of living on the weight of the infants at birth we have seen no statistics. It is to be hoped that the development of the antenatal clinic will lead to further study of the physiology of normal pregnancy.

Much may be hoped from the coöperation of physiologists and clinicians. Prof. V. J. **Harding**'s work on the subject of nausea and vomiting in pregnancy, recorded in The Lancet of August 13th, was the outcome of a suggestion made by a physiologist, Prof. V. H. **Mottram**, as a result of his observations on the mobilisation of fat during hunger, pregnancy, and early lactation in animals. Prof. **Mottram** found: (*a*) that a day's hunger was sufficient to double the amount of fat in the liver, (*b*) that a marked fatty infiltration of the liver accompanied pregnancy and early lactation, and (*c*) that this last was more marked in timid animals, or in those which had just left the dealer, than in normal and well-fed animals. It therefore occurred to him that the ketosis of nausea and vomiting in pregnancy was due to fat mobilisation, and that to stop this mobilisation a diet containing large amounts of carbohydrate was indicated, together with the removal, if possible, of any unpleasant emotional state which would result in a glycæmia or glycosuria with a concomitant mobilisation of fat. The work is a particularly good illustration of the value of the application of physiological thought to a medical problem, and there was no obvious practical application of the original research at the time that it was done. Further than this, the nausea and vomiting in the early months of pregnancy is so nearly a physiological phenomenon that many who suffer, suffer gladly, believing it to be a sign that their infant will be strong; and even when the discomfort is considerable they may be impatient of treatment, believing the vomiting to be a natural event. The fact, however, that the condition lends itself to a simple and efficient treatment will be a boon to many, and the good results obtained by Prof. **Harding**, and others who have followed his teaching, will encourage real scientific investigation of other conditions that are on the borderland of physiological and pathological states. It has been accepted by some observers that the vomiting of pregnancy is a neurosis, and this view has received some support from the fact that it is sometimes readily and immediately controlled by suggestion. Prof. **Mottram**'s observations also throw light on this aspect on the repopulation of France, in which he shows the existence of definite areas of low birth-rate whose influence spreads outwards like the growth of a cancer in all directions, opens up a promising field for sociological investigation. The biological line of approach suggested by Mr. Pell is also worthy of consideration, but it cannot be carried on independently of experimental research. And if we may be permitted one last word of advice it would be to refrain from a too unkind exposure of the want of expert knowledge in other workers in this most technical field. Even a member of the National Birth-rate Commission might hesitate to draw his statistical data from the columns of the daily press.

THE EUGENIC PROSPECT: NATIONAL AND RACIAL.

By C. W. SALEEBY, M.D., F.R.S. Edin., F.Z.S. London: T. Fisher Unwin, Ltd. 1921. Pp. 239. 12*s*. 6*d*.

Dr. Saleeby has paid another visit to America and has reinforced the inspiration and revelation of his previous visit. The result is a series of vigorous essays, written in his well-known popular style, on a large variety of topics ranging from the "decay of parenthood" to a eulogy of skyscrapers. He is greatly impressed, as indeed every liberal-minded visitor to the States must be, with the practical idealism of Americans. One could wish, however, that his stories of successful reforms were garnished with a few more of the practical details which so shrewd an observer must undoubtedly have gleaned. We are told, for example, that in Pittsburgh before the days of the Bureau of Smoke Regulation the pneumonia death-rate was the highest in the world. But we are not told how much the death-rate has been reduced nor what the minimum is to which smoke production has been reduced—only that it is now less smoky than Nottingham, which after all is a matter of judgment (not of soot records), and might even be considered a matter of opinion. The essays are thoroughly up to date, and while the reader may not always agree with the teaching, he must always admire the lucid and forceful manner with which it is presented.

JOURNALS.

Journal of Physiology. Edited by J. N. LANGLEY, D.Sc., LL.D., F.R.S. Vol. LV. 1921. Nos. 3 and 4. Cambridge University Press. Pp. 159–304. 12*s*.—The Regulation of the Reaction of the Blood, by C. Lovatt Evans.[1]—The Recovery Process of Excitable Tissues, Part II., by E. D. Adrian. By means of the capillary electrometer experiments were made to find out the relation between the decline of the electric response and the return of excitability in different tissues.—The Physiology of the Veins, by J. F. Donegan. The author's experiments were directed chiefly to comparing the effects of nerve stimulation on different veins and to determining the course and origin of the veno-motor nerves and the extent of central control and reflex effects. The methods used are described. The veins of the animals investigated (dog, cat, and rabbit) can be roughly divided into three groups. (*a*) The superficial veins returning blood from the skin. These receive sympathetic fibres. The veins of the hind limb receive them from the second to the fourth lumbar nerves inclusive and chiefly by way of the seventh lumbar and first sacral ganglia, those of the fore limb from the sixth to the eighth dorsal with cell stations mainly in the stellate ganglion. They react differently in different individuals, in some they contract on the first weak stimulation, in others they only contract after repeated stimulation. These veins were not found to react to the usual vascular reflexes, but probably they take part in temperature reflexes. (*b*) The mesenteric veins are also supplied with sympathetic nerve fibres which have their cell stations in the ganglia of the solar plexus and the inferior mesenteric ganglion. They are influenced reflexly in the same way as the arterioles. (*c*) As to the veins from muscles and the vena cava no effect was found in these. Adrenalin, 1 in 1,000,000, causes contraction in the veins of groups (*a*) and (*b*), but is practically inert in those of group (*c*).—The Survival of Motility in Mammalian Spermatozoa, by C. G. L. Wolf. This paper is the outcome of investigation in the School of Agriculture, Cambridge, and is one of great significance, bearing as it does on a problem of much practical importance in animal breeding—viz., the possibility of being able to keep spermatozoa viable for a sufficient length of time so that they may be transported and used for distant insemination. Up to now it appears that artificial insemination has been practised only with semen immediately after ejaculation, or at most, an hour or two after passage. The author investigated the conditions under which survival could best be prolonged. Wolf states that it is known that mammalian spermatozoa remain viable outside the male organism for periods up to 20 days, so that it ought to be quite possible by providing a suitable environment to keep them potent for some considerable length of time. The author's experiments were made on the epididymis of rabbits, to determine the effect of adding buffer salts to a solution of the Locke type. Experiments made to fecundate rabbits with spermatozoa which had been kept in salt and glucose solutions were unsuccessful, but it would appear that rabbits are very unsatisfactory animals for artificial insemination. It was found that the motility of rabbit spermatozoa can be preserved for at least nine days by placing the juice of the epididymis in a Tyrode solution which can be buffered and to which glucose has been added. Oxygen is passed in and a suitable amount of sodium bicarbonate added. The preparation must be kept at a temperature near the freezing point of water.—*Studies on Respiration and Circulation in the Cat. II.* The Effects of Hæmorrhage and Transfusion of Gum-saline Solution, by Y. Doi. When the blood pressure of a cat is lowered to various levels by progressive bleeding the amount of oxygen taken in by the animal and its minute volume of blood flow through the lungs decrease with a fall of blood pressure. The first fall of blood pressure from the normal height has greater effect on the minute volume per millimetre than the subsequent drop. When the blood pressure falls to a low level the decrease of the amount of oxygen taken in is less than that of the minute volume. The frequency of respiration and pulse-rate increase with a fall of blood pressure, and the volume of each respiration and of each heart-beat decrease with a fall of blood pressure. When the blood pressure is lowered by hæmorrhage injection of Ringer's solution or gum-saline solution raises it to normal height, and increases to normal values the amount of oxygen taken in and the minute volume. Gum-saline solution sustains these conditions for a longer time than does Ringer's fluid.—The Function of the Urinary Tubules in the Frog, by Mildred Atkinson, G. A. Clark, and J. A. Menzies. The authors conclude from experiments made by the perfusion method that urea, sodium sulphate, and glucose are filtered through the glomerular membranes, that the cells of the tubules are capable of transmitting urea and sodium sulphate, but not glucose, from perfusing fluid to urine, and that these results are not altered by the presence of 2 per cent. gum in the perfusing fluids, but the gum prevents the occurrence of œdema in the kidneys.—The Effect of Cooling Power of the Atmosphere on Body Metabolism, by J. A. Campbell, D. Hargood-Ash, and Leonard Hill. The technique is described and experiments are recorded showing the effects of out-of-door and indoor conditions upon metabolism. It is considered that basal metabolism of the body cells is raised by cool out-of-door conditions, and that shivering is not necessary to raise metabolism. The metabolism is controlled by cooling power, not by temperature. Formulæ are suggested for rapid calculation of heat production of the resting subject under comfortable indoor conditions and under cool out-of-door conditions. It is considered that the former may possibly afford important information regarding

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[1] See THE LANCET, Sept. 10th, p. 5 2.

Annotations.

"Ne quid nimis."

CARBON MONOXIDE IN COAL-GAS.

TWENTY years ago it was agreed that in view of the imperfect state of the gas fittings in the poorer houses of urban districts the only effective method of preventing danger from leakage was to fix a limit which the carbon monoxide should not exceed. After passage into law last year of the Gas Regulation Act, a departmental committee was appointed by the Board of Trade to consider whether it was necessary under present conditions to continue to enforce any such limitation. Sir William Pearce, M.P. (chairman), Dr. T. Carnwath, Mr. William Doig Gibb, and Mr. T. Gray, D.Sc., were the members of this committee, which has just brought in its report. Dr. J. S. Haldane in his evidence before the committee thought that in view of the improved forms of gas burners now constructed the maximum percentage of carbon monoxide in lighting gas for domestic use might be increased to 20 per cent. without undue risk. This would allow the admixture with coal-gas of one-third blue water-gas or one-half carburetted water-gas. The advocates for no limitation based their case on the advantages of cheap gas, especially for heating and cooking. The committee, after weighing carefully all the facts concerned, concluded, on the balance of advantage to the public, by recommending non-limitation. Increased risk from the poisonous nature of carbon monoxide was not, they thought, serious when all practicable precautions were adopted. The danger of increased death-rate was in any case of small dimensions and against this must be set the unquestionable improvement in the public health by the reduction of smoke and fog owing to increased use of gas. The economic advantages following the use of water-gas were proven and they were greatly impressed by the necessity of allowing the development of the gas industry to proceed without any check on its natural progress. The committee suggested, however, that the departments concerned should carefully watch the situation so that, should freedom from limitation be accompanied by unfavourable results, the attention of Parliament might again be directed to the matter. All the witnesses heard by the committee agreed that the distinctive odour of coal-gas is a necessary precaution, and the committee suggested that it should be made an offence to supply any gas for domestic purposes which does not possess the distinctive pungent smell of coal-gas.

The committee was assisted in coming to this decision by the experience of the Public Health Service of the U.S.A. communicated in a letter from Surg.-General H. S. Cumming to Dr. G. S. Buchanan. From this it may be seen that the composition of illuminating gas at Washington, D.C., described as a "straight water-gas," is as follows:—

	Per cent.		Per cent.
CO_2	4	CH_4	13·6
Illuminants ..	11	H	38·4
O	7	N	3·5
CO	28·7		

which may be taken as fairly representative of the average composition in the U.S.A. From their experience it would seem that the use of water-gas presents great economic advantages, and that the presence of anything up to 30 per cent. of carbon monoxide has not proved prejudicial to the public health. The poisonous character of illuminating gas is apparently well understood in America, and householders are prompt to remedy small leaks. In view of all the evidence in regard to carbon monoxide, it is not believed in America that any danger can result from leaks of gas so small as to be imperceptible to the sense of smell so long as an amount of illuminant adequate to give it a strong odour is added to gas. This last point is, of course, essential.

A MEDICAL PHYSIOLOGIST.

THE Society for Experimental Biology and Medicine has issued a Memorial Number for Samuel James Meltzer, M.D., its founder and first president in 1903. The number consists of addresses by various members of the Society setting forth the services of Meltzer to the Society itself and to the great part played by him in shaping and hastening the development of scientific work in the United States and more especially in New York which, a few years before, "as a scientific centre was pretty bleak and barren." Meltzer was born in Courland, Russia, on March 22nd, 1851, was educated at Königsberg, and then studied philosophy and medicine in Berlin between 1875 and 1882, where he came under the influence of the great masters of medicine and of physiology—Du Bois-Reymond, Virchow, Leyden, Frerichs, Traube, Helmholtz, Koch, and others. In Berlin he had the good fortune, while a student of medicine, to attract the notice of the late Prof. Hugo Kronecker, who at that time was assistant to Du Bois-Reymond, and they jointly in 1881 published a classic memoir on the "Process of Swallowing," giving an entirely new interpretation, now known as the Kronecker-Meltzer theory, of deglutition, which has since been generally accepted. The friendship begun in Berlin lasted throughout the life-time of both master and pupil. Meltzer was a distinguished promoter of the application of experimental methods to research in American medicine; he inspired fidelity to truth and stimulated achievement, more especially in younger men. He began practice in New York in 1883 but did not give up his physiological outlook, and he endeavoured throughout to bring his experimental facts to clinical application. With the foundation of the Rockefeller Institute he was chosen to direct the division of physiology and pharmacology, giving up practice at considerable financial sacrifice. His productivity was remarkable, extending to over 240 papers on physiology, pharmacology, pathology, and clinical medicine. His views on the part played by inhibition in the general activities of the body were much in advance of those of his earlier contemporaries. The border-land between medical science and medical practice was his special field of work, and he brought about a helpful and sympathetic understanding between the laboratory worker and the physician. It was he who called attention to the fact that reflex excitation of the inspiratory muscles is accompanied by reflex inhibition of the expiratory muscles, and vice versa, and he went on to suggest that a similar relationship must prevail in the case of all antagonistic muscles such as the extensors and flexors of the limbs. He thus led up to the convincing demonstration given ten years later under the term "reciprocal innervation" by Sherrington.

In Meltzer's later years he published several papers on the action of adrenalin upon the blood-vessels and pupillary muscles, showing that the temporary action of adrenalin upon the blood-vessels may be converted into more lasting effect in the blood-vessels of the ear if those blood-vessels are first denervated by section of the vasomotor fibres in the sympathetic and third cervical nerves. In the mammal, injection of small doses of adrenalin have no effect upon the size of the pupil, but if the superior cervical ganglion be excised, then after a time a moderate dose of this drug brings on a marked and long-lasting dilatation. Incidentally, Meltzer was led to use the pig's eye as a biological reagent for the detection of small concentrations of adrenalin. His last extensive series of researches dealt with anæsthetisation and artificial respiration through pharyngeal and intratracheal sufflation. Meltzer kept in touch with progress in almost all branches of experimental medicine, his sympathies being very broad. He represented the physiological type of physician and was one of the few earlier physicians—S. Weir Mitchell and W. T. Lusk were two others—in the United States whose practice was based upon physiological training, aptitude, and interest. Meltzer died on Nov. 7th, 1920, and his

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 17, 1921

Additional Benefit.

INSURANCE against ill health has long been second nature among the salaried classes and the principle is becoming familiar among the wage earners, for the first National Insurance Act is now just ten years old. Medical benefit has, indeed, been much criticised both by those who give and those who take, but there is ever less talk of abolishing it and more talk of extending and improving the general practitioner service. We may hopefully picture this extension and improvement as a continuous process without being sanguine enough to expect to see so-called medical benefit covering the whole range of additional services conveniently summed up in the Dawson report, at all events in the immediate future. The hospitals cannot do much, for they are bankrupt, or nearly so. The State has made a small and promising essay in the shape of regional medical officers, and is now obliged by the economy campaign to draw in again. Both heads of the stream *from which the funds for an extended service were to come having* dried up, the position would be desperate were it not for one blessed fact: that while the understanding on the part of the great industrial community of what health means has been growing, and the demand for its realisation has been becoming *more insistent*, the ability to provide it for themselves has arrived. No one who looks at the improved standard of food, of clothing, of comfort, and of pleasure among the great majority of the industrial population can doubt that they are in a position to secure the same standard *of health if they regard it as worth the* outlay. Mr. JOSEPH GRIFFITHS in his thoughtful contribution to the hospital problem which we print on p. 633 *states in so many words that the working classes* are now in a position to provide a hospital service the like of which the world has never seen.

Nor is this any vague and unpractical dream. A provident scheme embodying these additional benefits has already taken shape in Brighton and the neighbouring part of Sussex, and our readers *are* familiar with its *main features*[1] as also with the *further proposal* to adapt the scheme to the needs of the metropolis.[2] And during the last week-end the final step has been taken of bringing this National *Provident Scheme for Hospitals* and Additional Medical Services before a larger public. The experiment is to be launched on Nov. 1st at three London teaching *hospitals, apparently, for the first time in history*, working in conjunction with one another. From the point of view of the patient coming within the income *limits defined* in the schedule—£250 a year for an individual, £500 for a family—the scheme offers so many patent advantages that the secretariat at 77, Cambridge-terrace, Paddington may expect to be overwhelmed more by applications than by inquiries. Were it not for its credentials the leaflet reads more like a rosy company prospectus than a serious business proposition. But the signatories of the circular letter who *form the organising and executive com*mittee are actually in a position to announce a scheme to which the public can subscribe in the confidence that if miscalculations have occurred or if unforeseen circumstances should make the services more difficult to render the promises will still be faithfully carried out, and it will not be the subscriber who will have to bear the inconvenience, friction, or temporary loss that may result. Members of the executive committee have carried through enterprises even more complicated and momentous with success. An annual subscription of £1 or £2 a year, without preliminary medical examination, is a small premium to *insure an individual or a family against all expense* involved in consultations and special treatment of all kinds, to say nothing of home nursing. As there will be no entrance fee a subscriber who leaves London forfeits at most the *remainder of his current* year's subscription. Arrangements have been made with the Sussex Provident Scheme whereby members of the National Scheme may enjoy Sussex benefits should occasion *arise during a temporary sojourn* in the county, and this concession may be prophetic of a network of areas throughout the country, cooperating at least enough for a change of residence *to involve only a change of institutions and* consultants available.

Certain minor services will be specially valued. Since the dental surgeon in attendance upon a member may arrange for consultations at the dental department of any of the cooperating hospitals, it follows that the presence or degree of pyorrhœa which can often *only be ascertained by means of* X rays will be detected in doubtful cases, much ill health and perhaps some teeth being saved thereby. Queen's and *other visiting nurses will attend sub*scribers within the Metropolitan police area at the request of the medical attendant. Few of those eligible for membership have room for resident nurses, and economic *conditions have driven to* permanent work that surplus female whose real function in the community was just such emergency nursing. Appreciation of this boon must ultimately lead to a large increase in *the staff of non*resident *nursing* institutions. Last year there were only 1951 Queen's nurses spread over the Kingdom, and the total staff of district nurses available, say, for Paddington and Marylebone numbered 12, and for Chelsea, Pimlico and Belgravia only nine; but these figures take no account of overlapping, nor of the new class of patient who will now be attended. *A few points unexplained in the circular* have interest for the doctor. Individual consultations may apparently be arranged at any of the cooperating hospitals—the London, St. Thomas's, the Royal Free—but in the case of members living in the four-mile area unable to leave their beds, will the choice of the consultant be conditioned by distance, by convenience, or by the selection of the family practitioner? Presumably as in the Sussex scheme consultants outside hospital work will receive some but not full fees for their opinion, and an especially popular member of a staff might find himself overwhelmed with new work. Old students of the cooperating hospitals will doubtless be among the first to act as agents for the National Provident Scheme among their patients since they know and trust the staff of their alma mater. This alone should ensure the success of the scheme.

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[1] THE LANCET, Feb. [illegible]th, 1921, p. [illegible]

[2] THE LANCET, May 14th, 1921, p. 10[illegible]

educational propaganda concerning venereal diseases,[2] and provision of free treatment; and notification and permanent segregation of cases of leprosy. Special attention was paid to the various West Indian tropical diseases, and to the necessity of research in that connexion. The main impression to be gathered from accounts of the Conference is that, given the necessary financial means, the medical profession, working with the sanitary engineer, and having sufficient intelligent lay support, can render the West Indies perfectly safe for the rearing of a healthy native-born white population.

THE ECONOMICAL STORAGE OF FOOD.

THE Food Investigation Board have now presented to the Committee of the Privy Council for Scientific and Industrial Research their report for 1920. As in previous years, the report is divided into sections, each section showing the work of a different committee of the Board, with a note appended naming the papers and reports published during the year, or in course of preparation, by the particular committee in question. In the introduction reference is made to the establishment, now nearly completed, of the Low Temperature Research Station at Cambridge, and to a long report upon the general theory of preservation of food by cold, prepared by Prof. Walter Stiles. During the year the Fish Preservation Committee have published an interim report upon the brine-freezing of fish; the Meat Committee have discontinued their work on the preservation of beef by cold pending completion of the Research Station, but have investigated the production of lactic acid in muscle and the cause of moulds occurring in cold stores. The Engineering Committee are now producing a report of investigations upon the flow of heat through walls and of the specific heat conductivity of various insulators. The Oils and Fats Committee have continued their studies of the unsaturated fatty acids and the constitution of artificial fats derived from the alcohol mannitol and from methyl glucoside. The Canned Foods Committee have completed a report on the effect of a diet of putrefying meat on the health of animals, and other reports on the chemistry and bacteriology of canned foods is in process. Of great interest is the work of the Fruit and Vegetables Committee, which falls into three main groups of investigations: (*a*) into preservation and physiology of living fruit after it is gathered; (*b*) into diseases of gathered fruit; and (*c*) into the chemistry of the ripening process, particularly the chemistry of pectin and the mechanism of destructive oxidation of tissues following injury to some fruits. Experiments are being conducted with two types of English apple in order to determine the best temperature and degree of humidity, the longest possible period, and the period most commercially profitable for storage, together with the effect upon the keeping properties of apples of the soil conditions to which the trees were subjected: various methods of packing are also being investigated, with the object of discovery of a method whereby the fruit may be packed once for all by the grower and only opened after sale; and an inquiry is proceeding into the comparative advantages of cold and "gas" storage. By the results so far obtained, a temperature of 1° C. with a humidity of 85 per cent. is shown to give the best preservative effects; clay soil is preferable to chalk for cultural conditions, and chalk to fen-land; wooden boxes are found more satisfactory for packing purposes than cardboard cases, and tissue paper wrapping of apples is desirable. The storage life of apples held in "gas" (concentration averaging 14 per cent. carbon dioxide and about 8 per cent. oxygen) was about twice as long as that of controls stored under ordinary conditions; a full report of the experiments will shortly be available. The investigation of the oxidising enzymes of fruit with special reference to discoloration has been completed, and it has been found that fruits can be placed in two classes. The first group is of fruits containing two enzymes, a peroxydase, an oxygenase, and a substance with the catechol grouping, and includes the apple, quince, pear, plum, cherry, peach, apricot, medlar, strawberry, banana, grape, fig, and mulberry; the second group is of fruits containing only a peroxydase, no oxygenase or catechol substance being detected, and includes the orange, lime, lemon, grape-fruit, raspberry, blackberry, red currant, black currant, gooseberry, pomegranate, pineapple, melon, and tomato. Copies of the report are obtainable at H.M. Stationery Office, Imperial House, Kingsway, W.C. 2. Price 1s.

WOOD-ALCOHOL POISONING.

A GOOD deal has been heard in America on wood-alcohol poisoning, more especially since the adoption of the prohibition policy. The acute toxic symptoms which may be rapidly fatal are generally accompanied by blindness, partial or complete, or blindness may ensue in a case where acute systemic symptoms have been wholly absent. In cases that survive partial recovery of sight is not uncommon. Ziegler[1] believes that the primary and fundamental lesion in all cases is a profound injury of the pituitary body. "The changing but steadily contracting fields, the fugitive scotomata, the visual loss and recovery, the sclerosed or atrophied nerve-heads, the fixed and dilated pupils, the temporary paresis of the extra-ocular muscles, the ptosis, the ataxic gait and the mental hebetude are all characteristic of pituitary involvement." He records six cases in most of which recovery of vision took place. It is to be noted, however, that these are not recent cases, but all date from before the era of prohibition. The treatment adopted included the administration of alkalies and negative galvanism applied directly to the eye. A point worth noting is that the end-product excreted by the kidneys is formic acid and that this reduces Fehling's solution, so that a wrong diagnosis of diabetes is quite possible.

THE TREATMENT OF GASTRIC ULCER.

FEW medical problems to-day are so much a matter of controversy as that of the treatment of gastric ulcer; the opinion of so experienced a physician as Dr. Frank Smithies, Professor of Medicine at the University of Illinois, and for many years gastro-enterologist to the Mayo Clinic, is therefore of especial interest. In a recent paper[2] Smithies calls attention to the paramount importance of basing treatment on modern physiological and pathological knowledge. It is clear at the outset that no treatment can hope to give a high standard of results which neglects to deal with the primary focus of infection which lies at the root of the disease; and physicians often complain that surgeons tend too readily to perform drastic operations without at the same time seeking to eliminate readily accessible sources of infection. In deciding the criteria for surgical treatment Smithies states that, "unless ulcers with much scar, or causing great gastric deformity, are demonstrated to be luetic, little hope of permanent relief by medical measures can be offered"; extent, chronicity, and the tendency to hæmorrhage are the factors on which he lays stress as determining the advisability of surgical interference. In a disease requiring such prolonged medical treatment as must a chronic gastric ulcer, we are faced with the paradox of surgery being the more economical treatment. Having selected the cases, more recent and less extensive, suitable for medical treatment Smithies lays particular emphasis on the importance of securing true physioof the question, and it is to be remembered in this connexion that many activities that result from a physical process of excitation can be arrested by suggestion. There is, for instance, the well-known fact that the sneeze which ordinarily follows the sniffing of pepper up the nostril can be inhibited against the patient's will, by contra-suggestion. If Prof. HARDING'S important work stands the test of time it may point to a more rational explanation of some conditions that are at present apt to be dismissed as neuroses.

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[2] A summary of the report of the Western Commission of the National Council for Combating Venereal Diseases, dealing with the West Indian Colonies, appeared in THE LANCET, July 2nd, 1921, p. 55.

[1] The Ocular Menace of Wood-Alcohol Poisoning, by S. L. Ziegler, British Journal of Ophthalmology, August and September, 1921.

[2] International Journal of Gastro-enterology, July, 1921, vol. i., p. 13.

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Medical Education and the Rockefeller Foundation.

IN a review of the work done in 1920 by the Rockefeller Foundation, its president, Mr. GEORGE E. VINCENT, surveys achievements truly called world-wide. This review, taken along with the appended programme for 1921, shows that the minds directing the activities of the Foundation are sensitive to the change of attitude as to the scope of medicine which is gradually gaining ground in civilised countries. Public interest, while increasingly concentrated on the science of disease, is shifting towards its application to the prevention of ill-health. The doctor is now being called upon to keep his clients well, and while no part of his old training may safely be omitted, the new outlook adds greatly to his present responsibilities. The consequences for the training schools are fundamental. Recognising that modern medical education can no longer be maintained on a commercial basis, the trustees of the Foundation take the view that it is an essential social task for which private or Government aid must be provided. In no more fundamental way could the Foundation have contributed to progress than by helping strategically placed medical schools in various parts of the world to increase their resources and to improve their teaching and research. Seeking to fulfil its chartered purpose to promote the well-being of mankind throughout the world, the Foundation, among other good works during 1920, aided six medical schools in Canada; gave a large sum—eventually to be 5,000,000 dollars—to University College, London, for building and endowment; appropriated a million francs for the Queen Elisabeth Foundation for Medical Research in Belgium; agreed to contribute towards the complete rebuilding of the medical school of the University of Brussels; continued to construct and to maintain in Pekin a modern medical school with a pre-medical department; besides helping 31 hospitals in China to increase their efficiency. Moreover, it gave support to the School of Hygiene and Public Health of the Johns Hopkins University, continued to contribute towards a campaign against yellow fever in South and Central America, and gave financial and scientific aid to the prophylaxis of malaria and hookworm disease, as well as to many other medical enterprises—the whole involving an expenditure of over thirteen million dollars.

The campaigns against yellow fever and malaria are described in some detail. Once the scientific basis of malaria control is well established in any district there is ample opportunity for experiments testing various practical measures under different conditions. Apart from other well-known methods of preventing the deposition of the eggs and growth of the larvæ of the anopheles mosquito and of their destruction, in certain regions where water is abundant resort was had to "policing" the water by fish, as it was found that if the streams are dammed to form lakes the "top minnows" prove an effective ally. Each minnow consumes about 165 large mosquito larvæ a day, and appears to eat the mosquito eggs as fast as they are laid. A still more novel method was adopted in Louisiana, where the grasses on the banks of the stream form a protected zone in which eggs may be deposited beyond the reach of the top minnows. In order to clear away these grasses the strips along the "bayou" or sluggish stream are turned into pasture land on which cattle are allowed to feed. The cow crops the grass close along the low banks, and leaves the larvæ a prey to the eager minnows, the appetites of minnow and cow working together for the protection of man. To all these experiments, to medical science and practice in general, and especially to educational institutions, the Rockefeller Foundation plays the part of fairy godmother, giving due encouragement to such immediate schemes of public health as may be called paying concerns, but reserving her best gifts for the higher education of the doctor, in which lies the chief help for the future. It is the wide and comprehensive outlook on the medical problems of the world, even more than the immense sums at its disposal, which makes the Rockefeller Foundation an international potentate.

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The Health Committee of the League of Nations.

THE Health Committee of the League of Nations has just held its first meeting at Geneva, and has submitted to the Council its recommendations for a new health organisation. The members of the committee are as follows:—

Dr. Léon Bernard, professor of hygiene in the University of Paris; Dr. G. S. Buchanan, senior medical officer of the British Ministry of Health; Prof. A. Calmette, director of the Pasteur Institute in Paris; Dr. Carozzi, medical director of the International Labour Bureau; Dr. Henri Carrière, director-general of the Swiss Public Health Service; Sir Havelock Charles, president of the Medical Board for India; Dr. Chodzko, Minister of Health for Poland; Dr. Lutrario, director-general of the Italian Public Health Service; Dr. Th. Madsen, director of the State Institute of Serotherapy at Copenhagen; Prof. Miyajima, of the Kitasato Institute for Infectious Diseases, Tokio; Dr. Pulido, president of the Spanish Royal Council of Public Health; Mr. O. Velghe, director-general of the Belgian Public Health Service; Prof. C.-E. A. Winslow, director of the League of Red Cross Societies.

Although elected on their personal qualifications, the committee will be seen to be nationally as well as professionally representative. Ten of the members already belong to the Committee of the Office Internationale d'Hygiène Publique. The acting medical secretary, Dr. E. J. Steegmann, of the British Ministry of Health, is retiring after two years' work of preparation in favour of Dr. Rajchman, of Warsaw, who has been appointed permanent medical director.

BRITISH ORTHOPÆDIC ASSOCIATION.—A meeting of this association will be held on Sept. 24th and 25th at the Shropshire Orthopædic Hospital, Oswestry. On Sept. 24th, at 9.30 A.M., executive proceedings of the Association will take place, and at 10 A.M. visitors will be shown round the hospital by the staff. Sir Robert Jones will conduct an out-patient clinic. Mr. Naughton Dunn will give a demonstration of treatment of calcaneo-cavus with cases, casts, and X rays. Mr. D. McC. Aitken will demonstrate plaster work. Mr. G. R. Girdlestone will speak on bone-grafting for tuberculosis of the spine in children, showing cases. In the afternoon visits will be paid to after-care centres in Shrewsbury, Oswestry, and Wellington. On Sept. 25th, at 10.30 A.M., operations, as cases permit, will be performed by Sir Robert Jones, Mr. Girdlestone, Mr. Aitken, and Mr. Dunn.

syphilis of the lung. The pulmonary symptoms in these cases are either coincident with early syphilis or constitutional syphilis of other viscera in which prompt improvement or even complete disappearance of signs and symptoms results under anti-syphilitic treatment. According to the writers, clinical pulmonary syphilis may occur (1) as isolated gummas of the lung, (2) as diffuse syphilitic fibrosis, and (3) possibly as a diffuse broncho-pneumonia. Of these, gumma of the lung, though generally regarded both clinically and pathologically as extremely rare, is not so very uncommon as the initial stage of fibrosis followed by cavitation. The clinical picture depends entirely on the situation of the process and the stage of its development. Diffuse fibrosis or chronic interstitial pneumonia is the commonest form of syphilitic lung disease. The fibrosis in and about the bronchi gives rise to dyspnœa, coughing, and vascular changes leading to hæmoptysis. The occurrence of syphilitic broncho-pneumonia, which has been disputed by some authorities, is accepted by the present writers, as well as by Neumann, Fowler and Godlee, Fournier, Dieulafoy, Aufrecht, and others. The prognosis of syphilis of the lung may be said to vary with the time at which a correct diagnosis is established. In gummas and in the early stage of the fibroid type prompt institution of specific treatment renders the prognosis favourable, whereas the association of tuberculosis considerably aggravates the prognosis.

WE regret to announce the death, on Sept. 9th, of Sir Peter Freyer.

FACULTÉ DE MÉDECINE DE PARIS.—Special courses at the Clinique de Dermatologie et Syphiligraphie, Hôpital Saint-Louis, will be instituted during the autumn under the direction of Prof. Ed. Jeanselme. It is intended in future to hold two series of courses every year, one in October, November, and December, and the other in April, May, and June. Each series will comprise a complete course of dermatology and a complete course of venerology. The fee will be Fr. 150 for each course; the latter will begin each year on the second Monday in October and on the second Monday in April, at the Musée of the Hôpital Saint-Louis and at the amphitheatre of the clinic (Salle Henri IV.). Lectures and demonstrations will be held every afternoon from 1.30 till 4 P.M., the mornings being reserved for work at the Polyclinic, ward-visiting, out-patient consultations, &c. A certificate will be issued at the termination of a course. Those taking the course will register at the Secretariat de la Faculté de Médecine, Rue de l'École de Médecine (guichet 3). For all further information apply to Mr. Marcel Bloch, Chef de la Laboratoire à la Faculté, 40, Rue Bichat, Hôpital Saint-Louis, Paris 10e.

THE LONDON TOLL EXCHANGE.—The London Toll Exchange is now approaching completion and telephone subscribers should soon be able to make trunk calls extending over short distances with less delay than hitherto. Under the new system a subscriber wishing to call any provincial town within a distance of approximately 25 miles radially from the centre of London will ask for "Toll," instead of "Trunks." He will be connected to the London Toll Exchange, where the telephonist who answers him, besides recording particulars of the number, will herself establish the connexion to the desired subscriber. The General Post Office has issued a circular stating that the majority of such calls will be completed whilst the caller waits on the line, as in the local service. When a call cannot be connected on demand, owing to the lines being engaged, a subscriber's application will be booked and completed as soon as the telephonist is able to find a free line, when the subscriber will be rung up as in the case of a trunk call. At the date of opening the existing lines will be increased by 20 per cent., and the lines provided on the more important routes should be sufficient under present conditions for the immediate disposal of all traffic. The more important towns which will come within the operations of the London Toll service are: Ascot, Aylesbury, Bishop's Stortford, Buckingham, Dorking, Egham, Gerrard's Cross, Hatfield, Hertford, High Wycombe, Leatherhead, Luton, Maidenhead, Potter's Bar, Rickmansworth, St. Albans, Sevenoaks, Slough, Staines, Tring, Uxbridge, Walton-on-Thames, Watford, Weybridge, Windsor, and Woking.

ON THE
ORGANISATION OF A FRACTURE SERVICE.

BY HARRY PLATT, M.D., M.S. LOND., F.R.C.S. ENG.,
HONORARY SURGEON AND SURGEON IN CHARGE, ORTHOPÆDIC SERVICE, ANCOATS HOSPITAL, MANCHESTER; CONSULTING SURGEON, GRANGETHORPE HOSPITAL (MINISTRY OF PENSIONS), MANCHESTER.

SCHEMES for the efficient treatment of fractures have exercised the minds of surgeons for many years. War experiences have stimulated anew our surgical conscience in regard to this particular field of surgery, and it is now almost universally realised that in hospital practice the segregation of fractures in a special service or sub-service is an absolute necessity. Granted the fundamental principle of segregation, the actual details which go to make up an efficient scheme will tend to vary within wide limits according to local conditions. The scheme initiated by the writer at the Ancoats Hospital, Manchester, just before the war may be of some interest to surgeons in general, and to orthopædic surgeons in particular. The interruption of the war prevented the full development of the scheme, which has gradually assumed maturity during the past two years.

The Ancoats Hospital is a general hospital situated in a densely populated area, the majority of the inhabitants of this region being employed in some of the most important industrial organisations of the city. A considerable number of patients suffering from industrial accidents seek treatment at the hospital, and amongst these is found a steady flow of fractures; in addition, the hospital is called upon to deal with fractures occurring in individuals of all ages, not necessarily sustained in the course of employment. The surgical side of the hospital, to which 75 beds only are allotted, is divided into three services of equal size; one service, under the charge of the writer, is devoted exclusively to "orthopædic" surgery in its widest sense. The total accommodation for surgical in-patients is, however, not commensurate with the size of the out-patient clinics. Thus the orthopædic service alone has at all times a list of over 100 patients awaiting admission for operation. The number of fractures which can be admitted to the wards is therefore somewhat limited. But an average of 30 new fractures are dealt with each week as out-patients. All the fractures attending the hospital are treated in the orthopædic service. Patients reporting at the hospital for the first time are seen in the casualty department. Fractures of the lower extremity are admitted at once, if beds are available in the emergency wards, with certain exceptions—viz., the majority of fractures of the femur or of the bones of the lower leg in young children. Even in adults a certain number of simple fractures of the tibia and fibula are occasionally dealt with as out-patients, the Thomas splint being used as a routine. Upper limb fractures (simple) are temporarily splinted and referred for immediate radiographic examination. After receiving such first aid these patients are instructed to attend the special fracture clinic, which is held once weekly. The special fracture clinic is one of the three, weekly, out-patient clinics representing the out-patient department of the orthopædic service. The accommodation of the hospital at the moment precludes more frequent conduction of this clinic. In actual practice, however, it has been found that, having regard to the number of fractures attending the hospital, the one clinic a week is quite sufficient. Where for any reason a particular patient requires special supervision in the interval between the regular attendances, he is seen in one of the general orthopædic clinics.

The Fracture Clinic.

(*a*) *Surgical Staff.*—The clinic is under the immediate supervision of the senior surgical assistant of the memory will be a continuing inspiration, not only to members of the Society for Experimental Biology, but to all those who are now endeavouring to link up medicine more closely with physiology

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MOUNTAIN SICKNESS

INTEREST in mountain sickness has been recently stimulated by the discussions in the press regarding the expedition which is to attempt to reach the summit of Mount Everest, the highest peak of the Himalaya Range It is a well known fact that travellers ascending to high altitudes suffer from a series of symptoms, varying in different individuals, but generally comprising shortness of breath, palpitation, prostration, and a disinclination for exertion, at still greater heights the symptoms may be more severe, and may include loss of appetite, nausea or vomiting, cramps, drowsiness giddiness, a throbbing headache, loss of mental power, and great bodily exhaustion, occasionally there are hæmorrhages from the nose, eyes, or mouth All these symptoms are aggravated if the ascent be made in stormy weather, or when the air is saturated with moisture The causes of mountain sickness have been variously attributed to diminished barometric pressure, deprivation of oxygen, heart failure or undue fatigue A combination of these causes may operate at times but most authorities are now agreed that the chief of these causes is deprivation of oxygen

Considerable light has lately been thrown upon the subject by Captain R W G Hingston, I M S, who, while attached to an expedition despatched by the Survey of India to the Western Himalayas and the Pamir Plateau, made a series of careful and detailed observations, the results of which he has published in the last issued number of the *Indian Journal of Medical Research* (Vol IX No 1) under the title of "Physiological Changes at High Altitudes and their Relation to Mountain Sickness " This malady affects people in different ways and at different altitudes, but a person ascending from a low altitude to a high one can become acclimatised to the requirements of the greater height Nature comes to the rescue by developing an increased number of red corpuscles to provide the body with additional oxygen carriers to meet the altered circumstances of the rarefied air Mountain sickness, therefore, is associated with an insufficiency in the number of red blood corpuscles which are necessary at higher altitudes to convey oxygen to the tissues When the ascent is slow and gradual there is a rapid manufacture of the corpuscles At sea level an ordinary person has in round numbers about 5 millions of these corpuscles in every cubic millimetre of his blood, and this number is sufficient to deal with the available oxygen, which at that level is about one fifth of the air breathed When, however the traveller ascends to 7000 feet, the barometric pressure is reduced by about one quarter, and the oxygen available is only three quarters of the amount that was available at sea level When a height of 18,500 feet is reached, the available oxygen is halved, and it is calculated by Captain Hingston that anyone arriving at the top of Mount Everest, which is 29 000 feet high, would only have at his disposal a third of the oxygen to which he had been accustomed at sea level Continued examinations of his own blood and that of other members of the expedition showed that when a man by slow and gradual ascent attained an altitude of 8000 feet, his red blood corpuscles had rapidly multiplied from about 5 millions to 6 and that when a height of 13,000 feet had been reached the number of these corpuscles had risen further to 7½ millions An ascent to 18,203 feet, the highest point attained, and a residence there for about two days showed that in his own blood the red corpuscles had increased to 8,320 000

The facts observed by Captain Hingston confirm the observation, well known in lesser degree in the European Alps, that an ascent from a low to a high altitude is associated with a definite and continuous change in the constitution of the blood, the result of the stimulus which rarefied air exerts on the blood forming mechanism of the human body By this means the individual can adapt himself to the higher levels if the ascent be made slowly and gradually, thus allowing the production of a sufficient number of oxygen carrying corpuscles This manufacture of red corpuscles is by no means slow, for instance, in one observation a short stay of two days at an altitude of 13,000 feet showed an increase of about 725 000 in the number of these corpuscles per cubic millimetre of the blood It is possible that there may be a limit to this power of the body to compensate for great altitudes, but it will be noted that the process was in active operation in Captain Hingston's case at a height of 18 200 feet above sea level The blood of the natives of the Pamir Plateau, habitually living at an average height of 13,500 feet, was carefully examined, and it was found that the number of red corpuscles in the blood of the average adult native was 7,590 000 per cubic millimetre, as compared with 7,102,000 in Captain Hingston's own blood at that level It is further of interest to learn that during descent from high to low altitudes, when the stimulus of the rarefied air was withdrawn, there was a gradual reduction in the number of the red corpuscles, though the rate of decrease was not so rapid as the rate of increase had been during the ascent After a short residence at sea level the number of red corpuscles had fallen to normal—namely, a little under 5 millions These observations supply an illustration of the wonderful power of the human body to adjust itself to changes in its environment, and that man may become acclimatised to an atmosphere containing only a half of the oxygen supply to which he has been accustomed Finally, Captain Hingston expresses the belief that individuals might with care gradually adapt themselves to a region where as at the summit of Mount Everest, they would find only one third of the oxygen which is available at sea level

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THE WEST INDIAN MEDICAL CONFERENCE

THE recent West Indian Medical Conference at Georgetown was the seventeenth of its kind [1] and the first to be held in British Guiana The acting Governor, the Hon C Clementi stated in the course of his inaugural speech that the declining population of the colony, as contrasted with the increasing populations of Trinidad, Jamaica and Barbados, was due to climatic and sanitary conditions which are sufficiently explained when it is realised that the only area now colonised in British Guiana is a partially reclaimed swamp, four feet below high spring tides" Representatives of the London School of Tropical Medicine were present at the Conference having gone to the colony to investigate the causes of filariasis The deliberations lasted a fortnight, papers with a wide range of subjects being read and discussed The formation of a West Indian medical school was strongly advocated, and other topics of discussion were the possibility of a central medical service the safeguarding of the health of the immigrant population, the status and training of nurses infant welfare work, and the advisability of the appointment of a sanitary commissioner, free from local control, who might form a link between the various colonies concerned, the Colonial Office, and the London School of Tropical Medicine The resolutions passed by the Conference and forwarded to the acting Governor also included references to the following points Provision of pure water supply, efficient drainage, control of mosquitoes, and stringent enforcement of public health regulations, introduction of a suitable proportion of meat into the diet of the labouring classes hitherto almost exclusively vegetarian, control of midwives, registration of still births, and confidential notification of miscarriages and abortions; adoption of routine school medical inspection,

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[1] THE LANCET, August 20th p 419

NATIONAL PROVIDENT SCHEME FOR HOSPITAL AND ADDITIONAL MEDICAL SERVICES.

THE LONDON SCHEME.

THE organising and executive committee of the National Provident Scheme, which consists of Sir Arthur Stanley, Lord Dawson of Penn, Sir Alan G. Anderson, Mr. W. McAdam Eccles, F.R.C.S., and Dr. J. F. Gordon Dill (Hon. Secretary), has issued an explanatory leaflet giving full particulars of the Scheme as applied to London.

The Problem.—The great and increasing cost and complexity of medical services beyond the attendance of a general practitioner have made it impossible for a large majority of the population to obtain full advantage of the progress of medicine, although it is obvious that many cases cannot be properly dealt with unless the doctor in charge has all modern facilities at his disposal. It therefore becomes a choice of either having to do without them or of accepting them wholly or in part as charity. Further, the voluntary hospitals are already obliged to charge for their services, and have to ask all their patients to contribute, as far as they are able according to their means, to the outgoing cost of their maintenance and treatment.

Hospital Coöperation.—But it has now been made possible, by the help and coöperation of the following hospitals, to meet these difficulties by the establishment of a Provident Scheme which will supply its members, *free of cost* (beyond their subscriptions as members), with practically all the highest resources of medicine which are available—viz., the London Hospital, St. Thomas's Hospital, and the Royal Free Hospital.

Scope of Scheme.—The Provident Scheme, it is explained, (1) has nothing whatever to do with the National Health Insurance or any other organisation for medical benefit; and (2) does not provide its members with ordinary medical (i.e., general practitioner) attendance, or other benefit to which they are entitled from the State or from local authorities, or under the National Health Insurance Acts; but (3) is for the benefit of those who, irrespective of class or occupation, are in a financial position which makes them eligible for election as members.

No preliminary medical examination is required before the admission of an applicant for membership.

Facilities Provided by the Scheme.

Except where otherwise stated, members will receive, *without charge* beyond their subscriptions to the Scheme, the following advantages:—

Consultations.—The medical attendant of a member may arrange, by appointment, for individual consultations at any of the coöperating hospitals, and such treatment as he and the consultant may jointly think advisable will be undertaken (at the hospital if this should be necessary).

For those members who are unable to leave their beds and who reside within a radius of 4 miles of Charing Cross, the services of visiting consultants may be secured by appointment. For members outside this area, but within the Metropolitan Police area, who are unable to leave their beds, free consultation may be obtained by appointment, subject to the payment to the consultant at the time of consultations of a charge of 10*s.* 6*d.* per mile (i.e., equal to one-half of the usual mileage rates) beyond the 4-mile radius.

Nursing.—The services of the "Queen's" and other visiting nurses will be available within the boundaries of the City and the Metropolitan Police areas for members at their own homes at the request of their medical attendants.

Dental Services.—(*a*) Treatment in hospital: Such dental treatment as may be considered necessary for a member whilst under medical or surgical care in a coöperating hospital. (*b*) Consultations: The dental surgeon in attendance upon a member may arrange by appointment for consultations at the dental departments of any of the coöperating hospitals.

Laboratory.—All the resources of the pathological laboratories of the coöperating hospitals will be available for the benefit of members after consultation, including bacteriological and pathological investigations and examinations beyond the province of general practice, Wassermann and Widal tests, &c., blood examinations and counts, the preparation of autogenous vaccines, &c.

X Rays.—Examinations (including opaque meals) will be available where found necessary after consultation, and a report will be supplied to the medical attendant of a member. Treatment by X rays will be given when, after consultation, it has been considered advisable.

Massage will be provided by appointment for members in whose cases it is prescribed after consultation.

Electrical Treatment.—i.e., galvanism, faradism, high-frequency, ionisation diathermy, &c. will be administered by appointment, after consultation, in suitable cases.

Hospital Treatment.—Urgent cases will be admitted to hospitals, as at present; other cases requiring operation or other hospital treatment will, after consultation, be admitted to hospital in due course, but a member will not take precedence over more urgent cases, and the ordinary hospital routine will not be disturbed. Members of the Scheme conforming to the rules will not be subjected to any almoner's inquiry or to any charge at the hospital.

Radium Treatment.—If, as the result of a consultation, it is decided that treatment by radium is necessary in the case of a member such treatment will be provided by arrangement with the Radium Institute.

Ambulances.—Will be available at the request of the medical attendant or of the secretary of a coöperating hospital for the transport of "stretcher cases" within the boundaries of the City and the Metropolitan Police areas.

Income Limit.

Persons insured under the National Health Insurance Acts are eligible for election as members of the Scheme without regard to income; but, in the case of all persons not so insured, limits of income to qualify for admission to membership of the scheme have been set out as follows:—

Group.	Description.	Limit of income of persons applying for membership (not insured under the National Health Insurance Acts).	Annual subscription.
I.—(*a*)	Single person over 16 years of age.	£250	£1 0 0
(*b*)	Widow or widower without children under 16 years of age or other dependents.		
II.—(*a*)	Married couples without children under 16 years of age.	£400*	£1 10 0
(*b*)	Single person with one dependent.		
(*c*)	Widow or widower with one child under 16 years of age or with one dependent.		
III.—(*a*)	Married couples with a child or children under 16 years of age or other dependents.	£500*	£2 10 0
(*b*)	Single person with more than one dependent.		
(*c*)	Widow or widower with more than one child under 16 years of age, or other dependents.		

For the purposes of the rules a person will be deemed to be a dependent who satisfies the Committee of Reference that he or she is living with and is wholly dependent upon the applicant for his or her support.

* In Groups II. and III. the above income limits have reference to the combined income of the persons in respect of whom application is made, and will be reducible as and when children pass beyond the age of 16 years or when dependency in the case of another member of the family ceases. Transfers from one group to another will otherwise be also rendered necessary from time to time, but (except in the case of children attaining the age of 16 years whose membership automatically lapses on the date of the sixteenth birthday) adjustments will only take place as from the expiration of any membership year.

logical rest for the stomach; every student knows that rest in bed will save a damaged heart muscle from many thousands of contractions per diem, but few yet visualise the effect on a recent ulcer which must be produced by the 2000 peristaltic waves which accompany a normal meal. To secure such rest complete fasting with rectal feeding for a period of five days or more is advocated, with direct duodenal feeding by a tube as an alternative; when food by mouth is begun, liquid carbohydrate mixtures given frequently in small amounts are those which will provoke the minimum of gastric response. For treatment with drugs Smithies has little to say; many will disagree with his condemnation of alkalies, though most clinicians are now in accord in deprecating the use of sodium bicarbonate. It is interesting to observe that when discussing surgical treatment Smithies advocates pyloric closure in all cases operated upon; it is perhaps the multiplicity of surgical procedures adopted that makes judgment of results so difficult. In an important article on jejunal and gastro-jejunal ulcer, Hurst and Rowlands,[2] suggest that, "If gastro-jejunostomy were only performed when there is a visible ulcer or stenosis of the pylorus or duodenum; if before the operation every possible source of infection in the mouth and pharynx were removed; if at the operation any associated disease of the appendix or gall-bladder were dealt with; if after the operation the patient were given adequate instructions with regard to diet and told to take additional feeds between meals; if moderation in smoking and the taking of olive oil before meals and alkalies after were also enjoined; then the chances that a gastro-jejunal or jejunal ulcer might develop would be reduced to a minimum." Confirmation of these opinions is given by the experimental work[3] of Goto, of the Imperial University, Fukuoka, Japan; this worker, in an extensive series of experiments on dogs, has shown the readiness with which, apart from operative trauma, peptic ulcer may be produced in the intestine when septic foci are present and a highly acid gastic juice is left unneutralised.

FIMBRIAL CYSTS.

ACCORDING to Dr. Henry Cohen,[1] of New York city, who records two illustrative cases, fimbrial cysts which have previously been described as parovarian cysts are of very infrequent occurrence. Of 269 cases of ovarian cysts studied by Wiener only ten were examples of this kind. The most frequent complication is torsion, which may lead to gangrene. In five of Wiener's cases there was free fluid in the abdomen, but in none was there a severe peritonitis. Rupture, hæmorrhage, infection, and malignant degeneration were some of the other complications. Pregnancy was present in 11 cases. It is therefore obvious that a fimbrial cyst with torsion and gangrene and free fluid in the peritoneal cavity associated with pregnancy, of which one of Dr. Cohen's cases is an example, is an extremely rare occurrence, and no similar instance could be found in spite of a careful search through the literature. The relationship of these cysts to co-existing pregnancy is of interest both from a mechanical and physiological standpoint. Owing to the menace to life of both mother and child, fimbrial cysts, like ovarian cysts, should be removed as soon as the diagnosis is made. Numerous cases have been recorded to show that pregnancy may go on uninterrupted even when an operation on the ovary takes place before the fourth month. Nine of Wiener's cases were operated on before the sixth month with only one abortion, which occurred 11 days after a salpingo-oöphorectomy. In Dr. Cohen's second case, which occurred in a married woman, aged 23, the clinical picture simulated ectopic gestation, owing to the four cardinal symptoms of pain, missed period, vaginal bleeding, and the presence of a mass in the right fornix. On laparotomy a typical fimbrial cyst of the right side with a normal ovary and elongated tube was found. The tube, ovary, and cyst were removed and uneventful recovery took place.

MILK FOR MOTHERS AND INFANTS.

CIRCULAR 234 of the Ministry of Health, issued on August 20th, has given rise to some anxiety. A previous circular (No. 185, March 31st) on the subject of the supply of milk by local authorities to expectant and nursing mothers and children under five expressed the view that many authorities were greatly exceeding desirable expenditure on this head. Circular 234 re-states the need for economy, and announces the reduction of the Treasury grant towards such expenditure from 50 to 5 per cent., the outlay in the financial year 1920–21 being taken as the basis on which to calculate this percentage. To comply with the demand for a 20 per cent. cut on expenditure the Maternity and Child Welfare Department was apparently faced with the alternative of economising on the milk grant or of allowing health visitors to be discharged, welfare centres and children's homes to be closed. Restriction of such activities must inevitably lower the standard of the work as a whole and belittle the value of the child welfare movement in the eyes of the public. Milk can still be provided in necessitous cases through the Poor-law; it can still be sold at cost price at welfare centres, where the difference between cost price and the sum the mother can afford to pay will afford a proper object for voluntary contribution. For the mothers dinners may still be provided. And, finally, it is open to authorities which consider there is special need for the distribution of free milk to obtain approval for expenditure in excess of that on which the grant will be paid. We may regret the hardship implied in the limitation and yet feel that the Department has sacrificed the least essential part of its work. The percentage basis, however, hits especially hardly just those local authorities which observed due economy in their expenditure of 1920–21.

SYPHILIS OF THE LUNG.

DR. Udo J. Wile and Dr. Clement H. Marshall,[1] of the Department of Dermatology and Syphilology of the University of Michigan Medical School, remark that in syphilis of the lung, as in syphilis of the gastro-intestinal duct, in which the symptoms closely resemble those of any other gastro-intestinal disease, there is no characteristic clinical picture. It is therefore probable that the condition is more frequent than the clinical or pathological reports would suggest. Indications of the association of syphilis with pulmonary disease are to be found in the writings of Paracelsus, Cesalpinus, and Paro as far back as the sixteenth century, but the first anatomical description of pulmonary syphilis was given by Depaul in 1850, and the first clinical description in 1858 by Virchow whose article on white pneumonia is a classic. Prior to the publication of Koch's epoch-making work on tuberculosis in 1875 enormous numbers of cases of so-called pulmonary syphilis had been published, but after pulmonary phthisis had been recognised as tuberculous, reports of pulmonary syphilis ceased to appear for a considerable time. It is therefore probable that most of the cases reported up till then were those in which syphilis occurred in association with pulmonary tuberculosis or that they were examples of frank tuberculosis mistaken for syphilis. The present writers, from a study of the literature of the last 20 years and personal observations of cases in the University of Michigan Hospital, have come to the conclusion that there is a small group of cases in which there is presumptive clinical evidence of pure among the more expensive articles of food, and an improvement in the quantity and quality of the milk-supply was much to be desired. Vitamins were not produced in animals, but were ultimately derived from green plants, in which they probably arose in large amount in the course of photosynthesis. A good example of this was seen in the recent drought; as the green food became more scarce the vitamin value of the milk was reduced, but after rain had restored the grass there was a rapid recovery. In cows fed on artificial foods, in winter also, the volume of milk was greater, but its nutritive (vitamin) value less than in summer. Some interesting details of the sources of cod-liver oil were described by the speaker, who had recently visited the Norwegian fisheries. Lofoten oil was obtained from the liver of the cod at spawning time (February and March); oil from the Finmarken area was obtained later (June), and was derived from the livers of various other species as well as from the cod. Both were equally potent. The potency of cod-liver oil was remarkable. 2 mg. of oil per day sufficed to supply a rat with vitamin A. If we remember that nearly all of this is fat, the active constituent must be present in minute amount.

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[2] Guy's Hospital Reports, July, 1921, vol. lxxi., p. 310.

[3] Japan Medical World, June, 1921, vol. i., No. 2.

[1] American Journal of Obstetrics and Gynecology, August, 1921.

[1] Archives of Dermatology and Syphilology, July, 1921.

Sir WALTER FLETCHER, in opening the discussion on this paper, remarked that the vitamins were a very good illustration of a most important practical subject which had had its beginnings in purely academic research. The cost of the experiments was heavy and should be borne by the State. It was unfortunate that under the Vivisection Act a special certificate had to be obtained to enable experimenters to feed an animal without an anæsthetic. All these large numbers of animals were well treated, but their numbers were returned and were quoted by anti-scientific societies and used for propaganda work.

Presentation to Sir E. Sharpey Schafer.

Prof. W. D. HALLIBURTON, F.R.S., on behalf of former pupils and assistants of Prof. Sharpey Schafer, now teaching physiology in all parts of the world, expressed their pleasure in congratulating him on his seventieth birthday. He, as one of Prof. Schafer's former students, had seen little change in the young and energetic teacher under whom he studied in 1878 at University College. A presentation in the form of a medallion was to have been made on this occasion, but was not yet completed.

Prof. SHARPEY SCHAFER, in replying, said that he was happy to say that all who had passed through his hands had remained his friends. He, as a former assistant of Sharpey, Burdon-Sanderson, and Michael Foster, had done his best to continue their work, and was happy to see the pupils of his choice still bearing the torch.

Other Communications.

Prof. KROGH (Copenhagen) described a spirometer method by means of which the oxygen consumption of man and animals could be determined. The method should enable determinations of basal metabolism to be made with ease and accuracy.

Dr. W. W. PAYNE and Dr. POULTON described experiments on patients by the balloon method of graphic recording of intragastric pressures, as used by Carlson, which indicated that epigastric pain was due to contraction of the walls of the stomach. Surface tenderness was probably a referred pain. Powerful contractions of the stomach, and also of the œsophagus, resulted when the stomach was distended with gas.

Prof. HALLIBURTON gave a lecture on giants, and dealt chiefly with the effects of hyperpituitarism in the entertaining manner which characterises all of his popular lectures. The subject of dwarfism was also dealt with by way of contrast. Lectures such as the one he gave are always popular at meetings of the British Association, and do much to increase popular interest in the fascinating problems of physiology and medicine.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Health Insurance and Reorganisation of Hospitals.

Twenty-four deputies, including a number of prominent physicians, have elaborated the text of a Bill for the reorganisation of hospitals, for the adoption of a scheme for national health insurance, and a pension for disablement before old age, and have submitted it to the Commission d'Assurance et de Prévoyance Sociales. Sections 1 and 2 of the Bill create at the Ministry of Health a special department, l'Office National, consisting of technical men, physicians, surgeons, architects, and administrators thoroughly acquainted with hospital matters. Its members are to be elected by the Minister from names proposed by various scientific societies. The same sections of the Bill establish county offices working conjointly with the national office. Section 3 gives the function of each country office, which will investigate the need for the construction of new wings to existing hospitals. Such proposed extensions will be classified according to comparative urgency, and the office will censor the plans of any new building to be erected. According to Section 4 the expenses for the erection of buildings declared indispensable will be equally shared by the State, the administrative county, and the municipal borough. The other sections of the Bill deal with health insurance and pensions. Section 5 establishes the principle of a compulsory disablement and health insurance for all employees of both sexes whose salary is Fr.8000 or under. In Section 6 it is proposed that the benefit of the insurance shall not be claimable before the fifth day of the disease, but should the illness last more than ten days the patient would be benefited from the first day. In Section 8 it is suggested that the employer and employee should contribute equally towards the funds of the insurance, the contribution being for each of them 1½ per cent. of the salary, and that the State should contribute to the amount of 50 centimes for every franc. Under Section 10 medical benefit is to consist of medical treatment and attendance, including the provision of medicine and also of a daily unemployment allowance proportional to the salary. Section 11 provides that whenever the insurance doctor is of opinion that the insured person ought to be admitted to hospital, the latter will have to submit to his decision.

French Medical Profession and Inauguration of Pekin University.

On the occasion of the inauguration of the Pekin University in the course of this month Prof. T. Tuffier, of Paris, will, at the request of the Committee of the Rockefeller Institute, give three clinical lectures at the Union Medical College, and he has also been asked to perform a series of operations on three different days. On Sept. 17th Prof. Tuffier will deliver the inaugural lecture at the new university, the subject being Surgical Septicæmias and their Treatment.

International Congress of Hygiene.

The committee of the Propagande d'Hygiène Sociale et d'Education Prophylactique and the Société Française de Prophylaxie Sanitaire et Morale are organising an international congress for the propaganda of social hygiene by instruction on moral education and the prophylaxis of diseases, to be held in Paris during the last week of December, 1922. Mr. Paul Appel, Rector of the Paris University, will preside, and physicians, hygienists, moralists, and all those concerned with the education of the young are invited to the congress; it is hoped that a permanent scheme of action in the prophylaxis of diseases, and more especially venereal diseases, by scientific and moral education of the people, will be worked out. The preliminary programme is as follows: First section: general hygiene, tuberculosis, alcoholism, cancer; chairman—Prof. L. Bernard. Second section: venereal diseases and social consequences; chairman—

orthopædic service (orthopædic registrar). His chief assistant is a surgical registrar, who is also attached for out-patient duties to the "general surgical" services; a third medical officer is provided in the person of the house surgeon of the orthopædic service.

(*b*) *Records.*—The records of all patients attending the clinic are maintained on a special sheet and are kept in a special file separate from the general records of the orthopædic service. In order that adequate notes may be kept on each patient, two secretaries work in the clinic, taking down at dictation full detailed information of the history and results of the physical examination of new patients, and adding continuation notes on the records of old patients. From this department reliable statistics as to end-results should be available in the future.

(*c*) *Splinting.*—It has been found necessary, in order to deal with large numbers of patients at one session, to provide a sufficiency of assistants to the surgical staff, detailed for the special purpose of facilitating the application and reapplication of splints. One or more splint "teams," consisting of pupil masseuses who are under training in the hospital school of physio-therapy, and acting under the direction of the senior masseuse of the hospital, are in attendance. Where necessary, an additional team is formed by the out-patient sister and assistant nurses. In this way in the space of two and a half to three hours from 80 to 90 fractures are seen at the one clinic, and efficient primary splinting or readjustment of splints is carried out.

(*d*) *Physio-therapeutic Treatment.*—The orthopædic registrar in this hospital also holds the office of medical officer in charge of the physio-therapeutic department and its training school. He is thus able to control the patient suffering from a fracture throughout the course of treatment, from primary splinting to the final stage of mobilisation and re-education. This applies also to the senior masseuse and her pupil assistants, so that the arrangement is of considerable educational value to the school of physio-therapy. In this hospital there is thus more than a mere liaison between the orthopædic service and the physio-therapeutic department in regard to the treatment of fractures.

(*e*) *Methods.*—The question of the methods employed in the actual treatment in the clinic does not come within the scope of this article, but it may be said quite briefly that, as would appear from above, splints are used extensively. Plaster-of-Paris fixation is, however, occasionally employed for special purposes—e.g., where abduction of the shoulder-joint is required, or where difficulty is experienced in maintaining by splints the supinated position of the forearm. The splints used almost exclusively are the metal gutter splints of the Liverpool School. As has been mentioned, fractures of the femur or lower leg in younger children, and a certain number of fractures of the lower leg in adults, are treated on the Thomas splint with fixed extension, and such patients are transported from their homes to attend the out-patient clinic in common with the upper-limb fractures. The vast majority of the fracture cases, whilst continuing to attend the clinic, pass into the physio-therapeutic department by the end of the third week, and in a considerable number such treatment is begun within a few days from the time of the incidence of the trauma.

(*f*) *Teaching.*—It is considered that a clinic of this type is eminently suitable for the surgical teaching of both senior under-graduate and post-graduate students. The mass of material can be demonstrated without interrupting in any way the orderly working of the clinic, the actual teaching being in the hands of the surgical director of the service of which the fracture sub-service is a part, who, being able to delegate to others the supervision of the multitudinous details of staff-work, can devote his energies to instruction alone.

General Considerations.

The plan of allocating to one service or—to use a more individualistic British designation—to one surgeon all the fracture patients in a hospital redounds greatly to the credit of those surgeons who, in the interests of efficiency and progress, relinquish the care of these patients. In this connexion the writer is bound to express his appreciation of the whole-hearted coöperation he has received during the past seven years from his surgical colleagues at the Ancoats Hospital.

It is urged that in all general hospitals with not more than about 500 beds a single fracture service organised on similar lines to that which is the subject of this article will be adequate. In still larger hospitals the question of the duplication of this service will arise, but even for the largest general hospital not more than two services should be necessary. With regard to the widespread adoption of this principle of segregation of fractures, it is important to consider certain fundamental requirements. In the first place it is useless to "dump" a vast crowd of patients on to a particular surgeon, unless he is to be allowed a comparatively large staff of assistants, if possible chosen and trained by himself. Failing this provision the creation of a fracture service tends merely to propagate on a large scale all the deficiencies and blunders of the old scattered system. Further, no lasting advances in surgical organisation can be achieved if such a service is placed in a very subsidiary position by delegating it to the care of a junior surgical officer whose interest in fractures is of a temporary nature, and who is looking ahead to the days of promotion and to an active participation in some other surgical field. It is essential that the director of this department be a surgeon in full charge of a service at the hospital, and one in whose practice, teaching, and field of investigation the treatment of fractures will remain an integral part during the whole of his active career. If we are competent to visualise the future development of surgery, abroad and also in this country, we are compelled to affirm that the appropriate surgeon to be entrusted with the control of an ideal fracture service is that specially trained type of general surgeon who is justly accorded the title of orthopædic surgeon. Thus the fracture service of a hospital will naturally find its place as a department of a surgical service which deals with a field which, for want of a more accurate etymological term, is recognised all the world over as orthopædic surgery. This condition applies only to the choice of the director of the service; the surgical assistants can with advantage include junior surgeons whose connexion with the service will be one of a short term of years, and who are to be the future heads of general surgical services.

In a hospital where a second fracture service is deemed necessary, this will be controlled by the chief of one of the general surgical services who is prepared to devote the necessary time and interest to the direction of this work. It is unnecessary to elaborate the obvious economic importance to industry in general of the efficient treatment of fractures. Those who are engaged actively in this work are aware of the fact that employers, insurance companies, and trade-unions are alive to the necessity for reform.

FOOD EDUCATION SOCIETY.—The Food Education Society has issued an appeal for £20,000 to put its organisation on a firm footing, and to enable the many demands made upon its attention to be met in an adequate manner. The giving of cookery lectures, lessons, and demonstrations, participation in exhibitions and conferences, questions to Parliamentary and other candidates, and the publication and circulation of literature throughout the British Empire, are amongst the activities of the Society, which was founded in 1908, and has ever since that time been engaged upon a work proved to be of great national importance during the recent war, and remains an urgent necessity in the face of present financial and social crises. The small amount of capital belonging to the Society is now exhausted, and the public in general, together with social reformers in particular, are confidently appealed to for support. Donations and annual subscriptions should be addressed to the Hon. Treasurer, Sybil, Viscountess Rhondda, D.B.E., Food Education Society, Danes Inn House, 265, Strand, London, W.C. 2; cheques to the order of the Food Education Society, and crossed "Barclay's Bank, Ltd."

Public Health Services.

Reduction of the Capitation Fee.

According to the lay press there is to be a raid on the capitation fee payable to medical men working under the National Insurance Act. The capitation figure was fixed at 11*s.* on March 5th, 1920, by an arbitration between the Insurance Acts Committee of the British Medical Association and the Ministry of Health, the fee being considered to "afford fair remuneration for the time and services" given by practitioners under the regulations for medical benefit. The Minister of Health stated in the House of Commons at the time that the award had been received on both sides with the utmost goodwill. It was then understood that there was no finality about the capitation basis and that after the year 1920 notice of not less than three months might be given to vary the terms and conditions of service, to alter the basis of remuneration, or to repudiate service altogether by organised effort. Since that date panel practitioners have settled down to fulfil their share of the contract, leaving improvement in the remuneration to be considered at a more convenient season. The *Times* of Sept. 6th said that it was argued that the capitation fee might be brought down to 9*s.* 6*d.* without seriously interfering with the health of the country, no intimation being given by whom it was being argued. The *National Insurance Gazette* for Sept. 3rd states that there are proposals to cut down by 2*s.* 6*d.* the Treasury grant of 3*s.* 6*d.* paid to the doctors in respect of medical benefit; and again on Sept. 10th, that the Treasury is "determined in its course of action." The assumption apparently is that the Treasury grant was increased from 2*s.* 6*d.* to 3*s.* 6*d.* at the time the capitation fee was raised to 11*s.* As a matter of fact the new figure has never been split up into its constituent parts as the original capitation fee was. If the 11*s.* fee was granted on the ground of increased cost of living there may be a case for reduction if and when the medical man's cost of living is reduced. On the other hand, the increased responsibilities, the improvement in the nature of the services, and the keeping of records, are all grounds for maintaining the fee at its present level.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Nuneaton.

In his report for 1920 Dr. A. Middleton Hewat tells us that a new infant welfare centre has been opened during the year; that the enlargement of the fever hospital so as to admit diphtheria has been postponed, although the case fatality of diphtheria during the last eight years has been 20 per cent.; that a Bill is now before Parliament to secure an additional water-supply through the Leicester Corporation; and that steps are being taken to improve the overworked sewage works and the affluent therefrom. He describes Nuneaton as essentially a working-class town. Of the 8373 houses, 5102 have been built since 1891. A very large proportion of the working-class houses possess gardens, and the number of allotments under cultivation in the borough, exclusive of railway allotments, is 2929, with an acreage of 291. With an adult male population of about 13,000, this means a large proportion engaged in healthy outdoor occupation. Good health statistics may therefore be anticipated.

The estimated population for 1920 was 41,128; the birth-rate was 29·5 in 1920 and 22·7 in 1919; the death-rate was 9·6 in 1920 and 10·9 in 1919; the infant mortality rate is not so good—viz., 83, in comparison with 80 for the 148 smaller towns. The diarrhœa rate was 7·6 per 1000 births, as compared with 7·8 for the 148 towns. The tuberculosis death-rate was 0·62 for pulmonary and 0·26 for other forms. Dr. Hewat thinks this cannot be looked upon as excessive under present conditions in an industrial town where a large proportion of the population is engaged in coal-mining. But low phthisis rates are the rule among men in coal-fields, and coal-mining districts are practically the only parts of England where the female phthisis rate is equal to or exceeds the male.

Nuneaton has still privies to convert and privy-midden tips to abolish. Dr. Hewat comments on the uncleanliness of the milk-supply, in which respect Nuneaton is like the rest of the country. Dr. A. A. Wood, the M.O. for infant welfare, mentions that the system of having "one delivery" in the day instead of two means that the milk is often 36 hours old when used, and this has counterbalanced any little improvement that may have been secured by greater cleanliness. Dr. Wood comments on the almost complete disappearance of the atrophied infant, and says that rickets has become uncommon in spite of the wide use of dried milks, particularly during 1917, 1918, and 1919. Only about 6 per cent. of the children are vaccinated. Dr. Hewat reports the usual overcrowding, shortage of houses, long waiting list for corporation houses, and difficulty in getting repairs done.

Spenborough.

The urban district of Spenborough came into existence in 1915 by the amalgamation of Cleckheaton, Liversedge, and Gomersal, and includes a portion of the Yorkshire coal-field lying to the west of a line joining Bradford and Dewsbury. The trades of the district show great variety. The estimated population for 1920 was 31,241; the birth-rate, only 16·4 for the preceding five years, rose to 20·1 in 1920, a figure still low for an industrial district. The death-rate was 12·3, and included 19 deaths from influenza. The infant mortality rate was 82·8, slightly above the rate for the whole country, and of the 52 infant deaths no less than 33 occurred in the first four weeks. The diarrhœa rate under 2 years of age was low, only 1·6 per 1000 births, as compared with 7·8 in the 148 smaller towns. This no doubt, Dr. Lawrence Pick says, was largely due to the exceptionally cold and wet summer. The tuberculosis rate was 1·0. Five cases of ophthalmia neonatorum were notified, but no mention is made of permanent damage to eyes.

In regard to housing, Dr. Pick says there can be few districts more urgently in need of new houses; 12 per cent. more houses are required, and a large number should be condemned. There are many back-to-back houses, and owners are obviously unwilling to spend a sum of money on repairs equal to five or six years' rent or more. Much delay has taken place in the housing scheme. The first tender for the A1 non-parlour type was £1291 4*s.* 5*d.* After much conferring the figure became £909 towards the end of the year. Good progress is now being made with 50 houses. Two health visitors were appointed in July, in addition to one appointed in 1916, but no centre has yet been opened. The three health visitors also act as school nurses.

Heston and Isleworth.

A pleasing feature in Dr. W. A. Berry's report is the evidence of coördination of health services. Thus one committee performs the duties of the Health Committee, the Medical Inspection Sub-committee of the Education Committee, and the Maternity and Child Welfare Committee. The area is divided into five districts, and one "health nurse" acts as school nurse and health visitor for each district. Dr. Berry is school medical officer. His assistant, Dr. Eva Roberts, whose duties are mainly in connexion with school children, has charge of one child welfare clinic, in which antenatal work is dealt with. As in other urban districts, the local authority is not the supervising authority of the midwives. The medical officer of health does not therefore receive notification of "inflammation of the eyes,

Membership.

Cards of membership, bearing the date, will be issued for the first day of each month to those whose applications have been made during the preceding month, and the benefits begin on the date named on the card, and continue for one calendar year. These cards must be produced as evidence of membership. At the end of one year from the date of issue of the membership card the benefits cease unless the subscription has been renewed. Fourteen days' grace will be given for renewal (during which none of the services provided will be available). When the number of members has reached the limit of the capacity of the coöperating hospitals the list will be closed. In order that members may be fully assured of the promised services, and also that the capacity of the hospitals may not be strained, the committee have decided to limit very strictly the numbers of those admitted to membership. Applications from those wishing to join the Scheme will be dealt with in the order in which they are received until it is necessary to close the list.

All applications and inquiries should be addressed to the Hon. Secretary, 77, Cambridge-terrace, Paddington, London, W. 2.

BRITISH ASSOCIATION AT EDINBURGH.

SECTION OF PHYSIOLOGY.

THE Presidential Address was delivered by Sir WALTER M. FLETCHER, F.R.S., on

The Aims and Boundaries of Physiology.

This address, in abridged form, appeared in THE LANCET of Sept. 10th, p. 541. A new feature of this year's Association meeting was the discussion on the addresses of Sectional Presidents.

In opening the discussion Sir EDWARD SHARPEY SCHAFER, F.R.S., laid great stress on the fact that a divorce of the teaching of histology from that of physiology would be deplorable. Histology could only effectively be treated as an integral part of physiology, since all the real problems of histology were of a physiological nature. Nearly all the important advances in histology had been made in the course of physiological inquiries. Physiology must be regarded as a science of independent standing, and not merely as ancillary to the study of medicine; its truths were to be sought for their intrinsic scientific value, as the ultimate practical importance of any discovery could never be forecasted. Regarding the application of physiology to clinical medicine, and the recent tendency to summon the physiological expert to the bedside, Prof. Sharpey Schafer was of the opinion that this was impracticable. It was far more desirable for the clinician to so far understand physiology as to be able to apply its findings for himself, or else to be able to propound definite problems for solution in the physiological laboratory. This end could be achieved if young physicians would serve a term of apprenticeship in the Physiological Department similar to that customarily passed through in the dissecting room by their surgical colleagues.

Prof. A. KROGH said that in Copenhagen there were three chairs of Physiology, one in Human and General Physiology, one in Veterinary Physiology, and one in relation to Agriculture, and the arrangement worked well.

Prof. F. G. HOPKINS, F.R.S., drew attention to the importance of both analytical and synthetical methods in the study of all biological problems.

Prof. J. MEAKINS supported Prof. Sharpey Schafer, and was of the opinion that a wider instruction in physiology would be of great value to those practising clinical medicine, which was based on physiology; any great lengthening of the medical curriculum was, however, to be avoided.

Profs. A. D. WALLER, F.R.S., A. R. CUSHNY, F.R.S., J. S. HALDANE, F.R.S., and H. E. ROAF also spoke on the aims of physiological teaching in relation to practical medicine.

Kidney Deficiency Tests.

A discussion on the results of kidney deficiency tests in relation to the views on the functions of the kidney was opened by Prof. CUSHNY, who summarised the results of recent work on renal efficiency tests. In tests which depend on the determination of the relative concentration of some constituent—e.g., water, chloride, urea, sulphate, phosphate, or creatinine, in plasma and in urine—it was essential to distinguish between threshold and no-threshold substances. The first two-named above were threshold substances, and there was some recent evidence that urea was also in the same class: these substances were removed from the blood plasma until their concentration therein reached a definite limiting value. Urea when injected is only slowly excreted and is an unsuitable substance to use as a criterion of kidney efficiency. Sulphate, phosphate, or creatinine being no-threshold bodies—i.e., being finally completely removed by a normal kidney from the blood plasma—might be better. The method depending on the determination of urea content of the blood, which is normally 0·02–0·04 per cent., was unsatisfactory, because the limit of 0·04 per cent. was usually only exceeded when the kidneys were badly failing. In any case, determinations of any substances in the urine (sulphate, creatinine, or injected dyes) were almost useless unless the concentrations of these substances in the plasma was also known.

Prof. MEAKINS agreed with Prof. Cushny that considerable concentrations of urea could be present in the blood without producing marked symptoms. He then gave examples of clinical cases of chronic obstructions due to enlarged prostates, which tended to show that the secretion or retention of water, chlorides, and nitrogenous substances varied independently of one another. Nitrogen retention alone was not of great significance. A study of the volume of urine, and of the chloride and residual nitrogen of the plasma was often a useful guide to indicate whether operation was feasible or otherwise.

Prof. HALDANE was also of the opinion that urea was a no-threshold substance. As regarded the secretion of water, he thought that the kidney very accurately regulated the osmotic pressure of the blood plasma, but that its threshold value was abnormal when the kidney was subjected to back pressure.

Prof. P. T. HERRING showed photomicrographs which he believed indicated that in the kidneys of some lower vertebrates, at all events, the uriniferous tubules definitely secreted.

Prof. KROGH and Prof. T. H. MILROY also emphasised the opinion that urea was a no-threshold substance, and that urea was normally present in the tissues.

Dr. C. LOVATT EVANS suggested that an effect of obstruction and back pressure might be to cause local vascular changes in the kidneys, and thus to direct blood to different extents to portions of the uriniferous tubules of different functions, absorptive or secretory.

Dr. E. P. POULTON pointed out that in azotæmic nephritis, though urea was retained, chloride was not.

Sir J. MACKENZIE thought that too little attention had been given to the correlation between kidneys, skin, and bowel: further, that in nephritis some substances of unknown nature were retained and produced symptoms.

In replying, Prof. CUSHNY said that the effects of obstruction in producing alterations in urinary volume were almost certainly of a reflex nature.

Vitamins in Relation to Public Health.

Dr. J. C. DRUMMOND read a paper on the relation of vitamins to public health. The danger of an inadequate supply of these protective foodstuffs in the dietary of the working classes had by no means been overrated; their consumption of milk, fruit, and green vegetables was low, and much of their food had been subjected to unnatural processes of preservation. Most of the sources of vitamins were

Stockport.

Of 5668 elementary school children submitted to routine medical examination 33·85 per cent. were found defective. 8·7 per cent. were found suffering from enlarged tonsils and adenoids, and two-thirds of this number were referred for operative treatment. 12·94 per cent. had defective vision, 1·55 per cent. had otorrhœa, and, in addition, 2·82 per cent. suffered from deafness—"largely the result of untreated tonsils and adenoids." During the year treatment was received by just over half the number requiring it. The addition of a school dentist to the medical staff has been a step forward. There are no nursery schools. A scheme for effective supervision of physical education and for inaugurating the treatment of remedial defects has been approved by the authority. Seventy-five children per meal attended the feeding centres, as against 37 during the previous year. These children are weighed once a fortnight.

THE R. W. MICHELL MEMORIAL.

It has been suggested by many of his old friends that some form of permanent memorial should be instituted at Cambridge in memory of the late Dr. R. W. Michell, who lost his life in July, 1916, as a result of wounds received whilst rescuing wounded on the Somme. After holding a demonstratorship in anatomy in the University, Michell remained in Cambridge, where his practice was chiefly among the undergraduates and younger graduates. His keenness and energy, his enthusiasm for the young life of the University, his desire to give the best of his experience to those who needed it among active undergraduates, endeared him to successive generations. Heart strain was one of the conditions he particularly laboured to understand, so that he might guide aright the natural bent of the sporting man. He was one of the first practitioners to make use of the electro-cardiograph as a regular routine in his clinical practice. As at one time he captained the College boat at Caius, and continued to take an unselfish interest in Cambridge rowing, it is proposed that the memorial should take the form of a challenge cup, to be awarded every year to the successful College Boat Club in the Lent and May races, and in various annual rowing and sculling events. Subscriptions, limited to £2 2*s.*, may be sent to Dr. C. H. S. Taylor, 3, Trinity-street, Cambridge.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. A. C. Anderson to be Surg. Lieut.-Comdr.

The following appointments have been made:—Surg. Comdrs.—P. M. Rivaz to R.N. Hospl., Chatham; G. A. S. Hamilton to *Vivid* for Youths' Training Establishment; W. P. Walker to *Victory* for R.N. Barracks (temp.); W. H. Edgar to *Wildfire* for Sheerness Yard and Barracks; F. H. Hall to *Renown*; R. R. Horley to *Pembroke*, addl., for R.N. Barracks (temp.): and S. F. Dudley to *President*, addl., for Greenwich College, and as Prof. of Clinical Pathology.

Surg. Lieut.-Comdrs.—P. B. Wallis to *Colleen*, addl., for Haulbowline Hospl. and Yard; J. Kirker to *Wildfire*, and for Sheerness Yard; E. MacEwan to *Titania*; C. H. M. Gimlette to *Ambrose*; and A. Fairley to *Cordelia*; R. J. G. Parnell, A. G. V. French, M. C. Mason, S. W. Grimwade, A. B. Clark, and M. J. Aitken to *President*, addl., for five months' course of instruction to join R.N. College, Greenwich.

ROYAL ARMY MEDICAL CORPS.

The King has approved of the following appointments:—To be Colonels Commandant: Lieut.-Gen. Sir A. Keogh, Hon. Col. R.A.M.C., T.F.; Lieut.-Gen. Sir A. T. Sloggett; Maj.-Gen. Sir T. J. Gallwey; Surg.-Gen. Sir F. W. Trevor.

Lieut.-Cols. A. W. Hooper (granted the rank of Col.) and B. W. Longhurst retire on ret. pay.

Lieut.-Col. D. Lawson is placed on ret. pay.

Maj. W. R. O'Farrell to be temp. Lieut.-Col. whilst spec. empld. as A.D. of P.

Capt. D. T. M. Large to be temp. Maj. whilst spec. empld. as D.A.D. of P.

Capt. W. H. Dye is secd. for service under the Colonial Office.

Temp. Capts. relinquish their commns.: F. K. Kerr (granted the rank of Lieut.-Col.), E. Lauzon and W. S. Angus (retain the rank of Capt.).

ARMY DENTAL CORPS.

Flight Lieut. G. F. Charles, from R.A.F., Dental Branch, to be Capt.

Temp. Lieuts. G. Hepburn and A. R. B. Littlar relinquish their commns. on ceasing to be employed as dental surgeons and retain the rank of Lieut.

TERRITORIAL FORCE.

Maj. A. Bird, having attained the age limit, is retired and retains the rank of Major, with permission to wear the prescribed uniform.

Maj. H. H. B. Cunningham to be D.A.D.M.S., 53rd (Welsh) Divn.

Capts. E. F. Skinner and T. M. Jamieson to be Majs.

Maj. A. J. Gibson (late R.A.M.C., Spec. Res.), to be Capt., and relinquishes the rank of Maj.

Capt. J. L. Lawry (late R.A.M.C.) to be Capt.

Capt. S. McNaughton (late R.A.M.C.) to be Lieut., and relinquishes the rank of Capt.

Lieut. D. C. Graham to be Capt.

2nd Lieut. A. Pain (late Tank Corps) to be Lieut.

A. S. Pern to be Lieut.

1st W. Gen. Hosp.—Capt. W. Permewan, having attained the age limit, is retired, and retains the rank of Capt.

TERRITORIAL FORCE RESERVE.

Col. J. A. Jones, having attained the age limit, is retired, and retains the rank of Col., with permission to wear the prescribed uniform.

INDIA AND THE INDIAN MEDICAL SERVICE.

Maj. F. T. Thompson to be Lieut.-Col.

Major (retd.) to be Lieut.-Colonel (retd.): M. Dick.

The King has approved the retirement of Lieut.-Col. H. J. Walton.

The King has approved the relinquishment of their temp. commns. by the undermentioned, and the grant of rank as specified below: Capt. Sham Lal, Capt. Jatindra Mohan Mitra, in consequence of ill-health. And are permitted to retain the rank of Capt.: Harmusji Framji Maneckshaw, Dattatraya Mahadeo Bhatavadekar.

Donations and Bequests.—The committee of the Christie (Cancer) Hospital, Manchester, has received the following bequests: Miss M. E. Adshead £567, Miss Sophia Benger £500, Mr. William Sutcliffe £200, Miss Emily Scown £100.

National Hospital for the Paralysed and Epileptic.—A syllabus of post-graduate work for the term October–December has now been issued. Three courses will be given at the Hospital: 1. A course of clinical lectures and demonstrations will comprise attendance at out-patient clinics at 2 P.M., on Mondays, Tuesdays, Thursdays, and Fridays, followed at 3.30 P.M. by lectures delivered by Dr. Hinds Howell, Dr. F. M. R. Walshe, Dr. Grainger Stewart, Dr. Risien Russell, Dr. Farquhar Buzzard, Dr. Gordon Holmes, Dr. J. Collier, Mr. S. Scott, Dr. Russell Reynolds, Mr. D. J. Armour, Dr. S. A. Kinnier Wilson, Mr. P. W. G. Sargent, Dr. P. W. Saunders, Dr. James Taylor, and Mr. L. Paton. Provided sufficient entries are received, two additional courses will be given. Dr. Greenfield will give a course of 10 lectures and demonstrations, at 12 noon, on Mondays, commencing Oct. 3rd, on the Pathology of Nervous System, and a course of 10 lectures will be given on the Anatomy and Physiology of the Nervous System by Dr. Gordon Holmes and Dr. Hinds Howell, at 12 noon, on Fridays, commencing Oct. 7th. A fee of £8 8*s.* will be charged for the clinical lectures and demonstrations, and those taking this course will be entitled to attend the course in pathology without further payment. The fee for the pathological course alone or for the course in Anatomy and Physiology alone is £5 5*s.* Holders of the Fellowship of Medicine ticket for the National Hospital will be admitted to the clinical lectures and demonstrations and to the course in pathology.

Further information can be obtained from Dr. C. M. Hinds Howell, Dean of Medical School, Queen-square, Bloomsbury, London, W.C. 1.

Prof. Ed. Jeanselme. Third section: prophylaxis of venereal diseases; chairman—Mr. L. Queyrat. Fourth section: instruction in sexual matters; chairman—Prof. A. Pinard. Fifth section: *means of action*, propaganda, legislative measures; chairman—Mr. J. Godart. Anyone seeking further information concerning the congress is invited to write to the General Director of the Congress: Monsieur Sicard de Plauzoles, 6, rue de Logelbach, Paris (17e).

International Congress for the Protection of Motherhood and Infancy.

An International Congress for the Protection of Motherhood and Infancy will be held in Paris on July 6th, 7th, and 8th, 1922. The programme of questions open to discussion is the following: Section 1: Protection of the mother before and during confinement. (*a*) Consultations during pregnancy. (*b*) Management of confinement at home. Section 2: Protection of mothers who suckle their children. Section 3: Protection of the infant when weaned from its mother. Section 4: Assistance and teaching. In the course of the meeting an International Association for the Protection of Motherhood and Infancy will be organised. Foreign societies are invited to send a delegate to express their opinion on the questions set forth. Individuals desiring to be present, as well as societies wishing to send representatives, are invited to communicate with the President, Union des Œuvres d'Assistance Maternelle et Infantile, 49, rue de Miromesnil, Paris.

Sept. 10th.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

Vaccination in Madras Presidency.

THE campaign against small-pox has for many years been a very important part of the work of the Sanitary Department all over India. In the Madras Presidency, in fact, up till 1914 or later, the Deputy Sanitary Commissioner spent the greater part of his time inspecting vaccination in the various districts and checking vaccination returns. In spite of constant vigilance the results obtained were unsatisfactory, the percentage of successes gradually falling lower and lower. At first this loss of efficiency was laid at the door of the district vaccinators and the deputy inspectors of vaccination, who were harassed and fined until it was realised that perhaps the vaccine lymph might have something to do with the bad results. All lymph for the Presidency is manufactured at the King Institute at Guindy—some five miles out of Madras City—where the average temperature may be taken to be the same as in the city. The average temperature throughout the Presidency—which in this respect is unlike other parts of India—is never very low; it will be shown later how this militates against success. The position reached can be understood from the following communiqué issued by the Madras Publicity Bureau:—

> "The results of vaccination in this Presidency have not been satisfactory for some years, though other provinces have continued to show good results. In order to discover the causes of this deterioration, the Government deputed Major J. Cunningham, I.M.S., and later Rao Bahadur M. Kesava Pai, M.D., of the King Institute, to visit the lymph depôts in other provinces and report on the methods of lymph production and preservation in these depôts. The investigations of these officers indicate that climatic conditions in this Presidency are unfavourable to the success of vaccination in the hot weather. The experience of other provinces also points to the same conclusions. In the Punjab and in the United Provinces routine vaccination operations on the plains cease during the hot weather, and are resumed as soon as the weather becomes cool. Fresh vaccine lymph has been found to be more effective than lymph issued some time after manufacture, but in practice it has been found impossible to manufacture lymph at the King Institute during the hot months, with the result that fresh vaccine can only be issued from the Institute if vaccination is confined to the cooler months. The small-pox returns of the last ten years also indicate that the disease is most common between January and May, and that if vaccination were restricted to the cooler months, it would anticipate the period of greatest mortality which would be of considerable advantage.
>
> "Having regard to all these considerations, the Surgeon-General has strongly recommended a total cessation of routine vaccination work in the plains during the hot season except in cases of emergency, such as the presence of small-pox in an epidemic form. The Government approve the Surgeon-General's proposal. They accordingly direct that the supply of vaccine lymph from the King Institute shall cease during the months of May and June. The Government trust that it will be possible for the local bodies to employ the vaccination staffs usefully in other ways, such as checking records and registration of births and deaths during the two months when vaccine operations are suspended."

A further investigation into the average temperature showed that the south-west monsoon had no effect on many parts of the Presidency, and accordingly the Government have also agreed to the suspension of vaccine operations during July and August in such areas. This will give the King Institute a better chance of providing fresh vaccine lymph during the cooler months. Another important problem which has not yet reached a satisfactory solution is the method of transporting the lymph. At present it is packed up in small cardboard boxes and is distributed through the post. In many instances the lymph takes three days to reach its destination, and the high temperatures to which it is exposed cause a rapid deterioration in its potency. Various suggestions have been made, none of them very satisfactory, but it is obvious that until the lymph is packed in such a manner that it is maintained at a moderate temperature, it will never give a very high success rate.

The Sanitary Department in Madras.

As recently as 1914 the Sanitary Department consisted of the Sanitary Commissioner and one deputy for a population of 46 millions. In 1918 two more Deputy Sanitary Commissioners (D.S.C.'s) were appointed, and the Presidency was divided into three ranges, one D.S.C. for each. In 1920 a fourth appointment was made in order to permit of the senior D.S.C. being placed on special duty for the sanitary control of fairs and festivals. There are hundreds of sacred temples and shrines in the Presidency, all of which at one time or another attract considerable numbers of pilgrims, whilst some festivals are attended by many thousands of people. Here, obviously, was one of the most important means of spreading cholera, and it was felt that part of the danger might be averted. During the present month, for instance, the Pushkaram festival at Bezwada, which takes place only once every 12 years, and which lasts 10 days, will, it is anticipated, be attended by something like 1½ millions of people. For a town whose normal population is about 55,000, and from which run several large canals fed by the River Kistna, this enormous addition to the population constitutes a tremendous danger. Arrangements for sanitary control, for medical inspection of the pilgrims, for provision of additional water-supply and food, for temporary housing, hospitals, &c., have been in progress for the past six months or more under the guidance of the senior Deputy Sanitary Commissioner. Experience has already shown that this form of preventive work can be made very successful, for during another large festival, held in May of this year, not a single case of cholera occurred. Such extraordinary success may not always be possible, but it nevertheless demonstrates what can be accomplished by forethought and organisation.

The Secretary of State has recently sanctioned two more D.S.C.'s—i.e., six in all—a remarkable increase in the short space of seven years; but it is not to be supposed that the number is excessive. The work which lies waiting to be done could absorb the energies of twice six, and it is somewhat difficult to decide what problems most urgently require attention. The local Government has decided that in future D.S.C.'s shall be recruited from the provincialised Health Officer Service, so that it will now be possible for a Madras graduate to rise to the post of Sanitary Commissioner, the head of the Sanitary Department. It is believed and hoped that with this extension of activity the terms "Sanitary Commissioner" and "Deputy Sanitary Commissioner" will be replaced by the more correct and significant titles of "Director of Public Health" and "Assistant Director of Public Health."

concerning "catarrh," considering the nervous cases and epidemics of their time as alternative manifestations of the disease otherwise responsible for the cases and epidemics of respiratory and gastro-intestinal catarrh which make up for us so great a part of what we call influenza. It was on precisely similar clinical and epidemiological observations that Boström, in 1757, based his identification of the "new disease" at Upsala with the epidemic and catarrhal fever, of protean nature, to which the name of influenza was then being elsewhere attached. It was again on precisely similar grounds that Brorström, in 1910, founded his thesis of the relation between epidemic poliomyelitis and influenza.

There is, indeed, only one "disease" to which we can refer the picture so graphically outlined by Dr. Gardner and that is influenza—in the epidemiological if not the bacteriological sense. What we call epidemic influenza has been consistently described for some 500 years now, as always, "new in character." Yet, as Boström said, "Hic morbus non est novus."

I am, Sir, yours faithfully,
F. G. CROOKSHANK.
Wimpole-street, W., Sept. 10th, 1921.

THE COUGHING CUP IN THE PREVENTION OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Tuberculosis is spread in only three ways—by milk, spray, and sputum. Milk should be boiled, and the sputum collected in a flask and destroyed. But the chief agent and danger is from the spray given off in the act of coughing. A cavity case sitting at his table, and spraying the food-supply of the family, is probably the most dangerous agent in spreading the disease.

I would therefore suggest the use of *a coughing cup*, in which the spray given off should be collected, and the cup and its contents be boiled each night. A coughing cup is of as much importance as a sputum flask, and all patients with T.B. in their sputum should use one. In a parallel way the central feeding stall in all cow byres should be abolished, as I feel sure it is one of the most dangerous arrangements for spreading tuberculosis amongst cattle—an infected animal coughing infected froth into the face and fodder of the opposite animal.

I am, Sir, yours faithfully,
T. M. ALLISON, M.D.
Jesmond-road, Newcastle-upon-Tyne, Sept. 8th, 1921.

THE TREATMENT OF PNEUMONIA.

To the Editor of THE LANCET.

SIR,—During the last four years I have treated acute pneumonic fever, so-called pneumonia, in the following way. In my list, 255 patients were seen reasonably early; among these there was not a single death, no complications, and no case which caused me anxiety. Only amongst those coming under treatment late in the disease, when heavily toxic, did I find cause for anxiety or had deaths. The majority of my cases were Europeans, the rest were Asiatics with a few natives. Many of these were in the influenza epidemic of 1918 and were particularly malignant. Pneumonia here is certainly of as severe a type as in Europe.

The principles of treatment were: 1. Not to allow the temperature to rise above 101° F. 2. To reduce blood pressure. 3. To combat acidosis. 4. To keep the kidneys and bowels active. 5. Starvation. 6. No stimulants. 7. Thoroughness. No. 1 was carried out by having the body continuously naked and wet on a waterproof sheet, in a draught of air, varied in severity according to the mouth temperature at the time. No. 2 by bleeding (a pint or so according to the patient), by calomel, or by both. Bleeding was done very early, never late (when done early apparently only toxins are removed, when late antitoxins are also taken away). No. 3 by giving gallons of water to drink a day, by citrate of potash, bicarbonate of soda, lemon-squash and sugar. No. 4 by the above and by calomel in minute doses often. For the first 24 hours the patients were purged severely. For toxic cases, seen late, reliance was mostly placed on severe purgation immediately and the doing away with acidosis. No. 5 sugar was the only nourishment given until the fever was gone and until the patient became hungry. No. 7 treatment was not changed or modified for the wishes of the patient or of friends; it was directed to save life.

This skeleton of treatment is intended to elicit interest and trial by others. All other fevers, irrespective of the cause, have been treated on the same general principles with much the same results. These results have convinced me of the correctness of the Johns Hopkins principle, that antitoxins are not satisfactorily formed in the presence of a high temperature. I am, Sir, yours faithfully,
R. W. BURKITT.
Nairobi, Kenya Colony, July 30th, 1921.

THE REFRACTORY IRIS.

To the Editor of THE LANCET.

SIR,—The interesting annotation on Refractory Iris in your issue of Sept. 10th seems to me to lead to a very important question. Mention is made in the paragraph just cited of the fact that in certain races there are no crypts in the iris. It would be very important to ascertain if these races are more subject to glaucoma than others. Perhaps some of your readers who have opportunities of gathering statistical data on the subject would do so, and thereby render an important service to ophthalmic science.

I am, Sir, yours faithfully,
Glasgow, Sept. 12th, 1921. FREELAND FERGUS.

VERONAL AGAINST SEA-SICKNESS.

To the Editor of THE LANCET.

SIR,—The Channel passage used for many years to be a misery for me, as I suffered acutely from sea-sickness and once for days after from so-called land-sickness. During the last eight or ten passages I have taken veronal and have never been sick, even though the majority of the passengers succumbed. I have a light meal before going on board and take 8 gr. of veronal or its sodium derivative, which, being soluble, acts faster. I pass the first hour, and if rough the whole passage, in the recumbent position on deck. Many patients have also derived benefit, some even during longer voyages, by taking 2–3 doses a day for a couple of days.

I am, Sir, yours faithfully,
Zurich, Sept. 9th, 1921. THEODOR ZANGGER, M.D.

Obituary.

THOMAS ARTHUR HELME, M.D., F.R.S. EDIN., M.R.C.P. LOND.,

CONSULTING PHYSICIAN, NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, MANCHESTER.

WE referred briefly in our last issue to the death of Dr. T. A. Helme, which occurred on Sept. 5th at Rhosneigr, Anglesey. Thomas Arthur Helme was the fifth son of Mr. James Helme, of Lancaster, and the brother of Sir Norval Helme, Dr. James Milner Helme, of Silverdale, and Dr. G. Edgar Helme, of Rusholme, with the two latter of whom he received his medical education at the University of Edinburgh at a time when Sir William Turner was professor of anatomy. Sir William Turner, himself a Lancaster man, took a great personal interest in his young fellow-townsmen. T. A. Helme had a distinguished career as a student; taking his M.B. and C.M. with honours in 1885, he gained the Buchanan Scholarship however slight," in accordance with the rules of the C.M.B. He receives later the notification of the case as "ophthalmia neonatorum" if the medical man called in considers it to be such, but the method may cause dangerous delay. Dr. Berry instances cases of inflammation of the eyes discovered by the health visitors, with regard to which complaint was made to the county supervising authority that the midwife had failed to observe the rules. Eight cases of ophthalmia were notified. Three were nursed in an institution, and of these one was discharged blind in both eyes. It will naturally be asked whether there was delay in getting adequate treatment for this case.

The population of Heston and Isleworth for 1920 was 43,445 for birth-rate and 41,945 for death-rate; the birth-rate was 24·7; the death-rate was 10·9; the infant mortality rate was 58. There appears to be an unusual demand for antenatal advice and a prospect of a flourishing antenatal clinic. A home-help was appointed in 1919, and her services have proved very useful. During the year she paid 328 visits to homes for the purpose of rendering assistance. The school report shows that treatment of the defects found is being provided in a systematic manner, but that in a considerable proportion of cases the services of the school dentist were refused. Dr. Berry mentions that there are no facilities for open-air education, and that there is, as yet, no organiser of physical training for the elementary schools in the district.

SCHOOL MEDICAL SERVICE.

Liverpool.

IN Liverpool the close coöperation between the public health and allied services is agreeably noteworthy. Nearly 50,000 children are dealt with annually at the routine examinations, at which last year about 45 per cent. showed some defect. Tonsils and adenoids requiring treatment accounted for 3·1 per cent., while 6·4 per cent. were kept under observation—"the very gross cases are now, fortunately, very seldom met with." Only seven definite and 30 doubtful cases of pulmonary tuberculosis were found during these examinations, and Dr. E. W. Hope reports that at the end of the year the total number of such cases under observation was 438, all of which had been excluded from school. Besides these, there were 365 cases of non-pulmonary tuberculosis, 81 of which attended the public elementary and 108 the physically defective schools. Four open-air residential schools, with 376 beds between them, are available for these children. There appears to be no open-air day school.

On the list of nurses three women are returned as dental helpers; we look forward to many more of these before long. The sound principle is followed of treating school children and children of pre-school age in the same building. In tabulating the results of cleansing "in conformity with the Board's instruction," boys and girls are not differentiated, which, of course, makes the results numerically valueless, the figures depending on the distribution of boys and girls rather than on cleanliness and uncleanliness. A difficulty in accounting for the increase in ringworm cases seems to have been felt, but years ago it was pointed out that this disease ebbs and flows like one of the zymotics. Scabies here, as elsewhere, still remains a legacy of the war, the number of absentees during the year from this cause being the highest on record. The average attendance at Liverpool's six clinics of 122 on school days dwindles to eight on Saturdays, which shows Saturday working to be hardly worth while. During the year 377 new and 1576 old cases of defective vision were seen at the clinics, while 2376 new cases were treated by the nine private doctors who undertake the work at a fee of 7*s.* 6*d.* per head. An inquiry extending over several months elicited the fact that out of 3036 children, 36 per cent. were not wearing their glasses. In 11 per cent. of the cases the glasses had been broken or lost; as to the remainder, the glasses had either been forgotten or, as is more probable, the children did not like wearing them. Here, as everywhere else, it is most difficult to get a hypermetropic child to wear glasses. Experience has shown in Liverpool that the amblyopic eye remains amblyopic in spite of all remedial measures tried. Nothing useful can be done in such cases, and from the public health point of view it is not worth while making the attempt. Two sight-saving classes deal with 18 per cent. of cases requiring such special educational treatment. Additional classes have been authorised, and it is hoped that they will soon materialise. Children attending voluntary schools are precluded from attending these classes, however serious their eye condition may be, without special permission of the committee, on the written application of the parent.

The extensive survey of cripples sets out full statistics of 1770 cases between 5 and 14 years of age, but does not bring out clearly the epidemic of poliomyelitis, which appears to have occurred in Liverpool between 1912 and 1913. Approximately 40 per cent. of the tuberculous cases, 90 per cent. of paralyses, and 92 per cent. of rickets occurred before the age of 5; yet this city has no nursery schools. The Board of Education tables end an interesting and well-considered report.

Isle of Wight.

The number of children who underwent routine examination amounted to 2748. Of these 18 suffered from malnutrition, 677 from dental defect, 145 from defective vision, 27 from defective speech, and 1 from anæmia. There were three cases of definite pulmonary tuberculosis and one suspected case. Out of 1335 children referred for treatment, 517 obtained it. 401 cases of uncleanliness are reported, and in one case the parents were prosecuted and fined for non-attendance, but under the system adopted in the island of making the doctor pay his own travelling expenses it happens that he is fined more frequently than are the defaulting parents.

Ryde.

The total number of children submitted to routine medical inspection was 478. Of these 4 suffered from malnutrition, 124 from dental defect, 4 from defective hearing, 33 from visual defect, and 2 from defective speech. There were no cases of anæmia, nor of tuberculosis, although in one case pulmonary tuberculosis was suspected. 227 children were referred for treatment, and in just under one-half of these cases treatment was obtained. The school nurse paid 95 visits to each school in the borough, and examined each pupil four times during the year. 205 of these children suffered from uncleanliness, and there are no arrangements for cleansing. Dr. J. P. Walker notes that in nine out of ten cases where parents objected to examination, a medical inspection was found to be urgently needed.

Margate.

Of 1117 children submitted to routine examination, 63 required treatment for dental defect and 115 were kept under observation; 11 required treatment for enlarged tonsils and adenoids, 11 for defective hearing, 4 for otitis media, and 5 for defective speech. 153 children obtained treatment for defects of nose and throat under the local authority's scheme, and out of 1256 referred for dental defects throughout the year 1016 were treated. As a result of X ray treatment of ringworm, the period of absence was reduced from 21 weeks to between four and five. Dr. R. McCombe, in reporting on the employment of children out of school hours, records that 42 children were illegally employed, and that several errand boys were working out of school hours between 30 and 40 hours a week. Eleven out of the 42 children showed two to three years retardation in school work. About 20 girls were examined, but Dr. McCombe reports "as their work consisted chiefly of taking out babies and acting as 'mother's help.' I was of opinion that their employment was more conducive to health than otherwise."

Post-Graduate Course on Infant and Child Welfare.—A course of 12 lectures on the Management and Feeding of Infants and Young Children will be given by Dr. Eric Pritchard (physician in charge of the Infant Welfare Department) to qualified practitioners on Wednesdays and Fridays at 6 p.m., commencing Oct. 5th, at the St. Marylebone General Dispensary. Students taking this course will be entitled to attend the Infant Consultations held by Dr. Pritchard on Tuesdays at 11 a.m. and Thursdays at 3 p.m. at the Dispensary. Opportunities will also be afforded to students of visiting the Nursery Training School, 1, Wellgarth-road, Golders Green, on Saturday afternoons. Further information and tickets for the course (two guineas) may be obtained from the secretary, 77, Welbeck-street, Cavendish-square, London, W. 1.

King's College Hospital Medical School.—The opening ceremony of the winter session will be held at 3 p.m. on Friday, Sept. 30th, when the introductory address will be given by the Right Hon. Lord Gorell, C.B.E., M.C.

The annual dinner of past and present students will be held at 7 for 7.30 p.m. on the same day at the Café Royal, Regent-street, London, W., Mr. F. F. Burghard, C.B., senior surgeon of the Hospital, in the chair.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Sept. 19th.—2 p.m., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Mr. MacDonald: Surgical Out-patients.

Tuesday.—10 a.m., Mr. Steadman: Dental Department. 2 p.m., Dr. Burrell: Medical Out-patients. Mr. T. Gray: Surgical Out-patients. 2.30 p.m., Mr. Addison: Visit to Surgical Wards.

Wednesday.—10 a.m., Mr. MacDonald: Genito-Urinary Department. 2 p.m., Mr. Addison: Operations. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards.

Thursday.—2 p.m., Mr. D. Armour: Operations. Mr. MacDonald: Surgical Out-patients. Mr. B. Harman: Eye Department.

Friday.—10 a.m., Mr. D. Buxton: Dental Department. 2.30 p.m., Dr. Pritchard: Visit to Medical Wards.

Saturday.—10 a.m., Dr. Burnford: Visits to Medical Wards. 2 p.m., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.

Daily:—10 a.m., Visit of Post-Graduates to Wards. 2 p.m., In-patient, Out-patient Clinics and Operations.

Appointments.

Burns, David, M.A., D.Sc., Grieve Lecturer on Physiological Chemistry in the University of Glasgow, has been appointed Professor of Physiology in the University of Durham College of Medicine, Newcastle-upon-Tyne.

Grahame, M. C. R., M.B., Ch.B. Edin., Tuberculosis Officer and Deputy Medical Officer of Health to the Burnley Town Council.

Gunn, R. M. C., M.R.C.V.S., Lecturer in Veterinary Anatomy and Surgery in the University of Sydney.

Landau, J. V., M.B. Lond., M.R.C.S., Anæsthetist at Queen Mary's Hospital for the East End.

Thomson, C. S., M.D. Glasg., D.P.H., Medical Officer of Health of Deptford.

Willan, R. J., M.S. Durh., F.R.C.S. Eng., Consulting Surgeon to the Hexham and District War Memorial Hospital, Hexham.

Williams, P. L. W., L.R.C.P. Lond., F.R.C.S. Edin., to be one of the Medical Referees under the Workmen's Compensation Act for County Court Circuit No. 59.

Wilson, Wm., M.D. Vict. Manch., Aurist and Laryngologist to the Manchester Board of Guardians (Crumpsall and Withington Hospitals and Booth Hall Infirmary for Children).

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary and Cardiganshire General Hospital. Res. H.S. £200.

Ayr District Asylum.—Jun. Asst. P. £300.

Birmingham General Hospital.—Res. M.O. £155. H.S.'s. Each £125.

Bournemouth, Royal Victoria and West Hants Hospital, Poole-road Branch.—Res. M.O. £200.

Bridgwater Hospital.—H.S. £165.

Bristol Royal Hospital for Sick Children and Women.—H.S. H.P. Each £150.

Cancer Hospital, Fulham-road, London, S.W.—H.S. £150.

Canning Town Women's Settlement Hospital, Balaam-street, Plaistow.—Female Sen. Res. M.O. £150.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. £100. Jun. H.S. £50.

Chelsea Hospital for Women, Arthur-street, S.W.—Hon. Dental Surg.

Clifton, York, North Riding Mental Hospital.—Sen. Asst. M.O. £400.

Croydon General Hospital.—Vacancy on Hon. Med. Staff.

Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £200.

Dumfries and Galloway Royal Infirmary.—Female Res. H.S. and Res. Phys. Each £150.

Glasgow, Bellahouston Hospital.—Pathologist. £600.

Hospital for Epilsepsy and Paralysis, Maida Vale, W.—Hon. Ophth. Surg.

Hospital for Women, Soho-square, W.—Pathologist and Registrar. £100.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £200.

Newcastle-upon-Tyne, Wingrove Hospital.—Female Sec. Res. M.O. £250.

Norwich, Norfolk and Norwich Hospital.—H.S. £200.

Notts County Council.—Tuberc. Officer. £750.

Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.

Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.

Powick, Worcester County and City Mental Hospital.—Sen. Asst. M.O. £500.

Prince of Wales's General Hospital, Tottenham, N.—H.P. H.S. Each £200. Jun. H.S. Jun. H.P. Each £120.

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.P.'s. £100.

Rotherham Hospital.—Jun. H.S. £150.

Royal Chest Hospital, City-road, E.C.—H.P. £120. Res. M.O. £200.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. £100.

St. Helens Hospital, Lancs.—Res. M.O. £250.

St. Mary's Hospital Medical School, Paddington, W.—First, Second, and Third Assts. in the Med. Clinic. £750, £450, and £350 respectively.

Saint Pancras Dispensary, 39, Oakley-square, N.W.—Hon. Phys.

Salford Royal Hospital.—Res. Surg. O. £250. H.P. £200. H.S. £150. Cas. H.S. £150.

Salisbury General Infirmary.—H.S. £200.

Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Each £150. Asst. Cas. O. £150.

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Jun. H.S. £175.

Stoke-on-Trent, North Staffordshire Infirmary, Hartshill.—H.S. £200.

Sunderland Royal Infirmary.—H.S. £200.

Tunbridge Wells General Hospital.—H.S. £160.

Wakefield, Clayton Hospital.—H.S. £225.

West London Hospital, Hammersmith-road, W.—Two H.S.'s. H.P. Each £100. Surgeon.

Winchester, Royal Hampshire County Hospital.—Sen. Res. M.O. £250.

Wolverhampton County Borough Education Committee.—Asst. Sch. M.O. £600.

Wrexham Infirmary.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

Harris.—On Sept. 9th, at Holme, Sidmouth, the wife of Leslie Price Harris, M.C., M.R.C.S., of Gerrards Cross and Harley-street, of a daughter.

Webb-Johnson.—On Sept. 5th, at East Sheen, the wife of Dr. Cecil Webb-Johnson, of a daughter.

MARRIAGES.

Pendered—Singer.—On Sept. 6th, at St. Peter's, Bedford, Captain J. H. Pendered, M.C., F.R.C.S., R.A.M.C., to Margaret Louise Singer, late Q.A.I.M.N.S., third daughter of Lieut.-Colonel G. H. and Mrs. Singer, of St. Augustine-road, Bedford.

Thompson—Seaton.—On Sept. 7th, at St. Michael's, Orchard Portman, Taunton, James Thompson, M.C., M.B., Ch.B., to Margaret Catherine, only daughter of the late Gervase Douglas Seaton and Mrs. Seaton, of Elmfield, Taunton.

Verney—Scott Reid.—At Holy Trinity Church, Karachi, on July 28th, 1921, Major Leonard Morris Verney, D.S.O., F.R.C.V.S., Royal Army Veterinary Corps, only son of Richard John Verney, of Oxford, to Sydney Jessie Scott Reid, M.R.C.S., L.R.C.P. Eng., elder daughter of the late Surgeon-General Sir Adam Scott Reid, K.C.B., Indian Medical Service.

DEATHS.

Callender.—On Sept. 5th, at St. Mary's Hospital, Paddington, after a short illness, Dr. Leonard Hay Callender, aged 50 years.

Freyer.—On Sept. 9th, at Harley-street, W., Colonel Sir Peter Johnston Freyer, K.C.B., late I.M.S., aged 69 years.

Trotter.—On Sept. 10th, at a Leeds nursing home, Robert Hale Trotter, M.D., in his forty-ninth year.

Wilson.—At 36, Greenfield-road, Colwyn Bay, on the 11th inst., George Wilson, M.D., LL.D., in his 84th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Correspondence.

"Audi alteram partem."

MAN'S EVOLUTION FROM THE ANTHROPOID.

To the Editor of The Lancet.

Sir,—I feel I must be only one among many of your readers who have found of exceptional interest Prof. L. Bolk's lecture on the Part Played by the Endocrine Glands in the Evolution of Man, which appears in your current issue. That the structural changes attendant upon animal evolution are in large measure brought about through the instrumentality of the endocrine system none can doubt. This system, as the professor observes, controls both ontogenesis and phylogenesis. Many human characteristics, such as orthognathy and hairlessness, he attributes to a suppression, brought about by the endocrine system, of anthropoid characters; and he further suggests that the retardation in the developmental rate of man, a condition essential to his high grade of evolution, may be due to the change in "the nature of his food, the frugivorous ancestor of man becoming omnivorous or carnivorous."

This latter surmise—as to the truth of which I am not prepared to offer an opinion—I find of peculiar interest, inasmuch as it accords with a view already put forward by me in this journal[1]—namely, that man's evolution from the anthropoid was determined by the search for animal food—the abandonment of the forest for a hunting career. I argued that the evolution of *homo sapiens* depended upon the difference in point of difficulty between plucking a sessile fruit and catching an elusive prey. Herein lies the key to the situation. I may, perhaps, be permitted to quote from the second of the two papers referred to.

"It was the conditions entailed by a hunting career which brought about the evolution of the pre-human ape into man. For observe the peculiar situation—assuredly one of the most eventful and dramatic in the whole of man's evolution—when this creature took to hunting. Here was a being lacking the stereotyped equipment for slaughter, instructive and anatomical, of the carnivora, but gifted with an intelligence surpassing that of any other creature, and endowed with prehensile hands capable of giving effect to that intelligence. It was a situation in which intelligence counted in the life-struggle as it had never counted before, and it inevitably led to the evolution of a higher type. This agile, intelligent, hand-endowed precursor of man was compelled to rely upon his intelligence in hunting his prey—to live by his wits: for blind instinct he had to substitute strategy; for natural weapons, weapons made by hand. Once the pre-human ape started on his career of hunter, he began a struggle in which it was inevitable that a higher and ever higher grade of intelligence should continue to evolve by natural selection until sufficient mental capacity had been attained to render its possessor supreme in the chase."

It is obvious that something must have happened in the case of the pre-human anthropoid, alone of all the anthropoids, which greatly increased the survival-value of intelligence. That something was the adoption of a hunting career by a highly intelligent prehensile mammal lacking the special hunting equipment of the carnivora.

It is conceivable that the adoption of a highly animalised diet may have facilitated man's evolution from the anthropoid in the manner suggested by Prof. Bolk; but that the initiation and maintenance of that evolution were due to the conditions necessitated by the procuring of animal food rather than to the effect of animal food upon the organism may, I think, be regarded as certain.

I am, Sir, yours faithfully,
Harry Campbell.
Wimpole-street, W., Sept. 11th, 1921.

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[1] Man's Evolution, Past and Present, The Lancet, 1913, i., 1260, 1333, 1408, 1473. The Biological Aspects of Warfare, The Lancet, 1917, ii., 433, 469, 505.

THE SWIMMING-BATH AND CATARRHAL OTITIS.

To the Editor of The Lancet.

Sir,—In the annotation upon the above in your issue of Sept. 3rd, you state that Dr. K. Amersbach seems to have been discouraged from making any bacteriological examination by the fact that investigations of the kind undertaken by ophthalmologists on swimming-bath conjunctivitis had been inconclusive; and in his letter of Sept. 10th Dr. Dan McKenzie also deals with ear infection, stating that every effort should be made to render and to keep swimming-bath water as clear as possible. I should like to remind you that in September, 1909, in two somewhat lengthy reports, and in my annual report for the year 1909, I pointed out to the Baths and Washhouses Committee of the Poplar Borough Council the horrible dangers of the public swimming-baths, inter alia mentioning how quickly swimming-bath water changes its pristine sweetness even after being used only by a few bathers, particularly so in warm weather, and becomes after use by a number of bathers nothing more nor less than diluted sewage, and this condition exists often before the first day's use is finished. The formation of slime in the bath water was also mentioned and commented upon at length.

As it is during the months of July, August, and September that swimming-baths are mostly used, it would be of considerable interest if bacteriologists would take into consideration the possible connexion with disease of polluted swimming-bath water, more especially the slime which forms and settles at the bottom of the baths and becomes stirred up by the swimmers, and to find out if such slime plays any part in disease. I am sorry I cannot oblige with any of the slime from the Poplar swimming-baths, as they are kept free of it by the addition of electrolytic fluid manufactured by the Poplar Borough Council and added in the proportion of one part of chlorine to two million parts of the bath water. In swimming-baths a vegetable growth also occurs on the sides, but since the treating of the water in the Poplar baths such growth is absent.

I would also call Dr. McKenzie's attention to the "Report on Purification of the Water of Swimming Baths" by a Committee of the Royal Sanitary Institute, November, 1912 (excerpt from Vol. XXXIV., No. 1, 1913, of the *Journal of the Royal Sanitary Institute*).—I am, Sir, yours faithfully,

Fredk. Wm. Alexander,
Medical Officer of Health.
Bow-road, E., Sept. *10th*, 1921.

THE NATURAL HISTORY OF ENCEPHALITIS LETHARGICA.

To the Editor of The Lancet.

Sir,—Dr. H. Willoughby Gardner, in the important and interesting letter published in your columns this week, shows that, concerning the cases now called "encephalitis lethargica," he has arrived at certain conclusions which he shares with not a few physicians who, like him, have practised as consultants in wide and somewhat thinly populated country districts, and who have been able therefore to adopt the epidemiological point of view, or, in his own words, *to observe the natural history of diseases.*

Briefly, Dr. Gardner finds that the cases now referred to the fluctuating and arbitrary concept denoted by the term "encephalitis lethargica" should be considered as the nervous manifestations of a disease which is (1) very widespread, (2) markedly infectious, and (3) "new in character," whilst otherwise indicated by (*a*) fever, (*b*) sore-throat, (*c*) gastro-intestinal, and (*d*) bronchial catarrh, together with (*e*) an inconstant erythema, (*f*) marked prostration, and (*g*) slow recovery.

It was on precisely similar clinical and epidemiological observations that Fernel, Benedetto and others, in the sixteenth century, based their famous doctrines sources. To-day this sum is obtained in various ways, often at considerable monetary expense and by the employment of men and women who give their services voluntarily; no margin is afforded for the extension of hospitals, for more accommodation than exists to-day, or for new developments in the machinery for the cure of diseases; the amount is only enough to keep the hospitals going on their present basis. For these further objects money will be wanted; and it is time to enlist the support of the working class. During the past 50 years the status of the working man has undergone a profound change. At the beginning of this period he was rightly considered a poor man; he did not then earn enough to pay his weekly bills and leave a margin for contingencies. To-day he earns a good wage; he is supported during any sickness, and after 70 years of age is pensioned by the State. The working classes are now, I believe, in a position to say, "We can find it if you show us how and what benefit we shall obtain in return for our contributions." The following is an attempt to explain this benefit and the means by which it may be obtained.

Source of Revenue.

The present charity hospitals are, it is well known, more than adequate for the treatment of the really poor now that the working classes have risen from the lowest grade in society, and have acquired an independent and honourable position of their own. By coöperation they can, as I will show, share adequately with their employers in the maintenance of hospitals. There are about 13,000,000 men and women in our country who work for a weekly wage and are insured for definite purposes under the National Insurance Act. Moreover, under that Act is provided very economical machinery for the collection of contributions. If the same machinery were used any addition to the sum now collected by the Insurance Commissioners would involve a very slight and insignificant increase in the cost of collection. By a contribution of 1*d.* per week 13,000,000 men and women would provide £54,166 13*s.* 4*d.* weekly—that is, £3,066,666 13*s.* 4*d.* in one year. If to this is added 1*d.* per week by the employer from the industry for each employee twice the above sum would be available at the minimum cost of collection. This total of £6,133,333 6*s.* 8*d.*, together with the moneys now accruing from hospital charities, would amount to nearly £7,000,000 per annum, which sum the National Insurance Commissioners—the proper collecting body—would refund to each locality according to its needs. As the cost of the present hospitals is about £3,500,000 over and above that received from endowments the excess of money under the scheme could be put aside: (1) for the extension of existing hospitals; (2) for the re-erection of others in more suitable situations, or more commodious sites; and (3) for the establishment of new hospitals.

Consequential Changes.

The support of the hospitals by insured persons and by employers of labour, as above suggested, would be followed by many changes. The charity hospitals with their endowments would be absorbed by the new and reorganised institutions, and their mode of government would be modified to meet the new conditions. All service in them would, as a matter of course, cease to be merely voluntary. Apart from those who constitute the governing body, only the doctors at present render voluntary service. As, however, medical men are already appealing for payment for attention to sundry cases sent into the hospitals by public bodies, and are prepared to accept fees from payments made direct to the governing body by patients, the step I suggest is only a small one. Great advantages would, in the opinion of many, follow payment of the medical officers, as the time is at hand when work in the large hospitals should be undertaken only by those who devote their entire time to some specialty. Such work is too arduous and exacting for the man compelled to devote much time to other practice as a means of livelihood. The hospital doctor requires times for study, which, in the present condition of things, is very difficult to obtain; moreover, the medical student only receives such technical training in the methods for the discovery and for the curing of disease as will suffice to meet the requirements of examiners; newly qualified men, except in a very small proportion of cases, remain without opportunity to apply their book knowledge acquired with much labour and great expense. Again. the present system in the charity hospitals to which medical schools are not attached prevents the natural development of the machine for the proper treatment of patients; not until specialists only are employed can the work done in them be fully satisfactory. The recent progress of medicine and surgery makes it imperative for all specialists to have time for study and thought and to have their work apportioned and within their compass. The gain from this alteration would be immense if estimated only in the reduction of time an insured patient would take to become fit for the resumption of work.

Benefits.

But other benefits would be derived from a reorganisation of the hospital service on the new financial basis. Among them are relief of the home from the care of sickness and injuries, and a speeding up of the process of cure from immediate and proper attention and from the application of the appropriate means available in all large institutions but wanting in the home and seldom found in the smaller hospitals. In any scheme of reorganisation ample provision of beds must take precedence; a proper period of rest. combined with suitable employment, is essential to complete cure for the early resumption of work. To the injured workman the convalescent period is of extreme importance, and nowhere can this be ensured as fully as in graded hospital institutions designed for the purpose, arranged and equipped for the production of preliminary employment under healthful conditions. All dependants should be entitled to any advantages enjoyed by the heads of families; the houses of working men, necessarily of small size, would thus be relieved of all their sick and injured inhabitants greatly to the benefit of the rest of the family or occupants. Small-pox and other infectious diseases cannot be adequately isolated in such houses, which, moreover, are not large enough for maternity cases; it is therefore obvious that adequate provision for childbirth and after-care of mother and child would be necessary.

It will have to be recognised that the layman, however well acquainted with the business management of hospitals. is not the proper person to undertake the reorganisation of the hospital service. Such reorganisation must be the work of medical men who can grasp the problem as a whole. And those in charge of the finances should realise that it is not in the best interests of the patient that doctors should continue to render service on the old voluntary lines. We must break with the past, remodel the hospitals, and reorganise the professional work carried on in them, without losing sight of those sound fundamental principles under which the profession has won its present status. Whatever new hospital service might be devised the new conditions should embrace the following requirements: (1) The hospital medical service to come under the control of a sub-department, hospital service department, of the Ministry of Health; (2) appointments to be for life with the usual reservation as to behaviour, incompetency, &c.; (3) all payments on a whole-time basis; (4) promotion by merit combined with length of service; (5) translation, by direction of the sub-department of the Ministry of Health, as need arises for special services in different parts of the country.

The government of the hospitals would rest with the insured persons and employers; the State would represent the charities and thus exercise a measure of control. To ensure successful working the medical and surgical staff should hold office under a special body other than the governing body of the institution to which they are attached; otherwise the service would deteriorate, often very seriously, and in some instances would become almost worse than useless for reasons which need not here be stated.

Conclusion.

The scheme I have outlined is, I believe, the best available solution of the hospital problem confronting us to-day; I venture to think its adoption would lead to a quiet and very desirable revolution in the government, management, and usefulness of the hospitals. Money would be available for the development of matured and well thought out schemes and provisions of ample and immediate accommodation for sickness and injuries as soon as possible after their infliction. The result of speeding up the process of recovery would, I am satisfied, repay many times over the cost involved in the proper application of skilled doctoring, nursing, and convalescent training. Moreover, unification, in a general sense, of all hospitals and the creation of large institutions would lead to an economy impossible in the existing small and independent hospitals throughout the country. We need more for the money spent. and more cannot be obtained without reorganisation of the hospital service; from unification will result both economy in business management and better handling of disease and injury.

A CLINICAL THERMOMETER SHEATH.

Mr. A. E. James, head male nurse at St. John's Hill Infirmary, Battersea, has called our attention to the "James Thermometer Sheath" which he has devised. The sheath is a paper tube closed at one end, which is placed over the bulb and a portion of the stem of the clinical thermometer. When inserted into the patient's mouth the temperature is duly recorded, the thermometer withdrawn, and read. No cleansing is required, as the glass has not been in actual contact with the mouth. The sheath is ejected or removed by the patient. A further advantage is that, in the event for proficiency in midwifery and gynæcology. The Buchanan scholar is required to act for six months as resident physician in the university gynæcological wards of the Royal Infirmary, and this appointment was of great professional value to Helme, bringing with it also the formation of a lifelong friendship with his teacher, Sir Alexander Simpson. In 1886 he obtained the Leckie-Mactier Fellowship, and proceeded to Strasbourg, where he carried out researches in his own specialty, being awarded a gold medal for the thesis which he presented for his degree of M.D. in 1889. In 1890 he was elected Freeland Barbour Research Scholar

Dr. Helme began general practice in Fallowfield, Manchester, along with Mr. John Priestley, but found its pursuit not to his liking. On the advice of his friends he applied for and obtained the post of resident obstetric surgeon in St. Mary's Hospitals, an appointment usually held for three years, and one unrivalled in its opportunities of obtaining clinical experience in work of midwifery and gynæcology, being the nearest approach in this country to the much-coveted post of "interne" in the Paris hospitals. This meant severing his connexion with general practice, and a second spell of work as a resident physician in a hospital. The whole trend of Helme's work was towards midwifery and gynæcology, so that with his Edinburgh, Strasbourg, and Manchester experience in the theoretical, clinical, and practical aspects of these subjects he was well justified in becoming a consultant in Manchester at the end of his residentship. He was appointed shortly thereafter to the post of assistant gynæcologist to the Clinical (now the Northern) Hospital for Women and Children, and some years later, on the death of Dr. Samuel Buckley, he became honorary physician to that institution. Although never physically robust, and in spite of a measure of ill-health, Dr. Helme was soon well known as a specialist over all the North of England, where, as in Manchester and its neighbourhood, his services as a consultant were in constant request, so that during a busy professional life he rapidly acquired a large practice.

But his energies and activities were by no means confined to purely professional work. He did not write much, but what he wrote was of solid worth. Amongst publications were "Anatomy and Physiology of the Uterus, with Action of Drugs upon it" (Graduation Thesis, 1889). "Changes in Muscle Fibre, Connective Tissue and Blood-Vessels of Uterus during Pregnancy and Puerperium," "Aseptic and Antiseptic Methods in Midwifery," and "The Unborn Child: its Care and its Rights." For many years he was honorary secretary to the Manchester and Salford Sick Poor Nursing Institution, and was also vice-president of the North of England Obstetrical Society. He threw himself with great ardour into certain phases of medical politics, and was a useful member of the Council of the British Medical Association, while he acted as secretary and was for a period president of the Lancashire and Cheshire branch of the Association. His name came prominently before the public as a champion of certain medical interests, and he was a doughty opponent of the National Health Insurance Bill. The Edinburgh tradition of guarding the honour and dignity of his profession found expression in many phases of his professional activity. A friend of and sympathiser with the poor, his memory will be gratefully cherished in many homes in and around Manchester, where practically the whole of his professional life was spent.

LONDON TELEPHONE EXCHANGES.—Additional transfers from the Mayfair to the Langham Exchange, not mentioned in our last issue, are the following:—

Mayfair.	Subscriber.	Langham.
1313	Chaldecott, J. H.	1313
5959	Yearsley, Macleod	1487

and from the Mayfair to the Grosvenor Exchange:—

Mayfair.	Subscriber.	Grosvenor.
3677	Robinson, W. E.	1408

Medical News.

VISIT OF DR. OSKAR FRANKL TO DUBLIN.—On the invitation of the Royal Academy of Medicine in Ireland three lectures have been delivered in Dublin during the past ten days by Dr. Oskar Frankl, the distinguished head of the Schauta Clinic in Vienna. The subjects chosen by Dr. Frankl were "Menstruation and Ovulation," "The Early Diagnosis of Uterine Cancer," and "Radium and X Ray Treatment in Gynæcology." As a teacher of unusual lucidity with an almost unrivalled experience, his lectures attracted large audiences. In addition to his set lectures to the Royal Academy, Dr. Frankl conducted daily classes in Trinity College and at the Coombe Hospital, both of which were well attended. Our Irish Correspondent, in chronicling the visit, writes: One may hope that the precedent set by Dr. Frankl's visit will not be forgotten. The Royal Academy would increase its prestige and put the medical profession of Ireland still further in its debt if it were to arrange at intervals for such a visit from some distinguished foreign teacher. The welcome given to Dr. Frankl by the Dublin School means more than merely what is due to a distinguished man of science. It is a sign of admiration for the magnificent work for humanity and knowledge performed by the Vienna School in the past, and of sympathy with the vitality which that School still exhibits amid circumstances of almost overwhelming difficulty.

WESTMINSTER HOSPITAL MEDICAL SCHOOL.—The introductory address of the winter session will be given in the board room of the hospital on Friday, Sept. 30th, at 4 P.M., by Dr. Adolphe Abrahams, on "The Advantages and Disadvantages of a Small Medical School."

DORSET COUNTY HOSPITAL, DORCHESTER.—The new pathological department and X ray and electrical rooms will be open to inspection on Wednesday, Sept. 21st, at 3.30 P.M., when Mr. James Sherren, surgeon to the London Hospital, will give an address on "The Value of Pathological and X Ray Examinations in Abdominal Surgery."

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL DINNER. The annual dinner will take place at the Imperial Restaurant, entrance in Glasshouse-street, London, W., on Saturday, Oct. 1st, at 6.30 for 7 P.M. The chair will be taken by Dr. H. A. Des Vœux. Tickets may be obtained from the hon. secretaries, Dr. Claude Frankau and Mr. J. A. Torrens, at the hospital.

SOCIETY FOR THE STUDY OF INEBRIETY.—The Ninth Norman Kerr Memorial Lecture will be delivered by Sir Arthur Newsholme on Tuesday, Oct. 11th, at 5.30 P.M., in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1. The subject of the lecture is "Some International Aspects of Alcoholism with Special Reference to Prohibition in America."

SOCIETY OF M.O.H.'s.—The annual general meeting of the Navy, Army and R.A.F. Hygiene Group of the Society will be held at 1, Upper Montague-street, Russell-square, London, W.C. 1, on Friday, Sept. 30th, at 4.30 P.M., when Major-General Sir W. G. Macpherson will read a paper on "The Disposal of Latrine Contents, with Special Reference to Immediate Incineration." All members of the Society are invited to attend and take part in the discussion. Surg. Rear-Admiral Sir P. W. Bassett-Smith has been nominated to succeed Lieut.-Colonel H. R. Kenwood as President of the Group for the coming session.

CONFERENCE OF THE BRITISH COMMERCIAL GAS ASSOCIATION.—At the tenth annual conference of the Association to be held in the Royal Technical College, George-street, Glasgow, on Sept. 27th and 28th, the subjects to be discussed at the public sessions will be "Gas in Relation to Hygiene and Smoke Abatement" and "The Industrial Uses of Coal Gas." Dr. J. S. Owens, superintendent to the Advisory Committee on Atmospheric Pollution, will contribute to the former discussion a paper on "The Prevention of Smoke Pollution," and Dr. C. W. Saleeby will deliver a lecture on "Life and Light."

THE FARADAY SOCIETY.—A general discussion on Catalysis with Special Reference to Newer Theories of Chemical Action will be held at 4.30 P.M. on Wednesday, Sept. 28th, at the Institution of Electrical Engineers, Victoria Embankment, W.C. 2. Prof. J. Perrin (Paris) and Prof. Irving Langmuir will open the discussion, and among those contributing to it are Prof. E. C. C. Baly, Prof. F. G. Donnan, Prof. W. C. McC. Lewis, Prof. A. Lindemann, Prof. A. W. Porter, and Dr. E. K. Rideal. It is expected that Prof. Arrhenius and Prof. Victor Henri will also be present. Tickets of admission may be obtained from the Secretary of the Society, 10, Essex-street, London, W.C. 2.

MILESTONES IN ANÆSTHESIA.

I. In A.D. 1875 a student, just qualified, when he was dresser in the eye wards at Guy's, gave the deadly drug chloroform in a closed inhaler to a patient upon whom Higgens was to operate for cataract. He proceeded to do his part with the confidence of ignorance, and with absolutely no instruction except such as he had gathered from watching the house surgeons in the theatre. All went well, and only a little sickness followed.

II. In A.D. 1887 the same student, now sobered by practice, gave chloroform in a similar way for Lister to perform a serious operation. That great and kind man instructed him in the better method of placing as much of the corner of a stiff towel as would cover the patient's nose and mouth, telling him to keep that surface gently wetted the whole time, with excellent result. Only the usual, or "laudable," vomiting followed.

III. In A.D. 1921 the same man, spectator and no longer practitioner, witnessed the administration of ether to his wife for the extraction of a difficult tooth. The excellent young anæsthetist used a Clover, holding it an inch away from the mouth, and gradually bringing it closer until quiet induction was complete, prepared to give ether on a flannel mask if it were needed. All went well of course; no vomiting, discomfort, or danger occurred, and directly afterwards the patient was talking clearly.

Perhaps these advances in 46 years are worth noting.

SEPTUAGENARIAN M.D.

SANITATION IN BENGAL.

IN the fifty-second annual report on Sanitation in Bengal in 1919, recently issued, Dr. Charles A. Bentley, Sanitary Commissioner, states that the vital statistics are calculated on a population of 45,329,247, being that of the Presidency according to the census of 1911, excluding the Chittagong Hill Tracts. The birth-rate was 27·5 per 1000, compared with 32·9 in 1918, and 33·3 in the quinquennium (1914–18); it was the lowest recorded since 1892, due to unfavourable economic conditions resulting from the poor harvest of 1918, and a serious prevalence of influenza, with excessive mortality, during the latter half of that year and the earlier months of 1919. In the various districts it ranged from 18·5 in Calcutta and 21·0 in Jessore to 32·8 in Rajshahi and in Noakhali. With regard to the rates in towns, it is stated that the "abnormally low birth-rates are due solely to neglect to register the births that actually occur." Presumably the same observation might apply to rural areas, of which 37 returned birth-rates below 20 per 1000; but this explanation would be at variance with the attribution of a low birth-rate to a poor harvest and influenza.

The general death-rate was 36·2 per 1000, compared with 38·1 in 1918 and 31·2 in the preceding quinquennium. Of the total number of deaths (1,641,111), no less than 1,229,257 are returned under the head of "fevers" (27·1 per 1000); this mortality was specially heavy during the first six months of the year, and was undoubtedly due to influenza; in the latter part of 1918 some 350,000 to 400,000 deaths may be ascribed to this cause, and in 1919 a further 200,000; Birbhum and Burdwan districts suffered most, with a probable loss of about 3 per cent. of their population during the last two years.

An Epidemic of Cholera.

Cholera was epidemic throughout the province—namely, in 491 out of 498 registration areas. The deaths reported (121,910) were in a ratio of 2·8 per 1000, compared with 1·8 in the preceding quinquennium. Only once in the last ten years has this ratio been exceeded. In the district of Birbhum the ratio was 6·8, and in that of the 24 Parganas 5·9, where the deaths from this cause numbered 14,360, this being the largest number reported from any individual registration area. Dr. Bentley remarks that "the October rainfall of 1918, on which the normal outturn of the winter rice crop depends, was much smaller than usual. The early cessation of the rains which occurred, especially in the Burdwan and Presidency divisions, reduced the supply of water available during the succeeding months. The deficient rainfall and short harvest also led to increased migration. Thus the factors necessary for the occurrence of widespread epidemics of cholera in 1919 were provided by the unfavourable season of 1918, with the results that have been recorded." The outbreak among pilgrims returning to Calcutta from the native festival on the island of Sagar at the mouth of the Ganges, when a large number of cases of cholera were landed in the city (Dr. Bentley states the number to have been "some 217"), and the energetic and successful manner in which this emergency (to which the epithet "appalling" may be fitly applied) was dealt with, have been already alluded to in these columns.[1] Dr. Bentley considers that a considerable proportion of the excess cholera mortality in the succeeding months was indirectly due to infection originally brought from Sagar island. In several instances during the year outbreaks in the province were traced to polluted water, but increasing use is being made of permanganate of potash and chloride of lime for disinfecting wells and tanks.

Small-pox, Plague, Rabies.

There was a great increase in small-pox, the deaths numbering 37,010 in 1919, giving a ratio of 0·8 per 1000, compared with 0·2 in 1918 and 0·3 in the quinquennium, 1914–18; the vaccinations increased from 1,619,280 in 1918 to 2,216,812 (if the figures are to be relied on, which Dr. Bentley considers to be doubtful). The deaths from plague numbered 424 (0·01 per 1000); 334 of these deaths occurred in Calcutta (0·4 per 1000). There were 179 deaths from rabies during 1919, compared with 119 in 1918 and 71 in 1917; the increased mortality emphasises the need for a Pasteur Institute (at Calcutta), more accessible than those at Kasauli and Shillong.

The work falling upon the Sanitary Commissioner has greatly increased in recent years, and a special committee is considering the matter with a view to improved organisation. It may be noted that the population of Bengal is approximately the same as that of the United Kingdom.

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[1] THE LANCET, 1921, i., 307.

INDIAN JAIL OCCUPATION.

IN the Administration Report of the Jails of the Bengal Presidency for 1920 Lieut.-Colonel F. S. C. Thompson, I.M.S., the inspector-general of prisons for the Presidency, gives an interesting note on the diet of prisoners. The proportion of prisoners voluntarily choosing wheat at one meal in lieu of rice is steadily increasing. The beneficial result of this nutritious diet is evident from the fact that cases of bowel complaints have gone down considerably, and of the 32,175 convicts discharged during the year 54 per cent. gained weight, while only 19 per cent. lost weight. The daily average strength for the year was 15,357, the number admitted to hospital 20,254, and the daily average number of sick 812, against 15,886, 22,699, and 878 respectively in the previous year. The total number of deaths during the year was 321, against 365 in 1919. The commonest cause of mortality at the two most unhealthy jails, Malda (death-rate 78·8) and Jalpaiguri (69·2), was malaria, while dysentery proved the main reason at the next two jails, Burdwan and Faridpur, although malaria remained the chief cause of sickness. The industries pursued by the prisoners in the various jails include the manufacture of jute, iron goods, the printing and supply of forms, the manufacture of cloths and blankets, and of lubricating and medicinal castor oil and of mustard oil. In the juvenile jail the most important industry is the manufacture of quinine tablets. On an average 83 boys were employed on this industry and 13,195 lb. of quinine sulphate were converted into treatments and tablets during the year. 1,074,321 treatment tubes (each containing 20 four-grain tablets), 712,520 five-grain tablets, and 50,875 two-grain tablets were sold during the year. This jail also acts as a distributor of cinchona products. The total profits of the jail from the quinine industry and other manufactures amounted to Rs.233,561, against Rs.230,022 in the previous year.

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THE HOSPITAL PROBLEM AND A NEW HOSPITAL SERVICE.

BY JOSEPH GRIFFITHS, C.M.G., M.CH. CAMB., F.R.C.S. ENG.,
SURGEON TO ADDENBROOKE'S HOSPITAL, CAMBRIDGE.

IT must be clearly understood that every attempt to place hospitals for the sick and injured on the rates under the Poor-laws has failed, and a new attempt is no more likely to succeed to-day than those made in the last century, even if the authority be changed to the County Council. Hospitals of large size, and more of them, are the greatest social need of the day; as the hospitals constitute the hub of the medical world, it is best to re-establish them on a sound and satisfactory basis so as to be able to build up and add spokes and a rim that will make a solid, substantial, and complete wheel of medical organisation with the general practitioner at every point in the periphery and the highly-trained specialist in the centre—each doctor a specialist in his own sphere, with every facility to pass the patients back and fore as conditions dictate, the whole being arranged and connected for the sole benefit of the sick and injured.

From small beginnings the hospital service in this country has gradually become very complex, and few are familiar with its many phases or understand how it is made up. It was created by charity, and not until 1810 was much done to relieve charity of a burden that had then become too heavy; in that year were passed the Poor Law Amendment Acts of Queen Victoria. Since that date the guardians have made provision—adequate in places, inadequate in others—for the care of the sick and indigent poor. In 1818 the first Public Health Act made provision under the Local Government Board for the isolation and treatment of infectious diseases, and thus to some extent relieved the charity hospitals. To-day we have charity hospitals, Poor-law infirmaries, public infectious diseases hospitals, &c.; the first governed by supporters of charity, the last two by public authorities, the guardians and the local public health body respectively. The provision made by the Poor Law Amendment Act and by the Public Health Acts far exceeds that supplied by charity.

The charity hospitals are divisible into two large groups—those with medical schools, and those without medical schools.

The Charity Hospital Medical Schools.

In this country medical education, begun in charity institutions, has been maintained in them by the help of generous friends—not from the funds of the charity—and by the great efforts and self-sacrifice of the medical teachers for centuries past. During the nineteenth century the Government gave help in some directions, and the Education Department is to-day experimenting with medical education in the hope of placing it on sounder footing, but there is doubt whether the experiment will serve its intended purpose. The hospitals in which medical education has been fostered are chiefly the large ones in London. It may be of interest to group these hospitals in accordance with the periods in which they were founded. In the twelfth century, St. Bartholomew's; in the sixteenth, St. Thomas's; in the eighteenth, Westminster, Guy's, St. George's, the London, and the Middlesex; and in the nineteenth, Charing Cross, King's College, University College, St. Mary's, and the Royal Free. All were and are dependent for their income on charitable contributions and bequests, and their resources have been well spent and carefully husbanded for the benefit of the sick poor—and, of late years, of those who, whilst not to be classed as poor, but who were totally unable to afford the expense of nursing and of skilled attention from a physician or surgeon. In return for medical services, hitherto given free, the governors of the charities have granted the medical officers the privilege of creating medical schools within the precincts of the charities and the use of the hospital wards for the training of students. It is not too much to say that the success of these great hospitals is largely due to that intimate association of the school with the hospital, which has acted as an intellectual stimulus to the hospital staffs. Medical education has not been subsidised, as has every other form of education, largely because medical men have been content with indirect rewards; and the latter are apt to be very unequally distributed. Most of us think of St. Bartholomew's and the other big hospitals in London first as medical schools, and secondly as hospitals, although they are maintained primarily for a hospital service for poor people. The need for such special fostering of medical education was so strongly impressed upon the teachers in the early Victorian days that it was held by them that the establishment under the suggested Poor-law Bills of large London hospitals alongside the charity hospitals to which were attached medical schools, would practically cripple the British system of medical education. Indeed the collective action of these teachers actually prevented the development of a new hospital service that, in the opinion of many, would have grown in the remaining portion of the nineteenth century into a magnificent organisation, providing not only London but also the rest of the country with adequate accommodation for the sick and injured.

Charity Hospitals Without Medical Schools.

In 1810 it was fully recognised that the support of charity was inadequate for the growing needs of hospital service; and from that date onwards the disparity between the supply of accommodation and the demand for it has steadily increased. Between 1860 and 1870 London was in dire need of additional hospital service, but the expense could not be faced. Before the war, in spite of the growth of existing hospitals, the creation of many small ones, and of innumerable cottage hospitals, the deficiency of provision was very evident. During the war attention was diverted from this question, but the public was educated, by force of circumstance, in the value of hospitals, by witnessing the rapid and successful treatment of injury and disease. The result is an appreciation on their part of the need for more accommodation to meet the increase in population.

If the resources of charity had begun to fail in 1810 and have not since been able to meet many of the demands made upon them, as is well known to the Poor-law and public health authorities, provision from that source is most unlikely to be forthcoming for the additions now contemplated. The Royal Commission in its recent report recommends a subsidy of £1,000,000 to clear some of the hospitals of debt, and further suggests a new mechanism for the collection of funds, but the Commissioners show no appreciation of the pressing need that exists for extension of our present hospitals and for the erection of new ones, nor do they differentiate between the great charity hospitals containing medical schools and those hospitals unhampered by the machinery of education. Hospitals with medical schools attached are exceptionally placed; upon them the entire fabric of medical education rests. They are entitled, therefore, to those privileges which all other educational institutions now enjoy in the matter of State support. The charity hospitals in London and throughout the country, used solely for the purpose of affording relief to the sick and injured, need no special consideration. When these institutions were founded the working classes were included amongst the poor. To-day they are as well off as, if not relatively better off, when in employment, than, any other class in the community, and it can scarcely be maintained that they require the help of charity to provide a medical service for them and their dependents. The guardians may to-day, as ever since the passing of the Poor Law Amendment Acts, make suitable provision for those few who are indigent in Poor-law or charity hospitals, being empowered to incur the necessary expenditure on their behalf. The hospital service of to-day is therefore kept up for the benefit of working classes, which everybody must rejoice to know are now in a position to provide a hospital service the like of which the world has never yet seen. These workers create industry, and the profits of industry are unobtainable without their help; they may justly claim that this service, perhaps the most essential for their welfare, shall be placed on a sound basis, and be supported in part by the industries they make a success.

The problems for immediate solution are: (1) the placing of the medical schools and their hospitals on a sound footing, and (2) the extension and modification of the existing hospital service to meet the needs of the working classes.

I do not propose to deal with the medical schools, for sooner or later the State, through the Education Department, must step in and place them in a position worthy of this country and of the magnificent system of medical education built up by and in great part at the expense of the teachers.

Hospitals for the Working Classes.

The first essential to the establishment of an extended hospital service is additional revenue. There is, of course, the money left in the name of charity, which the new hospitals would be entitled to claim, for the reason already given that the working classes until recent years were considered to be a poor and deserving section of the community. This money does not, perhaps, amount to more than £750,000 per annum for England and Wales. As the present cost of running our charity hospitals is over £1,000,000 per annum, nearly £3,500,000 would have to be provided from other subject who is not trying may give very discrepant readings. With the manometer again turned away, he may, by encouragement, be made to surpass his previous efforts, but when, after trying again whilst looking at the manometer scale, he will, if he is not really trying, not surpass the previous effort which he saw.

4. *Sustaining* 40 *mm. Hg* (*endurance or fatigue test*).—This test is performed as follows: the candidate is asked to empty the lungs, fill up, blow the mercury to the height of 40 mm. and hold it there without breathing for as long as possible, the nose being clipped. An essential adjunct to this test is the behaviour of the pulse, which is counted for every five seconds during the time that the mercury is sustained. As in the breath-holding test, the demeanour of the subject, the discomfort endured, and the resolution displayed are noted.

Before passing to a consideration of the results obtained it is necessary to consider each test in more detail and, if possible, to meet certain criticisms which may be made. As already indicated, the prime idea of such tests is to provide adjuncts to the clinical examination and not to carry out experiments of absolute accuracy with elaborate scientific apparatus requiring a difficult technique.

Vital Capacity.

The employment of a modified gas meter is open to the criticism that it opposes a resistance to the breathing out and gives inconstant readings. The resistance of a meter of good make is not large, but it is true that it is difficult to obtain a dry meter which gives accurate readings; the error to a steady rate of breathing out can be obtained by periodic testing. Mosso was apparently the first to use such an instrument in preference to the spirometer designed by John Hutchinson[2] and modified by various subsequent observers. Since the pioneer work of Hutchinson, much as been written as to the clinical value of the measurement of the vital capacity. One of the severest criticisms as to its value has been the great difficulty experienced by various observers in laying down what is to be regarded as the normal for any one individual. It is probably on this account that spirometry has not come into more general use. During the years (1846–1855) following the pioneer work of John Hutchinson, there was much work done upon the vital capacity of both males and females, and considerable discussion arose as to what factors should be taken into account in determining the normal standard. The literature for this period is given by Arnold.[3]

John Hutchinson considered the standing height as the principal factor determining the vital capacity, and worked out values based mainly upon this measurement. He found that the sitting height was of little value for this purpose. He considered that the vital capacity was also influenced by weight in relation to height, and also by the degree of mobility of the chest. He did not find any direct relationship between the circumference of the chest and the vital capacity. He states that the vital capacity is influenced by the bodily position in which it is taken, chiefly through altered mobility of the ribs, being greater standing than sitting; sitting than lying. It is influenced by age, increasing up to 35 and then decreasing to 65, and by sex, being greater in males than females. The taking of food modifies the vital capacity. Hutchinson found that the vital capacity varied with the occupation of the individual, being greatest in seafaring folk and military recruits, medium in police and firemen, low in sedentary workers.

Simon (1818) made observations upon the vital capacity. He set his standards by the standing height and gave figures which were somewhat smaller than Hutchinson's. He also made observations upon the influence of sex, but no observations on the effect of weight or age. He found that the capacity was influenced by the mobility of the chest as measured by upper chest expansion.

Fabius (1853) from his observations came to the conclusion that the standards for vital capacity could best be calculated from the sitting height and chest circumference. He found also that the mobility of the chest and the age of the individual had to be considered. He formed the opinion that a good deal depended upon the muscularity of the individual, the vital capacity being greatest in strong individuals, since they can breathe in and out more than weak men. He believed that the taking of food and constipation considerably diminished the capacity. He states that the administration of one ounce of lenitive electuary increased the vital capacity of his assistant by 250 c.cm. He found that the vital capacity was not decreased by pregnancy.

Wintrich (1854) made observations on 3500 healthy individuals, including 500 women, ranging from 6 to 90 years of age. He fixed his standards by the standing height, age, and sex. He found that consideration of the weight was of no practical value. He noticed also that in strong people the effect of bodily position was slight, but was striking in weak people. He found no effect on vital capacity as the result of pregnancy.

Schneevogt (1854) examined 300 healthy and diseased individuals particularly as regards the relationship between vital capacity and standing height, sex, and age.

Arnold (1855) reviewed the whole position and made many further observations upon his own account. He came to the conclusion that the vital capacity increases with the standing height. He could not agree that the measurement of the sitting height was of greater value than that of the standing height. He considered that the measurement of the chest circumference is one of value, particularly if a reduction of 5 cm. to 10 cm. be made for fat subjects and an addition of 5 cm. be made for thin ones. Weight was to be considered only in so far as it was influenced by height. He found a lessened capacity of 100–200 c.cm. after meals. He did not attribute importance to the degree of upper chest movement, believing that chest movement increases with height rather than with chest circumference. He therefore made different allowance for expansion at various heights. Age had a definite effect, but he found that the true value of age influence could not be sufficiently accurately determined. Arnold worked out figures for women; finding the vital capacity absolutely and relatively smaller than in man, he also found the measurement of chest circumference of less value than in man. He found no diminution as the result of pregnancy.

Despite Hutchinson's and Arnold's work spirometry did not come into general use—probably, as has been indicated, owing to the fact that it was found difficult to lay down an exact standard for an individual. From time to time observations of various authors have been published, but no attempt will be made to deal with such observations here.

In more recent years Bohr[4] has shown that the residual air of the lungs is increased during muscular exercise and that the vital capacity is correspondingly decreased—giving, as it is termed, a greater mid-capacity between the breaths. This is probably to allow more efficient circulation through the more distended lung during the period of exercise. On the other hand, it is obvious that the residual air cannot be increased above a certain amount without seriously affecting the efficiency of lung ventilation.

More recently Peabody and Wentworth[5] have again graded healthy individuals, both male and female, according to height. They give the figures shown below.

	Height.	Vital capacity.
Males	6′ and over 5′ 8½″ to 6′ 5′ 3″ to 5′ 8½″	5100 4800 4000
Females.. ..	5′ 6″ and over 5′ 4″ to 5′ 6″ 5′ 4″ or less	3275 3050 2825

They also show that the vital capacity is a function of the surface area, as calculated by Du Bois's formula.[6]

Dreyer (1919)[7] has applied the measurement of the vital capacity to the assessment of physical fitness. He finds the older methods of estimating the vital capacity inadequate, since they were based on the theory that definite relationships exist between age, height and weight, relationships which he believes do not exist. He publishes tables of the vital capacity based upon calculations from definite relationships which he shows to exist between the weight of the body, the sitting height, and the chest circumference. Full details are to be found in his recently published book on this subject.[8]

Vital Capacity during Disease.—In regard to the vital capacity during disease, Hutchinson pointed out the value of measurement in phthisis. He divided his cases into two classes, early and late. In the early stages he looked upon a diminution of 16 per cent. as suspicious, believing that unless the person examined was excessively fat he was probably the subject of disease. In late cases the deficiency may well amount to 2000 c.cm. or more. Various observers[3] (1846–1855) confirmed the value of spirometry in this respect (Simon, Fabius, Wintrich, Arnold, &c.). Wintrich believed that phthisis could be ruled out if the vital capacity was only diminished by 1/6, but believed that a positive diagnosis even without other signs could be made with a diminution of 1/5–1/4 the normal vital capacity. Arnold believed spirometry was of value not only in diagnosis but also in of accidental breakage of the thermometer in the mouth, the sheath will hold. There is nothing deleterious in the sheath, as rice paper, gum arabic, and paraffin wax only enter into its composition. Obviously the sheath must materially retard the correct recording of the temperature. Thus we found that an unprotected thermometer registered a rise in temperature from 73° to 100° F. in 18 seconds, the same instrument under similar conditions, but covered with a sheath, requiring 60 seconds. The inventor thinks the sheath should be found very useful to the busy physician passing from house to house during an epidemic. It would, however, be necessary first to determine that the retarded reading has no practical drawback.

UNIVERSITY TRAINING FOR WELFARE WORKERS.

THE Joint University Council for Social Studies, of which the object is the coördination and development of the work of university departments of social study, has issued its fourth report, entitled "*University Training for Welfare Work in Industry and Commerce.*" Since the publication of the Council's report on welfare training in 1917 much experience has been gained on the subject, and in January, 1921, a committee was appointed further to consider the subject and prepare a revised report. The committee consisted of members of the Council and of other persons of special knowledge and experience; representatives were appointed to it from the Factory Department of the Home Office, the Ministry of Labour, Employers, Labour, the Welfare Workers' Institute, and the Industrial Welfare Society. Owing to the illness of Prof. E. J. Urwick, chairman of the Joint University Council, Prof. F. Tillyard (Birmingham) was appointed chairman of the committee.

In the introductory section of the report the development of industrial welfare work is traced from its beginning at the end of the nineteenth century to its present position. Its definition in the Home Office pamphlet of 1919 is quoted as follows in the section devoted to the scope of welfare work in the report: "the provision by the management for the workers of the best conditions of employment . . . . including everything which bears on the health, safety, and general well-being and efficiency of the worker, while avoiding any interference with his private affairs." It is pointed out that the minimum requirements of various Acts of Parliament constitute the basis of welfare work, but its logical development includes canteens, recreational and educational schemes, medical departments, employment departments, thrift societies, &c. An essential for the success of welfare supervision is the confidence and support of the workers.

The summary of recommendations is briefly as follows: 1. Training for welfare workers should be provided by the Universities. 2. While no fixed standard of qualifications for training for candidates for welfare work can be laid down, it is essential that candidates should have had such previous education as to enable them to profit by the social study course. 3. Graduates desiring to qualify for welfare work should supplement their degree courses by specialised post-graduate study. 4. No definite age can be fixed for commencing welfare training, but a certain degree of maturity of thought and experience is essential. 5. While the length of training differs according to the previous qualifications of the student, two years is, as a rule, the shortest period necessary to cover both the academic training and the supervised practical work. 6. Candidates for welfare training should receive the customary training for social workers, with certain options in the second year. 7. The syllabus should include some treatment of the following subjects: industrial and social history, economics, social and political philosophy, health and hygiene, psychology, outlines of central and local government, elementary statistics, industrial law, business organisation, industrial structure and problems. 8. Students should have lectures and personal tuition by persons who have had welfare experience. 9. While regular work in a well-organised welfare department for an extended period forms an essential part of practical training, all students should have opportunities of practical experience which will give them an insight into the working of the public and social agencies of a modern community, and opportunities of association with normal conditions of working-class life. 10. Scientific study of the problems of industrial welfare being still in its infancy, facilities for advanced study of such subjects as industrial organisation, psychology, statistics, &c., should be provided at convenient hours with a moderate fee. 11. Students who satisfy the examiners in theoretical and practical work should receive the usual Social Study certificate or diploma, with a special endorsement as regards welfare work. 12. Bursaries should be provided in order that candidates without means should not be excluded from qualifying for welfare work.

The final recommendation is for the establishment of joint advisory councils composed of representatives of both employers and workers, as well as of welfare societies, in connexion with each university.

GAS DISEASE IN FISH.

THE great mortality, due to various causes, frequently caused in very hot summers in fish-breeding establishments is well known, and the mortality among fish from want of oxygen is very common in summer. It appears, however, that super-saturation of the water with oxygen may be a danger to fish life. The *Fishing Gazette* for August 27th directs attention to a condition occurring in fishes known in German as Gaskrankheit der Fische, and described by Prof. Marianne Plehn, of the Biological Experimental Institute of Munich. In ponds rich in plant life, especially those that contain a large amount of algæ, at times there is an enormous liberation of oxygen and the water becomes super-saturated therewith. A slight super-saturation is harmless to fish, but when it becomes considerable they suffer. More oxygen is taken up by the blood, and if a rise of temperature takes place the oxygen separates from the blood in the form of small bubbles, which may injure the gill vessels or may collect in the heart and so form a "gas embolism," which may cause death almost immediately. The gas bubbles may occur in the peripheral cutaneous blood-vessels and are easily seen in the fins; larger bubbles collect in the vessels of the head, in the mucous membrane by the mouth below the eyes, and with preference in the orbital cavities, so that the eyes may be made to protrude. If the fish is removed to cooler water the phenomenon disappears and it may quite recover. But if the blood is super-saturated with oxygen a fatal gas embolism may occur if the temperature rises. These observations seem to explain a phenomenon, noted by fish breeders, that a rich growth of algæ is injurious to the fry, and it is not improbable that the trouble is caused by an excess of oxygen. Other gases than oxygen may be absorbed from the water and be set free in the blood stream when the temperature rises or the pressure falls. Everyone is familiar with the discharge of nitrogen in the form of bubbles that may occur in too rapid decompression of a person who has been working in a caisson, sometimes with very serious or even with fatal results from gas emboli. Fish in water super-saturated with ordinary air under high pressure show the gas disease, but the gas bubbles liberated are chiefly nitrogen, which, however, are equally dangerous to life.

THE USE OF X RAYS IN OBSTETRICS.

ATTENTION was drawn in a recent issue of THE LANCET to the possible uses of X rays in ascertaining the position of the fœtus during pregnancy. An article in the August number of the *American Journal of Clinical Medicine*[1] exposes a further use of X rays in obstetrics—namely, in determining the various pelvic measurements with precision and without any inconvenience to the patient. The principle upon which this method depends is of course that the height of any object may be determined by a comparison of its shadow with that of another object of known length. The article cited consists of an illustrated description of the *technique*.

THE "BLACK PERIL" IN U.S.A.

STATISTICS of the Metropolitan Life Insurance Co. of New York show that the coloured population of the United States increased at a lesser rate during the last decade than ever before. The increase was in fact only 6·5 per cent. during the last ten years. While the birth-rate has remained stationary or thereabouts, the death-rate has been rising and has in some areas even doubled. The death-rate from tuberculosis among adolescent negro boys and girls is ten times as high as among whites of the same ages. Malaria, typhoid, and hookworm infection take a high toll in the Southern States, while syphilis does enormous damage among the coloured people. Among negro males between the ages of 15 and 35 years the homicide rate is approximately ten times that of whites.

A SIMPLE METHOD OF FIXING FINGER-PRINTS.

To the second (Sept.) issue of *Dactylography*, a bi-monthly journal, edited by Dr. Henry Faulds, dealing with identification by finger-prints, Mr. Leslie D. White has contributed an easy method of making finger-prints which he accidentally discovered while experimenting in photography. Expose a piece of self-toning printing-out-paper to the daylight until it becomes almost black, impress the finger on it for three seconds, and immerse the paper in a solution of potassium permanganate, when immediately the finger-print shows up black on a white background. Wash in water for two seconds, place in the usual hyposulphite of soda solution for half a minute, wash in water, and hang up to dry. The result is clear and permanent, and bears magnification. Mr. White claims as an advantage that the method does not soil the fingers, and there is no ink to clog the skin markings. Dr. Faulds adds a remark that the impressions look as if they would enlarge well for legal exhibits.

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[1] Roentgen Pelvimetry, by Dr. Edward E. Brostrom, of Los Angeles, p. 525.

TABLE I.

Initials.	Breath held.	Alveolar air after full expiration and full inspiration.		Alveolar air after holding breath.		Oxygen percentage content of bag at breakdown.	Time of breathing in and out of bag.	Remarks.
	Secs.	CO_2%	O_2%	CO_2%	O_2%		Secs.	
F. T. W. ..	72	5·40	15·32	6·65	10·95	7·99	200	Fit.
T. G.	70	5·63	16·29	6·61	12·30	6·35	255	,,
J. A. C. ..	68	4·54	16·30	7·19	10·10	5·00	280	,,
C. A.	78	4·66	16·37	6·36	13·33	8·78	230	Fit (slight stress).
A. S. C. ..	53	4·24	16·01	5·31	13·54	9·03	150	Tired.
O. G. L. ..	54	5·14	15·00	6·25	11·60	12·15	190	Nervous headaches.
J. A. W. ..	38	4·83	16·41	6·00	13·41	12·11	130	Fainted in air.
F. J. M. ..	36	4·14	17·20	6·18	14·33	13·14	132	,, ,,
T. A. C. ..	53	4·16	16·01	6·18	12·97	14·69	125	Dizziness in air.
L. G. B. ..	32	5·49	14·22	5·77	12·08	13·00	124	Ditto after accident.
T. C. N. ..	36	5·00	15·92	5·5	13·62	13·75	150	Unfit.
S. O. S. ..	32	5·42	15·53	6·60	12·46	13·52	90	Unfit; headaches.*

* After concussion in motor accident.

In addition to the measurement of the vital capacity, therefore, I prefer also to use in conjunction tests such as the breath-holding and 40 mm. Hg test, in which the performance of the individual depends upon the amount of the air contained within the lungs (vital capacity + residual air). It is to be anticipated that when the vital capacity is small and the residual air increased the performance will be poor, and conversely, when the vital capacity is large and the residual air minimal the performance will be good; I believe the above-mentioned tests prove this to be the case.

The Breath-holding Test.

The idea underlying this test primarily was that it would serve to give an idea of the subject's susceptibility to unpleasant sensations as the result of diminution of the oxygen-tension in the alveolar air. It was shown by Leonard Hill and the writer [14] that if a subject be asked to hold his breath, not knowing whether he has filled his lungs with air or with oxygen, the breath is held about two to two and a half times as long when oxygen is breathed in, as compared with the result when the lungs are filled with air. It was argued, therefore, that a man who could hold his breath long, until the alveolar oxygen-content was low, would probably be able to endure more easily the diminished oxygen-tension of high altitudes than one who more quickly suffered discomfort as the oxygen-tension was reduced.

By analysis of samples of the alveolar air taken by Haldane and Priestley's method at the beginning and at the end of the test it was found that certain subjects (found unfit) manifested signs of great discomfort with considerably less diminution of oxygen than did others who were fit. This is seen in the figures given in Table I., which are examples taken from observations made on 47 subjects. It was found that unfit subjects could not expire so forcibly as fit, and therefore that the true alveolar content might not be obtained, especially in taking the sample immediately after holding the breath. That there is such an increased susceptibility, however, especially to diminution of oxygen, was confirmed by observations made by breathing in and out of a five-litre bag, the carbon dioxide being absorbed. It was found that some subjects suffered discomfort when the oxygen percentage in the bag was reduced only to about 12 to 13 per cent., whereas others did not suffer until the oxygen percentage was reduced to 7 or 8 per cent. By calculation from this percentage a rough estimate of the height at which discomfort would supervene could be ascertained. For example, taking 16 per cent. as the oxygen-content of normal alveolar air at 760 mm. then a bag content of 11·5 per cent. corresponded to $\frac{760 \times 11\cdot5}{16} = 546$ mm. Hg = 9000 feet approximately as compared with a bag content of 8 per cent. which equalled 380 mm. Hg, or approximately 19,000 feet. It was found that this method provided useful information as to the height at which symptoms would develop and that it correlated well with the breath-holding test.

As already stated, the nature of the answer returned during the breath-holding test is important, the normal individual does not suffer from unpleasant sensations such as dizziness, giddiness, or nausea. The man unfit for flying was frequently found to be able to hold his breath but a short time and to give an abnormal answer as shown in Table II. As the result of experiment on successful officers chosen by

TABLE II.

Initials.	Vital capacity in c.cm.	Breath held in secs.	Remarks after holding breath.	Number of hours flying.	Remarks.
E.	2400	25	Made him fuzzy.	10½ (dual)	Giddiness and blurring of vision when flying at 6000 ft. Bag method broke down at 6000 ft.
Bo... ..	3800	19	Head inclined to swim.	6 (dual)	Has fainted three times below 5000 ft. With bag method nearly fainted at 3000 ft.
H. W. A. ..	3750	34	Headache and throb.	16 (solo)	Headaches—worse after one hour; has had concussion. By bag method, "oxygen-want" at 4000 ft.
P. S. M. ..	3700	36	Little dizzy; warm in head.	30	Goes dizzy and sick in air with bag method. Broke down at 4000 ft.
D. W. S. ..	3500	21	Sort of funny.	2 (solo)	Dizzy every time he went up.
H. G. G. ..	3700	40	Head bursting, especially at temples.	P.U.I.*	Bad pressure in head and discomfort, especially about 2000 ft.
S. B. M. ..	2800	30	Felt little giddy.	Just got wings.	Feels giddy and faint above 5000 ft. By bag method broke down at 4500 ft.
J. B. ..	3300	21	Little giddy.	8	Giddy above 1000 ft.
E. W. C. ..	3200	26	Uneasy.	25	Solo, feels faint over 2000 ft. By bag method broke down at 8500 ft.
V. P. J. ..	2700	15	Blood rushing to temples visible.	P.U.I.*	Gets headache and blood rushing to temples at 2000 ft. Was stood off flying; now permanently unfit pilot.
G. W. ..	3200	20	Pressure in head and temples.	Just got wings.	Above 5000–6000 ft. pressure in head and temples; blurring of vision. With bag method broke down at 5000 ft.
G. N. ..	3200	35	Queer in head.	P.U.I.*	Giddy during first flight; with bag method broke down at 4500 ft.

* P.U.I. = pupil under instruction.

The Milroy Lectures

ON

RESPIRATORY EFFICIENCY IN RELATION TO HEALTH AND DISEASE.

Delivered before the Royal College of Physicians of London

BY MARTIN FLACK, C.B.E., M.B., B.CH. OXON.,
WING COMMANDER, ROYAL AIR FORCE MEDICAL SERVICE.

LECTURE II.*

THE evidence I have to offer as to the importance of the respiratory efficiency of the individual is based upon results obtained upon flying officers. Modern service flying, particularly in time of war, imposes a great stress upon the airman; it became important, therefore, to devise simple tests which besides helping to elucidate the causes of flying strain, would aid in the efficient selection of suitable candidates for flying. Various considerations soon led me to the point of view that in many cases of flying strain the first breakdown in the bodily system was probably in connexion with the respiratory mechanism, which became defective in working, reacted unfavourably upon the efficiency of the circulatory and nervous systems, and thereby brought out signs of cardio-vascular or nervous debility. To test this point an examination was made of the respiratory systems of successful pilots (chosen by the executive), of pilots in need of rest but not of medical treatment, and of pilots broken down by stress and requiring medical attention.

NATURE AND VALUE OF THE TESTS EMPLOYED.

It is not proposed to give here the full results of such examinations, many of which have been reported elsewhere.[1] Rather will be given illustrative examples to show the value of the tests employed. In regard to the final form which these tests have taken, it is pointed out that they were designed to act as adjuncts to the clinical examination and therefore had to be of a simple character, to require but little apparatus, and to be capable of easy application. It is further pointed out that the success of the use of such tests depends upon the exactness with which the technique is carried out; otherwise results of but little comparative value are obtained. In the first place were measured the vital capacity and the power to hold the breath after full inspiration and full expiration. At the same time investigations were made on the tidal air, on the composition of the alveolar air before and after holding the breath, and on the susceptibility of the subject to diminution of oxygen-tension by letting him breathe in and out of a five-litre bag, the carbon dioxide being absorbed. With further work the importance of efficient expiratory capacity was indicated by a number of observations, as, for example, by the fact that pilots suffering from strain could not blow round rapidly the dial-hand of the modified gas-meter employed for measuring the vital capacity; although this instrument offered but little resistance, the endeavour made such subjects flushed and out of breath.

In consequence the test for expiratory force was devised. For a time observations were also made on the power to draw up mercury by an inspiratory movement—but these were early found to be of little value, and were abandoned, since it was difficult to rule out the "sucking power" of the individual as distinct from "inspiratory force." Later the supplemental air was determined by asking the subject to breathe in quietly and out quietly as in normal respiration, and then to blow his reserve of air through the meter. The complemental air was determined by a reverse process—namely, after a quiet inspiration the sucking in of as much air as possible through the meter. Owing, however, to the difficulty of cleansing the tubes, &c., the determination of the complemental air was abandoned as unhygienic. It was found, however, that unlike the supplemental air, the complemental air was not affected, except possibly in one case of extreme fatigue.

SPECIAL ROUTINE TESTS.

Measurement was also made of the time during which the subject could, after full expiration and full inspiration, sustain a column of mercury at 40 mm. with the breath held and nose clipped, the pulse being counted during the process. By a comparison of the results obtained the following tests came into routine use in the Royal Air Force, as affording information of value: (1) Vital capacity; (2) holding the breath; (3) expiratory force; and (4) sustaining 40 mm. mercury (endurance or fatigue test).

These tests were employed in conjunction with tests for circulatory efficiency and nervous stability. For the former were employed: (1) The pulse-rate sitting, after standing up, and after regulated exercise (lifting the body-weight on to a chair five times in 15 seconds), and (2) measurement of the systolic and diastolic arterial pressures. For the latter were employed the tests introduced by Mr. Arthur Cheatle: (1) Observation of knee-jerks and other reflexes; (2) observation of presence or absence of tremor of eyelids, tongue, and fingers; (3) observation of the ability of the subject to stand steadily on one leg for 15 seconds with eyes closed and hands to side; and (4) the ability of the subject to raise from table to shoulder level and replace again an unstable rod placed on a piece of board.

The technique laid down for the special tests referred to above is as follows:—

1. *Vital Capacity.*—The candidate sits opposite the spirometer, the dial being so placed that he cannot see the readings. Neck, chest, and abdomen must move freely. With the nose clipped he is directed to fill his lungs to their maximum capacity, and then to expire as completely as possible at a fair rate through the meter. Several mouth-pieces must be kept in disinfectant and the mouth-piece changed for each candidate. Preferably five observations should be taken and recorded in litres and fractions of a litre.

2. *Breath-holding.*—The candidate is asked to expire audibly as deeply as possible and then to fill the lungs fully (but not to absolute distension) and to hold the breath with the nose clipped. The reason for the audible expiration is that it has been observed that some subjects suffering from stress have lost the power of expiring fully, and a marked shortening of time taken to expire as fully as possible may afford an indication of such loss of power. The time for which the breath is held is noted, and the candidate is then asked the reason for giving up. This should be recorded. The candidate must not be told the significance of the test, nor the time he is expected to hold his breath. On no account may he time himself. The demeanour of the candidate during the test is noted, also the degree of discomfort endured and the amount of resolution displayed.

Reason for Ceasing.—Normally an answer such as "I had to give up," "I felt I should burst," "I wanted to breathe," is given. Subjects suffering from marked disability at altitudes almost invariably return an abnormal answer—e.g., "I became giddy or dizzy," "Things went blurred," "The blood rushed to my temples," "I began to feel squeamish." Where the answer is deemed not to be normal the candidate's own words should be given.

3. *Expiratory Force.*—The candidate is instructed to hold his lips around the mouth-piece with the thumb and forefinger of each hand, at the same time pressing against the cheeks so that these take no part in the performance of the test. After drawing in a full inspiration through the nose, he is told to blow the mercury steadily as high as possible, being sure to work the abdominal musculature during the process. On no account must the candidate be allowed to swing the mercury up violently, and in all cases the height of any initial swing is to be disregarded. The reason for holding the cheeks is that it has been found that in some cases the mercury may be forced up to abnormal heights by the action of the cheek muscles. The number of mm. Hg blown is recorded. The first test is made with the scale turned away. The candidate is then asked to repeat the performance while looking at the column. The resolute candidate may, under these conditions, considerably exceed the effort which he did not see, in this way affording some indication of his mental make-up. On the other hand, a

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* Lecture I. was published in THE LANCET of Sept. 17th, p. 593. Lecture III. will appear in a coming issue.

ON THE VALUE OF APPARATUS AND TECHNIQUE IN MEDICAL RESEARCH.[1]

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IN all inquisition into the causation of pathological events, and into the efficacy of treatment—in other words, in all medical research—adjudication by empirical methods—i.e., by observation unaided by apparatus and technique—should be superseded by adjudication undertaken with the help of apparatus and technique.

What Empirical Methods Promise.

Empirical methods take cognisance only of what comes, without our going in quest of it, into our field of experience; and they take into account only that knowledge which is brought to us directly by our five senses. In other words, in empiricism we have that which unregenerate man most desires: an evangel which proscribes all delving below the surface of things, all going in quest of knowledge, all employment of apparatus, and all troublesome technique—in short, a gospel which holds out promise of knowledge unpurchased by arduous labour.

In reality the promise that is held out is merely deceptive. It is quite true that so long as inquiry is confined to observing and noting the succession of events in individual cases it can proceed with a minimum of intellectual effort. But if, afterwards, the observer should wish to achieve something that will endure: if he wants some generalisation—some chain of cause and consequence—to come to light, then he will find out that this means severe intellectual exertion. He will very soon then come to know how difficult a thing it is to assemble and sift and complete one's observational data, and to procure a proper complement of control cases. And presently, also, he will discover that when, at the completion of a cumulative experiment all the fallacies of empirical observation, and also those of statistical or experiential evaluation have been allowed for, there will generally be left over very little of assured knowledge—often so little as not to be worth the pains of gathering in.

Where they Lead into Error.

We may take the case of an experiment undertaken for testing the efficacy of a therapeutic agent:—

(1) Already in the initial operation of selecting clinical material for experimentation empirical clinical methods will mislead. Instead of their furnishing cases which are all in fundamental respects alike, they furnish a congeries of more or less heterogeneous cases.

(2) Again, in the next operation, that of giving to each of the cases which is to receive treatment an equal dose of the therapeutic agent, empiricism may involve us in error. We may easily be led astray if we assume from the fact that we administer the same dose to each patient that the same dose is in each case absorbed and brought into operation.

(3) Again, the doctrine that judgment must be based always on overt signs will, in judging the patient's condition after treatment, often mislead us. Abatement of symptoms may, for example, be registered as definite cure, and death from intercurrent causes may be ascribed to inefficacious treatment.

(4) Lastly, the principle that we must in every case judge by criteria registered directly by the senses will not seldom bring us into conflict with that principle of logic which prescribes that we should in experimentation—so as to leave no loophole for the intervention of other causes—fix our attention upon the immediately sequent and directly affiliated event, and should refrain from vaulting by, let me call it, a *saltus empiricus*, directly from the application of a remedy to some distant and perhaps doubtfully affiliated event.

To every man who has a conception of the complexity of nature, every *saltus empiricus* is distasteful. Such a man will wish, in investigating chains of causation, to search in every case only for the next following link. In other language, he will wish to progress only from step to step, never letting anything hustle him off his *passus scientificus prudens*.

The man who lives no life within the brain, and has no conception of the complexity of nature—"your plain, practical man" as he self-appreciatingly styles himself—is always hankering after the procedure here called the *saltus empiricus*. He tells you—your statistician aiding and abetting him—that this procedure should, whenever possible, be employed, and that it is nothing but simple good common-sense to eliminate from consideration intermediate links in a chain of causation.

Subsequent Logical Operations.

Let us now turn to the subsequent logical operations, and see how, by the help of these, the empiricist—the man who believes in the passive observation which dispenses with inquisition and apparatus and technique—tries to extricate himself from the series of errors into which that policy leads him. It is familiar matter that he trusts here to cumulative experimentation with experiential or statistical evaluation.

By *cumulative experimentation* would be denoted that form of experimentation which has already been in question: that form where a group of treated and untreated cases are compared. By *experiential evaluation* would be denoted the procedure of keeping a rough account in one's head of the treated and untreated cases, taking into consideration in each case, so far as possible, all the significant points. By *statistical evaluation* would be denoted the procedure of arbitrarily selecting one particular criterion, and counting the exact proportion of cases in each group which satisfy and fail to satisfy it.

It will be worth while considering whether we can by these means arrive at trustworthy generalisations with respect to causal connexion or therapeutic efficiency. That is in reality to raise the whole question of the value of *cumulative experiments, experience,* and *statistics* in medicine.

We may begin by distinguishing two types of medical treatment. The *first* is one which may be said to float as an ideal vision before the eyes of us all—doctors and quacks and laymen. It is that in which *specific cures* are brought into operation after the method of the penny in the slot. The *second* is what we may denote *general medical treatment*.

The former type of treatment may be said to have taken scientific shape, on the one hand, in antitoxic serum-therapy, and, on the other hand, in the specific *chemo-* or *pharmaco-therapy* of Ehrlich. In either case we bring into operation therapeutic agents which are *monotropic*—i.e., agents which have a highly *specific neutralising* or *inimical affinity* for the particular pathogenetic chemical element we desire to combat.

Testing by Cumulative Experiment.

With regard to testing the efficacy of such *curative agents* by the method of cumulative experiment we may usefully note the following:—

(1) When we employ these agents we limit ourselves to our one therapeutic agent, and we give each patient treated the same dose, or series of doses.

This tying ourselves down to using only one therapeutic measure, and this strict adherence to schedule, furnish the *sine qua non* for the comparison of a group of treated with a group of untreated cases.

(2) In pharmaco-therapy we almost invariably attack either a microbe or a microbic toxin—that is, we take as our chemical target an element alien to the body. It is a direct corollary of this that the organism of the patient will (we, of course, assume our chemical agent to be really monotropic) be out of our line of fire and untouched.

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[1] Being the substance of an argument in the preface to the second [illegible] of Technique of the Teat and Capillary Glass T[illegible] [illegible] and Company, Ltd., 1921. Price 42*s*.)

estimating the degree of infection, pointing out that it is of particular value when no other signs can be found as enabling correct early treatment to be adopted. Recently Dreyer and Burrell (1920)[9] have again drawn attention to the value of spirometry in connexion with the early diagnosis of phthisis.

Observations as regards vital capacity were made in a number of other conditions—e.g., bronchial catarrh, acute pneumonia, empyema, emphysema, asthma, hypertrophy of liver and spleen, ascites, scrofula, &c. (for literature see Arnold).[8] Generally speaking, it may be said that the vital capacity was found to be diminished in all diseases in which the airways become filled with secretions, and in conditions in which the lung is compressed. In emphysema the vital capacity is diminished, particularly in relation to chest circumference (Arnold).

Bohr[4] has shown that the residual air is increased in emphysema, the mid-capacity of the lung being increased. Siebeck[10] has confirmed this and shown that a similar condition appertains in decompensated heart cases, an observation also made by Rubow.[11]

Peabody and Wentworth[5] have shown that cases of heart disease, which become dyspnœic more readily than healthy subjects, suffer from a diminished vital capacity. They find that this diminution accords well with the clinical condition. They regard the dyspnœa as being due to the inability of such cases to increase the depth of respiration in normal fashion. In their opinion, any condition which limits the possibility of increasing the volume of air breathed per minute is a very important factor in causing the production of dyspnœa. They express the opinion, therefore, that the determination of the vital capacity offers a clinical test as to the functional efficiency of the heart, since compensated cases who do not suffer from dyspnœa have a normal vital capacity according to their method of calculation.

In my experiments the measurement of vital capacity was used in conjunction with other tests to see whether any functional relationship existed between such tests in successful and unsuccessful officers. With respect to fixing a standard it has to be borne in mind that in the earlier days of the war officers engaged in flying were, generally speaking, not chosen below a certain height and standard of physique, owing to their inability to manipulate machines, nor above a certain height and weight, owing to their inability to accommodate themselves to the relatively small machines and to the undesirability of having heavy individuals for flying purposes. With the first measurements it soon became obvious that officers who could not fly high possessed a small vital capacity compared to those who were successfully carrying on. This was particularly marked in those who were suffering from flying strain; in such the vital capacity was found to be what might be termed absurdly small, often from 2500 c.cm. to 3000 c.cm. instead of approximately 4000 c.cm. usually found in the fit flying officer. It is to this falling away of the vital capacity as a result of exposure to strain that I wish to draw particular attention. Having discovered its existence I endeavoured to find out where exactly the discrepancy lay by taking observations of the tidal air, complemental, and supplemental air. At first I tried to make relatively accurate experiments by means of prolonged observations with a mask and inspiratory and expiratory valves. It was found that the wearing of a mask tended to alter the breathing of the subjects, and it was difficult to overcome the resistance of the valves. Moreover, subjects suffering from strain did not care about such apparatus and sometimes objected to its use. For the measurement of the complemental and supplemental air, therefore, it was found simpler to ask the subjects to endeavour to breathe as fully as possible after making a normal quiet inspiration or expiration. After about 20 observations I satisfied myself that there was little or no falling away on the inspiratory side—the complemental air averaging in all between the standard figures of 1500–2000 c.cm. or over. On the other hand, the measurement of the supplemental air gave results which showed that in officers suffering from strain the supplemental air is generally decreased, especially in those who have been engaged for a long period in high flying (21,000 feet), in whom it may measure no more than 500–800 c.cm. Further observations quickly confirmed the view that in officers suffering from strain the diminution of the vital capacity was due to their inability to expire sufficiently to empty the lungs to their full capacity. This was confirmed also by the observations that it was difficult for such officers to blow forcibly through the spirometer, or to blow up a five-litre bag. I do not think attention has been drawn to this point before, but it is undoubtedly one of considerable importance. The fit individual is possessed of a good vital capacity because he has the power adequately to empty his lungs by expiration. This power also is not greatly reduced by bodily strain. In the unfit individual bodily strain does affect the capacity. The diminution of the vital capacity of an individual leads to deficient ventilation of the lungs and accounts for the condition which I have observed in tired pilots, and which has also been recorded by Corbett and Bazett[12]—namely, that instead of responding to muscular effort by an increased depth of respiration they quickly become breathless and pant in short ineffective gasps as the result of exercise. Officers themselves are aware that they now easily get out of breath on the ground, while in the air they begin noticeably to breathe deeply at altitudes at which previously they were unaffected, so far as they themselves had noticed. Observations made upon candidates who have never flown have convinced me that such respiratory inefficiency is not confined to the flying officer. It is quite common to meet among candidates for aviation individuals whose respiratory capacity is small. Such candidates have usually led sedentary lives and indulged but little in health-giving exercise.

The case may be stated briefly as follows. The normal fit individual is possessed of sufficient expiratory force to keep his residual air near the physiological minimum (say, 1000 c.cm.). In the unfit person, owing to lack of good expiratory tone, the vital capacity becomes decreased and the residual air increased, with the result that the ventilation capacity of the individual is greatly decreased. This can be seen by a consideration of the following figures: Suppose a fit man has a vital capacity of 4000 c.cm. (ventilation capacity of 4 to 1); when as the result of strain or unfitness his vital capacity is reduced to 3500 c.cm. his residual air increases to 1500 c.cm., and his ventilation capacity is now only 2⅓ to 1; a reduction of the vital capacity to 3000 c.cm. and an increase of the residual air to 2000 c.cm. gives a ventilation capacity of 1½ : 1, instead of 4 : 1. As already stated, such vital capacities were frequently found and observation showed that they increased with treatment, rest, and exercise. I have had many examples of this. Recently I saw a flying officer who, on his return from Egypt after a considerable period of high flying followed by strain, had at his first examination a vital capacity of 2200 c.cm. Six months later, as the result of rest and exercise, it had increased to 5600 c.cm.

In my next lecture I shall give other examples of the increase of vital capacity by special expiratory exercises. Not only is an increased residual air a disadvantage when exercise is taken, but when the body is resting a large residual air necessitates a greater inspiration to bring about adequate ventilation of the lungs. It appears quite probable that after a time ventilation becomes relatively inadequate, so that an anoxæmia in the arterial blood results, the respiratory and other centres in consequence becoming more sensitive to stimulation by the CO_2 tension of the arterial blood. It may even be that in certain cases the CO_2 tension of the arterial blood is increased; Poulton and Campbell[13] have found that this condition occurs in cases of heart disease and it appears possible that a similar state of affairs may be found in unfit people who are respiratorily deficient in the way I have described. Such a state would readily explain the reason of the breathlessness on exertion, and the greater susceptibility to diminishing oxygen-tensions in the lung (see Table I.). It would also conduce to a hyperexcitability of the central nervous system generally.

a therapeutic agent which exerts a specific and immediate or quasi-immediate result. The *second* is the case where we apply as an element of general medical or surgical treatment a code of procedure which makes so great a difference in the results as to exclude the fallacy of chance; and where, further, the fallacy of superior professional skill being enlisted in favour of the one or other method is excluded, as it is where man after man has made a comparative trial of the two methods.

Here a favourable or unfavourable verdict upon a therapeutic measure can go forth if the procedure under trial is competent to swamp the effects of all the measures employed in association with it, and to dissever in a manifest manner the group of cases which have received only general treatment from those which have received also the special treatment.

Again, in respect to trial and error experiments for the scientific betterment of therapeutics, the conditions in the domain of general medicine are infinitely less favourable than in pharmaco-therapy. In the latter we have, so far as our therapeutic agent is concerned, to consider only modifications in its dosage and eventual modifications in its chemical structure. In general medical treatment—for here we apply a multiplicity of procedures—we have an infinite number of variables, each one of which would be competent to modify the result. We can, therefore, here never hope by cumulative clinical experiments to do anything appreciable for the betterment of treatment.

Still in other respects—respects which materially affect experiential and statistical evaluation—are the conditions in general medical treatment different from those in pharmaco-therapy. We proceed in pharmaco-therapy on the conception that all the phenomena of disease proceed from a single cause and are connected up single file like the links in a simple chain of causation. Conformably with this mental picture we expect the retrenchment of the original pathogenetic agent (microbe or toxin) to annul the whole train of pathological phenomena and utterly abolish the ailment. That is what we have in mind when we speak of a *cure*.

Cures thus understood furnish material which satisfies the requirements of statistics. These are satisfied, first, in the respect that we have in *cures* (i.e., in the purging of the organism from a pathogenetic element) data which are quite definite and clean cut, and easy to appraise; and, secondly, in the respect that we have in the kind of cures here in view (those affected by pharmaco-therapy), effects which are directly engendered and attributable exclusively to the agent we bring into operation. The importance of this for the evaluation of therapeutic measures will presently appear.

Conception of Sanation in Place of Cure.

In general medical treatment we proceed upon a different and unquestionably profounder view of the processes of disease. Instead of regarding these as proceeding from a single cause and ranged up in the form of a single chain of causation (a picture in reality applicable only to the initial events in any disease), we now perceive that each morbid phenomenon is the resultant of many causal factors, and that in consonance with this our therapeutic measures must be directed against a multiplicity of pathogenetic forces.

In a word, we now put in the place of the conception of *cure* the conception of *sanation*. This is indicated by a change of vocabulary. We tacitly drop the term *cure* and employ instead the terms *clinical improvement*, *recuperation*, *recovery*, *convalescence*, and *restoration of health*.

This change of programme makes, when we come to evaluation, an important difference; for the form of clinical achievement at which we now aim is one which does not lend itself to statistical evaluation.

False Conclusions from Individual Experiences.

Clinical appraisement in connexion with general medical treatment conducts also into other error. It not [illegible]ently leads us to draw from individual e[illegible] false conclusions. When a patient gets well we are, without regard to the circumstance that our treatment may have been ineffective or hurtful, prone to conclude that treatment has not only in the particular case been effective, but also that it will be universally useful. Again, where the clinical event disappoints expectation, we are, without regard to the circumstance that the therapeutic agent may have perfectly accomplished its mission, prone to regard that agent not only as having in that particular case been useless, but as one which will on all occasions be useless.

The reason for such misjudgments is to be found in that fact that we here judge by contingent and indirectly engendered effects.

It will perhaps be profitable to show, first by an example culled from our domestic surroundings and then from one supplied by medicine, how judgment by contingent and indirectly engendered effects conducts into error.

When our electric bells have refused to function, and the filling of the battery with water has made them ring, we might, if we knew no more about the mechanism of those bells than the ordinary man does about the body, quite well suppose the pouring in of water to produce without other intermediation the ringing of the bells. And, again, if the filling up of the battery failed to make the bells ring, we might quite naturally pronounce this pouring in of water a quite futile procedure.

Both kinds of false inference would clearly be due to our neglecting to investigate the direct effect of pouring in water, and arrogating to ourselves the right to draw by experiential or statistical evaluation conclusions from remote effects.

Arrest of Hæmorrhage as an Example.

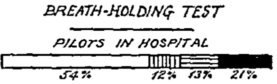
A comparable example in medicine would be adjudicating by clinical effects upon the efficacy of measures for the arrest of hæmorrhage. Sustained bleeding may be due (*a*) to delayed blood coagulation; (*b*) to the unsatisfactory quality of the fibrin meshwork; or (*c*) to deficiency of red corpuscles—these last being required to fill out the meshwork of fibrin and convert this into a sufficiently massive tampon.

This once comprehended, it becomes clear that when arrest of hæmorrhage—or, to be more precise, prompt and durable hæmostasis—has in this or that instance followed a particular therapeutic intervention, that gives no warranty for assuming that the result has here (any more than in our last example) been directly produced by the procedure adopted, nor yet that this will prove a method of general utility. Nor, again, when a particular therapeutic intervention has failed to arrest hæmorrhage does that warrant the conclusion that the method in question has failed in its appointed task, or that the accomplishment of that task will never be contributory to the arrest of hæmorrhage.

With regard to such misjudgments based on individual experiences the accepted statistical doctrine teaches that all false judgments are quashed when we collect enough cases. That is false doctrine. When cumulative experiments are undertaken with heterogeneous clinical material our misjudgments need never be reversed. In fact, erroneous verdicts will almost inevitably be pronounced. If, for example, we administer to a group of undifferentiated cases of bleeding—a group in which by chance each of our three varieties of bleeding is equally represented—a remedy which is sovereign for one of those varieties of bleeding, our remedy would be pronounced unsatisfactory as giving success only in one case out of three. And if in our experimental group the class of case for which our remedy was appropriate was unrepresented, or only very scantily represented, the statistical conclusion would be that that remedy was utterly useless.

And—let this be observed—we should, failing the application of laboratory methods for differentiating the different kinds of bleeding, never learn whether the appropriate variety of bleeding was included in our experiment, and in the case where all varieties were included in what proportions the several kinds were included. We should, in fact, be confronted with the executive the normal time was fixed at 60 seconds approximately; in the tired pilots the time was found to be 51 seconds; in pilots who had to be taken off flying for flying strain, 49 seconds. Besides giving indication as to the likelihood (when the time is short and an abnormal answer is given) of the subject suffering from oxygen-want at altitudes, the breath-holding test may also be taken to give indication as to the stability of the respiratory centre to diminished oxygen-tension. Experience with the test shows that great instability of this centre is also accompanied by instability of the vaso-motor and coördinated centres and may also, in many cases, reflect instability of the nervous system generally. The test is also of psychological value, since observation of the subject during the test gives an indication of the resolution with which he will carry on under conditions involving gradually increasing discomfort. The value of the breath-holding test in aiding in an assessment of flying capacity is indicated by the following chart (Fig. 1). The fit experienced pilots numbered 52 and were chosen by the executive; the short-service pilots had suffered from no disability in the air and were anxious to obtain short-service commissions; the civilian pilots had flown on an average 800 hours, had suffered from no disability in the air, and were applying for licence to carry passengers and goods. The stressed pilots (home service) were returning from active service overseas and were tired but not in need of medical treatment, whereas the stressed pilots (off flying) were being treated in hospital or performing ground duties only. The pilots in hospital were not selected and, although for the most part suffering from strain, included subjects who were suffering from temporary illness such as influenza or conditions requiring surgical treatment. This accounts for the percentage (21 per cent.) who could hold their breath the normal 70 seconds or over. (Fig. 1). The next figure indicates that among 79 pupils who qualified but broke down from medical causes, including acute infectious diseases, within one year of acceptance, there is a tendency for the breath-holding capacity on admission to be on the small side. From actual experience it is known that those who fail medically display a small breath-holding capacity at the time of failure. The figures indicate that there is ground for the view that it is advisable to admit candidates with a breath-holding capacity approximating to that of the fit flying officer as selected by the executive and to give special consideration before admittance to those whose breath-holding capacity approximates to that of the tired or broken-down pilot (Fig. 2).

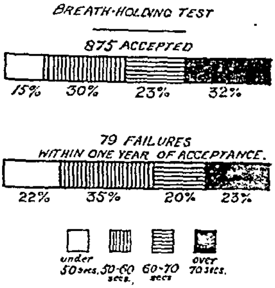
FIG. 1.



The Test for Expiratory Force.

At the time that this test was first employed in the examination of the flying officer I did not know that John Hutchinson[2] had already used the test. As the result of his observations John Hutchinson expressed the opinion that "a dynamic instrument like the hæmodynamometer would be useful to those whose duty it is to examine men for certain public services, as for the army, navy, police, fire-brigade, &c.; with care it would often detect disease." Hutchinson was of the opinion that measurement of the inspiratory power was more valuable than that of the expiratory power, which he found more apt to vary. It is to be noted that he measured such forces through the nostrils. In this connexion I must observe that I also tried this method, but found that I had to give it up owing to the discomfort induced in many subjects, who objected most strongly to this form of the test. For this reason, therefore, the method of performing the test in which movement of the lips and cheeks is prevented is still used, and despite criticism on the point, it is on the whole satisfactory. That is to say, that it is desirable that the expiratory force in man shall at least reach the minimum standard of 80 mm. Hg, preferably the average of 110 mm. Hg, otherwise a cause should be sought for the inefficiency, and, generally speaking, it may be assumed that bodily endurance is not likely to be good. In regard to Hutchinson's conclusion as to the superiority of the inspiratory force, it is interesting to note that this was formed on account of the greater variability of this power. In my opinion, it is this great variability which lends value to the test for expiratory force. Hutchinson's figures for Freeman the giant show that, as he became more and more ill with phthisis, his expiratory force declined more than did his inspiratory; there was a decline of 38 mm. Hg in the former from 127 to 89 mm. Hg and of 60 in the latter (160–100 mm. Hg). I have noticed that my own expiratory force is greatly lessened by an attack of "influenza," and returns to normal as my physical condition improves. Hutchinson gives the variation of expiratory force from 50–250 mm. Hg, observing that it was high in the Thames police, sailors, firemen, and pugilists, less in paupers and gentlemen, low in pressmen, and lowest in compositors. It was also low in cases of disease. The various values which I have found in regard to this test are given later, the standard for fitness being set upon specially selected officers.

FIG. 2.



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(This lecture will be concluded in our next issue.)

animals. The quantity of virus necessary to give this degree of immunity was found to be less than 1/100,000 of the quantity required to cause the disease. (Tokio Ijishinshi, No. 2204, Nov. 20th, 1920.)

This important discovery threw new light upon prophylactic inoculation for many of those acute infectious diseases, specific treatment of which had till then been thought impossible. I determined to apply Dr. Kusama's method of prophylactic inoculation to measles and other diseases. I intended to begin with measles, as a comparatively mild disease which no one can escape, but unfortunately for my purpose, all five of my own children had already had the disease, and I was unable to procure others. Just at the time a typical scarlet fever patient came into my hospital. I made up my mind to carry out a test of prophylactic inoculation against scarlet fever, using my children as the experimental objects.

Previous Experimental Work.

Before the prophylactic inoculation in the human body against scarlet fever can be undertaken, the distribution of the virus in the human body and its virulence in the particular epidemic, must be determined. It is necessary to find out the minimal morbid dose of the blood or secretions which contain the virus. Judging from the literature, experimental results have differed according to the intensity of the virus in various epidemics. Grünbaum, Cantacuzene, Bernhardt, Landsteiner, Levaditi and Prasek, Levaditi and Danulesco, and Koga obtained blood or secretions from the throat or tonsils of scarlet fever patients just before the appearance of the eruption, and smeared them over the throats of, or injected them subcutaneously into, gorillas or monkeys. From the results obtained there is no doubt that the blood and secretions named contain the virus. The quantity of blood used was more than the minimal morbid dose. Bernhardt produced the disease in a monkey with 0·25 c.cm. of fluid from a vesicle of the skin taken from a patient four days after onset of the fever. There have been no experiments on human beings, and consequently the minimal morbid dose for man is not known. It is probably less than 0·1 c.cm. It was hardly practicable to determine the minimal dose of the virus of this year's epidemic before the quantity of the prophylactic dose was determined. Therefore, according to the results obtained by previous investigators on monkeys, I used in the following experiment 0·1 c.cm. as the minimal morbid dose of the virus of the present epidemic.

I.—*Prophylactic Inoculation.*

Materials.—Blood obtained from the median vein of arm of a scarlet fever patient S., a girl of 11 years old. The past history and present illness described in brief are as follows: General health had been always good; she had had measles and had been vaccinated once; no hereditary disease (tuberculosis, syphilis, &c.). Present illness began Nov. 24th, 1920, with sudden chills; examination on admission to the hospital the next day showed bright scarlet rash over the vault and arch of the mouth, both tonsils swollen, the root of tongue coated yellowish-white, and tip of tongue bright scarlet; the rash seen faintly over face, neck, and chest. Temperature was 39·6° C. On the third day the rash became more distinct, and spread over the inner sides of the thighs; the fever rose and patient became delirious. On the fourth day the rash extended over all the extremities; distinct strawberry tongue; face bright scarlet except around the mouth. These conditions continued during fifth and sixth days, and on the eleventh day scaly desquamation began. This patient had bronchitis and the fever recurred, but in a few days the temperature returned to normal.

The blood was taken on the sixth day of illness. The sterile syringe contained 2 per cent. sodium citrate in physiological salt solution, and the same amount of blood was taken from the median vein of the arm. The blood was transferred to four test tubes containing a fixed amount of 1 per cent. sodium citrate solution, c.cm. of the diluted solution in the test tubes contained 0·0001 c.cm. of the patient's blood. The blood was thus diluted 10,000 times with the citrated salt solution. This dilution was used as the material for injection. The experimental objects were five of my children, all in good health; they had all had measles and had been vaccinated. The eldest daughter had erysipelas at 9 years old, but no other serious diseases.

Experiment.—On Nov. 29th, after shaking the tubes containing the diluted blood so that the virus would be equally distributed in the solution, certain amounts of the solution were injected subcutaneously in the interscapular regions. The ages of the children and the amounts of diluted blood injected were as follows:

Names.	Ages.	C.cm. injected.	Names.	Ages.	C.cm. injected.
Girl E.	10	1	Girl H.	6	1
Girl A.	8	1	Boy J.	3	0·5
Boy I.	7	1			

From time to time during the next three weeks I carefully examined their temperatures, urine, throats, and general symptoms. In all cases there was no local reaction in the shape of swelling, redness, or pain, and absolutely no general symptoms (e.g., fever, pharyngitis, albumin in urine). The two elder girls went to school and the rest of the children played around the house as usual. The above experiments prove that sufficient dilution of injected blood renders it powerless to cause the disease in human subjects. In order to discover whether immunity was conferred by injections I determined to try an infection experiment with proper material; on Jan. 4th, 1921, I obtained a scarlet fever patient through the kindness of Dr. Kurabe, and made the following infection experiments.

II.—*Infection Experiments.*

M., a schoolboy 17 years old, whose general health had been good; he had had measles and had been vaccinated; no serious or hereditary disease. The present illness began on Dec. 31st, 1920, with sudden attacks of shivering. Examination on Jan. 5th, 1921, showed eruption all over the face, except around the mouth, and over the body. Tonsils and tongue showed typical picture of scarlet fever; temperature was 39·6° C. and pulse 120; delirium and muttering at times. On Jan. 5th, at 1 P.M., the blood was taken as in the previous experiment, and diluted with citrated (1 per cent.) physiological salt solution so that 1 c.cm. of the final dilution contained 0·1 c.cm. of blood. The above dilution was injected subcutaneously into four of the children in the interscapular region.

Names.	C.cm. injected.	Names.	C.cm. injected.
Girl E.	1·5	Boy I.	1·5
Girl A.	1·5	Boy J.	0·6

I did not know how much of the virus of the present epidemic of scarlet fever was necessary to infect a human being. To determine the minimal morbid dose in man is impossible, and as Bernhardt infected a monkey with 0·25 c.cm. of the fluid obtained from a skin vesicle, I presumed that 0·1 c.cm. would probably infect a human being, so I took 0·15 c.cm. of the blood for the experiments. During the next three weeks I again carefully observed the children as before. There were no local reactions and no general symptoms.

The above experiments prove that injection of 0·0001 c.cm. of the blood of a scarlet fever patient into children produces no reaction, but confers a degree of active immunity sufficient to prevent occurrence of the disease on introduction of the virus contained in 0·15 c.cm. of blood.

Clinical observation and animal experiment show that scarlet fever is spread directly or indirectly by the secretions of the patient's nose and mouth. In natural infection the virus transmitted from the one to the other must be very minute. From the immunity derived from an injection of 0·15 c.cm. of blood given subcutaneously it might safely be assumed to prevent ordinary infection. I therefore made the following experiments in imitation of natural infection.

Our task of adjudication will hereby be facilitated. For clearly the circumstance that the patient's body is, as it were, an unaffected spectator contributing nothing to the result, will eliminate many possibilities of fallacy, and bring out more clearly the specific effect of the remedy.

(3) With the class of agents we are here considering the clinical results are, when obtained, obtained promptly. In virtue of this we are spared those possibilities of fallacy which are incident to the *saltus empiricus*.

All this can go into a nutshell. When treatment conforms to the type of pharmaco-therapy, it will be possible to adjudicate upon its efficacy by cumulative experimentation and experiential or statistical evaluation.

The Element of Chance.

But a reservation must here be made. In every cumulative experiment the operations of chance—i.e., the intervention of other causes—will constitute a source of error. This error of chance may be so small as to be practically negligible. This will be the case where we are dealing with sensibly homogeneous clinical material; are operating with a really efficacious remedy (i.e., an agent which has a definite inimical affinity to the pathological element we are combating); *and are employing a proper scheme of dosage.* Under these circumstances we shall not need in testing a remedy (and the same principle will apply in investigating a pathogenetic connexion) to employ large numbers of treated and untreated patients; and it will be possible, dispensing with statistics, to arrive by the experiential method at prompt and trustworthy judgments.

When, on the contrary, we are dealing with sensibly heterogeneous clinical material, or are operating with a pharmacological agent which has no very definite inimical affinity for the pathogenetic agent we are combating, or, again, when we are *employing an ill-chosen scheme of doses*, the element of chance will exert a dominating influence.

In such cases it will be necessary to employ correspondingly larger numbers of treated and untreated cases. That involves us in difficulties. The collection of sufficient numbers of cases will involve very considerable expenditure both of time and energy. Further, when the patients are collected it will require a considerable gift of tact to carry out that portion of the experiment which consists in leaving the control cases entirely without treatment. And, finally, the experimenter will have to shoulder a certain moral burden in applying the treatment in cases where it is contra-indicated, and withholding here such other treatment as would seem to hold out more promise. In brief, there are not only physical difficulties, but also humanitarian objections to the carrying out of clinical cumulative experiments on any large scale. Moreover, as the physical and moral difficulties *increase*, the intellectual harvest from the work becomes less and less. Finally, the task becomes so patently unremunerative that every reasonable man will cry off from statistical inquiry.

Where Statistics Leave us in the Lurch.

There is yet another aspect of the question—specially important for those of us occupied in research. When a therapeutic method gives entirely satisfactory results, or when—and this comes to the same—we are satisfied with those obtained, we have then nothing to ask from a method of evaluation except that it should blazon abroad our achievements and make propaganda. That is, for example, all that is aimed at and achieved by the statistics of anti-typhoid inoculation.

If, however, our treatment is unsuccessful, or if we do not account it sufficiently satisfactory, what we then want is not the exact number of successful and unsuccessful cases, but particulars such as are not furnished by statistics. We want, for the systematic trial and error experiments upon which all scientific betterment of therapeutics depends, to know whether our failure or comparative failure has been due to our having had under treatment a heterogeneous group; or whether it is to be ascribed to the inherent ineffectiveness (i.e., the inappropriate chemical constitution) of the therapeutic agent; or to an error in dosage; or other specifiable cause.

In default of information of that kind the only course which lies open to us is that of launching out again and again into cumulative experiments with the original treatment altered each time in such fashion as caprice may suggest. *To put ourselves in heart*, it is necessary to hypnotise ourselves on each occasion with *the idea that this time, at last, chance is going to smile upon our random experimentation.*

All the poignant futility of such self-suggestion is made manifest in the example of quinine. Here cumulative experiments of a sort have followed each other for—it must be now close upon—three hundred years. And from all those years of scientifically unguided experimentation with different preparations and sundry and divers doses, all that has clearly emerged is: that while, *in certain forms of malaria and in* conditions which cannot be clearly particularised, therapeutic effects are not unfrequently achieved, quinine is very far from furnishing a cure for malaria generally. Quite other information—information that cumulative empirical experiment cannot supply—is required for the improvement of treatment. We require to know *what concentration of quinine should* be achieved in the blood in each different form and stage of malaria, and how long this concentration should be maintained. And, above all, we require to know whether the organism of the patient should, when quinine is administered, *play the part* of the neutral spectator, or whether the doses of the drug should be *so adjusted as to allow of the organism of* the patient joining in with a therapeutic effort.

This in itself suffices to show that even in the domain assigned to pharmaco-therapy—in other words, in the ideally favourable field for the employment of the method—cumulative experiment is almost unserviceable for the improvement of treatment.

Cumulative Clinical Experiment inapplicable to General Medical Treatment.

It is now time to see whether cumulative clinical experiment can be put to any use in connexion with general medical treatment. In pharmaco-therapy the programme is to take in hand the disease in its earlier stages, to leave the organism of the patient out of account, and let the therapeutic agent do the work. In general medical treatment the programme is entirely different. We now aspire to exercise directive control over the physiological machinery of the body—checking from moment *to moment* such reactions as may be excessive, spurring on those that are torpid, and supplementing, so far as we can, the responses which make default by supplementary responses artificially evoked. Further, in general medical treatment we are prepared to undertake the patient in any stage in the disease. And the ideal we set before ourselves is that of *trying to pilot him* back to health by constant opportunist intervention.

Reflection will show that such a programme is incompatible with the undertaking of any cumulative experiment. It is, as we have seen, a precondition for every such experiment that there shall be a *definite* schedule of treatment which is not departed from, and that the *cases shall* distribute themselves into two sharply contrasted groups. But in general medical treatment, as in the steering of a motor-car or a ship in a crowded thoroughfare or fairway, we work *not by schedule*, but by following the indications of the moment. And as we never *encounter precisely* the same set of circumstances, we never treat two cases *in exactly the same way*; and thus can never obtain a group of cases treated all in one way, to contrast with a group of cases treated all in another.

Two Possible Exceptions.

To the general proposition that the method of cumulative experiment is inapplicable when general medical treatment is in question, there are two exceptions. The *first* is the case when we superadd considered a special form of chronic middle-ear "dry catarrh." Moos, in 1867, and Politzer, in 1893 and 1901, gave reasons for considering it a primary disease of the bony labyrinth, as in the great majority of cases the middle-ear mucous membrane was found perfectly normal, while in many preparations the most marked changes were found in the deeper layers away from the mucous membrane. Specimens were soon noted which showed scattered islets of similar bony changes throughout the petrous bone, with or without stapes involvement. Further, labyrinth-atrophy was sometimes met with on the affected or on the opposite side, and Manasse brought forward a nerve-degeneration theory which was supported by many. Brühl, in an excellent recent summary of our knowledge of the disease, points out that the facts suggest rather that labyrinth-atrophy, when met with, must be secondary (or a post-mortem change), Manasse himself having demonstrated a preparation showing stapes-fixation without definite labyrinth change, and in his more recent works (1914 and 1917) coming nearer to Brühl's view that the primary change is in the bone. As to vascular theories, O. Mayer, Cornet, and Gray have all wholly or largely given up earlier theories of theirs as to its origin in local anæmia (arterio-sclerosis, syphilitic endarteritis, or thrombosis), and this clears the ground somewhat for a basis for radiation treatment. Mayer now considers it an "undescribed variety of ostitis fibrosa," an "osteofibromatosis." Instead of anæmia there is increased vascularity (clinically suggested by the sometimes seen "flamingo-red" flush on the promontory), it presents appearances like Volkmann's "vascular ostitis," is a "chronic metaplastic ostitis" (Manasse), and has apparently close relations with osteomalacia. As Ferreri says, there seems "a great affinity" between osteomalacia, rickets, and otosclerosis. All the patients in Arcangeli's clinic with osteomalacia also had otosclerosis, and on this relationship Siebenmann's phosphorus treatment is based, whether increased ovarian internal secretion (with hyperæmic results elsewhere) or that of other endocrine glands, or calcium (Kobrak) or chloride (Cornet) retention be ultimately at fault. It must frequently at least be an endocrine gland anomaly, as Alexander has found otosclerosis in cretins (human and animal). Gray regards it now biologically as a "variation," a degeneration of the later-evolved auditory as distinct from the equilibrative mechanism of the ear (the latter fully-developed already in fishes, the former appearing with reptiles or early amphibians).

Siebenmann, on the other hand, regards it, on the basis of many histological researches from his clinic, as an over-development in the labyrinth of cartilage remnants which normally are there at least till adult life (Taniyama), especially in the region in front of and above the oval window. The labyrinth is practically full-size at birth, and if it continues to develop in the confined space it is in (Kerrison), as the skeletal bones normally do, by absorption and new bone formation, there must be marked changes, beginning, in Siebenmann's view, at the boundary of the original cartilaginous and the later periosteally developed labyrinth-capsule. (Brühl thinks the predilection for the region in front of the oval window is due to the bony stresses set up by the pull of the tensor tympani muscle. Gray thinks that in addition the stresses set up by the continual stapes-vibrations sensitise the bone in the neighbourhood to new formations or pathological changes.)

The earliest changes are rather matter for dispute, Brühl finding them in the vessel-canals of the old periosteal bone, absorption of the bone round these, and subsequent new building of an abnormal spongy bone; Mayer, in the transformation of the connective-tissue cells of the marrow and vessel-canals into osteoblasts and osteoclasts, so that "this richly cellular fibrous marrow causes on the one side an absorption, and on the other a new growth of bone" (1912). In both ostitis and otosclerosis are found, as Sc[illegible]; Bryant, in his exhaustive analysis of the ætiology of the condition (1913) points out, increased vascularisation, granulation tissue, replacement of the normal bone by osteoid tissue, exostosis and hyperostosis, a definite line of demarcation (Pommer's cementing line), the formation of giant-cells, origin in the endosteum or periosteum, cellular marrow transformed to fibrous, and finally new atypical compact bone. Bryant calls it an "osteodystrophy." The marrow is atypical, as myelocytes and normoblasts are absent (Wolff). The giant-cells are of interest; up to 12 nuclei have been seen (Jenkins).

As Denker in his analysis of the 26 or so cases, and literature to 1904, gives nearly five pages of references, and Bryant, in 1913 (writing on the ætiology chiefly), gives seven and a half pages of references in small print, it is clear the subject is an immense one. The main point for the present purpose is that the pathology of the condition suggests that in its early stages it should be amenable to radiation treatment. Diathermy has been found to give bad results (Joseph); more is to be hoped for from the "ischæmic power of radiotherapy" (Chevriet and Bonnot), and its action on certain types and growth-stages of cells. Additional grounds for believing the treatment may be of avail are (2) the effects of radiation on growing cartilage and bone in young animals (Récamier); (3) the well-known curative effect of radiation on tuberculous bones and joints (Albert-Weil, Wetterer, Iselin, Petersen, &c.); and (4) the results of radiation on young osteomata (Chevriet and Bonnot).

Early Results of Treatment.

The first to try X ray treatment in otosclerosis, so far as I am aware, was Jaulin, in 1908. He applied 1–2 H weekly (5–7 Benoist) through an ear-speculum, the rays directed on the tympanum. 3–14 sittings were given. Of ten cases six improved: he stated they improved more in their voice-perception than could be shown by objective tests; tinnitus also improved. Schwartz treated three cases with six doses at monthly intervals, in one case with surprisingly good results, the hearing becoming practically normal; one showed no improvement, the third was slightly better. Ortloff, in Freiburg, reported ten cases in 1913, with negative results as regards improvement, a "middle-soft" Müller water-cooled tube being used, a third of a pastille being given on each of three successive days, then a 2–3 weeks interval, then another series (sometimes a pastille dose being given at one sitting with 2–3 weeks pause). Two or three series were usually given, in one case four series. The dose was measured apparently (being an unfiltered pastille dose) to the external ear: Jaulin calculated his one or two-fifth dose to the tympanum. Ortloff was not very fortunate in his choice of cases, only one had a history of one or two years (Case 6), some having eight or ten years' history of deafness. The results on the hearing, tested by Prof. Bloch's elaborate scheme, were uniformly negative; if there was slight improvement it was invariably followed by return of the tinnitus and deafness as before. (The possibility of therapeutic aim at *arrest* of the process is briefly referred to in conclusion.) As the tube-size and distance are not given it is impossible to compare the doses given by Jaulin and Ortloff, but considering the position of the oval window (behind the post. inf. quadrant of the tympanum, but partly hidden in 32 per cent., and quite hidden from the tympanum in 19 per cent.—refer. in Ortloff), and the necessity for penetrating the bone, even in the case of the most favourably placed oval window, to at least 3–4 mm. with sufficient radiation, neither Jaulin nor Ortloff seems to have used a sufficiently penetrating ray, or enough total dosage. The difficulties are certainly great. Siebenmann's cases have been treated on another scheme, and, while I should not be justified in publishing the complete technique used at Bâle (being the as yet unpublished work of others), it may be said that a cross-fire method is used on to the fenestra ovalis with a 4 mm. filter. Schemes of fractional and full the situation which presented itself in the typhoid statistics of the South African War, where the efficacy of the process of anti-typhoid inoculation was judged of by clinical methods which required of that inoculation process that it should give protection not only against typhoid fever, but also against paratyphoid A and paratyphoid B.

It is, in sober truth, "old abusing God's patience" to go on dreaming that statistical evaluation conducted with the data ordinarily supplied by clinical observation can ever conduct to any trustworthy quantitative estimate of the value of a therapeutic measure.

How Laboratory Methods remove Difficulties.

We may now examine and see in what way recourse to laboratory methods clears away the difficulties which beset the path of research. First and chiefest the employment of laboratory methods makes it possible to substitute in many cases for cumulative or group experiments (experiments where the conditions are so complicated that the individual cases give different results) crucial experiments—experiments where the conditions are so simple that each individual case gives one and the same result. These crucial experiments furnish us with a series of firmly established facts which will, like fixed points in a trigonometrical survey, supply a foundation for the mapping out of all the rest of the territory. Firmly established facts, such as are here in question, would be the fact that such and such a microbe produces such and such a disease; that a particular modification of the blood converts it into a favourable culture medium for a particular microbe or for all microbes; and that a vaccination process produces such and such changes in the blood.

A second but also supremely important function of laboratory methods is that of making of the method of cumulative experiment a more effective instrument of research.

(*a*) To begin with, laboratory methods enable us to select, out of that raw and heterogeneous material which clinical examination provides, cases which are more nearly homogeneous—in other words, better material for experiment.

(*b*) Where we administer a therapeutic agent and suspect that, by reason of non-absorption, this agent does not regularly come into operation, we can, if suitable technique for blood examination is available, ascertain whether our surmise is well founded and, if so, in what cases.

(*c*) Recourse to laboratory methods saves us from making a *saltus empiricus* and so precipitating ourselves into fallacies. When laboratory methods are at disposal we, instead of trusting to the remote effects which make themselves sensible to the unaided senses, adjudicate by direct effects. When, for example, antiseptics are applied to infected wounds, we can ascertain by the method of culture, without either question or statistical delay, whether the microbes have been exterminated or reduced in number.

(*d*) The employment of laboratory methods makes it possible when dealing with a complex procedure, such, for example, as *sanatorium treatment*, or the technique of aseptic surgery, or vaccine-therapy, to investigate the effect of the separate items of treatment instead of noting only the effect of the procedure taken as an aggregate.

(*e*) Finally, we can, by resort to laboratory methods, find out what has been achieved by treatment. We have here at disposal cultural methods, also opsonic measurements carried out in connexion with auto-inoculation procedures, and, in the case of syphilis, the Wassermann procedure and the more accurate derivative method of Dreyer and Ward.[2]

Conclusion.

In conclusion, it will be well to take brief account of two questions which, in the perusal of the above, are bound to have come up in the mind of the reader. He will have asked himself whether the recognition of the fact that clinical observation is an essentially imperfect instrument for adjudicating on the efficacy of therapeutic measures is not going to involve as its consequence the ousting of the clinical observer from his present office of expert and adjudicator in questions of therapeutics. And, again, the reader will have asked himself whether, in those domains of medicine where no appropriate laboratory methods of investigation lie ready—*and there are, of course, many such* domains—clinical cumulative experiments, such as have always been going on, should not be persisted in, and whether, at least in these scientifically untilled provinces of medicine, the clinician should not for the present be confirmed in his office of adjudicator.

Both these questions can be answered in a very few words. The first finds its answer as soon as we bring the concept *adjudication by experts* into quite sharp focus in our minds. It then becomes evident that by an expert is meant a man who carries in his head a precise mental picture of the mechanism by which an effect is produced, and who is at any rate competent to investigate such machinery. When anyone who has possessed himself of this definition is, in connexion with problems like those of the cause and treatment of shock, or the effect of anæsthetics, or the efficacy of antiseptics in an infected wound, or the treatment of malaria or vaccine-therapy, interrogated as to whether the surgeon and physician are in matters of this kind experts, his reply must inevitably be that the surgeon and the physician have in such matters, exactly like the layman, vision only of the final result.

The further question as to whether the method of cumulative clinical experiment should be persisted in in those regions of medicine in which the requisite laboratory methods of investigation do not yet exist, can be disposed of also in a few words. It is clearly not a matter of very great importance to the world whether men who are prepared to waste their time do or do not waste it over experiments which are doomed for the most part to be futile. But what does seriously matter is that it should be contended and believed that failing preciser methods of investigation, it is inevitable necessarily to have recourse to cumulative clinical experimentation, and to requisition the services of the statistician.

As doctrine that is erroneous. It may quite well be necessary, *when other means have failed*, to have recourse to clinical cumulative experiment. But the trained expert put upon the job can, given time, practically always meet the needs of the moment, or at least some of those needs, by the invention of new methods.

AN EXPERIMENTAL STUDY OF PROPHYLACTIC INOCULATION AGAINST SCARLET FEVER.

(PRELIMINARY COMMUNICATION.)

BY I. TAKAHASHI, M.D.

(*From the Kitasato Institute for Infectious Diseases, Tokio.*)

OF the acute infectious diseases caused by filtrable viruses—e.g., small-pox, hydrophobia, scarlet fever, typhus, and tsutsugamushi—only the first two can be successfully prevented by prophylactic inoculation. There are no specific treatments for the others, chiefly because no method of attenuation of the viruses has been discovered. At the general meeting of the Keio Medical Society in November, 1920, Prof. S. Kusama made a very important report[1] on an experimental study of prophylactic inoculation against typhus with infected monkey's blood which had not been attenuated by passage through animal bodies or by any other means. By dilution of blood obtained from human typhus patients, injections were given causing no reaction in the animal bodies, but conferring a degree of active immunity upon the

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[2] G. Dreyer and H. K. Ward: THE LANCET, 1921, i., 956.

[1] This report appeared in THE LANCET of August 20th, p. 386.

STUDIES FROM THE ST. ANDREWS INSTITUTE OF CLINICAL RESEARCH.

III. A SCHEME FOR THE INVESTIGATION OF DISEASE IN CHILDHOOD.

BY ANDREW ROWAND, M.D. EDIN.

THE object of the St. Andrews Institute for Clinical Research is the investigation of disease in its earliest stages. It is unquestionable that many of the vague disabilities of later life, as well as many grave diseases, have their origin in childhood; it is therefore obvious that the study of children's ailments gives promise of being the most valuable part of our work. It is only the general practitioner who has the opportunity of watching the first manifestations of illness in childhood, and it is only by his observations that it will ever be possible to understand the prognostic significance of what are at present regarded as trifling ailments.

The Opportunities of the General Practitioner.

When I was starting work here I attended the out-patient department of a large children's hospital with the hope of observing the early symptoms of disease, but soon found that very little of the information I was seeking could there be obtained. I saw cases of advanced marasmus in infants, severe skin diseases, glandular swellings which had reached the stage where surgical interference was necessary, adenoids requiring immediate operation, mastoid abscesses, and so on. I was impressed by the great value of the work done and the skill displayed, but the vast majority of cases were end-results of disease which might surely have been prevented by earlier care. It must not be inferred that the general practitioner was to blame for this state of affairs; very probably many of the cases were not seen even by him till the necessity for prompt and skilled assistance had become obvious. It is impossible to-day to follow carefully the after-history of all children seen in the routine of busy general practice. A child suffers from a slight feverish attack of unknown nature and origin; a simple diaphoretic mixture is prescribed and the patient recovers quickly, it may or may not be by the aid of the medicine given. Similar attacks recur, and the doctor is not called in. Or a mild bronchitis is promptly relieved, and when succeeding attacks occur the mother repeats the mixture and all appears to go well. But the recurrence of such attacks may indicate some grave weakness, and when the doctor's services are next requisitioned a serious condition may be found.

Sir Robert Philip[1] states that in groups of Edinburgh school children examined at random 30 per cent. were found—after making full allowance for error and over-refinement of diagnosis—to show stigmata of tuberculosis, and he is of opinion that this is probably too low an estimate. Hamburger found that in post-mortem examinations—deducting those who actually died from tuberculosis—the frequency of lesions detected increased from 17 per cent. in those of 2 years of age to 53 per cent. in those between 11 and 14. Pottenger[2] makes the statement that probably 75 per cent. of all children have an infection before they reach the period of adolescence. Whether these statistics be accurate or not, they give good ground for the belief that many of the ill-defined feverish attacks in young children may be due to systemic intoxication resulting from bacillary invasion. Before school age the seed is very often sown, and, as Philip points out, the existing system of medical examination of school children is entirely misleading, as the returns refer only to obvious cases of disease. The slighter degrees of infection leading to systemic disturbance without definite physical signs can be studied only by the general practitioner. Tuberculosis has been taken as an illustration, partly because of its widespread and fatal nature, and partly because it is a subject to which we are giving special attention here, but what has been said about its early incidence applies to that of many other diseases.

Coöperation of Medical Practitioners.

A research into the early symptoms of disease, if it is to be of any value, involves the coöperation of many workers. No one individual can cover a wide enough field, and personal bias is apt to lead to the giving of undue prominence to a particular line of inquiry as the result of some preconceived idea of its importance. The value of evidence is more than multiplied by the number of observers. The circumstances in which we work here are ideal, for all the general practitioners in St. Andrews are giving their assistance. Similar coöperation will, no doubt, be possible in all centres when its importance has been fully realised; it is to the benefit of all, not only in widening the field of opportunity for study, but in lessening the possibility of misunderstandings. Our difficulty has not been to ensure coöperation among the general practitioners, but to determine the principles on which to base our work and to evolve a satisfactory scheme for carrying it out. An adequate scheme cannot be devised at once; false starts are inevitable, but they are of educative value. We may not even now be on the best road, but we appear at least to be going in the right direction.

The Problems of Tuberculosis.

It was decided that the investigation into the early symptoms of disease in children should have special reference to tuberculosis because of the outstanding importance of this subject. The activity of lymphoid tissue in the young and the frequency in them of tuberculous glandular infiltration naturally suggested to us a special study of this tissue and careful observation of all glandular enlargements. The importance of this line of investigation is generally recognised. Thus Philip[3] says: "If the more likely seats of lymphatic infiltration were scrupulously supervised in childhood and adolescence, the determination of tuberculosis at the lymphatic stage would be a common event. Persistent glandular enlargement in any area, however slight the degree of enlargement, should not be passed over lightly." Pottenger[2] says: "Recognition of early lymphatic tuberculosis is the key to the tuberculous problem."

The Nature and Functions of Lymphoid Tissues.

Accordingly we undertook a preliminary study regarding the function of lymphoid tissue and the nature and development of lymphatic glands. We were met on the threshold by rather striking and unexpected difficulties, for the whole subject has been much less fully studied than one would naturally have assumed to be the case. Presumably from its activity in the young lymphoid tissue has some peculiar function. It is commonly supposed to be protective before the body cells generally have acquired a power of resistance to bacterial infection; its needless sacrifice should therefore be avoided. It is, indeed, not easy to understand how the lymphoid tissue situated in the mucous membrane itself and commonly called the "first line of defence" of the body can perform effectively the function of arresting bacteria that penetrate the surface, for it is not spread out in a continuous layer. Moreover, lymphocytes appear themselves to have the power of destroying the epithelial covering. Even when aggregated into masses, as in the pharyngeal and faucial tonsils, it would often appear—if judged from clinical experience alone—to be a source of weakness rather than of protection. The same may be said regarding the lymphoid tissue of the Eustachian tube—the "tube tonsil" as it has been named. The abundant lymphoid tissue of the vermiform appendix seems to be of very doubtful value, and it is the lymphoid tissue of the intestine which gives way to attack in typhoid fever.

Glands.

Glands are said to form the "second line of defence" of the body, and their protective function is generally assumed, but they frequently break down under the

III.—*Experiments with Smeared Virus.*

In this experiment the material used was a mixture of the blood and throat secretions of a scarlet fever patient. This patient, a young man of 22, had had measles and had been vaccinated; his general health had always been good. The present illness began on March 6th, 1921, with sudden shivers and fever; scarlet fever was diagnosed by a physician, and on the 8th patient entered the Kitasato Institute Hospital. On the 10th, when I collected the material, he had eruption all over the body, the tongue was coated pale white, the tip was a bright scarlet colour; temperature 37·4° C. The throat secretion was obtained after careful gargling, and the blood was taken from the median vein as in the previous cases. To determine the presence of the virus in the materials collected, the secretion was subcutaneously injected into monkey No. 148 and the blood into monkey No. 146. The former had fever of 40° C. on the 15th day, lasting for five days; the latter had fever on the 7th day, rising on the 10th day to 39° C. with eruption over the face, especially around the eyes. These symptoms agreed with those of experimental scarlet fever in man.

Throat secretion and blood were mixed and a cotton pledget, soaked in the mixture, was carefully smeared over the mucous membrane of the tonsils and throats of the children who had received prophylactic inoculation. As virus smeared over the mucous membrane was liable to carry infection to others, the two oldest children, who were attending school, and the youngest, who was still at the breast, were excluded from this experiment; only the boy I. and the girl H. received the smeared material. For the next three weeks I carefully examined the temperatures, urine, and throats of the children, but there was nothing to be noted at all. Thus the inoculation completely protected the children from the disease.

IV.—*Summary.*

From the foregoing experiments it is clear that prophylactic inoculation against scarlet fever with the blood of a patient, taken before the eruption appears and given subcutaneously in an amount of 0·0001 c.cm., causes not only no local or general symptoms in man, but protects him from infection. Even an injection given 50 days after inoculation with the blood, and smearing the children's throats with the mixture described above, 115 days after inoculation, did not give rise to the disease.

It has been claimed by some investigators that one-third of human beings have a natural immunity against scarlet fever, and perhaps my children had this natural immunity. Moreover, it has not yet been determined that the dose of blood given in the infection experiments was enough to infect the children. Taking these facts into consideration, I cannot claim that these experiments are flawless; but considering the results which Dr. Kusama obtained with typhus fever, the fact that the experimental objects were of the most susceptible age, and the fact that the control monkeys showed the presence of the virus in the material used for the smearing, it is not an overstatement to say that the experiment strongly suggested the efficiency of prophylactic inoculation against scarlet fever.

On the effective period of immunity and its time of appearance after inoculation will be reported later.

My thanks are due to Dr. Kusama, who has given me valuable guidance, and to Dr. Karube, Dr. Sukekawa, and Dr. Miyajima, who have greatly assisted me.

LITERARY INTELLIGENCE.—The twelfth edition of Bruce and Dilling's "Materia Medica and Therapeutics" is announced for immediate publication by Messrs. Cassell.—Messrs. J. and A. Churchill have just issued a 48-page catalogue of medical and scientific publications. The forthcoming appearance is announced of "An Introduction to Biophysics" by Dr. D. Burns, Grieve Lecturer in Physiological Chemistry at the University of Glasgow, with an introduction by Prof. D. Noel Paton, F.R.S. The subjects dealt with include energetics, cellular mechanics, cell communities, transport, and the organism as a whole.

X RAY TREATMENT OF TWO CASES OF OTOSCLEROSIS.

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IN dealing with otosclerosis we are "confronted with one of the most difficult and obscure problems in modern medicine" (Gray). And because its ætiology and essential nature are still largely unknown or in dispute, and its course one prolonged usually over so many years (often with intermissions or natural arrest), to make an estimate of the true value or otherwise of any treatment is a matter of the greatest difficulty. In well-established cases, which are perhaps the great majority of those presenting themselves, permanent bony damage has already taken place at the stapes-foot, with possibly secondary nerve impairment, and such cases afford no fair test of the value of radiation treatment, any more than late inoperable malignancies, old-standing exophthalmic goitres or (as I have noted) acromegalics. It is only in the earliest stages when there are young actively proliferating or hyper-functioning cells that radiation can be expected to benefit to a satisfactory degree. Now, unfortunately, as Brühl says, otosclerotic patients rarely notice the earlier tinnitus or slight impairment of hearing, and therefore do not usually apply for advice till the newly-built bone at the annular ligament of the oval window has reduced the hearing to a marked degree (whispering reduced to 0·5 m. or less). This being so, there is nothing to be wondered at that some otologists hold the view, and frankly tell their patients, that it is an "incurable" complaint.

Prof. Siebenmann, the eminent oto-laryngologist at Bâle, has been experimenting since 1912 with radiation treatment, encouraged, at the beginning, with the good results obtained by radiation of an ostitis fibrosa case (as he remarked at the Oto-laryngological Congress at Kiel in May, 1914), and while awaiting an analytical report from him on the results of his many hundred cases, it may be of interest to bring the matter forward, discuss the rational basis for the treatment, and give the results of two cases treated.

Theories as to the Cause and Nature of the Disease.

There are about ten distinct theories as to the cause and nature of the disease. The earliest opinion was that it is secondary to middle-ear inflammation (of mucous membrane or periosteum); later views are that it is a primary condition, either a bone disease or an abnormal development of the cartilaginous remnants in the labyrinth capsule, or is due to vascular conditions (active hyperæmia, anæmia, and venous congestion each having supporters). Then there are toxic and bacteriological, internal secretion, and chemical theories; and there is the nervous theory, that the sometimes associated degeneration of the labyrinth nerve is primary, and the bone change secondary to this; and the developmental theory, that there is arrested development or degeneration of the organ of hearing as a whole, central and peripheral. There seems no doubt that many factors can excite its appearance in a predisposed person. Brühl, in this connexion, gives authorities for syphilis, arteriosclerosis, chills, internal secretion changes, latent tetany, rheumatism and gout, uræmic intoxication, scrofula, anæmia, rickets, osteomalacia, auto-intoxications, tuberculosis, tropho-neurosis, and wasting diseases. The hereditary nature is most marked, as with bony abnormalities (polydactylism, multiple exostoses, &c.) and some bone diseases (Paget's disease, achondroplasia).

Katz was the first (1890) to publish the microscopic findings in a case diagnosed during life as a stapes-ankylosis. Toynbee (1860) and Tröltsch (1881) had called the condition "sclerosis," and for long it was are immune to bovine infections for the rest of life. Brownlee,[10] in a statistical inquiry published by the Medical Research Council, concludes that in districts where infection by milk is prevalent in childhood the "young adult" type of phthisis is rare. Bushnell,[11] agreeing with Calmette, holds that the time has now come when we must strive to substitute an artificial premeditated infection for the present infection by chance, though he admits that we have not sufficient knowledge to justify the attempt in the meantime. All children will in the future be vaccinated for tuberculosis.

Even now Shiga[6] advises that preventive inoculation with his Tb. serovaccine should be undertaken during the school age, and considers the following cases suitable for treatment: (1) those who have been exposed to infection within their family circle; (2) those of consumptive appearance, as, for example, the anæmic and debilitated, and those of weakly constitution; (3) those with chronic tonsillitis or chronic cervical adenitis; (4) those who easily catch colds and have a continuous slight fever; (5) those who from time to time suffer from slight fever of uncertain origin, or whose temperature rises slightly after moderate exercise; (6) those, finally, in whom rough or diminished breath sounds are found on auscultation. He regards von Pirquet's reaction as a necessary preliminary to inoculation, and considers a marked reaction as a favourable indication for vaccinotherapy.

The Scope of the St. Andrews Scheme.

It became evident to us that even if the inquiry were concerned solely with the investigation of tuberculosis its scope must be very wide. All symptoms indicative of toxæmia must be included, and though there appears to be a great similarity in these symptoms whatever may be the nature of the toxin, it is probable that the differences are quite distinguishable if we were trained to observe them; only by the study of such vague and indeterminate symptoms can the earliest onset of any disease ever be detected. No pre-supposition as to the probable outcome must bias observation the inquiry must include all children, of all types and in all circumstances, who show the earliest symptoms of departure from health. It is impossible to isolate any clinical investigation so as to deal with the origin and onset of tuberculosis alone.

It may be said that to obtain sufficient material for investigation a wider field than St. Andrews is necessary. Experience has already proved the contrary. Complete and methodical examination of a limited number of cases is worth much more than incomplete investigation of a very large number. To keep in touch with all our cases and to analyse our records is already a very heavy task. The suitability of St. Andrews for our work was emphasised by Sir James Mackenzie when the Institute was projected; all classes of the community are represented and the population is not migratory. The material is ample for the members of our staff, and we have been compelled to give up, in the meantime, any idea of linking up a larger district by the aid of outside practitioners.

The ideal at which we aim is to obtain records from birth onwards of all St. Andrews children—all children of all classes. No similar attempt has ever been made. If the investigation were made among children of the poor alone it would not be of anything like the same value. Surroundings undoubtedly play a great part in the causation of disease, but how great a part can never be known if statistics are confined to one class only in a community. Even such diseases as marasmus and rickets are not confined to the poor; faulty dieting is common enough among the well-to-do. Moreover, rickets occurs in circumstances which make it difficult to believe that it is essentially a deficiency disease due to the lack of an antirachitic factor in milk-fat. This may be the main factor in most cases, but other factors must be considered, especially the absence of fresh air and of cleanliness. The investigations of Noël Paton[12] and his collaborators in Glasgow [illegible]d attention to their importance. In young dogs under ordinary laboratory conditions a liberal allowance of milk-fat neither prevents the onset of rickets nor cures it when it has developed. Cubic space is important in a house, but the mere calculation of cubic space may not lead us to the chief element at fault in the surroundings; there is more in a mother's management of a family than is generally realised. It is possible to find a large number of healthy children in a poor and crowded house and a few weaklings in a mansion.

The Methods of the Scheme.

In order to make our records complete it is necessary to have the coöperation of all the doctors and nurses, and, what is equally important, the intelligent coöperation of the parents. All the practitioners of St. Andrews are on the staff of the Institute, and through them we ensure the help of the nurses. The main difficulty is to get the help of the parents, but it is lessened by the fact that each mother deals directly with her own doctor only; there is no inspection by an official doctor and no suspicion of any outside interference. This is a most important matter, for the poor have a perfect right to resent what would not be tolerated by the well-to-do. Children brought to the Institute are examined by the family attendant himself, or jointly by him and some other member of the staff who is present by his request, and with the consent of the parents. When the cases are read at the weekly meetings they are numbered, not named. Our methods bear no resemblance to those of a hospital out-patient department. The fact that we have acquired the confidence of the community is shown by the number of our cases.

Coöperation of Parents: Weight Charts and Child-welfare Centre.

The real difficulty is to ensure that the mother will call in the doctor when the child begins to show the first symptoms of illness. We have endeavoured to get over this difficulty in connexion with infants under one year by distributing weight charts through the doctors and nurses, and by impressing on the mothers that regular weekly weighing of the baby is necessary in order to detect those early signs of failure of nutrition which call for a doctor's services. They are appreciating this and showing interest in the weekly records. The doctor or nurse takes the weight at birth, a handy spring balance being now part of the equipment of each doctor's bag. The nurse who will be in charge of the child-welfare centre is at present giving us much assistance in cases where want of intelligence or carelessness on the part of the mothers might lead to faulty or incomplete returns. When the child-welfare centre is in full working order we shall have much assistance from the work done there, for though we do not consider it advisable that the Institute should be regarded as having any direct control in the matter of its management and the nature of the treatment prescribed, the physician in charge, being one of the local practitioners, will necessarily be a member of our staff. The weight chart is of handy form, and is spaced for 52 weeks. At the side and on the back is sufficient room for short notes made by the doctor or nurse from time to time.

Examination of Infants: The Infant's Card.

We have drawn up cards containing a number of queries with regard to infants which the doctors will fill up in all cases. It is necessary to ensure uniformity in the observations made; whether the items selected are the most suitable can only be determined after further experience. The value of many at least of the queries is sufficiently obvious; for example, the weight at birth, whether or not the child is premature, and whether it presents any abnormality. It would have been well to leave a space for description of the nature of the confinement; it would be interesting to know whether the alarming condition of the baby sometimes seen after the employment of "twilight sleep" has any prejudicial effect on its subsequent doses have been worked out, and the total dose advisable for each ear has been the subject of investigation. A certain amount of hair-fall takes place, temporary only, but no deleterious effects have been noticed on the labyrinth, dura, brain, hypophysis, or in other ways. Coolidge or Müller's boiling tubes are used. (I should be glad to give fuller details of the technique to any interested who write to me.) During a visit to Bâle Prof. Siebenmann kindly gave me fully his views as to the theoretical grounds for the treatment, and explained that he advises it in late cases with the hope of arresting the process at the stage it is in, and in early cases with the hope, and in fortunate cases with the result, not only of arresting it, but of causing some slight improvement. No more, considering the pathology of the condition, can be hoped for. It might be of use in certain cases to combine ovarian radiation with the ear radiation (*see* Wetterer on beneficial results with ovarian irradiation in osteomalacia). In a recent communication (June 16th, 1921), Siebenmann writes that "his trial of the method has not continued long enough for him to come to a definite conclusion on the matter"; he began "with a good dose of optimism," but the results "are only to a small degree positively encouraging." As a number of radiation schemes have been used, and these only in the last four years to any considerable extent, it is still too early to hope for much in the way of results. But the method seems to deserve full investigation, as even if the treatment only arrests the usually inevitable progress of this common and disabling complaint (perhaps even only in certain types of cases, as may be defined by further research on the subject), it will have achieved a great therapeutic success in a region which hitherto has been, for the most part, a despair of the internist and the otologist, and, as a result, a "happy hunting ground" for the quack in various forms and disguises.

The Author's Cases.

My two cases are as follows:—

CASE 1.—Mr. F., aged 37, no hereditary history, R. ear began to be affected 15 years ago, L. ear about 10 years ago, had consulted many of the leading otologists in England, and tried pneumo-massage, &c., had been told it was almost certain to progress slowly and was incurable. On a visit to Switzerland, in the spring of 1920, with the hope that the high dry air for some months might effect some improvement, he consulted Prof. Siebenmann, who recommended X ray treatment as the only thing likely to arrest the course of the disease. Recommended to me by a medical friend of his. Being very sceptical as to possible benefit, I made a visit to Bâle, after some correspondence with Prof. Siebenmann, largely also to choose between the various schemes of radiation employed. The patient understood that the most that could be hoped for was arrest, which he greatly desired, as his wife said he was worse than he was six or eight months ago, and any further increase in his deafness would cut him off completely from social enjoyments. Tympani were normal, no operations had been performed (though one had been recommended in the nose), whispering heard at the ear only, R. ear with C fork, Rinné −12, L. ear −7. After the treatment, as anticipated, there has not been any change whatever to remark on; the watch was heard, if anything, slightly further away on the left side than before (from 1–1¼ in.). So far the condition seems stationary, both as regards hearing and tinnitus. It will require another year or two to show if it is progressive.

CASE 2.—Miss H., aged 25, no hereditary history was made out, but a brother and a sister show signs of the disease coming on. No operations, but a history of nasal catarrh. She was referred to me by Dr. J. W. Stenhouse, and as she was attending the Ear Hospital, under Dr. Frank Wrigley, he kindly saw her before I began treatment, and wrote that as "he was quite sure she was not going to improve with the ordinary methods of treatment, it would be quite worth while to try X rays." He viewed her as a mixed oto-sclerosis and catarrhal case. R. ear began about eight years ago, left not until about seven months ago, since when it had become rapidly worse, and she was in danger of losing her employment (office work). Marked tinnitus both low and high. Paracusis Willisii. Watch at R. ear at ½ in., L. ear about 1 in. R. ear, Rinné −6; L. ear, Rinné −6. After treatment over three months she had distinctly improved, could hear a clock at her home that she had not heard for eight months, the low-toned tinnitus in the left ear was much less, and was away for considerable periods (Ortloff's fifth case showed improvement in the low tinnitus—? vascular, of hyperæmic origin, Mayer, Brühl, &c.), and Dr. Wrigley, examining her on April 30th, found definite improvement on both sides; she could hear his watch (a softly-ticking one), which she had not previously been able to do. Treatment was continued, and the improvement maintained. On June 16th the watch was heard at R. ½ in., the L. 1¼ in. In letter of August 15th the improvement was reported as continuing, "can still hear the clock." It is hoped that this slight but definite improvement will be maintained, and in any case that the process has been arrested, as Siebenmann finds is sometimes apparently the case.

My thanks are due to Sir William Milligan and Dr. Frank Wrigley for their interest and encouragement, and to Prof. Siebenmann for his kindness and patience in correspondence and on my visit to his clinic, and to Dr. Löffler and the sister-in-charge of the Rontgen work at the Physical Treatment Department of the Bürger-Spital, Bâle, for their kindness in giving me details as to the method of treatment.

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never been satisfactorily investigated. With regard to diet, it is manifestly impossible to calculate the calories in the daily diet of individual children whose food is not accurately estimated at every meal. The digestive organs of normal children can deal within reasonable limits with many varieties of diet.

What we aim at recording is the manifest excess or privation of the various elements considered necessary in all diets, and to note the types of diet in common use among children of the various classes of the community, and to compare their apparent results. In noting failure of nutrition we observe the want of muscle substance and loss of muscle tone. "Tuberculosis toxins would seem to act specially on neuromuscular structures. The dystrophic influence is seen in the progressive loss of sarcous substance and associated enfeeblement and irritability of muscle. Hence early manifestation of motor weakness, both of limbs and of viscera—the feeling of tiredness, the disinclination for effort, the softening of pulse, and the gastro-intestinal sluggishness. These are generally in evidence long before cough or expectoration or other indication of local lesion is forthcoming ...... loss of muscle counts in tuberculous intoxication rather than loss of fat. Patients with advanced tuberculous intoxication may have abundance of adipose tissue" (Philip[3]).

It is with the object of testing such statements and of finding out whether or not they form any guide to the differentiation of tuberculous from other toxins that we draw attention to them in the investigation of failure of nutrition. Sir James Mackenzie has clearly demonstrated the existence of muscular rigidity in connexion with underlying visceral disease and its value in diagnosis. Pottenger[2] affirms that in tuberculous disease of the lungs muscular rigidity may be detected. The spasm, he says, varies in position with the lesion; if in front, the sternomastoid, scaleni, pectorals, and intercostals are affected; if behind, the trapezius, levator anguli scapulæ, and rhomboidei. So far we have not found this borne out in our examination of early cases of phthisis, but it is well to bear the statement in mind and to continue to test its worth. Exhaustion is always a sign that a child is not well. Already we know that there are various types of exhaustion, possibly distinctive of different toxæmias. Another hopeful field is the investigation of anæmias. It is quite impossible to estimate the severity of an anæmia by the appearance of the patient, or even in many cases to determine whether or not anæmia is present. Therefore in all cases in which pallor is a symptom we are having blood examinations made at the Institute. If time permitted of this, we believe that valuable information might be obtained by the routine examination of blood in all cases of illness in children. Something distinctive in the way of blood pictures might be found in connexion with the onset of various diseases. It is unnecessary to insist on the necessity for observing irregularities of temperature which may be slight and therefore overlooked. The condition of the pulse must be carefully observed in all its aspects. Rapidity and softening, by which is meant loss of tone with apparent fullness of the artery and feeble impulse communicated to the examining finger, are always suggestive of an active toxæmia. X ray examination of the chest is made in all children with glandular enlargement, with the object of observing, as far as may be possible, the condition of the mediastinal glands and the state of the lungs. We are also examining the chests of a number of healthy children; without a knowledge of varieties in the normal, which have not yet been sufficiently investigated, it is impossible to recognise and interpret the abnormal. Urine examinations of a somewhat more elaborate nature than is possible in every-day practice are made in the chemical laboratory in all cases of failure of nutrition.

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A CASE OF
POISONING BY CANTHARIDIN.

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THE following case of poisoning by cantharidin, the active principle of cantharides, seems worth recording, as it may help to throw a little light on inflammations of the kidney. I can find no record of any other case in which cantharidin itself has been taken.

At about 4 P.M. on June 7th, 1921, a medical student tasted, out of misplaced curiosity, some crystals of cantharidin; no unpleasant taste was noticed. He stated that he took as much as would go on a pin's head—almost certainly at least one-fiftieth of a grain. As tincture of cantharides contains only 0·01 per cent. of cantharidin, this would be the equivalent of about 220 minims of tincture of cantharides, or over 40 times the maximum pharmacopœial dose. Shortly afterwards the patient had tea, including some bread and butter. About 7 P.M. he noticed pain in the left lumbar region, shooting round to the front, but not very severe. A few hours later he felt much slighter pain in the right lumbar region. At 8 P.M. he began to pass urine in small quantities about every quarter of an hour; there was some pain on micturition. At 9 P.M. he began to feel unwell and noticed blood in his urine; this increased in quantity later. During the night he micturated only five or six times and obtained some sleep. About 3 A.M. next day he vomited twice. In the morning he came to St. Bartholomew's Hospital and was admitted to the wards; he was then passing urine containing blood about every two hours, and he still complained of lumbar pain, mainly on the left side.

On admission he looked pale and rather anxious; his mouth and tongue were not at all blistered. Nothing abnormal was discovered in his chest, his blood pressure was 125 mm. Hg (systolic) and 80 mm. (diastolic). There was tenderness on deep palpation in the left lumbar region; no œdema anywhere. His temperature was 99·6°F., his pulse 120, his respirations 24. He gave no history pointing to previous nephritis; he had never, to his knowledge, had scarlet fever. The urine was red in colour and acid; it contained 0·64 per cent. albumin (Aufrecht), large numbers of red blood cells, and no more leucocytes than could be accounted for by the amount of blood present; no casts or epithelial cells were seen.

On the 9th the patient's condition had improved; his pain was less. 53 oz. of urine were passed (intake 84 oz.). There was still much blood, but polymorphonuclear leucocytes were nearly as numerous as red cells. Two red-cell casts were seen, but no other casts. His temperature was down to normal; he passed a dark green stool, which was negative to benzidine. On the 10th he passed 27 oz. urine (intake 50 oz.). On the 11th he looked less well and passed only 20 oz. (intake 68 oz.). This still contained much blood and a few red and white celled casts; the albumin was 0·1 per cent.

The patient's condition then began to clear up rapidly. By the 13th he was passing 43 oz. of urine, which contained no blood microscopically (intake 70 oz.). There was only a faint haze of albumin. By the 15th no albumin could be detected. In the centrifuged deposit three red cells were seen, fair numbers of leucocytes and many casts, mostly hyaline, a few epithelial and granular. By the 20th no red cells and no casts could be found, and only a few leucocytes. Throughout the course there was no headache, no mental symptoms.

assault of germs and themselves become foci of disease. They may be physiologically enlarged as the result of protective activity, or pathologically enlarged to the detriment of the organism. It is no easy matter to distinguish these separate conditions. The whole problem of glands is a very intricate one, and many puzzling questions remain unanswered. For example, is a palpable gland in the neck an enlarged gland, and at what stage in infancy do normal glands become palpable in any situation? To what extent do glands vary in number and size in healthy individuals? Are new glands formed on comparatively slight stimulus, and do they disappear entirely when the stimulus is withdrawn? The necessary elements for their development are present in any loose connective tissue. Gulland[4] states that glands which have been removed are very readily replaced and that the newly formed glands are not distinguishable from the original ones after some time. Even the relationship between glands in various situations is not definitely established. Some observers[5] have maintained that the tubercle bacillus may enter through some part of the mouth or pharynx, possibly through a decayed tooth or through the tonsil, and track from gland to gland down to the root of the neck until the lung itself is affected by direct contact with a caseous gland; this has been given as an explanation of the occurrence of tuberculous infection of the apices. Woodhead and other observers believe that there is a direct lymphatic connexion between the deep cervical and bronchial glands, and that the tubercle bacillus may thus pass from the pharyngeal mucous membrane to the lungs. Shiga[6] states that tubercle bacilli, having reached the respiratory passages, are taken up by the leucocytes, pass through the mucosa into the lymphatics, and eventually reach the hilus glands by way of the glands of the neck. According to Still,[13] "direct extension of tuberculosis from cervical glands to those in the mediastinum, if it occurs at all, is extremely rare. Enlargement and caseation is progressively less in cervical glands from above downwards (affected from tonsil), but when mediastinal glands are affected in such cases they show as advanced changes as the upper cervical glands. Hence the latter were probably infected in the usual way through the lung." According to Cobbett,[5] "careful investigations of unselected material provided by children dying in general hospitals have shown that the bronchial glands are affected with tuberculosis, or tubercle bacilli, much more commonly than the cervical or mesenteric glands, and there, therefore, can no longer be any doubt that the lungs, even in young children, are a commoner portal of entry of tubercle bacilli in general than the intestine or pharynx." He states, further, that investigations have shown that it requires much larger doses to infect when the bacilli are swallowed than when they are inhaled. In animals the lungs present a marked contrast to other organs, in that they invariably yield copious cultures of bacteria, including moulds, &c.; and that these bacteria really get into the lungs with the inspired air there can be no doubt. The tissues and fluids of the healthy body, lungs excepted, are almost entirely free from living bacteria.

Calmette's[7] view is very different. Too much emphasis, he believes, has been laid on the respiratory route. Germs floating in the air are not often sufficiently numerous to be carried into the fine bronchial ramifications, the filtering action of the nasal and buccal mucous membranes being very effective; moreover, very small droplets do not as a rule contain bacilli, and numerous researches have shown that healthy lungs are nearly always aseptic. Most tuberculosis, from that of infants to that which occurs in adults, is derived from penetration of the intestine. The digestive tract is the principal path of invasion by the human as well as by the bovine bacillus.

With regard to the condition of lymphatic glands as an indication of the point of entrance, contrast the views of these two authors. According to Cobbett,[8] "if the lymph glands are such efficient filters as we have reason to believe, it seems probable that they will seldom, if ever, let a tubercle bacillus through their meshes without retaining in their substance a number of others sufficient to cause disease there and produce obvious lesions which will serve to mark the path along which the invaders penetrated into the body." According to Calmette, Cohnheim's law, which states that a cellular reaction always marks the site of invasion, is only true of individuals already infected. Unless this condition is fulfilled, or the dose of infection is truly massive, no cellular reaction indicates the presence of bacilli within a gland. Von Behring was the first to maintain the intestinal origin of pulmonary tuberculosis. Tubercle bacilli, he said, received in infancy may pass through the wall of the intestine and through the mesenteric glands, and so reach the lungs, without leaving any lesion in the abdominal cavity.

The recent work of Ferrán and Chabás is of interest in this connexion. They maintain that "even under laboratory conditions, when healthy animals are housed along with infected animals in cages whose walls and floors as well as the food are thickly smeared with living tubercle bacilli, tuberculosis will not occur in the uninfected unless they are permitted to drink water contaminated with their own excrement. Ferrán concludes from this that the tubercle bacillus is merely the end product or transmutation of an intestinal saprophyte, and that infection need not be feared as long as the tubercle bacillus is the only organism present" (Sorley[8]).

Conjoint Clinical and Laboratory Investigation.

An investigation has been undertaken in the bacteriological laboratory of the Institute and in the physiological laboratory of the University with the object of obtaining more accurate information regarding the reactions of lymphoid tissue to tuberculous infection, the power of resistance of the lymphocytes, and the course and extent of possible spread of infection by the lymphatics before there is general infection of the blood stream. From the clinical side we are carefully observing all glandular enlargements and co-relating them with the possible portals of entry of infection, and by prolonged study endeavouring to arrive at some conclusion regarding the nature of the infection in each case. There is a tendency at present to regard all glandular enlargements as evidence of tuberculosis, yet many of them disappear and leave no sign to support the view that they were associated with this disease. It is surely of importance to determine in what proportion of cases this is found to occur. These diverse views show how confused and inadequate our knowledge of the disease really is.

Prognosis and Treatment in Tuberculosis.

Preventive and curative treatment have as yet no sure basis, and our powers of prognosis are very feeble. Rational prognosis cannot be based on theories, however plausible. It can only be based on observation of facts. The present tendency is to base all our hopes on inoculation. Hereditary predisposition is now regarded as resulting merely from some special texture of the cutaneous and lymphatic apparatus, and not from the presence or absence of a specific hereditary impregnation with the bacillary products. Special stress is laid on the presence or absence of acquired immunity. Few individuals, it would appear, can hope to escape infection, and the slight infections to which we are all exposed in childhood may provide us with the power of resistance to later and more deadly attacks. In the opinion of Lyle Cummins[14] this conception of "infection and resistance" provides the master key to the whole question of tuberculosis.

Nathan Raw[9] believes that bovine and human tubercle will not live in the body at the same time, and that the one disease produces immunity from the other. He states that a child who develops primary abdominal tuberculosis with involvement of the mesenteric glands, or an infection of the neck glands, which are usually caused by the bovine bacillus in milk, is immune to infection by the human bacillus for the remainder of life, and that young adults attacked by the human bacillus, producing primary pulmonary tuberculosis, and with the discovery of secretin by Bayliss and Starling.

The deeper insight into the mechanism of the function of the cell given by Prof. Moore cannot fail to be of benefit to mature workers. Whether students will be able to appreciate this presentation of the subject must depend upon their previous scientific equipment.

BRIGHT'S DISEASE.

Praxis der Nierenkrankheiten. By Prof. L. LICHTWITZ, Altona. (Fachbücher für Ärzte. Vol. VIII.) Berlin: Julius Springer. 1921. With 33 illustrations. Pp. 252. M.45.

IN this monograph Prof. Lichtwitz establishes his position among the leading continental authorities on diseases of the kidneys; it is not only a guide to a subject of considerable difficulty, but it is also an exposition of the author's own point of view based on his personal experience. The subject is approached along orthodox lines, and in the opening pages a summary is given of the main principles on which other workers have attempted to base their classification of diseases of the kidneys. In its main outline Prof. Lichtwitz's classification follows that of Volhard and Fahr; at the same time he accepts Aufrecht's point of view in emphasising for classification purposes the importance of the primary site of the disease process in the kidney. The anatomy of the kidney is shortly reviewed and its physiology is well summarised in its relation to medicine.

The best and most important section of the book deals with the crucial signs of kidney disease. The author's critical remarks on the significance of albuminuria, cylinduria, red and white blood corpuscles and epithelial cells in urinary deposits are worthy of the closest study and attention. In the functional tests of renal efficiency Lichtwitz makes a sharp distinction between the secretory and concentrating power of the kidney, since these functions are performed by different parts of the renal epithelium. He gives a standard renal-test diet, to which on successive days ¾ litre of water, 10 g. sodium chloride, and 20 g. urea are added. The urine passed during the day, from 8 A.M. to 8 P.M., is collected in two-hourly periods; the urine passed during the night is collected together and makes the seventh specimen of the 24 hours. For practical purposes it is sufficient to measure the volume and specific gravity of the separate specimens, and to estimate the urea and sodium chloride only in the total quantity of the 24-hour period. A table is given by which the amount of salt and urea output may be roughly calculated from these simple data. Prof. Lichtwitz would limit the use of the term renal insufficiency to disturbance of the power of concentration. Renal insufficiency always leads to an increase in the non-protein nitrogen in the blood and tissues. Non-protein nitrogen retention is an important sign in diagnosis and as an index of the course of the disease, but it is not proportional to the degree of renal damage and cannot, as Volhard has suggested, be used as an index of comparison between different cases.

The extra-renal signs of Bright's disease (incorrectly termed "Die Nierenfolgen"), namely—œdema, raised blood pressure, cardiac hypertrophy, arterio-sclerosis, uræmia and anæmia—are perhaps too theoretically discussed for a practical book. The author accepts a twofold relation of raised blood pressure to kidney disease; on the one hand he speaks of the association of nephritis with raised blood pressure, and on the other he recognises the sequence of: raised blood pressure—arterio-sclerosis—renal sclerosis. In the description of the clinical types the morbid anatomy and histology are briefly stated, more attention being given to the ætiological aspect. Nephrosis (or toxæmic kidney) is dealt with in detail and the "Genuine Schrumpfniere" (primary granular kidney) is [illegible] ther briefly. In general, however, the clinical aspect is carefully and ably reviewed from the present-day standpoint.

The book is a masterly introduction to the newer pathology and treatment of diseases of the kidney. It has throughout a practical interest that ensures it the widest recognition.

ALFRED NEWTON.

Life of Alfred Newton, Professor of Comparative Anatomy, Cambridge University, 1866–1907. By A. F. R. WOLLASTON. With a Preface by Sir ARCHIBALD GEIKIE, O.M. London: John Murray. 1921. Pp. 332. 18s.

THIS is a delightful book about a man who was also delightful in many ways. In his obstinacy, his hatred of any change, his whole-hearted aversion towards publishers, reviewers, popular natural history publications and their writers, his kindliness, his love of work and meticulous accuracy, he must in many ways have resembled Samuel Johnson, and another whimsical and very real naturalist, Charles Waterton. Though nominally a comparative anatomist, Prof. Newton's actual position in the scientific world was that of an ornithologist, and to the study of ornithology he devoted his life. It was in 1865 that the University decided that the study of comparative anatomy should be removed from the school of the professor of anatomy and should be combined with a professorship of zoology, the two making a new chair. The first election took place in 1866, the candidates being W. H. D. Drosier, M.D., of Caius, and Alfred Newton, M.A., of Magdalene, the latter being successful. Newton had previously been well known for researches in ornithology; for six years after his matriculation in 1848 he was elected to the Norfolk Travelling Fellowship, whereby he was able to make ornithological journeys in Lapland, Iceland, the United States, and the West Indies. He was much interested in the question of the extinction of birds, and with infinite labour collected notes and information about the great auk or gare fowl and the great bustard, with the intent to write two books, "The Story of the Gare Fowl" and "The Bustard in Britain." But his passion for accuracy and completeness made him dissatisfied with his material, and neither book arrived at publication. Incidentally we may mention that Mr. Wollaston says that it was Newton's inquiries into the matter of the great auk which led Kingsley to refer to that ancient bird in "The Water Babies." Part of Newton's duties as professor was to give courses of lectures in zoology, but he was never happy as a lecturer, and, as he himself says, knew that he was one of the worst of lecturers, but he devoted himself with great ardour to the museum, and was always on the look-out for specimens to add.

One of the most interesting portions of the book is that dealing with Newton's views as to other ornithologists and naturalists. "Two of a trade never agree," says the proverb, a sentiment which is as old as Hesiod, and Newton's remarks about Gould, Buckland, who was "wanting in every essential of a naturalist, except zeal," and Seebohm are just as good reading as Waterton's remarks upon Swainson and Audubon, but both Newton and Waterton were in the right. Mr. A. C. Benson's description of the trials which Newton underwent when music was introduced into Magdalene College Chapel, together with a collect from the office of Compline raises a smile, and his agonies when an ibis with a scarlet head appeared among the Chorus of Aristophanes's *Birds* are described with great vividness. In 1907 he died, and Mr. Wollaston gives us his almost last letter, written to his friend Mr. Harvie Brown (p. 291), a letter which in its modesty, its thankfulness for a happy life, and the gift of friendships sums up the whole man. He was, to use Sir A. Geikie's words, "one of the most eminent ornithologists of his day," and his Dictionary of Birds is a monument of industry and knowledge.

progress. The length is of importance, and should be taken from time to time, as the ratio between growth and weight is a fairly constant one in normal conditions. Any ill-health of the parents and of other children is noted, and the existence of any tuberculous heredity on either side. We classify surroundings as good, fair, and bad. This is vague, but much must be considered in addition to number of rooms and cubic space; general evidence of good management may rightly modify our opinion of a small house. We leave it open to the doctor to judge of all the circumstances before coming to a decision. I have recently seen a large family in two small rooms in a dilapidated house who were all fairly healthy. If I had found them all showing such signs of disease as rickets and enlarged glands the cause would have been regarded as perfectly obvious. Discovery of good health in a bad house is as valuable an observation as the discovery of disease, but is apt to make much less impression on the mind. Efforts by the parents to make the best of bad circumstances by good management may be much more successful than is generally considered to be possible.

If the child is not breast-fed the nature of the substitutes is noted and the dates at which they were given. It is unnecessary to point out how impossible it often is to find out exactly what some mothers are giving to their children. If unsterilised cow's milk is given we note the source of the milk; it is our intention to have bacteriological examinations made at the laboratory from time to time, and also to have the mother's milk analysed in cases where it is suspected to be of poor quality. In the consideration of gastro-intestinal disturbances in infants and children it is of the utmost importance to consider all associated symptoms with great care. The disturbance may not be due to an error in diet at all; the diet may be not theoretically perfect, yet of a kind which we have known to suit many other children. The disturbance may be purely reflex, and the primary mischief may not be in the stomach or intestine at all. The symptoms of a pulmonary catarrh may be overlooked because of the prominence in the picture of the secondary gastro-intestinal symptoms. Meticulous tinkering with the diet will not carry one far in such cases. Want of rest and excitement, due to the fussy attentions of a mother or nurse, may upset a child's digestive system. We know that excitement may cause diarrhœa in an adult, and worry may bring the functions of the digestive system almost to a standstill. The diverse views on the value of many foods—apart from gross errors—indicates that the solution does not lie entirely in percentage proportions and calories.

We consider it highly important to note the time and circumstances of the earliest onset of various common ailments, and have selected for special observation catarrhs (respiratory and gastro-intestinal), nasal obstruction, ear trouble, and glandular enlargement. A short account of any special illness can be given on the back of the card. By means of these cards and the weight charts we hope to obtain a fairly full record of the health of infants during the first year of life.

Details Recorded on Infant's Card.

Date, name, address, doctor.

(1) Weight at birth, (2) length, (3) mature or premature, (4) any abnormality, (5) health of parents, (6) any tuberculous heredity, (7) number and health of previous children, (8) surroundings (good, fair, bad), (9) breast-fed or not, (10) if not, what substitutes given and when, (11) source of milk-supply.

Onset of (12) catarrhs (respiratory and gastro-intestinal), glandular (13) nasal obstruction, (14) ear trouble, (14) enlargements, (15) any other ailment.

Notes of any special illness and after-history over-leaf.

Examination of Children: Children's Card.

We have prepared similar cards for the examination of older children. When a doctor is called in for any illness he notes the various points mentioned on the card quite apart from that special illness. It may be wondered how the doctor will obtain opportunity of seeing children between infancy and school age unless he is called in on the occasion of serious illness; we hope that with the opportunity of closer examination of the children during the first year of life he will be better able to estimate the prognostic significance of any illness, and that the mothers' intelligent interest will make them readier to call for his advice. Further, the nurses will have gained the confidence of the mothers, who may often ask their advice regarding the need for the doctor's services; this is already occurring in St. Andrews. It is useless to ignore the fact that expense is frequently the cause of the mother's reluctance to send for a doctor; she desires to be assured of the necessity before spending money which she thinks might be better spent in procuring food and necessary comforts for her children.

Details Recorded on Children's Card.

Date, name, address, doctor.

(1) Glands, especially deep superior cervical—palpable or enlarged, (2) tonsils (normal, enlarged, unhealthy), (3) teeth, (4) nostrils (free or obstructed), (5) ears (earache or discharge), (6) diet, (7) failure of nutrition, including loss of muscle, (8) tendency to catarrhs, (9) exhaustion—disinclination for effort, (10) anæmia, (11) temperature—especially irregularities without obvious cause, (12) pulse—especially persistent rapidity and softening.

X ray examination of chest in all cases of glandular enlargement; blood examination in all cases of pallor; urine examination at Institute in all cases of failure of nutrition.

The condition of glands, tonsils and teeth is obviously very important. The enucleation of tonsils simply because they are enlarged is surely a most unscientific procedure. Enlarged tonsils often present a healthy appearance, yet from their size alone they may no doubt cause a certain amount of harmful obstruction. On the other hand, there may be purulent discharge from the crypts of tonsils of normal size. The deep superior cervical glands are selected for special note because of their close relationship to the tonsils and pharynx. We note carefully the condition of the nostrils in order to observe the onset of obstruction. No doubt complete nasal obstruction is commonly associated with the presence of adenoids, but what are the conditions which lead to this hypertrophy and degeneration of the lymphoid tissue of the naso-pharynx? It is reasonable to consider that the nasal obstruction due to recurrent attacks of coryza, with swelling of the nasal mucous membrane, may lead to defective aeration of the nasal passages, the accumulation of secretions, and decomposition due to microbic infection. Adenoids might possibly be prevented by simple attention to the condition of the nose from the earliest stages of life. When this obstruction occurs the Eustachian tube becomes involved, and it is the channel through which infection is conveyed from the naso-pharynx to the middle ear in cases of suppurative otitis media. Urbantschitsch drew attention long ago to the existence of Eustachian salpingitis in every case of chronic middle-ear suppuration. Further, tuberculosis of the middle ear is not uncommon in the infant, the tubercle bacilli no doubt finding their way along the Eustachian tube. Douglas Guthrie[13] states that in a children's clinic for ear and throat disease 90 per cent. of cases are tonsil-adenoid disease and middle-ear suppuration. The amount of suffering and ill-health which the prevention of such conditions would abolish demands attention to the earliest onset of symptoms with the hope that simple measures may then be effective. Lewin[14] points out that children are rarely taught to attend to their noses, and are allowed to acquire the habit of sniffing up discharges instead of blowing their nostrils free. Sprays and lotions are resorted to when the mischief has been done, and are troublesome and often ineffective. She suggests that very simple early measures might abolish the necessity for their use.

Tendency to catarrhs need not be dwelt upon, except to point out that they may lead to the formation of the suitable soil for the growth of the tubercle bacillus, if they are not indeed the indication of an underlying tuberculous infection. The whole relationship of respiratory catarrhs to tuberculosis has clear, and the reader is left in doubt at times as to which operation the authors actually advise for the different types of lesion. There is, however, a very full discussion of many disputed points such as, for instance, the value of occluding the pylorus or of the performance of gastro-enterostomy with a perforated gastric ulcer.

The book is one which no modern surgeon can afford to be without, for here is gathered in convenient compass an epitome of work collected from innumerable original sources.

DICTIONARY OF BRITISH SCIENTIFIC INSTRUMENTS.

Issued by the British Optical Instrument Manufacturers' Association. London: Constable and Co., Ltd. 1921. Pp. 335. 21*s.*

IT is not altogether easy to understand for what class of reader this work has been prepared. In substance it appears to be a catalogue issued by the Associated British Manufacturers of Optical Goods. Yet it is more than that. Certain chapters, devoted to the British optical industry, to navigating instruments, the Royal Meteorological Society, to British optical glass, and the Royal Observatory challenge a larger and more general interest than attaches to a mere trade catalogue, however extended and precise. But these more literary elements of the work are of very uneven quality. The chapter on the Royal Observatory is a compendious but very informing and interesting résumé of the work of that remarkable institution. The chapter on British optical glass again is well informed and readable. But the paper on the Royal Meteorological Society is drawn up like an annual report, and the short paper on navigating instruments is inadequate from every point of view. The most important part of the volume is the glossary —called a dictionary—of British scientific instruments; but a "dictionary" of scientific instruments of British manufacture which makes no mention whatever of the bistoury, scalpel, trephine, trocar, catheter, lithotrite, and dozens of other surgical instruments, seems to be misnamed. The fact that the publication is issued by a manufacturers' association would explain and even excuse the omission if the instruments specified were only optical. But seeing that the list does include specula, forceps, a cephalometer, and a milk jar, called by the curious name of "cremometer," it seems necessary to go farther than to the obvious principle of provenance to explain its limitations. Considered as a dictionary the work suffers from excessive compression. More useful and more intelligible than the too brief descriptions are the 150 pages of excellent engraved and photographed drawings of instruments manufactured or sold by the members of the Association. If the compilers of the book had shown literary faculty commensurate with the skill and taste with which the collection of diagrams has been prepared the work would have left us in no doubt as to its value from the readers' point of view.

JOURNALS.

Quarterly Journal of Medicine. Vol. XIV., No. 56, July, 1921.—Edgar F. Cyriax, in an article entitled Unilateral Alterations in Blood Pressure: the Differential Blood Pressure Sign, continues his observations upon the differences in blood pressure on the two sides of the body. This discrepancy, which he found to exist in a large number of cases of war injuries, he calls the "differential blood pressure sign." In the present series both medical and surgical cases were examined, and they were divided into two groups: (*a*) unilateral conditions, bilaterally unequal conditions, and operations performed upon structures in the middle line; (*b*) bilaterally equal conditions, and constitutional disorders. In the former group the differential blood-pressure sign was found in a large proportion of cases; in the latter group the sign was only present in about half as many cases. In all instances of spinal curvature investigated the sign was r [illegible] J. C. Spence describes a series of Ob[illegible] on Sugar Tolerance, with Special Reference to Variations Found at Different Ages. The blood-sugar curve is now generally recognised to be the most accurate method of determining sugar tolerance. He showed that the sugar tolerance is greater in infancy, but after the age of three a curve similar to those of young adults was obtained. Five apparently healthy men over the age of 60 were examined, and the sugar tolerance was found to be considerably diminished. In the four cases of cancer investigated, no definite change, apart from that attributable to age, was established.—J. W. McLeod, A. G. Ritchie, and C. A. Dottridge contribute an article on the Incidence of Infections with Pfeiffer's Bacillus Before, During, and After the 1918 Epidemic. According to the literature, Pfeiffer infections were rare in the early years of this century, but occurred in localised epidemics from 1915 onwards until the pandemic in 1918. Accepting the probability that Pfeiffer's bacillus is the causative organism of influenza, the authors have endeavoured to strengthen the view that there is a gradual diminution of infections with the bacillus in the years immediately following an epidemic, and a rise in the years preceding the next outbreak. They examined naso-pharyngeal swabs in 24 chronic venereal cases in the early summer of 1918, in 33 per cent. of which Pfeiffer's bacillus was isolated whereas in March, 1920, 47 similar cases were investigated and Pfeiffer's bacillus was found in only 8 per cent.—Thomas Lewis, in an article entitled "The Law of Cardiac Muscle, with Special Reference to Conduction in the Mammalian Heart," enunciates the Law of Cardiac Muscle as follows: "The fundamental properties of muscle will be found to vary in their degree in the four types of cardiac fibre; if for any two types we can obtain a measure, then within reasonable limits we may predict the degree for the remaining two types by placing all four in their natural order." The four types of cardiac fibre are (1) Purkinje substance; (2) auricle; (3) ventricle; and (4) a.-v. node. The Purkinje fibres are the largest, and contain most glycogen, the nodal fibres are the smallest, but on the other hand are the most rhythmic, and so probably the Purkinje fibres will prove to be the least rhythmic. The 2 : 1 response (half response) of cardiac muscle is described, in which the cardiac muscle only responds to every other stimulus providing they are supplied sufficiently frequently. The critical rate is greatest for auricle, less for nodal tissue, and intermediate for ventricle. The various conditions modifying conductivity are discussed, and emphasis is laid on the fact that the several properties of cardiac muscle have not been proved to be independent. In altered conductivity the cardiac function is probably depressed as a whole, but the four types of cardiac fibre are affected to different degrees according to the law of cardiac muscle.—Leonard Findlay, D. Noël Paton, and J. S. Sharpe: Studies in the Metabolism of Rickets. The authors commence their contribution by stating that the ætiology of the disease is no better understood now than when Glisson described it. Experiments were made to determine the calcium content of food, fæces, brain, and blood in rachitic and non-rachitic pups. The brain and muscles and the blood calcium content of the rachitic pups showed no divergence from the controls. The conclusion is therefore drawn that the calcium deficiency of the bones in rickets is not due to a deficient supply of calcium to the bones. The remainder of the paper is devoted to a study of the calcium balance in normal and in rachitic children. In normal children the excretion of calcium varies with age. During the first year of life, 35 per cent. of the calcium intake, which is high owing to the nature of the diet, is retained, and although the intake falls with the changes in diet as age advances, yet the utilisation percentage rises up to the time of puberty. The percentage utilisation in human milk is higher than in cow's milk, a fact that has not been explained. On comparing healthy with rachitic children no definite divergences were found. The utilisation of calcium in health and in rickets is fairly proportional to the intake, although in rickets slight discrepancies *no aphrodisiac symptoms or* œdema. The blood pressure remained constant (125 mm. systolic, 80 diastolic). The blood count on the 10th showed 6,150,000 red cells and 11,000 *leucocytes per* c.mm.; hæmoglobin 91 per cent.; there was no departure from normal in the differential count.

Treatment.—The patient took fluids very freely until *admission*; he was then limited to 2½ pints of fluid and no solids for 24 hours; he was given 4 oz. of lactose daily. On the 10th the fluids were increased to 3½ pints and he was *allowed plentiful carbohydrates.* Fats were added on the 13th and limited proteins on the 14th. He got up on the 24th and was discharged on the 28th.

Tests for renal function.—For four or five days after the patient's admission each specimen of urine passed was kept and tested separately. On admission the diastase content *of the urine* was low (5 units), but the patient was then drinking much fluid. Next day it was 20 units, and specimens tested during the next four days always contained between 10 *and* 20 units. *Only* one other specimen, on June 13th, gave a reading as low as 5 units. The blood-sugar was at first on the low limit of normal (0·085 g. per 100 c.cm. on *admission*), while the urinary sugar was 0·032 g. per 100 c.cm. But by 11th the blood-sugar had risen to 0·136 g. per 100 c.cm.; and the sugar in urine in g. per 100 c.cm. was *in different specimens* 0·080, 0·100 on the 9th; 0·120, 0·109, 0·106 on the 10th; 0·116, 0·122 on the 11th; 0·141 on the 12th; on the 13th it had fallen to 0·096 and 0·092. The sugar was *estimated by Dr. R. L.* Mackenzie Wallis, using his method for normal urinary sugar; the normal limits by this method are 0·06 to 0·08 g. per 100 c.cm. It must be *remembered that over this* period the patient was taking 4 oz. of lactose daily as well as other carbohydrates later, and the figures must be compared with the quantities of *urine passed.*

On admission the urea in his urine was 0·8 per cent. It was not thought justifiable to test his excretion of urea or *iodides during the acute stage. His blood-urea on admission* was 30 mg. per 100 c.cm.; 36·5 mg. per 100 c.cm. on the 11th—i.e., well within normal limits.

The patient was seen again on July 22nd, 1921, after a holiday. His urine contained no albumin, and no casts, red or white cells were seen in the centrifuged deposit. His *blood count showed* 6,600,000 *red and* 7400 *white cells* per c.mm. His blood pressure had, however, risen to 140 mm. (systolic) and 95 mm. (diastolic). A few weeks later *his blood pressure had fallen to* 112 *mm. (systolic).*

Discussion.

The case presents several interesting features, especially as regards the kidney lesion:—

1. The absence of vesication in the mouth and the relatively slight damage after a comparatively large dose of cantharidin suggests that not all of it can have been absorbed; cantharides, however, takes some time to blister. Much worse damage has followed the taking *of a relatively smaller amount of tincture of cantharides* in which the presence of chloroform as a solvent would perhaps assist the absorption of the cantharidin. Possibly in this case the butter taken with the patient's tea helped the *absorption of the drug.*

2. The rapidity with which the condition cleared up is worthy of note.

3. The signs and symptoms are those of a glomerular nephritis. Of *particular note in this connexion* are: (*a*) absence of œdema; (*b*) no great reduction in the fluid output; (*c*) hæmaturia with large numbers of leucocytes in the urine, moderate numbers of casts soon *disappearing*; (*d*) *normal* blood-urea; (*e*) normal diastase output; (*f*) a blood-sugar on the lower limits of normal (at first) with a urinary sugar on the upper limits of normal. It is as yet too early to lay much stress *on* this.

I am indebted to Dr. J. H. Drysdale for permission to publish the clinical details and to Dr. Mackenzie Wallis for permission to give the results of his investigations into the chemical pathology.

DISABLED SOLDIERS' AND SAILORS' WORKSHOPS CHARITY.—A subscription dance is to be held at Rectors on Wednesday, Nov. 16th, under the auspices of the *Disabled Soldiers' and* Sailors' Workshops Charity. The dancing salon has been given for the evening by the management, and the Duchess of Sutherland *has consented to act as* hostess. Price of tickets, if purchased before Nov. 16th, £2 each; if purchased on that day, £3 each. Tickets, and any further information *desired, can be obtained from* the Hon. Organiser, 177A, Kensington High-street, W. 8; remittances should be made payable to the Duchess of Sutherland.

Reviews and Notices of Books.

BIOCHEMISTRY.

A Study of the Origin, Reactions, and Equilibria of Living Matter. By BENJAMIN MOORE, M.A., D.Sc., F.R.S., Whitley Professor of Biochemistry, *University of Oxford.* London: Edward Arnold. 1921. Pp. 340. 21*s*.

Prof. Moore defines biochemistry as the study of the chemical substances produced by biotic energy, or the energy of life, in the bodies of living plants and *animals, and the* further study of the energy processes by which such substances are elaborated and used subsequently to their production for carrying on the life of the cell. The living cell and its energy exchanges are subject to physical and chemical laws, but the peculiar structure of living matter is inhabited by a type of energy not producible in the absence of life. The theme of the book is biotic energy. We have *before us all the author's views on this subject.* Though not accepted in their entirety by his colleagues, these views afford material for consideration and thought, as well as for further investigation.

Part of the book is a reprint of some of the author's papers in the Proceedings of the Royal Society and part is a re-edition of his contributions to Advances and Recent Advances in Physiology. The book is *not a text-book on the subject. The reader must* already be acquainted with the elements of physical and organic chemistry so as to follow the reasoning of the author. The papers reprinted from the Proceedings *of the Royal Society are those on the origin of life.* Life originates by the catalytic action of certain hydroxides, such as that of iron, upon the traces of carbon dioxide in the atmosphere. Light energy is converted into chemical *energy* by *the reduction* process to formaldehyde. Further chemical energy arises by the reduction of nitrates to nitrites in water by the action of light. Through the agency of the chemical energy so produced complex *organic* compounds are built up by unknown stages and ultimately the chloroplast as a special energy transformer. The small supply of nitrates, insufficient *for existing life*, can be supplemented by the conversion of atmospheric nitrogen by certain algæ. The living cell is peculiar in its special structure, consisting of a mixture of colloids and crystalloids in *common solution* in water. This mixture is endowed with an aggregate of physical properties and thus differs from a simple colloid like starch or albumin. Hence the cell has biotic energy. *Living matter acts as a transformer* between biotic energy and other forms of energy. All the energy is supplied by changes arising from chemical reactions in solution and they are initiated and controlled *by the substances in the* cell and in its secretions.

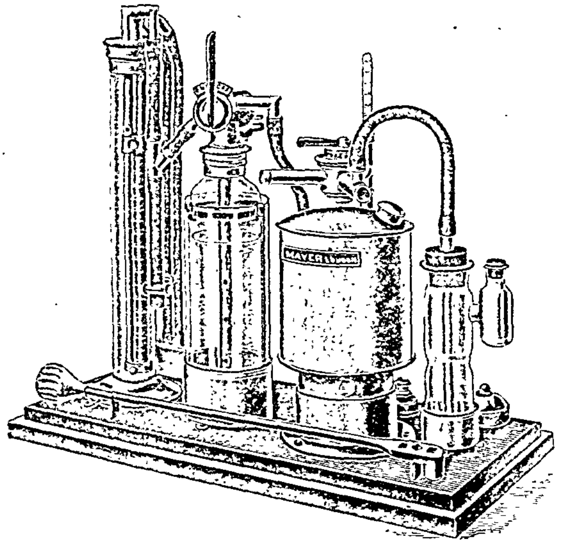
In Chapter XIV., on Secretion and Glandular Mechanisms, the most interesting section in *the book*, *Prof. Moore explains* the inner working of the cell. He argues thus: Since a really impermeable membrane does not exist and no animal cell has been proved to possess even a semi-permeable *membrane*, the *peculiarity of the* presence of excess of potassium in the cell and of excess of sodium in the plasma must be attributed to an active process of selective absorption against osmotic pressure. *The cell structure has a* definite affinity for the different ions; each ion passes in and out, but only in accordance with the affinity; the amount that passes through in either direction may be so small *that* it *is not* detected by chemical means. The work done in the secretion of urine can only be determined by reference to each constituent separately. In the case of urea, the *concentration in the urine is over* fifty times that in the blood, of sodium chloride scarcely double. By using a suitable formula the work done in their secretion is represented by 1211 calories per day. The *chapter concludes* with an excellent description of Pavlov's work on the connexion of the nervous system with secretion

New Inventions.

A COMBINED APPARATUS FOR INHALATION OR INSUFFLATION ANÆSTHESIA.

THE apparatus is designed for administering nitrous oxide-oxygen-ether by inhalation or insufflation, and ether by insufflation; it comprises the following units mounted on a wooden base :—

1. *Gas and oxygen sight feed.* consisting of two tubes, their upper parts of metal, and their lower six inches of glass, contained in a glass cylinder with a screw top. The outer ends of the tubes are fixed into the screw top and connected with the nitrous oxide and oxygen supply; the tubes inside are immersed in water up to their glass-metal junctions. They are pierced in their upper (metal) parts; the holes are of equal size, but the tube for registering nitrous oxide volumes has four openings, and that for oxygen only one. The gases issue from these openings and mix in the upper part of the glass cylinder, exerting, at the same time, a downward pressure on the water inside the glass tubes, and producing a water-level varying with the pressure of nitrous oxide or oxygen delivered, and therefore indicating the relative volumes of the gases passing through the feed. As there are four holes for nitrous oxide and one for oxygen, the volume of nitrous oxide passing into the apparatus is four times that of oxygen when the water-levels in the tubes coincide. A centimetre scale placed behind the tubes serves as an indicator, and enables one to recognise changes in the relative proportions of the gases passing to the patient. The mixed gases leave the sight-feed cylinder by an exit tube also fixed into the screw top. A water trap prevents a sudden rush of gas forcing water from the feed into the ether bottle.



2. *Ether bottle* provided with a two-way stopcock, by means of which the gases can either be passed straight to the heater or be deflected in any proportion through the ether. The tube dipping into the ether is pierced by six holes, bored on alternate sides at distances of half an inch. When the stopcock is first opened the gases pass out of the highest hole only and bubble through approximately half an inch of ether; on opening it wider they issue from two, three, or more holes, and each subsequent bubble passes through a greater depth of ether. In this way more or less ether vapour can be added to the gas mixture. The bottle is surrounded by water to prevent freezing, and has a mark half an inch above the highest hole, beyond which the ether level should not be carried. It is filled by a device resembling a reversed Junker bottle, which fits any ether manufacturer's bottle by means of a cork. One tube, which dips into the ether, is connected with a tap on the ether bottle of the apparatus, and the other, which just passes through the cork, carries a pair of hand bellows. On squeezing the bellows the air pressure is raised in the bottle and ether forced into the apparatus.

3. *Heater for warming the gases.*—The gases pass through a coil of wide-bore tube surrounded by a water jacket, which is kept hot by an ordinary electric bulb, preferably about 20 watt metallic filament. It is thus adaptable to any current or voltage, taking a lamp in ordinary use for lighting. A thermometer indicates the temperature of the gases as they leave the heater.

4. *Two-way tap.*—The gases leave the apparatus through a two-way tap, one limb of which carries a safety valve.

5. *Safety valve.*—Dr. Shipway has kindly given permission for his mercury safety valve to be fitted to the apparatus.

Methods of Use.

1. When used for insufflation of ether vapour only, the air supply is connected directly to the ether bottle and the strength of ether regulated by the stopcock.

2. When used with gas-oxygen-ether, cylinders containing the gases are laid horizontally on the lower shelf of the anæsthetic table and firmly secured to it by a long strap. (The carrying strap of the apparatus box serves for this purpose.) The flow of gases is controlled by one long key which fits both cylinders. The cylinders are connected with the gas feed by means of nozzles and rubber tubes. (*a*) For inhalation of gas-oxygen-ether, a bag and face-piece are attached to the plain limb of the two-way exit tap. The proportions of the gases are adjusted and more or less ether vapour added to them as the case demands. (*b*) For endotracheal or endopharyngeal insufflation, the tube going to the patient is attached to the limb of the two-way tap carrying the safety valve, and the gas mixture regulated as above. Induction may thus be carried out by gas-oxygen-ether via bag and face-piece attached to the plain limb of the tap. The catheter is passed, connected up with the other limb, which is protected by the safety valve, and the course of the gases is deviated by simply turning over the tap. For endotracheal insufflation an average of 120 gallons of nitrous oxide and 5 cubic feet of oxygen is required per hour; but for endopharyngeal insufflation a larger quantity is usually needed.

The apparatus has been used by me in over 500 cases at the Queen's Hospital, Sidcup, and elsewhere; the advantages claimed for it are: (1) Its portability; it weighs 15 lb. with cover. (2) Good control and steadiness are obtained by the long key and the method of fixing the cylinders; reducing valves or a cylinder stand do not seem to be necessary. (3) The fact that it combines three pieces of apparatus in one. (4) It renders easy the application of gas and oxygen to intratracheal work. Many of the cases which require an intratracheal anæsthetic are also those in which the non-toxicity of gas and oxygen is most desirable—e.g., excision of the tongue. (5) The method of filling the ether bottle obviates the danger of fire from ether vapour with an exposed flame, and prevents waste of ether. The heater appears to be a definite aid to an easy induction and a good anæsthesia. Apart from the necessity of supplying a warmed vapour in intratracheal cases, heating nitrous oxide seems to render it more potent, so that less ether is needed; and heating ether vapour renders it less irritating.

I have to express my thanks for the great amount of work in making, altering, and remaking many experimental models of each unit of the apparatus carried out in the first instance by Mr. F. C. Carr, a dental mechanic at the Queen's Hospital, and later by Messrs. Mayer and Phelps, New Cavendish-street, London, W., who produced the final model.

STANLEY ROWBOTHAM, M.R.C.S., L.R.C.P. Lond.,
Anæsthetist, Queen's Hospital for Facial and Jaw Injuries, Sidcup; Honorary Anæsthetist, Seamen's Hospital, Greenwich.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—Sir William Taylor, past President of the College, was the guest at lunch of the Dublin Rotary Club on Sept. 12th. In the course of his address Sir William Taylor made some historical references to the Royal College of Surgeons in Ireland, the foundation-stone of which was laid in 1806. The two main objects of the College of Surgeons, he said, were, firstly, to improve medical and surgical education in Ireland, and, secondly, to provide a sufficient number of properly qualified surgeons for the British army and navy. The schools of anatomy and surgery which were established in connexion with the College made great progress and won wide celebrity. The College of Surgeons was a neutral establishment without regard to sect or politics. As an instance of its extensive work in this matter of education he said that one-fourth of those placed on the register in Ireland came from this College.

ANATOMY OF THE HUMAN ORBIT AND ACCESSORY ORGANS.

By S. Ernest Whitnall. Oxford Medical Publications. London: Henry Frowde, Hodder and Stoughton. 1921. Pp. 428. 35s.

Before his appointment to the chair of Anatomy at McGill University Dr. Whitnall had been a frequent contributor on orbital matters, large and small, to the Proceedings of the Anatomical Society, and he has now brought together these notes and fitted them into their appropriate places in a large work dealing with the anatomy of the region. In doing this he has enriched English medical literature, for this book is a veritable work of reference and a collection into English of the scattered results of investigators of all nationalities. The excellent bibliography at the end is an indication of the extent of his researches. The subject is not treated in any narrow sense, but includes the anatomy of the neighbouring parts, such as the accessory air-sinuses and the central connexions of the orbital nerves, abnormal muscles, and intracranial sinuses. We note in this connexion that Prof. Whitnall does not describe a vena centralis posterior. The illustrations, which are numerous, are mainly from photographs and are an excellent feature of the book; we would like to see some of these clarified or replaced by line diagrams, however, for it must be recognised that photographic illustration has its limits.

Altogether it is a book on which all the parties to its production are to be congratulated, and it will be in demand among students of ophthalmology.

MEDICAL GYMNASTICS AND MASSAGE.

Notes on Diseases Treated by Medical Gymnastics and Massage. By Dr. J. Arvedson, Arvedson's Gymnast Institute, Stockholm. Translated and edited by Mina L. Dobbie, M.D., B.Ch. London: J. and A. Churchill. Pp. 280. 8s. 6d.

When Dr. Dobbie produced her translation of Kleen's "Massage and Medical Gymnastics," it was the hope of those interested in medical gymnastics that she would continue her labours and translate this little book of Arvedson's, which has been a standard work throughout Scandinavia for the last 20 years. Certain inherent difficulties faced the author, for, in the first place, as the title indicates, the book is intended merely to present to the student notes on diseases, not to give a full description of them. In other words, the work is an epitome. Then, too, we are told in the preface that the book is intended to be read in conjunction with Kleen's handbook. The task of producing a satisfactory book on these lines is obviously great; but, when due allowance is made, there remain points for criticism. The book is designed for the use of students, and accuracy should therefore have been its keynote; yet errors abound.

Take Chapter VII., which deals with Diseases of the Nervous System. On the first page allusion is made to various movements with the object of bringing back arrested menstruation. Apoplexy is said to follow hæmorrhage from a vessel in the brain or its membranes, and we regret to note in the treatment of the result of hemiplegia that little distinction is drawn between true passive movement and forced movement. We are told that thrombosis in cerebral vessels is usually due to arterio-sclerosis; and the definition of ataxy as "inability to innervate the muscles accurately and sufficiently to perform a movement, so that it is performed uncertainly," is hardly satisfactory. The value of stretching the back in cases of tabes is not mentioned. It is definitely stated that there is no disturbance of the bladder in patients suffering from disseminated sclerosis, although precipitate micturition is recognised as one of the earliest symptoms.

On the ethical side, the author says that "orthopædic treatment is often necessary for these patients, and it is important that the gymnast should not waste time by opposing such treatment, but should instead explain the necessity of it, and insist upon it when it has been advised by the doctor." Such advice would hardly be required by gymnasts in this country.

In dealing with neurasthenia, little stress is laid on the fatigue element in its causation, and, although we read that these patients "must not be tired," the table advocated for the treatment of a neurasthenic patient seems to us far too severe. It is unusual to class such complaints as migraine and trigeminal neuralgia under the heading of rheumatism of the neck; and no mention is made of cervical rib as a possible cause of brachial neuritis, or of sacro-iliac strain as a cause of referred pain in back or legs. And there are astounding omissions, since adenoids and displaced cartilage in the knee are not mentioned, while it is entertaining to learn that roast beef and bacon are classed amongst foods "easily digested" by the chronic dyspeptic.

These are grave drawbacks for the learner. But the arrangement of the book is admirable, dealing as it does in turn with the morbid changes, the causes, symptoms, and treatment of each complaint in turn; and, were it revised so as to bring the medical aspect into accord with the teaching of the schools, its value would be great indeed. The style is clear and the translation excellent.

The Theory and Practice of Massage. Third edition. By Beatrice M. Goodall-Copestake, Teacher of Massage and Swedish Remedial Exercises to the Nursing Staff of the London Hospital. London: H. K. Lewis and Co., Ltd. Illustrated. Pp. 270. 12s. 6d.

For the most part this third edition is an exact reproduction of the second, but a short chapter on muscle re-education has been added which should prove a valuable addition to the work. Two new plates are inserted, of which the one showing types of enteroptosis as seen with the opaque meal explains to the student the nature of the condition far better than any words.

SURGERY OF THE UPPER ABDOMEN.

Second edition. By John B. Deaver, M.D., Sc.D., LL.D., F.A.C.S., Barton Professor of Surgery, Pennsylvania; and Astley P. C. Ashhurst, A.B., M.D., F.A.C.S., Associate in Surgery, Pennsylvania. Philadelphia: P. Blakiston's Son and Co.; London: H. K. Lewis and Co., Ltd. 1921. Pp. 832. £3 10s.

Inasmuch as no part of surgery has been more discussed of late than the lesions of the upper abdomen, an adequate text-book considering the whole subject will be welcomed. This volume is certainly the most complete treatise obtainable to-day. It is a second edition of a work formerly published in two volumes, but so great has been the progress since the issue of the first edition that the present one may be regarded almost as a new work. The wide experience of the authors in this branch of surgery is well known and their book is based almost entirely upon their own experience. At the same time alternative theories and views of treatment are thoroughly discussed, and although some surgeons may disagree with certain of the methods of treatment advocated, it must be admitted that a very strong case is made out in support of these methods.

The text is easy to read, is carefully arranged, and suitably illustrated. Symptomatology is perhaps not sufficiently discussed, especially with regard to the surgical diseases of the stomach and duodenum. Since diagnosis is admitted to depend to such a large extent upon the past history, more help should be offered as to the value to be placed upon different points in the history. In fact, the changes in the appetite, the different types of vomiting, and the character of the hæmatemesis are not discussed at all under the general diagnostic considerations, but only under the individual headings. Full attention is given to the more modern methods of diagnosis, and scattered throughout the book are some beautiful reproductions of X ray photographs.

The description of the operative technique is very lucid, but the account of the choice of operation is less agents are concerned in the ætiology of this mouse carcinoma: the first agent being the minute coccal bodies stimulating the cells to rapid division, and second, the cancer cell itself closely associated with the organism and transmitting from host to host in subsequent transplantations." It is well known that the transplantable carcinomata of mice and rats have characteristic individual features both morphologically and biologically, and retain their individuality through many years of transplantation. The one successful experiment of Dr. NUZUM out of 1200 mice proves too much. If the micrococcus cultivated from the Crocker Fund carcinoma No. 11 is capable of causing in a normal mouse the formation de novo not only of a carcinoma but of a carcinoma identical with the original carcinoma, we would have to conclude that each tumour strain has its specific parasite so that each spontaneous tumour must have its own specific parasite. The description of Dr. NUZUM's organism and the method used for its isolation reminds us of similar organisms which were isolated not many years ago and said to be the causative agents of a great many different diseases of a more undoubted infectious character than cancer, such as influenza, encephalitis lethargica, trench fever, and a number of others. They were found to be contaminations. The rapid growth of the tumour in mouse No. 250 and the high percentage of successes in the first transplantation are so different from the behaviour of a spontaneous tumour that a more obvious explanation suggests itself.

Information of a very different kind on the ætiology of cancer is furnished in a paper by F. D. BULLOCK and M. R. CURTIS read recently before the New York Pathological Society.[2] G. L. ROHDENBURG and BULLOCK had observed that, in rats, sarcoma of the liver is almost always associated with the *Cysticercus fasciolaris*—which is the larval stage of the *Tænia crassicollis* of the cat—and that the new growth arises in the walls of the cyst. In the recent communication BULLOCK and CURTIS record the results of an experiment in which a large number of rats were infected experimentally with the eggs of the tænia obtained from one cat. In October, 1919, 1165 young rats were thus experimentally infected by placing measured doses of an emulsion of the eggs in the pharynx. Of these rats, 600 animals all belonging to one strain, which proved to be particularly resistant to the infection, were subsequently eliminated. Of the remaining 565 animals 279 were alive on June 30th, 1920, when the first tumour was found. During the next six months 230 of these animals were killed or died from natural causes. Of these 55, or 29 per cent., had shown tumours by January, 1921. Forty-nine of the 279 are still under observation. The litters obtained from the original animals have been added to the experiment; there are about 2500 animals comprising four generations. Of the first generation 30 animals had by January, 1921, developed tumours. Since then until May tumours have developed in 125 additional rats, giving a total of 210 animals in which sarcomata have been produced experimentally. The tumours were morphologically sarcomata, composed of either spindle cells or polymorphous cells. They arose in the cyst wall and showed rapid growth with invasion of the surrounding tissue and extensive metastasis formation. They were transplantable through several generations and were then, of course, no longer associated with the cysticercus. The malignant nature of these tumours is therefore clearly established. The authors attribute the origin of these neoplasms to the chronic irritation of the cysticercus acting over a sufficiently long period on a susceptible cell—the connective tissue cell of the rat. This work, which was carried out in the laboratories of the Crocker Cancer Research Fund in New York, is of the same fundamental importance as the recent work of FIBIGER on spiroptera cancer and as the experimental production of cancer obtained by YAMAGIWA and ISHIKAWA in rabbits and by FIBIGER and by MURRAY and WOGLOM in mice subjected to painting with tar over a long period.

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A Clean Milk-supply.

IT is a comment on the national neglect of agriculture that legal enactments concerned with the sale of milk are in the hands of doctors, while agriculture has but a secondary place in the promotion of these enactments and no effective share at all in their execution. This position has arisen, at least in part, from the facts that this country was the first to devise active measures in promoting public health and that it was the medical profession which first took up the serious study of bacteriology and thus discovered that milk might be a source of disease. It was a misfortune that no such studies were made at that time on behalf of the milk industry, for combined effort by agriculture and medicine might have effected early and great improvements in the milk-supply. As it was, the attempts made were almost entirely of a legislative character, carried out by a body not directly concerned with agriculture whose criticisms of dairy methods were apt to raise a smile from the farmer. Even now there are serious agriculturists to assert that better methods of milk production and distribution are problems for public health and not for agriculture. The grave financial losses incurred as a result of bad methods of handling and distributing milk were not realised in the industry itself and the appeal from outside for an improved supply fell upon deaf ears. Even in dairy schools clean milk production was not taught. Such was the position which faced the Research Institute in Dairying when it was founded at University College, Reading, in 1913.

In the early days the outlook was not very hopeful. The gross annual income of the Institute was £1500; laboratories had to be created in an old house and workers found. The staff had no dairy farm or dairy under their control. Inquiry, however, soon showed that unclean methods of milk production and distribution were a source of grave loss to the industry. Work upon these subjects was, therefore, begun and has been continuously carried out at the Institute for the past five years. In the light of the results already gained it is clear that the problem of its milk-supply must be worked out by each country according to its own needs, since the conditions at the farms, the times of storage, and consequently of the age of the milk when distributed, and the temperature conditions to be encountered, vary greatly in different climates. Methods of management cannot be translated en bloc from one country to another. A further need for the continuance of these studies lies in the fact that the longer the work is carried on the clearer it becomes that the creation of an improved milk-supply lies with the worker. Each person who handles milk must acquire, along with his practical knowledge, the kind of technical skill that is found in an operating theatre. At present there are few such technicians available in the milk industry, but the study of the effects of variations in technique upon the ultimate state of the milk is constantly do occur, and in cases of some duration the retention may be above the normal for that age, probably indicating that recovery is taking place.—D. Murray Lyon writes on Blood Viscosity and Blood Pressure. The viscosity estimations were made with Determann's viscosimeter. The author shows that in healthy individuals the viscosity of the blood rises to a maximum during the third decade of life, and then gradually falls, the curve following very closely that of the red blood corpuscle count, but not corresponding with the blood-pressure curve. In disease there is no close parallelism between blood viscosity and blood pressure. Martinet divided cases into three groups: (1) "Les eusystoliques," in whom the blood pressure corresponds with the blood viscosity. (2) "Les hypersystoliques," where the blood pressure is high, but the viscosity is low. (3) "Les hyposystoliques," where the blood pressure is low but the viscosity is high. Murray Lyon found that in anæmias and in cyanosis there is the closest correspondence between the blood pressure and blood viscosity, but in other conditions, owing to the compensatory power that the body possesses, the blood pressure is not markedly influenced by the blood viscosity.

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[2] [illegible] of the New York Pathological Society, N.S., [illegible] 3, October–December, 1920.

The Biochemical Journal. Vol. XV., No. 2, 1921. Cambridge University Press. 20*s.*—A Comparative Investigation of the Corresponding Proteins of Cow and Ox Serum, Cow's Colostrum and Cow's Milk by the Method of Protein Racemisation, by H. E. Woodman. Armed with this new method with which to attack the baffling problem of the chemical architecture of the protein molecule, Woodman finds that lactalbumin is identical with the albumin of colostrum, but that it is a substance distinct from serum-albumin. From this it is concluded that a distinct mammary synthesis is necessary for lactalbumin as well as for caseinogen. The euglobulin and pseudoglobulin fractions from serum and from colostrum are all shown to consist of the same individual protein, which is further identical with the serum-globulin. Incidentally, it is shown that the corresponding proteins of cow serum are identical with those of ox serum—the difference in sex of the animal not being accompanied by a difference in the constitution of its proteins—and that heat coagulation and variations in the mode of preparation are without effect on the rate of racemisation of globulin.—On the Theory of the Barcroft Differential Blood-gas Apparatus, by T. R. Parsons. It is shown by direct experiment that the constant of the Barcroft apparatus is the same when it is used to measure an absorption as when it is used to measure an evolution of gas. Mathematical calculation shows that a difference of constant would be expected in the two cases, but also that this difference is so small as to be well within the limit of the experimental error involved in the ordinary use of the apparatus. This result justifies the assumptions made during the determination of the percentage saturation of blood with oxygen by Barcroft's method.—On the Physiology of the Silkworm, by A. P. Jameson and W. R. G. Atkins. The contents of the gut of the silkworm are shown to be markedly alkaline, the pH value being as high as 9·0–9·4. The chief digestive enzyme in this animal is an amylase, which differs from most starch-splitting enzymes in that it can act in a strongly alkaline medium.—The Influence of Reaction on Colour Changes in Tryptophan Solutions, by E. C. V. Mattick and R. S. Williams. The growth of *B. proteus vulgaris* in tryptophan solutions acidified with hydrochloric acid or made alkaline with caustic soda was studied. In solutions whose pH values were below 8·05 no growth took place; over the range from this value to a pH of 9·41 growth occurred and was accompanied by the formation of orange or yellow-coloured bodies; in a still more alkaline solution growth also took place but no coloration was observed, until finally, at a pH of about 9·6, the organism was found to be incapable of surviving.—Methods of Measuring the Opacity of Liquids; The Relation between the Number and Size of Red Corpuscles and the Opacity of their Suspensions; The Relation between the Microscopic Appearance of Precipitated Calcium Oxalate and the Opacity of its Suspensions; The Opacity of Serum Diluted with Distilled Water, Physiologically Normal Saline, and Ringer's Solution, by J. Holker.—On the Composition of the Unsaponifiable Matter of the Ether Extract of Human Fæces, by J. A. Gardner. By dint of elaborate fractionation of the non-saponifiable matter of human fæces a new sterol has been isolated, of which the constitution has not yet been determined. It is certainly not oxycholesterol.—The Antiscorbutic and Antiberi-beri Properties of Certain Sun-dried Vegetables, by J. A. Shorten and C. B. Ray. The vegetables are steamed or scalded for a few minutes before the sun-drying. This process retains the antiscorbutic vitamin of the coarser vegetables such as potatoes, tomatoes and cabbage, but destroys that of the more delicate products such as carrots, brinjal, spinach, turnips, and turnip-tops. Factory-dried mixed vegetables are also found to be devoid of antiscorbutic properties. The sun-dried carrots, brinjal, spinach, cabbage, tomatoes and potatoes were found to prevent the appearance of neuritis in fowls on a polished rice diet.—On an Autoxidisable Constituent of the Cell, by F. G. Hopkins. In this paper Prof. Hopkins describes the isolation of the autoxidisable dipeptide of glutamic acid and cystein, "glutathione," which is responsible for the nitroprusside reaction in tissues.—The Influence of the Nervous System on the Excretion of Creatinine; Experiments on Nervous and Mental Patients, by A. A. Weinberg. It is found that the excretion of creatinine in nervous and mental patients is not entirely determined by the degree of muscle tonus, as a high excretion is observed in patients in whom the tonus is diminished. The amount of creatinine excretion seems to depend on the functional connexion between the cerebrum and the muscles, and becomes excessive when this connexion is interrupted.—The Salt Effect in Alcoholic Fermentation, by A. Harden and F. R. Henley. Salts in general are found to depress the rate of attainment of the maximum rate of fermentation of glucose and fructose by zymins. This is due not to an inhibition of the carboxylase enzyme which attacks pyruvic acid, but to a diminution of the rate of action of the hexose phosphatase.—Observations on Abnormal Iodine Values, with special reference to the Sterols and Resins, by I. Smedley MacLean and E. M. Thomas. This is a study of the iodine numbers of a wide range of substances as determined by the use of Wijs's reagent (iodine monochloride in glacial acetic acid) and Hübl's solution (mercuric chloride and iodine in 95 per cent. spirit).—The Effect of Exposure to Low Temperatures on Some Physiological, Chemical and Physical Properties of Amphibian Muscle, by D. L. Foster and D. M. Moyle. The irritability to induction shocks of frogs' muscles stored in air or oxygen at 0° C. falls off at first rapidly, then more slowly, and finally, after the lapse of about a week, more rapidly again. On the other hand, in nitrogen a rapid fall of irritability was maintained throughout. This loss of irritability in the case of muscles kept in air or oxygen was not due to accumulation of lactic acid; it was not accompanied by rigor. But the muscle rendered non-irritable by storage at 0° C. was found to be capable of producing lactic acid (just as is a fresh muscle) when kept at room temperature, exposed to nitrogen or toluene vapour, sent into heat rigor or submitted to mechanical injury. The non-irritability of the muscle is not due to lack of power of producing lactic acid, but to some physiological changes occurring on long exposure to the ice-cold temperature. Experiments on the increase of weight of these muscles in various solutions show that a solution which would be isotonic with a normal muscle is hypertonic to the non-irritable; the physical change which has occurred is therefore either a change in permeability of the muscle membranes or a diminution in the number of osmotically active particles in the muscle substance. There seems to be some degree of recovery of the irritability after perfusion of saline solutions.

In the discussion which followed the reading of Dr. Savage's paper, General Sir Layton Blenkinsop expressed the opinion that many of these cases would not arise if animals destined for human food had to be slaughtered under efficient medical supervision, and that a person who supplied the public with food of any sort became a public servant, who should conform to Government regulations, and should have no claim in that connexion to be considered a private individual. Prof. F. Hobday contrasted the state of affairs in this country, where, in his view, the value of collaboration had not been realised, with that obtaining on the Continent, where medical men and veterinary surgeons collaborate in the laboratory and in the field. He also contended that the absence of State aid, and pecuniary aid generally, had severely hampered younger members of the veterinary profession; and that the reason why there was not more disease in England was the general custom of cooking food well before eating it. Mr. W. M. Scott, President of the Association, disagreed with Dr. Savage's view that food for human consumption was more likely to be contaminated after death than during life, maintaining that many animals apparently in excellent health can really harbour organisms of various kinds. Sir Clifford Allbutt, who was unable to be present, referred, in a letter which was read to the meeting, to the successful meeting held at the Royal Society of Medicine in February, between that Society and the Central Branch of the National Veterinary Association,[1] and pointed out that fusion of medical and veterinary practice was impossible; veterinary surgery must retain its own examinations and qualifications. In Cambridge what they were aiming at was to found a school of research in animal and plant pathology, and to present preliminary sciences to the student in a way that would serve both professions.

BRITISH DENTISTS' HOSPITAL.

THE ninth annual report of the British Dentists' Hospital, which has just been issued, contains statistics showing a rapid growth of the work carried on at the various centres and clinics of the Dentists' Hospital service. The rules of the hospital provide that fees are to be paid by patients; a scale is fixed on this basis, but the Executive Council reserve the right to vary this scale in exceptional cases. Payment by instalment is permitted; dentures must be paid for when supplied unless payment is guaranteed by some responsible person or society. All treatment is carried out by dentists holding the L.D.S. diploma, who are also members of the British Dental Association; anæsthetics are administered by medical men. Thus a standard of skilled dental care similar to that of private practice is secured and maintained. Each treatment centre is under the charge of a resident matron. The intended establishment of centres throughout London was rendered impracticable by the war, and the report speaks of general apathy on the part of the majority of dentists in the matter of a qualified dental service for the masses. The provision of dental clinics for maternity and tuberculosis patients has rapidly extended during the year. At the Camden Town, Lewisham, and Clapham Common centres the hospital has working agreements with the St. Pancras, Lewisham, and Wandsworth Borough Councils respectively, enabling mothers attending local welfare centres to obtain dental treatment and the provision of artificial teeth. The Battersea, Fulham, Hampstead, Holborn, and Southwark Councils have also arranged with the British Dentists' Hospital for the institution of dental clinics for the same class of patients at the council centres; the equipment and the services of dentists are provided by the hospital executive. At Greenwich, Hampstead, Holborn, Paddington, and Wandsworth, under agreements with the hospital, patients attending the local tuberculosis dispensaries obtain advice and necessary treatment on the recommendation of the medical officer of health. Most of these clinics have been opened during the year. The earlier experiments at Greenwich and elsewhere were carefully watched by medical officers of health of other London boroughs, and by the authorities at the Ministry of Health, and sanctions for the establishment of similar clinics resulted from a conviction of the real value of the work made possible by them. By a recent agreement the number of L.C.C. school children to be attended to annually at the treatment centre at Rushey Green has been increased to 2200. The executive has also agreed to provide dental treatment and advice for the 500 male members of the Oxford and Bermondsey Insurance Society at a clinic to be established in the neighbourhood of Tower Bridge-road and Grange-road, Bermondsey. Dental propaganda work has not been overlooked; literature has been regularly distributed to the patients, and a number of lectures have been given during the year. The year's record is of an organisation that deserves encouragement and support.

CHOLERA PROPHYLAXIS.

AN efficient cholera quarantine depends naturally upon a sufficient and pure water-supply, but more especially under modern conditions upon rapid and efficient laboratory methods of detecting carriers of the cholera vibrio. It is well known that these carriers may be in apparent rude health, but as in the case of enteric and other intestinal disorders of bacterial origin they may, and probably are, under favourable circumstances the starting-point of an epidemic. An organisation capable of examining thousands of pilgrims for the cholera vibrio has to be based upon the most efficient methods for isolation of this organism. Special selective media, such as the alkaline agar of Crendiropoulo, have been generally adopted, but the plating out of each individual stool and the search for the cholera vibrio on the incubated plates is a lengthy and tedious procedure. The recognition of the cholera vibrio has been greatly facilitated by the employment of specific anticholera sera of high titre, which are capable of clumping the organism in such manner as to be visible to the naked eye, even in high dilutions. Such a method was introduced by Otto,[1] who by enrichment media and plating out on Dieudonné's medium, and employing the agglutination test for the recognition of the colonies, was able to make a positive diagnosis in 48 hours. By employing numerous labour-saving devices he estimated that in order to examine 10,000 stools daily it is necessary to employ a staff of 35 persons (of whom three should be specially trained doctors with bacteriological experience, and six trained laboratory assistants). It has been found by Bandi,[2] that with the addition of a minute amount of cholera-immune serum to the primary culture tubes of peptone water, a most distinct visible agglutination of the vibrio takes place, so that the tedium of the process of recognition can be still further reduced.

An improvement upon this method, utilised by Arthur Davies in an epidemic in Palestine, was described by him in the *Journal of the Royal Army Medical Corps* for October, 1920. By mixing the suspected peptone water culture with cholera serum on a glass slab—known as Garrow's agglutinometer—on which macroscopic agglutination rapidly takes place, it was found that the presence of vibrios in the primary culture could be more accurately detected than by any visual method. A provisional report upon a suspected stool could thus be submitted within 18 hours of the receipt of the specimen. Moreover, the procedure, as worked out, was found to be so simple that a trained worker was capable of examining no less than 200 suspected stools during a day's work of eight hours.

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[1] [illegible] NCET, 1921, i., pp. 711 and 726.

[1] Otto: Centrbl. f. Bakt., 1915, lxxvi., No. 5, 392–400.

[2] Bandi: In Kolle and Wassermann, 1910, vol. iv., p. 6, Handb. b. path. Mikroorganism.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 24, 1921.

Health Insurance and the State.

WHATEVER may lie behind a rumour that the continuance of the Insurance Act is being reconsidered in high quarters, at all events the position is sufficiently serious for all parties concerned to review the situation and to think over calmly the advantages of a scheme of compulsory health insurance on a large scale and whether they do or do not counterbalance the drawbacks. During the last ten years many and varied cries of disapproval have arisen from friendly societies, from the medical profession, from the contributing employer, and from the contributing employed person; although the last-named, the corpus vile of the Act, has less ready means to hand of rendering himself vocal. No one who has closely studied the working of the Act from anywhere within its orbit during this decade will dispute the justice of some of these complaints. Dr. H. G. COWIE sets them out vividly in our correspondence columns for the London area. Obviously it would have been impossible to carry through the greatest constructive health measure of our generation without coming up against conflicting interests. It was, for instance, hardly to be expected that the smaller and struggling friendly societies would like to be snuffed out because they had not in 1911 established themselves on a satisfactory financial basis. With the experience of the club system before the eyes of medical men in industrial areas it was natural for a State insurance medical practice to seem nothing other than a larger and no less objectionable club practice in which the doctors were obliged, by economic pressure, to give services satisfactory neither to themselves nor to their patients.

The Act has not yet had anything like a fair ten years' run. Up to 1914 it was largely a question of determining by the familiar plan of trial and error the details of working, and when the beginnings of a satisfactory working basis had evolved the war came and paralysed further development. In spite of this the Act has worked so well for the friendly societies that they now have at disposal a surplus large enough to be coveted for a number of useful purposes, and the *National Insurance Gazette*, which is devoted chiefly to the interests of the National Insurance Act, admits that the Treasury contribution of two-ninths to supplement the contribution of employer and employed might be withdrawn without seriously imperilling the working of the insurance principle. In the medical profession opposition has dwindled to small proportions, not merely, as has been hinted, because medical benefit is good business for the doctor, but because, in a large and true sense, it is solving the problem of medical practice in densely populated areas The practitioner no longer accepts, with what good grace he can, a modicum of poorer patients, making up his loss from the remainder of a large mixed practice; insurance practice in an industrial area is now such as to attract young men and women with high academic qualification and untamed ambition. This alone is sufficient to justify the practical working-out of the insurance principle.

For it must not be assumed that, if the State renounced its quota towards health insurance, the contributory principle would fall to the ground. Everything points to the friendly societies being prepared to continue to offer medical benefit, making their own terms direct with the medical profession. We have no reason to doubt the possibility of cordial relations between these two administering agents in an insurance scheme. On neutral Government ground they are learning with great advantage to work together, as may be seen in several large centres in which the chairman of the panel committee is also the chairman of the insurance committee. On the other hand, there is nothing unlikely in a large industrial undertaking organising its own medical service to the entire satisfaction of both parties. This may, indeed, come about naturally in the course of time as a further development of welfare work, for when some such suggestion arose in the mining industry of South Wales the health benefits were construed in a generous sense, to include dentistry, nursing, and hospital provision. For the moment the advantage of the insured person himself is surely best secured by the continuance of the Act. The benefit to which he is entitled has grown considerably during the ten years, and has only been set back by the war and its aftermath in the same way as the quality of food-supply and other necessaries. Those, therefore, if such there be, who would demand the withdrawal of the Government as the third party in a great health contract between employer and employed should consider whether the time has yet safely come when health insurance can be left to the clash of conflicting interests. The State itself has a big responsibility in the matter.

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The Cancer Parasite: Facts and Fancies.

IT is necessary nowadays to keep a sharp watch on the cancer parasite. In a paper[1] entitled "A Critical Study of an Organism Associated with a Transplantable Carcinoma of the White Mouse," Dr. J. W. NUZUM, of Chicago, claims to have isolated from a mouse carcinoma (the Crocker Fund carcinoma No. 11) under partial anaerobic conditions a minute filtrable Gram-positive non-motile micrococcus. The method was that employed by NOGUCHI for the cultivation of filtrable viruses. Pure cultures of the micro-organism are said to present uniform morphological and cultural characteristics, but on the same page on which this statement appears it is also said that "an intensive study of the morphology of this organism has shown that the micrococcus is extremely pleomorphic." Sometimes larger forms appear in cultures approximating the staphylococcus in size. Injections of pure cultures of the organism into the breast tissues of mice have frequently produced nodules which grow progressively for 10-30 days and then slowly regress in the majority of cases. Microscopically these nodules show "a mass of newly formed tissue cells rapidly dividing and supported by a newly formed stroma which becomes vascularised." In one mouse (No. 230) the injection of a pure culture produced within a week a rapidly growing tumour. The tumour was palpable after one week and after four weeks had reached the size of a walnut. On microscopic examination it showed "a typical alveolar carcinoma identical histologically with the original carcinoma." On transplantation it grew rapidly and gave 60 per cent. of successful inoculations.

The author is careful not to claim that he has discovered the cause of cancer. He thinks that "two were actually fewer cases of tuberculosis among the women addicted to drink, advanced cases were somewhat more frequent among heavy drinkers. For further information on the subject of tuberculosis and prostitution, which possesses clinical, epidemiological and social interest, Dr. Samson refers the reader to his recently published monograph.[2]

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[1] Surgery, Gynecology, and Obstetrics, August, 1921.

SMOKE.

THEORIES about the causation of fog, arguments based on the reduction of the washing bill, diatribes as to the folly of allowing unburned fuel to go up the chimney, records showing the loss of sunlight in industrial towns, the damage done to the masonry of buildings, private and public—all these have hitherto failed to produce a public opinion sufficient to energise a really active campaign against the smoke nuisance. It is just possible that the practical recent demonstration of how much the joy of life in a town is increased by a clear atmosphere may succeed where these other arguments have failed. The beauty of London during the recent spring and summer months will not be readily forgotten. The discussion on smoke abatement at the Edinburgh meeting appears to have taken a practical turn. As a rule speakers are inclined to argue that domestic fires being the chief cause of the trouble it is hardly worth while bothering about factory chimneys. But at Edinburgh members of the British Association pointed out that although two-thirds of the London smoke may be due to domestic chimneys, the case is different in many manufacturing towns. Smoke from factory chimneys can be dealt with, even though we have no legal power to deal with domestic fire smoke, and the nuisance could be largely abolished except in the case of a few metallurgical furnaces. The difficulties in the way of bringing effective pressure to bear are notorious, but not insurmountable; the will, however, to act on our present powers seems strangely lacking. One has only to read regularly the annual reports of medical officers of health in order to appreciate the fact that the prevention of smoke is a veritable Cinderella among the interests of health committees. Local authorities whose duty it is to carry out the law are seemingly obsessed by a superstitious reverence for a smoky chimney as the necessary concomitant of good trade. Owners of smoky chimneys are generally fairly well represented on the local authorities. Moreover, the chimneys of the local authority, such as those of the public baths, isolation hospital, or electric power-station, are sometimes the worst offenders.

A SCHOOL OF RADIOGRAPHY.

THE first school of radiography to be established in the United Kingdom is to be opened at King's College Hospital, London, next month under the direction of Dr. R. Knox, hon. radiologist to the hospital. It is intended for the training of technical assistants in X ray and electrical departments, and the classes will be under the supervision of Dr. Knox and the assistant radiologist, Dr. H. A. Colwell, while the teachers also include Mr. C. P. G. Wakeley, F.R.C.S., and Mr. A. O. Forder, M.S.R. The course of instruction comprises general elementary physics: sound, heat, and light, ideas of measurement, energy, mass, and so forth to be incorporated as the subject progresses. Electricity, from a knowledge of electrical terms, electrical attraction and repulsion, cells and batteries, the theory of ionisation, sinusoidal currents, condenser discharge apparatus, static machines, functions of electrical measuring instruments, leading on to the construction of apparatus, and how to manage Coolidge tubes and controls, accumulators and transformers, with practical deductions for localisation of foreign bodies, methods of dosage, application of diathermy, high frequency, ultra-violet rays, and radium. Anatomy, as far as the development and elementary morphology of human skeleton, surface markings and positions of the chief viscera. Photography, covering photographic chemistry, lantern slide making, printing, enlarging, copying, and clinical photography. The school is open to both men and women over 18 years of age, the course of instruction lasting a year and being preparatory to the examination of the Radiographers' Society. This examination has been established with a view to securing adequate training upon scientific lines for skilled non-medical workers in X ray and similar departments. The enormous developments of radiology—both from a therapeutic and from a diagnostic point of view—have made a thorough grounding, in theory as well as in practice, essential; and it is realised that a few months spent in an X ray department with little or no systematic training are quite insufficient to produce an efficient and skilled worker. The possession of the diploma of "Member of the Society of Radiographers" (M.S.R.) will therefore be evidence, not only that the holder has passed an examination, but that he or she has had systematic practical and theoretical training in the subject for at least a year. The number of students in each course is limited, the fee for the full course being 35 guineas. Inquiries should be addressed to the Radiographer, King's College Hospital, Denmark Hill, London, S.E. 5.

INDIRECT DETERMINATION OF FUNCTION.

EXPERIMENTAL physiology is liable to the reproach that deductions may be made from results obtained under unnatural conditions, and that laboratory findings are not always upheld by practical experience. An example of this is afforded by the antidiuretic effect of pituitary extract in man, despite the highly diuretic properties originally attributed to it as the result of physiological experiment. It is well recognised that psychical and irrelevant factors play an important part in modifying the functions of bodily organs. The pulse-rate is frequently increased as the result of the excitement induced by a medical examination, and the blood pressure may be raised by the novelty of the processes used in estimating it. Any indirect method of observation which eliminates this psychical factor is likely to give a more accurate picture than if the patient is aware that direct observations are being made. An example of this is afforded by the electrocardiograph, by the use of which a graphic representation of the heart's action can be obtained while the patient lies quietly in bed, and no attention is paid to the heart.

In a recent issue we published an article by Dr. E. C. Dodds in which this method of investigation is carried a stage further. The reaction of the secretions of the stomach and duodenum is determined by means of a series of examinations upon the alveolar air. The psychical factor can thereby be eliminated, as the patient is completely unaware that his gastro-intestinal functions are the subject of research. Direct methods of determining the reaction of the gastric secretions are liable to errors, as the result of the emotional influence of the experiment, the unappetising nature of the test meal, and the possible mechanical effect of the swallowed tube upon the gastric glands. Drs. T. Izod Bennett and J. F. Venables using the fractional method of gastric analysis have demonstrated the emotional inhibition on gastric secretion, by making suggestions of nausea and anxiety to normal subjects under hypnosis, and although, as Pavlov originally showed, mechanical stimulation alone of the gastric mucous membrane will not cause secretion, yet the passage of the stomach tube through the œsophagus in some cases leads to a copious flow of saliva, which necessarily lowers the acidity of the stomach contents. Dr. Dodds, when testing a Haldane gas analysis being carried forward at the Institute. By means of demonstrations, classes, and lectures, and the circulation of its publications, the results of that study are spread abroad, and every year a greater number of persons within the industry is acquiring the requisite skill.

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[2] Prostitution und Tuberkulose, Klinische und Social-Medi- Untersuchungen. Leipzig: Georg Thieme.

This is no small work for a single Institute to have accomplished within eight years. The fact that its work is now being appreciated at its proper value by the milk industry is shown by the long list of inquiries received every year, by the increasing number of clean milk competitions promoted by county councils or by dairymen, and by the applications for help in preparing clean milk demonstrations at agricultural shows. Throughout its career the dairy teachers have given the Institute their cordial support and have incorporated much of its work in their daily teaching. They have remodelled the syllabus of dairy education in order that methods of clean production may form part of the student's course. The Ministry of Health has given financial support to the work of the Institute, admitting in so doing that the problem of clean milk is one to be solved by combination of effort between agriculture and public health. At Birmingham, at Salford, and we hope shortly at other towns, the medical officer of health, those engaged in the milk industry, and the agricultural education establishment in the district are working together to improve the supply of milk. When those who administer the milk regulations take a sympathetic interest in the difficulties of the milk industry, a long step will have been taken towards a solution of hygienic dairying.

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TUBERCLE AND RESTRICTED MIGRATION.

THE conditions[1] under which emigrants from the United Kingdom who have suffered from tuberculosis will be admitted into the Commonwealth of Australia are less interesting than the conditions under which they will be deported thence, at their own expense, should they have the ill-fortune to suffer relapse. The Commonwealth Government are willing, subject to certain conditions, to admit persons in whom the disease has been arrested, if they have received the education of a period in a sanatorium and have, in addition, been symptom-free for at least 12 months. The conditions of admission include certification by a medical man who is an expert in tuberculosis, preferably by a tuberculosis officer, for whose services the Commonwealth Government is willing to pay a fee of one guinea to the local authority. A satisfactory report having been furnished, the intending emigrant must then obtain the formal consent of the Commonwealth Minister for Home and Territories before admission. It is only to be expected that such persons shall be subject to the ordinary examination by the quarantine medical officer at the port of disembarkation, and it is not unreasonable that in the event of their disease having become active during the voyage they should not be allowed to land. But it is the last provision in the circular asking for the coöperation of local authorities in this scheme which may well dishearten those unfortunates with a past history of infection and present prospects in Australia. "They will be liable to report themselves for examination at the end of each 12 months during the first three years spent in Australia, and in the event of the disease having become active during that period they would be liable to deportation at their own expense." The acceptance of a citizen, after due precautions, might, we think, entail recognition of responsibility for a risk which has been taken with open eyes by a new country hungry for immigrants.

Annotations.

"Ne quid nimis."

CHILDREN'S ORTHOPÆDIC CENTRES.

DURING the past few years it has been necessary to organise physical treatment by massage, exercises, and electrical methods on a very large scale for the treatment of disabled soldiers. The first institution which became prominent in carrying out this sort of treatment was the Grand Palais Hospital in Paris. Visitors from this country to Paris criticised the work of this institution in that the physical treatment was too much divorced from surgical treatment; for example, stiffness following fractures and contractures from wounds were to be seen under treatment lasting over very considerable periods, whereas with better primary treatment they should never have been allowed to arise. In other cases, massage and electrical treatment were carried on for conditions which required preliminary surgical treatment or the use of splints or apparatus. In this country, although a good deal of physical treatment was carried out in convalescent or command depôts, the most important organisation in this line consisted in the formation of the many military orthopædic hospitals, in which physical treatment of all sorts was closely coördinated with surgical treatment. More recently a number of additional centres for the physical treatment or out-patient pensioners have been organised all over the country, some by the Ministry of Pensions itself, many by other organisations, particularly by the British Red Cross Society. The principle of coördination was kept by associating these centres, as far as possible, with the orthopædic hospitals, and by arranging that they were visited regularly by surgeons from these hospitals. Now at last the work of these centres in the treatment of pensioners is beginning to diminish, and some of them are turning their attention to the treatment of civilian cripples, particularly to crippled children. Here the problem is a very different one. Crippled children, in many cases, have suffered from tuberculous disease, in which the use of physical treatment, except under strict surgical supervision, is actually dangerous. A large proportion are suffering from infantile paralysis and spastic palsies, for the treatment of which massage and electrical methods, although often of use, are apt to be wasted unless closely coördinated with other varieties of orthopædic treatment. Centres for dealing with crippled children and adults should be of great service, particularly in districts which are not well served by hospitals, but, if they are to carry out their work to the best advantage, they must be brought within a complete scheme of orthopædic treatment and not exist as isolated bodies. The Central Committee for the Care of Cripples have had this matter under consideration and have drawn up an outline of principles (see p. 669) which should guide the establishment of orthopædic centres for children.

COMPARATIVE MEDICINE.

THE wide field common to workers in medical and veterinary science, and the necessity of a closer coöperation between them, were the main subjects of discussion at the recent quarterly meeting of the Mid-West and South Wales Veterinary Medical Association at Bridgwater. The feeling has long been growing on both sides that work in almost watertight compartments is a source of weakness; in a paper on "Bacterial Food Poisons" Dr. W. G. Savage referred to numerous conditions which are still obscure "because they touched on the work of the two professions and were neglected by both."

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[1] Circular I.D.B., No. XII., 1921, issued by the Scottish Board of Health.

EXPERIMENTAL RICKETS.

THE causation of rickets, either experimental in animals or that form so frequently manifested in the human child, is far from settled. The study of experimental rickets continues to attract many observers in the United States, and in the Proceedings of the Society for Experimental Biology and Medicine (Vol. XVIII., 1921) there are a number of communications of considerable interest. A. F. Hess, G. F. McCann, and A. M. Pappenheimer describe experiments on rats to show that the view held by other observers that the development or non-development of rickets is dependent mainly on the absence or presence of the fat-soluble vitamin A or a vitamin closely associated with it—a vitamin sometimes called anti-rachitic—does not hold true either for experimental or human rickets. In young rats fed from three to four months or longer on a special diet markedly deficient in this vitamin there was no instance where rachitic lesions, either microscopic or macroscopic, were noted. That the dietary contained only a minimum of the fat-soluble vitamin was proved by the lack of gain in weight after the animals had been fed on the food mixture for about 60 days, by their prompt response in growth on the addition of 6 per cent. of butter fat to the diet, and by the development of ophthalmia or keratomalacia in almost all of the animals and its rapid subsidence on adding butter to the dietary. In addition to eye lesions the rats on a restricted diet developed many infections. Those receiving 0·5 c.cm. of orange juice did not, however, develop either ophthalmia or infections as frequently as others in which the diet did not include this food. Control animals which received the same diet with, however, an addition of butter did not develop ophthalmia, grew normally, and remained in perfect health. It was concluded that a lack of the fat-soluble vitamin in a dietary which is otherwise complete does not lead to the development of rachitic lesions in rats.

The same observers, with the addition of T. F. Zucker, experimented on the effects of various modifications of a diet known to produce rickets in rats; such a diet is one composed of patent flour, calcium lactate, sodium chloride, and ferric chloride. If, however, 0·4 per cent. basic potassium phosphate was substituted for an equal percentage of calcium lactate in this diet, the animals were uniformly protected against the development of rickets. The question arises as to whether it is to the potassium or the phosphate that the protective action of the basic potassium phosphate is due. By substituting sodium phosphate in one series of experiments, and potassium chloride in another, it was shown that the protection is conferred by the phosphate and not by the potassium. E. V. McCollum and some of his pupils in their studies on experimental rickets describe observations which demonstrate in a striking way the differences in the effectiveness of cod-liver oil as contrasted with butter fat in influencing the rate and extent of growth and their effects on the histological structure of bone. A restricted diet containing 3 per cent. of cod-liver oil, but deficient in calcium, induced fairly good growth and fertility during at least eight to ten months. The same food mixture with butter fat to the extent of 3, 10, or 20 per cent. of the food mixture fails to induce an appreciable amount of growth. The rats usually die within a few months. The same diet with 10 per cent. of casein added, but without the addition of either fat or cod-liver oil, causes pathological changes characteristic of rickets. With small amounts of cod-liver oil (3 per cent.) no rachitic changes are seen in the bones. Even 20 per cent. of butter fat fails to effectively direct the growth processes in the bones toward the normal condition. This food mixture, containing 3 per cent. of butter fat and 1·5 per cent. of calcium carbonate, is a highly satisfactory diet for the promotion of growth to the full adult size, the maintenance of high fertility throughout the breeding period of the females, and the successful lactation by the mothers. Without the calcium addition, but with 3 per cent. of butter fat, very little growth can take place. The striking differences between the nutritive properties of cod-liver oil, as contrasted with butter fat, only occur with diets in which the phosphorus content is approximately the optimum, and with the calcium content distinctly below the optimum.

The same observers experimented with a diet faulty in only two respects, and, when fed to the young rat, in a comparatively short time (three to five weeks) produced rickets. The diet was extremely poor in fat-soluble A, the anti-xerophthalmic substance, and young rats developed this condition in four to five weeks. The gross tokens of rickets in the rats were very marked and the microscopic evidence of rickets in the skeleton was convincing; the condition in the bone produced by the faulty diet was at all points identical with that seen in advanced rachitis of human beings. When butter fat (0·5 per cent.) was added to the faulty diet, xerophthalmia was postponed, but the pathological condition of the skeleton remained essentially unmodified; a 10 per cent. addition of butter fat effectually prevented xerophthalmia, life was prolonged, but rickets remained. If 2 per cent. of cod-liver oil was added no pathological condition of any sort—not even rachitic—developed in the skeleton. The authors conclude that butter fat is feeble in its anti-rachitic properties, and this fact seems to be of great practical importance in so far as the explanation of the occurrence of rickets in the human being is concerned. Cod-liver oil, on the contrary, is powerful in its anti-rachitic properties.

A SAFE WATER-SUPPLY.

THE rain which has fallen in the South of England during the past fortnight has been welcome enough to gardeners and allotment holders but has done little to replenish the starved water-supplies. Such a gush of water as there was in London on the night of Sept. 11th brings its own perils, for, as our Special Correspondent recently pointed out (THE LANCET, August 13th, p. 353), when the fear of scarcity has disappeared, questions of purity will immediately arise. What kind of water is going to be impounded, in unprecedented amount, into heavily depleted reservoirs, and will all wells yield, in due course, exactly the same quality of water as in the past? Six weeks ago it did not appear that the health of the community had suffered as a result of prolonged drought, but, in the week ending Sept. 3rd, 191 deaths from diarrhœa and enteritis in children under 2 years were reported in London, and the number of deaths from this cause during the month of August has had no precedent since 1914 (see Summary of Vital Statistics, p. 674). On the other hand, the mortality from the enteric fevers was below the yearly average. In the circular on Water Supplies just issued to local authorities the Minister of Health reminds them that, while there is no immediate cause for anxiety, the prolonged drought increases the risk of water-borne disease occurring. The prevalence abroad of cholera calls for special vigilance and the occurrence of any outbreak of diarrhœa, however mild, should lead to a critical examination of the water-supply. Attention is directed to chlorination as the best method of securing rapid and efficient sterilisation, and the process is described in useful detail in an appendix to the circular letter which we reprint on p. 671. Ex-service men may protest that chlorinated water in France did not taste agreeably, but it is not an essential part of the process to add more chlorine than is needed to oxidise the organic impurities.

THE Harveian oration will be delivered at the Royal College of Physicians of London at 4 P.M. on Tuesday, Oct. 18th, by Dr. Herbert Spencer.

Surgeon-Commander A. C. W. Newport, R.N., will accompany the Prince of Wales to India as personal medical officer.

It is probable that modern cholera prophylaxis will be based more and more upon rapid and labour-saving laboratory methods, such as the one described above, since efficient laboratory organisation is the mainspring of cholera control. In this respect the Egyptian Public Health Department is fortunate, for it can command the services of several officers specially trained in cholera work. This department has had a considerable experience in cholera detection and control, for both before and during the war its vigilance has been unrelenting, and it is mainly due to the organisation of the Central Laboratory in Cairo, under the direction of Dr. Charles Todd, that the introduction of cholera from Palestine during the period of hostilities was prevented and that so many minor epidemics in Egyptian villages were nipped in the bud. The absorption of the International Quarantine Board into the Egyptian Public Health Department is now considered probable. The Board, which has been for many years responsible for the control of Egyptian ports, and especially for the health conditions of the annual pilgrimage to Mecca, has been called upon to concert measures with the French authorities in Syria and the Palestine Government against the possible spread of cholera from Russia. The present Mecca pilgrimage having been declared free from infection, westward bound pilgrims will henceforward have to submit only to the normal period of quarantine at Tor in Sinai. It is presumed that cholera control stations will in future be established at Beirut in French Syria and at Kantara at the terminus of the Palestine railway, based upon the system elaborated at Tor.

AORTIC REGURGITATION FOLLOWING LETHARGIC ENCEPHALITIS.

THE mischief that may follow in the wake of lethargic encephalitis is proving to be extraordinarily varied, and the disease, which a few years ago was regarded as one with an almost exclusive affinity for the nervous system, is now known to be no respecter of other systems, such as the cardio-vascular. Dr. D. Paterson and Dr. J. C. Spence recorded in our columns [1] recently a series of 25 cases in children, treated at Great Ormond-street Hospital, in the majority of whom permanent after-results were left; only one-fourth made a complete recovery. In a recent note on the late sequels of lethargic encephalitis, Dr. H. F. Höst[2] has recorded the case of a workman, aged 18, who had previously been well. On Dec. 7th he developed intermittent diplopia. Examination by an oculist next day proved negative, but a couple of days later he felt unwell and chilly, and his left arm became painful. On Dec. 11th, when first seen by Dr. Höst, he complained of violent pain in the left side of the neck, and the left shoulder and wrist. The temperature was 38·5°C., but there were no paralyses, no swelling of any joint, and no sign of heart disease. Two days later there was a complete change in the clinical picture; the pain had vanished and he became very drowsy, sleeping all day and having to be awakened for meals. The temperature of about 38° C., in conjunction with the other symptoms, left little doubt as to the diagnosis of lethargic encephalitis, and he was sent to hospital. He was discharged on Jan. 7th, comparatively well, but still suffering from lassitude. Two days later Dr. Höst examined him and was surprised to find definite signs of aortic regurgitation. Over the second right intercostal space and the adjoining portion of the sternum there was a prolonged, soft, diastolic murmur, which began with the second heart sound and continued throughout almost the whole of diastole. There was no other sign of aortic regurgitation, such as a capillary pulse, with this exception: the diastolic blood pressure was 55 mm. There was no evidence of mitral disease. In young adults aortic regurgitation without mitral disease is generally regarded as the result of syphilis. But in this case there was no history of syphilitic infection, and no clinical sign of it. As the regurgitation had developed within a few weeks, during which the patient had suffered from a febrile condition undoubtedly due to lethargic encephalitis, the correlation of the two was very probable. This case is the more remarkable as it is usual, indeed practically the rule, for the mitral valve to be first attacked when an acute disease, such as pneumonia, angina faucium, acute rheumatism, and the like, gives rise to endocarditis.

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[1] THE LANCET, Sept. 3rd, p. 491.

[2] Tidsskrift for den Norske Laegeforening, July 15th, 1921.

TUBERCULOSIS AND PROSTITUTION.

IN a recent address before the Berlin Medical Society Dr. J. W. Samson[1] discusses the subject of tuberculosis and prostitution from observations which he commenced in 1911 on 1300 women under the control of the Berlin police. With the exception of Spillmann of Nancy, who at the International Congress of Tuberculosis in 1905 described tuberculosis as a venereal disease, secondary only in importance to syphilis and gonorrhœa, no previous writer appears to have dealt with the relations between tuberculosis and prostitution. Dr. Samson attributes this omission to two principal causes: in the first place to the mistaken belief that coitus with a tuberculous woman is of too transitory a character to enable infection to take place; and secondly, to the equally erroneous supposition that women suffering from tuberculosis would be unable to pursue their profession or attract any clients. As regards the first supposition recent observations with the tuberculin reaction have repeatedly shown that only a brief contact in the case of young persons is sufficient to produce tuberculous infection; and it should be remembered that the great majority of the prostitute's clientèle is composed of youthful persons. The supposition that tuberculous women would be unable to pursue their occupation only holds good in the last stages of the disease. Moreover, the great majority of the women are compelled to continue their unhappy calling because the progress of the tuberculous process unfits them for any arduous work. Dr. Samson found that although about 10 per cent. of the 1300 women studied had more or less active tuberculosis, only one-seventeenth of those in the first stage, one-fifth of those in the second stage, and one-third of those in the third stage, according to the Turban-Gerhardt classification, were in a poor state of nutrition and so likely to repel their clients. The main contingent of those affected with tuberculosis were women between the ages of 20 and 30, a time of life when the disease is most frequent in other occupations, and, what is of special importance from the epidemiological standpoint, when they are most likely to be attractive to the male sex. Dr. Samson remarks that it is difficult to understand why attention has not previously been given to the high incidence of tuberculosis among prostitutes in view of the large number of factors which favour its prevalence in this class of women, especially bad hygiene, inferior housing accommodation, alcoholism, and sexual excess. On the other hand, the prostitute has two distinct advantages over other women—namely, a lesser expenditure of energy owing to the absence of any regular or heavy employment, and a remarkably high income compared with that of other occupations, the average earnings of professional prostitutes aged from 25 to 40 in Berlin in 1910 being four to five times as high as those of women occupied in other ways. It is noteworthy that syphilis, which was present in at least two-thirds of the 1300 cases, had, with a few exceptions, no appreciable influence on the course of the tuberculosis and that the two infections ran their course independently. As regards the effect upon tuberculosis of alcoholism, which from time immemorial has been associated with prostitution, Dr. Samson found that though there

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[1] Berliner Klinische Wochenschrift, Sept. 5th, 1921.

BRITISH ASSOCIATION AT EDINBURGH.

SECTION OF PHYSIOLOGY.

(Continued from p. 624.)

A joint discussion with the Section of Chemistry was held on

Oxidations and Oxidative Mechanisms in Living Tissues.

The discussion was opened by Prof. F. Gowland Hopkins, F.R.S., who dealt with the chemical aspect of the biochemical oxidation of fatty acids, sugars, and amino-acids, and gave an outline of the current views concerning the mechanism by which these oxidations are effected. Prof. Hopkins had recently isolated from tissues a dipeptide, one of the components of which was cystine, a sulphur containing amino-acid. The cystine portion of the dipeptide could also be converted to the cysteine or reduced form, and could thus act as a hydrogen acceptor. By so doing it enabled a peculiar form of oxidation to occur; water was decomposed, the hydrogen being taken up by the sulphur dipeptide, while the oxygen was available for oxidations. These changes were effected by the activity of a special enzyme which resembled the Schardinger enzyme present in fresh milk. If a mixture of milk, formaldehyde, and methylene-blue were warmed the formaldehyde was oxidised to formic acid, while the methylene-blue was reduced to the colourless hydrogen addition product. These simultaneous oxidations and reductions probably play a very important part in effecting tissue oxidations.

In the discussion which followed Dr. C. Lovatt Evans, referring to the great significance of the isolation by Prof. Hopkins of the formerly obscure sulphur derivative present in the tissues, commented on the fact that hydrocyanic acid, employed as a poison gas in the war, exerted all its physiological effects by depressing the oxygen usage of the tissues, and, significantly enough, was eliminated as sulphocyanide. It seemed extremely likely that its conversion into sulphocyanide in some way deflected the proper functions of the sulphur dipeptide. The neutral sulphur of the urine, which was also affected by cyanide administration, seemed to be a further indication in the same direction.

Prof. R. Robinson, F.R.S., and Prof. G. Barger, F.R.S., gave chemical analogies to oxidations occurring in the tissues. Prof. A. V. Hill, F.R.S., gave a short account of the relations of lactic acid to muscular contraction and heat production in presence and absence of oxygen.

The section paid a visit to the clinical laboratory of the Royal Infirmary, directed by Prof. J. Meakins. Demonstrations of the effect of resistance to, and of restricted volume of, breathing by the methods devised by Dr. J. S. Haldane and his collaborators were shown. An apparatus for the study of the psycho-galvanic reflex was also shown.

Prof. E. P. Cathcart, F.R.S., opened a discussion on

The Physiology of Heavy Muscular Work.

The problems concerned, he said, were of a complex nature, since not merely the muscular, but also the circulatory, respiratory, and nervous systems were involved in an intricate coördination. Psychic factors were of especial importance in the onset or masking of fatigue; collapse from overstrain as a consequence of muscular exertion was most commonly of cardiac origin. Work might be divided into three physiological types, positive and negative, as in raising and lowering a weight, and static, as in maintaining a weight. The latter was of considerable importance, and played a very large part in all very severe work. It was particularly potent in arousing subjective sensations of fatigue, and yet was associated with no greater metabolic breakdown than positive or negative work; probably a restriction of the circulation through the muscles was one of the reasons why static work is accompanied by such severe subjective effects.

Prof. Hill, referring to the contraction and recovery processes in muscle, said that it was essential in prolonged effort for the recovery process to keep pace with the breakdown processes accompanying contraction; under these circumstances the muscles were, so to speak, living on their income, whereas in brief but violent efforts they were living chiefly on their capital. He was convinced of the importance of static work because the duration of single muscle twitches was so short. The stiffness following heavy static work was also a marked feature. One reason why a short contraction was less efficient than a more prolonged one was that relatively more energy was required to alter the shape of the viscous muscle tissues quickly than to change it more slowly, just as greater energy was needed to stir treacle quickly than to stir it slowly. He also described an apparatus for the study of maximal work in human muscle.

Prof. H. Briggs described a method previously detailed in the *Journal of Physiology*, by which he had studied the degree of physical fitness of recruits. The method was also applicable to the detection of malingerers.

Dr. J. S. Haldane, F.R.S., gave a short communication dealing with the circulatory changes during exercise. In connexion with this part of the subject Prof. Hill resumed the discussion, and described how, by measurement of the velocity of the pulse-wave by the use of the hot-wire sphygmograph, some measure of the circulation rate could be obtained from the formula:—

$$\begin{array}{c}\text{Velocity of}\\ \text{pulse wave}\\ \text{(in M. p. sec.)}\end{array} = 3{\cdot}57 \Big/ \sqrt{\frac{\text{\% increase of volume of arteries}}{\text{per mm. Hg pressure.}}}$$

It is interesting to note that the pulse wave travels with an increased velocity during exercise, especially in older persons; in young individuals whose arteries are more elastic the change in velocity is smaller.

Prof. A. D. Waller, F.R.S., then described his well-known investigations on

The Physiological Cost of Muscular Work

as determined by measurement of the carbon dioxide output, and claimed that his simple technique gave results of greater accuracy than the other and more elaborate methods dependent on measurement of the oxygen intake. This statement was subjected to extremely severe criticism by Prof. Cathcart, and was also criticised by Prof. A. Krogh and Dr. Haldane. An interesting fact was brought out by Prof. Krogh—namely, that fatigue occurred more easily in subjects whose diet was largely composed of fat than in those whose diet contained large amounts of carbohydrate. With reference to the restriction of circulation in static work he had, contrary to expectation, been unable to obtain definite proof of this, though it was certain that static effort was less fatiguing if interrupted at short intervals.

Mr. E. Farmer, M.A., contributed an interesting paper at the close of the discussion dealing with the

Economy of Human Effort in Industry.

There were innumerable difficulties in the investigation of industrial fatigue, not the least of which was the difficulty of obtaining any true measure of fatigue. Constant coöperation and intercourse between the laboratory worker and the field or workshop investigator were necessary in all such investigations.

At a later meeting, papers on colour-vision were read by Dr. F. W. Edridge-Green and Dr. J. H. Shaxby. Dr. Edridge-Green showed that the effect of adding white light to any spectral colour was virtually the same as an addition of yellow. The reason was apparently because yellow is the most luminous component of white light. Dr. Shaxby described a method of testing colour discrimination.

apparatus for estimation of CO_2, found that analyses made at different times of the day showed a range of 8 mm. Hg tension of alveolar CO_2, and that these variations were not due to experimental error, but were directly related to the ingestion of food. Haldane had showed that respiration is so regulated as to maintain the alveolar CO_2 tension approximately constant, that the stimulus to the respiratory centre is the H-ion concentration of the blood, and that any factor raising the acidity of the blood will automatically increase pulmonary ventilation and so lower the CO_2 in the alveolar air and blood plasma. The effects of alteration in the reaction of the plasma, as in violent exercise or in diabetic coma, upon the alveolar CO_2 tension are well known, but that the pouring out of acid from the blood during gastric digestion and of alkali during pancreatic secretion should influence the reaction of the blood and so the alveolar CO_2, although a rational deduction, had not been experimentally verified.

We await with interest further evidence upon the reaction of the blood and urine in the series of cases investigated by Dr. Dodds, and would congratulate him upon a successful application of the deductive method of reasoning to an important physiological and pathological investigation, the results of which correspond so closely with those obtained by the fractional method of gastric analysis.

POST-SCARLATINAL MIDDLE-EAR DISEASE.

WHEN commenting[1] on the Annual Report of the Metropolitan Asylums Board we expressed regret that the final portion of Mr. T. B. Layton's report, consisting of "suggestions put forward for organising a service to prevent the occurrence of chronic ear disease as a sequela of the infective diseases," and containing recommendations now under consideration, had not been published. A large part of this valuable report on the otological work done at the North-Eastern and Western Fever Hospitals is directed to just this point, the prevention of chronic ear disease as a result of the infectious fevers, or rather of scarlet fever, for the few cases of ear discharge in the other fevers were not enough to justify any conclusions. Mr. Layton finds that there is a great divergence of opinion as to the proportion of cases that leave the fever hospitals with chronic inflammation of the middle ear; otologists appear to believe that they are very numerous, whilst the medical officers of fever hospitals consider that they are relatively few. Possibly both are right; the percentage is low, but the total is nevertheless large, owing to the immense number of cases of infectious fever passing annually through the Board's hospitals. Similarly, aural surgeons in general believe that the middle-ear suppuration occurring in scarlet fever is more severe than other forms, whereas epidemiologists hold the opposite view. Mr. Layton supports the latter from his experience of 12 months' work, and offers two principal explanations: that scarlet fever varies in its clinical type, so that severer complications *may* occur in other epidemics; and that the otologist does not often deal with the mastoiditis occurring during scarlet fever, but rather with the secondary infections which occur in ears previously damaged by the disease. We can hardly agree with his third explanation—namely, that the otologist stirs up the inflammation by surgical interference. Mr. Layton finds, and most otologists will confirm this, that early paracentesis of the inflamed drum is the best way to limit the number of cases of chronic otorrhœa. The problem is how to ensure that this is done as soon as it is required. Aural surgeons have advocated daily routine inspection of the drum in fever patients; Mr. Layton finds it takes about an hour to do 30 cases, which is at the rate of one minute for each drum, and that it would therefore take one man an eight-hour day to go through a hospital of 240 beds, even if one man could do such routine work. Neither does he think it practical that each medical officer should examine the ears of all his cases daily, as there is a constantly changing personnel, and he has obtained much better results by asking the officers and ward sisters to look out for the symptoms of early ear disease, especially pain and a sudden rise of temperature, and to report to the otologist. Mr. Layton performs the paracentesis without a general anæsthetic, chiefly to avoid the loss of time consequent on waiting for consent, and does not mention the use of any local anæsthesia. The treatment, once the ear has begun to discharge, contains nothing noteworthy, and it has been decided not to proceed to the removal of tonsils and adenoids during the children's stay in the fever hospitals; under these circumstances it is to be hoped that arrangements are made for the performance of this operation after their departure. For mastoiditis Mr. Layton performs a Wilde's incision, and considers this operation particularly useful in severe cases of scarlet fever; it appears that he only proceeds to antrotomy if the temperature remains raised or if the incision fails to heal. We look forward with interest to the publication of recommendations based on his experience.

THE WAR-BLINDED IN GERMANY.

Sir Arnold Lawson, in a recent issue of THE LANCET, related the scheme of re-education for the blinded sailor and soldier in operation at St. Dunstan's. There are about 4000 Kriegsblinde in Germany, 287 of them being natives of Silesia, and in a little brochure[1] which has reached us Dr. Kurt Uhthoff tells how, in the province of Silesia, the problem of the war-blinded has been faced. At first the help given was largely through voluntary agencies of which there were a large number. Now the war-blinded are under the care of a branch of the official administration. The pension in the case of a single man with no previous skilled employment amounts to about 4550 marks a year; not too much, it would seem, when the depreciation of the mark is taken into account. An essential part of the system is that each of the blinded men has a caretaker (Fürsorger) who reports on his needs to the local committee and makes it his special business to advise and help as to his training for employment. The result has been so far successful that at present only about one-third of the war-blind are without some sort of remunerative employment. These include, besides the usual employments of brush, mat, and basket making, typewriting, telephone operating, massage, and various other employments. Country settlements have been attempted but here the inevitable difficulties of housing soon became apparent. German experience agrees to a great extent with that at St. Dunstan's. Poultry-farming is one of the employments, but experience shows that this is hardly suitable for a single man. The writer agrees with Sir Arthur Pearson that those with a minute amount of vision are far more difficult to help than the totally blind. The latter goes so far as to say that a slight residue of vision is a positive disadvantage to man from the point of view of learning a trade. On the whole the problem seems to have been approached in Germany in much the same spirit as it has been at St. Dunstan's, but we suspect that the latter has the advantage in providing the communal life during the period of re-education. A special feature of the German scheme is the proposal to supply each blinded man with a trained dog to guide him on his walks, embodied in a law made last year. The training of the dogs—German sheep dogs and Airedale terriers are mentioned—is carried on at a Government institute and already some 2000 canine attendants are available.

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[1] THE LANCET, Sept. 10th, p. 580.

[1] Über das Schicksal der Kriegsblinden und ihre Versorgung mit besonderer Berücksichtigung der Kriegsblinden Schles by Dr. med. Kurt Uhthoff. Halle. Pp. 103. 9.50 M.

and laboratories. Amongst them Italians and Americans are most numerous; the latter have reconstituted the "American Medical Association of Vienna," which in pre-war times occupied an important position in the university. It is intended to re-establish the English courses formerly controlled and organised by that association. Numerous medical men from the Scandinavian countries and Holland have also come to the city, where they find not only a courteous reception and excellent opportunities for study, but a rate of exchange greatly to their advantage—enabling them, indeed, to save money during a sojourn in this country. At present special post-graduate courses are proceeding in the clinics of oto-rhino-laryngology, ophthalmology, and skin diseases, and in the laboratories of the pathological and chemical institutes; all other institutes and clinics will shortly be completely ready for post-graduate classes.

Indirect Extension of the General Hospital.

The present financial situation of the State, which is not likely to improve for some time, makes it impossible to proceed with the old plan to erect the remaining clinics of the general hospital on their selected site. The old military hospital, however, is not now required for its original purpose; under the Empire Vienna, being the military centre of a large army, boasted an enormous garrison hospital, now practically unused. This old building can thus be converted at comparatively little cost, in order to accommodate a large number of institutes and offices of the general hospital. Thus the kitchen, the administrative offices, the disinfection plant, the laundry, and the nurses' home will be transferred to the garrison hospital, and the premises thus rendered vacant in the general hospital devoted to creation and enlargement of clinics. A number of wards containing patients not required for teaching purposes, and convalescents, will also be transferred; the neurological clinic already possesses a dependance in the garrison hospital, and the departments of dermatology and pathological histology are now in process of migrating. The change will be completed within a year. The clinical beds alone will then number over 2000, and scientific work will not, as hitherto, be hindered by lack of space.

Difficulties of the University in Innsbruck.

The medical faculty of the University of Innsbruck (capital of the part of Tirol left to Austria) is faced with a serious dilemma which threatens to stop its work completely. The hospital where the clinical patients are housed is supported partly by the provincial council, partly by the municipality, with only a small grant from the Government. These contributions have suddenly been discontinued, the municipality having denied its obligation to assist in the upkeep of a State institution. The provincial council followed this bad example, and the Government is unwilling or unable to carry the entire burden. Negotiations are now going on; a real deadlock would mean a severe blow to the medical life of this country. The medical organisation is, therefore, on the look out to intervene or to assist in a satisfactory settlement.

Impending Retirement of Prof. Choostek.

The intention of Prof. Choostek, the famous neurologist, to retire from clinical work, and the plan of the Government to discontinue his—i.e., the third—clinic for pathology and internal diseases, has caused uneasiness in medical circles. This excellent investigator and teacher commands great respect amongst his colleagues, and his decision has caused sincere regret. Attempts are being made to persuade Prof. Choostek to reconsider his decision; it is surmised that the Government has in some way offended the professor, and would like to use this opportunity to dispense with the cost of one of the clinics. It is hoped such a deplorable result will not be permitted to follow.

Sept. 6th.

Public Health Services.

COÖRDINATION OF PUBLIC MEDICAL SERVICE.

COÖRDINATION of the public medical services is a desirable thing to which we are very far from having attained. Uncertainty as to the future position of the guardians no doubt blocks the way, but that is no reason why the medical services at present directed by local authorities should not be unified. The Bradford Health Committee's proposals to unify all the medical work of the health and education committees by putting it under the control of one committee of the corporation should meet with approval. Many medical officers of health make similar recommendations. Thus Dr. E. W. Hope, of Liverpool, in his last report, in referring to this subject, says:—

> "It is an administrative blunder to break the continuity of health supervision so soon as the child reaches its fifth birthday and impose the obligation for the child's health upon a different body, constituted for a wholly different purpose, and by no means always appreciative of the health needs of the child."

Dr. Charles Porter, in his 1920 report for Marylebone, deals with the matter as it affects the Metropolitan boroughs. He refers to the quite unnecessary duplication of work, to cross-purposes and excessive correspondence resulting from the existing system, and says:—

> "In no part of the kingdom, indeed, is the divorce between the general public health work and school medical work so complete as in the Metropolis, and since it is impossible to see any justification for it on public health grounds, certainly, and probably also on economic grounds, it is difficult to see why either the central government authorities or the local authorities have for so long acquiesced in the arrangement."

Other anomalies in our existing system of health administration which lead to overlapping are to be found in the control of tuberculosis and the supervision of the midwifery service. Large urban districts charged with the administration of maternity and child welfare schemes do not control their own midwives, while it is now becoming more and more recognised that well-trained midwives may be invaluable helpers in such schemes. Antenatal work, the encouragement of breast-feeding, the prevention of ophthalmia neonatorum all suffer from the lack of unified control. Metropolitan boroughs are at the present time making a move towards better coördination of official and voluntary efforts with regard to tuberculosis and infant welfare.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

A GROUP OF METROPOLITAN BOROUGHS.

Kensington.

THE estimated population of the Royal Borough of Kensington in 1920 was for birth-rate 165,496 and for death-rate 164,177. The birth-rate during 1920 was 24·3, the death-rate 13·4, the infant mortality rate 81, the death-rate from phthisis 0·82, and from other forms of tuberculosis 0·27. Dr. J. Fenton tells us that one of the most important steps during the year has been "the establishment of an advisory committee to the maternity and child-welfare committee to assist the council in coördinating the work of the numerous voluntary bodies engaged on child-welfare work in the borough." There are seven centres and the borough has been mapped into seven areas with a centre in each. Five of the centres provide dental treatment. There is an infant clinic in addition, which Dr. Fenton thinks might usefully act as a treatment centre for the seven child-welfare centres. Whatever the future of local government in London this coördination of child-welfare work seems eminently desirable. One of the seven day-nurseries has been closed, and on this subject Dr. Fenton says: "The future of day-nurseries requires careful consideration, for it is open to question whether it would not be better and even more economical to spend money on keeping necessitous widowed and deserted mothers

CHILDREN'S ORTHOPÆDIC CENTRES.

IN view of the fact that some of the clinics established for the treatment of pensioners are now desirous of extending their work and including the treatment of crippled children, the Central Committee for the Care of Cripples have had under consideration the work of such clinics for the treatment of children by massage, remedial exercises, and electrical methods[1] and have drawn up the following report.

The types of children for whom such treatment may be suggested are:—

1. *Rickets.*—It is very doubtful whether physiotherapy is worth while. Minor cases are best treated at infant welfare centres by regulation of feeding and medicine and attention to hygiene. Major cases require either splinting or operation, or treatment in a residential institution where the hygiene and the diet are carefully supervised. Out-patient massage is waste of effort; it is impossible to give skilled massage to an infant.

2. *Infantile Paralysis.*—The treatment may be divided into (1) Prevention and correction of deformities: (*a*) splinting; (*b*) operative treatment; (*c*) use of walking apparatus. (2) Physio-therapy: (*a*) massage; (*b*) re-education of movement; (*c*) electrical treatment. These should be considered as a whole. In an early case splinting, massage, and electrical treatment of the appropriate muscles should be provided, followed at a slightly later stage by re-education of movement and by the provision of any necessary appliance. The scheme of treatment must be settled by a surgeon with special experience in this work, who should direct which muscles are to receive treatment and which movements require re-education. There is a tendency to consider physiotherapy as the panacea for infantile paralysis. This is not so. It has its uses, but must be applied thoughtfully as a part of the whole scheme of treatment. Only selected muscles and movements should be treated and exercised. It is easy by giving electrical treatment to the stronger muscles to produce rather than to diminish deformities. After two years from the date of onset of the paralysis physio-therapy has only very restricted uses. During the later stages, however, carefully thought out exercises to improve the power and control of muscles which have recovered but are not in active use, and to undo bad habits, may produce great improvement. It requires great experience and intelligence to draw up the scheme for such treatment. These cases more than any others should be under an orthopædic surgeon whilst under treatment. Treatment should in no case be indefinitely prolonged.

3. *Spastic Paralysis.*—These repay physio-therapy only in so far as they are capable of improvement by re-education. Massage and electrical treatment are useless. It may be said generally that the appropriate methods of re-education are not taught in the massage schools, so that a masseuse will not be able to deal adequately with a case of spastic paralysis unless she has preliminary and special instruction.

In all except very mild cases the treatment by re-education is only a part of the treatment, preliminaries being the reduction of the spasm by surgical methods such as tenotomy, division of nerves, division of posterior nerve-roots, and perhaps the provision of walking appliances. Many cases of spastic paralysis are so mentally deficient that they are unable to respond to any form of treatment.

4. *Scoliosis and Round Shoulders*, divisible into: (1) Mild postural cases. The essential element in these is not bone deformity or muscular weakness, but lack of proper muscular control and balance. Their cure is a question of physical education. They are best dealt with in small classes and by educational gymnastics. Such treatment is most easily given in the schools. Apparatus is not essential: if apparatus is provided it should be only of the simplest, the most valuable pieces being (*a*) reversible bench for balance work, and (*b*) a few rib stools. Plinths are not wanted. (2) Mild structural cases. It is essential that these should be under regular surgical supervision, as they are the type of case from which the bad scoliosis arises, and often arises very suddenly. Exercises for these require most careful regulation. The best exercises are, as a rule, those for improvement of control of muscle balance—i.e., educational. Splints for recumbency and supports for the spine may be required. (3) Severe structural cases. These require much the same treatment as the last class, but in many cases there is a tendency to treat by exercises children with fixed severe curves which are quite incapable of improvement. The number of bad cases of scoliosis among school children is relatively very small.

5. *Flat Feet.*—Flat fleet and talipes valgus are common in children. The first essential in treatment is to see that proper boots or shoes are worn. Boots that have been modified or are supported by a steel spring may be required. Subject to this, exercises are useful in a large proportion of cases. Class exercises in school are all that are required, except in a few special cases. No apparatus is required unless it is a skipping rope.

6. *Breathing Exercises* can be best done in classes in school. No apparatus is required.

7. *Bone and Joint Disease.*—It should be our aim to see that these cases are treated, as far as possible, in residential institutions while at the active stage. During later stages they require careful after-care, namely: (*a*) periodical surgical supervision to watch progress; (*b*) supervision to see that apparatus is worn and rules as to rest carried out.

The types of cases which require orthopædic supervision and treatment can therefore be divided into: (*a*) Those for whom class exercises only are required. These should be dealt with by special physical education classes in schools, and should not be brought to treatment centres apart from initial and periodic examinations. The treatment of these children in clinics interferes much with their schooling, and is unnecessarily expensive. (*b*) Those who require orthopædic treatment. This may include surgical supervision, splinting, surgical appliances and physiotherapy such as massage, exercises, and electrical treatment. These cases cannot be dealt with at a clinic at a school, but should be treated either in a hospital out-patient department, or if one is not accessible, in a centre which is virtually an outpost of the orthopædic hospital, and should be supervised by a surgeon trained in orthopædic work and in touch with the central hospital, which can deal with portions of the treatment which cannot be carried out at the centre.

Such centres should be: (1) Established only where a hospital cannot adequately carry on the work of the area. (2) Part of a complete scheme of orthopædic treatment for the area and properly coördinated with a hospital. (3) Under the surgical supervision of an orthopædic surgeon, who visits sufficiently often to exercise adequate supervision. He must be paid. (4) Coördinated with: School medical work—school medical officer should visit the clinic weekly and admit new cases; infant welfare centres; school classes for corrective exercises; Invalid Children's Aid Association.

The Central Committee for the Care of Cripples are willing to assist in the first organisation of a clinic or system of clinics, and particularly to assist in the selection of visiting orthopædic surgeons.

PÆDIATRIC RESEARCH FELLOWSHIP.—The John and Temple Research Fellowship has been established for a period of three years at St. Thomas's Hospital by Mrs. Temple Thomson. The Fellow elected receives £600 per annum and is required to act as chief clinical assistant in the Children's Department at St. Thomas's Hospital, as well as to undertake research work in some clinical or pathological subject especially connected with children. It is a full-time appointment.

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[1] A report drawn up by the Central Committee for the Care of Cripples on the Organisation of Clinics for the Treatment of Children, 20, Berkeley-street, London, W. 1.

for the year 1920. The birth-rate rose from 13·6 in 1919 to 20·8 in 1920. The death-rate in 1920 was 15·2. The legitimate infant mortality-rate was 60, the illegitimate rate being 128. Dr. Bond expresses his satisfaction that the Holborn Council have approved the methods advocated by the Society for the Prevention of Venereal Disease. It is good to read in the account of the maternity and child welfare scheme that the Holborn Council are giving much attention to dental treatment. In addition to a dental clinic for expectant and nursing mothers, evening dental clinics have been arranged for men and boys not attending school and also for tuberculous patients. Of 16 cases of ophthalmia neonatorum notified, one of the children died, three left their former address, and the remainder were reported to have recovered.

SCHOOL MEDICAL SERVICE.

Colchester.

THE whole of the public health services of this ancient borough are under one executive officer. A blemish is the absence of a cleansing station. Dr. W. F. Corfield reports: "The time is not far distant when serious consideration must be given to the advisability of providing cleansing arrangements for children suffering from scabies." Naturally under these conditions it follows that impetigo "is one of the diseases that flood the minor ailments clinic." There is no nursery school in Colchester, and as children are admitted at the age of 4 the need for one is not regarded as pressing. A physical training organiser has recently been appointed with good results, and a class for defective speech training has been instituted. The number of children who underwent routine medical inspection was 1772. Of these 384 were referred for treatment, and in 201 cases treatment was obtained. 3120 dental inspections were made, and out of 1483 referred for treatment in 530 cases this was obtained. Out of 115 cases referred for treatment on account of visual defect, in 112 cases it was available.

Gloucestershire.

During the year about 15,000 routine examinations were made. Only 25 per cent. of the parents were present. Out of 7903 dental inspections 59 per cent. were found to require treatment, and in 61 per cent. of these cases it was obtained under the authority's scheme; 26 per cent. refused treatment, as against 31 per cent. in 1915; 218 children suffered from ear defects, in addition to 442 requiring observation; 315 cases of enlarged tonsils and 62 of adenoids required treatment, 3905 being kept for observation; 1402 children suffered from organic heart diseases, and 107 from anæmia. Definite pulmonary tubercle was found in 7 cases, and there were 13 suspected cases; 55 children were kept under observation for rickets. 79 per cent. of all defects requiring treatment received it, 21 per cent. of these being cured, 41 per cent. improved, 16 per cent. unchanged. Less than 50 per cent. of the children were unvaccinated. There is an excellent detailed summary of the year's work. Dr. J. Middleton Martin has made a comparative analysis of conditions for the pre-war period of 1908 to 1915, with the period 1916 to 1920. A comparison is made of nutrition in the two periods, nutrition in the second period being above average in 292 cases to every 100 cases in the first; while average heights and weights showed very little difference, in fact, above the age of nine the weights in the second period are 1 to 2 per cent. below those in the first. The method of estimating nutrition is interesting; the inspector makes a note on the card of each child as to the general impression conveyed, whether "above average," "average," or "below average." The comparative tables, which might have been analysed to a useful degree, are of little value, comprising as they do a mixture of various age and sex groups in no defined proportions.

Derbyshire.

Dr. Sidney Barwise, who is the school medical officer, acknowledges Dr. G. K. Thompson, his senior assistant, as the author of the report, a too unusual courtesy in regard to a quite usual condition. The report has been delayed by the preparation of the detailed and complex tables now required by the Board of Education. "There is a strong tendency for numerical records of treatment to overshadow prevention of disease." The number of children medically examined throughout the year was 29,342, as compared with 26,874 in 1919. Of these 26,534 were routine inspections; 6526 parents attended medical inspection; 457 children were temporarily excluded from school on account of tuberculosis, and 225 on account of their verminous condition. The number of children suffering from malnutrition showed a reduction this year. "The principal meal in colliers' homes is often about 2–2.30 P.M., and the children have to be satisfied with a makeshift. The want of a good midday meal is undoubtedly a principal cause." The fact that in 72·5 per cent. of invalid crippled cases the trouble began before 5 years of age emphasises the necessity for nursery schools. "It is the duty of our school nurses, as health visitors and inspectors under the Notification of Births Act, to visit each child regularly during the first five years of life, and already there have been many cases where incipient disease has been detected and checked through their vigilance. How much more easily and surely could this be done if the child attended a nursery school." As a result of the school nurses acting as nurses under the Maternity and Child Welfare Act, the proportion of salaries chargeable to the Education Committee has dropped from 33 to 23 per cent. The three dentists are assisted by five dental dressers. Sixty closures of schools, mostly for measles, were, as a rule, too late to prevent the spread of the disease. The ophthalmic work is well done so far as provision has been made. Two cases of xerosis with night blindness, cured on the vitamin theory with cod-liver oil, are noted. A half-tone block of tonsils and adenoids removed is of interest. Of 205 tonsils removed at the Derby clinic, 91, or 45 per cent., were demonstrated to be infected with tubercle bacilli. They were for the most part accompanied by enlarged glands which disappeared after operation. Further details of this investigation would be of interest. Dr. Barwise considers that the results of physical drill so far have been disappointing. He points out that the majority of deformities are preventable. With this object in view the authority has appointed a supervisor of physical exercises. This is an excellent report of work which, if allowed greater freedom, would rapidly advance knowledge.

VITAL STATISTICS OF LONDON

DURING AUGUST, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the *notified cases of infectious disease* it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 8·5 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 9·6, 9·4, and 10·3 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Fulham, St. Marylebone, Hampstead, Holborn, Lambeth, Wandsworth, and Lewisham; and the highest in Hackney, Finsbury, Shoreditch, Bethnal Green, Stepney, and Bermondsey. The prevalence of *enteric fever* was about equal to that in the preceding month; of the 43 cases notified during the five weeks ended Sept. 3rd, 6 cases belonged to Deptford, 4 to St. Pancras, 4 to Wandsworth, and 3 each to the boroughs of Kensington, Stepney, Poplar, Lambeth, and Greenwich. There were 32 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 18, 23, and 27 at the end of the three preceding months; the weekly admissions averaged 5, against 5, 4, and 5 in the three preceding months. The prevalence of *scarlet fever* was 20 per cent. less than in the

CHLORINATION OF POTABLE WATER:

CIRCULAR OF THE MINISTRY OF HEALTH.

THE rapid and efficient sterilisation of drinking water by means of treatment with chlorine is described in an appendix to Circular 241, issued by the Ministry of Health on Sept. 15th to local authorities.

General Principles of Chlorination.

Chlorine is most readily available in the form of chloride of lime (bleaching powder) which can readily be obtained commercially. This, if freshly made, should contain 33 per cent. of free or active chlorine. It loses its efficacy on keeping, especially during hot weather; but this loss may be retarded by the addition of 25 per cent. of quicklime. Samples of the bleaching powder used should be examined by a chemist to see that the proper amount of chlorine is present. Any deficiency in strength may be counteracted by an increased dose.

In order to be sure that all infective organisms are killed, the chloride of lime must be added to the water in such quantity that free chlorine will be available to the extent of at least one part per million of water. This will be effected by the preparation of a solution of chloride of lime consisting of 1 ounce of chloride of lime to 1 quart of water. This will suffice to treat 2000 gallons of a water which does not contain an excessive amount of mineral or organic matter.

If the water is very impure, discoloured, or contains much suspended matter, it should, if circumstances permit, first be clarified by the addition of from 2 to 8 grains per gallon of alum and an equal proportion of powdered whiting, and allowed to stand in a tank, from which it should be decanted to another tank for the addition of the chloride of lime solution.

Removal of the Taste of Chlorine.

After the addition of the chloride of lime, the water should, *if practicable*, be allowed to stand in an open tank for four hours before consumption. If this can be effected there will usually be no complaint of taste of chlorine in the water. If this cannot be effected the taste may often be removed by the addition of a small quantity of permanganate, sufficient to produce a very faint pink colour fading away in about 5 to 15 minutes; or, so far as the chlorine taste is concerned, by the addition of a solution of sodium thiosulphate (the hyposulphite of soda used in photography) in small quantities. The quantities of these preparations which are necessary to remove the taste can be quickly determined by practical tests. Wherever possible, in the case of a water-supply which is filtered, the chlorine solution should be added after filtration.

Adaptation of Method to Quantity.

There are various ways of adding the chlorine solution to the water. If it is a small supply, such as that from a cottage well, dip well, small spring, or land drain, the water will have to be pumped into some receptacle such as a tub, barrel, or tank cart, and the chlorine solution added by hand. Water should be allowed to stand for four hours in the open and then be distributed to consumers.

If it is a larger supply, corresponding methods, involving the adding of measured quantities of the chlorine solution by hand, will probably have to be adopted in the first instance, because it takes time to provide or arrange apparatus.

If the treatment has to be continued for any length of time, however, an improvement on this method is to provide a small tank to hold the chlorine solution, which is fed from a larger tank, and kept filled to a certain level by means of a ball tap or other similar contrivance. In this way, a constant level, and, therefore, constant pressure, is maintained in the small tank, which assists in regulating the flow. If this is fitted with a fine glass tube, having a controlling tap and a pressure gauge, the solution may be allowed to drip at such a rate as to pass the required amount per hour into the water, the rate of discharge of which into the reservoir is known. The tap should be so arranged as to drip over the point of discharge of the water into the reservoir. When the reservoir is filled, the chlorinated water should be allowed to stand for four hours before consumption, if practicable.

When the chlorine cannot be added to the water in the reservoir the solution may be injected into the rising or other main by means of a suitable contrivance, such as a pump driven by a turbine from the rising main, the amount of solution injected being proportionate to the rapidity of flow of water in the main, a definite relation being established between the two.

The tank containing the chlorine solution should preferably be of glass, in order that any failure in the supply may be detected at a glance.

Difficulties and Safeguards.

The continued use of chloride of lime, except where employed on a very large scale, and under skilled supervision, may give rise to difficulties in that it requires labour and constant attention, and it will probably be found that some other method of adding the chlorine will in the long run be preferable if the treatment has to be continued for an indefinite period. Various liquid preparations containing chlorine in known proportion may be employed, such as "Chloros," which contains from 10 to 15 per cent. of available or free chlorine and is prepared by the United Alkali Company, Liverpool. The liquefied gas can also be employed, and there are various forms of apparatus for effecting this automatically, also for using the dry chlorine gas or a solution of this in water.

Any mains, pipes, cisterns, or tanks which have contained polluted water should be emptied and disinfected. It will frequently be found, after the water mains, pipes, and cisterns have been disinfected by a strong solution, say, five parts per million, and after the use of chlorine, in the proportion of one part per million, for some days in the water, that the amount of chlorine may be reduced to one part in three millions, and risk of "taste" will then be reduced. Whether this can be done will depend on the course which the outbreak of disease takes, and on the results of analysis, bacteriological and chemical, of the water before and after treatment with the chlorine.

The appendix concludes by stating that in the case of a heavily polluted water it is well to make sure that some free chlorine is present after the addition of the solution to the water. This can be ascertained by the starch and iodide of potassium test, which is particularly sensitive if the water is at a low temperature; the materials for this test can be obtained in the form of compressed tablets. The use of poisonous metals in any apparatus dealing with the water whilst under treatment with chlorine must be avoided.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Attempts to Restrict the Number of Matriculations.

VARIOUS proposals have been made of late years with a view to checking the constant increase in the number of medical students in Vienna. The dissecting rooms and laboratories were more than crowded before the war, and latterly things have become worse. The formation of the new States in Middle and Eastern Europe, the increase of illness caused by the war, and the changed mentality of many millions of people, have necessitated a larger and better supply of qualified doctors; and nearly all the new medical students have flocked to Vienna, the old centre of learning, where are the best equipped institutes and the best teaching available for them. As a consequence the Viennese and other Austrian students began to be crowded out; moreover, the majority of the foreign students from Eastern Europe are Jews, who have been more or less expelled from Poland, Roumania, or Russia, and possibly religious bias has assisted the decision of the dean of the medical faculty to admit no more than 100 new first-year students to matriculation for this term, with the proviso that only if all Austrian applicants have been accommodated may the remainder ask for admission. This proviso does not, however, apply to students who have already had one term at the university, or to post-graduates; such students are encouraged to continue their studies. This restrictive measure is also justified by the small number of human bodies available for dissection and the very high prices demanded for animals—even frogs, mice, rats, and rabbits—used for experiments. Naturally its promulgation has not received unanimous support, as it is feared that the high standard of liberty hitherto enjoyed by the Vienna school may be discredited by its application.

Influx of Foreign Physicians.

Quite a number of foreign doctors have recently taken medical courses in Vienna and are now busily engaged in scientific and practical work in the clinics

HOUSING NOTES.

Building Guilds.

THE Government's refusal for a certain period to enter into further contracts to aid the building of houses has by no means quenched the interest appertaining to housing at the present time. Old problems have acquired a new liveliness; ideals arising out of the war have produced new methods. To these ideals Building Guilds owe their origin. Building Guilds stand for complete democratic control within the industry and for complete publicity as to costs, charges, and prices. The fact that work on 13 building schemes (two in London and 11 in the provinces) has been commenced shows that they represent a practical proposition. Mr. Ernest Selley, an independent investigator who has collaborated with Mr. Seebohm Rowntree and Captain Reiss in the past, has visited five sites involving the building of 986 houses; at three, many houses were nearly finished and the work was sufficiently advanced to provide a basis for a considered opinion as to the probable success of the Guilds. Informal inspections of the building operations were first made and the workmen questioned, later the Guild officials on the site were cross-examined impartially. All the workmen appeared to be working with a will, even in the absence of the foreman. The clerks of the works, the best judges, were all pleased with the output; some found that the output on Guild schemes are 25 per cent. above the average for similar work for other contractors. The standard of the work is high. Guilds reserve the right to pay the workmen full wages in wet weather or fine, in sickness or on holiday. In Manchester for the last quarter of 1920, in spite of much rainy weather, the money paid for time not worked was less than 1 per cent. of the total wages paid. No figures are available as to the actual cost, but Mr. Selley holds that in the schemes visited all the evidence goes to show that the final costs would be considerably below contract figures. For the Walthamstow Council Scheme for 400 workmen's dwellings the accepted estimate of the London Guild was about £36 per house less than the lowest estimate submitted by the private contractors. The Guild agreement provides that the price shall be the prime cost of material and labour at standard rates, together with an additional 6 per cent. to cover head office administration expenses, plant, insurance, and, if necessary, interest on borrowed capital. To this is added an allowance of £40 a house to enable the Guild to guarantee continuous pay to its workmen in all contingencies. Sir Alfred Mond, as shown by his speeches in the House of Commons, evidently prefers the contract system, but is willing to consider the Building Guilds if they can prove the claims made for them.

The Standard of Home-Making.

An old problem has come more into the light. Many local authorities have recently for the first time become responsible for the management of house property, and will doubtless come up against the problem of the neglectful and dirty tenant. Obviously, it is almost impossible under prevailing circumstances to make inquisitorial investigations as to the cleanliness of the present homes of the applicants for municipal houses; the war services of the men, the overcrowding, residence outside the area, hinder such inquiries. The Women's Section of the Garden Cities and Town Planning Association have recently issued a report on the management of working-class property by women, a feature inaugurated by Miss Octavia Hill in 1864. They find that where tenants dispossessed from old houses are provided for in modern dwellings, many of the incoming housekeepers have had no experience of using the new fittings. Some of the women have not known how to clean their porcelain-surfaced or painted bath or [illegible]ware sink, or how to manage their closed-[illegible] Not only could a woman deputy manager remedy this lack of knowledge, but a skilled and tactful adviser would be able to improve the standard of housekeeping and home-making which has been lowered by overcrowding and unemployment. The Section recommend that the London University, which now grants a degree in estate management, and the College of Estate Management, should recognise the special need for the management of working-class property and make any necessary provision. The best course of training, they consider, would be one which combines the studies arranged at the Household Science Department at King's College, the London School of Economics, and the College of Estate Management, all of which are linked up to the University of London. The report goes on to condemn the undesirable means—key-money, percentage fees on builder's bills, and other "payments"—which have been practised in order to make the management of lower grade properties a paying business.

"Zoning."

The spoiling of residential areas has long been with us; its cure—zoning—has only recently been mooted in this country. Probably few outside those intimately concerned with town planning have a very definite idea of the meaning of the word, although zoning of cities has been in operation in the United States since 1909, when Los Angeles established the first zoning ordinance. Zoning, as defined by the chairman of the New York (City) Committee on Districting, is "the creation by law of districts in which regulations, differing in different districts, prohibit injurious or unsuitable structures and uses of structures and land." St. Louis, U.S.A., affords an example of its practice. After 16 months' preliminary study of existing facts and probable tendencies the city was, in August, 1918, divided into five districts—first residence district for one-family houses exclusively; the second residence district for other dwellings and for tenements, hotels, institutions, &c.; the commercial district comprising important streets, not within the manufacturing part of the city, for stores and shops; the industrial district for all forms of industry not considered objectionable because of noise, odours, smoke, and dust; and the unrestricted district, chiefly along the railroad lines and the river front, which may be put to any use provided that nuisances dealt with under the existing laws are not created. Apparently the movement in favour of zoning in America derives much of its impetus from objection to the sky-scrapers which cut off light and air from too closely approaching neighbours. Other objections are the proximity of garages, with their inevitable workshops, to adjoining schools or of factories to houses. The motor lorry has enabled industrial concerns to fix their factories in the tract of residential districts; proximity to railroads is no longer necessary. Only by a lawsuit can the well-to-do protect themselves against the various forms of nuisances caused by industry; zoning affords protection and prevention for both poor and rich.

It is necessary to guard against the insidious encroachment of industry and business on residential areas; one factory or one shop brings others in its wake. Interruption of the quiet and peace of residential streets, the disturbance of sleep of children, nightworkers, or even other adults, the creation of dust by increased traffic or by dusty industries, are all arguments against allowing any encroachment on residential areas by businesses or industries. One boon which zoning would bring in the future, if not at present, is the saving of hours now spent in travel between work and home; more homes will in the future be within an easy walk of work. Zoning finds its easier application in the towns to be planned in the future; when applied to existing towns it would require to be adapted to existing conditions while serving to check undesirable tendencies.

To prevent injustice no alterations in the use of districts would be made unless a substantial majority of the property owners affected gave their consent, the final decision resting with the municipal authority.

at home with their children rather than on the support of day-nurseries." The council subsidises the Kensington District Nursing Association to carry out, under the instructions of the medical attendant, the treatment of cases of ophthalmia neonatorum. Every one of the 53 notified cases of this disease has been finally reported as cured without any appreciable loss of vision. In one case, however, which was not notified, the sight of one eye was completely lost and that of the other seriously damaged. The council have now arranged to take over the North Kensington Tuberculosis Dispensary and run it as a municipal institution—another wise move. The treatment of tuberculosis in South Kensington is carried out for the council by the Brompton Hospital, and it is hoped to arrange a satisfactory system for the examination of contacts and suspects. Dr. Fenton points out that a tuberculosis dispensary ought not to be a place for doling out bottles of medicine and cod-liver oil and malt, as was the tendency during the war, but ought to be more and more confined to cases requiring expert treatment and diagnosis.

Hampstead.

The estimated population of the Metropolitan Borough of Hampstead for 1920 was 91,519. The birth-rate was 17·1, the death-rate 9·4, the infant mortality rate 47·9, the death-rate from phthisis 0·45, and from all forms of tuberculosis 0·60. The infant mortality rate is very satisfactory even in a district which Dr. F. E. Scrase tells us "is almost entirely residential, the greater portion being composed of well-to-do people, with two districts situated on the east and west composed almost entirely of the working classes."

Like Kensington, the Hampstead Borough Council have been engaged in drawing up a coördination scheme which will utilise the efforts of all the voluntary bodies engaged in child-welfare work, including the Hampstead Council of Social Welfare. Dr. Mary Kidd, who is in charge of the pre-maternity clinics, reports that as the result of the agreement with the District Nursing Association, the nurses send up cases and the pre-natal work is growing rapidly. The dental clinic for nursing and expectant mothers is doing good work. Dr. Kidd thinks the allowance of milk to expectant and nursing mothers has enabled a larger proportion to feed their babies up to nine months and in this way has helped in the lowering of the infant mortality rate. Nine cases of ophthalmia neonatorum were notified. Eight cases made a complete recovery; particulars of the ninth are not given. The report contains an elevation of the first block of the South End Green housing scheme, the only one of many proposed which has fructified. The first block was expected to be ready for occupation in May, 1921. The scheme consists of 140 flats, 20 with one bedroom, 78 with two bedrooms, and 42 with three bedrooms.

Poplar.

The Borough of Poplar comprises the registration sub-districts of Poplar (population 55,503), Bromley (population 63,970), and Bow (population 40,203), and the estimated population of 1920 for death-rate was 159,776. The following were the principal statistics for the three districts compared with those for the County of London as a whole:—

	Poplar.	Bromley.	Bow.	County.
Birth-rate	33·13 ..	35·82 ..	32·77	26·5
Death-rate	14·73 ..	14·55 ..	14·96	12·4
Infant mortality rate ..	83·10 ..	75·85 ..	90·77	75·0
Tuberculosis death-rate	1·78 ..	1·57 ..	1·58	1·26

Dr. F. W. Alexander reports that 10 true cases of small-pox occurred during the year and that 3 of the patients from Bromley died. Four successful prosecutions for smoke nuisances were undertaken. The tuberculosis officer reports that the dispensary in Bow-road is unsuitable owing to noise and that the Council are negotiating for new premises. Surgical tuberculosis is dealt with by agreement with the London Hospital. An X ray apparatus is in constant use at the dispensary for diagnostic purposes. A proposed dental-clinic awaits the approval of the Ministry of Health. A "care" committee meets fortnightly, but no arrangements exist for finding employment for patients and the labour bureaus are of little or no value to the tuberculous patient. The council have now taken over the work of the Poplar Infant Welfare Association. The antenatal clinic is not a success as yet. Sixty-one cases of ophthalmia neonatorum were notified; 57 recovered, 1 died, 1 removed, and 2 were in hospital at the end of the year. A dental clinic was opened in April.

Wandsworth.

The estimated population in 1920 of the Metropolitan Borough of Wandsworth (for death-rate) was 316,990. The birth-rate was 21·03; the corrected death-rate was 10·36; the infant mortality rate was 64, to be compared with 86 for the previous decade; the death-rate from phthisis was 0·75 and from other forms of tuberculosis 0·18. The pulmonary tuberculosis rate "is much the lowest on record." Dr. P. Caldwell Smith quotes the remarks of the magistrate in dismissing a case brought for giving a false warranty for milk: "In my opinion the borough councils of London will never get things right till they one and all intimate that it is useless to prosecute until the law is put into a reasonable shape in this matter." X ray work and throat examinations are carried out at the tuberculosis dispensary at St. Thomas's Hospital. Little is apparently done for surgical tuberculosis. Dental treatment is provided for the tuberculous by an arrangement with the British Dentists' Hospital. "The greatest difficulty has been experienced in finding suitable employment for those who are well enough to do some work." Dr. Smith gives particulars of the state of health at the end of 1919 of the cases of active pulmonary tuberculosis dealt with by the dispensary during the six years 1913 to 1918. There were 1561 in all, of whom 331 removed; of the remaining 1230, 54·5 per cent. are dead, 15·4 per cent. are in an advanced stage, 6·8 per cent. are stationary, 23·3 per cent. have improved. Tuberculin is only being rarely used as a diagnostic and much less frequently than formerly for curative purposes. Wandsworth has a very complete maternity and child welfare scheme. There are seven infant welfare centres and it is hoped to open an eighth shortly. Till recently the council have sent confinement cases to the Clapham Maternity Hospital and private maternity homes. A new maternity home with accommodation for 23 patients was opened in November and is to be maintained by the borough council. The building was purchased as a borough war memorial, the amount required being raised by voluntary subscription. Sixty cases of ophthalmia neonatorum were notified. "Twenty-six cases were treated in hospital as out-patients, 11 as in-patients, and the remainder were treated at home. Three cases removed from the district before recovery and one died. In three cases the sight has been impaired." A "home help" has been engaged in connexion with one of the centres. She "is paid 30s. a week with outdoor uniform and overall, fares being allowed up to 2s. 6d. a week. She is required to work eight hours a day and do whatever is necessary in the home—Saturday afternoons and Sundays excepted. The mothers book her services for confinement or sickness and pay a contribution according to their means to the infant welfare centre. No money is paid by them to the home help nor are meals provided."

Holborn.

Dr. W. A. Bond submits his farewell report for 1920 after 26 years' work in the Metropolitan Borough of Holborn, and refers to the improvements which have taken place during his tenure of office. He mentions housing improvements, improvements in meat inspection, in scavenging, and the control of tenemented property. The death-rate went down from 24·4 in 1895 to 14·4 in 1913; the phthisis death-rate was 3·24 in 1895 and 1·13 in 1920; the infant mortality rate was 185 in 1895 and 66 in 1920. The population of Holborn is a declining one and is estimated at 39,676 prostate had been abandoned on account of high mortality and indifferent results. White, of America, had started a crusade of orchidectomy, and vasectomy was by some surgeons being substituted for it. It was becoming increasingly evident that, in spite of much writing and many statistics, no real progress was being made. In 1901 Freyer published four cases of suprapubic prostatectomy, and claimed to remove not only the intravesical projection but the whole of the enlarged prostate. There at once arose a controversy, partly in regard to priority and partly in regard to anatomical details of the operation that lasted for some years.

One of Freyer's colleagues writes of this part of his career: "Looking back on that controversy one cannot help thinking that, although much ink was spilt and some feelings hurt, it did much good. The operation was brought well into the notice of the profession and the points of difficulty in regard to the anatomy and physiology were thrashed out so that within a comparatively short time the operation was established on a firm surgical and anatomical basis. The operation of suprapubic prostatectomy, on the lines drawn up by Freyer, is now practised throughout the surgical world.

"What of the man who achieved so much, and who raised such keen controversy? Freyer had, more than any man I have known, the power of concentration on a single issue. It was possible for him to exclude from his mind other surgical subjects, and even for the time all by-paths to which the subject might lead. Add to this a restless energy and a great driving force, and we see the character of the man. Like many of his countrymen, Freyer's best efforts were made under the stimulus of opposition. Yet he made a conscientious hospital surgeon. His attendance at hospital and the care that he expended on his cases there, until failing health rendered him unequal to the strain, was an example to his junior colleagues. It was with genuine pleasure that he accepted the post of first president to the newly formed Section of Urology at the Royal Society of Medicine and his regular attendance, sometimes in spite of physical suffering, and his evident desire to help the work of the Section will leave a lively sense of gratitude in the minds of the members and officers of the Section."

In 1904 Freyer was awarded the Arnott Memorial medal for the original research in surgery incorporated in his various works on "Modern Treatment of Stone," "Enlargement of the Prostate"—which has passed through five editions—"Surgical Diseases of the Urinary Organs," and "On the Best Methods of Removing Large Calculi from the Bladder." The size of his surgical practice may be gathered from the fact that articles which he published bear such titles as "100 Operations for Stone without a Death" and "1000 Cases of Total Enucleation of Prostate for Radical Cure of Enlargement of that Organ." During the war he was placed on the consulting staff of the Queen Alexandra Military Hospital and the Indian Hospitals at Brighton. He had also been consulting surgeon to the Eastern Command and surgeon to King Edward VII. Hospital. In recognition of all this public work he was created K.C.B. in 1917. Sir Peter Freyer married Isabella, daughter of Robert McVittie of Dublin, who predeceased him in 1914; he leaves a son and a daughter, the latter of whom is the wife of Major J. D. Grant, V.C.

DR. Paul Uhlenhuth, sometime professor of hygiene and bacteriology in the German University of Strassburg, has been appointed director of the Institute for Experimental Therapy at Marburg, founded by E. v. Behring.

THE R.M.S.P. yachting steamer *St. Margaret of Scotland* will commence in October a series of holiday cruises, embracing calls at Madeira, Teneriffe, and Las Palmas, the round voyage occupying about 22 days. Calls will be made at the principal ports in the islands, and the stay in port permits of excursions being made inland to points of interest.

Correspondence.

"Audi alteram partem."

THE CASE FOR NATIONAL HEALTH INSURANCE.

To the Editor of THE LANCET.

SIR,—As an attack is being made on the capitation fee and possibly on the whole question of National Health Insurance, it is necessary that the whole case be carefully examined so that the advantages, the faults, or the defects may be properly treated and the responsibility rightly adjusted.

The medical service, on which the Acts practically hang, has been subjected to much criticism, and has been searched thoroughly for the bad things, and these have been fully advertised. In many quarters it is taken for granted that the panel doctor is not only hopelessly inefficient, but that he is a brutal hard-hearted bully. Such a view does not require refuting as it is so evidently outside common sense; but yet there is an atmosphere of distrust and questioning, amongst responsible people, which has to be dispelled. An intimate knowledge of the service compels the considered opinion that as a whole it is a very good general practitioner service, that it is improving, that it will continue to improve if given a fair chance. It has been carried on under very great disabilities which have certainly not received the same publicity nor recognition from the interested parties exploiting complaints. It was started amidst the most acute and bitter political acrimony, not only amongst the general public, but amongst the medical profession. This has gravely handicapped the service all through, and it is possible that the present campaign is a resurrection of the old hates, for the same parties are again prominent. It may appear somewhat of the nature of an appeal ad misericordiam, but yet it has to be recognised that the conditions of the service, especially in an industrial area of London, are very trying. Of necessity there must be evening consulting hours which practically exclude the doctor from family and social life, or from recreation. His services are on tap at all hours, day and night. Any time he may take off is at risk of complaint. No citizen in the community occupies the same position as to hours of labour or demands for his services as the panel doctor. This does require recognition when the question of remuneration is considered. These disabilities are inherent to the service, but there are many others capable of reasonable adjustment.

As a whole the insured person is pleasant to serve and considerate, and in general the proper relations of trust between doctor and patient are established. There is practically no malingering, but a small section makes unreasonable demands. This section is naturally a noisy one, and has been consistently used by politicians, by the less responsible press, and by inefficient administrators, much to the prejudice of the service and adding considerably to the difficulties of the doctor. Again, there is the insured person who has not grasped the principle of insurance, and thinks he is being badly used because he "has been paying in and getting nothing out." Somehow he seems to think the doctor is the cause, and, if he reads the daily press, he becomes quite certain of it. There is also the "superior person" who tattles about "charity" and expects all the frills of the West End. It can be readily understood how such agents may be used to raise opprobrium on a genuine service, and how difficult it has been for the doctors to wear down a campaign carried on with deliberation for nine years. There is ample evidence, however, that the insured person is slowly but surely appreciating the value of the service.

An inquiry into the working of the service is being asked for. The medical profession would welcome an honest investigation, but their experience compels

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING AUGUST, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	43	—	—	2351	1052	162	13	5	9	38	3673	8·5	7	—	24	13	56	80	658	838	1·9	4615	10·6
West:																								
Paddington ...	149,673	2	—	—	62	26	9	1	—	—	2	102	7·1	1	—	—	—	5	1	15	22	1·5	121	8·6
Kensington... ...	164,177	3	—	—	74	44	5	—	—	—	1	127	8·1	—	—	—	—	1	7	22	30	1·9	191	12·1
Hammersmith...	136,200	—	—	—	58	33	3	1	—	—	—	95	7·3	—	—	—	—	1	4	11	16	1·2	120	9·2
Fulham	158,621	2	—	—	36	25	9	2	—	—	2	76	5·0	1	—	—	2	2	3	25	33	2·2	164	10·8
Chelsea	62,987	2	—	—	20	10	2	—	—	—	4	38	6·3	—	—	—	—	—	—	6	6	1·0	53	8·8
City of Westmin'r	132,615	—	—	—	64	15	4	—	—	1	2	86	6·8	—	—	—	—	—	3	4	7	0·6	96	7·5
North:																								
St. Marylebone...	101,856	—	—	—	34	16	1	—	—	1	1	53	5·4	1	—	—	1	1	1	6	10	1·0	100	10·2
Hampstead ...	91,519	—	—	—	20	18	1	—	—	—	1	40	4·6	—	—	—	—	1	1	3	5	0·6	56	6·4
St. Pancras... ...	228,178	4	—	—	114	39	7	—	1	—	—	165	7·5	—	—	3	—	3	4	16	26	1·2	212	9·7
Islington	335,907	—	—	—	175	94	12	—	—	—	5	286	8·9	—	—	2	2	3	6	42	55	1·7	343	10·6
Stoke Newington	52,984	1	—	—	25	15	1	1	—	—	—	43	8·5	1	—	—	—	1	—	2	4	0·8	43	8·5
Hackney	225,372	—	—	—	164	87	3	—	1	—	1	256	11·8	—	—	—	2	1	1	39	43	2·0	209	9·7
Central:																								
Holborn	39,676	2	—	—	15	5	—	—	—	—	—	22	5·8	—	—	—	—	—	—	2	2	0·5	34	8·9
Finsbury	78,291	—	—	—	73	28	13	—	—	—	1	115	15·3	—	—	—	—	3	3	10	16	2·1	84	11·2
City of London...	14,447	—	—	—	11	—	1	—	—	—	—	12	8·7	—	—	—	—	—	—	1	1	0·7	8	5·9
East:																								
Shoreditch... ...	102,044	2	—	—	98	55	4	—	—	1	1	161	16·5	—	—	—	1	—	5	41	47	4·8	125	12·8
Bethnal Green...	114,471	1	—	—	92	41	7	—	1	—	1	143	13·0	—	—	1	—	3	2	40	46	4·2	157	14·3
Stepney	241,770	3	—	—	236	81	8	—	1	—	1	330	14·2	—	—	8	1	—	4	65	78	3·4	305	13.2
Poplar	159,766	3	—	—	99	42	7	1	—	1	1	154	10·1	1	—	8	—	6	6	41	62	4·0	199	13·0
South:																								
Southwark... ...	187,142	—	—	—	75	43	17	—	—	—	1	136	7·6	—	—	—	—	1	3	41	45	2·5	227	12·6
Bermondsey ...	129,189	1	—	—	104	51	7	—	—	1	1	165	13·3	—	—	2	1	1	7	18	29	2·3	159	12·8
Lambeth	293,572	3	—	—	97	34	6	1	—	1	6	148	5·3	—	—	—	—	2	4	58	64	2·3	327	11·6
Battersea	165,664	—	—	—	92	58	5	1	—	1	—	157	9·9	—	—	—	—	4	4	14	22	1·4	160	10·1
Wandsworth ...	346,990	4	—	—	112	51	6	1	—	1	—	175	5·3	1	—	—	1	3	1	26	32	1·0	302	9·1
Camberwell ...	284,712	—	—	—	129	51	8	1	1	—	—	190	7·0	—	—	—	2	6	5	27	40	1·5	276	10·1
Deptford	115,636	6	—	—	70	15	3	—	—	—	—	94	8·5	—	—	—	—	2	—	23	25	2·3	148	13.3
Greenwich	102,408	3	—	—	46	20	5	1	—	—	2	77	7·8	1	—	—	—	2	—	11	14	1·4	109	11·1
Lewisham	174,438	—	—	—	74	18	4	2	—	—	1	99	5·9	—	—	—	—	2	1	24	27	1·6	131	7·8
Woolwich	141,666	1	—	—	82	37	4	—	—	1	3	128	9·4	—	—	—	—	2	4	25	31	2·3	153	11·3

* Including membranous croup.

preceding month; this disease was proportionally most prevalent in Hackney, Finsbury, the City of London, Shoreditch, Bethnal Green, Stepney, and Bermondsey. The Metropolitan Asylums Hospitals contained 3108 scarlet fever patients at the end of the month, against 3375, 3621, and 3722 at the end of the three preceding months; the weekly admissions averaged 467, against 507, 606, and 567 in the three preceding months. The prevalence of *diphtheria* was 16 per cent. less than in July; the greatest proportional prevalence of this disease occurred in Hackney, Finsbury, Shoreditch, Bethnal Green, Stepney, Bermondsey, and Battersea. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2121, 1896, and 1969 at the end of the three preceding months, numbered 1709 at the end of August; the weekly admissions averaged 209, against 241, 235, and 250 in the three preceding months. *Erysipelas* was proportionally most prevalent in Paddington, Fulham, Finsbury, the City of London, Bethnal Green, Southwark, and Bermondsey. Of the 13 cases of *poliomyelitis* or *polioencephalitis*, 2 belonged to Fulham and 2 to Lewisham. Five cases of *encephalitis lethargica* were notified during the month, against 18, 10, and 9 in the three preceding months. The notified cases of *cerebro-spinal fever* numbered 9, against 11, 5, and 7 in the three preceding months. The 38 cases of *puerperal fever* included 6 in Lambeth, 5 in Islington, 4 in Chelsea, and 3 in Woolwich.

The *mortality statistics* in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended Sept. 3rd, the deaths of 4615 London residents were registered, equal to an annual rate of 10·6 per 1000; in the three preceding months the rates had been 11·2, 9·4, and 9·8 per 1000. The death-rates ranged from 5·9 in the City of London, 6·4 in Hampstead, 7·5 in the City of Westminster, 7·8 in Lewisham, 8·5 in Stoke Newington, and 8·6 in Paddington, to 12·6 in Southwark, 12·8 in Shoreditch and in Bermondsey, 13·0 in Poplar, 13·2 in Stepney, 13·3 in Deptford, and 14·3 in Bethnal Green. Nine deaths from *influenza* were registered during the month, against 77, 30, and 15 in the three preceding months and an average of 32 in the corresponding period of the five preceding years. The deaths from the *principal infectious diseases* given in the table numbered 838; of these, 7 resulted from enteric fever, 24 from measles, 13 from scarlet fever, 56 from whooping-cough, 80 from diphtheria, and 658 from diarrhœa and enteritis among children under two years of age. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, Hampstead, Stoke Newington, Holborn, and the City of London, and the highest in Shoreditch, Bethnal Green, Stepney, and Poplar. The 7 fatal cases of enteric fever were 2 fewer than the average. The 24 deaths from *measles* were only one-half of the average number; of these, 8 belonged to Stepney and 8 to Poplar. The 13 fatal cases of scarlet fever exceeded the average by 7; of these, 2 belonged to each of the boroughs of Fulham, Islington, Hackney, and Camberwell. The 56 deaths from *whooping-cough* were double the average number; the greatest proportional mortality from this disease occurred in Paddington, Finsbury, Bethnal Green, Poplar, and Battersea. The 80 fatal cases of diphtheria were 33 in excess of the average; this disease was proportionally most fatal in Kensington, Finsbury, Shoreditch, Poplar, and Bermondsey. The deaths from *infantile diarrhœa* numbered 658 and exceeded the average by 401. This is the largest number of deaths from infantile diarrhœa recorded in London in August since the corresponding period of 1914 when they numbered 711; the greatest proportional mortality from this disease occurred in Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Lambeth, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during August from these principal infectious diseases was 152 per cent. above the average in the corresponding period of the five preceding years.

THE LATE DR. WILLIAM BARNETT BENJAFIELD.—Dr. Benjafield, a retired practitioner, who died on Sept. 13th in his sixty-fifth year, was a graduate of Edinburgh University, where he qualified M.B., C.M. in 1882, in the same year taking the M.R.C.S. Eng. He was a man of wide interest in the profession, having been physician to the Tottenham and Edmonton General Dispensary, assistant demonstrator of anatomy at the University of Edinburgh, and house surgeon in the ophthalmic wards of the Royal Infirmary. Dr. Benjafield was at one time specially interested in the treatment of consumption under the Poor-law, contributing a paper on the subject to the *Poor Law Officers' Journal* in 1902.

non-protein nitrogenous bodies, provided the patient be eating, and the kidneys not properly working? And how do the amino-compounds (and allied bodies), absent in health, but present in the urine in these cases get into the urine? They must come in part at least from the blood. And how is their presence in the blood explained, except by an insufficiency of the liver?

Recognising Dr. Mackenzie Wallis as an authority on this matter, I have just looked up his recent article, the Toxæmias of Pregnancy.[1] I find he says much the same as the writer of THE LANCET article. This is what he says: "In toxæmias of pregnancy the results of an analysis of the blood show no striking deviations from those found in normal pregnant women. The blood urea content is usually within the normal limits. . . . The same applies to the sugar in the blood. . . ." But he says not a word about any other non-protein nitrogenous body. Throughout his article his blood test refers for the most part to the discovery of the urea content. Of course, if the patient is eating and the liver not functioning, one cannot expect as much urea to be formed as would be the case in the normal. But unless one excludes the presence of other non-protein nitrogenous bodies that may possibly be in the blood (and may possibly cause the fits), or has shown they do not occur in greater quantity than in health (Bayliss[2]), the categorical statement that in the pre-eclamptic state there is an absence of a definite nitrogenous retention seems to me unwarranted and misleading. Because, you know,[3] the occurrence of the toxæmias of pregnancy and of eclampsia, after all, may not be due to the wonderful "toxin or toxins" of which everyone is speaking. In any case, such a statement as that I have referred to coming from THE LANCET seemed to me to require clearing up, or qualification. The statement may be perfectly correct. If it is, then I can only suppose that the functions of the liver are limited to the storing of carbohydrate, the formation of bile, and possibly others, but that its supposed urea production is an exaggeration. And I must suppose when an Eck's fistula is made in the dog and the animal is given meat that the ensuing convulsions are the result either of a depletion of carbohydrate in the liver (as Prof. Harding suggests is the cause of pernicious vomiting[4]), or that it is the result of an experimental error, and in any case is to be neglected.

I am, Sir, yours faithfully,
R. H. PARAMORE, F.R.C.S. Eng.

Rugby, Sept. 17th, 1921.

VERONAL AGAINST SEA-SICKNESS.

To the Editor of THE LANCET.

SIR,—Dr. T. Zangger's experience (THE LANCET, Sept. 17th, p. 630) agrees with my own, though, fortunately, mine was not acquired in my own person. In 1912, while acting as surgeon in the Union Castle Co., I had an exceedingly troublesome case of sea-sickness in a woman who was previously suffering from the vomiting of pregnancy. There were several other doctors on board and one of them (I believe Dr. Ashe of Kimberley) advised me to try veronal. I did not carry any in stock but managed to collect enough from passengers to go on with. I had had no previous experience of this drug other than as a sleeping-draught, so was afraid to push it. As long as the patient was under the influence of veronal the vomiting ceased and when it recurred it was checked by a further dose. The patient arrived safely though very weak. A second pregnant woman in a later voyage became sea-sick; I gave her a 10-grain dose on my morning round and by 5 o'clock she was quite cheery. A second attack a few days later was checked permanently by one dose. As far as I remember, out of all the cases in which I used the drug (and I used no other) only one failed to respond to a 10-grain dose.

My experience of treating sea-sickness was not nearly as large as I should have expected, as most people seem to prefer to suffer in solitude unless the attack is very severe.

I am, Sir, yours faithfully,
Clevedon, Somerset, Sept. 19th, 1921. R. L. WASON.

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[1] Journ. of Obstet. and Gyn. of the Brit. Emp., vol. xxviii. No. 1 (New Series), Spring, 1921, p. 11.

[2] Principles of General Physiology, 1920, p. 265 (first two lines).

[3] Some Problems of Midwifery, THE LANCET, July 12th, 1913, p. 87.

[4] Nausea and Vomiting in Pregnancy, THE LANCET, August 3th, 1921, p. 327.

TRYPANOSOMIASIS:
A NEW METHOD OF TREATMENT.

To the Editor of THE LANCET.

SIR,—With reference to the paper on this subject read by Dr. C. H. Marshall, senior medical officer to the Uganda Protectorate, at the Royal Society of Tropical Medicine and Hygiene (THE LANCET, June 4th, p. 1185), I am surprised that neither in this paper nor during the subsequent discussion was any mention made of the fact that this method of treatment was suggested as far back as 1907 by Thiroux and d'Aufreville, who wrote[1] as follows:—

> "There is reason to conjecture that sero-therapy will not give results in meningeal trypanosomiasis unless the antitoxin is injected into the spinal canal or cerebral substance, as has been done for tetanus antitoxin."

No statement can be clearer than this. During 1909 a review[2] under the heading "A Suggestion for Treatment," by Dr. Andrew Balfour, goes on to say:—

> "In a memorandum headed 'The Treatment of Sleeping Sickness: A Suggestion,' forwarded to the Bureau by Colonel Mathias, R.A.M.C., President of the Sudan Sleeping Sickness Commission, and dated Nov. 17th, 1908, Dr. Andrew Balfour draws attention to the results obtained by Drs. Mackenzie and Martin, in the treatment of cerebro-spinal meningitis' by their method of introducing locally by spinal puncture a highly immune serum which they had obtained from the blood of patients who had recently recovered from the disease or, as in two successful acute cases, who were still running a course. The latter were injected with their own sera taken on the sixth and seventh day of their illness respectively.'
>
> "He suggests a similar use of serum-therapy in cases of trypanosomiasis. He mentions some points in which the diseases resemble one another. He asks if in sleeping sickness the cerebro-spinal fluid is a locus minimæ resistentiæ, does it lack trypanocidal substances? He proposes a combined therapy, the trypanosomes being attacked in the blood by some of the more promising of our present drugs, in the cerebro-spinal fluid by the injection of the patient's own serum or the serum from a case improving under treatment, obtained by defibrinating and centrifuging the blood.
>
> "Dr. Balfour's suggestion is well worth attention. As appears more than once in this number many cases have been met with in which trypanosomes persisted in the cerebro-spinal fluid when they could no longer be found in the blood or glands. Martin and Lebœuf found in one instance that tartar emetic, while it cleared the blood of parasites, was without effect on those in the cerebro-spinal fluid. If the action on the parasites is direct this might indicate that the drug does not readily permeate the meninges, and hence is never present within them except in a more dilute state than elsewhere in the body. That this may be so is suggested by Nierenstein's observation that arsenic was absent from the cerebro-spinal fluid of an injected donkey on the first day but appeared on the second. If the action of the drug is indirect the want of trypanocidal substance may be due to the poverty of the cerebro-spinal fluid in cellular elements, as Balfour suggests."

Dr. Andrew Balfour, therefore, went a step further when he suggested that the blood serum of patients under treatment with some trypanocide should be used for intrathecal injection. It will be observed from these passages that Prof. Halliburton's expression that "he took exception to scientific workers remaining in the clouds and avoiding propositions of practical importance" is by no means accurate; for it is obvious that the resistance of the meninges against permeation by curative agents introduced in the blood stream was prominently borne in mind by the observers

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[1] Bulletin of the Sleeping Sickness Bureau, No. 6, 1909, footnote, p. 223.

[2] Ibid., No. 4, 1909, p. 163.

Each scheme should be framed with consideration for property rights; if, after this, individual owners feel themselves aggrieved, these grievances cannot be allowed to stand in the way of the public ideal.

In New York City the zoning ordinance has prevented depreciation in the value of property; areas which had been practically abandoned for several years by good-class residents have been rehabilitated. During the four and a half years of its adoption little disapproval has been shown, while no significant changes have been made in the ordinance itself.

MEDICINE AND THE LAW

Shell-shock and Perjured Evidence.

IN the case of a man sentenced to six months' imprisonment at the Central Criminal Court for perjury, the prisoner's counsel urged in mitigation of his offence that, having been blown up by a shell at the front, he suffered from a diminished sense of responsibility. The perjury alleged had been committed in the Divorce Court where, in seeking a decree, he had sworn that he had not had relations with his wife, or lived with her since 1916. It was, however, conclusively proved from a letter produced that he had visited her often since, when on leave. Mr. Justice Acton said that it would be a dangerous principle if it were to be laid down that injuries received by a man in defence of his country excused him from the consequences of such an offence. The prevalence of perjury in the Divorce Court was also referred to by the learned judge. In comment it may be observed that the effect in diminishing self-control and sense of responsibility attributable to shell-shock, wounds, and the strain of war, is, no doubt, considerable. It can, however, well be understood that neither a judge nor a jury would attach great weight to such an explanation in the case of perjury committed by a man in his own interest, in the circumstances of deliberation and reflection attaching to evidence in a court of law.

Rex v. Starkie.

At the Central Criminal Court R. W. Starkie, a medical practitioner who had held appointments under the police and under the St. Pancras Board of Guardians, was convicted and sentenced to nine months' imprisonment on a charge of administering to a woman, or causing to be taken by her, noxious things with intent to procure miscarriage. On three counts, charging the prisoner with using instruments to procure miscarriage upon three other women, he was acquitted. Sir Edward Marshall Hall, K.C., who defended, intimated that there would be an appeal referring in particular to the judge's ruling that the charge relating to the administering of drugs, upon which the prisoner was convicted, could be taken with the charges of using instruments. This was the case in which urgent requests by the committing magistrate and by counsel for the prosecution were addressed to the press to the effect that the names of the women witnesses, the subjects of the charges tried, should not be given in the newspapers. This does not imply that there was secrecy as to their identity, their names being given in court in the usual way. The publication of the names in the press was considered undesirable on account of the importance of securing, as witnesses in cases of the kind indicated, women who might be deterred from giving evidence by dread of the usual publicity. In his summing up Mr. Justice Acton referred to charges of the class under consideration as of deep seriousness to the defendant, possibly involving for him social, professional and financial ruin, and at the same time as of hardly less importance to the community. Cases such as this are admittedly insidious and difficult to prove.

The Traffic in Cocaine.

A man, 23 years of age, described as a pugilist, and a woman, 21 years of age, were sentenced recently at Bow-street for being in unlawful possession of cocaine, the former to a term of six months' hard labour, with three months in addition if he should fail to pay a fine of £200, and the latter to one month's imprisonment. The case was of the usual kind, the man having been seen by a detective-sergeant handing something to the woman at the corner of a street near Leicester-square. Upon the detective arresting him the man dropped three packets of cocaine and the woman in like manner tried to get rid of a single packet. Hardly a week passes without similar cases being reported, and it is to be regretted that the police seem unable to check the illicit traffic in the drug at, or nearer to, its source. The persons arrested appear nearly always to be the last links in a chain of distributors, operating in the streets or in more or less disreputable bars, the early closing of the latter driving them, no doubt, to deal largely in the highway where, at any rate, they are liable to observation. In many cases it is a man who carries a small stock of cocaine in packets, and hands one or two packets at a time to a woman, who may or may not be the ultimate consumer. The profits appear to be sufficiently large to tempt those concerned in retailing small quantities to run considerable risks, but it should not be beyond the ingenuity of the police to track out the traders who at present work in comparative security.

Obituary.

SIR PETER JOHNSTON FREYER, K.C.B., M.D., M.CH.R.U.I.,

LATE LIEUT.-COLONEL I.M.S.; CONSULTING SURGEON TO THE QUEEN ALEXANDRA MILITARY HOSPITAL AND TO THE EASTERN COMMAND.

THE death of Sir Peter Freyer on Sept. 9th, in his seventieth year, will remind surgeons the world over how it came about that litholapaxy and suprapubic prostatectomy are to-day firmly established as the operations of choice in vesical calculus and enlargement of the prostate.

The eldest son of Samuel Freyer of Selerna, Co. Galway, Peter Johnston Freyer was educated at Erasmus Smith's College, Galway, afterwards studying medicine at Dr. Steevens's Hospital, Dublin, and at Paris. In 1872 he graduated B.A. at the Royal University of Ireland with first-class honours and gold medal. Two years after he took his M.D. degree, again with the highest distinction, as well as the M.Ch. and L.M. Later he received an honorary M.A. In 1875 Freyer entered the Indian Medical Service, obtaining first place in open competition, and was lent to the Government of the North-West Provinces, acting first as civil surgeon at Moradabad, and afterwards at Bareilly, Allahabad, Mussoorie, and Benares, becoming surgeon to the Prince of Wales's Hospital at the last-named. He was appointed medical officer to the Lieutenant-Governor of the North-West Provinces and Oudh, and subsequently to the late Nawab of Rampur.

In India Freyer was interested in two widely different diseases, cataract and stone, both very common in the practice of a civil surgeon. It was soon after he went to India that Bigelow's operation of crushing stone in the bladder and removal at one sitting became known. The operation was not well received by Bigelow's colleagues in America, and it fell to two great Irishmen in the I.M.S., Keegan and Freyer, to place the operation in the position that it deserved. In 1894 Freyer was deputed by the Indian Government to attend on their behalf the International Medical and Surgical Congress at Rome.

After retirement from the Indian Medical Service in 1896 with the rank of honorary colonel, Freyer came to London, and two years later was appointed surgeon to St. Peter's Hospital for Stone. Prostatic surgery was then at a low ebb. McGill's operation for the removal of the intravesical portion of the enlarged

ROYAL ARMY MEDICAL CORPS.

Temp. Maj. J. J. Abraham relinquishes the actg. rank of Lieut.-Col.

Capt. J. A. W. Ebden, from Res. of Off., R.A.M.C., to be Capt.

Lieuts. (temp. Capts.) to be Capts: W. O. Holst, D. F. Panton, L. C. Goument, C. P. Chambers, and G. E. MacAlevey.

TERRITORIAL FORCE.

Maj. G. R. Livingston, having attained the age limit, is retired, and retains the rank of Maj., with permission to wear the prescribed uniform.

Maj. F. Gracie resigns his commn. and retains the rank of Maj., with permission to wear the prescribed uniform.

The following resign their commns. and retain their rank: Maj. W. J. Mackinnon and Capts. E. N. Thomson, W. Cullen, D. Campbell, and E. McM. Dunlop.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lieut.-Col. F. J. Dewes.

Lieut.-Col. J. C. H. Leicester, professor, Medical College, Calcutta, has been granted leave. Maj. F. W. Cragg officiates as Director, Central Research Institute. Maj. D. Heron has been posted as Agency Surgeon at Meshed and Assistant to H.M. Consul General and Agent to the Government of India in Khorasan. Lieut.-Col. G. Fowler, on return from leave, is re-posted to Akola District. Maj. J. Taylor, officiating sanitary commissioner, has been placed under the direct orders of the Government of India. Lieut.-Col. J. B. Christian has been posted as Second Physician, J. J. Hospital, Bombay. Lieut.-Col. S. H. Burnett has been posted as Surgeon Superintendent, St. George's Hospital, Bombay. On return from leave Lieut.-Col. H. A. F. Knapton has resumed the duties of Superintendent of Matheran and Presidency Surgeon, First District, Bombay. Maj. M. A. Rahman has been posted to the United Provinces. Maj. D. Coutts has been appointed to collateral charge of duties of Civil Surgeon and Lecturer on Midwifery and Medical Jurisprudence, Médical School, Amritsar. Lieut.-Col. C. B. McConaghy, on return from leave, has been posted as Agency Surgeon, Bhopal. Maj. J. R. J. Tyrrell, on return from leave, has been posted as Agency Surgeon, Bundel Rund. Maj. F. E. Wilson, on reversion from military duty, has been posted as Residency Surgeon and Chief Medical Officer, Baluchistan. Maj. H. H. Thorburn, who has been officiating in the last-named appointment, will, on relief, take over the Civil Surgeoncy, Quetta, vice Capt. J. B. Hance, who will be posted as Consular Surgeon, Mohammerah.

MESOPOTAMIA HONOURS.

The King has made the following appointments for services during the operations in Mesopotamia.

The Most Excellent Order of the Indian Empire.—To be additional Companions: Col. A. H. Morris, Lieut.-Cols. A. E. Berry and M. MacKelvie, Maj. (actg. Lieut.-Col.) H. W. Illius.

The Most Excellent Order of the British Empire.—To be Officers of the Military Division: Maj. A. S. Arthur, Capt. and Bt. Maj. A. MacD. Dick, Capt. W. A. M. Jack.

MENTIONED IN DESPATCHES.

Royal Army Medical Corps.—Lieut.-Col. G. J. Houghton; Lieut.-Cols. and Bt. Cols. T. C. Mackenzie, H. H. Norman; Maj. A. S. Arthur; Capt. (actg. Maj.) C. M. Gozney (killed); Capts. H. C. Godding, A. N. Minns, and C. H. K. Smith.

Indian Medical Service.—Lieut.-Cols. A. E. Berry, M. Mackelvie; Maj. and Bt. Lieut.-Col. (Temp. Col.) W. H. Hamilton; Maj. (actg. Lieut.-Col.) H. W. Illius; Majs. J. W. H. Babington and A. A. C. McNeill; Capt. and Bt. Maj. A. MacD. Dick; Capts. E. Cotter, W. A. M. Jack, and J. W. Pigeon (killed in action).

Indian Medical Department.—2nd Cl. Asst. Surg. H. E. Gillson; 4th Cl. Asst. Surg. H. C. Halge; Sub-Asst. Surg. (Civil) Kesar Singh; 1st Cl. Sub-Asst. Surg. Waman Hari Supekar; Maula Bux.

THE R.A.M.C. ROLL OF HONOUR.

The official list of the names of officers of the R.A.M.C. who laid down their lives in the Great War was published in March last and an analysis of the 709 names, according to rank, was given in our issue of March 12th. A roll of honour has now been published by H.M. Stationery Office, price 5s., containing the names of non-commissioned officers and men. There are over 5500 names of the Regular Army and Territorial Force arranged alphabetically, and the document forms part 79 of "Soldiers who Died in the Great War, 1914-1919."

Medical News.

University of London.—The following awards of medical entrance scholarships and exhibitions have been made by the London Inter-Collegiate Scholarships Board:—

University College.—Bucknill Scholarship.—A. S. Wesson, Merchant Taylors' School. Additional Bucknill Scholarship.—M. Barer, King Edward's Sch., Birmingham. Medical Exhibition.—Violet H. Comber, Univ. Coll.

Westminster Hospital Medical School.—Natural Science Scholarship.—G. A. H. Norman, E. Lond. Coll.

London (Royal Free Hospital) School of Medicine for Women.—St. Dunstan's Medical Exhibition.—Muriel F. Prout, Sydenham Secondary Sch. Mrs. George M. Smith Scholarship.—Winifred A. Ladds, Bromley High Sch. Isabel Thorne Scholarship.—Evelyn M. Pakeman, St. Paul's Girls' Sch. Mabel Sharman Crawford Scholarship.—Grace Nicolle, Lond. Sch. of Med. for Women.

London Hospital Medical College.—Price Scholarship in Science.—F. W. Ta'Bois, E. Lond. Coll. Science Scholarship.—H. Evans, E. Lond. Coll.

Royal College of Physicians of London.—The Mitchell Lecture will be delivered by Dr. F. Parkes Weber on Tuesday, Nov. 1st, at 5 p.m., on the Relations of Tuberculosis to General Conditions of the Body and Diseases other than Tuberculosis. On Nov. 3rd, at 5 p.m., Dr. Michael Grabham will give the Bradshaw Lecture on Sub-Tropical Esculents. Dr. R. O. Moon will give the Fitz-Patrick Lectures on Nov. 8th and 10th, at 5 p.m., his subject being Hippocrates in Relation to the Philosophy of his Time.

West London Medico-Chirurgical Society.—The opening meeting of the fortieth session of this society will take place at the West London Hospital on Friday, Oct. 7th, at 8.30 p.m., when Sir G. Lenthal Cheatle will give his presidential address on a Study of Breast Cancer in Relation to the Cancer Problem.

London (R.F.H.) School of Medicine for Women.—The introductory address on the occasion of the opening of the winter session on Oct. 3rd will be given at 3 p.m. by Dr. Louisa Martindale on the Woman Doctor and her Future.

St. Mary's Hospital: Past and Present Students' Dinner.—Dr. E. G. Graham Little will preside at this dinner, which will be held at the Connaught Rooms, Great Queen-street, at 7 for 7.30 p.m., on Monday, Oct. 3rd. Applications for tickets (12*s.* 6*d.*, exclusive of wine) should be addressed to Dr. A. Hope Gosse, the Hon. Sec., 15, Queen Anne-street, London, W. 1.

Middlesex Hospital Medical School.—The opening of the winter session will be held at the Scala Theatre on Tuesday, Oct. 4th, at 3 p.m. Mr. Gordon Taylor will deliver the introductory address and Sir John Bland-Sutton will distribute the prizes. The annual dinner will be held on the same date at 7.30 p.m. at the Trocadero Restaurant, Piccadilly Circus, London, W.

St. Thomas's Hospital: Old Students' Dinner. Dr. H. W. G. Mackenzie will take the chair at this dinner, which will be held at the Wharncliffe Rooms, Hotel Great Central, London, N.W., on Friday, Oct. 28th, at 7 for 7.30 p.m. The price of the dinner, inclusive, is 17*s.* 6*d.*, to be paid at the Wharncliffe Rooms. Applications for seats should be sent as soon as possible to the Hon. Secretaries, Dr. H. B. Russell and Mr. L. N. Reece, at St. Thomas's Hospital, S.E. 1.

Charing Cross Hospital Medical School.—The annual distribution of prizes will take place in the out-patients' hall of the hospital on Wednesday, Oct. 5th, at 3.30 p.m. The distributor will be Sir Frederick Mott, F.R.S., and the chairman Sir Herbert Waterhouse.

The annual dinner of past and present students will be held on the evening of the same day at the Adelaide Gallery, Gatti's Restaurant at 7 for 7.30 p.m. The chairman will be Sir James Galloway, and the guest of the evening Sir Frederick Mott. Tickets 12*s.* 6*d.* each may be obtained from the Dean or may be paid for at the door.

Popular Lectures on Psychology.—Among the courses of public lectures to be delivered at King's College, Strand, W.C., during the forthcoming Michaelmas term is one on Psychology and Psycho-Therapy by Dr. William Brown, Wilde Reader on Mental Philosophy at the University of Oxford. The course will consist of ten lectures, the first of which will be given on Oct. 18th at 5.30 p.m., and the remainder on successive Tuesdays.

them to hold the view that an inquiry into the administration of sickness benefit by approved societies is much more necessary. The general impression received is that the approved society has not the least concern with the sickness or circumstances of the insured person, that its aim and object is to pay out as little sickness benefit as possible, and that not sooner than can be avoided. During the war there were difficulties, and within the last year some societies have been administering sick benefit humanely and intelligently. Yet there is much room for improvement, especially on the question of certification, which is a fruitful source of irritation between patient and doctor. Although the regulations allow a certificate to cover from Sunday to Sunday, there is still much worrying for certificates on special days and times, and withholding of benefit if a certificate is not forthcoming.

In a case of death it not infrequently happens that a "final" certificate, which means capacity for work, is demanded to cover the period between the death and the last intermediate certificate, even although the agent has seen the death certificate and "viewed" the body. It would be tedious to enlarge on the vagaries and irritations of certification. It is recognised that accurate certification is necessary to cover incapacity, but it has to be approached from a different aspect than that adopted by approved societies before smooth or efficient working can be established. A survey of the inquiries on questions arising out of certification demonstrates how vexatious to the doctor certification can become. As an example, a doctor giving a good service certifies an insured person, after careful examination, as suffering from "abdominal pains." The patient is kept under observation for a week, and, as no further developments occurred, certifies her fit for work, using "abdominal pains" again. The approved society demands an inquiry for incomplete certification. The health visitor, another asset of the approved society, is of questionable value, and undoubtedly a frequent source of friction. When bandages are removed, pulses felt, tongues inspected, and when the charlady, recovering from influenza, is reported for doing a little charing for herself, it need cause no surprise that health visits are not always appreciated as they might be. The visitors are viewed as detectives watching the doctor and insured person. At one time the approved societies employed referees to "coax the lazy ones" of sick benefit at half a guinea or a guinea at a time, but this duty is now undertaken by the regional medical officers of the Ministry, at a cost to the approved society of *10d.* a time. The Ministry has a reputation for business instinct, and as the cases are mostly chronic it is difficult to see how national health may be advanced by estimating their earning capacity to a decimal point. Yet many of these poor people are harried every three months or oftener at *10d.* a time because the panel doctor is not supposed to be able honestly to judge their fitness for work.

It may be wondered how it happens that so little has been heard of complaints against the administration of sick benefit. This is easily explained. The only means by which an insured person can obtain redress is to apply to the disputes committee of his approved society, with a deposit of £1, which is forfeited if his complaint fails. It is when we arrive at the insurance committee, which administers medical benefit, that we get a grip of the predominating factor in the dissatisfaction. The London Insurance Committee has been from the start hostile to the panel doctor, has appeared to encourage complaints against him, and to conduct its inquiries with bias. Insured persons are not supplied with title to medical benefit for months or even years, and their title to benefit is constantly being questioned. Their names are removed from doctors' lists for this reason, although at the time their title may be such as allows them to receive sickness benefit—a position which gives occasion for unpleasantness between doctor and patient. But there is much worse than this. It will be agreed that the doctor has a right to receive information as to the extent and direction of his responsibility. Article 18 of the Medical Benefit Regulations, 1920, provides that practitioners shall be supplied by the insurance committee with a correct list of insured persons whom he has accepted. It further provides that this list shall be kept correct to date, and it is the duty of an insurance committee to supply the doctor with the necessary information. This duty has been neglected by the London Insurance Committee, and there is reason to believe that London is not alone in this respect. It would be difficult to contemplate medical service being rendered contentedly and efficiently under such circumstances. The issue of Forms Medical Record, hurried as it was, has revealed a disturbing state of affairs, calling for immediate inquiry; the errors in individual lists have been shown to be anything from 12 to 33 per cent. and of a varied character.

Having considered the effect and operation of outside influences it is possible to examine the evidence regarding the character of the medical service. During 1919, a year above the average, there were 66 inquiries. Of these 42 were substantiated. This means that one in every 25,000 insured persons felt he had a grievance, or one complaint in about 100,000 attendances, and, as several of these complaints were against the same practitioner, it would mean that 66 doctors at most out of 1500 on the panel had given cause, real or imaginary, for inquiry. Inasmuch as the insured person understands that it is his right to lodge complaints, however trivial, the comparative smallness of the number of complaints becomes very real. Highly placed approved society officials have alleged that malingering is encouraged by the medical profession. These statements have to be put against the fact that surpluses of many millions have been placed to the credit of a majority of the societies. When we consider how carefully the actuaries estimated the cost of sickness benefit in 1912, it is surely just to suggest that part at any rate of the huge surplus is due to the efficiency of the medical service; otherwise approved societies have been depriving members of their due.

No one contends that the medical service of the general practitioner on the panel is perfect, but it can with confidence be asserted that an honest inquiry would show the "panel doctor" to be as efficient as any other section of the profession, to have as strong a sense of duty, and to be as meticulously careful of his performance of that duty. All he asks is a fair chance.

I am, Sir, yours faithfully,

Champion Park, S.E., Sept. 19th, 1921. H. G. COWIE.

SOME TOXÆMIAS OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—In a leading article with this title in your last issue the following occurs: "The marked accumulation of urea and other nitrogenous waste products, so frequently seen in acute and certain types of chronic nephritis, is absent in the toxæmias of pregnancy. The non-protein nitrogen and urea of the blood are frequently within normal limits." And this difference, the article continues, "serves to differentiate the true eclamptic from cases of uræmia due to chronic interstitial nephritis complicating pregnancy."

I venture to ask how is it possible that "a definite nitrogenous retention" in the blood should be absent in a disease in which extensive necrosis and degeneration of liver cells and of kidney cells are the characteristic features? Does not the liver safeguard the body from the inroad of poisonous non-protein nitrogenous bodies? Is it not one of this organ's functions to transform these amino- (and allied) bodies into the innocuous urea? If, then, the liver is the seat of such a profound degeneration as is the case in the pre-eclamptic toxæmia, how can the general blood fail to become surcharged with these

Elizabeth Garrett Anderson Hospital, Euston-road.—Female Asst. S.
Glasgow Asylum Service.—Asst. M.O. and Pathologist. £275.
Glasgow Distric Mental Hospital, Gartloch, Gartcosh.—Jun. Asst. M.O. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. Asst. Cas. O. Res. H.P. Each £50.
Ilkeston, Borough of.—M.O.H. £700.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Macclesfield General Infirmary.—Asst. H.S. £150.
Manchester Royal Infirmary.—Asst. M.O. £35.
Manchester and Salford Hospital for Skin Diseases.—Asst. M.O. H.S. £100.
Northampton General Hospital.—H.S. £200.
Norwich, Norfolk and Norwich Hospital.—H.S. £200.
Nottingham Education Committee.—Jun. Asst. Sch. M.O. £500.
Nottingham General Hospital.—H.P. £200.
Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.
Peterborough Infirmary.—Hon. Phys.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Prince of Wales's General Hospital, Tottenham, N.—H.P. H.S. Each £200. Jun. H.S. Jun. H.P. Each £120.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S. £100.
Rotherham Hospital.—Jun. H.S. £150.
Royal Chest Hospital, City-road, E.C.—H.P. £120. Res. M.O. £200.
Royal National Orthopædic Hospital, 234, *Great Portland-street W.*—Clin. Asst. £105.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £200.
St. Helens Hospital, Lancs.—Res. M.O. £250.
Salford Royal Hospital.—Res. Surg. O. £250. H.P. £200. H.S. £150. Cas. H.S. £150.
Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Each £150.
Singapore, Government Medical School.—Professors of Physiology, Anatomy, Medicine, Midwifery and Gynæcology. £1190. Lecturers in Chemistry and Physics, Biology. £840.
Stoke-on-Trent, North Staffordshire Infirmary, Hartshill.—H.S. £200.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Non.-res. H.S. £150.
Weston-super-Mare Hospital.—H.S. £150.
Wolverhampton and Staffordshire General Hospital.—Res. M.O. £200.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointment:—Newton Stewart (Wigtown).

Births, Marriages, and Deaths.

BIRTHS.

GRACE.—On Sept. 14th, at Gloucester-crescent, Regent's Park, the wife of W. H. Grace, M.B., M.R.C.P. Lond., of a son.

MORRIS.—On Sept. 18th, the wife of Lionel F. Morris, L.D.S. R.C.S. Eng., of West Moor, Bournemouth, of a daughter.

REICHWALD.—On Sept. 16th, at Timber Hill, Ashtead, the wife of M. B. Reichwald, of a son.

MARRIAGES.

BAMPTON—PURSLOW.—On the 10th inst., at St. Simon's Church, Southsea, by the Rev. N. E. Ashenden, M.A., Horace Edgar Bampton, L.D.S. R.C.S. Eng., of Four Oaks, to Alice Maud Mary, daughter of Dr. and Mrs. Purslow, of Broad-street, Birmingham, and Southsea.

BROWNE—CARROLL.—On Sept. 15th, at Minehead, Lieut.-Colonel C. G. Browne, C.M.G., D.S.O., R.A.M.C., to Florence (Pat), eldest daughter of Brigadier-General J. W. Carroll, C.M.G., D.S.O. (late Norfolk Regiment.) and Mrs. Carroll, of Boldon, Minehead, Somerset.

FOULKES—VAUGHAN.—On Sept. 17th, at Emmanuel Church, Camberwell, Richard Kenrick Foulkes, M.B., to Mary Gwendolen, only daughter of the Rev. F. D. and Mrs. Vaughan, of Emmanuel Vicarage, Camberwell.

DEATHS.

BYAM.—On Sept. 12th, at Worthing, from peritonitis, Samuel Henry Byam, L.R.C.P. Lond., M.R.C.S. Eng., of Chester-square, London, S.W., aged 73 years.

FAULDER.—On Sept. 11th, at Glendaruel, Argyllshire, Julia, the beloved wife of Major T. J. Faulder, F.R.C.S., R.A.M.C. (T.A.) and elder daughter of W. Harrison Cripps, Esq., F.R.C.S., of Glendaruel.

MCCREERY.—On Sept. 10th, at Colaba War Hospital, Bombay, Major A. T. J. McCreery, M.C., R.A.M.C., eldest son of the late Colonel B. T. McCreery, R.A.M.C.

ROBERTS.—On Sept. 5th, in Madras, Lieut.-Colonel Edmund Arthur Roberts, D.S.O., I.M.S.

WILLIAMS JONES.—On Sept. 16th, at Prestatyn, North Wales, John Williams Jones, of 2, Albert-road, Whalley Range, Manchester, L.R.C.P. & S. Edin. and L.M. Glasg., in his 68th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE PRESENT POSITION OF PSYCHOTHERAPY.

BY MILLAIS CULPIN, M.D. LOND., F.R.C.S. ENG.,
LECTURER ON PSYCHONEUROSES, LONDON HOSPITAL.

AN increased interest in the psychological aspect of medicine is one of the unexpected results of the war. Soon after the outbreak of hostilities officers and men were invalided home in fairly large numbers under the diagnosis of "concussion" or "shell-shock," and presented symptoms which were ascribed to these physical causes. Newspaper stories appeared of marvellous recoveries from mutism, blindness, or paralysis in returned soldiers, and it was finally recognised that the words "concussion" and "shell-shock" (the latter had by then been made an official term) were by no means synonymous, but indicated two groups with causations diametrically opposite, one being physical and the other mental. The physical symptoms of the mental condition were recognised as identical with those described in civil life under the name of hysteria, and, in fact, Hector Gavin[1] had described as early as 1843 practically all the physical disabilities seen in these cases of shell-shock. The assumption that shell-shock had a gross anatomical basis recalls the half-forgotten controversy concerning "railway spine"—a condition regarded as due to gross organic changes till the efforts of H. W. Page and the late Furneaux Jordan established its emotional origin. One regrets that the work of these surgeons was overlooked in the attempt to establish an anatomical pathology of shell-shock; Page's book, "Railway Injuries,"[2] needs only the addition of a chapter on modern psychological theories to make it a complete picture of the war neuroses. The centre of interest gradually shifted from the bodily symptoms known to be dependent upon mental disturbances, and attention was directed more to the mental disturbances themselves. This change coincided with a change in the nature of the cases which, as time passed, presented less of the hysterical symptoms and came more into line with the compulsion and obsessional neuroses, anxiety states, and psychasthenias of civil life. These latter conditions are generally found classified as "neurasthenia"—a term which now has little value for purposes of definition, though there are a few cases to which it may properly be applied.

Mental and Physical Causes.

The physical aspect of the subject is concerned with:—

(*a*) True concussion, often followed by symptoms scarcely to be distinguished from those produced by strong emotion. Careful psychological investigation of individual cases is necessary before the physical and mental factors can be separated, but it is to be noted that the claim of men suffering from shell-shock to have been unconscious for a varying period after the shock rarely rests upon a true insensibility, but upon a loss of memory which can often be restored by psychological means (hypnosis, &c.).

(*b*) The effect of vibration upon the molecular structure of the brain. Carver and Dinsley[3] produce evidence to show that the vibrations produced by a certain sequence of explosions cause psychical effects, which suggests that, just as explosives may be discharged by other explosions at a distance, so the cells of the central nervous system may react to particular vibrations.

(*c*) Toxins, whether their action is direct, upon the nerve centres, or indirect, by lowering the sense of well-being.

(*d*) The functions of the endocrine glands, which are closely associated with emotion. Here is to be sought the explanation of those cases diagnosed in the army as disordered action of the heart, or effort syndrome, which are now claimed as their own by both cardiologists and neurologists.[4] Nervous symptoms commonly occur with the cardiac disability, and in addition there are found excessive sweating, cyanosis of the hands, fine tremors, easy induction of nervous and muscular fatigue, and other symptoms dependent upon interference with the sympathetic nervous system and the ductless glands.

The conception of a physical causation for hysteria had long been abandoned, though physical means are still commonly used in its treatment. With regard to other nervous conditions, opinion was less definite; the cause of of that day. Further than this, Nierenstein's researches appear to invalidate Prof. Halliburton's statement that the cells lining the choroid plexus constitute an absolute barrier preventing arsenic from entering the cerebro-spinal fluid.

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[1] Gavin, Hector: Feigned and Fictitious Diseases in Soldiers and Sailors. London. 1843.

[2] Page, H. W.: Railway Injuries. London: C. Griffin. 1891.

[3] Carver, A., and Dinsley, A.: Some Biological Effects due to High Explosives, Brain, 1919, vol. xlii., p. 113.

[4] THE LANCET, 1920, ii., 184.

It might not be out of place to draw attention to the past literature on this subject, more especially to the period when inquiry into every form of therapeutics in connexion with trypanosomiasis was at the height of its activity. Consequent on important work on sera by Schilling (1905), Klein and Möllers (1906), Mesnil and Brimont[3] studied this question and an extract from a review of their paper is as follows:—

> "Action in vitro of the serums on the trypanosomes.—The trypanosomes of the last experiment after half-an-hour's contact with active serums showed a vitality as great as that of the control trypanosomes. It was thought possible that the effect of the serums might be evident later. Trypanosomes were therefore put in contact with active serums, inactive serums, and in the citrated water with which they were diluted, in each case at 18° and 37°. In a great number of trials no microbicidal action was observed; the active serums behaved like the inactive; in both the trypanosomes kept their vitality longer than those in the citrated water; it was kept longer still when heated serums were used. The protective power of the serums is therefore not due to trypanolytic action. The two properties, when they exist together, are independent. Nor did the addition of serum from the mouse to supply complement bring about trypanolysis. The agglutinating power of the serums was very inconstant, and never well marked; it exists also in some fresh serums; agglutinative power has no sort of relation to protective power. Anti-lewisi serum is the only one for which agglutination is characteristic, and here Laveran and Mesnil have shown the independence of agglutinating and preventive power."

Following on the work of Laveran and Mesnil, Goebel,[4] among other conclusions, found that—

> (1) Human serum digested at 37° with trypanosomes does not lose its preventive and curative properties. The parasites which have remained in it preserve their infectivity completely.
>
> (2) "Human serum does not show any opsonic or cytotropic property as regards trypanosomes. In any case it does not change the parasites so as to make them an easy prey for leucocytes."

Research undertaken by Levaditi and Mutermilch is described[5] as follows:—

> "The authors mixed trypanosomes from the blood of a mouse with serum from guinea-pigs killed in the course of a third relapse, and added complement. At 38° the degree of trypanolysis was proportional to the quantity of trypanocidal serum added. With certain quantities microscopical examination showed that all the parasites were immobile and had become round and transparent. It was thought that sterilisation was complete, but when some of these mixtures were injected into mice the animals became infected with trypanosomes and died. The authors suggested that those parasites which had succeeded in multiplying in the blood of the mice had become resistant to the antibodies with which they were in contact in the test-tube: experiment showed that it was so."

From the above it would appear that the blood serum of animals, whether suffering from trypanosomiasis or not, contains little if any trypanolysin, and that trypanosomes kept for some time in contact with such sera do not lose their infectivity; in fact, according to later researches, they become in certain cases resistant. The conclusions that Dr. Marshall arrives at and the hopes expressed that "in man prophylaxis and immunisation against trypanosome infection might be so attained"—i.e., by the use of animal serums—are certainly not supported by the researches of many eminent workers, and are also perhaps not without danger.

Regarding complement-fixation, Beck's experiments, like those of previous workers, led to no practical conclusions. He doubts whether complement-fixation will ever become of use in the diagnosis of human trypanosomiasis."[6] As Dr. Marshall appears to have had such promising results, we trust that he will be given ample opportunity for continuing his work, and if he can bring it to a satisfactory termination he will have achieved remarkable success. I am sure we all wish him the best of luck.

I am, Sir, yours faithfully,

Dar-es-Salaam, July 14th, 1921. J. O. SHIRCORE.

*** Dr. Shircore's letter makes it clear that intrathecal serum treatment for trypanosomiasis was tried even earlier than was suggested in an annotation on Sept. 10th, p. 573.—ED. L.

NATIONAL PROVIDENT SCHEME.

To the Editor of THE LANCET.

SIR,—In the National Provident Scheme for Hospital and Additional Medical Services in London, as detailed in your current issue, is there intended to be any differentiation between earned income and income derived from capital? If there is no such differentiation, what is to prevent an individual, with an income of £250 derived from invested capital of £5000, from becoming a member at an annual subscription of £1?—I am, Sir, yours faithfully,

C. HAMILTON WHITEFORD.

Plymouth, Sept. 17th, 1921.

The Services.

WOMEN'S MEDICAL SERVICE FOR INDIA.

CERTAIN progressive steps are recorded in the annual report for 1920 of the Women's Medical Service for India (W.M.S.I.), incorporated in the report of the National Association for Supplying Female Medical Aid to the Women of India.[1] A deputation from 16 members of the Service, received by its President Lady Chelmsford in February, 1920, urged, in the interests of the Service, especially with regard to pay and status, that it should be taken over by the Government of India. Lady Chelmsford replied that though the proposal for a Government service was not at present practicable, the question of increased pay[2] was already under consideration and the desire for a more definite status would be met if possible. The Viceroy was officially approached by the Council in the following September with a view to obtaining for officers of the W.M.S.I. a place in the Warrant of Precedence in India, and meanwhile local governments were asked to accord to officers of the W.M.S.I. gazetted rank and to issue orders that they be treated on all occasions with the consideration paid to gazetted officers. This last request shows that the lack of official recognition in a country where precedence counts for so much has been felt, and for the dignity of the service it is to be hoped that the response of the Viceroy has been favourable. The United Provinces, alone of the Provinces, had replied when the report was issued and their answer was immediately to bestow gazetted rank on all officers of the W.M.S.I. Meanwhile, the service has altered its internal nomenclature more in accordance with the traditions of a government service, doubtless in hopeful anticipation of a change in the official attitude. Dr. M. I. Balfour, one of the joint secretaries of the service, is now its chief medical officer. The assistants to the surgeons-general or inspectors-general are now to be known as senior medical officers, and those engaged in hospital duties are graded as executive medical officers of the first, second, third, and fourth grades. The bestowal of certain executive powers on the chief medical officer is under consideration.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs.—G. D. Walsh to *Defiance*; C. H. Dawe to *President*, addl., for four months' hospital course; and F. H. Holt to *Renown*. Surg. Lieut.-Comdrs. C. F. O. Sankey to *Harebell*; and W. P. Beattie to *Cerce*. Surg. Lieut. J. F. Haynes to *Woodlark*.

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[3] Review in Bulletin, S.S.H., No. 6, 1909, p. 220.

[4] Bulletin, S.S.H., No. 7, 1909, p. 259.

[5] Ibid., No. 8, 1909, p. 330.

[6] Ibid., No. 21, 1910, p. 350.

[1] Calcutta: Superintendent Government Printing, India. 1921.

[2] The scale of pay recorded in our Students' Number (August 27th) is the recently revised scale.

Present Conditions.

This survey of the trend of opinion indicates that at the outbreak of war we were little prepared to deal on a large scale with casualties that needed treatment by the methods discussed above; the large number of neurological cases occurring in the army called for action, and neurological centres were established both at home and in the war areas. But functional nervous disorders had hitherto been neglected in the training of the medical student, and clinics for their treatment were practically unknown. The need for training medical men was faced, and during the war centres were established at Maghull and Seale Hayne, to which were sent R.A.M.C. officers and others for a course of training in the subject. Even now the supply of practitioners able to understand and treat cases among pensioners is so insufficient that the Ministry of Pensions offers a course of training at Tooting under the direction of Dr. R. G. Rows, formerly in charge of the Maghull centre. The care or treatment of the insane soldier was separated from that of the psychoneurotic, though difficulties of diagnosis caused occasional errors. The strangeness and severity of some psychoneurotic conditions led to diagnoses of insanity which were ultimately revised, and, on the other hand, a small proportion of the inmates of neurological hospitals became certifiable. The authorities met this difficulty when they established hospitals under expert psychiatrists, where soldiers were kept under observation for a period of not less than nine months before being certified as insane. The needs of pensioners are now being met by the establishment of out-patient clinics, hospitals, and training centres all over the country. The Maudsley Hospital, the fate of which is just now in the balance, is an example of institutions where "border-line" cases are taken for investigation. It must be admitted that these efforts are hampered by the facts that pensioners need much urging before they will accept treatment, and that in mental cases neither the patients nor their friends are always the best judges as to what treatment is necessary. The "neurasthenic" pensioner is a special problem,[7] for his neurotic symptoms serve as a flight from hard reality, and in present economic conditions he is at a considerable disadvantage in the labour market, so that his adjustment to reality often becomes impossible. This condition is not to be taken as indicating a deliberate malingering, or retention of symptoms for a conscious end; the influence of financial and domestic worry cannot be denied in cases occurring in private practice where no question of pension arises.

The experience gained during the war, and especially the recognition that many—probably at least half—of the war patients had suffered from nervous manifestations before enlistment, helped to draw attention to the needs of the civil population. The sufferer from a bodily hysterical disability had hitherto been regarded with a certain degree of contumely, as being responsible for a condition which he or she ought to overcome by a little common-sense. Presumed organic disorders cured by pious pilgrimages, bone-setters, Christian Science and similar means, were explained as hysterical, and our professional responsibility ceased with the making of the diagnosis. But if hysteria is curable it should be our duty to cure it, and if others succeed when we have failed we must be honest enough to confess our failure. The war has taught that even the hysteric may desire to be cured, and the sufferers from other psychoneuroses bear them in silence only because they have come to regard their condition as beyond our help. Hitherto the student has felt that the subject is unimportant, that treatment is directed by no intelligible principles, and that the sufferers themselves are mere nuisances and may properly be left to their troubles; but the attention given to functional nervous disorders during and after the war, and the diffusion of knowledge concerning them, should make itself felt in medical education, especially when the ever-widening field of psycho-therapy is recognised. That such diverse conditions as asthma, writer's cramp, and stammering should be placed among the functional nervous disorders now found amenable to treatment by mental exploration is an indication of the practical value of that treatment.

The study and treatment of psycho-neuroses and of cases on the border-line of insanity are inseparable; neglect of one is associated with neglect of the other, and in the past our students have derived their knowledge of psychiatry from a few visits to an asylum where they saw advanced certified cases of mental disease. In practice medical men are faced with early or doubtful cases in which, under present conditions, little or nothing can be done until the patient is certifiably insane, unless his position is such that he can afford the luxury of a private institution for an indefinite period. The city of Birmingham has shown a good example by the establishment of a "nerve hospital," containing 35 beds, and situated in grounds of several acres. Here are admitted cases of functional nervous disorders requiring in-patient treatment, and amongst these will come the "border-line" sufferers who would otherwise remain untreated until they became fit for an asylum. An out-patient department is worked in conjunction, and the treatment is along the lines indicated by modern psychology. Special out-patient clinics have been established at some of our large hospitals, but there is a general lack of such provision as Birmingham provides for treating the potentially insane when he is still accessible to treatment.

A description of clinics and hospitals on the Continent, where non-certifiable cases are received without the stigma attached to asylum treatment, is given in the work on shell-shock by Elliot Smith and T. H. Pear.[8] This book, in spite of its title, is a plea for the early treatment of the uncertifiable cases of civil life, and in it emphasis is laid upon the observation that the hereditary nature of mental disorders is probably over-rated; just as tuberculosis is now known to be often conveyed from parent to offspring by infection and not by heredity, so the evil home influence inseparable from the presence of neurotic or drunken parents is bound to produce effects upon the mental stability of their children quite apart from or in addition to the effects of hereditary predisposition. H. Crichton Miller[9] shows this in the study of 28 army cases, where he traced failure of mental adaptation in adult life to the influence of a drunken or cruel father with a resulting fixation upon the mother; he admits the hereditary element, but the developmental flaw is far more apparent. The psychological investigation of juvenile delinquents offers a promising field with prospects of ameliorating or curing criminal tendencies. Sentimentality has no place in this question—if a child or young adult can be saved from a bad career only by a term of imprisonment then the imprisonment is justified; but such punishment obviously fails in many cases. Committal to a reformatory, or supervision by a court official or missionary, is an effort in the right direction, but more is needed. A child who repeatedly offends in a particular way, who derives no obvious benefit or pleasure from the offence, and on whom punishment has no deterrent effect, is urged by a motive hidden from the casual observer. The offenders are not carrying out conscious wishes, for they are urged by some impulse which they cannot resist or understand; they may even be keenly sensitive to their disgrace and long to be cured of the impulse. Kleptomania as a plea in defence has become a by-word, but there certainly are cases where the impulse to steal is psychologically on all fours with a psychoneurotic obsession, and, like it, is a fit matter for investigation and treatment.

William Healy, Director of the Psychopathic Institute of the Juvenile Court, Chicago, has shown[10] the application of the theory of the unconscious to these cases. Stealing, vagrancy, truancy, and other examples of misbehaviour were investigated by him and his colleagues, and by the use of methods which he admits were often superficial it was found that of 2000 cases over 7 per cent. presented examples of mental conflict, generally sexual in origin, as a main cause of the delinquency. Let us bear in mind that the trouble arose from a struggle against something which the child believed was evil—that the evil thought, thrust into the unconscious, yet possessed such dynamic energy that it manifested itself in the pathological impulse to offend. In these cases the correct treatment is by mental exploration; the use of restraint or punishment only increases the conflict and creates an anti-social grievance in the mind of the sufferer. In our country we have very little experience of this particular application of psycho-therapy; but it is plain that the elucidation of the mental processes concerned cannot be undertaken by those untrained in methods of mental exploration, which is something more than mere questioning of the patient.

General Survey of Opinion.

Healy shows how the new methods are finding application in America. In Austria and Germany the adherents of Freud are very active, and meet with great opposition; an energetic controversy concerning the mental or physical cause of the war neuroses seems to have ended in a victory for the advocates of the former. A centre of clinical research and literary activity is the Psychiatric Clinic of the University of Zurich, where Jung and his colleagues, departing from the absolute sexual theory of Freud, have built up a psycho-analytical philosophy based upon unconscious strivings not necessarily of a sexual nature. The principles of Jung have a fair number of adherents in this country. In France the influence of Babinski and Bernheim is still powerful; suggestion is regarded as the cause

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[7] Culpin, Millais: The Problem of the Neurasthenic Pensioner. Brit. Jour. Psychol. (Medical Section), 1921, Parts 2 and 3,

[8] Smith, G. Elliot, and Pear, T. H.: Shell-shock. Manchester Univ. Press. 1917.

[9] Functional Nerve Disease. Oxford Med. Publications, 1920

[10] Mental Conflict and Misconduct. London, Kegan Paul, 1919.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART: POST-GRADUATE COURSE.—A special course of ten systematic lectures will begin on Monday, Oct. 10th, at 5.30 P.M., when Dr. J. Parkinson will lecture on Aortic Disease. Subsequent lectures, to be given by Sir S. Russell-Wells, Dr. P. Hamill, Dr. F. W. Price, Dr. J. S. Goodall, Dr. R. O. Moon, and Dr. B. T. Parsons-Smith, will be announced in our Medical Diary. Clinical demonstrations are given, and the clinical practice of the hospital is open to post-graduate members of the course. A fee of £2 2*s.* per month, or £5 5*s.* for three months, is charged. Appointments as clinical assistants are also open to members of the course. All inquiries should be addressed to the Dean, Dr. P. Hamill, and cheques made payable to the Secretary of the Hospital at Westmoreland-street, W. 1.

SOME PROBLEMS OF MODERN BIOLOGY.—A course of 24 lectures under this general title will be given at Gresham College, Basinghall-street, London, E.C., on Mondays, at 6 P.M., beginning Oct. 3rd, by Mr. William B. Brierley, D.Sc. The aim of the lectures, which are being given as a university extension course, is to make a survey in the light of recent experimental research of some of the main problems and tendencies in biology and to attempt to build up a coherent system. The lectures are divided into four groups under the headings: (*a*) Problems of Life, Growth, and Death; (*b*) Problems of Sex and Inheritance; (*c*) Problems of Interpretation; and (*d*) Problems of Practice. The fee for the session of 24 lectures is 17*s.* 6*d.*, or 10*s.* for the term of 12. Admission to the first lecture on the Origin of Life is free and to each subsequent single lecture 1*s.* 6*d.* Further particulars as to this and other university extension courses may be obtained from Mr. J. Lea, University Extension Registrar, University of London, S. Kensington.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of eight lectures and discussions on Problems of Public Health in Relation to Industrial Hygiene will be delivered in the lecture theatre of the Institute, 37, Russell-square, London, W.C., on Wednesdays, at 4 P.M., starting on Oct. 19th. The first lecture will be delivered by Sir Thomas Oliver on Problems of Industrial Hygiene in Relation to Public Health, Lord Askwith presiding. Subsequent lectures, which will be announced in our medical diary, will be given by Dr. R. M. Wilson, Dr. H. M. Vernon, Prof. Louise McIlroy, Prof. S. Lyle Cummins, Dr. R. Prosser White, Prof. Edgar L. Collis, and Sir Kenneth Goadby. A discussion will follow each lecture. Medical officers of health, medical practitioners, sanitarians, medical students, and all men and women engaged in any form of public health service or interested in medico-sociological problems are invited to attend. Further particulars may be obtained on application to the Secretary, The Royal Institute of Public Health, 37, Russell-square, London, W.C. 1.

BETHLEM ROYAL HOSPITAL.—A course of lectures and practical instruction for the Diploma in Psychological Medicine granted by the various universities has been arranged to commence on Monday, Oct. 10th. The course is divided into two parts. Part A comprises the anatomy, histology, and physiology of the nervous system, together with psychology (general, experimental, and of dreams). Part B comprises neurology, psychological medicine, and mental deficiency. Lectures will be delivered by Sir Maurice Craig, Drs. S. A. Kinnier Wilson, C. Worster-Drought, F. C. E. Danvers-Atkinson, Clement Lovell, William Brown, W. H. Rivers Rivers, E. D. Macnamara, W. H. B. Stoddart, R. Hunter Steen, J. G. Porter Phillips, Thomas Beaton, H. E. Wingfield, and A. R. Tredgold. The course will take place according to a time-table which may be obtained on application to the Physician Superintendent, Bethlem Hospital, S.E. 1. Fee for the full course £15 15*s.*; for either part separately, £10 10*s.*

NORFOLK AND NORWICH HOSPITAL.—The last quarterly report of this hospital forms a welcome contrast to the almost universal depression in the financial state of our voluntary hospitals. The board of governors reports that the increased financial support referred to in their last report has been continued, and that the expenditure for the first six months of this year has been covered by the income received in that time. This is a gratifying improvement on the condition of affairs prevailing last year, when the expenditure exceeded the income by £250 a week, as a result of which it was found necessary to close one of the wards. This improvement in the finances of the hospital is due, in the first place, to the result of the entertainments organised throughout the county on behalf of the hospital, which brought in the substantial sum of £6000 in six months; and secondly, to the growth of the contributory scheme in connexion with the Sunday and Saturday Fund, from which the institution received £3200 as a first instalment for this year. It has been decided to reopen the ward which had been temporarily closed, but the board urges subscribers to continue their efforts, and reminds them that there is still an overdraft of £28,000 due to the bank. The quarterly report of the work done by the hospital shows that the in-patients numbered 711, against 833 in the corresponding quarter of 1920; the daily average of in-patients was 234, against 263 last year. This diminution in numbers was no doubt due to the closing of a large ward; but, on the other hand, the number of operations was 521, compared with 401 last year. The new cases treated in the out-patient department were 827, and the accidents and casualties 1820, these figures last year having been 506 and 1862.

LONDON TELEPHONE EXCHANGE TRANSFERS.—From Paddington 3385 to Langham 2530, F. W. Price. From Mayfair 3677 to Grosvenor 1408, W. E. Robinson.

AMERICAN UROLOGICAL ASSOCIATION.—At the last annual meeting held at Montreal, Canada, in June, this Association decided to discontinue publication of the yearly transactions. Papers which have heretofore appeared in the transactions will be published in the *Journal of Urology* (Williams and Wilkins, Baltimore), which is now the official organ of the Association.

FOREIGN DECORATIONS.—The King has granted permission to wear the undermentioned decorations, which have been conferred in recognition of valuable services rendered:—The Order of the Nile, Second Class (Egypt), to Dr. Owen William Richards, C.M.G., D.S.O., Director, School of Medicine, Cairo; the Order of the Excellent Crop, Sixth Class (China), to Dr. Norman Hay Bolton, Medical Officer, Shanghai-Nanking Railway.

DONATIONS AND BEQUESTS.—The late Miss Hannah Amelia Irving, of Bennett Park, Blackheath, has left by will £3000 to the London Hospital to endow three beds in the Cancer Ward; £2000 to the Middlesex Hospital to endow two beds in the Cancer Ward; £200 each to the Royal London Ophthalmic Hospital, Moorfields, St. Mark's Hospital for Fistula, City-road, the East London Hospital for Children, the Surgical Aid Society, and the Poplar Hospital; £100 each to the Nursing Sisters of St. John The Divine, Bow-lane, E., and the Miller General Hospital, Greenwich. The residue of the estate is to be divided between the Royal Hospital for Incurables, Putney, the British Home and Hospital for Incurables, Streatham, and two other beneficiaries.—Under the will of the late Mr. Frank Sammon Parsons, of Shipston-on-Stour, who left estate of the gross value of £21,337, with net personalty £21,282, the testator left £2000 upon trust to pay three incomes to certain benefactors, with remainder to the Moreton-in-the-Marsh Cottage Hospital.

Appointments

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Wednesday morning of each week, such information for gratuitous publication.*

DUNSCOMBE, N. D., B.A., B.Ch. Cantab., L.M.S.S.A. Lond., has been appointed Assistant Medical Officer, Royal Earlswood Institution, Redhill, Surrey.

MACGILLIVRAY, G., M.B., Ch.B. Aberd., Tuberculosis Officer for Fife.

PRINGLE, K. D., M.B., B.C. Cantab., Medical Officer of Health to the Brecknock Rural District Council.

STEVENS, B. C., M.D., M.S. Durh., F.R.C.S. Edin., D.P.H. Oxf., Medical Officer of Health for the County Borough and Port of Grimsby.

Vacancies.

For further information refer to the advertisement columns.

Aylesford, Kent, Preston Hall Treatment and Training Colony for Tubercular Ex-Service Men.—Sen. Asst. M.O. £300.

Belfast District Asylum.—Two Asst. M.O.'s. £300.

Benenden, Kent, National Sanatorium.—Asst. M.O. £250.

Birkenhead, County Borough of.—Asst. M.O. £650.

Birmingham General Hospital.—Res. M.O. £155. H.S.'s. Each £125.

Bournemouth, Royal Victoria and West Hants Hospital, Poole-road Branch.—Res. M.O. £200.

Brighton, Royal Sussex County Hospital.—Hon. Surg. Hon. Asst. Surg. Hon. Med. Clin. Asst. Cas. H.S. £140. H.S.'s £140.

Cardiff, King Edward VII. Hospital and Medical School.—H.S. £200.

Chelsea Hospital for Women, Arthur-street, S.W.—Hon. Dental Surg.

Clifton, York, North Riding Mental Hospital.—Sen. Asst. M.O. £400.

Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £200.

crowding; but nevertheless there was a marked decrease in the sickness and death-rates of the prisoners. The ratios of admission to hospital (1222·2 per 1000), daily average sick (48·0), and the deaths (43·6) were all considerably lower than in 1918, when these ratios had been 1497·5, 71·9, and 63·4 respectively. These figures afford a most striking testimony to the skill and care of the officers in charge of these institutions and their staff. The mortality was high at Angul (158·9), Hazaribagh (127·6), and Balasore (126·2), dysentery being the chief reason for the excess in each case. For the province as a whole malarial fever caused most admissions (304·6 per 1000), but only 1·0 per 1000 were fatal. Dysentery caused 193·2 per 1000 admissions and 15·8 deaths; diarrhœa, 150·4 admissions and 3·3 deaths. For pneumonia the ratios were only 9·6 and 3·5, as compared with 21·0 and 4·9 in 1918. An interesting table (No. XVII.) gives details as to death-rates for convicts in 1919, according to length of sojourn in jail. For six months or less the ratio was 65·9 per 1000; from six months to a year, 44·4; from one to two years, 30·3; from two to three years, 21·4; from three to seven years, 25·7; and above seven years, 3·2.

THE SUICIDE-RATE AND NATIONAL PROSPERITY.

According to the August number of the *Statistical Bulletin* of the Metropolitan Life Insurance Co., there are indications that the downward trend in the suicide death-rate in the U.S.A. has received a check this year. During the first seven months of 1921, the rate from suicide among more than 13 million industrial policyholders was 7·3 per 100,000, which is an increase of 26 per cent. over the rate for the corresponding period of 1920. Other observers have noted the same facts in different fields. The National Committee for Mental Hygiene has called attention to the marked increase in the number of suicides, especially among ex-soldiers and others in the general population.

The American suicide-rates of the past ten years present some interesting characteristics. During the period 1911 to 1915, preceding the period of intense industrial activity during the war, only slight changes in the suicide death-rate are to be found. The second period, beginning with 1915, is that of the war years of great economic expansion and increased prosperity for the great body of the American people. Every year, both among the insured and the general population, recorded marked declines in the suicide-rate. In 1920 the rate among insured wage-earners was less than one-half what it had been in 1911. In the later months of 1920 a change seems to have set in which has continued throughout the first seven months of 1921. Month after month the suicide-rate is mounting over the corresponding figures for the months of 1920, and it is likely that the rate for the whole year will be higher than for the preceding one. It would be interesting to know to what degree the unemployment situation of the last year is responsible for the observed conditions as to suicide; suicide-rates may prove to be a sensitive index of the prevailing economic well-being of a people.

A STATE INSTITUTE OF HYGIENE IN PRAGUE.

A contract between the International Health Board of the Rockefeller Foundation and the Czecho-Slovak Ministry of Public Health and Physical Education has just been signed, by which a gift of 27,000,000 Cz. crowns has been accepted by the Czecho-Slovak Government for the erection of a State Institute of Hygiene, the Government agreeing to expend an additional 23,000,000 crowns for the project. Such an institution has been projected since the creation of the Ministry; it was conceived as a central public health laboratory, a school for health officers and sanitary personnel, and a research institution which would furnish a scientific background for the activities of the Ministry and save it from becoming a bureaucratic paper office.

When the budget for the Institute was made and was found to reach the sum of 50,000,000 Cz. crowns, it was felt that the strict economy made necessary by post-war conditions would not permit the realisation of this magnificent project. Later the Rockefeller Foundation's representatives, Colonel Frederic F. Russell and Prof. Selskar M. Gunn, came to Prague and the plan was presented to them and finally, with their recommendations, submitted to the International Health Board in New York. The land for the Institute has already been purchased and is located on both sides of a large hospital in Vinohrady, a suburb of Prague. It is one of the best and most modern hospitals of the capital and houses some of the teaching clinics of the Prague Medical Faculty. The close connexion between hospital and laboratories will be of advantage to both, giving excellent opportunities for research and teaching.

Plans for the Institute.

Plans have been made and agreed upon by both sides for a central large building and a smaller one. Stables, a power plant, a sewage purification plant, and houses for the personnel are included in the plans. The Institute will consist of several departments. The department for the production of small-pox vaccine and sera will be located in the small building which will also contain the department for Pasteur treatment for rabies. Patients requiring this treatment will be housed temporarily in the hospital, where two pavilions will be built for them. Later on those pavilions will be used for the contagious disease and gynæcological services of the hospital. The main building will have three stories: it will include a central diagnostic laboratory; the department for the control of foods, the department for the control of drugs, and finally, the department for research in hygiene. This last department will contain sections for school hygiene, an experimental station for water purification and sewage disposal, and departments for industrial hygiene and housing; the school for the training of health officers and sanitary personnel will be attached. The Institute will be entirely distinct from the medical faculty and will be administered by a board of directors made up in part from the prominent laboratory men of the country. Some of the future heads of departments have been already selected and sent to the United States at the expense of the Rockefeller Foundation for post-graduate study.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Special Intensive Course.

Monday, Sept. 26th.—4.30 p.m., Clinical Lecture:—Mr. C. J. Bond: Latent Infections (lantern).

Tuesday.—4.30 p.m., Dr. F. G. Crookshank: Colon Bacillus Infections.

Wednesday.—4.30 p.m., Mr. J. Berry: The Differential Diagnosis of Thyroid Swellings.

Thursday.—4.30 p.m., Colonel L. W. Harrison: The Routine Treatment of Syphilis and Tests of Cure in Gonorrhœa and Syphilis.

Friday.—4.30 p.m., Mr. H. W. Carson: Intussusception.

Saturday, 11 a.m., Dr. J. Macarthur (at the L.C.C. Mental Hospital, New Southgate, N.): Cases illustrating Emergencies in Mental Medicine.

Daily:—10.30 a.m. and 11.45 a.m., Demonstrations of Clinical and Laboratory Methods. 2 p.m., Demonstration of Groups of Clinical Cases. 3 p.m.: General Hospital Work. 4.30 p.m., Clinical Lecture (free to Medical Practitioners).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Sept. 26th.—2 p.m., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Mr. MacDonald: Surgical Out-patients. 2.30 p.m., Mr. T. Gray: Visit to Surgical Wards.

Tuesday.—10 a.m., Mr. Steadman: Dental Department. 2 p.m., Dr. Burrell: Medical Out-patients. Mr. T. Gray: Surgical Out-patients. 2.30 p.m., Mr. Addison: Visit to Surgical Wards.

Wednesday.—10 a.m., Mr. MacDonald: Genito-Urinary Department. 2 p.m., Mr. Addison: Operations. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards.

Thursday.—2 p.m., Mr. D. Armour: Operations. Mr. B. Harman: Eye Department.

Friday.—10 a.m., Mr. D. Buxton: Dental Department. 2.30 p.m., Dr. Pritchard: Visit to Medical Wards.

Saturday.—10 a.m., Dr. Burnford: Visit to Medical Wards. 2 p.m., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.

Daily: 10 a.m., Visit of Post-Graduates to Wards. 2 p.m., In-patient, Out-patient Clinics and Operations.

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the symptoms vaguely described as neurasthenia was practically unexplained, though physical causes such as toxæmia were sometimes postulated. The view is still widely held that the physical condition is the primary cause when such troubles as constipation or enteroptosis are found associated with neurasthenia: similarly, in regard to the condition already alluded to as disordered action of the heart, it is often assumed that the nervous symptoms are secondary to the cardiac trouble. Those who approach nervous disorders from the psychological side do not ignore the action of toxins or exhaustion upon nerve centres—observation of febrile diseases would prevent such a mistake—but they find that mental causes underlie the diseases variously described as hysteria, anxiety states, compulsion or obsessional neuroses, psychasthenia, and neurasthenia. These are the conditions generally called nervous, and it is obvious that this use of the word, though sanctioned by custom, is incorrect: "nervous" diseases are mental. It is partly for this reason that "psychoneurosis" is often used in place of the older "neurosis." The link between bodily symptoms and mental states is probably to be found in the sympathetic nervous system and the ductless glands. Cannon[5] has shown how emotion affects the glandular secretions, and glandular secretions in turn have great influence upon bodily and mental functions. Although changes in the brain substance—in general paresis of the insane, for example—produce alteration in function, yet it does not follow that alterations in function must always be associated with demonstrable changes in structure. The fact that the symptoms of the psychoneuroses are amenable to psychotherapy does not lead us to expect to find their prime cause by the study of morbid anatomy.

With regard to insanity, the need for distinction between organic and mental causation is equally obvious. Different views concerning the pathology of that form known as dementia præcox illustrate a present conflict of opinion. To some authorities it is a disease of the brain, with added pathological changes in other structures—for example, the genital glands; on the other hand, it is regarded by some—e.g., by Jung—as a psycho-genetic disease with possibilities of treatment by psychological means, though the question is left open as to whether the mental cause may produce toxins that ultimately affect structure. The varieties of insanity which are believed to rest upon a psychological basis are manic-depressive insanity, dementia præcox, and paranoia. The importance of recognising their mental origin lies in the fact that in early stages the patients may be accessible to treatment. The inaccessibility to treatment shown by the insane, and their failure to recognise their infirmity, distinguish the psychoses from the psychoneuroses.

The Psychological Theory.

The outbreak of war came at a time when a new theory of the cause of mental disorders had attracted attention, and had been adopted by a few workers in this country. This theory was promulgated in 1895 by Freud, of Vienna, who found that hysterical symptoms were related to past incidents in the life of the patient which had been forgotten or repressed into a part of the mind which he calls the "unconscious." Being buried in the unconscious the memory does not lie dormant, but sends into the consciousness certain impulses which create the hysterical symptoms. By a process which he calls psycho-analysis the memories were brought to consciousness and the symptoms disappeared.

The theory soon became more elaborate; the buried memories proved to be connected with repressions concerning sex and those repressions went back to infancy, during which the sex instinct undergoes a course of evolution liable to arrest at any stage. Freud traces the sex instinct through a period of attachment to the self, then of attachment to the parent—usually the parent of opposite sex—till it finally reaches that stage of attachment or attraction to the opposite sex which we have hitherto regarded as the sum of normal sexuality. The instinct may be arrested at any of those stages, the memory of which is rarely or never within the consciousness of the adult, and the person concerned is at a disadvantage throughout life owing to this unconscious fixation upon a parent or upon a still more primitive sexual object. According to this theory, conflict and repression—one factor in the conflict being repressed by opposition of other interests or desires—produce the mental symptoms, and cure is sought by reviving memories excluded from consciousness, and by teaching the patient to face his troubles; when properly approached, the latter are often of little importance. The technique of this revival need not concern us, but making the patient work out the interpretation of his own dreams is an essential part of it.

This very brief summary of the "theory of the unconscious" at first sight bears little relation to war cases, but investigation of these has produced confirmation of at least a part of the theory. It had been freely assumed that a man who has passed through terrifying experiences should endeavour to forget them, and this assumption at first largely guided the treatment of war psychoneuroses. But it was soon found that any attempt to make a patient talk of his war experiences met at once with a definite refusal or some other form of resistance. When the man was persuaded to talk a difficulty in recall became obvious, and investigation by means of psychological technique revealed that even when the man had told all he knew there still remained in the majority of cases a loss of memory for strongly emotional incidents. Moreover, a total loss of memory for the war or even for the man's previous life was a well-known symptom in severe cases of shell-shock. Hence it followed that "forgetting," so far from being a necessary object of treatment, was already associated with the diseased state, and even formed part of it. When the memories were revived they were often proved to have found symbolic expression in the symptoms; stammers and tremors were obvious symbols of the terror attached to the repressed memory, and disappeared with its revival. Even the bizarre gasps, sniffs and grimaces occurring with the stammer represented definite repressions; disgust at horrible smells, the putting on of a gas mask, efforts to free the head when partly buried, have found symbolic representations in an individual stammerer, and difficulty with certain initials has referred to forgotten names with emotional significance. Hysterical gaits, dyspnœa, unreasonable fears and obsessions, nightmares, fits, and somnambulisms, as well as many unclassifiable symptoms, were similarly traced back to forgotten incidents and removed by their revival.[6]

These observations confirm the existence and influence of repression, and further consideration shows the repression to have resulted from conflict. Perhaps the conflict was between desire to avoid danger and discomfort, on the one side, and duty or sensibility to public opinion on the other. The desire became repressed into the unconscious but found expression in the symptom, the patient being unaware that the symptom was really a means of escape from the conflict. Conflict of this nature, in which a material end is sought unconsciously, is not so common as one might expect. More often the repugnant memory of the horrors of modern war was thrust down into the unconscious and later found expression in a psychoneurosis. Only a proportion of the cases showed an ætiology so completely related to war experience. Many soldiers broke down from mental strain before reaching the front line; there was a varying degree of resistance, so that some men succumbed at the thought of being called up, others broke down during training, at disembarkation in an enemy country, or at the first experience of shell-fire, and others only after years of strenuous fighting.

Resistance against breakdown obviously varied with the man's mental constitution, and an early breakdown was practically always correlated with a lowered resistance to the ordinary troubles of civil life, as shown by a history of previous nervous symptoms or illnesses. This was illustrated by a series of 397 neurological cases[6] which were divided into two groups—one of 150 men presenting a history of nervous predisposition or symptoms, and one of 217 men in whom investigation failed to find evidence of predisposition. The men of the first group had served abroad for an average of nine months, those of the second for an average of 10 months. It followed that the study of war cases could not be separated from the study of cases arising in civil life, and in these were found conflicts and repressions derived from causes apart from warfare, similar to those found in the simple war cases. This view of the processes concerned in the psychoneuroses may be regarded as definitely established, and it is accepted in the writings of William Brown, William McDougall, C. S. Myers, T. H. Pear, W. H. R. Rivers, R. G. Rows, G. Elliot Smith, and others.

At this point opinions diverge: psycho-analysis, whilst claiming that the predispositions revealed in so many cases are based upon infantile repressions, admit that patients are greatly benefited by revival of the more superficial unconscious material, but psycho-analysis in the proper sense of the word is so prolonged and difficult a task that one may safely say very few war cases have been fully studied by the psycho-analytical method. The names of individual workers quoted above probably represent as many degrees of acceptance of the theory of psycho-analysis, but the facts of repression and conflict must be regarded as established by war experience; this is a definite step forward in the understanding of mental diseases.

Persuasion, re-education, and suggestion still play their part in treatment, but it cannot be claimed that they are based upon such firm psycho-pathological grounds as are the various methods of mental exploration.

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[5] Cannon, W. B.: Bodily Changes in Pain, &c. London: Appleton. 1915.

[6] Culpin, Millais: Psychoneuroses of War and Peace. Camb. Univ. Press. 1920.

X ray examination is invaluable in cases of acute right-sided pain, so often diagnosed incorrectly as appendicitis. At every period of duty at hospital when the house surgeon is new I am asked to see these cases of acute pain in the right iliac fossa as appendicitis, which they certainly are not; of the nature of some of them I am still uncertain. All with any surgical experience of the abdomen will recall cases in which the appendix was removed and a stone was later found in the ureter and had to be treated by operation or passed naturally, and many more in which the appendix was removed without relief for pain confined to the right iliac fossa. X ray investigation and careful examination of the urine will prevent the former mistake being made.

We must always be on the alert for tubal pregnancy and disease in women: these are frequent causes of unilateral pain, but tubal disease does not usually require immediate operation. One serious condition requiring immediate interference which may give rise to right-sided pain is perforation of a duodenal ulcer. In cases in which this is subacute and the fluid escapes slowly it may trickle down on the outer side of the ascending colon and give rise to right-sided symptoms; knowledge of this fact will prevent these cases from being overlooked.

SPECIAL INVESTIGATIONS IN CHRONIC CASES.

I will now pass to the type of case in which special investigations are so often necessary; in at least 90 per cent. of chronic cases we should have recourse to the pathological or X ray department at some time during the illness, either for diagnosis, prognosis, or both. Chronic abdominal diseases fall into two groups, those in which the diagnosis can be made by clinical methods—particularly careful history-taking—and those in which the symptoms are not clear and do not conform to those of any named disease. It is in the latter group that special methods of investigation are so helpful, although they should never be neglected as confirmatory evidence in the former.

I should like to give two examples from the latter group to illustrate my meaning. Both were women with left-sided pain, and in both the pain was diagnosed as renal in origin. The history in neither was typical; the pain—in its site and spread—did not have all the characteristics of renal pain; neither did it have the characteristics of pain due to the disease from which the patients were found eventually to be suffering—in one, an hour-glass stomach with a posterior ulcer eroding the pancreas, in the other malignant disease of the splenic flexure of the colon. By X ray investigation the correct diagnosis was made, which enabled me to carry out operative treatment successfully knowing beforehand the condition with which I had to deal.

VALUE OF X RAYS IN ABDOMINAL DIAGNOSIS.

In speaking of the value of X ray work in abdominal diagnosis one naturally starts with its earliest victory—that of revealing calculi in the urinary passages; this of itself is of the greatest value, not only in those elusive cases of right-sided pain, but also in many left-sided. Disease of the stomach, gall-bladder, and the appendix may all give rise to pain in the left iliac fossa and a suspicion of ureteric calculus raised, to be settled by this method of examination. This left-sided pain in chronic posterior gastric ulcer and in diseases of the gall-bladder is more common than is generally realised. It is unfortunate that so far X rays cannot reveal gall-stones for us with the same accuracy as they do stones in the urinary tract. The frequency, however, with which they are demonstrated is yearly increasing with greater knowledge and improved technique. While from time to time we are able to get positive results, the constitution and size of gall-stones differ so much that no reliance should be placed on negative reports; and we must always bear in mind that the causes of biliary colic are numerous and that a typical attack is not necessarily diagnostic of gall-stones. We have, therefore, to rely on our history, symptoms, and physical signs; we must make our diagnosis of biliary colic from history and symptoms, and occasionally are able, from symptoms and signs, to determine, definitely, its cause. If the diagnosis of biliary colic is to be correct, we must realise that the pain never starts in the gall-bladder region, but is epigastric or right round the waist as a band, in the back, and occasionally the left side.

The introduction of X ray investigation of the alimentary tract after an opaque meal has advanced our knowledge of abdominal anatomy and physiology, and, in certain cases, is a great aid in diagnosis. It has also the somewhat doubtful advantage that a shadow of the viscera can be depicted in a photograph that may be presented to the patient showing the dropped stomach or the dropped colon, whichever it happens to be the fashion to treat. The whole subject of visceroptosis is so complex and bound up with the well-being of the abdominal autonomic nervous system that it is very difficult to believe that any form of operation fixing ptoses of this description is likely to be of permanent good; in fact, more harm than good has been done in many of these cases. It is a treatment that should only be carried out as a last resort. I am not yet convinced that the mere fact that the stomach or cæcum is lower than is considered normal is any sign of disease.

X ray examination after an opaque meal may confirm the opinion formed that the case is one of visceroptosis, and, thus, if other disease can be excluded, in my opinion unlikely to be helped by operative treatment. We must guard against a too ready acceptance of this diagnosis. The symptoms of the condition are so various that it is difficult to be certain, and I always remind myself that the fact that a patient has visceroptosis does not shelter him from other more serious abdominal disease. Gall-stones, which it frequently mimics, are not infrequently found, and I have known carcinoma of the stomach overlooked in these patients, as it probably would not have been had an opaque meal been given.

ROUTINE X RAY EXAMINATION IN A GASTRIC CASE.

The opaque meal should be given six hours before the patient is to be examined. The first point to note is the rate of passage of the meal through the intestinal canal, much more important above than below; normally the whole of it should have left the stomach in five hours and the head of the meal should be half-way across the transverse colon. Any residue in the stomach is evidence of gastric stasis and denotes some organic lesion, the nature of which may be at once apparent by definite signs indicating the presence of carcinoma or ulcer. But these may exist without stasis; in this case a residue may sometimes be seen in the crater of an ulcer. The actual time taken for the material to leave the body is not important; there are such wide variations in individuals of normal health. It is important, however, that there should be no undue delay in the small intestine; such delay is, however, rare. The question of intestinal stasis and its treatment is so involved and of so controversial a character that I could not profitably discuss it briefly. I would, however, remark that I believe it is rarely necessary to operate, and that the failures of operative treatment far exceed the successes.

After these points have been noted, if the diagnosis is not clear the patient is again given a meal, and the tone, peristalsis, and position of the stomach first investigated. Filling defects indicative of growth, niches or accessory pockets, direct evidence of ulceration, may be noted, or the presence of a bilocular or hour-glass stomach. In the organic type the two pouches are rarely seen filled simultaneously, the fluid not infrequently being held in the upper for a considerable time before passing into the lower. The spasmodic type in which the stomach is ꙍ-shaped does not necessarily or usually denote an ulcer.

of hysteria, and the chief agent in its removal, though the methods of persuasion and explanation—perhaps owing their success to an element of suggestion—find their advocates. Janet remains an uncompromising opponent of the theories of Freud, though his own valuable work on dissociation as an explanation of certain mental phenomena was their direct precursor.

Taking a general view of recent development, we find a great increase of interest in the mental processes underlying certain disorders. The full theory of psycho-analysis, regarded by its supporters as an almost revolutionary conception of human thought-processes, is far from being generally accepted; but the investigation of the clinical material so abundant as one of the results of war has led to the establishment of many of its principles. The application of these principles to the study and treatment of psycho-neuroses, psychoses, and some varieties of criminality is already demonstrated to be of great practical utility.

PUBLIC HEALTH IN BIHAR AND ORISSA, 1919.

THE statistics of births and deaths in this province for the year 1919 are calculated on the census population of 1911—namely, 34,489,846. On this basis the birth ratio was 30·4 per 1000, as compared with 37·5 in 1918, and 39·5 in the quinquennium 1914–18; and the death ratio 40·0, as compared with 56·7 and 37·0. This low birth ratio was due to high prices of food, the epidemic of influenza, and the absence of a large number of both sexes recruited for the tea districts. The birth-rate varied from 22·6 in Manbhum district, and 22·8 in the Santal Parganas, to 35·7 in Gaya, and 36·2 in Palamau. In this district the birth-rate was exactly the same as the death-rate. In Patna the birth ratio (31·7) was 0·6 above that from deaths. In every other district throughout the province the mortality ratio exceeded that for births. The highest mortality recorded in any district was that of 87·9 per 1000 in Angul, and the next highest that of Puri (70·3) on the sea coast. Both these districts are in Orissa. On the other hand, Darbhanga (in Tirhut) lost only 30·5, Singhbhum (in Chota Nagpur) 31·1, and Patna also 31·1 per 1000; the respective ratios for the preceding quinquennium having been 38·0, 26·7, and 42·0. Taking the province as a whole the highest mortality was recorded in January, due to a continuance of the influenza epidemic of the preceding year. The infantile mortality ratio (214·5 per 1000 births) was less than that of 1918 (231·2). It varied from 119·6 in Darbhanga to 607·6 in Angul. Lantern lectures on child welfare and maternity work were given in some of the large towns, and articles on the subject published in the local newspapers. As regards mortality among different classes of the population the ratio for Hindus (who form about four-fifths of the total) was 40·9, for Mohammedans 31·5, and for Christians 24·3 per 1000.

Fevers: Influenza, Cholera, Plague.

The rise in general mortality (40·0 per 1000) as compared with the preceding quinquennium (37·0) was recorded chiefly under the heading of "Fevers" (28·1 compared with 24·4), and was due to influenza. 970,055 deaths out of the total 1,379,657 were registered under "Fevers." In the district of Angul (in Orissa) the "fever" mortality was 63·1 per 1000, as compared with 26·6 in the quinquennium. In Saran and Patna the ratios were only 17·3 and 17·6 respectively. Dr. S. N. Tiwari, D.P.H., officiating sanitary commissioner, who presents this report,[1] remarks that "only 10,765 deaths were reported from influenza throughout the whole province. This is obviously wrong. . . . The presumption is that the high mortality returned under fevers, in the first few months of the year, was due to the declining epidemic of influenza of 1918, which continued in 1919." Anti-malarial operations and free distribution of quinine were continued. Cholera caused 101,727 deaths (3·0 per 1000, the same as in the quinquennium, 1914–18). It was epidemic in the Orissa division, where the deaths numbered 42,217 (8·2 per 1000), and particularly in the district of Puri (12·8 per 1000). This province has an especial importance in regard to cholera on account of its three much frequented pilgrimage shrines (Puri, Gaya, and Deoghar). Besides the ordinary prophylactic measures the experiment of inoculating cholera contacts with anti-cholera vaccine was tried at Hurhuru in Hazaribagh district; 635 persons were inoculated, 8 were attacked within 18 hours, and 19 from 2 to 10 days after inoculation. Excluding the 8 (who must have been already infected before inoculation) the incidence after one injection was 3·5 per cent., compared to 12·0 previous to inoculation, and the mortality 42 per cent., against 62 per cent. A second injection was given to 433 persons, and amongst these not a single case occurred; while of 121 not inoculated, 24 were attacked and 14 died—i.e., 19·0 per cent. in incidence and 58 per cent. case-mortality. Out of 178,031 coolies recruited by the Tea Districts Labour Association 131,606 were inoculated without any untoward effects. There was less plague (0·4 deaths per 1000, compared with 1·5 in 1918 and 1·2 in the quinquennium). The small town of Tikari, in Gaya district, had 39 deaths (6·6 per 1000). It is very satisfactory to learn that the Temple authorities at Puri gave willing coöperation in disinfecting wells inside the temple and the sacred tanks at the time of the Rathjathra festival in July, when cholera was epidemic in the surrounding districts. This was done, Dr. Tiwari believes, "for the first time in the history of sanitary arrangements at Puri," and is a testimony to the care and tact of the sanitary authorities concerned. Improvements have been carried out in the drainage and general sanitation of the "New Capital," Patna; and in this connexion Mr. J. G. Alexander, officiating sanitary engineer, states that the year under review has been one of marked activity. The use of flat graded sewers to take the effluent from small septic tanks "has been found to be thoroughly justified in practice," and "augurs well for the success of the whole scheme designed on this principle."

Hospitals and Dispensaries.

In his report on hospitals and dispensaries[2] in Bihar and Orissa for the years 1917–19 Lieut.-Colonel H. Austen Smith, C.I.E., Inspector-General of Civil Hospitals, points out that the provision of dispensaries, even if extended (as is now being done), only partly meets the needs of the population, leaving the rural areas to some extent untouched. He advocates the extended use of travelling dispensaries, adequately equipped, while the assistant surgeon in charge would give advice regarding sanitation, investigate local outbreaks of disease, and generally help the people from a medical point of view. There were 20 travelling dispensaries in the province at the beginning of the triennium and 15 at its close, the average number of patients treated yearly being 76,305. The total number of indoor patients treated in all classes of hospitals and dispensaries was 65,319 in 1919, compared with 50,625 in 1916; the corresponding numbers of out-patients were 3,603,077 and 3,412,520. A large increase occurred in the death-rate of dispensary in-patients (5·68 per cent. in 1917, 7·20 in 1918, and 10·06 in 1919), partly due to general unhealthiness in some districts, and partly to be explained by the fact that over 6 per cent. were moribund on admission. Malaria was excessively prevalent, the yearly average of cases treated at hospitals and dispensaries having been 765,435, compared with 609,001 in the preceding triennium. The benefits of quinine are appreciated by the people, the amounts realised from its sale (in the form of pills and influenza tablets) having been Rs. 23,531, Rs. 29,202, and Rs. 26,920 in the three years, 1917–19 respectively. Lieut.-Colonel J. C. S. Vaughan, I.M.S., has ascertained that *Vitex peduncularis* (a plant largely used in Madagascar in the treatment of malaria and blackwater fever) is indigenous in the Ranchi district, and in use by the aboriginal tribes as a remedy for these affections. Good results have been obtained by treatment with infusions of the leaf, and further investigations are in progress. There was an increase of 7503 patients treated for venereal disease in 1917–19 over the preceding triennial period. This was apparently due to the increased number of syphilitic patients attending, since treatment by novarsenobillon injections has been adopted with considerable success. An additional leper asylum has been established at Cuttack, with accommodation for 232 patients. Radium therapy for cancer, keloids, &c., was undertaken by Lieut.-Colonel Vaughan at Bhagalpur in 1913, and has been continued by him at Ranchi with good results. The demand for this treatment is rapidly increasing, and it is proposed to establish a radium institute at this station, which is conveniently near Calcutta, and has a suitable climate.

Sickness and Mortality in Jails.

From the report on the jails[3] in Bihar and Orissa, in 1919 it appears that 9026 prisoners were present at the beginning of the year, and that the total number of prisoners of all classes received was 59,835, being an increase of 17,270 on the corresponding figure for 1918. The total number under care was therefore 68,861, and the daily average prison population 9763, compared with 9199 in the year preceding. Major W. Gillitt, C.I.E., I.M.S., officiating inspector-general of prisons, states that this increase "was doubtless due to the prevalence of acute scarcity throughout the province," leading to an increase in offences against property. Crimes against the person have shown an appreciable decline. The number of females convicted was more than double that in the previous year. There was consequently over-the left epididymis, associated with a large hydrocele which I considered was syphilitic. There was no history of this disease and he had a perfectly healthy family. The X ray examination seemed to confirm the suspicion of carcinoma, but there was a positive Wassermann, and on anti-syphilitic treatment the tumour had disappeared completely in three weeks.

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[1] Annual Sanitary Report on the Province of Bihar and Orissa for 1919. By S. N. Tiwari, D.P.H., officiating sanitary commissioner, and J. G. Alexander, officiating sanitary engineer. Patna, 1920.

[2] Patna, 1920.

[3] Administration Report for 1919. Patna, 1920.

The surgery of the spleen is now becoming one of the commonplaces of life in the work of an abdominal surgeon. Many of its diseases are curable by operative means. Without blood examination we should be helpless. In splenic anæmia, with its leucopenia with relative increase in lymphocytes, the enlarged spleen can be removed at slight risk with the prospect of cure. The patient is saved from gradually increasing ill-health and the later development of Banti's disease. The change in the blood after splenectomy is rapid and striking; within a few weeks the white cell count has returned to normal. The blood changes in splenomegalic jaundice are typical before operation, and equally striking is its post-operative recovery.

By our blood examination we are warned away from the enlarged spleen of splenomedullary leukæmia with its 100 per cent. death-rate. In the cases of latent carcinoma of the stomach with marked anæmia, blood examination at once tells us that it is not "pernicious" and hence should raise the suspicion of carcinoma.

Post-Operative Investigations.

I have dealt only with some of the more recent methods; of the no less important examination of fluids and solid materials removed at operation you are all as familiar as I. As reminders I might mention that the discovery of typhoid bacilli when the biliary passages are drained, or in stones removed at operation, enables us to take precautions against infection. The report on the fluid evacuated from the cyst confirms our diagnosis of its pancreatic origin, and the finding of malignant cells in a portion of tissue removed at an exploration gives us the indication for correct treatment.

Special Lesions.

Of all simple gastric diseases amenable to surgical treatment chronic duodenal ulcer is the most common; fortunately it is also the most easily diagnosed and has the best prognosis. Ninety per cent. at least are cured by gastro-jejunostomy, and less than 2 per cent. are failures. In this disease hyperchlorhydria is the rule, except immediately after a hæmorrhage. In a fairly large experience I have only met with two cases in which gastric acidity was lower than normal, excluding those with enormously dilated stomachs due to cicatrisation of old ulcers, in whom chronic gastritis may diminish gastric acidity; even in these the acidity is usually above normal.

With the "typical" history and the hyperchlorhydria, the diagnosis is more certain than that of any other simple abdominal condition. Unfortunately, only about 75 per cent. of cases have this "typical" history; in others the symptoms may suggest gall-stones or chronic gastric ulcer. I have recently operated on two patients in one week, both of whom had normal gall-bladders drained elsewhere and the ulcer overlooked. It is, however, by no means unusual to get coexisting gall-bladder disease. Jaundice as the result of the presence of a chronic duodenal ulcer is a far from uncommon complication, but one that rapidly clears after gastro-jejunostomy.

The right-sided pain may suggest renal colic. Several patients have come under my care with this diagnosis, who proved on investigation and operation to have chronic duodenal ulcers. The test-meal here is of the greatest assistance. We must, however, bear in mind in anomalous cases that an oxalate calculus in the kidney may give rise to hyperchlorhydria and hunger pain. In doubtful cases I always have the urinary tract X rayed. X ray examination after an opaque meal adds nothing to our certainty of diagnosis in the majority of cases and is not necessary; a hypertonic stomach with rapid emptying is the rule, and it is unusual to find direct evidence of the ulcer.

Chronic Gastric Ulcer.

In chronic gastric ulcer the test-meal is unfortunately of no diagnostic value; as a rule the condition is little removed from normal. Occasionally in ulcers that are active there may be hyperchlorhydria; in others, particularly with hour-glass stomach, there may be an absence of free HCl and a low total acidity. These cases are often diagnosed as carcinoma. In chronic gastric ulcer in men, in whom it is so much more common, the history is often as diagnostic as in chronic duodenal ulcer, but in women it may present extraordinary difficulties and certainty may be impossible.

The only direct evidence is that which may be obtained by X ray examination. The large penetrating ulcer and the constricting ulcer should be well seen. The small chronic ulcer on the lesser curvature, about the size of a shilling, that has passed through all the coats of the stomach may be demonstrated but is often missed. In every anomalous upper abdominal case X ray examination should be carried out. It must not be allowed the final word, for at the present time we cannot say that if X ray fails to reveal it no ulcer is present. The evidence must be balanced with that obtained by other means, particular importance always being attached to the history. In this connexion it must be remembered that the stomach is very responsive to lesions elsewhere in the abdomen, themselves curable by operation but not capable of X ray demonstration.

Carcinoma of the Stomach.

We now pass to a consideration of carcinoma of the stomach. The death-rate from this disease is unjustifiably high; yet it is safe to say that the greater part of it is preventable, since more than half the cases arise from a pre-existing chronic gastric ulcer. Early and efficient treatment of this condition will save many lives. In carcinoma originating without previous history of gastric trouble, the percentage of cases operable when first seen by the surgeon is appallingly low. This is not, in most cases, the fault of the patient, but of the profession. The patient usually seeks advice early enough, but the symptoms are so slight as not to be generally recognised and thus valuable time is lost. The usual history is that medicine is given, then a change of air ordered, or pyorrhœa is diagnosed and more valuable time wasted until the inevitable tumour can be felt.

There is only one safe rule—every case of digestive discomfort arising in an adult who has previously been in good gastric health, must be looked upon with suspicion. The first thorough examination will find or eliminate obvious causes—teeth, overwork, alcohol, disease of the genito-urinary or nervous systems—and the patient will be weighed. It is not humanly possible to examine by test and bismuth meals every case of this nature, but in those in whom thorough examination has revealed nothing to account for the symptoms these investigations should be done at once. In the remainder, what we consider the cause should be dealt with and treatment adopted for a month. If at the end of that time the patient is not well, sooner if he is not improving, test and bismuth should be given. In this type it is usual to find that free HCl is lost early, and that the total acidity is low. I consider this sufficient evidence to justify operation—if we wait for absolute certainty it usually means death to the patient. If an adult previously in good health develops discomfort after food, for which no cause can be found, and the test-meal reveals an absence of free HCl and a low total acidity, operation should be carried out without delay. Occasionally in growths near the pylorus there is, in the early stages, a great increase of gastric acidity; to know this should be sufficient.

THE LANCET, OCTOBER 1ST, 1921.

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An Address

ON THE VALUE OF PATHOLOGICAL AND X RAY EXAMINATIONS IN ABDOMINAL SURGERY.

Delivered at the Dorset County Hospital, Dorchester, at the Opening of the new Pathological Department and X Ray and Electrical Rooms on Sept. 21st, 1921,

BY JAMES SHERREN, C.B.E., F.R.C.S. ENG.,
SURGEON TO THE LONDON HOSPITAL, ETC.

SURGERY has a fascination possessed by few occupations. By its aid diseases and injury, incurable by nature alone or aided by altering the constitution of the body fluids, can be eradicated or assisted in such a way that natural processes are enabled to bring about a cure. This work can be carried out so that its benefits are obvious to the naked eye; it is the one direct method we have to-day of combating disease which is already established in the body. Enthusiastic as we may be about operative methods of treatment, we all look forward to the day when the causes of surgical diseases are known with certainty and measures can be taken to prevent their development. It is, however, only with the help of departments such as it has been my privilege to open to-day that this can be brought about. The establishment of these in hospitals and the recognition of the invaluable aid they can give is one of the greatest advances in modern surgery.

Surgery has many branches; that dealing with the abdomen is the one in which I take the greatest interest and led to the title of this address. It would, perhaps, be an exaggeration to say that there is no such thing as abdominal medicine, but the abdomen is a region of the body that should be approached with a surgical mind. Many lives would be saved and much suffering avoided if this were done. How many cases of carcinoma of the stomach, to take a common example, have been told that there was nothing seriously wrong, finally to seek surgical aid when the condition was too far advanced to be benefited. How many tragedies does this not call to mind! I recently saw a gentleman with an enormous inoperable mass in the abdomen who, on retiring from business nine months previously, developed suspicious gastric symptoms. His medical attendant wished him to see a surgeon; the patient's friends said "No—he will surely be operated on." He was diagnosed flatulent dyspepsia—allowed to go for a trip round the world and returned inoperable. Never a month passes but I see cases of this nature.

The surgeon is the only individual who has the correlated knowledge of symptoms, signs, and the actual condition of parts as seen during life. This clinical knowledge cannot be possessed by the physician. We have too often heard it said of patients —"he was afraid to go to a surgeon as he would be certain to operate." The public seem to think that surgery is synonymous with operating; this fallacy ought to be seriously combated. The modern surgeon is not an operating machine, although if he has to bring this art into play he should have a rapid and sure technique with the power of quick decision when faced with the unexpected.

THE STATUS OF A HOSPITAL DEPENDENT ON ITS SPECIAL DEPARTMENTS.

One judges of the value of the work done by a hospital, not by the beauty of its wards or the up-to-date nature of its operating theatres, valuable as these are in treatment, but by the special departments, particularly those for pathological and X ray investigation, and the use that is made of them. Without the facilities given by these, not only can there be no life in our work but no progress; the dry bones of surgery can only live when breathed upon by knowledge gained from such investigations.

Surgery is now so wide that no one individual can thoroughly master the whole of it and be equally at home in the cavity of the skull and in the abdomen; of those special branches of medicine dealing with the departments of which I have been speaking still less are we able to do the work ourselves even had we the necessary training. Team work is inevitable. It is, of course, impossible to have a team without a head; a cricket team without a captain stands as little chance of winning matches as a ship in which all men are equal has of ever reaching its destination. The only individual who possesses the necessary knowledge is the clinician; he alone knows the nature of the symptoms and realises, perhaps dimly, their meaning, and as a result of that valuable asset, clinical experience, he can determine the nature of the investigations required for diagnosis and of the special forms of treatment that may be requisite. His must be the guiding hand.

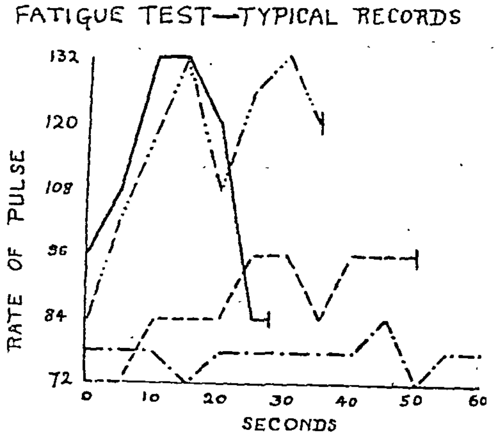
Before discussing the great value of these methods I should like to emphasise that, in the abdomen, the history as given by the patient must ever be the most important factor in diagnosis, which would, in most cases, be impossible on pathological and X ray investigation alone. In some branches of surgery the history may not be so important to diagnosis. X ray examination reveals the fracture and its nature; microscopic examination of a portion of an ulcer of the tongue tells us that we are dealing with malignant disease. But in investigating abdominal disease we cannot obtain such direct evidence, and these methods have to be fitted in with the history which is usually the last court of appeal. The functions of a pathological laboratory are manifold; not only have histological investigations to be carried out, often at short notice, but bacteriological and chemical. The clinical pathologist needs to be familiar with every method of investigation.

SPECIAL INVESTIGATIONS IN ACUTE CASES.

In acute abdominal emergencies no time should ever be wasted. A careful history must always be taken; this, with the symptoms and physical signs and examination of the urine, which ought never to be neglected, must be our guide. After all our reliance must be on ourselves. To await some special form of investigation while peritoneal infection or damage to intestine is possibly increasing is quite unjustifiable. In the less acute cases we may obtain much help; where no great danger is anticipated by delay every endeavour should be made to come to an accurate diagnosis before the abdomen is opened. For example, acute tuberculous peritonitis may sometimes lead to the suspicion of typhoid, a disease of protean types. Our laboratory colleague at once is able to tell us the blood reaction and its degree.

In the diagnosis of complications arising during recovery after operation we may get much help. To take, as an example, the disease of which there can be no doubt that surgery in the first few hours is the only justifiable treatment—appendicitis. Unfortunately we do not get all as early as this, and it is these late cases that often tax our skill to the utmost if we are to bring them to a successful termination. All may not be going well, there is a rise of temperature perhaps to 100° each night, and rectal examination and examination of the chest does not reveal the cause; a blood count will give us the warning of the formation of a residual abscess. Again, when there is suspicious dullness at the right base without displacement of the heart, X ray examination of the chest may show us the situation of the fluid—above or below the diaphragm. If below, we know from experience that it is certainly pus and also the great danger of delay—in these cases following appendicitis. I am a whole-hearted sceptic as to the value of vaccine treatment, in acute abdominal conditions at any rate. I have never known it do good so shall not discuss it.

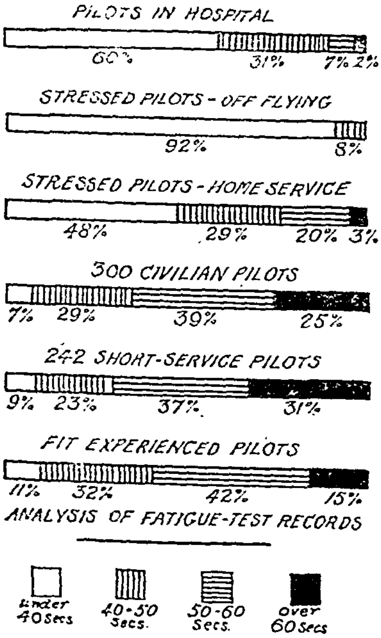
FIG. 3.



characteristic, and in all cases it is associated with marked flushing of the face and engorgement of the jugular veins, conditions which are not marked in the fit man. These forms of responses are charted in Fig. 3.

What exactly the test indicates it would be premature to try and say. More work is required on the exact physiological processes which are taking place. But a sufficient number of tests have been made as to the application to physical fitness and unfitness. The first standard for fitness for the test was set, as with the standards for other tests, by the examination of fit flying officers chosen by the executive, the standard for the tired and broken-down officer being similarly worked out. The remarks which have been made with regard to the breath-holding test—as to the test being in part a measure of the lung capacity for oxygen, as well as of the sensitivity of the subject to diminishing oxygen-tension—also hold good in respect of this test. So, too, does the comment as to the value of such tests in regard to the resolution of the subject. It is to be observed, however, that no matter how resolute a really unfit man may be, he will not be able to support the mercury for the time that a fit man does. Some figures concerning the application of the fatigue test have been given me by Lieut.-Colonel A. P. Bowdler, and they are charted in Fig. 4. It will be seen that, as with the breath-holding, pilots who may be said to represent the survival of the fittest—namely, successful demobilised flying officers, who wish to be granted short service commissions and other pilots desirous of continuing flying in commercial aviation—reach high standards on this test, in marked contrast to pilots who are on limited flying through stress or off flying altogether. It will be seen that, as with the breath-holding, the population of a hospital for flying patients has, on an average, a very poor capacity in this test. This is confirmed by the examination of over 400 for the records of both this and the breath-holding test.

FIG. 4.



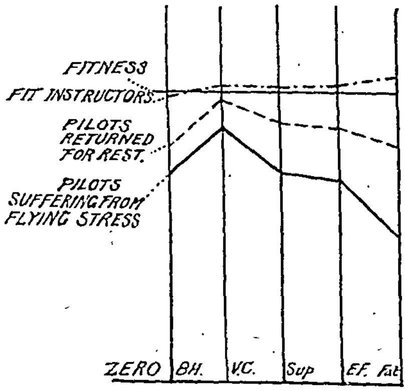
I will now give a few examples of the value of the tests considered as a whole; in assessing the physical fitness of the individual it must be remembered that in practice they are also employed in conjunction with other tests for circulatory efficiency and nervous stability. The normal standards taken for the tests may be summarised as follows: Breath-holding, 70 sec.; vital capacity, 4000 c.cm. (approx.);† supplemental air, 1600 c.cm. (approx.); expiratory force, 110 mm. Hg; 40 mm. Hg test, 50 sec. The falling away in efficiency due to flying strain may be shown shortly in the following table:—

TABLE III.

—	Breath holding in secs.	Vital capacity c.cm.	Supplemental air c.cm.	Expiratory force mm. Hg.	Fatigue in secs.
Fit instructors	69	4060	1620	112	52
Pilots returned for rest ..	57	3900	1400	95	40
Pilots broken down through flying strain	49	3480	1130	74	25

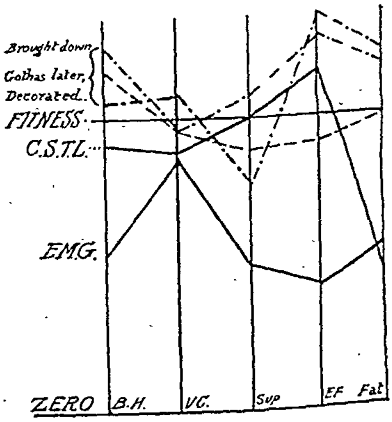
These are graphically recorded in Fig. 5; the value of the tests in overhauling an individual is shown in the results, which were obtained quite early during the time of working out the standards for the tests and of testing their possible value.

FIG. 5.



Graph showing how, in various respects, groups of pilots were below the normal line. B.H. = Breath holding. V.C. = Vital capacity. Sup. = Supplemental air. E.F. = expiratory force. Fat. = Fatigue.

FIG. 6.



Graph illustrating Table V.

The results in Table IV. were obtained at one of the first aerodromes visited for the examination of efficient flying officers. Through a misunderstanding all instructors were sent, and not the fit ones only. It will be seen from the results that the fit officers are easily distinguished from those who were either unfit for flying on medical grounds or who had been placed on limited flying or taken off flying for a rest by the executive.

Table V. shows results obtained at a home defence aerodrome where I had gone to obtain results from fit officers. On arrival there I was told that one

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† These experiments were made before Dreyer's tables were available.

I have very briefly sketched out what should be looked for in the routine X ray examination of a gastric case. Before dealing with its value *in diagnosis in the various gastric lesions* I must speak shortly of its utility in diseases of the colon.

VALUE OF X RAY INVESTIGATION IN DISEASES OF THE COLON

Except in the unusual cases in which we wish to estimate the stay of intestinal contents in this part *of the alimentary canal, the opaque material* is usually and in my opinion, better administered by enema. *We are able to demonstrate angulations, enlarge*ments, and the changes caused by *diverticulitis all* of the utmost importance. In the diagnosis of carcinoma it may be of the greatest help. Every suspicious case should be so investigated by X *rays* as a routine. Here, again, I would warn against accepting a negative finding if it does not agree with the *clinical diagnosis*. The possibility of carcinoma of the lower bowel should *never* be dismissed until examination with the sigmoidoscope has been carried out.

Malignant disease of the colon is very amenable to surgical treatment and the prognosis is good; yet *how seldom do we see cases of this* disease when they are really operable, not because the condition does *not produce symptoms either pain or diarrhœa* but because so little attention was paid to them. Every *complaint* of abdominal pain or discomfort or of anything abnormal should call for investigation by *all the means at* our disposal. This is one of the reasons for the statement at the beginning of my *address*—all abdominal cases should be considered surgically.

The early *symptoms of carcinoma of the colon* are usually *irregularity of the bowels or painless diarrhœa*. Sometimes there is colicky pain—general or it may be in the right iliac fossa. This site for the pain has caused many errors in diagnosis; for example, I was asked to operate on a patient for intestinal obstruction on his landing from New York *after a recent* operation in Canada for appendicitis. On seeing the patient I found that the appendix had been removed for pain confined to the right iliac fossa, due to carcinoma of the pelvic colon. This is by no means an uncommon error. Much more generally recognised is the *difficulty in diagnosis between* certain cases of carcinoma *of the cæcum and a mass due to disease* of the appendix. In both there may have been attacks of colicky *pain in the* mid line. I have known mistakes made in both directions. Usually the history *and physical* examination is sufficient to enable the diagnosis to be made; X ray *examination after an opaque enema* usually *clinches* it *at once*, revealing in the one the irregular filling *defect, in the other the narrowing of the cæcum* from external pressure.

Left-sided pain is rarely a symptom of carcinoma of the pelvic colon; it is much more common in *disease of the gall-bladder* and stomach. I have had several patients with gall-stones *sent to me as carcinoma of sigmoid*. Adult patients with looseness of the bowels must be seriously investigated and X ray examination is one of the most valuable methods and should never be neglected.

The help given by the investigation of the stools not only in *inflammatory disease of the colon but in* pancreatic and obstructive jaundice is often of the *greatest use in diagnosis and treatment*.

PATHOLOGICAL CHEMISTRY OF THE STOMACH

It is no exaggeration to say *that without access* to a pathological *laboratory* efficient abdominal surgery is *impossible*. In dealing with diseases of the stomach chemical pathology is of great assistance. I attach importance to the examination of the gastric contents *after a test meal*, both in diagnosis and prognosis. I have been in the habit of employing *the Ewald test breakfast*. With regard to the fractional test meal much work is still being done *and valuable physiological information obtained, but for surgical work it* has at present no advantage over the simpler method of examining the gastric contents one hour after the meal. Some years must elapse before sufficient observations, checked by operative investigation, have given data to render it so satisfactory a *guide*.

Certain precautions are necessary; the meal must be examined in the same *laboratory under the same* staff. All mine have been done by Dr. P. N. Panton in the manner which he described with Dr. H. L. Tidy. It has its greatest use in diagnosis in chronic duodenal ulcer, and certain cases of carcinoma, in prognosis after gastric operations.

Considerable discussion has taken place with regard *to the action of gastro-jejunostomy in bringing about* the healing of an ulcer and in preventing the formation *of other chronic ulcers elsewhere*. I have shown by numerous specimens, obtained post mortem and by examination at *operations performed* for other conditions up to 11 years after, that chronic ulcers of the stomach and duodenum if they are "free" will heal and remain healed after a gastro-jejunostomy correctly performed. Also that the formation of ulcers in the region of the anastomosis is dependent upon gastric acidity. The operation is not entirely or in my opinion chiefly mechanical; the change it produces in the chemistry of the stomach *is of great importance*. *By the new opening it allows* rapid emptying of the stomach and counteracts pyloric spasm but before long food leaves again by the pylorus with no ill effect. It should immediately abolish the free HCl and diminish by from half to two-thirds the total *gastric acidity*. *This it does in at least 90 per cent of cases and in these success is* certain; no *fresh ulceration can take place* under these circumstances unless unabsorbable material *has been used*. This lowered acidity is permanent; at least I have known it persist for 11 years after gastro-jejunostomy.

There are many interesting details with regard to *what prevents*, in some few cases, lowered gastric acidity after gastro-jejunostomy. There is one very fertile cause that I must mention—pyloric exclusion. No attempt should ever be made to bring this about. If ulcers in the pyloric region have to be directly *dealt with it should be in such a manner that the* pylorus is *enlarged and not excluded*. Every patient *upon whom gastro-jejunostomy* has been carried out for the cure of ulcer should have *a second test meal* 11 days after operation and if gastric acidity is not lowered although the original ulcer will heal fresh ulceration in the region of the anastomosis *may occur* unless medical measures can be *found which will* bring about the *desired change*. Test meals are, *therefore, of great importance in prognosis*.

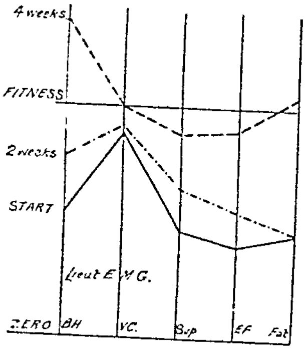
BLOOD EXAMINATION

*I must deal briefly with one other side of patho*logical work—blood examination. The abdominal *crises of tabes have led many surgeons astray*, and many gastro-jejunostomies were done for this *condition when the indications for its performance* were less sure than now. Still it does present *puzzling features and the only safe rule is always to* suspect. Examination *of the central nervous system* should be part of the routine in investigating every chronic abdominal case. A *Wassermann* reaction and examination of cerebro-spinal fluid may be necessary to confirm our suspicions. Again we are sometimes puzzled, and have opened an abdomen *for a mass in the gall-bladder region with symptoms suspicious of gall-stones* which proved to be a gumma, when the diagnosis would have been clear had we been thinking of this condition and had a Wassermann done.

Syphilitic disease *of the stomach* should be kept in mind. Last summer a patient *came to* England *from abroad to consult me* with regard to the possibility of removal of a large tumour of the stomach *thought to be malignant*. On examining there was a gastric tumour with all the characteristics *of a* carcinoma of that organ. I also found a swelling in decorated for bringing down Gothas which were raiding London. Fig. 6 illustrates Table V.

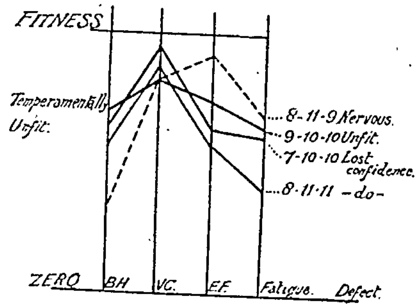
As showing the value of treatment, rest, and open-air exercise, I give (3a and 6b and c) the results obtained some time later upon the non-efficient officers. The progress of recovery of physical efficiency of Lieutenant E. M. G. is seen in the graph (Fig. 7). Although he recovered to this extent physically it is worth recording that he continued to suffer for a time from "anxiety neurosis." As regards the value of the test in assessing physical efficiency, it is interesting to compare the result in these cases with that of R. G. N. (Table VA.), who, although advised to give up flying for the time, asked to be allowed to continue to fly on limited flying. At the end of six weeks he returned stating that he felt that he could not continue flying any longer and that he would be glad to get away from it for a time.

FIG. 7.



Other examples could be given of similar cases which were met with during the period of investigation of the tests. That such a condition is not necessarily due to the length of time of flying indulged in is well seen in Table VI. which is taken from the results of over 300 officers or cadets examined during their period of training. All were found unsuitable for further flying, but it is noticeable that those who had developed nerves or lacked confidence and did not wish to continue flying present a marked contrast in physical efficiency to those who had no air sense, who were heavy on controls, or who made bad landings, and were disappointed at being "stood off" from flying.

FIG. 8.



Note.—The figures in the "fatigue" column in this and the following graph indicate variation in pulse-rate for five seconds ($\frac{1}{12}$ min.) during the fatigue test—e.g., 8–11–9 means that the pulse in five-second periods started at 96 per minute, went up during the test to 132, and fell again to 108.

FIG. 9.

DEPOT CADETS.

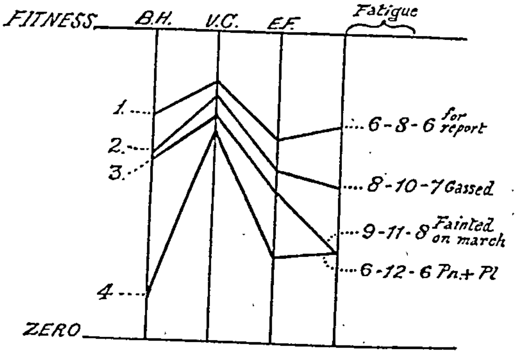


TABLE VIII.

Initials.	Age.	Breath held in secs.	Vital capacity in c.cm.	Supplemental air in c.cm.	Expiratory force in mm. Hg.	Secs. of sustaining 40 mm. Hg by blowing.
G. E. B.	17 11/12	55	4200	1300	80	42
W. D. H.	17 11/12	84	4300	1800	60	25
J. McK.	18	53	3700	1700	55	32
H. G. R.	18	66	3800	1650	130	30
H. B.	17 11/12	53	2800	1000	60	25
R. R. S. A. ..	18	48	3600	1650	70	27
W. M.	17 11/12	44	3400	1600	120	35
R. C. T.	18	85	2750	900	100	28
F. R.	19	50	3100	1000	60	20
D. H.	19	63	—	—	60	40
C. T. M. H. ..	19	42	3800	—	40	33
F. W. C.	22	61	4100	—	100	30
F. C. B.	23 2/12	63	4300	1800	60	35
F. R. B. W. ..	21 6/12	55	4100	1700	80	37
C. T. Y.	18 2/12	48	3800	1700	100	35

The falling away in efficiency of four of these subjects is shown in the graph (Fig. 8).

A similar condition of inefficiency may arise in cadets who have never been near an aerodrome, but who either have not sufficient physical stamina for military training or who have been debilitated by illness. The figures in Table VII. are taken from the records of 54 cadets reported upon before being posted to an aerodrome.

Cases 1–4 are graphically represented in Fig. 9 in such a manner that the falling away from standard in these tests is well demonstrated.

Finally, as showing that a similar condition of bodily inefficiency may be found among individuals who are deemed more or less normal members of the community, I give the results obtained during the period of experiment upon the tests by the examination of a number of individuals (mostly youths of 17 to 19 years) who, being conscripted for military service during the war, presented themselves for an opinion as to their suitability for aviation. (Table VIII.)

Candidates 1 to 11 had already been rejected by the medical examiners before the tests were taken. In candidates 12 to 15 an opinion was asked for by the assessor, who, although he did not feel the candidates were suitable, was unable to give an exact reason for this opinion. It is seen that in these four cases the tests afforded valuable help in indicating the physical inefficiency of the subjects in question.

COVENTRY AND WARWICKSHIRE HOSPITAL.—On Sept. 21st the general committee of the Coventry and Warwickshire Hospital, faced with a bank overdraft of £36,216 and an average working loss of £1000 a month, decided that in view of the present decline in income drastic economic action was necessary. The only possible course appeared to be the closing down of one block of the hospital, known as the White Wards, and this was reluctantly agreed upon. The number of beds will be reduced by 66, and a considerable saving will be effected in expenditure on account of staff and overhead charges.

I have never had an opportunity of seeing the result of X ray examination in an early case; at the time I most often see the patients the diagnosis is so obvious that it is usually a waste of time to have this done. It has been stated that X ray examination is useful in judging of the operability of a case of carcinoma of the stomach. This may be so in a few instances, but had I acted on this assumption many patients who are well to-day would have been dead or leading miserable lives as invalids. Never defer operation because it is the opinion of the X ray colleague that no growth is present or the case is inoperable. I have several times known cases of simple chronic ulcer returned from X ray examination with the definite diagnosis of inoperable malignant growth, and cases of carcinoma with the report "no evidence of any gastric lesion." A case should only be judged inoperable before opening the abdomen if enlarged glands are present above the left clavicle, or if rectal examination, which should be a routine in every abdominal case, reveals secondary deposits in the pelvis.

In the more common type of carcinoma, that following a many years history of chronic ulcer, the test-meal is of no value; the result is the same as that found in chronic ulcer without this complication. In the same way the opaque meal may not help—simply showing the crater of an ulcer or being returned as negative. This is as we should expect when we consider the difficulty even after the abdomen has been opened; in some cases it is only on microscopical examination that the diagnosis is made. It is the history that usually makes one suspicious that this complication may have occurred. After a period of years in which the patient has had attacks of pain at a regular hour after food, lasting meal after meal, day after day for weeks, with or without occasional vomiting, interspersed with periods of perfect or almost perfect digestive health lasting for months, an attack comes which, instead of passing away in the usual time, continues, or the symptoms alter, the pain becoming constant. Change in the nature of the symptoms, or their continuance, points to some complication having occurred, either adhesion to and erosion of neighbouring organs, particularly the pancreas, or the development of a stricture, hour-glass stomach, or the onset of carcinoma. X ray examination may help, but symptoms such as these mean that a long delayed and long necessary operation must be done.

Gall-stones.

Little help can be obtained in the diagnosis of gall-stones from X ray or pathological investigations. It may be possible in the future to say as the result of X ray examination that no stones are present, but this, although of value, would not exclude serious disease producing biliary colic. Many anomalous symptoms owe their origin to cholelithiasis; I have already mentioned attacks of pain in the left iliac fossa. I have published several cases in which the symptoms of carcinoma of the stomach were mimicked with exactitude; in gall-stones low gastric acidity is the rule and absence of free HCl common. Occasionally the regularity of the pain is such that the inevitable diagnosis is chronic gastric or duodenal ulcer. When we remember how frequently gall-stones are found complicating other abdominal diseases, the problem becomes more difficult. It holds a lesson for us all—never be content with the lesion found: if the condition of the patient will permit the whole abdomen must be examined. This warning is particularly necessary in dealing with disease of the appendix. No term has been more abused than chronic appendicitis; it has been made to cover many sins other than its own. Appendicular dyspepsia is a very real condition—diagnosable usually only by exclusion—and none of its symptoms are referable to the right iliac fossa. I teach at hospital that it is legitimate to diagnose appendix dyspepsia but not to act upon it. By this I mean that one should not in these cases remove the appendix through a small incision in the right iliac fossa: the whole abdomen should be explored through a right paramedian incision in which the rectus is pulled out. By this method the size of the incision is of no moment in the strength of the abdominal wall after operation; the muscle falls back into its place and ventral hernia is impossible.

CONCLUSION.

I am afraid my remarks have been rambling, and for this I must apologise. I hope I have been able to point out a few of the great advantages of such departments as I have opened to-day in one small branch of surgery. Their utility, not only to the hospital, but to the whole district served is so great as to be inestimable.

The Milroy Lectures

ON

RESPIRATORY EFFICIENCY IN RELATION TO HEALTH AND DISEASE.

Delivered before the Royal College of Physicians of London

BY MARTIN FLACK, C.B.E., M.B., B.CH OXON.,
WING COMMANDER, ROYAL AIR FORCE MEDICAL SERVICE.

LECTURE II.—(*Concluded*).*

SPECIAL ROUTINE TESTS.

The Endurance or "Fatigue" Test.

THE test of sustaining 40 mm. of mercury with the breath held arose out of an endeavour to see if any noticeable fatigue could be elicited by getting the subject to blow every few seconds the mercury as high as possible, thereby getting a fatigue curve. This proved to be too wearisome, so the idea came to hold the mercury at a given height as long as possible. The height of 40 mm. was fixed upon, partly because certain subjects could not blow the mercury much above this height, but also because it was thought that this pressure, besides throwing a certain amount of work upon the expiratory musculature, would also cause a distinct but not unbearable or dangerous resistance to the circulatory through the lungs, thereby possibly giving value to the test as throwing light upon the circulatory condition of the subject. The idea of counting the pulse arose from this point of view, and it has proved to be a valuable adjunct to the test. The subject has no control over the behaviour of his pulse, and it has been found that the fit man differs very greatly from the unfit man in this respect. In the fit man the rate of the pulse every five seconds is not materially affected during the time that the mercury is sustained; in the slightly less fit the pulse rises gradually in rate until just before the end. The average time for the fit individual is 50 to 60 seconds. In a man probably unfit for flying, on the other hand, the pulse is immediately increased in rate and may stay so, with variations due mainly to error in counting by five seconds, as, for example, from seven per second before the test to 10, 11, 10, 11, 10, 9, 10 in five-second periods during the test. This type of response, however, is certainly not so definitely an expression of unfitness as one in which, after a transitory period of quickening, the pulse rapidly falls to the initial rate or even below. This type of response has been found to be associated with the most marked cases of flying strain. The length of time during which the mercury is supported is short, 15 to 25 seconds, and in that time the pulse-rate, in five-second periods, may vary from 96 per minute to 144 or 156 per minute and fall again to 72. Such cardio-motor instability is very lower fragments of the tibia and fibula are carried back with the displaced foot, both fragments forming a large open angle with their corresponding shafts. (See Fig. 3.)

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* Lecture I. and the first part of Lecture II. were published in THE LANCET of Sept. 17th and 24th respectively. Lecture III. will appear in a coming issue.

Disastrous Third Degree.

This last is the fracture to which I now wish to call particular attention. My experience of the treatment of this fracture, of which very many cases have passed through my hands since I first recognised it early in my career, is that it is very often impossible to replace and retain the fragments in accurate apposition by means of manipulation and splinting alone. That this is certainly the experience of others is fair to assume from the conditions presented by those cases which have come under my observation some months after treatment. As far as I could gather from the history of these patients, they were regarded as ordinary examples of Pott's fracture, and were all subjected to the process of so-called "setting" which entailed the administration of an anæsthetic. The limb was then put up in a splint and a perfect result was promised. Some were radiographed subsequently, but no mention was made to the patient of any residual displacement, if it was observed, and certainly no effort was made to rectify it.

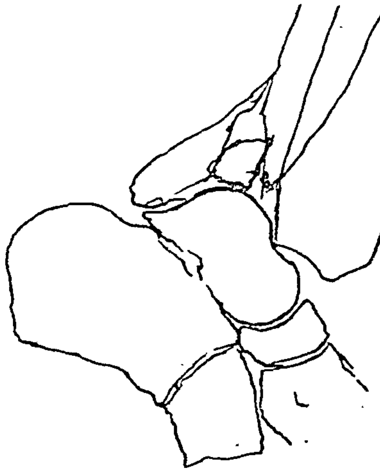

FIG. 3 represents diagrammatically the relations of the broken bones to the foot at time of receipt of the injury.

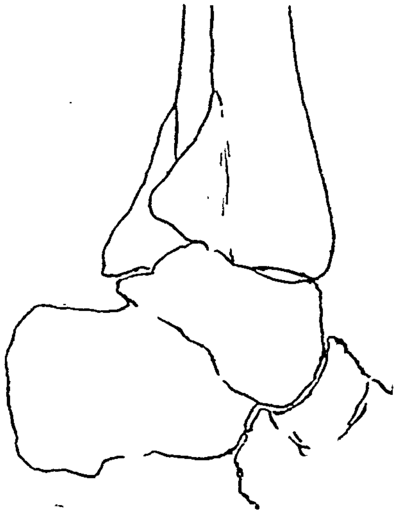

FIG. 4 shows the relationship of the bones to the foot after several months have elapsed since the receipt of the injury. The front of the tibia has formed a new joint with the upper aspect of the head of the astragalus, while the fragments of the tibia and fibula have blended together to form an irregular mass which no longer permits of free flexion and extension of the ankle-joint. The articular surface of the astragalus has also undergone extensive changes in form.

It is unfortunate that once the fragments of the tibia and fibula have united in their displaced position the possibility of separating the tibial fragment and of restoring it to its normal position is very small. This is due to the fact that the end of the tibia has formed for itself a new joint with the upper surface of the neck of the astragalus and the adjacent portion of the tibial facet on the astragalus, while the fibular and tibial fragments, having united with the shafts, articulate with the rest of the facet on the astragalus—which has become much altered in form—with the process of bone behind it. (See Fig. 4.)

In the other varieties of adduction and abduction fractures it is usually possible by operation to replace the inner malleolar and fibular fragments in their normal position and to restore the function of the joint. In this particular fracture the presence of the displaced tibial fragment forms what is practically an insuperable obstacle.

Surgeons have no valid excuse for the very disastrous results that follow these methods of treatment, since it is possible to obtain excellent radiograms in most places in the country. What has puzzled me is that none of these unfortunate patients had resorted to the law courts, although the failure of the surgeon to perform his duty is only too obvious to the meanest intelligence, in view of the facility with which radiograms can be obtained by patients in the present day.

Treatment.

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Much of the difficulty and failure which the surgeon experiences in the treatment of fractures is due to the fact that while in his preliminary studies he is called upon to acquire a transitory knowledge of much that is relatively useless to him in the efficient performance of his profession, the fundamental principles of mechanics upon which a knowledge of the function of the skeleton and soft parts and of the treatment of the variations they undergo from injury or disease is absolutely essential, are excluded from his education. The fault lies not with the surgeon but with the teacher.

NUTRITION AND GROWTH ON DIETS DEVOID OF TRUE FATS.

BY J. C. DRUMMOND, D.Sc., F.I.C.,

AND

KATHARINE H. COWARD, M.Sc.,

BEIT MEMORIAL RESEARCH FELLOW.

(*From the Biochemical Laboratories, Institute of Physiology, University College, London.*)

THE question as to whether fats are or are not necessary components of the diet of higher animals has always presented great interest to physiologists, but in spite of much research work and many theories no definite answer has as yet been given. As was pointed out by Drummond (1919) no solution of this problem was possible until it had been found practicable to separate the so-called fat-soluble vitamin from the true fats, because experiments of long duration—and experiments only extending over a period of a few days are useless in this study—in which diets nearly or wholly devoid of fats have been given, have of necessity entailed the absence of adequate amounts officer had developed "nerves" and had to be taken off, and that another was tired and was landing badly and was probably unfit to fly. I asked that they should be sent in with the other officers. From the results obtained the opinion was offered that No. 6 was the officer who had broken down, this on account of his poor performance in all the tests. In this case the small supplemental air is especially noticeable. No. 6, as the 40 mm. Hg test well shows, was the officer showing signs of early stress. With regard to the other officers, who were all very fit, it is interesting to record that three were subsequently

TABLE IV.

Initials.	Age.	No. of hours flying.	Maximum height.	Average height.	Breath held in secs.	Vital capacity.	Supplemental air in c.cm.	Expiratory force in mm. Hg.	Secs. of sustaining 40 mm. Hg by blowing.	Remarks.
			Thousands of feet.							
H.	25	400	13	4	68	4400	—	150	58	Fit.
S.	23	150	15	5	71	4100	1900	100	55	,,
H.	21	70	11	4	64	3850	—	90	53	,,
D.	26	750	11	3	46	3600	1900	100	51	,,
H.	32	650	15·5	2	105	5020	1500	180	48	,,
M. C. ..	26	200	10	2	46	4000	1500	70	35	Unfit general service.*
S.	21	500	18	5	52	3700	1000	80	27	"Flying tired."†
P.	31	150	18	10	50	3700	700	80	27	Resting after high flying in France.
C.	24	150	18	3	65	4100	1200	65	25	Unfit general service.‡

* Gallipoli, enteric, dysentery, jaundice. † Now gets very tired after flying.
‡ Dysentery, enteric, jaundice; "flying tired."

TABLE V.

No. and initials.	Age.	No. of hours flying.	Maximum height.	Average height.	Breath held in secs.	Vital capacity in c.cm.	Supplemental air in c.cm.	Expiratory force in mm. Hg.	Secs. of sustaining 40 mm. Hg by blowing.
			Thousands of feet.						
1. A. J. Q. B.	24 8/12	500	20	10	85	3800	1400	100	30
2. G. C. B. ..	24 11/12	220	17	4	92	3800	1700	140	57
3a. C. S. T. L.	21 6/12	125 o 200 p	22	13	63	3550	1600	125	23
*b.					83	4400	1600	140	45
4. L. F. L. ..	19 6/12	95	17·5	6	70	4200	1800	125	53
5. R. G. H. A.	21 1/12	120 o 125 p	16	5	85	4800	1800	90	68
6a. E. M. G. ..	26	150 o 150 p	16·5	5	37	3600	750	45	23
†b.					55	3700	1000	60	23
‡c.					95	4000	1400	100	52
7. H. A. W. ..	19 2/12	120	19	10	73	4300	1200	145	59

TABLE VA.

R. G. N. ..	22 11/12	1500	23	10	40 42	4100 4100	1750 1700	60 60	28 25§

* Two months later. † After two weeks rest. ‡ After four weeks rest. § Six weeks later after limited flying.

TABLE VI.

Initials.	Hours flown.	Breath held in secs.	Expiratory force in mm. Hg.	40 mm. Hg test.	Pulse response during test.	Official report.
R. H. W. ..	12 dual, 2 solo	40	60	20	96–132	No confidence.
C. S. W. ..	13 dual	45	70	30	84–120	Has lost confidence.
F. B. C. ..	4·13 ms. dual	25	100	33	96–132–108	Too nervous.
S. R. H. ..	6·20 ms. dual 15 ms. solo	35	60	25	84–132	Temperamentally unfit.
N. D. L. ..	1½ dual	37	80	23	108–120–72	Does not possess necessary confidence.
F. V. B. ..	5 dual	45	70	20	72–132–84	Extremely nervous.
J. L. A. ..	15·50 ms. dual	70	110	65	84–96–84	Erratic engine running.
A. W. G. ..	11·25 ms. dual	65	100	60	72–96–108	Cannot land.
D. W. P. ..	13 dual	85	100	56	72–108	No balance sense.
A. G. F. ..	18 dual	68	110	50	72–84–72	Bad landings.
G. W. W. ..	19·50 ms. dual	95	100	45	84–108	Heavy on controls.
A. C. B. ..	10 dual	65	100	68	72–108	Slow to learn, bad turns.
	Fitness average =	70	110	52	—	—

TABLE VII.

Initials.	Breath held in secs.	Expiratory force.	40 mm. Hg test.	Pulse response during test.	Remarks.
S. W. G. ..	50	70	35	72–96–72	Sent for report on physical fitness. Smoking too much.
G. W. ..	42	60	25	96–120–84	Gassed 1915; short of breath on exertion.
E. A. R. ..	40	50	15	108–132–96	Fainted while marching.
W. H. C.	10*	30	15	72–144–72	Dizziness on exertion. History of pneumonia and pleurisy in the army.
C. J. ..	43†	110	25	84–108	Breathlessness after influenza and pneumonia.
G. G. O. C.	42	60	15	96–108–84	Vital capacity 1750; general debility; always ill at school.
W. G. W. ..	30	70	20	84–108–72	Blown up by shell 1915. Now (1918) dizzy and headaches in the morning.
T. G. H. ..	60	80	35‡	84–108–96	Neurasthenia.
C. J. B. R. ..	40	70	15	72–96	Breathless on exertion. Pneumonia three months ago.
R. H. W. ..	25	80	20	108–132–84	"Short of breath." Gastritis. Had "cold" at the time of examination.

* "Made him fuzzy." † "Dizzy." ‡ "Head swimming."

lower fragments of the tibia and fibula are carried back with the displaced foot, both fragments forming a large open angle with their corresponding shafts. (See Fig. 3.)

Disastrous Third Degree.

This last is the fracture to which I now wish to call particular attention. My experience of the treatment of this fracture, of which very many cases have passed through my hands since I first recognised it early in my career, is that it is very often impossible to replace and retain the fragments in accurate apposition by means of manipulation and splinting alone. That this is certainly the experience of others is fair to assume from the conditions presented by those cases which have come under my observation some months after treatment. As far as I could gather from the history of these patients, they were regarded as ordinary examples of Pott's fracture, and were all subjected to the process of so-called "setting" which entailed the administration of an anæsthetic. The limb was then put up in a splint and a perfect result was promised. Some were radiographed subsequently, but no mention was made to the patient of any residual displacement, if it was observed, and certainly no effort was made to rectify it.

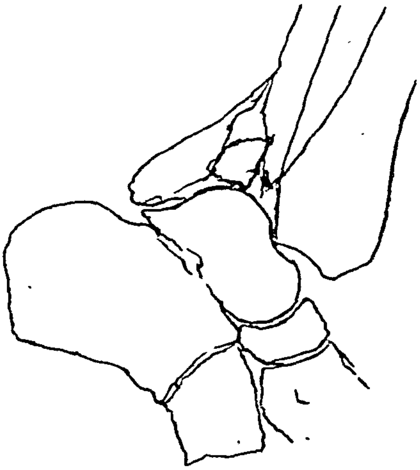

FIG. 3 represents diagrammatically the relations of the broken bones to the foot at time of receipt of the injury.

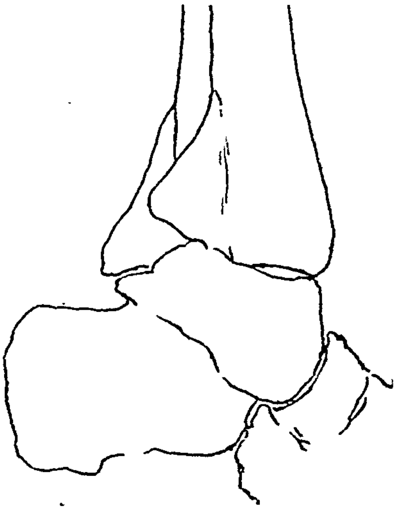

FIG. 4 shows the relationship of the bones to the foot after several months have elapsed since the receipt of the injury. The front of the tibia has formed a new joint with the upper aspect of the head of the astragalus, while the fragments of the tibia and fibula have blended together to form an irregular mass which no longer permits of free flexion and extension of the ankle-joint. The articular surface of the astragalus has also undergone extensive changes in form.

It is unfortunate that once the fragments of the tibia and fibula have united in their displaced position the possibility of separating the tibial fragment and of restoring it to its normal position is very small. This is due to the fact that the end of the tibia has formed for itself a new joint with the upper surface of the neck of the astragalus and the adjacent portion of the tibial facet on the astragalus, while the fibular and tibial fragments, having united with the shafts, articulate with the rest of the facet on the astragalus—which has become much altered in form—with the process of bone behind it. (See Fig. 4.)

In the other varieties of adduction and abduction fractures it is usually possible by operation to replace the inner malleolar and fibular fragments in their normal position and to restore the function of the joint. In this particular fracture the presence of the displaced tibial fragment forms what is practically an insuperable obstacle.

Surgeons have no valid excuse for the very disastrous results that follow these methods of treatment, since it is possible to obtain excellent radiograms in most places in the country. What has puzzled me is that none of these unfortunate patients had resorted to the law courts, although the failure of the surgeon to perform his duty is only too obvious to the meanest intelligence, in view of the facility with which radiograms can be obtained by patients in the present day.

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Much of the difficulty and failure which the surgeon experiences in the treatment of fractures is due to the fact that while in his preliminary studies he is called upon to acquire a transitory knowledge of much that is relatively useless to him in the efficient performance of his profession, the fundamental principles of mechanics upon which a knowledge of the function of the skeleton and soft parts and of the treatment of the variations they undergo from injury or disease is absolutely essential, are excluded from his education. The fault lies not with the surgeon but with the teacher.

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THE DISASTROUS RESULTS OF CERTAIN ABDUCTION FRACTURES OF THE ANKLE-JOINT.

BY SIR W. ARBUTHNOT LANE, BART.,
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A SEQUENCE of consultations on the disastrous results of the surgical treatment of a fracture of the ankle-joint which I described for the first time very many years ago has impelled me to write the following short paper on the subject, since the mode of production of this fracture and its characteristics seem to have escaped the attention of the surgeon. As a consequence it receives no efficient treatment, with the unfortunate result that the patient is rendered permanently lame since little or nothing can be done to remedy the disability after the lapse of some weeks or months. I call attention to the details of this fracture with less hesitation since, with the exception of the writings of Dr. Artemio Zeno, the distinguished professor of surgery of the Litoral University of Rosario, I do not think I have ever seen the method of its treatment correctly referred to. It is certainly not an uncommon fracture, while the deformity and disability that is associated with it are most distressing. I called it the "third degree of abduction fracture of the ankle-joint." Many years have elapsed since I dealt with the mechanics of the ankle-joint, which were incorrectly described in anatomical text-books, when I showed that under the term Pott's fracture two distinct and opposite conditions were comprised. They were the results of an excessive amount of force applied to the ankle-joint in the positions of adduction and abduction. All these results had been blended into one confused mass by Pott and by the surgeons who followed him, while in anatomical and surgical works impossible diagrams were inserted to illustrate what was supposed to represent a Pott's fracture. The treatment of these fractures by splints was based largely on the supposed accuracy of these diagrams and was consequently comparatively futile. I note that the more recent editions of such books as Gray's Anatomy have discarded the ridiculous old diagram employed to illustrate Pott's fracture and have replaced it by a rough compromise. I will therefore make no apology for referring in some detail to the conditions which result from excessive adduction and excessive abduction of the ankle-joint.

Degrees of Adduction.

If the foot is *adducted* with a force greater than the skeleton is able to bear two varieties of fracture may result:—

(1) The direct impact of the facet on the inner aspect of the astragalus upon the internal malleolus results in a more or less vertical fracture of the tibia, the line of fracture passing upwards in such a direction as to carry away the internal malleolus and a triangular area of the shaft of the tibia. As this fragment is displaced upwards the gap between the malleoli is widened and the grip of the tibia and fibula upon the astragalus is rendered less secure than it was. (See Fig. 1.)

(2) If forcible adduction be continued after the internal malleolus has been broken, strain is exerted through the external lateral ligament on the outer malleolus sufficient to break the fibula transversely over the lower end of the tibia. The fibular fracture is usually somewhat scrunched. (See Fig. 2.)

It is obvious that should any difficulty be experienced in placing the fragments in either of these fractures in accurate apposition, the best possible result can be obtained by securing the internal malleolus in position by means of a plate and three screws, an operation which makes little demand on the skill of the surgeon. At the worst, except in a few cases, neither of these fractures is followed by serious disability.

Degrees of Abduction.

If the foot is *abducted* with a force greater than the skeleton can bear, fractures of three degrees of severity may ensue.

(1) In this movement, the areas of the articular surface of the ankle-joint which sustain the greatest pressure are the anterior portions of the facet on the external malleolus and on the astragalus. In consequence of this pressure on the front of the *malleolus a torsion* fracture of the fibula results. The situation of this fracture may vary within wide limits; it is never transverse, as originally described and illustrated diagramatically in the text-books, but is very oblique, or in some cases nearly vertical. If the fracture extends through the malleolus there may be no displacement of fragments, and the injury may only be seen in a radiogram taken from side to side. In no case of suspected abduction fracture should the surgeon be satisfied to express an opinion solely from the examination of a radiogram taken from before backwards. If the fracture be through the shaft of the fibula above its articulation with the tibia the displacement may be very *considerable and* correspondingly difficult to replace.

FIG. 1.

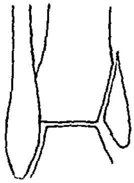

FIG. 2.

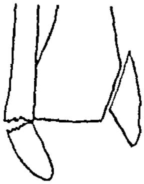

FIG. 1.—Fracture of tibia and carrying away of internal malleolus as a result of direct impact of facet on inner aspect of astragalus upon internal malleolus.

FIG. 2.—*Forcible adduction being continued after breaking of internal malleolus,* fibula breaks transversely over lower end of tibia as result of strain exerted through external *lateral ligament* on external malleolus.

(2) If the foot is displaced still further outwards strain is exerted through the internal lateral ligament upon the internal malleolus, which may be broken transversely. Occasionally the ligament may be ruptured instead.

These two fractures are met with fairly frequently. In many instances the displacement is trivial, and *in most a moderately good result may be obtained by splinting, controlled by radiography.* When the surgeon is unable to *bring the fragments into* reasonable apposition and to retain *them*—especially in patients in whom a joint affording a normal security is of great importance—the exposure of the fibular fracture, the accurate restoration by means of traction and forceps of this bone to its normal form, and its retention by means of a plate and four screws gives a perfect result. The internal malleolus falls automatically into position and does not require to be fixed by a plate. The exception to operative measures is when the patient is old or alcoholic and the bone is very fragile or severely comminuted. The difficulty that this particular fracture presents is that the *lower fibular fragment* consists of a long sharp spike, extending upwards and backwards, which has to be fitted and secured to the end of the shaft of the fibule.

(3) If the foot is abducted with still greater force the pressure exerted on the lower fragment of the fibula may by its strain upon the interosseous ligament *tear off a* wedge-shaped area of the lower end of the tibia of variable size having its base downwards. This fragment includes a varying proportion of the articular *facet* on the tibia. The ends of the shafts of the tibia and fibula are displaced forwards, the former resting upon the neck of the astragalus and upon the anterior portion of its tibial facet, while the

now reached maturity and it is hoped to continue the experiment further to ascertain whether any remote effects of the deficiency of true fats may be observed by changes in the capacity to breed and rear the young. The fact that we have obtained normal growth in rats from weaning to maturity on diets deprived as far as possible of all traces of neutral fats indicates that this class of foodstuff is not essential to the nutrition of these animals. (Growth curves in Figure.)

It is not intended to review the whole subject here, since the results will be published in a more complete form later. We may emphasise the truth of the remarks made by Osborne and Mendel in the paper to which we have referred, on the confusion which has arisen in the literature on this question through failure to recognise the disturbing factor introduced by the association of the vitamin with some fats and not with others. Our results support one opinion held by Hindhede (1920) who claims that fats are dispensable provided that a sufficient supply of vitamins is ensured.

Summary.

Young rats have been grown from weaning to maturity on diets, deprived as far as possible of neutral fats, and have shown normal development and behaviour. It is intended to ascertain whether the capacity for breeding and rearing the young is in any way inhibited by such diets.* More deaths were encountered amongst the animals on the fat-free diets than amongst those receiving fats. It would appear that neutral fats are, from a purely physiological standpoint, dispensable constituents of a diet, provided the other foodstuffs supply a sufficiency of the vitamin frequently found in association with natural fats. The real value of fats as convenient sources of energy is obvious.

References.—Drummond, J. C.: Biochemical Jour., 1919, xiii., 81, 95; Proc. Physiol. Soc., Jour. Physiol., July, 1920, p. 54. McCollum, E. V., and Davis, M.: Jour. Biol. Chem., 1914, xix., 245. Steenbock, H., and Boutwell, I. P. W.: Jour. Biol. Chem., 1920, xlii., 131. Hindhede, M.: Skand. Arch. Physiol., 1920, xxxix., 78.

A NOTE ON THE USE OF SULFARSENOL IN THE TREATMENT OF CONGENITAL SYPHILIS.

BY E. CRAWFORD, M.B., CH.B. GLASG.,

AND

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MOST workers will admit that salvarsan or one of its allies along with mercury is the treatment par excellence for all manifestations of syphilis, especially of congenital type. Statistics have been published of cases treated at the Royal Hospital for Sick Children, Glasgow, which show a fall in the death-rate since the advent of salvarsan.[1] In pre-salvarsan days the mortality among children under 3 months old was 71 per cent., and after the introduction of salvarsan and kharsivan it was reduced to 26 per cent. Unfortunately, in order to avoid pain or sloughing of the tissues, it has been necessary to give these preparations of arsenic intravenously, and the difficulty of such a procedure has considerably limited its use.

Recently, however, sulfarsenol—a drug which can be given intramuscularly without causing either pain or sloughing—has been put on the market, and at first it seemed to give equally good results. Attention was drawn to this fact by Dr. Leonard Findlay[2] in the discussion on congenital syphilis at the Royal Society of Medicine in February, 1921, but more extensive experience has unfortunately considerably modified this opinion. In children treated with sulfarsenol the manifestations of the disease quickly disappear if doses equal to those employed with kharsivan (0·12 to 0·2 g.) are given, and the general condition of the children improves remarkably; but if the crucial test, the Wassermann reaction (W.R.) is employed, then the results do not compare at all favourably with those obtained earlier with kharsivan and neokharsivan.

For example, 35 children have now been treated with intramuscular injections of sulfarsenol and mercurial inunction. In order to compare the results with those published for kharsivan the children have been divided into two groups: (1) children under 1 year of age; and (2) children over 1 year of age.

As is shown in the table (Group I.), 19 children received from 7 to 9 injections and a negative Wassermann reaction was obtained in 8, or 42 per cent. Four children received from 10 to 18 injections and in one a negative W.R. was obtained. Thus in 9 of the 23 children under 1 year of age—i.e., in 39 per cent., a negative W.R. was obtained, but in 14, or 60 per cent., it remained positive after from 7 to 18 injections had been given. The figures given by Dr. Findlay for kharsivan indicate much better results. A negative W.R. was obtained in 64 per cent. of his cases after a course of 9 or fewer injections.

GROUP I.—*Children Under 1 Year of Age (23).*

No. of cases.	No. of injections.	Average No. of grammes of drug given in each case.	W.R.	
			+	–
13	7	1·06	8	5
4	8	1·05	2	2
2	9	1·41	1	1
1	10	1·42	1	—
1	12	2·04	—	1
1	15	2·76	1	—
1	18	1·95	1	—
Total 23	—	—	14	9
GROUP II.—*Children Over 1 Year of Age (12).*				
1	3	0·72	1	—
1	4	1·92	1	—
1	5	2·40	1	—
1	6	1·44	1	—
5	7	1·48	5	—
1	12	3·12	1	—
2	15	5·92	2	—
Total 12	—	—	12	—

In Group II., of 12 children over 1 year old (five of whom had previously been treated with neokharsivan) none gave a negative W.R. after from 3 to 15 injections of sulfarsenol, whereas among Dr. Findlay's cases over 1 year old treated with intravenous neokharsivan a negative W.R. was obtained in 50 per cent. Among the 35 children treated with sulfarsenol and mercury only one death occurred, and it was due to bronchopneumonia.

These results suggest that the intramuscular injection of sulfarsenol is not as efficacious in producing a cure of congenital syphilis, as evidenced by the W.R., as intravenous injection of kharsivan. Whether the virtue in the latter method lies in the drug per se or in the method of administration (intravenous as against intramuscular) we are at present unable to say. On the other hand, the work of Harrison, White, and Mills[3] seems to show that intramuscular injection of neosalvarsan or its substitutes is more efficacious in producing a negative W.R. than intravenous injection of these drugs. In these cases, however, a very much larger dose was given intramuscularly than intravenously, and they did not attempt to determine the relative efficacy of the various arsenical preparations they used.

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* Since this was written the animals in both groups have reproduced, and several healthy normal litters of young have been reared by the females on the fat-free diet, as well as by those on the more normally-balanced ration.

[1] Findlay, L.: Syphilis in Childhood, Oxford Univ. Press, 1919, p. 143.

[2] Findlay, L.: Proc. Roy. Soc. Med., xiv., No. 8.

[3] Harrison, L. W., White, C. F., and Mills, C. H.: Brit. Med. Jour., 1917, i., 569.

of the associated vitamin, and therefore the results obtained are not free from complications which arise from this cause.

The absence of the vitamin A from the diet of animals induces an abnormal condition which may be recognised by certain symptoms, and in the paper referred to above it was shown that there was no appreciable difference in the type of symptoms, or in the time which elapsed before they appeared, in groups of animals fed on diets deficient in this vitamin with or without true fats. This was taken as indicating that true fats may be dispensable components of the mammalian diet provided that a sufficient supply of calories is given in other forms. The next step was obviously to attempt to feed animals on diets which would supply the requisite amount of the accessory vitamin, but which were devoid of free fats. Experiments on these lines, however, demanded that a natural source of the vitamin A containing no fat should be discovered, or that a method of separating the growth-promoting substance from the fats in which it naturally occurs should be found.

Conclusions Drawn from Preliminary Work.

During the last two years attempts have been made by us to accomplish both these tasks. In a former preliminary communication before the Physiological Society (1920) it was shown that by employing an extract prepared from carrots it was possible to supply the vitamin in a palatable form without, at the same time, giving more than minute traces of glycerides. Experiments were made with this preparation, and it was found that young rats will live and show growth for several months on diets freed from all but very small traces of fat. Allowing for the small amount of fat in the extract from carrots it was estimated that the animals received about 14 mg. of true fats per day in an average ration of 15–20 g.

The results were, however, regarded as preliminary, partly because normal growth was not obtained, and also because a certain amount of true fat was being given. The conclusions drawn from the results were summed up in the following statement:—

> "Unless this minute amount of fat plays as important a rôle in the metabolism of the organism as do the minute quantities of such substances as the accessory factors, it is reasonable to suggest that pure fats are dispensable constituents of the mammalian diet."

Since this work was carried out we have devoted further attention to this question, and as we have now succeeded in separating the vitamin from every trace of true fats we have at last been able to study the problem adequately. It is interesting to note that very shortly after the preliminary results were published by Drummond some very similar experiments were described by Osborne and Mendel (1920), who obtained good growth on diets containing mere traces of true fats and whose conclusions were almost identical with our own; "if true fats are essential for nutrition during growth the minimum necessary must be exceedingly small."

The Separation of Vitamin A from Fat.

McCollum and Davis (1914) first stated that the vitamin found in butter fat would resist saponification processes applied to the fat, but this observation was not confirmed by Drummond. More recently, however, it has again been asserted by Steenbock and Boutwell (1920) that a fraction from the unsaponifiable matter of certain oils contains the vitamin. When this latter paper appeared we had ourselves just completed another study of the question, and had found that the negative result previously reported by Drummond was probably due to destruction of the active substance by contact with air, and that if such contact is prevented the activity passes into the unsaponifiable fraction of the fat. We have found it possible to prepare extracts of extraordinary potency from fish liver oils and from green plant tissues by this means, of which a fuller account will be given later.

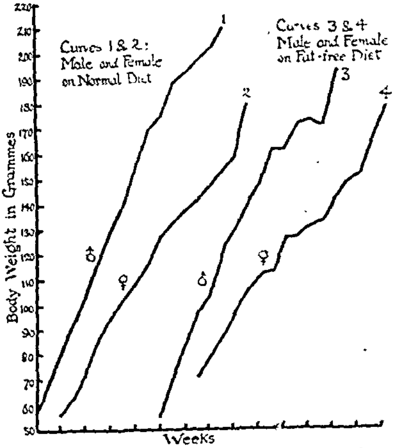
The possession of such material made it possible at last to test satisfactorily the problem of the dispensability of fat, since it was practicable to compound an artificial diet supplying all the known dietary essentials but devoid of neutral fats. The preparation of the constituents of the diet was the subject of great care. The protein (caseinogen) and the starch were rendered as free from fat as is possible by repeated and prolonged extraction with hot alcohol and ether, and so far as we are aware the only chance of the diets containing any trace of fat was from the inclusion of yeast extract as a source of the vitamin B. The ether extract of this product was, however, found to be almost negligible—0·08 per cent.—of which less than half was true fat.

Feeding Experiments.

The composition of the two dietaries used by us was as follows:—

	Normal diet.	Fat-free diet.
Caseinogen	20	20
Starch	50	65
Purified fat (tristearin)	15	0
Yeast extract	5	5
Lemon juice	5	5
Unsaponifiable matter from fish liver oil	0·02–0·04 g.	0·02–0·04 g. per day
Mixture of salts	5	5

The two dietaries were given daily in the form of food pastes made up with water, except for the unsaponifiable matter, which was given as a daily supplement, as is our custom. Young rats as soon as weaned were placed in groups on these two rations and have been under close observation ever since. The experiments have now been running for several months and the progress of the two groups has been parallel, apart from the fact that the few deaths which have occurred were of animals on the fat-free diet. The food consumption of both groups has throughout been good, and no abnormality has as yet arisen which could be attributed to the absence of fats. Naturally the group on the fat-free diet consumes a larger amount of food daily, since this is necessary to ensure the requisite calorific intake.



Growth curves of young rats fed on a normal diet (1 and 2) and a fat-free diet (3 and 4).

Animals from each group have from time to time been killed and submitted to post-mortem examination, but without any abnormality being detected. The amount of body fat in those on the fat-free rations was normal. Several animals in both groups have

TABLE SHOWING AMOUNT OF COPPER IN TISSUES.

No.	Tissues.		Milligrammes copper per kilo.	
			Fresh.	Dry.
	Tumours.			
1	Squamous carcinoma, neck ..	..	—	83·0
2	Spheroidal Carc.	Liver (primy. tonsil) ..	4·9	37·1
3		Stomach	9·84	60·1
4		,, (secy. nodule) ..	—	255·0
5	Columnar Carc.	Rectum	—	65·1 76·2
6		Gall bladder	5·9	19·0
7		Kidney	10·8	77·7
8	Spheroidal carc.	Breast	6·3	28·0
9		,, ...	—	121·0
10		Axillary glands (primy. breast)	—	250·0
11		Breast	—	113·2
12		,, ...	7·6	30·3
13		Liver (primy. breast) ..	—	61·6
14		,, ,, ,, ..	6·15	50·4
15	Spindle-celled sarcoma, groin ..		—	38·5 37·6
16	Round-celled sarcoma, cervical glands		2·21	14·9
17	Lymphocytoma, axillary glands ..		7·8	50·0
18	Melanotic sarcoma	Liver (primy. skin) ..	60·2	262·0
19		Ox	—	30·3
20	Fibroid	(a) Uterus	—	77·7
21		(b) ,, ...	—	38·9 36·7 40·8
22	Dermoid cyst	Wall	—	84·4
23		Contents (a)	—	36·5
24		Contents (b)	—	155·0
	Mean		12·17	79·7
	Alimentary Canal.			
25	Mucous membrane	Stomach (carc.) ..	13·9	81·5
26		Small intestine (normal)	5·0	39·6
27		Colon (normal)	17·2	101·5
28		Rectum (carc.)	—	501·0
29	Wall of colon (sepsis)		8·3	82·0
30	Muscular coat	Small intestine (normal) ..	1·78	17·2
31		Colon (normal)	5·55	34·4
	Mean		8·62	122·5
	Uterus.			
32	Uterine wall	(a) (Fibroid case) ..	—	65·6
33		(b) ,, ,, ..	—	27·6
	Liver.			
34	Sepsis		19·1	169·0
35	Fatty ($CHCl_3$ poisoning)		—	32·2
36	Normal		—	49·3
37	Normal	Pityriasis	8·6	40·7
38		Previous carc. breast ..	—	45·5
39		Lupus carc. of neck ..	13·2	49·2
40		Sarcoma of tonsil	6·25	27·0
41	Contained metastases	Carc. of tonsil	6·0	28·7
42		,, ,, breast	13·4	81·3
43		,, ,, ,, ...	17·9	50·4
	Mean		12·0	57·3
	Kidney.			
44	Sepsis		5·6	52·8
45	Normal		3·7	18·5
46	,, ...		7·6	36·9
47	,, ...		7·4	41·2
48	Pityriasis		—	17·7
49	Previous carc. of breast		50·6	173·0
50	Lupus carc. of neck		9·2	56·6
51	Carc. of breast and liver		10·4	66·5
	Mean		13·5	57·9
	Spleen.			
52	Sepsis		60·4	177·5
53	Normal		12·0	64·7
54	,, ...		—	89·5
55	,, pityriasis		—	38·8
56	Previous carc. of breast		19·6	53·0
57	Lupus carc. of neck		7·6	43·2
	Mean		24·9	77·8
	Pancreas.			
58	Sepsis		7·5	62·5
59	Pityriasis		—	63·0 40·6
	Mean		..	55·4
	Lung.			
60	Carc. breast		7·5	40·5
	Heart.			
61	Sepsis		9·4	65·1
62	Normal		3·3	17·8
63	,, ...		3·5	12·9
64	Lupus carc. neck		8·8	50·0
	Mean		6·25	36·5

AMOUNT OF COPPER IN TISSUES—*continued.*

No.	Tissues.		Milligrammes copper per kilo.	
			Fresh.	Dry.
	Viscera (of Bantam).			
65	Melanotic sarcoma, jaw		10·5	52·7
	Calcified Glands.			
66	Carc. of breast		278·0	432·0
67	,, ,, tonsil		8·7	18·2
	Ribs.			
68	Rib	Normal	52·7	140·0
70		Carc. of breast, left	95·0	253·5
71		,, ,, ,, right	121·0	223·5
72		,, ,, ,, ...	60·6	147·2
73	Costal cartilage, carc. of breast ..		48·5	160·5
74	Rib	Carc. of breast, left	210·0?	694·0?
75		,, ,, ,, right	78·5	215·0
	Mean of six (omitting 74) ..		76.05	189·8
	Various.			
76	Milk (cow)		3·5(l)	30·2
77	Blood (sheep)		7·3(l)	37·4
78	Egg	White	0·0?	0·0?
79		,, ...	1·3	11·1
80		Yolk	—	3·4
81		,, ...	5·0	10·1
82		Shell	—	73·0
83	Oyster shell		43·8	63·7
84	Oysters		96·4	407·0
85	Nux vomica (seeds)		—	97·9
86	Cardamoms		—	96·2
87	Oats		—	80·8
—	Bread (a)		—	10·3
—	,, (b)		—	21·4
—	Beef steak (a)		—	28·3
—	,, ,, (b)		—	29·8
(16)	Rabbit		9·4	46·0
(6)	,, ...		2·9	11·8
(9)	,, ...		—	39·0 33·6 33·8 44·2
(8)	,, ...		58·2	301·0
(12)	Mouse		130·0	431·0
	Urine (3 different samples) ..		0·2 0·15 0·0	(l)

(l) = Litre.

14·9 and a maximum of 262·0 mg. per kilo. of dry tumour. This variation cannot be correlated with any distinct differences in the nature of the tumours, except that those which are most degenerated tend to show a larger amount of copper. For instance, Nos. 1, 4, 9, 10 (mean Cu = 177·0) showed a considerable amount of degeneration, while Nos. 2, 6, 12, 15, 16, 17 (mean Cu = 32·5) showed very little. Nos. 20 and 21 were from different portions of the same fibroid (total weight over 18 lb.) and Nos. 32 and 33 were from corresponding portions of the uterine wall in the same case. The two specimens of the tumour and the two portions of the uterine wall show somewhat similar differences in Cu content. The two specimens of dermoid cyst contents, Nos. 23 and 24, were from different portions of the same cyst, No. 23 being from a hæmorrhagic area and No. 24 from an area which was largely necrotic and contained a large excess of calcium. This necrotic area contained a large amount of copper.

In the specimens of alimentary canal the most striking feature is the large amount (501) in the mucous membrane of the rectum. This was taken just above a carcinoma (No. 5) and there was a very small amount available, so that there is probably a large error. The amount of copper, however, must have been great to enable it to have been estimated at all. Possibly the copper is excreted by the large intestine, as is calcium.

The ten specimens of liver examined show with one exception (No. 34) less variation than the tumours or the alimentary canal. The kidneys show practically the same average amount as the liver. Here again there is one specimen (No. 49) with a content very much higher than the rest, and this is not from the same case as the liver with the high content (No. 34). The spleens again show one specimen with a high content (No. 52) from the same case as liver No. 34.

of the associated vitamin, and therefore the results obtained are not free from complications which arise from this cause.

The absence of the vitamin A from the diet of animals induces an abnormal condition which may be recognised by certain symptoms, and in the paper referred to above it was shown that there was no appreciable difference in the type of symptoms, or in the time which elapsed before they appeared, in groups of animals fed on diets deficient in this vitamin with or without true fats. This was taken as indicating that true fats may be dispensable components of the mammalian diet provided that a sufficient supply of calories is given in other forms. The next step was obviously to attempt to feed animals on diets which would supply the requisite amount of the accessory vitamin, but which were devoid of free fats. Experiments on these lines, however, demanded that a natural source of the vitamin A containing no fat should be discovered, or that a method of separating the growth-promoting substance from the fats in which it naturally occurs should be found.

Conclusions Drawn from Preliminary Work.

During the last two years attempts have been made by us to accomplish both these tasks. In a former preliminary communication before the Physiological Society (1920) it was shown that by employing an extract prepared from carrots it was possible to supply the vitamin in a palatable form without, at the same time, giving more than minute traces of glycerides. Experiments were made with this preparation, and it was found that young rats will live and show growth for several months on diets freed from all but very small traces of fat. Allowing for the small amount of fat in the extract from carrots it was estimated that the animals received about 14 mg. of true fats per day in an average ration of 15–20 g.

The results were, however, regarded as preliminary, partly because normal growth was not obtained, and also because a certain amount of true fat was being given. The conclusions drawn from the results were summed up in the following statement:—

> "Unless this minute amount of fat plays as important a rôle in the metabolism of the organism as do the minute quantities of such substances as the accessory factors, it is reasonable to suggest that pure fats are dispensable constituents of the mammalian diet."

Since this work was carried out we have devoted further attention to this question, and as we have now succeeded in separating the vitamin from every trace of true fats we have at last been able to study the problem adequately. It is interesting to note that very shortly after the preliminary results were published by Drummond some very similar experiments were described by Osborne and Mendel (1920), who obtained good growth on diets containing mere traces of true fats and whose conclusions were almost identical with our own; "if true fats are essential for nutrition during growth the minimum necessary must be exceedingly small."

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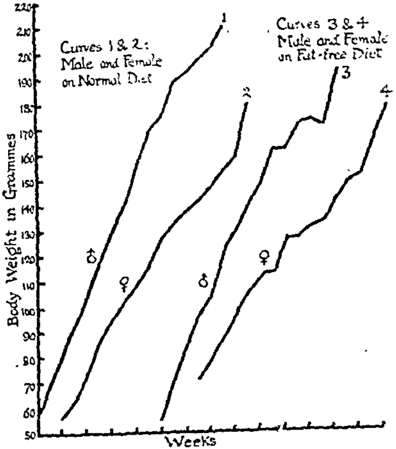

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Clinical Notes:

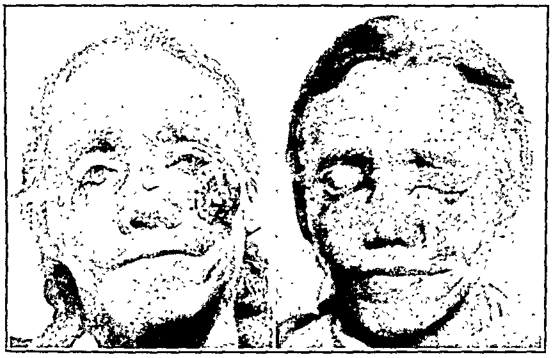
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
LUPUS-EPITHELIOMA TREATED WITH RADIUM.

By F. Joselin Jauch, M.R.C.S., L.R.C.P. Lond.,
RESIDENT MEDICAL OFFICER, HOSPITAL OF ST. JOHN AND ST. ELIZABETH.

Lupus vulgaris sooner or later tends to heal finally, but the condition sometimes persists despite treatment. Even so, and especially if the diseased part is irritated or injured, an epithelioma may develop; the latter usually runs a rapid course owing to the good vascularisation of the tissues, and treatment is very difficult. The case described is illustrative of these points, an apparent cure being effected by the energetic use of radium.

Mrs. N. F., aged 61, was admitted to the cancer wing of the Middlesex Hospital at the beginning of November, 1920, with the following history: At the age of 6, the patient had a discharging swelling on either side of the face in the malar region, which, on treatment at various hospitals, gradually disappeared, leaving a certain amount of scarring behind. During the whole of her life, however, it appears, she was never quite free from one or two small discharging ulcers which broke down periodically. She also complained of a stiff ankle and deformed wrist, which on examination proved to be the site of an old tuberculous disease. In January, 1920, the patient accidentally scratched the diseased tissue over the left malar region with a comb. Subsequently an ulcer formed at the site of injury, which was treated with a "burning liquid." The edge of the ulcer began to grow, and its increase was accompanied by shooting pains radiating to the top of the head, and a copious offensive discharge. The growth encroached upon the left eye, giving rise to a great deal of pain here. She had been admitted to a surgical ward in September, 1920, but was discharged as the condition had progressed too far for operation.



Before treatment with radium. After treatment.

On examination, the patient's general condition was rather poor; the bridge of the nose was very depressed, and covered, as were both cheeks, with papillomatous elevations of lupus, the scarring of which had caused ectropion of the lower eyelids, especially of the right. On the left malar and temporal region was an oval mass of growth, 1½ in. by 2½ in., ulcerating in the centre, firmly fixed to the subjacent structures, with hard raised edges and an irregular surface, and having a copious and offensive discharge. It encroached upon the orbital cavity, displacing the eye backwards and inwards, having destroyed a considerable portion of the lower eyelid by its growth. The eye was subject to fairly marked conjunctivitis, and vision was very poor on this side. The diagnosis of lupus-epithelioma was made and confirmed histologically. No enlarged glands were palpable. The Wassermann reaction was negative.

The treatment was commenced on Nov. 13th, 1920, and consisted in the application of 1 mm. screened radium in tubes, applied to the surface and periphery of the growth, with a rubber protective between the two; the latter, however, was later discarded. The first dose consisted of 284 mg. of radium applied for 10 hours. The amount and time of exposure, however, were later increased, as I found that the radium in smaller quantities stimulated the growth to further activity. Necrosis of the growth took place after six weeks' treatment, the slough separating on Jan. 7th, 1921, and local recurrences were dealt with by further applications of both screened and unscreened radium, in all 12 323 mg.-hours of radium. The pain gradually lessened and practically disappeared. Unfortunately, it was found necessary to remove the left eye on account of panophthalmitis on Feb. 14th. On the 28th the papillomatous elevations on the nose and cheeks had completely disappeared and the epithelioma had been replaced by healthy granulations; when the patient was seen in April there was no evidence of a recurrence, though the area was subject to lymphatic œdema.

For permission to publish this case I am indebted to Mr. W. Sampson Handley, surgeon to the Middlesex Hospital, under whose care the case was admitted.

A CASE OF
LABIO-GLOSSO-LARYNGEAL PARALYSIS
SUCCESSFULLY TREATED BY VACCINE.

By J. C. Voigt, M.D. Edin.

The rarity of this disease, and the fact that practically all authorities on labio-glosso-laryngeal paralysis are agreed in describing its causes as unknown, and its prognosis as hopeless, give interest to the following case.

At Easter, 1920, a lady, who, during 30 years has been a patient of mine whenever she was resident in Southport, and attended by Dr. L. D. Temple of Rock Ferry when she lived in that district, came to see me complaining of bronchitis and nasal catarrh. The "cold" from which she was suffering appeared to me of the mild influenza type—if influenza can ever be described as mild. When she was breathing in, I noticed a peculiar occasional sound, half-wheezing, half-sighing, sometimes followed by a rasping clearing of the throat.

I saw the patient again on Sept. 15th, at her home in Birkenhead, where she had been under the care of Dr. Temple since the early part of August. The first symptom had been a difficulty in swallowing, then dribbling of saliva from her mouth, difficulty in articulation of linguals and labials, and inability to blow her nose, which felt "closed up." These symptoms had become progressively worse, until when I saw her with Dr. Temple, on the 15th, a continuous stream of saliva was running from her mouth, and she had constantly to dry her lips with wool. She could only swallow liquid food, and that with difficulty; her speech was very indistinct.

We agreed that since extensive pyorrhœa alveolaris complicated an apparent acute case of labio-glosso-laryngeal paralysis in which the œsophageal muscles were failing in sympathy with those of the larynx, skilful nursing was a first necessity. Circumstances did not permit the patient's removal to a nursing home; so after seven weeks in the Royal Infirmary, Liverpool, she was placed under my care in Southport.

What struck me as most noticeable now was her mental depression and apathy. She could swallow soft foods better than liquids; but the dribbling of saliva from her mouth was worse and her speech was very difficult to follow. Her pulse was small and frequent. Her senses of taste and smell were both affected, and these facts, together with a history of four definite attacks of influenza, led me to resolve to try a treatment of vaccine of *B. influenzæ* (with pneumococcus for prophylaxis). On account of the myocardial weakness, I put her on full doses of liquid extract of fresh green kola nut with Peruvian bark and glycerine. To correct intestinal stasis she had 3½ gr. of phenolphthalein nightly, and during the first week 1/60 gr. strych.-sulph. hypodermically every day. I determined to attempt an improvement with blended vaccines, and on Dec. 1st she was given hypodermically a vaccine injection of:—

B. influenzæ	..100 million.	*Staph. aureus* ..	30 million.
Pneumococcus ..	50 „	Streptococcus ..	20 „

COPPER IN TUMOURS AND IN NORMAL TISSUES.

BY CHARLES POWELL WHITE, M.A., M.D.CAMB., F.R.C.S. ENG.

(*From the Helen Swindells Research Laboratory, University of Manchester.*)

DURING an investigation of the amount of phosphorus and calcium in tumours it was noticed that on evaporating to dryness an acid extract of a carcinoma and igniting the residue, the ash was distinctly of a blue colour. This colour was easily shown to be due to the presence of copper. I proceeded therefore to examine other tumours and normal tissues for the presence of copper, and to estimate the amount present. The method of treating the material was, briefly, to extract the dried tissue successively with boiling $CHCl_3$ and warm 1 per cent. HCl. The acid solution was used for the estimation. Examination of the insoluble residue in several cases did not show the presence of any copper.

The estimation was eventually carried out by a colorimetric method, using a Dubosc colorimeter. The delicate colour tests for copper are:—

1. The brown colour formed on evaporating to dryness a solution containing bromide of copper. This is probably the most delicate test for copper, but is not easily adapted for quantitative work. It was noticed in every case during the preparation of the material.
2. The purple colour formed on adding a solution of formaldoxime to a solution containing copper. This is a very delicate test, but the colour is apt to change and it is not therefore adapted for use in a colorimeter.
3. The red colour produced by adding a copper salt or metallic copper to a solution of a morphine salt containing H_2O_2 and NH_3. This test for morphine was discovered by Dr. T. H. Oliver (1914[14]) working in my laboratory, but a similar test had previously been described by Denigés. It will detect 0·01 mg. of copper in about 10 c.cm. of solution, but the test is not adapted for colorimetric work as the depth of colour is not proportionate to the amount of copper and the colour is not permanent.
4. The pink colour of cupric ferrocyanide. This is useful for colorimetric work, but there are difficulties in its use which will be described below. It was used to a large extent.
5. The brown colour of cuprous sulphide. This also was used.
6. The blue colour of ammonio-cupric solutions. This was noticed in each case during the preparation of the material, but is not of sufficient delicacy for the present investigation.

Two main difficulties were experienced in using the ferrocyanide test. First, in the solution to be tested the cupric ferrocyanide tended to separate out as a precipitate, instead of remaining in colloidal solution as it did in the standard solution. This difficulty was partly overcome by the addition of a little gum arabic, but it remained a difficulty and in some cases prevented an accurate comparison. The other difficulty was that the pink colour in the solution to be tested often diminished or disappeared in a short time. This disappearance was shown to be due to the oxidation of the ferrocyanide to ferricyanide, but the cause of this oxidation was not detected. It did not occur in the standard solution. This difficulty was overcome by the addition of a reducing substance. Glucose and formalin were tried, but their action was too slow. Phenylhydrazine hydrochloride (1 per cent.) was immediately successful and was frequently used, and eventually a saturated (4 per cent.) solution of hydrazine sulphate was used as being a cleaner substance to work with than the phenylhydrazine hydrochloride. Lehmann (1897[12]) also met with this difficulty and traced it to the presence of HNO_2. He overcame it by the addition of urea.

Owing to these difficulties with the ferrocyanide test the later estimations were made with the sulphide. Comparisons between the two methods showed that they gave the same results, being of about the same order of delicacy, an amount of 0·1 mg. in 15 c.cm. of solution giving a sufficient colour for comparison.

Details of Method.

The method in detail was as follows:—

The acid (1 per cent. HCl) extract of the tumour or other tissue having been evaporated down to known volume, usually 100 or 200 c.cm., a definite amount—25, 50, or 100 c.cm.—was taken and evaporated to dryness in a silica dish, the residue being ignited. The ash was dissolved in dilute HCl and the copper precipitated with H_2S. The precipitated sulphide was dissolved in bromine water, and the filtered solution evaporated to dryness on a waterbath, a little H_2SO_4 (0·5 c.cm. of N/2 solution) being added before drying. The residue was dissolved in a little water and a drop of $FeCl_3$ solution added, and then excess of NH_3. The solution was filtered from the precipitate of $Fe(OH)_3$ and the filtrate again evaporated to dryness with the addition of a little H_2SO_4 before drying. The residue was then ready for estimation. The two methods employed were as follows:—

A. The residue was dissolved in a little water and filtered. One c.cm. of 1 per cent. potassium ferrocyanide, 1 c.cm. of saturated hydrazine sulphate (or of 1 per cent phenylhydrazine hydrochloride), and a little gum arabic added, the whole being made up to known volume, usually 15 c.cm.

B. The residue was dissolved in a known volume of water and the solution saturated with H_2S.

The standard solution contained one part Cu in 10,000 of water and was prepared by dissolving the equivalent quantity of $CuSO_4\,5H_2O$ in water. It was tested against a solution prepared by dissolving 1 g. of electrolytic copper in HNO_3 and diluting to 5000 c.cm. One to five c.cm. of the standard solution were used for each test, the same reagents being added as to the solution to be tested, and the whole made up to known volume with water. It is convenient but not necessary to make the standard solution up to the same volume as the solution to be tested. The two solutions are then introduced into the receptacles of the colorimeter and a series of readings (usually 15 or more) taken, the mean of the series being taken as the result.

All reagents used, and the air of the laboratory, were tested for the presence of copper with negative results, except in the case of the hot water supplied to the laboratory. This contained a fraction of a milligramme per litre. This hot water, however, was not used except occasionally for washing apparatus. The method of estimation proved very accurate when tested with different known solutions of copper. As a test for the method in the presence of organic matter 5 c.cm. of the standard solution (0·5 mg. Cu) were added to 1600 c.cm. of urine. A subsequent estimation after evaporating to dryness, &c., gave 0·55 mg. Cu (and urine itself may contain copper). In another test in which 0·2 mg. Cu were added to 500 c.cm. of urine the amount found was 0·21 mg.

One possible source of fallacy when the sulphide method is used is the possible occurrence of lead. Most of the lead would be removed in the process (by H_2SO_4 and NH_3) but traces might survive, as it appears almost impossible to separate the last traces of lead from copper. An experiment was carried out in which 5 c.cm. of the standard solution and a considerable amount of lead acetate were added to 500 c.cm. of urine. The result was an apparent excess of Cu in the final estimation to the extent of 0·06 mg. (0·56 instead of 0·50), and this excess may have been due to the copper in the urine. There was, however, no reason to suppose that any of the material examined contained lead. This source of fallacy does not occur in the ferrocyanide method, but in the latter especial care must be taken to remove the last traces of Fe.

Results.

Coming now to the results, every specimen examined (over 100 in all) contained copper with the exception of one specimen of urine and one sample of egg white (No. 78). In this latter case the eggs had been boiled hard before drying, and the albumin dried into a very hard horny mass which yielded little to the acid solution. Examination of the insoluble residue in this case showed the presence of traces of copper. The negative results in these cases tend to confirm the general reliability of the method.

The results are given in the table expressed as milligrammes Cu per kilo. of the fresh or dry weight. They show that copper is present in tissues to a greater extent than is usually supposed. As a general rule there was not a sufficient amount of material to allow of a repetition of the estimation but, where possible, this was done. Some of these duplicate estimations are given in Table I.—e.g., No. 21.

The 21 specimens of tumours examined show a great variation in Cu content, with a minimum of

Reviews and Notices of Books.

DISEASES OF THE NEW-BORN.

By Dr. AUGUST RITTER VON REUSS, Director of the Department for the New-Born at the First University Women's Clinic in Vienna. London: John Bale, Sons and Danielsson, Ltd. 1921. With 90 illustrations. 52*s.* 6*d.*

THIS book was published in Vienna in 1914 and we owe the war, therefore, a still further grudge for the delay of seven years before the translation reaches this country. Without doubt it is a book of great importance, which deals more thoroughly with the subject of the new-born than any we can call to mind. Only two points suggest criticism. The first is that the title does not suggest at all adequately how much the book contains of value and interest to the general practitioner. It should, we agree, be read as a matter of course by every one who already has a special interest in obstetrics or pædiatrics. But the title will not do much to encourage its circulation beyond that point. This is unfortunate, for the author takes a wide view of his subject, and the book contains a valuable section on the physiology of the new-born, an equally good one on breast nursing, while the premature child and its needs are ably discussed before the subject suggested by the title is reached. There follows an account of birth injuries, of diseases of individual organs and systems, and of congenital malformations. The hæmorrhagic diseases are fully treated, and the chapters on acute and chronic infections are good.

The second and more material complaint arises out of the extreme anxiety of Dr. von Reuss to acknowledge throughout the text every authority with whose writings his industry has brought him into contact. There is a bibliography at the end of the book wherein some 1800 publications are mentioned and this is all to the good. But the tiresome honesty which sees fit to load almost every sentence with a host of names is utterly ruinous to literary style. It may be considered captious to criticise a habit, the lack of which we often condemn in French writers, but in a text-book of this type some collect in acknowledgment of sources of erudition at the end of each chapter would make the volume much more readable. There are passages in this book which read like a Parliamentary division list. Why should it be thought necessary, in a short sentence on infections of the salivary glands, to state that Messrs. Hennig, Mikulicz, and Kümmel differ in their views from Messrs. Nobécourt-Hutinel, Hofstaelter, Auerbach, and Bretschneider? And in the next sentence there are inflicted on the reader the names of the bacteriologists who have isolated different organisms in this complaint. Perhaps, too, irritation is somewhat increased by the rarity of an English name. In the whole bibliography there seem to be only about 40, and of these about half are American. Dr. von Reuss might reply, one fears with some truth, that there are not a great number more who could serve his purpose.

One turns with relief from many of the author's introductions to reach his summaries of evidence. For these are clear, well written, and convincing. Certainly one feature of this book, and one of the most valuable, would be hard to seek in any English or American study of infancy, even one concerned with the new-born. This is the section on lactation and breast nursing. There are here 61 pages devoted to breast feeding and the conquest of its difficulties, and but four to artificial feeding. Space in an exactly opposite proportion is usually allotted to these aspects of the subject in our text-books. Where else could be found so stimulating a confession as "Our experience concerning the artificial feeding of new-born children is somewhat scanty . . . . with regard to artificial feeding in the first week we know exceedingly little." We fear to think of the fate of medical student or pupil midwife in 1914 in this country who reached a final examination in this condition of praiseworthy ignorance. Yet Dr. von Reuss was specially appointed to teach midwives in the obstetric clinic in Vienna on the feeding of infants.

The English edition has been prepared under the supervision of Dr. J. D. Rolleston, who has revised the translation. This is throughout exceedingly well done. The illustrations are good, and we hope a new edition may contain many more. The book is a mine of information.

Physiologie normale et pathologique du Nourrisson. By E. LESNÉ and LÉON BINET. Paris: Masson et Cie. 1921. Pp. 297. Fr.18.

THIS volume, which is the joint work of a physiologist and of a clinician, embodies a summary of the facts known as to the general physiology of the infant in health and disease, forming what is practically a monograph on the subject. Although reference is made to the work of more than 700 authors—including, however, very few English names—the volume consists largely of the results of personal researches undertaken by MM. Lesné and Binet themselves.

In an introductory chapter the authors point out that while the anatomist and the pædiatrist have studied the new-born infant each from his own point of view, the physiology of the suckling has hitherto received no such specialised attention, the present volume being an attempt to supply the lack. The 17 chapters deal with the blood; the circulatory, muscular, nervous, genital and urinary systems; respiration, digestion, and nutrition; thermometry and calorimetry; growth, muscular movement and the special senses; and the means of defence possessed by the organism. It will be seen that the range of subjects is very wide, and the authors having correlated with these studies various pathological considerations, the book is one that will appeal with some force to the general practitioner. Certain controversial statements appear. Among the many contra-indications to suckling given are included all organic affections of the nervous system as well as most of the neuroses, while, on the other hand, erysipelas in the mother, which von Reuss considers an absolute contra-indication owing to the high susceptibility to it of the infant, is not here regarded as a bar. In discussing the question of the transmission of tuberculosis by cows' milk it is stated that even sterilised milk from tuberculous cows will, owing to its content of dead tubercle bacilli, cause cachexia and death in a young animal; while a further statement in the same section that the question of the identity of the bovine and the human tubercle bacillus is still sub judice will not be endorsed by all bacteriologists. An index would add materially to the value of the book. These, however, are minor blemishes in a work of unusual merit and completeness, in which the whole subject is handled with a scientific knowledge and thoroughness entitling the volume to a place in every medical library.

HYPNOTISM AND SUGGESTION.

Treatment by Hypnotism and Suggestion, or Psychotherapeutics. Seventh edition. By C. LLOYD TUCKEY, M.D. Aberd. With a Chapter on Treatment by Suggestion during the War, by A. PERCY ALLAN, M.D., B.S. Lond. London: Baillière, Tindall and Cox. 1921. Pp. 413. 21*s.*

Dr. Lloyd Tuckey's well-known volume on treatment by hypnotism and suggestion appears in a seventh edition, proof of its continued usefulness over more than 30 years and of the fact that psychotherapy needs no stimulus from war experience to justify its worth in clinical medicine. There are, of course, other forms of psychotherapeutic treatment than hypnotism and suggestion, and though the chapter formerly contributed by Dr. Constance Long and dealing with psychoanalysis is now omitted, this is not because of the author's lack of sympathy with the latter but solely

The average amount of copper in the spleen is higher than that in the liver or kidney. The ribs show a uniformly high copper content (189.8). The large amount in No. 74 is probably an error. A second estimation showed a very much smaller amount, but there was not sufficient material to allow of a third estimation.

The last part of the table shows the copper content of various substances for comparison. An interesting point is the high content of egg shells and the closely similar content of oyster shells. Possibly the copper may be concerned in the shell pigments. Another interesting point is the similarity of the three seeds nux vomica, cardamoms, and oats. In the case of the rabbits and mice the material examined was the acid extract of the whole animal. In the three specimens of normal urine about two litres was used each time. Since this work was done I have found copper in nine other specimens of normal and nephritic urines.

Recorded Estimates of Copper in Tissues of Vertebrates.

Few estimates of the amount of copper in the tissues of vertebrates have been recorded. I have not had access to the original communication by K. B. Lehmann (1895[11]) but his figures are partially quoted in Oppenheimer's "Handbuch" and also by Yagi (1910[16]). Comparing the figures for the liver and kidney (human) with my own expressed as milligrammes per kilo. of fresh weight, we have—

	Lehmann	Yagi	White
Liver	3.75	11.52	12.0
Kidney	1.73	3.21	13.5

It will be seen that as regards the liver my figure agrees very well with that of Yagi and both are considerably higher than that of Lehmann. I have found much more copper in the kidneys than either of the other two observers. Yagi suggests that the reason why his figures are higher than those of Lehmann is to be found in the more extensive use of copper cooking vessels by the Japanese. My figure for oysters (96.1 mg. per kilo. fresh) agrees exactly with that found by Dubois (1900[7]), which was 96.5.

Possible Significance of Copper Content of Tumours.

As this investigation was mainly of a preliminary nature directed towards finding out whether the copper content of tumours differed from that of other tissues and how widely copper was distributed in the organism no definite conclusions can be drawn as to the significance of the presence of copper in the higher animals. While it has been known for a long time that copper plays an important physiological rôle in some of the invertebrata, especially molluscs and arthropoda, its presence in the higher animals has usually been regarded as an accident, and of no physiological importance except that it enters into the formation of the pigment turacin of birds' feathers, in which copper exists in combination with hæmatoporphyrin (Laidlaw, 1904[10]). Similarly, its presence in plants is attributed to accident and in pharmaceutical preparations it has been attributed to the use of copper vessels in manufacture. It is possible, however, that copper may have a physiological action as a catalyser. In the morphine reaction described above Oliver (1914[14]) found that during the reaction the morphine is destroyed by oxidation and cannot be again recovered. He also determined in the course of further investigations (unpublished) that copper salts give the reactions which are usually relied on to detect the presence of oxidases (guaiac and indophenol reactions).

The presence of an increased amount of copper in degenerated tumours suggests either that the degeneration is associated with an increased catalytic action due to the increased amount of copper, or it may be that copper like calcium tends to be deposited in degenerated areas. The question whether or not copper is of physiological importance in the higher animals and plants must thus be left for future investigation. The universal distribution of copper and its presence in seeds, eggs, and fœtal tissues as well as in adult organisms would seem to point to its being something more than an accident. In man it has been found in fœtal as well as in adult livers (Bergeson and d'Hôte, 1875[1]) and, indeed, in larger quantities in the fœtal organ than in the adult (v. Italie and v. Eck, 1913[9]).

Distribution of Copper in Animal and Vegetable Organisms.

As copper is present in wild animals and in animal and vegetable foodstuffs its presence in man cannot be attributed wholly to the use of copper vessels, &c. The distribution of copper in the animal and vegetable kingdoms appears to be universal, so far as it has been looked for. According to the above investigations it is present in man, cattle, sheep, fowls, rabbits, and mice, and also in oats, nux vomica, cardamoms, and bread. It has also been described in fish (Dubois, 1900[7]), whales (Dougal, 1911[6]), dogs, cats, horses, swine (Lehmann, 1895[11]), in numerous plants—e.g., belladonna, colchicum, ergot, digitalis, sarsaparilla, thuja, oats, cardamoms, wheat, buckwheat—and in pharmaceutical preparations (Lehmann, Lewis, 1914[13], and others). In the lower animals in which it exists for the most part as entering into the composition of a respiratory pigment, it is present in cœlenterata, echinoderms, crustacea, molluscs, insects, &c. (Dubois, 1900[7]). It has also been found in the eggs of some of these—e.g., sepia (Dhéré, 1900,[3] 1904[4]) and lobsters (Dougal, 1911[5]).

Another metal which appears to be universally present in the animal and vegetable kingdoms is manganese. The presence of this metal has been studied especially by Bertrand, who with Medigreceanu (1912[2]) examined 150 specimens from 15 species of vertebrates and found manganese present in all except in the white of birds' eggs. Bertrand is of the opinion, based on experiments on aspergillus and other organisms, that manganese is of considerable physiological importance. In my material I tested for manganese in 24 cases taken at random (including seven tumours) and found it present in all, but I did not estimate the amount.

Summary.

1. Copper appears to be universally present in the tissues of animals and plants so far as it has been looked for.

2. The known catalytic action of copper and the presence of copper in seeds, eggs, and in fœtal as well as in adult tissues, suggest that it has a physiological significance.

3. Copper is present to a greater extent in degenerating tumours than in those which are not degenerated.

This work was carried out in connexion with the Christie Hospital, Manchester, and the Pilkington Cancer Research Fund.

References.—1. Bergeson and d'Hôte: C. R. Acad. des Sciences, lxxx., p. 268, 1875. 2. Bertrand and Medigreceanu: Bull. de la Soc. Chim. (4), xi., p. 891, 1912. 3. Dhéré: C. R. Soc. de Biol., lii., p. 458, 1900. 4. Ibid., lvii., p. 209, 1904. 5. Dougal: Pharmaceutical Journal (4), xxxii., p. 405, 1911. 6. Ibid. (4), xxxiii., p. 88, 1911. 7. Dubois: C. R. Soc. de Biol., lii., pp. 391, 314, 1900. 8. Heutze: Z. f. Phys. Chem., xxxiii., p. 417. 9. van Italie and van Eck: Year Book of Pharmacy (abst.), 1913. 10. Laidlaw: Jour. of Physiology, xxxi., p. 464, 1904. 11. Lehmann: Arch. f. Hyg., xxiv., p. 1, 1895, quoted in Oppenheimer's Handbuch d. Biochemie and by Yagi. 12. Lehmann: Arch. f. Hyg., xxx., p. 250, 1897. 13. Lewis: Pharmaceutical Journal (4), xxxix., p. 16, 1914. 14. Oliver: Medical Chronicle, 1914. 15. Slowtzoff: Hofm. Beit., ii., p. 307. 16. Yagi: Arch. Internat. de Pharmacodynamie, xx., p. 51, 1910.

LITERARY INTELLIGENCE.—Messrs. E. and S. Livingstone have undertaken the British and Colonial Agency of the American *Medical Record* and will send specimen copies to intending subscribers. Annual subscription, including postage, is 35s., and should be sent to 17, Teviot-place, Edinburgh.

PRESENTATION TO A MEDICAL MAN.—Dr. T. Glyn James, of Pontypool, has been presented with a cheque for 100 guineas by the workmen of the Pontnewynydd Sheet Galvanising Works in recognition of his work as President of the Works Distress Fund.

A TEXT-BOOK OF PATHOLOGY.

Seventh edition. By ALFRED STENGEL, M.D., Sc.D., Professor of Medicine, University of Pennsylvania, and HERBERT FOX, M.D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1921. With 509 text illustrations and 15 plates. Pp. 1111. 42*s.*

WHEN this text-book first appeared in 1899 it was intended to make appeal to the "clinical pathologist" as the term was then used in America. As such, rather than as an exhaustive treatise on pathology, we then gave it favourable notice. Pathology has during the last two decades shaken itself free of many shackles, and the authors seem hardly to have kept in touch with its developments. Their present outlook on the science may be illustrated by their statement (p. 146) that inflammation "is a pathological state *per se*, but considered from the point of view of its result . . . . inflammation is essentially conservative and useful." The first seven words contain about as many misconceptions of the subject with which they are dealing as it would be possible to express so briefly. To conceive of inflammation as a state instead of a process, and by "but" to imply that pathological processes are not as a rule useful, is to go about as far astray on fundamental considerations as anyone can. It is the attitude which likes to look on the subject matter of pathology as a series of states which can be classified and labelled and put in compartments already marked out for them like a collection of postage stamps, and misses altogether the truth that the student of pathology has to do with the passing phases of a pageant of reaction and adaptation as inspiring as any that he has had a chance to get a sight of. If only the authors could have seen Burdon-Sanderson twenty-five years ago leaning up against the blackboard with his eyes shut and muttering to himself, "Yes, yes, a process, not a state"—still they have had plenty of opportunity of reading Adami. Pathology on the authors' terms is such a hopelessly dull subject—perhaps this is why they both profess medicine.

The first part, extending to 427 pages, deals with general pathology, including bacteriology, and is unsatisfactory. From the section on acidosis (p. 44) no one would gather that respiration had anything to do with the regulation of the acid-base equilibrium in the body; there is a general reluctance to make definite statements which leads the authors to surmise (p. 30) that "the low partial pressure of oxygen at high altitudes has in all probability something to do with" mountain sickness; in œdema (p. 79) "a second process at work is that known as diffusion or osmosis." It may be, of course, that the authors, by the curious convention that has prevailed and which cheap copies of Cohnheim and Lazarus-Barlow have failed to dissipate entirely, regard these functional topics as not being part of pathology properly so called and that they have dealt with them just to fill up their schedule. But sections which have been pathological for all time are equally bad. Under tumours there is no kind of attempt to discover what tumours really are, and the only recognition of the quite fundamental information which has been obtained from the experimental investigation of mouse cancers is a reference to Miss Slye's breeding experiments and (p. 168) "various investigators since Hanau have found it possible to transplant certain tumours from man to animals or from one animal to another," which could not be more misleading even if it were capable of a jesuitical defence as not being untrue. The preface is dated April, 1921, and we read that "the cultivation of the gonococcus is difficult" (p. 203), "the typhoid bacillus is peculiarly resistant and may thrive upon clothing, in soil and in water for a long time" (p. 305),—"difficult," "peculiarly," and "long" are truly relative terms—and (p. 400) that the life-history of Bilharzia after the eggs leave the body is unknown. "Dyspnœa" and "rodent ulcer" do not occur in the index, and the only reference to scurvy is (p. 368) "several micro-organisms have been described," though beri-beri and pellagra have a page apiece.

The second part, special pathology, occupies the remaining 632 effective pages. It is mostly arranged under organs, with subsections, "congenital abnormalities," "circulatory disturbances," "atrophy and degenerations," "inflammations," "infectious diseases," and "tumours," and these categories are adhered to with a remarkable determination to say something under each heading whether it be of interest or importance or not. The authors' orderly scheme requires that active and passive hyperæmia should always form subheadings of "circulatory disturbances," and they tell the student that the former is associated with the early stages of inflammation and the latter with general circulatory failure over and over again under each organ separately; what is true of the pharynx, œsophagus, and kidney is probably true of the stomach, intestines, and pancreas; in all about a page is wasted by repeating for each of these six organs what a tolerable acquaintance with general pathology should make it unnecessary to state for any of them. The whole forms a dull and uninspiring catalogue of reasonably accurate information.

The book propagates the idea that pathology deals with a series of isolated anatomical facts with no general principles behind them and without any very important functional effects. The pity of the situation is that since 1898 it has gone through seven editions and has been reprinted in all on 18 occasions without keeping in touch with the science of pathology. The get-up of the present edition is excellent, the illustrations variable, some very good with a few quaint relics—e.g., the picture of acute urethritis (Fig. 398); a fair number are clinical without pathological interest.

MOTHER AND CHILD.

Fourth edition. By EDWARD P. DAVIS, A.M., M.D. London: J. B. Lippincott Company. 1921. Pp. 278. 12*s.* 6*d.*

THIS book, the first edition of which was brought out in 1902, is intended rather for the domestic hearth than for the medical profession. It contains nothing novel, but has been brought up to date, incorporating the more recent teaching on ante-natal care and on infant feeding. The book is in two parts, dealing respectively with mother and with child. The division of the chapters into short sections, each with its own heading, may facilitate the use of the book as a work of reference, but spoils the sequence of thought. The simple directions cover all essential points, and should result in the more intelligent observance on the part of the mother and nurse of the precautions advised by the doctor. A word may be added in praise of the illustrations, of which there are 33, more than half dealing with various details of the infant's wardrobe; these drawings add materially to the value of the book.

LE DARWINISME ET NOTRE SANTÉ.

By EDOUARD JUNG. Sainte-Marie-aux-Mines (Haute Rhin): E. and R. Cellarius. 1921. Pp. 120. Fr.5.

THIS small book is an attempt to put forward, according to the doctrines of evolution, a rational explanation of the principles underlying Nature's methods of preventing disease. It amounts to a plea for the "simple life," based upon arguments which are intended to appeal rather to the man of science than to the man in the street. After dealing with the general principles of the theory of evolution, and defining and explaining the terms in use, Mr. Jung proceeds to enunciate and consider seven laws. These lay down the relationship existing in nature between hereditary and acquired characters, and urge that some at any rate of the latter are harmful to the individual and therefore to the race. The seventh law propounds that "every (acquired) habit contrary to specific adaptations is injurious"; everything

This mixed stock vaccine was gradually increased in strength until the dose was:—

B. influenzæ	..500 million.	*Staph. aureus*	..100 million.
Pneumococcus	..200 „	Streptococcus	.. 60 „

This was at the end of January, 1921, by which time all the teeth except seven had been extracted, and there was marked general improvement. Swallowing had become easy, articulation improved, and salivation stopped. Treatment with an autogenous vaccine of *Staph. aureus* kindly made for me by Dr. T. Jorkes, Department of Pathology, St. Bartholomew's Hospital, was now commenced (first dose 100 million). The pus from which this was prepared was collected for me from the roots of freshly extracted teeth and conveyed to Dr. Jorkes by Dr. Reginald Hilton, also of St. Bartholomew's Hospital. The mixed stock vaccine was used alternately with the autogenous vaccine, and the interval following any one injection was four or five days. This was in February, and by the end of the month the patient was able to whistle and articulate perfectly, and was in fact apparently quite cured.

Up to date there has been no return of symptoms, and last month the patient increased in weight by half a stone.

Southport.

GAERTNER MENINGITIS COMPLICATING GAERTNER ENTERITIS.

By JOHN SMITH, M.B. ABERD., D.P.H.,
BACTERIOLOGIST, CITY HOSPITAL, ABERDEEN.

CASES of Gaertner enteritis complicated by development of Gaertner meningitis appear to be extremely uncommon; after an extensive search of the literature only one such case is described as having occurred. This case is mentioned by Worster-Drought and Mills Kennedy[1] in their book on cerebro-spinal fever. Records of sporadic Gaertner infections are also infrequent. Thus Savage[2] instances three cases; two recorded by Batten and Forbes (1908) occurred in infants, the chief symptoms being diarrhœa and vomiting, both terminating fatally. The third case recorded by Dean[3] (1911) occurred in an adult who had no symptoms of food poisoning, but who had a suppurative cholecystitis from which *B. enteritidis* of Gaertner was isolated. Rosher and Wilson[4] describe a fourth sporadic case which simulated typhoid fever. McNee[5] records a fifth case which was at first suspected to be a case of cerebro-spinal fever, and which later developed marked signs of pulmonary involvement. It appears, therefore, that only one case of Gaertner enteritis complicated with meningitis, and five sporadic cases of Gaertner infections, are described in the literature on this subject. Accordingly it has seemed desirable to record the following case:—

A. B., a male child, aged 5 weeks, admitted to hospital on Dec. 2nd, 1920.

History.—The child had been ill for a fortnight previous to admission. During that time the chief symptoms were diarrhœa and vomiting, with considerable pyrexia. On Dec. 1st slight head retraction was observed.

Condition on Admission.—Temp. 99·2° F., pulse 160, resp. rate 50; head retraction very marked, the anterior fontanelle bulging, and Kernig's sign present.

Course of Illness.—On the 3rd temp. rose to 101°, and from this point onwards child became progressively worse. Convulsions were frequent, and the child died on the 7th, five days after admission.

Cerebro-spinal Fluid.—Lumbar puncture was performed on admission and on four subsequent days. The first three punctures yielded a total of 110 c.cm. cerebro-spinal fluid. The fourth and fifth punctures yielded no fluid.

Bacteriological Diagnosis.—The fluid obtained at the first lumbar puncture was turbid, and when allowed to stand in a test-tube a distinct deposit was formed. The globulin tests of Noguchi and Ross-Jones showed a great increase above normal in the amount of globulin present. After standing one portion of the fluid overnight a pellicle formed. The pellicle was suspended in the centre by processes projecting from the periphery, and was very similar in appearance to that obtained in tuberculous cerebro-spinal fluids. Smears made of the deposit after centrifuging and stained by Gram's method showed the presence of numerous Gram-negative organisms, mostly extracellular. Some of the organisms were definite bacilli, others were almost coccal in shape. A differential cell count showed that 90 per cent. of the cells were polymorphs, and 10 per cent. small lymphocytes. Agar slopes and plates of trypagar,[6] containing hæmolysed blood, were inoculated and incubated overnight. On both slopes and plates numerous discrete colonies were obtained. The colonies consisted of Gram-negative bacilli.

The biochemical reactions of the organism were then investigated, and it was found that mannite, glucose, dulcite, maltose, galactose, and lævulose were fermented, while there was no change produced on lactose, saccharose, salicin, and raffinose. Litmus milk showed at first a slightly acid reaction, but later became markedly alkaline. No clot formed. Indol was not formed. The organism was motile. Agglutination tests were made, using *B. paratyphosus A*, *B. paratyphosus B*, and *B. enteritidis* of Gaertner agglutinating serums. The tubes were incubated in a water bath at 55° C. for two hours, and read after standing for quarter of an hour. It was found that the organism was agglutinated to the limit of the titre of *B. enteritidis* of Gaertner serum, and not by a dilution of $\frac{1}{100}$ *B. paratyphosus A*, and *B. paratyphosus B* agglutinating serums. Cultures were made from the fluid obtained at the second and third lumbar punctures. The same organism was present.

Post-mortem Examination.—The child showed no marked signs of wasting. The lungs were congested. Heart normal; stomach and intestines showed little macroscopic pathological change. Mesentery congested, mesenteric glands much enlarged. Liver enlarged and friable, showing marked signs of fatty degeneration. Spleen normal in appearance; kidney showed both cortex and medulla to be pale.

Pia-arachnoid, on opening of the cranium, found to be much congested. Sulcii filled with purulent exudate, most marked at base, especially left base. Superficial part of brain substance hyperæmic. Ventricles distended, containing blood-stained purulent fluid. Spinal membranes also showed an acute leptomeningitis. MacConkey plates were inoculated with material from intestinal contents, liver, spleen, and with heart blood, and pus from the brain. Typical *B. enteritidis* of Gaertner, fulfilling all the biochemical and agglutination reactions, were obtained from all these sources.

Source of Infection.—Not determined. No other cases of Gaertner enteritis were discovered in association with the case, and the five immediate contacts of the patient gave no history of any enteric infection. Samples of fæces obtained from all these contacts gave on examination for *B. enteritidis* of Gaertner negative results.

Feeding.—Previous to becoming ill the child had been fed on diluted cow's milk; after the onset of the illness a concentrated milk product had been substituted.

Conclusion.—It is evident from the clinical and bacteriological findings that this was a case primarily of Gaertner enteritis as indicated by the presence of diarrhœa and vomiting; by the isolation of the Gaertner bacillus from the intestine, liver, and spleen; and by the absence of meningeal symptoms during the first fortnight of the illness. Thereafter there was an extension of the infection to the meninges.

References.—1. Worster-Drought, C., and Kennedy, A. Mills: Cerebro-Spinal Fever, p. 335. 2. Savage, W. G.: Food Poisoning and Food Infections, p. 66. 3. Dean, G.: Jour. of Hygiene, 1911, xi., p. 259. 4. Rosher, A. B., and Wilson, G. Selby: THE LANCET, 1921, i., 16. 5. McNee, J. W.: THE LANCET, 1921, i., 218. 6. Med. Res. Report, No. 50, p. 16.

COLONIAL MEDICAL COUNCIL.—The South African *Union Government Gazette* announces that Dr. Arnold Hirst Watkins has been elected President of the Colonial Medical Council, with effect from August 31st, for the remainder of the period of office expiring on Dec. 31st, 1921, vice Dr. Charles F. K. Murray, resigned.

GOVERNMENT POSTS FOR WEST AFRICAN DOCTORS. We understand from *West Africa* that the Secretary of State for the Colonies has agreed to the creation of six posts in the Gold Coast Medical Service for West Africans possessing qualifications entitling them to be placed on the Medical Register of the United Kingdom. The salary attached to these posts will be at the rate of from £500 to £700 a year. An allowance, in lieu of quarters, at the rate in force for European officials will be granted, with the option of free Government quarters when such quarters are available. Pensions will be the same as those enjoyed by other African members of the Government service under the Pensions Ordinance. The duties of the African medical men, whom it is thus proposed to appoint to the Government service, will, unless an emergency should arise which rendered it necessary to employ them for other purposes, be entirely concerned with the indigenous population, and more especially with the poorer classes, and they will usually be stationed away from large towns. They will, as a general rule, be allowed private practice.

purified substance possesses the solubility characteristics of the globulin class of proteins, and consists of about 41·6 per cent. phospholipin and 58·4 per cent. of protein, the latter contains about 1·06 per cent. of phosphorus in firm combination. Addition of further amounts of phospholipin to the active material increases its activity. The presence in the tissues of an actual union between the protein and phospholipin elements is shown, and also that any alteration in this relation causes changes in the specific activity of the compound.

The Action of Tissue Extracts in the Coagulation of Blood, by C. A. Mills.—Tissue extracts accelerate the clotting of blood in a very definite manner. The active tissue substance will not react with the blood fibrinogen to form fibrin, either in vitro or in vivo, except in the presence of soluble calcium salts. Injected intravenously, rapidly, and in sufficient amounts, tissue extracts, or the purified active substance, cause intravascular clotting and death in a very definite manner. Injected slowly and in smaller amounts the blood is rendered non-coagulable, partially or completely, the non-coagulability apparently depending on a gradual removal of the greater part of the fibrinogen from the blood stream. A marked decrease in the alkali reserve of the plasma develops along with the development of the negative phase of coagulation, but is apparently not the cause of it. The injection of active tissue extracts into the blood stream so as to produce non-coagulability without clot formation is followed by an excretion of the active tissue substance apparently unchanged in the urine (dogs and rabbits). As observed by Loeb, there is present a class specificity in regard to the action of the tissue extracts on blood clotting. The specificity, however, is not absolute, since mammalian lung extract will accelerate the clotting of frog blood.

Certain Chemical Changes in the Blood after Pyloric Obstruction, by A. B. Hastings, C. D. Murray, and H. A. Murray.—The following changes in the blood were found to occur after closure of the pylorus in dogs—a marked increase in the CO_2 combining power of the blood and a striking fall in the concentration of Cl ions. These changes are confirmatory of the work of McCann and of McCullum. The authors further show a slight increase in the concentration of calcium in the serum, a marked increase in the sulphur and phosphorus concentration, and a variable diminution in the sodium concentration. The pH of the plasma, after operation, showed only an insignificant rise; at death it fell rapidly.

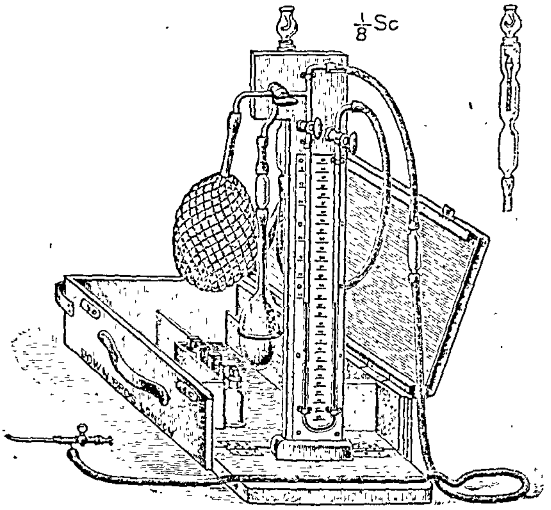
The Effect of Age on Pancreatic Enzymes, by F. Fenger and M. Hall.—Powdered pancreas preparations stored under ordinary conditions for one year show a material diminution in their diastatic and lipolytic activities, certain samples becoming almost inert. The proteolytic activity of the same samples, however, remains constant, indicating that trypsin is the most stable of the pancreatic enzymes.

The *Journal of the Royal Army Medical Corps* for September opens with a Preliminary Report on a Substitute for the Wassermann Reaction by Bt. Lieut.-Col. H. Marrian Perry and Major E. C. Lambkin. The "substitute" is the flocculation method of Dreyer and Ward,[1] or the Sigma test, which these officers tested against the Wassermann reaction in 220 cases, in which they found the Sigma test rather more delicate. They also compared the two tests in the examination of 22 cerebro-spinal fluids, where again this test proved the more delicate.—Dr. C. M. Wenyon, late Temp. Col., A.M.S., gives an account of malaria in Salonika and in the Farther East in 1919, in continuation of his preceding paper. Caucasia is a country highly malarious, as bad as Macedonia, but troops were not compelled to occupy so many of the worst positions, consequently fewer cases occurred; still, in one party of 305 men, 303 were attacked in about a month, they having no mosquito nets and no prophylactic quinine. In no case in Macedonia was there so high an incidence in so short a time, which is thought to show that prophylactic quinine does confer some benefit. Attempts were being made in the Caucasus before the war to deal with malaria, and some remarkable posters were exhibited at Tiflis. Mosquitoes survive the winter as larvæ in sheltered pools or more usually as mature females by hibernating—culex in caves, anopheles in huts or stables. The anopheles prefer stables which are warmer (buffaloes are "veritable stoves"); during the winter they occasionally wake up and make a meal of blood; on fine bright days they even come out in the sun and bite. The impregnated females in autumn become fat and as the weather cools collect in the barns; their ovaries develop slowly through the winter, and fully developed ovaries were found in March. Mosquito nets should be used from April to November inclusive. Malaria was more intense in the valleys because the anopheles in the valleys were chiefly the earlier breeding, and so earlier infected, *A. maculipennis* (May to November), but in the hills chiefly *A. superpictus* with a shorter season of infection (July to October). Of each variety about 6 per cent. were infected. It is possible that an infected female may carry malaria on through the winter, but generally it is the natives who are the carriers and who infect the early broods.

New Inventions.

ARTIFICIAL PNEUMOTHORAX APPARATUS.

THIS apparatus is a modification of that of Prof. Morelli, of Pavia, and its advantages are ease of manipulation and portability. The water-manometer is connected on the one hand with a collapsible india-rubber bag or reservoir of 400 c.cm. capacity and with a flexible tube leading to a hollow needle on the other hand. To the distal limb of the manometer is connected a safety-trap which prevents spilling of fluid. Air, nitrogen, or oxygen is run into the reservoir through the three-way tap on the left-hand side of the apparatus, the reservoir being almost filled but on no account distended. To this three-way tap is attached a glass bulb, containing sterilised cotton-wool, which acts as a filter for the gas, a similar filter being connected with the flexible tube leading to the needle. Gas having been run into the reservoir, the three-way tap is now turned so that all its openings are sealed, and the manometer taps are opened. After the usual aseptic precautions, the hollow needle is now thrust through the chest wall until the manometer reading indicates that the pleural cavity has been reached. The left-hand manometer tap is now closed and the three-way tap turned so that the coloured bead is uppermost. Gas will be drawn into the pleural cavity from the bag. From time to time the three-way tap is closed and the manometer tap opened in order to register the changes in intra-pleural pressure. As this pressure rises, gas will cease to flow into the chest, and the bag must be gently squeezed by the hand to continue the injection. When the reservoir is empty, the three-way tap is turned so that the coloured bead is to the left, and more gas is run in until the bag is just not distended as in the first instance. For primary inductions I use the Riviere cannula, but for refills a sharp-pointed Parry-Morgan needle is more convenient. The case contains four glass-stoppered bottles in safety clips. These may be filled with ether and tinct. iodi for sterilising the skin, novocaine solution for anæsthetising the tissues, and collodion for sealing the puncture wound. I have used this apparatus extensively during the past 12 months and have found it in every way satisfactory. It was made for me by Messrs. Down Bros.



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[1] THE LANCET, 1921, i., 956.

owing to his recognition that it has a literature of its own. As befits a veteran in his subject, Dr. Lloyd Tuckey feels that much of what he used to preach has become of general acceptance and can be omitted; nevertheless, the reader will still derive benefit from a perusal of the history of the question and from the records of old experiments now rather relegated to the class of *vieux jeux*. On the whole, notwithstanding the excellence of the clinical record here reported in considerable detail, we are not able to dispel the feeling that the methods of actual hypnotism are of somewhat limited applicability, though for suitably selected cases recourse might be had more often to its therapeutic aid.

ADVANCED SUGGESTION (NEURO-INDUCTION).

Second edition. By HAYDN BROWN, L.R.C.P. Edin. London: Baillière, Tindall and Cox. 1921. Pp. 402. 10*s.* 6*d.*

SOME two years ago we reviewed the first edition of this book, in which the principles of psychotherapy by suggestion are elaborated along lines commending themselves to its author. The second edition contains three new chapters and is otherwise amplified and modified. In our view, Dr. Haydn Brown is on much surer ground when he expounds the practical value of his particular technique than when he endeavours to propound psychological "laws" to explain its action. Reduced to its lowest terms and stripped of the peculiar terminology which is employed ("synapsis is the process of convection from neurones to neurones, through synapses,") the method appears to consist in the attainment of "automatic relaxation, both of body and mind," whereupon "the sensible words you say to the patient will henceforth continue to claim his interest right through, provided they are of the slightest value to him." As far as we have noticed, however, notwithstanding a chapter on technique, the author nowhere appears to vouchsafe simple, definite information as to the production of this ideal state of automatic relaxation; in fact, he admits candidly that "I am no better able to tell a medical man what I do than a golfer can by mere words tell another how to play the game." In his hands, to judge by the records of this book (and who can tell what virtue there may not be in the handling of a treatment-hardened neuropath or psychopath by a "new" process, or at least by a process for which there is a new name?), the method of suggestion in psychotherapy has proved conspicuously successful. As in many other instances, we are convinced it is the man behind the method who, by his justifiable self-confidence and his practice of several golden rules (to our mind perhaps the most useful and practical paragraphs in the book), is able to impress his patient, to his lasting benefit.

EXAMINATION OF MENTAL CASES.

Examen des Aliénés. Nouvelles Méthodes Biologiques et Cliniques. By ANDRÉ BARBÉ, Médecin Aliéniste des Hôpitaux de Paris. With a Preface by Dr. SÉGLAS, Physician to the Salpêtrière. Paris: Masson et Cie. 1921. Pp. 178. Fr.8.

THIS little handbook is intended to assist the alienist in the objective examination of mental cases; it is a kind of vade mecum of such methods of clinical pathology as are likely to prove of service to the student of mental disease. Accordingly we find by far the larger portion of the book taken up with the cerebro-spinal fluid, the blood, the urine, the circulatory system, and the ductless glands; the space devoted to psychological investigation is trifling by comparison, psycho-analysis being dismissed in a page and a half. In fact, the book rather belies its title, though the aspect of the subject that it deals with is of equal importance with the psychological. The author is seemingly far from being convinced that all mental disease is psychogenic, and his handbook of clinical laboratory methods is likely to prove very useful to the student entering on an asylum course, for no preconceptions as to the psychogenesis of mental disorder can render nugatory the importance of painstaking examination of the physical side of the diseased organism. The latter, indeed, is in many cases calculated to throw light on the origin and type of the mental symptoms. Dr. Barbé's little compendium deserves a cordial welcome among asylum men.

TEXT-BOOK OF NEUROLOGY.

Lehrbuch der Nervenkrankheiten für Studierende und Praktische Ärzte. In 30 Vorlesungen. Second enlarged and completely revised edition. By ROBERT BING, Professor in the University of Basle. Berlin and Vienna: Urban and Schwarzenberg. With 162 illustrations, some in colours. 1921. Pp. 672.

THE first edition of Prof. Robert Bing's text-book of neurology was reviewed in these columns in March, 1914, and there is little wonder that, with the great increase in the study of the nervous system which the intervening years have seen, the chapters on the peripheral nerves, neurosyphilis, acute infective diseases of the nervous system, cerebral and cerebellar disease, dysglandular syndromes, and the psychoneuroses, have been almost entirely re-written. The book presents itself for consideration as an up-to-date product of the active and progressive school of neurology in Switzerland and deserves all the favourable commendation we can give it, nor does it need its author's apology for his inability during the years of the war to keep himself abreast of the neurological literature of foreign countries; after all, originality derived from the utilisation of personal material is as valuable as, or more than, a mere compendium of the ideas of other workers. Notwithstanding the disadvantage we felt, and feel, the author labours under in adopting the "lecture" form of presentation of his subject, we acknowledge the successful way in which he manages to cover the field, no small one at that, of modern neurology, though omissions of one sort or another will strike the reader. In the chapter on the dyskinesias, included in which is paralysis agitans, the pathological information supplied is very meagre; and in a volume of this size the few lines given to myotonia atrophica seem unsatisfying when pages are devoted to sclerodermia. Under tumours of the temporal lobe, reference is made in one line to the occurrence of hallucinations of taste and smell, but the significant addition of a peculiar "dreamy state" in many of these cases is not mentioned. It is easy, of course, to criticise sins of omission; the book is intended rather for practitioners than for neurologists by profession, and we can congratulate Prof. Bing on having worthily attained his aim.

THE SYMPATHETIC AND ASSOCIATED SYSTEM.

Le Sympathique et les Systèmes Associés. Second edition, revised and enlarged. By A. C. GUILLAUME. With Preface by Prof. PIERRE MARIE. Paris: Masson et Cie. 1921. Pp. 398. Fr.18.

ON its first appearance we gave this monograph a favourable review, commending it for its clarity and comprehensiveness and for its useful diagrams. The first edition was a slender brochure of some 160 pages; the second runs to nearly 400, and therefore contains a vast amount of new material, revolving mainly round the question of the clinical physiopathology of the sympathetic system. In its present form it will be found particularly useful to the clinician, to whose attention we again heartily recommend it. The new diagrams are conspicuously serviceable, though the errors we noted in Figs. 5 and 11 have not been corrected. The book is sorely in need of an index.

Surgery and Pathology, Dental Materia Medica, Dental Mechanics and Dental Metallurgy, with a practical as well as the written and oral examinations in the subjects of Dental and Oral Surgery, Pathology, and Mechanics. The candidate will be tested in the Treatment of Dental Diseases, in Operative Dentistry, the Administration of Anæsthetics, Orthodontics, and in Prosthetic and Mechanical Dentistry. Candidates who claim exemption from the First Dental Examination on the ground of having passed the First and Second Triple Qualification Examinations or other recognised examinations will, before being admitted to the Second Dental Examination, be required to pay the total fee of £15 15*s.* payable for the dental diploma. Fees and schedules must be lodged with the Clerk not later than one week before the examination.

Higher Dental Diploma.—The College grants a Higher Dental Diploma which is registrable in the Dentists Register as an additional qualification. Every candidate for the Higher Dental Diploma shall produce evidence that he has been engaged in the study or practice of his profession as a Registered Dentist for at least one year subsequent to his having obtained the Licence in Dental Surgery of the College, or a Licence or Qualification in Dental Surgery specially recognised by the College. Particulars as to the examinations can be obtained from Mr. D. L. Eadie, Clerk to the Royal College of Surgeons, 49, Lauriston-place, Edinburgh. The fee payable by Licentiates of the College is £15 15*s.* For all other candidates £21. A fee of £10 10*s.* is retained for examination expenses in the case of referred candidates.

The examination embraces the following branches of Dental Science and practice: Dental Surgery, Anatomy, Pathology and Bacteriology, Prosthesis, Anæsthesia, and Dental Radiology. The examination will be clinical and practical as well as written and oral. Candidates will be expected to show a high degree of knowledge and skill.

Royal Faculty of Physicians and Surgeons of Glasgow.—The regulations as to certificates, curriculum, number, and subjects of examinations, fees, &c., are in effect similar to those of the Royal College of Surgeons of Edinburgh, but embrace Dental Bacteriology. Candidates can enter for the First Examination in three divisions, the first embracing Physics and Chemistry, the second Dental Metallurgy and Dental Mechanics, and the third Anatomy and Physiology. The examination in Dental Mechanics is practical; and there is at the Final Examination an examination in Practical Dentistry conducted in a dental hospital. Copies of regulations, &c., to be obtained from Mr. Walter Hurst, Registrar, Faculty Hall, 242, St. Vincent-street, Glasgow.

Royal College of Surgeons in Ireland.—Candidates for the Licence in Dental Surgery are required to pass two professional examinations. Before the First Examination the candidate must produce evidence of having attended courses in Theoretical and Practical Chemistry, including Metallurgy and Physics, at a recognised institution; of having been registered as a medical or dental student by the General Medical Council; and of having attended courses of instruction in the following subjects at a recognised school of medicine: (*a*) Anatomy Lectures; (*b*) Dissections with Demonstrations; (*c*) Physiology, including Dental Physiology; (*d*) Practical Physiology and Histology, including Dental Physiology and Histology, Human and Comparative. Before the Final Dental Examination the candidate must have been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under the direction of the superintendent of the Mechanical Department of a recognised Dental Hospital, and have attended, at institutions recognised by the College for the purpose, the following courses of instruction: (*a*) Dental Surgery and Pathology, Orthodontia, and the Materia Medica and Therapeutics applicable to Dental Surgery. Lectures. Two courses. (*b*) Dental Mechanics. Lectures. Two courses. (*c*) Dental Anatomy. Lectures. One course. (*d*) The practice of a Dental Hospital, or of the Dental Department of a General Hospital. Two years. He must also have attended Clinical instructions at a recognised General Hospital during the ordinary teaching sessions (nine months), and have been engaged during four years in the acquirement of professional knowledge subsequently to the date of registration as a medical or dental student. One year's bona-fide apprenticeship with a registered dental practitioner, after being registered as a medical or dental student, may be counted as one of the four years of professional study. He must be 21 years of age.

In the First Dental Examination candidates will be examined in (A) Physics and Chemistry, including Practical Chemistry and Metallurgy. (B) Anatomy, Physiology, and Histology—General and Dental. All the subjects may be passed at the same time, or they may be passed in two groups, (A and B). The examination is partly written, partly vivâ voce, and partly practical.

In the Final Dental Examination candidates will be examined in General Pathology, Medicine, and Surgery; Dental Surgery, and Dental Pathology, with the Materia Medica and Therapeutics applicable to Dental Surgery; Dental Mechanics and Metallurgy; Orthodontia. Candidates must pass in all the subjects at one examination. The examination is partly written, partly vivâ voce, and partly practical, and includes the examination of patients and the performance of dental operations. Candidates are required to provide their own instruments and gold for filling. The First Dental Examination will commence on the first Mondays in the months of February, May, and November. The Final Dental Examination will commence on the second Mondays in the months of February, May, and November. The total fee for the Diploma in Dental Surgery is 20 guineas. Candidates must pay the fees for examinations from which they are exempted, unless when such exemptions have been granted in virtue of examinations passed before the Conjoint Board in Ireland.

University of Birmingham.—The teaching of Dentistry is undertaken by the University acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board. The instruction at the Dental Hospital is carried out under the direction of the University Dental Clinical Board, so that students may fully qualify themselves for the Dental Diploma (L.D.S.) of this and other universities and licensing bodies. There is a special and well-equipped Dental Museum and Laboratory. An Entrance Exhibition, value £37 10*s.*, is awarded annually at the commencement of the winter session. The following are the regulations for Degrees in Dentistry:—1. The degrees conferred by the University are those of Bachelor and Master of Dental Surgery (B.D.S. and M.D.S.). 2. All candidates for these degrees must pass the same Matriculation Examination as that required from candidates for Medical Degrees. 3. The degree of Bachelor of Dental Surgery is not conferred upon any candidate who has not obtained a Licence in Dental Surgery. The candidate is not eligible for the degree until a period of 12 months has elapsed from the passing of his examination for the Licence in Dental Surgery. Of this period at least six months must be spent in the dental department of a general hospital approved by the University. 4. *A.* In addition to the Licence in Dental Surgery the candidate must produce evidence that he has attended the courses required by medical students of the University in the following subjects and passed the Examinations held in the same for Medical and Surgical Degrees: (*a*) Chemistry and Practical Chemistry (*b*) Physics and Practical Physics, (*c*) Elementary Biology, (*d*) Anatomy and Practical Anatomy, and (*e*) Physiology and Practical Physiology. *B.* That he has passed the class examinations in: (*f*) One Special Course of Lectures on Medicine, (*g*) One Special Course of Lectures on Surgery, and (*h*) Pathology and Bacteriology. *C.* That he has attended courses and that the individual has acquired, if such as to interfere with his inherited characters, is bound to react detrimentally upon his health or powers of resistance to disease. This seems to be pushing the matter too far, for some inherited characters would bear modification. The book goes on to discuss certain of Nature's prophylactics against disease, which maintain good health and so favour in the struggle for existence the individual who adopts them. Such are exercise, proper food, fresh air and sunshine, adequate sleep, and the use of water. None of this is new, but though preached for ages only the lucky few are able to make full use of the preventive and remedial measures which Nature provides. For centuries man has at certain times cast aside the bonds of civilisation, and has gone away to enjoy the holiday that brings him in closer touch with Nature, knowing instinctively that is the sort of holiday most likely to bring him back to normal health.

The moral of the book is that the means employed by Nature to produce a healthy race should also be those resorted to by the individual to remain healthy, or to recover health when it is temporarily lost.

JOURNALS.

British Journal of Children's Diseases. Vol. XVIII. July–September. Edited by J. D. ROLLESTON, M.D.—Dr. Bernard Myers contributes a paper on a Case of Oxycephaly in a girl aged 12 with tracings of the skull and skiagrams. The patient belonged to the group of oxycephaly cases described by H. Morley Fletcher in which changes occur in the first few months of life in the shape of the head, prominence of the eyes being observed at the same time. In such cases the condition becomes more evident during the first two years and is accompanied by increasing impairment of vision. The paper contains an account of the ophthalmoscopic examination of the case made by Dr. Bickerton and of the X ray findings by Dr. Martin Berry.—In a paper on Rickets, with Special Reference to its Ætiology, Early Manifestations, and Treatment, Dr. James Burnet, of Edinburgh, emphasises the fact that "rickets is essentially, in the first instance at all events, a disease of alimentation," and protests against its being regarded as a disease of bones. He is firmly convinced that rickets could be practically stamped out if the sale of "infant foods," dried milk, and condensed milk were strictly regulated, and medical men were warned against these articles as a routine method of infant feeding. Other causes of rickets, such as bad hygiene, he regards as insignificant compared with improper feeding. The early manifestations of rickets are divided by Dr. Burnet into catarrhal phenomena, nervous phenomena, and vaso-motor phenomena. Catarrhal phenomena, which are probably the earliest manifestations of all, consist in gastro-intestinal symptoms, such as vomiting and diarrhœa and a marked tendency to nasal, aural, and bronchial catarrh. The nervous phenomena include restlessness and irritability, attacks of crying, disturbed sleep, and convulsions. The principal vaso-motor phenomena are profuse sweating and the appearance of a red line when the finger-nail is lightly drawn across the skin. In the treatment of the disease Dr. Burnet attaches special importance to prophylaxis. If breast milk is not available he considers that scalded cows' milk, pure or diluted with water, or citrated, is the only proper substitute. As an adjunct, cod-liver oil may be ordered either pure or in the form of a good emulsion. Fresh air and sunlight and massage with olive oil are useful additional measures.—Dr. W. McKim Marriott, of St. Louis, writes on Abnormal Metabolism in Infancy and its Relationship to Symptomatology.—Mr. W. M. Mollison reports two cases of Paralysis of Eye Muscles Occurring in Connexion with Mastoiditis: Recovery. In the first case the paralysis came on after operation for acute symptoms arising in the course of chronic suppuration, and in the second in the course of simple acute mastoiditis. In neither case was any extension of disease found towards the tip of the petrous bone. Both cases had certain features in common—namely, pain about the affected eye, nausea and vomiting, slow pulse combined with paralysis of the levator palpebræ superioris, but in the first case paralysis of the third cranial nerve and in the second of the sixth cranial nerve was present. Some form of meningitis was probably responsible for involvement of individual cranial nerves, though the evidence was very poor in the second case.—The Society Intelligence contains résumés of cases of pædiatric interest shown at various sections of the Royal Society of Medicine and an account of recent meetings of the Philadelphia Pediatric Society and Société de Pédiatrie of Paris.—The abstracts from current literature are devoted to tuberculosis and dermatology.

The Journal of Biological Chemistry (Vol. XLVI., 1921) contains the following papers of interest on various problems of nutrition:—

Studies in the Digestibility of Proteins in Vitro. (I) The Effect of Cooking on the Digestibility of Phaseolin, by H. C. Waterman and C. O. Johns.—Preliminary work on a method for the comparison of protein digestibilities is described, and the possibility of developing an approximately quantitative method is discussed. The experiments indicate that phaseolin (navy bean) is rendered more readily digestible by boiling with distilled water. Cooking for five minutes gave a detectable increase in digestibility, while cooking for three-quarters of an hour apparently produces the maximum effect.

The Available Carbohydrate in Thrice-boiled Vegetables, by L. O'Reilly and E. H. McCabe.—With the introduction of thrice-boiled vegetables into the dietary of diabetics it becomes of importance to know the carbohydrate content available to the organism. From their investigations the authors conclude that only in the case of a few thrice-boiled vegetables is it possible to free them completely from carbohydrate as determined by taka-diastase. The use of 20 parts of water as compared with 10 for each boiling makes the extraction more complete, and by this method vegetable marrow, lettuce, and celery can be completely freed from available carbohydrate, and canned spinach, canned asparagus, turnips, beets and onions rendered approximately carbohydrate free. Canned string beans, cauliflowers, pumpkins, cabbage and carrots still retain about 0·5 per cent. available carbohydrate. The addition of sodium bicarbonate 0·05 to 0·1 per cent. assists complete extraction.

Antiscorbutic Potency of Milk Powders, by E. B. Hart, H. Steenbock, and N. R. Ellis.—Milk powders vary in their antiscorbutic properties. Apart from the factor of the initial vitamin content of the milk as influenced by feed, the powders vary in their potency with the process used in their manufacture, the spray process being more destructive of antiscorbutic vitamin than the Just process. These results should in no way condemn the milk powders made by the spray process; they only point out their limitations when used as the sole source of nutrients in infant feeding.

Some Observations on the Stability of the Antiscorbutic Vitamin and its Behaviour to Various Treatments, by N. R. Ellis, H. Steenbock, and E. B. Hart.—Desiccation of cabbage in an atmosphere of carbon dioxide for 35 hours at 65°C. did not prevent the destruction of the antiscorbutic vitamin. Fermentation processes involved in the making of sauerkraut from cabbage and silage from corn result in the destruction of the antiscorbutic factor. This vitamin was not removed from the orange-juice by ether or by aeration, but whereas oxidising agents caused its destruction, mild reducing action was without effect. Blood charcoal and the Chamberland filter removed a measurable amount of this vitamin from orange-juice.

A Study of the Chlorine Content of Milk and Blood after the Ingestion of Sodium Chloride, by W. Denis and W. R. Sisson.—By the administration to lactating goats of a sufficiently large amount of sodium chloride to produce an 18 per cent. increase in the blood plasma content, the chlorine content of the milk is also raised. Coincident with this increase, there is a great diminution in the volume of milk.

The Determination of Carbohydrates in Vegetable Food, by V. C. Myers and H. M. Croll.—A relatively simple colorimetric method is described for the determination of the amount and form of the available carbohydrate in vegetable foods.

Other articles dealing with more general bio-chemical subjects may be briefly summarised thus:—

Contributions to the Biochemistry of Iodine. IV. The Effect of Thyroxin on Growth in White Rats and in Rabbits, by A. T. Cameron and J. Carmichael.—Using decrease of growth rate in growing rats, hypertrophy of heart, liver, kidneys, and adrenals, and decrease of growth rate of thyroid, as tests, thyroxin, when administered by mouth, produces the same qualitative effects as does desiccated thyroid. Quantitatively, when compared on a basis of iodine content, the effects of thyroxin are distinctly less. This is probably due to bacterial decomposition; thyroid acts as a shield. The hypertrophy of heart and lymphatic tissue resembles that observed in cases of hyperthyroidism.

The Chemical Nature of Tissue Coagulins, by C. A. Mills.—The active agent of tissue extracts is a protein-phospholipin compound, and the phospholipin alone, although possessing a slight effect on blood coagulation, accounts only for a small fraction of the total activity of the extract. Splitting of the compound destroys its activity, but reunion restores its action. The isoelectric point of the compound lies between $N \times 10^{-5}$ and $N \times 10^{-6}$ acidity. At this point the material precipitates from its solutions without loss of its activity on coagulation. The school in the kingdom, and the fullest opportunities for study are offered to students preparing for any of the professional examinations. Instruction adapted to the requirements of students preparing for the B.D.S. Degree and the Dental Diplomas of the University, the Royal College of Surgeons of England, and of other licensing bodies is given throughout the session both at the University and at the Dental Hospital of Manchester adjoining the University. The required general hospital practice is taken at the Manchester Royal Infirmary. Women students are admitted to the classes in the Dental Department, and for them common rooms are provided. The composition fee for candidates for the University degree of Bachelor of Dental Surgery is 93 guineas, payable in three equal yearly instalments. The composition fee for candidates for the University Diploma in *Dentistry is 83 guineas, payable in three equal yearly* instalments. The composition fee for candidates for the L.D.S. of England is 93 guineas, payable in three equal yearly instalments. Students who have already served their apprenticeship with a private practitioner, and who propose to complete the final portion of their attendance at the University and at an approved dental hospital, will be required to pay the composition fee in two equal instalments at the commencement of the first and second years of studentship. The composition fee does not include the hospital fees, the examination fees, nor the fee for the conferment of the degree or the diploma.

National University of Ireland.—This University grants the degrees of Bachelor of Dental Surgery and a degree of Master of Dental Surgery. A student may not be admitted to the Degree of Bachelor of Dental Surgery unless a period of not less than four years shall have elapsed from the date of his matriculation, during which period he must have pursued an approved course of study of not less than nine terms. For the degree of Bachelor of Dental Surgery candidates must pass four examinations, the first two being the same as those for the first and second examination in Medicine. The subjects of the third examination are Dental and Practical Pathology, Dental Surgery and Dental Medicine, the subjects of the fourth being Dental Surgery and Pathology, Dental Mechanics, Operative Dentistry, Orthodontia, and Dental Materia Medica. A candidate for the degree of B.D.S. must produce evidence of having been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under professional direction in the mechanical department of a dental hospital approved by the University. A portion of or the entire period may be served before commencing study for the degree of B.D.S., but no portion so taken prior to commencement of study shall count as part of the four years of Dental Study. The degree of Master of Dental Surgery will not be granted until three years after the B.D.S. has been obtained.

Queen's University of Belfast.—At the beginning of session 1920–21 a Department of Dentistry was opened, and in due course the University expects to confer a Licentiate in Dental Surgery, a Bachelor of Dental Surgery, and a Master of Dental Surgery. Lecturers have been appointed in Dental Surgery, Dental Mechanics, Dental Metallurgy and Materia Medica, and Orthodontia.

TEACHING INSTITUTIONS IN DENTISTRY.

See also under Universities of Birmingham, Leeds, Liverpool, and Manchester above.

London.

Royal Dental Hospital of London, School of Dental Surgery, Leicester-square.—A school of the University of London, and women are now admitted as students and are eligible for all hospital appointments and school prizes. The school provides the special dental education required by the Royal College of Surgeons for the Licence in Dental Surgery. The general part of the curriculum may be taken at any general hospital. The hospital is open from 9 A.M. to 5 P.M., there being one staff for the morning and another for the afternoon of each day. Pupils are received for the training in dental mechanics recognised by the curriculum. The demonstrators at the commencement of each session give a course of lectures on Operative Dental Surgery. The five house surgeoncies are held for six months each and are open to all qualified students. The lecturers, in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery. The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory. There is an Entrance Scholarship in Chemistry and Physics of the value of £50. One Entrance Scholarship in Dental Mechanics and Metallurgy, value £25, open to pupils of the Hospital only. One Entrance Scholar*ship of £25 in Dental Mechanics, open to pupils of* private practitioners. The Saunders Scholarship of £20 and Saunders Prize of £5 awarded to second year students. The Storer Bennett Research Scholarship for Scientific Research in any branch of Dental Surgery, value £50, is awarded triennially. The Alfred Woodhouse Scholarship of £35 and the Robert Woodhouse Prize of £10 for Practical Dental Surgery. Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses at the end of the summer and winter sessions. Fee for two years' hospital practice required by the curriculum, including lectures, £70 in one payment, or £73 10*s.* in two yearly instalments. The curriculum requires two years to be passed at a General Hospital; the fee for this is about £63. Both hospitals can be attended simultaneously. For the lectures in Chemistry and Physics for the Preliminary Science Examination £13 13*s.* The fee for the instruction in Dental Mechanics and the two years' hospital practice required by the curriculum is £200 if paid in one instalment, or 200 guineas if paid in three equal instalments. The fee for tuition in Dental Mechanics is £70 per annum; for one year's hospital practice £28. The Winter Session opens on Oct. 3rd.

University College Hospital Dental School, corner of Great Portland and Devonshire-streets, W.—This Hospital and School has recently been thoroughly reorganised, and is now fully equipped with all the most modern appliances. Students are entered as students of University College Hospital, and, as such, attend the classes of Chemistry, Physics, Anatomy, and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland-street, hitherto known as the National Dental Hospital, the first Dental School to admit Women Students. Practical courses to comply with the R.C.S. curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator. Two Entrance Exhibitions, of the value of £40 and £20, are open for competition. Prizes are open for competition at the end of each course of lectures. Composition Fees: Comprising two years' Dental Mechanics, Chemistry, Physics, Anatomy, Physiology; two years' Hospital Practice, Medicine, Surgery, and Dental Lectures (four years): 1st year, £77; 2nd year, £56; 3rd year, £92; 4th year, £32. Total, £257. Medical Men: Two years' Mechanics, and Dental Practice and Lectures: 1st year, £102 6*s.*; 2nd year, £70. Total, £172 6*s.* For a six years' course of medical and dental education comprising the whole of the dental curriculum and the curriculum for the M.R.C.S., L.R.C.P. diplomas: 1st year, £113; 2nd year, £70; 3rd year, £73; 4th year, £60; 5th year, £73; 6th year, £49; total, £438, in six instalments payable in advance.

Guy's Hospital.—The work of the Dental Department begins daily at 9 A.M. both in the extraction rooms and in the conservation room. The Extraction Rooms: A new Dental Out-patient Department has been provided. There is ample accommodation for ordinary extractions and anæsthetic extractions, together with waiting- and retiring-rooms. Patients

Supplement to the Students' Guide.

DENTAL SURGERY.

ANYONE who is on the Medical Register is entitled to practise as a dentist, although he cannot register as such without a licence in dentistry; but it is of eminent advantage to take the L.D.S., otherwise few dental appointments at general or special hospitals or dispensaries are available.

THE DENTISTS' REGISTER.

The Registration of Dental Students is carried on at the Medical Council Office in London in the same manner as the existing registration of medical students, and subject to the same regulations as regards Preliminary Examinations. Candidates for a diploma in Dental Surgery must produce certificates of having been engaged during four years in professional studies, including two years' instruction in mechanical dentistry. The two years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student. When a student can show evidence of regular pupilage in mechanical dentistry to a registered practitioner prior to the passing of a preliminary examination he may be allowed to antedate for a period not exceeding one year prior to the passing of a preliminary examination.

It is necessary for anyone practising Dental Surgery in this country to be on the Register, and no foreign qualifications are recognised, except the Dental Diploma granted in Belgium after examination by the Provincial Medical Commission, provided the holder has obtained the grade of "Candidate in Medicine" at one of the four Belgian Universities. Persons with Colonial and Foreign qualifications which have been obtained after a four years' curriculum can apply for special registration. Certain dental qualifications granted in Australia and New Zealand are also registrable. The Royal Colleges of the United Kingdom and ten of the Universities grant degrees or licences in Dental Surgery.

THE DIPLOMA-GRANTING BODIES IN DENTISTRY.

The Royal College of Surgeons of England grants a diploma in Dental Surgery under the following regulations, which apply to all candidates who have registered as dental students after Jan. 1st, 1897. Candidates are required to pass three examinations: the Preliminary Science Examination, the First Professional Examination, and the Second Professional Examination. 1. Preliminary Science Examination.—This is identical with Part I. of the First Examination of the Examining Board in England. Candidates who commenced professional study on or after Oct. 1st, 1913, must pass the Preliminary Science Examination before commencing the courses required for the Second Professional Examination. 2. The First Professional Examination.—The candidate must produce evidence of instruction in Dental Metallurgy and Practical Dental Mechanics. The Examination consists of Part I. (Mechanical Dentistry), Part II. (Dental Metallurgy), the examination in Dental Metallurgy being by written paper, and Part III. (*a*) General Anatomy and Physiology, (*b*) Dental Anatomy and Physiology conducted by papers and vivâ voce examination. The parts may be taken together or separately. III. The Second Professional Examination.—This is divided into two parts: (*a*) the General, (*b*) the Dental. The General part must be passed before the Dental portion. The instruction is obtained partly at a General Hospital and partly at a Dental Hospital.—The Second Professional Examination consists of: Part I., General Surgery and Pathology; Part II., Dental Surgery and Pathology, and Practical Dental Surgery. There is a written and vivâ voce examination in each part and a practical examination as well in Part II. Exemption from the Preliminary Science Examination is granted to candidates who have passed an Examination in Chemistry and Physics for a degree in Medicine at a University in the United Kingdom, in India, or in a British colony. Exemption from Examination in Anatomy and Physiology is granted to candidates who have passed the Second Examination of the Examining Board in England or the corresponding Examination for any degree or qualification in Medicine or Surgery registrable under the Medical Act of 1886. Exemption from Examination in General Surgery and Pathology is granted to candidates who have passed the Examination in Surgery of the Examining Board in England or the corresponding Examinations of the Colleges and University above mentioned. The fee for the diploma is 20 guineas, and is payable as follows: Preliminary Science Examination, for each admission to Part I., £3 3s.; Part II., £2 2s. First Professional Examination, for each admission to Part I., £4 4s.; Part II., £1 1s.; Part III. (*a*) £2 2s.; (*b*) £2 2s.; Second Professional Examination, for each admission to Part I., £2 2s.; Part II., £4 4s. Synopses of examinations and all further information can be obtained from the Secretary, Examination Hall, Queen-square, London, W.C. 1.

Royal College of Surgeons, Edinburgh.—Regulations giving a list of Preliminary Examinations recognised for obtaining the Licence in Dental Surgery, as well as of the subjects of the Professional Examinations, may be obtained from Mr. D. L. Eadie, Clerk to the Royal College of Surgeons, at 49, Lauriston-place, Edinburgh. Candidates must produce certificates of having, subsequently to the date of registration, been engaged for four years in professional studies and of three years' instruction in Mechanical Dentistry from a registered dental practitioner, except in the case of previously registered medical practitioners, when two years will be considered sufficient. Candidates must also have attended a course of instruction at a University or in an established school of medicine or in a provincial school specially recognised by the College as qualifying for the Diploma in Surgery. In addition they will be required to have attended in a recognised dental hospital, or with teachers recognised by the College, special courses of lectures and instruction in Anatomy and Physiology (Human and Comparative), Surgery, Pathology, Materia Medica, Dental Histology, and Practical Dental Mechanics and Metallurgy; two years' attendance at a dental hospital or the dental department of a general hospital recognised by the College. Practical instruction in Mechanical Dentistry from a registered Dentist, or in the Mechanical Department of a recognised Dental Hospital and School, for three years. Candidates who have passed the First and Second Examinations for the Triple Qualification will be exempt from the First Dental Examination, and will have the advantage of being admissible either to the Final Dental Examination or to the subsequent Examination for the Triple Qualification, or to both. But the First Dental Examination will not be held as equivalent to the First and Second Triple Examinations, and will admit to the Final Dental Examination only. Candidates who are Licentiates of this College or who may be registered medical practitioners will be required to produce certificates of attendance on the special subjects only and will be examined in these only for the dental diploma. First Professional Examination: The candidate must have attended the required courses. The examination embraces (1) Chemistry and Physics; and (2) Anatomy and Physiology. The fee is £5 5s. for the complete examination, and £3 3s. is payable for each division. In all cases of rejected candidates the fee for re-entry is £3 3s. Second Examination: The candidate must have attended the remaining courses of the curriculum, must produce certificates showing that he is 21 years of age, and must pay a fee of £10 10s., for re-entry £5 5s. The examination embraces (1) Surgery and Medicine; and (2) the special subjects of Dental Anatomy and Physiology, Dental

5 guineas, open for competition to all Students. Extraction prize, value 2 guineas, open for competition to all Students. A prize in Orthodontics, value 5 guineas, open to all Students. All communications should be addressed to the Warden, School of Dentistry, the University, Leeds.

Dental Hospital of Manchester.—This hospital is in association for teaching purposes with the University of Manchester and the Royal Infirmary, and is in the centre of a very large population. Courses of study are provided to meet the requirements of the various examining bodies, including those of the University of Manchester for the qualifications L.D.S. and B.D.S., and the L.D.S. of the Royal College of Surgeons of England. Clinical instruction is given by the members of the staff and by the house surgeons and demonstrators, and also by the honorary anæsthetists in the administration of nitrous oxide gas; a special class in anæsthetics is conducted by the clinical tutor in that subject, and a class for instruction in porcelain and gold inlay work by the demonstrator specially appointed for that work.

Ten prizes, varying in value from £2 to £12 12*s.*, are awarded annually.

For the whole course of hospital instruction for the L.D.S. (including two years' mechanical training) the fee is £131 5*s.*, paid in instalments. For the two years' Operative Course only, £26 5*s.*, paid in two instalments. For the whole course of hospital instruction for the B.D.S. degree (including mechanical training), £168, paid in instalments. Additional practice in Dental Mechanics may be taken by pupils who have already received their mechanical training elsewhere, at a fee of £36 15*s.* for six months.

All the courses of instruction are open to women students.

Copies of the Prospectus will be forwarded on application to Mr. J. Hilditch Mathews, Dean.

Newcastle-upon-Tyne Dental Hospital and School.—This hospital is centrally situated (within five minutes of the various colleges, infirmary, and railway station); the rooms are well lighted and thoroughly equipped for carrying on the work. Dental surgeons and an anæsthetist attend each morning. A tutorial dental surgeon and a prosthetic tutor is also in attendance. The Composition Fee for the special Dental Lectures and Dental Hospital Practice is £60 4*s.* if paid in one sum, or £62 6*s.* if paid in two instalments of £31 3*s.* The Composition Fee for the Lectures at the Colleges of Medicine and Science is £57 10*s.*; in addition to this there is a library and an athletic fee. Particulars of the fee for General Hospital Practice may be obtained from the Senior House Physician, Royal Victoria Infirmary, Newcastle-upon-Tyne. Medals and Certificates of Merit are granted to students showing certain standards of proficiency in the various classes at the Dental School. The prospectus of the Dental Hospital and School, containing full information, may be obtained from either Mr. J. T. Jameson, 12, Windsor-crescent, Newcastle-upon-Tyne, Dean, or Mr. James Coltman, 13, Ellison-place, Newcastle-upon-Tyne, Vice-Dean.

Devon and Exeter Dental Hospital, 24, Southernhay West, Exeter.—Established 1880.—The hospital is open on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays, and patients are admitted between the hours of 9 and 11 A.M. Students attend the practice of the hospital under the control of the medical officers. Honorary treasurer, Mr. J. M. Ackland; secretary, Mr. Albert G. Littlejohn.

SCOTLAND.

The Incorporated Edinburgh Dental Hospital and School.—The Edinburgh Dental Hospital and School is located in spacious and well-equipped buildings at 30, 31, and 32, Chambers-street and offers special advantages to dental students. The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools. The general hospital attendance and clinical instruction are taken at the Royal Infirmary. The University, Medical Schools, and Royal Infirmary are within three minutes' walk of the Dental Hospital. The special courses are taken in the hospital. The Dental Hospital practice, extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry. The hospital admits a limited number of indentured pupils. They receive their instruction in Mechanical Dentistry concurrently with the general and special courses. A premium of 60 guineas is payable with each such pupil. The practice and lectures of the hospital are recognised by, and qualify for, all the Licensing Boards. The cost of the hospital outfit of instruments is included in the Dental Hospital fee of £42. The minimum cost of classes and Diploma for the whole course of dental instruction amounts to £98 17*s.* Those students who desire to take a Medical and Surgical Diploma in addition to the L.D.S. have in this school admirable facilities for so doing. The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow is recommended. The minimum cost of Professional Education, the Triple Qualification, and the Licence in Dental Surgery amounts to £172 19*s.* The Higher Dental Diploma (H.D.D.) of the Royal College of Surgeons affords an opportunity of obtaining a higher qualification subsequent to registration. The Prospectus, with full information, may be obtained by application to the Dean or the Assistant Secretary.

Incorporated Glasgow Dental Hospital, 15, Dalhousie-street, Glasgow.—The School is open to Men and Women Students, and Lectures are given on Dental Surgery, Operative Dental Surgery, Orthodontia, Dental Anatomy and Physiology, Pathology, Dental Histology, Dental Mechanics, Crown and Bridge work, Dental Metallurgy, Dental Bacteriology, and Anæsthetics. A new Radiography department has been added. Lectures on general subjects required for Dentistry may be taken at the University or at one of the extramural schools where special provision is made for Dental Students. Composition fee for two years' Hospital Practice and Lectures special to Dentistry, £50 on entry, or in two instalments of £31 10*s.* and £21. Full information may be had on application to the Dean.

Glasgow Royal Infirmary (Dental Department).—Mr. W. R. Taylor attends at the Royal Infirmary at 9 A.M. on Wednesdays and other days as arranged. The following course in the curriculum can be taken at St. Mungo's College: Anatomy, six months; Practical Anatomy, nine months; Physiology, six months; Chemistry, six months; Practical Chemistry with Metallurgy, three months; Surgery, six months; Medicine, six months; Materia Medica, three months; Clinical Surgery, six months; Dental Surgery, six months, and attendance for two years on the dental department of the hospital. The attendance on the Dental Clinic is free to students of the hospital.

IRELAND.

Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin.—All Dental Students who have passed their First Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital. In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica. Practical instruction is also given in Anæsthetics.

Fees.—Dental Hospital Practice (each year), £18 18*s.*; Lectures, £5 5*s.* Registered dentists who are members of the British Dental Association will usually be permitted to take out a three months' course for a fee of 6 guineas. The course in practical Dental Mechanics can be taken in the Hospital Laboratory. Further particulars can be obtained from the Dean.

passed the class examinations in: (*k*) Dental Histology and Patho-Histology, (*l*) Comparative Dental Anatomy, and (*m*) Dental Surgery and Prosthetic Dentistry. *D.* That he has received instruction in the Clinical Examination of living cases at the dental department of a general hospital for a period of not less than six months. 5. The Final Examination will deal with the subjects in Classes *C* and *D*. 6. On the expiration of 12 months from the date of passing the Examination for the Degree of Bachelor of Dental Surgery, the candidate will be eligible for that of Master of Dental Surgery. 7. For this degree candidates will be required to submit a thesis containing original work and investigations in some subject connected with Dentistry, which theses shall be submitted to examiners to be nominated by the Dental Advisory Board.

University of Bristol.—Candidates for the degree of Bachelor of Dental Surgery must be not less than 21 years of age and shall have pursued the courses prescribed by University regulations during not less than five years, of which three shall have been passed in the University, and shall have been registered as dental students by the General Medical Council. All candidates for the degree of B.D.S. are required to satisfy the examiners in the several subjects of four examinations. The First Examination: The subjects are Chemistry, Physics, and Zoology, and the curriculum extends over one year.* The Third Examination: The subjects are Dental Mechanics, Dental Metallurgy, and Dental Materia Medica, and the candidate shall produce evidence of having served for three years an approved pupilage in Dental Mechanics. The Second Examination: The subjects are Anatomy, Physiology, and Histology, Dental Anatomy, and Dental Histology. The Final Examination: The subjects are Medicine and Surgery, Dental Surgery (including Prosthetics), Operative Dental Surgery, and Dental Bacteriology. Degree of Master of Dental Surgery: Candidates shall be Bachelors of the University, shall present a Dissertation on some subject of Dental Surgery to be approved by the Examiners, and pass an examination in Dental Surgery. Diploma in Dental Surgery: Candidates need not be undergraduates, but shall have passed an entrance examination satisfactory to the University before being admitted to any professional examination; the curriculum extends over four years. A three years' pupilage in Mechanical Dentistry is required and four examinations must be passed, the subjects of which differ only from those of the B.D.S. in that Zoology is not required for the First Examination, and Medicine is not required for the Final Examination. Candidates who are already registered medical practitioners shall be further exempted from study and examination in Physics and Chemistry, Anatomy, Physiology and Histology, Medicine, and General Surgery.

University of Durham.—Every candidate for the Licence in Dental Surgery must be registered as a dental student. There are four Examinations. The subjects are:—*First:* (*a*) Chemistry; and (*b*) Physics. *Second:* (*a*) Dental Mechanics, Theoretical and Practical; (*b*) Dental Metallurgy. *Third:* (*a*) Anatomy; (*b*) Physiology and Histology; (*c*) Dental Anatomy and Dental Histology; and (*d*) Dental Materia Medica. *Final:* (*a*) Surgery; (*b*) Dental Surgery, including Prosthetics and Orthodontia; (*c*) Operative Dental Surgery, Practical Examination; and (*d*) Dental Pathology and Bacteriology. A candidate before presenting himself for examination is required to furnish certificates of instruction in the following subjects, attended after registration as a dental student at recognised Colleges or Schools:—*First Examination:* Chemistry and Physics. *Second Examination:* Dental Mechanics and Dental Metallurgy. *Third Examination:* Anatomy, with Dissections; Physiology; Histology; Dental Anatomy and Physiology; Dental Histology; and Dental Materia Medica. *Final Examination:* Dental Hospital Practice (two years); General Hospital Practice (nine months); Medicine Lectures (two terms); Surgery Lectures (two terms); Dental Surgery and Pathology (a course of not less than 20 lectures); Dental Bacteriology (three terms); Operative Dental Surgery (not less than 12 lectures); and Anæsthetics (a course of not less than one month).

Before admission to the Final Examination each candidate must furnish evidence (1) of having attained the age of 21 years; (2) of having undergone a three years' pupilage in Mechanical Dentistry with a registered dentist; and (3) of having been engaged in professional study for at least four years subsequent to registration as a dental student. The examinations will be held concurrently with the medical examinations, and the fees payable by candidates are as follows: First Examination, £2 10*s.*; Second Examination, £2 10*s.*; Third Examination, £3 10*s.*; Final Examination, £3 10*s.*; fee for Licence, £3; total, £15. For re-examination: First Examination, £1 10*s.*; Second Examination, £2; Third Examination, £2 (in one part only, £1); Fourth Examination, £2. The practical examinations in dentistry will be conducted at the Newcastle Dental Hospital.

University of Leeds.—The degrees in Dental Surgery are Bachelor of Dental Surgery (B.Ch.D.) and Master of Dental Surgery (M.Ch.D.). All candidates for the degree of Bachelor of Dental Surgery shall be required to have passed the Matriculation Examination, to have pursued thereafter approved courses of study for not less than five academic years, two of such years at least having been passed in the University subsequently to the date of passing Parts I. and II. of the First Examination, and to have completed such period of pupilage or hospital attendance, or both, as may be prescribed by the regulations of the University. No candidate will be admitted to the degree who has not attained the age of 21 years on the day of graduation. The classes in the Department of Dentistry begin on Oct. 3rd. The instruction in the Preliminary subjects of Chemistry, Physics, and Biology are given at the University in College-road. The classes in the other subjects and the systematic courses in Dental subjects are held in the School of Medicine of the University in Thoresby-place. The clinical instruction is given in the Dental Department at the Leeds General Infirmary. Applications for the prospectus should be made to the Dean of the Faculty of Medicine.

University of Liverpool (Liverpool Dental Hospital Clinical School and School of Dental Surgery).—The University grants a Licence in Dental Surgery (L.D.S.) and degrees in Dental Surgery (B.D.S. and M.D.S.). The courses of systematic instruction are given in the University buildings, five minutes' walk from the Dental Hospital. The two institutions are closely associated, and the management of the curriculum is in the hands of the Board of Dental Studies. The Dental Hospital, covering a site of 672 square yards, is equipped in each department with every modern accessory and receives constant additions. The laboratory is in charge of a skilled dental mechanic under the supervision of the Director of Dental Education and Dental Staff, and students are able to undertake at the hospital the whole of their training in Mechanical Dentistry. The times of the lectures at the University are arranged to meet the convenience of students, thus allowing the maximum time for attendance upon Dental Hospital practice. Fees: The fees for the complete courses, including Pupilage and Hospital Practice, are as follows: Degree of B.D.S., £237 10*s.*; M.D.S., £18 5*s.*; L.D.S. (Liverp.), £100; L.D.S. (other licensing bodies), £203. Further information may be had from the Director of Dental Education, Prof. W. H. Gilmour.

University of Manchester.—In the University of Manchester the Dental Department forms an integral part of the Faculty of Medicine. This contains a series of laboratories, lecture rooms, and museums which will bear comparison with those of any other maimed; the interested world is beyond the stage where verbal communication can possibly achieve the desirable end. But, on the whole, publication becomes less feasible as the work becomes more serious because the available public becomes progressively smaller, and it is difficult to see how many sober scientific journals are to be maintained. The great technical weeklies are subsidised by their advertisements, which incidentally are not the least useful or interesting part of their contents; in America a good many journals are helped out by endowments, a fact which explains their moderate price; journals with a big circulation, such as those of the chemical societies, have an available margin for economies. But most of our valuable periodicals have a very limited circulation, they rely on relatively small societies whose members are, for the most part, much poorer than they were and their very existence seems to be threatened.

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* Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination for either the B.D.S. or the L.D.S., and will be regarded as having completed one year of study.

Possible alleviations or solutions fall roughly under two heads. In the first place various plans have been suggested depending on alterations in the form of publication, and Mr. Brierley has a concrete proposal to put forward. Premising that the readers of scientific papers want to acquaint themselves with either a summary statement of the author's conclusions or the fullest details of the observations on which his conclusions rest, he points out that the present method of a curtailed publication in extenso satisfies nobody; it is too full for a summary, too meagre for critical examination. He suggests that the journals should contain very full summaries with the minimum of original data necessary for their comprehension; these would be read or looked through by those generally interested in the compartment of science dealt with by the journal. For the specialist the results of the inquiry would be written up in full detail with all the original data, and these memoirs, with any germane pictures or specimens, would be deposited in some central office where they would be available for consultation by the few people really interested and competent. It is a scheme to which everyone will have a spontaneous repugnance, but if, as Mr. Brierley bids us, we face reality, it may be the best way out of our troubles. It is at any rate something to be thankful for that scientific memoirs are susceptible to condensation; it is reported that the Russian novelists are reduced to reading their works aloud to those who want to listen or who cannot get away. The second line along which relief may be sought involves an alteration in the material rather than in its method of reproduction. As Mr. Brierley indicates, many of the papers published are merely records of time spent and have no permanent and little (if any) temporary value in the advancement of learning. The curious and rather secretive interest in things which used to lead to discovery has been the subject of what almost amounts to a stunt; research has become a business and has to justify itself and those who engage in it. But is this really progress? Is not the real solution of the cost of printing to be found, not by curbing the rapacity of compositors as Prof. Oman suggests, but by setting a different standard of merit for what ought to be put into type? If those contributions only were printed which really made a contribution to knowledge and, what is perhaps more important, indicated further lines of advance, much of the present trouble might disappear. The others could be printed in the briefest abstract. But the lot of editors might then be unhappier than it now is.

The cynic may remind us that some of Cavendish's papers have only this year been transferred from manuscript to print and that, after all, publication does not matter very much; the pessimist, that the dull formalism into which so much of scientific literature has fallen deserves no better fate than it has met. Re-thinking is doubtless needed in several directions; the importance of publication has perhaps been exaggerated, it would be as well for scientific writers to realise that it is possible to be serious without being solemn. But someone must find a plan for making publication possible for material which deserves it.

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Treatment of Stigma Diseases in General Hospitals.

It is curious how the attitude of man towards different diseases has changed from time to time, a disease like tuberculosis, for example, being regarded by our ancestors as a pathetically genteel state to which the victims of unrequited affections were peculiarly liable. Cancer, on the other hand, was discussed by our grandparents with vague horror, and when it occurred in the family it was referred to with tactful anonymity. At the present time the subject of cancer is ventilated with call-a-spade-a-spade frankness, whereas tuberculosis has become a stigma disease, the mention of which conjures up terrifying pictures of infection, not to say contagion. The lurid colouring of such pictures has been not a little enhanced by the injudicious daubing of "compulsory segregation" heavily over the canvas. A useful corrective to this tendency is to be found in the recommendation by the American Medical Association that wards in general hospitals should be opened to tuberculous patients. This recommendation was prepared by the American National Tuberculosis Association in 1916, and its approval by the American Medical Association at its recent annual meeting at Boston marks a definite change in the attitude of the profession to this disease. It has been calculated that there are about two million known sufferers from tuberculosis in the U.S.A., quite apart from the thousands whose disease is incipient or latent and unknown. In this stage tuberculosis is often very difficult to detect, and to effect a certain diagnosis it is frequently desirable to admit the case to a hospital for a term of observation. But if this hospital be a special tuberculosis hospital, the person examined may emerge with the diagnosis of tuberculosis excluded, and yet he may not get rid of the stigma attaching to his sojourn in such a hospital. On the other hand, another person may actually be suffering from active tuberculosis in an early stage, but fear of the stigma of an avowed tuberculosis hospital may defer action till no action can secure his recovery. In a general hospital the diagnosis of tuberculosis does not become general knowledge, and the family need not be embarrassed by such knowledge. At the same time, all necessary precautions can be taken to avoid danger of infection to others. In further support of this new policy, it is said that in many small towns two hospitals, one general and one tuberculous, can be run only at a loss, whereas if combined they would pay working expenses, and the combined hospital would draw many secret tuberculous cases. A number of general hospitals could easily enlarge their facilities by fitting up porches and other open-air structures without great extra expense. The same arguments apply to the other stigma diseases, and great as is the importance of specialisation in the treatment of various diseases, this aspect must not blind us to the socio-psychological factor.

are admitted between 8.45 and 9.30 A.M., and are seen by the dental surgeon for the day, the staff demonstrator, the dental house surgeon, and the dressers. The Conservation Room is open from 9 A.M. till 5 P.M. It has recently been entirely remodelled and greatly enlarged, giving a floor space of over 6000 square feet. It affords accommodation for about 100 dental chairs, with the necessary equipment of the most modern type, for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. The members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Prosthetic Laboratory. The Probationers' Laboratory is supervised by two of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of clinical study. Students in Dental Prosthetics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out. Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the L.D.S. Eng.—viz., two years' studentship in dental prosthetics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. The fees for these two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma. Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge. Four Scholarships in Dental Prosthetics of the value of £30 each are offered for competition annually, two in September and two in April, and prizes of the aggregate value of £40 are awarded for general proficiency and for skill in Operative Dentistry. The Newland-Pedley Gold Medal for Operative Dentistry is also awarded annually. A Dental Travelling Scholarship of the value of £100 is awarded every second year. Dental students are eligible for admission to the Residential College and enjoy the privileges of students in the Medical School. Application should be made to the Dean of the Medical School.

London Hospital.—This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances. It provides a complete curriculum in all subjects for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern; the fountain spittoon at every chair has been specially designed and has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet. Electric sterilisers are supplied in each department and motor engines where required. The School possesses in addition to the Theatres, Laboratories and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Dental Metallurgy and Dental Prosthesis. A systematic course of instruction in Dental Prosthesis is arranged for pupils. The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants. Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground. For full particulars as to fees and course of study advised apply to the Dean, Prof. William Wright, who will be glad to make arrangements for anyone wishing to see the Dental School and Medical College.

London (Royal Free Hospital) School of Medicine for Women.—Full courses are arranged for women students for the study of dentistry, and in preparation for the Licence in Dental Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women, in conjunction with the London Dental Hospital, Leicester-square. The course is arranged as follows: First and second years: Chemistry, Physics, and Dental Mechanics. Third and fourth years: Anatomy, Physiology, and Special Dental Courses, Courses in Medicine and Surgery, General Hospital Course, Dental Hospital Course.

PROVINCIAL.

Birmingham Dental Hospital, Great Charles-street.—Dean: Mr. W. T. Madin. The Dental Hospital was founded in 1858, and was recognised by the Royal College of Surgeons in 1880 for the teaching of Dental Students. Having an annual attendance of about 10,000 patients, it affords every advantage for students about to enter the profession to acquire a thorough practical knowledge, as required by the Medical Council. The present Hospital was opened on July 6th, 1905. It has accommodation for 50 students. The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery. The operations performed annually average 35,000, including 5000 gold and other fillings, and many cases of crowns, bridges, porcelain inlays, and regulations. By arrangements with the Birmingham University and with the General and Queen's Hospitals the entire course of Lectures, Hospital Practice, &c., may be completed for an inclusive fee of £121 14*s.* 6*d.*, or including Mechanical Pupilage, £233 5*s.* 9*d.* Examination fees for L.D.S. Birm., total £22 10*s.* The instruments and materials necessary for Hospital Practice cost about £35. The Composition Fee for the courses required for the L.D.S. of the University, or any of the Corporations alone, is £75, payable in two annual instalments at the commencement of the first and second years; that for the courses required for the L.D.S. and the Degree in Dentistry of the University is £100; that for the L.D.S. in combination with the M.R.C.S. and L.R.C.P. is £106 5*s.*; and that for the M.B., Ch. B., and B.D.S. is £118 15*s.* All of these composition fees are payable in two annual instalments at the commencement of the first and second years. Each of these fees covers the cost of the courses given at the University for the qualifications indicated, but does not include fees for Hospital teaching. For two years' dental hospital practice the fee is £26 5*s.*, payable in two instalments of £13 2*s.* 6*d.* each at the commencement of the first and second (hospital) years respectively. For two years' mechanical pupilage, £111 11*s.* 3*d.*, which may be paid in two annual instalments of £65 12*s.* 6*d.* and £45 18*s.* 9*d.* respectively; mechanical pupils may join for a probationary period of one month, fee £8 11*s.* 3*d.*, which is deducted upon payment of the full amount. For general surgical hospital practice, lectures, and demonstrations: Surgery, two winters, £13 2*s.* 6*d.* One Entrance Scholarship is offered annually of the value of £37 10*s.* It is awarded to the student who, entering for the Dental Degree of the University in October, or having entered not earlier than the previous April, shall pass the best examination in the subjects studied during his apprenticeship. Candidates must be under the age of 21 years. Application for admission, together with a certificate of birth, must be sent to the Dean of the Medical Faculty, Mr. William F. Haslam, on or before Oct. 15th.

Leeds University School of Dentistry.—The School of Dentistry is fully equipped to provide training for Dental Students, and affords every opportunity for the student to prepare for any of the Dental Degrees or Diplomas. The Demonstrator of Operative Dental Surgery instructs students during their probationary course. At the completion of this training students have patients allotted to them by the Demonstrator, and have every opportunity of acquiring knowledge from the members of the Honorary Staff, two of whom are in attendance each day. The following prizes are awarded:—First year Students, value 2 guineas. Operative Dental Surgery Prize, value 5 guineas. Two prizes in Prosthetic Dentistry: (*a*) a prize, value 2 guineas, for first year pupils; (*b*) a prize, value down of proteins by putrefactive bacilli are harmful when administered by the *mouth*, and that the whole conception is based upon injections under the skin.

It is well attested that in the majority of food-poisoning outbreaks the food is perfectly good in appearance, taste, and smell, and that evidences of decomposition are usually conspicuously absent. On the positive side all outbreaks, or at least all the larger ones which have been scientifically investigated, have been traced to the activities of specific bacilli, nearly all of them members of the salmonella group. While this point has been definitely established it still leaves very many factors in their causation unexplained. One essential problem which has to be solved is as to the source and channels whereby the infecting bacilli gain access to the food. It is this vital factor that most of the recorded outbreaks leave undecided. In a very few instances a human source of infection has been detected; this was the case in the Lambeth outbreak investigated by Dr. J. Priestley in Aug. 1920.[1] In a considerable number (especially on the Continent, where food supervision is more thorough) the food has been traced back to a diseased animal, but in the majority there is no evidence at all as to any source of infection. This cannot be ascribed to the use of meat from a diseased animal but unrecognised as such, since in many cases the evidence is convincing that the animal was healthy and infection was subsequent to slaughter. In some cases the food is not of animal origin at all; in others it was harmless at first and only poisonous subsequently. The sources of infection in these outbreaks can only be unravelled by searching and elaborate investigation of all channels of infection. In this and other directions there are many gaps in our knowledge and until they are bridged the prevention of these distressing outbreaks is likely to remain in its present unsatisfactory state.

This being the present position of our knowledge we welcome the arrangements which have been made recently between the Ministry of Health and the Medical Research Council for the fuller investigation of the conditions which give rise to illness produced by bacterial food poisoning. The inquiry will be undertaken by medical officers of the Foods Section of the Ministry, under the direction of Dr. A. W. J. MacFadden, in coöperation with Dr. W. G. Savage, under whom the investigations will be made at the University of Bristol by a special investigator. Medical officers of health and medical men are invited to make use of these facilities for the investigation of outbreaks through Dr. MacFadden or Dr. Savage at Weston-super-Mare. We reprint on p. 727, for the convenience of readers, the instructions given in the circular of the Ministry of Health for the collection and transmission of specimens to the laboratory.

CHEMICAL WARFARE.

The disaster last week at Oppau in the Rhine Province has recalled attention to one of the terrible episodes of the war, for whatever was the actual source of the explosion, the Ludwigshafen Aniline Works were notorious as one of the principal manufactories of poison gases. During actual hostilities, chemical warfare is an engrossing occupation to a large proportion both of attackers and defenders, as well as a painful concern to the whole civilian community. In times of peace it naturally tends to lose interest except for small groups of strategists preparing for the next campaign, chemists interested in toxicology, humanitarians who are out to prevent any campaign at all, and doctors whose duty it is to stand by in any event to anticipate and prevent bodily suffering and disability. The problem is a baffling one. It would be logically convenient to limit a discussion on chemical warfare to the view-point of any one of these groups, but the borderland is apt to be crossed. This was notably the case with the protest made at Edinburgh by the President of the British Association against the diversion of the brains employed in the promotion of his science to the perfecting of means for destroying mankind. Sir Edward Thorpe brushed on one side the sophistical talk about the painlessness or temporary effect of poison gas, and made a dignified appeal to the Association to set its face against the continued degradation of science in augmenting the horrors of war, and to use its influence in resisting a course of action which is the very negation of the civilisation which natural knowledge has done so much to build up. It is surely idle to dally with the notion that any effective form of chemical warfare can be genial or humane. The offensive agents devised in the laboratory are useful from the military point of view in proportion to their power to maim, torture, and kill the enemy, and their moral effect on him is in proportion to the horrors of their physical effect. Although it seems plainly wrong-headed to refuse to recognise that the objections which should reasonably prevent civilised nations from using phosgene or mustard gas are equally cogent against the employment of high explosive shell or any other recognised agent of destruction, allowance must be made for the psychological difference between using what you have and trying to devise something "better." As those engaged in the study of natural science will be the first to admit, nothing can remain as it is; if there is no progress decay inevitably follows. The implications involved in the continued prosecution of chemical warfare are of an order which may properly be described as fundamental. It is a question not only of the progress of chemical research but of the continuance of civilisation. It should be recognised that what Sir Edward Thorpe protests against is not a possibility but a reality. There is in existence a War Office organisation for the prosecution of research in the offensive and defensive aspects of chemical warfare with which are associated some 50 or 60 chemists, physicists, physiologists, and medical men. Their experimental ground near Salisbury is still in being. Whether anything of offensive military value is being discovered is naturally not known; progress along defensive lines is obviously as impossible as to discover the cure for an unknown disease. The scientific members of this Chemical Warfare Committee may find food for reflection in what Sir Edward Thorpe has said.

THE SPREAD OF HUMAN COCCIDIOSIS.

In 1915 H. M. Woodcock announced the discovery of a human coccidium in a man who had been invalided from Gallipoli. The discovery was quickly confirmed by G. C. Low and C. M. Wenyon, while the latter demonstrated that the coccidium belonged to the genus *Isospora*. Since that time a number of cases have been described from different parts of the world, and having encountered a case in the Philippines, Dr. F. G. Haughwout reviews[1] the situation and shows that practically all the cases can be traced either directly or indirectly to the Eastern Mediterranean area and that this coccidium has now circumnavigated the globe. Such is the influence of the war in spreading infections. Infections in men who had been in the Eastern Mediterranean war area have been recorded in England, Italy, Egypt, Salonika, and America, while in India they have been noted in men returning from Mesopotamia. In all these cases it appears that the infection was contracted in Turkish territory. In America, however, C. A. Kofoid discovered infections not only in men who had been abroad but also in others, so that it would seem that the infection may have been established in this country. A case recorded by F. Noc from West Africa was in a man who had been a prisoner of war in Germany, and the writer believes that the infection may have been contracted from other prisoners from the Eastern Mediterranean.

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[1] The Lancet, 1920, ii., 361.

[1] A Case of Human Coccidiosis detected in the Philippine Islands, with Remarks on the Development and Vitality of the Cysts of *Isospora hominis* (Rivolta). By Frank G. Haughwout. The Philippine Journal of Science, April, 1921.

THE LANCET.

LONDON: SATURDAY, OCTOBER 1, 1921.

The Health Committee of the League of Nations.

The Assembly of the League of Nations has now recast the proposals for the new Health Organisation of the League to meet political difficulties which, for the time being, prevent the accomplishment of the procedure which was settled at the first Assembly in December of last year.[1] In order to promote international measures for the improvement of public health, which is required of it by the Covenant, the League then decided to have an organisation which included a health council, with a small paid secretarial staff at Geneva, together with a consultative body on which as many national public health services as possible were represented. The latter body, which exists already in the Office International d'Hygiène Publique, was to be brought under the direction of the League, and practically was to nominate the Health Council, which in turn would appoint the Secretariat. The machinery now to be substituted, in consequence of the objections made by the United States to participating in an official organ of the League of Nations, consists of a Health Committee nominated directly by the Council of the League, and a small secretariat under a medical director, directly appointed by the secretary general of the League. To this post Dr. L. Rajchman, of Warsaw, has been appointed, and the personnel of the Committee, wide nationally as well as professionally, was given in our issue of Sept. 17th. The essential advisory body, which will bring the League into touch with official public health opinion in all countries, can fortunately still be found in the Office International d'Hygiène Publique, though it remains for the present, at the wish of the U.S.A., outside the League. The Office, while remaining autonomous with its present statutes and organisation under the Rome Convention of 1907, has signified its readiness to aid the League and will be systematically consulted by the Health Committee. The two bodies already have sufficient membership in common to keep them in close touch with each other.

The main functions which the League desires its Health Organisation to fulfil are not materially changed. They are stated as follows in the resolutions which have just been adopted by the Assembly, and are to be carried out in coöperation with the Office International d'Hygiène Publique:—

(*a*) To advise the League of Nations in matters affecting health.

(*b*) To bring administrative health authorities in different countries into closer relationship with each other.

(*c*) To organise means of more rapid interchange of information on matters where immediate precautions against disease may be required (e.g., epidemics), and to simplify methods for acting rapidly on such information where it affects more than one country.

(*d*) To promote the conclusion of international agreements necessary for administrative action in matters of health, and their revision when circumstances require, and to collect information as to action taken to give effect to such agreements.

(*e*) In regard to measures for the protection of the worker against sickness, disease, and injury arising out of his employment, which fall within the province of the International Labour Organisation, the Health Organisation will coöperate with, and assist, the Labour Organisation, it being understood that the Labour Organisation will, on its side, act in consultation with the Health Organisation in regard to all health matters.

(*f*) To confer and coöperate with international Red Cross Societies and other similar societies.

(*g*) To advise, when requested, other voluntary organisations in health matters of international concern.

(*h*) To organise missions in connexion with matters of health with the concurrence of the countries affected.

The chief service which the League of Nations can render to public medicine, within the limits of the small budget allotted for the purpose, consists in facilitating combined action in matters where many Governments are interested but where no one Government can be expected to act by itself. The immediate questions with which the Health Committee of the League has already made a beginning seem to afford good examples of practical and useful work of this nature. The Committee considered it essential to effective work that the Epidemics Commission of the League of Nations should be amalgamated with the Health Organisation of the League, and this view has been accepted. The results achieved by that Commission have been of great value in preventing the spread of typhus and other epidemic diseases from Russia to Western Europe, and all information available regarding the epidemic situation in Russia at the present time points to the necessity of fully maintaining these measures and extending them wherever necessary to border States other than Poland. This is particularly requisite in consequence of the grave risks which may be run by the spread of infection of cholera from the parts of Russia now affected by famine. First-hand information is now to be secured by a visit to Russia on the part of representatives of the Commission. The Health Committee felt also that a service of epidemiological intelligence and public health statistics will form a most important part of its work, and it was decided in consequence to start an immediate inquiry to determine the best methods for collection and distribution of such intelligence. As a result of the International Opium Convention the Health Committee has accepted a reference from the Council asking it to undertake an inquiry in certain countries in which the use of morphine, cocaine, and other dangerous drugs is said to be excessive as well as in certain others in which its use is at present more probably limited to medicinal and other legitimate purposes, with a view to obtaining information concerning the average quantities that might be regarded as reasonably needed for medical use in different classes of population.

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Publication and Progress.

The enormous increase in the cost of printing has put a serious obstacle in the way of the advancement of learning. From the point of view of the humanities Sir Charles Oman had a good deal to say about it at the recent meeting of the Library Association in Manchester, and on the scientific side Mr. W. B. Brierley, of Rothamsted, crystallises in *Nature* what everyone in contact with research work has been feeling for some time past. Serious work for the improvement of knowledge must be completed by publication of some sort unless its purpose is to be enthusiasts lay most stress on the building up of good sound teeth, which will resist decay, by means of more careful attention to the dietary of childhood and adolescence. The committee appointed is a representative one, and we do not doubt that its findings will give a great and much needed stimulus to the campaign against this extremely important cause of ill-health and physical disability. Sanitary reformers, who know the far-reaching effects of dental decay and oral sepsis, have been anxiously waiting for a lead.

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[1] See an address on International Organisation and Public Health (The Lancet, 1921, i., 415), and International Health Problems (The Lancet, 1921, i., 921).

OSWALD SCHMIEDEBERG.

There is something pathetic in the fact that Oswald Schmiedeberg should have outlived the post of professor of pathology in the German University of Strassburg, which he held during the whole period of German occupation from 1872 till 1918. Born in Kurland in Russia in 1838, he died after a short illness on July 12th of this year at Baden Baden, where he had gone to live near his friend Naunyn. Even the German medical papers seem to have lost him in his retirement, for they do not report his death till September. He was a prolific writer himself, and the articles inspired by him would be difficult to count. He is known for his theory that alcohol is in no sense a stimulant of the central nervous system, but that it depresses from the beginning, dulling the highest centres first and the medullary centres last of all, the so-called stimulant effects being merely due to depression of the inhibitory centres. He was less happy in his advocacy of organic iron compounds. His well-known Arzneimittellehre, translated into English in 1887 as "Elements of Pharmacology," has served as a model for text-books on pharmacology. Schmiedeberg's life was bound up in his institute and his scientific work, and he was one of a group of German scientific workers who have formed a school round them by attracting students from all parts of the world. Cushny and Stockman studied under him in Strassburg. While not coming into the class of Pasteur, Ehrlich, and Koch, he was certainly one of the great pioneers of experimental pharmacology.

MEDICAL EVIDENCE FOR THE DEFENCE.

Sir Edward Marshall-Hall, K.C., in addressing the jury on behalf of a medical man[1] charged with administering drugs to women for an illegal purpose, made the interesting suggestion that the Medical Defence Union should organise a rota of medical men who would be prepared to give evidence on behalf of an accused person, or to give the advantage of their knowledge to the court. In saying this Sir Edward Marshall-Hall appears to have had in his mind the power of the Crown to assemble medical witnesses against a prisoner, and the inability in many cases of a prisoner to obtain expert evidence on his behalf through lack of means. He referred, no doubt, to all classes of accused persons and not only to medical men, who generally can obtain such evidence owing to their professional position. He meant also, we presume, that such evidence should be given gratuitously. From a medical point of view the suggestion is rather attractive. It is certainly a hardship that a man's liberty should be placed in danger for lack of a medical witness able to criticise the medical evidence given for the prosecution and to put the medical aspect of the prisoner's case in a more favourable light. The giving of such aid as is indicated might, in conceivable cases, be a work of the truest charity. Whether the innovation would be generally practicable and welcomed by all parties is a slightly different matter. Sir Edward Marshall-Hall has had very great experience, perhaps greater than any other present member of the Bar, in the defence of difficult criminal cases. One would like to ask him whether, apart from the particular case that he was fighting, and the needs of a particular client, he would wish to see the system instituted which he has suggested, and considers that it would prove workable in practice. Probably in many instances the suggested medical witnesses would agree with the evidence given by the witnesses on behalf of the Crown. Further questions suggest themselves for consideration. Would the fact that such witnesses were not called prejudice the defence, and would the jury be unduly influenced against a prisoner by their absence? Would they be regarded as putting themselves forward as professional witnesses for the defence, and would the weight of their evidence be lessened thereby? It would be useful to know whether other counsel of experience in criminal courts agree with Sir Edward Marshall-Hall.

SMALL-POX AND VACCINATION.

At the present time a considerable proportion of the English people are under the impression that small-pox is no longer to be looked upon as a formidable disease, and that they may safely ignore the Vaccination Acts. The present generation has had no object-lesson of epidemic small-pox, and consequently has no fear of the disease; the belief appears to be widely prevalent that small-pox is to be reckoned among the diseases which have practically become extinct in England and Wales in consequence of the high standard of sanitation now exacted by local health authorities. The former ravages of variola in this country in pre-vaccination days are not realised—the heavy mortality of children, the blindness among many of the survivors, the facial disfiguration, along with other sequelæ. Nor does it appear to be generally recognised that small-pox is continually manifesting itself in epidemic form in one or another part of the world, that the infection is constantly being carried by shipping from one continent to another, and that England, from its geographical position and its world-wide commerce, is peculiarly exposed to the risks of imported small-pox.

To dispel this ignorance and remove the misapprehensions which have arisen in the public mind is a course that is obviously necessary in the interests of public health. Something could be done to improve the present situation if the public were put in possession of trustworthy information concerning small-pox and vaccination. Probably it has been with this object in view that the Medical Department of the Ministry of Health has prepared for circulation a small pamphlet[1] on this subject, written in plain and concise language, and summarising the main facts concerning small-pox and its only prophylactic—vaccination. An account is given of the behaviour of the disease in pre-vaccination days, and a description of how inoculation was tried and found wanting, how vaccinia was introduced by Jenner, and what were the early experiences of it in this country. There is also given a brief résumé of the present administrative arrangements for vaccination in England and Wales, and a short description of the Government Calf Lymph Establishment. Perhaps the most interesting section is that which deals with the present state of vaccination in the population of this country. In this connexion our readers may remember that the Royal Commission on Vaccination, in its final report presented in 1896, recommended that exemption should be granted to those parents who honestly believed that vaccination would be injurious to the health of their children. The Vaccination Act of 1898 therefore contained a provision allowing exemption in cases in which the applicant satisfied the magistrates that his conscientious objection was a genuine one. The Act of 1898 also instituted domiciliary instead of stational vaccination, and made obligatory the use of Government glycerinated calf lymph by public vaccinators. These concessions resulted in a better observance of the vaccination laws, and the percentage of vaccinations to births,

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[1] The Lancet, Sept. 24th, p. 677.

[1] Reports on Public Health and Medical Subjects, Ministry of Health, No. 8. Small-pox and Vaccination. London: H.M. Stationery Office. 1921. Pp. 19. Price 3d.

Health Insurance and the State.

THE State itself has a big responsibility in the matter—we begin where we left off a week ago. The mechanism set up under the National Insurance Acts makes it possible to carry out a concerted scheme for safeguarding the national health when the human elements in the scheme shall have all found appropriate place. To scrap this mechanism, for the State to withdraw its contribution and its directing influence, is now being seen for the calamity that it would be. It was solely the intervention of a department of State in the region of sickness insurance that opened up the sphere of public health and preventive medicine to the general practitioner. With the institution of a panel service the skill and experience of the family practitioner, unique in so many ways, was enlisted in a health service, no less truly a public health service because it bore a misleading name until it was united with the more technical Public Health Department of the Local Government Board to become the Ministry of Health. It is inconceivable that the General Practitioner Services of this Ministry should now be sacrificed in the interests of a so-called economy. The department, still in its infancy, will, we fancy, manifest the vitality of the young kitten which refuses to be drowned; if only for the reason that it is essential to the building-up of an ideal health service which has yet to include the provision of nursing, dentistry, hospital clinics, and pathological laboratories, all of which were foreshadowed when the first Insurance Act became law. Despite the urgent need of real economy, the responsibility of the State for the health of the citizen is no less than it was.

Much has been said in public and private during the week on the merits and demerits of the various human agencies which drive the mechanism. There is a reciprocal consensus of opinion that much improvement is possible. But two things stand out as noteworthy. One is the testimony of the chief organ of the approved societies that to discontinue medical benefit would be an unspeakable calamity. Our information, so writes the *National Insurance Gazette* for Sept. 17th, is to the effect that in most parts of the country medical benefit is a success. Conviction of this fact having been brought home to the critical member of the party, the value of medical benefit in the insurance scheme may fairly be considered as established for all practical purposes. The second item worthy of note is that on Sept. 23rd, at their annual conference, the group of friendly societies turned down a resolution to urge a national medical service upon the Ministry of Health, after hearing Dr. J. F. GORDON DILL set forth by invitation the provident scheme for extending hospital and additional services. All this is in harmony with the resolution to be laid before the coming Conference of Panel Committees, that the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the medical profession in uniting to ensure the continuance and improvement of this system.

THE LANCET of January 1st, 1921.

THE Manager will be obliged to readers who have not any further use for their copy of THE LANCET of the above date if they will kindly return it to him at 1, Bedford-street, Strand, W.C. 2. The postage on the number is three halfpence. He will be pleased to pay for those returned.

Annotations.

"Ne quid nimis."

PSYCHOTHERAPY IN RELATION TO MEDICINE.

THE future of psychotherapy and the place that it will eventually occupy in medicine affords an interesting subject for speculation. At present in its infancy, it has been brought to the fore, largely as the result of the numbers of cases of functional nervous disorders directly or indirectly attributable to the conditions of warfare. Psychotherapy is perhaps regarded with suspicion and distrust by some of the medical profession, either on account of its innate intangibility, the lack of definite proof of its hypotheses, or the possibilities of harm which might result from its exploitation by unqualified and unscrupulous persons. A moderate and carefully reasoned review of the subject is therefore refreshing, as there is still doubt as to its scope and limitations and the class of cases to which it is applicable. Dr. Millais Culpin gave our readers last week a reasonable presentation of the present position of psychotherapy. We would add that if psychotherapy is to play an important part in the future of medicine, it must find a place in our medical schools. It will probably always remain a specialty, but the student should receive instruction in its elements, as he does in other special branches of medicine and surgery, and he should be expected to display such knowledge, if called upon, at the time of his final examinations. If it is not deemed worthy of such attention, it can hardly yet be considered as a recognised branch of medicine. The tendency to send medical men for a short course of instruction, and to allow them then to practise as specialists in functional nervous disorders, is to be deplored. The psychotherapist should be a skilled neurologist and a sound general physician, for he will require expert knowledge before his doctrines can carry weight that such conditions as asthma are functional nervous disorders and amenable to treatment by mental exploration.

FOOD POISONING.

IN hot weather the thoughts of a medical officer of health naturally turn to the possibility of food poisoning and, if he lives in one of the larger towns, seldom is his anticipation unrealised, although many outbreaks never come to his notice. Frequently his first intimation is a note in the local press of a death from so-called ptomaine poisoning, with the consequent inquest and publicity. The more or less accidental fact that one or more of the cases ended fatally is often the only determining factor between official cognisance and investigation on the one hand and an entire absence of knowledge of the existence of an outbreak on the other. It is important to realise the complete lack of machinery for the official recognition of these outbreaks, mild or severe, as the extensive number of outbreaks which must occur and which remain uninvestigated is undoubtedly one important contributory reason why so much in their ætiology remains unexplained. Another factor retarding a fuller knowledge is the continued use in the lay press, by medical men, and even by health officers, of the term ptomaine poisoning, which suggests changes in the nature of putrefaction as in some way ætiologically concerned. Such a conception diverts inquiries into channels which lead nowhere and prevents investigations which might throw essential light upon paths of infection. Objection to its use is not purely academic, since its retention is a hindrance to progress. Dr. W. G. Savage has dealt decisively with this matter in his recent book on Food Poisoning and Food Infections. He pointed out that ptomaines are late degradation products of protein decomposition only produced when food is far too nasty to eat, that there is no evidence that ptomaines or other toxins produced by the breaking and maintain a hospital atmosphere convincing to the sufferers, to their friends, and not least, to the officials who have charge over them. The insane would then be regarded as patients rather than prisoners, even in those cases where the primary object of their segregation is the protection of society; when once detained, their restoration to health is alone important. This is the acknowledged atmosphere at hospitals for infectious diseases and might become universal at mental hospitals. On the preventive side, the Board deplores the collapse of Dr. Addison's Miscellaneous Provisions Bill in so far as its rejection involved a clause relating to the treatment of incipient mental disorder. There seems little doubt that some at least of the 22,373 new cases, admitted to institutions or under single care during 1920, could have been saved from certification had there existed some way of dealing with them in the early stages. This figure and that of the discharges cured, relieved, or "not recovered" (the destination of these 3276 persons remains obscure, unless transfers are included under this heading), show very little variation from those of the previous year. The total increase of 3580 in notified insane persons under care is accounted for mainly by a decrease in the death-rate. Recoveries numbered 7206, or 32·21 per cent. of the total direct admissions.

The condition of the patients in public asylums and the arrangements for their care and treatment have, as a rule, proved satisfactory to the Commissioners at their annual visits. Complaints of harshness or rough usage have been rare, and after searching inquiry justification for such complaints appears to have been even rarer. Dissatisfaction with the quality, monotony, and cooking of the food supplied seems to have been more widespread, and in some instances justified; the Board has pressed for improvement in this matter. The desirability of the nursing of male patients by women having been questioned, the Board has carefully considered this subject and concludes that under suitable circumstances the arrangement may be markedly beneficial. On the result of the special inquiry into the conditions and treatment of service patients in Prestwich Asylum we have already commented;[1] other criticisms have also been carefully investigated, a useful result being the unqualified condemnation of cold baths as correctional treatment. Considering the number of suicidal cases under detention, the number—22 persons—who managed to kill themselves while in residence does not seem high, especially as 15 of these were not regarded as suicidal; five others were so trusted as to be allowed about by themselves on parole, and two only were known to have active suicidal impulses. The cases of dysentery (1085) were fewer than those recorded for any year since 1908, when they numbered 1068. The lack of institutions for mental defectives remains an acknowledged blot in our system of dealing with abnormal members of the community. When employment is restricted it is the feeble and inefficient who suffer first, and, moreover, the presence of a large number of unprotected feeble-minded women must inevitably lead to the spread of venereal disease. Recognising that the need for national economy will prevent any direct advance on these lines at present, the Board urges local authorities at any rate to proceed with and to complete the work of ascertainment, in order that when funds permit no time shall be lost for lack of information.

Appendices contain statistics of the patients resident in asylums, hospitals, and houses, and of the expenditure incurred on their behalf, and also lists of the county and borough asylums, hospitals, and licensed houses with names of medical superintendents, clerks, and so forth; while in a supplement 15 pages are devoted to details of scientific research work. Inasmuch as the greater part of this work has been or will be published elsewhere, this space might with advantage have been allocated to extracts from the Commissioner's reports of their annual visits. Publication of Part II. of the report, which includes these, has been suspended for reasons of economy; certain statistical tables, also omitted, will be available for inspection in the offices of the Board. The reports of the Commissioners are, it is stated, mostly printed in the annual reports of the several institutions, but they would form instructive reading when taken collectively, and we regret their omission from an otherwise clear and adequate volume.

RECENT OPHTHALMOLOGY IN FRANCE.

THE French genius for elegant precision makes ophthalmology a congenial study. Dr. F. Terrien gives us a useful summary[1] of the progress of ophthalmology in France for the last year. Many of the subjects dealt with bear relation to general medicine and surgery. According to Prof. Achard, the most constant symptom of encephalitis lethargica is paralysis of the accommodation. The papilla is sometimes, but not always, affected with a moderate degree of neuritis. The anatomical seat of the lesion is usually the mid region of the mesencephalon round the aqueduct of Sylvius, when hæmorrhages are found near the vessels. In a case of retro-bulbar neuritis in a girl of 12, Dr. Netter found an alteration in the blood, the red corpuscles being reduced to one-half and the white being increased to threefold the normal, the condition being ameliorated by treatment directed to the anæmia. In a case of irido-choroiditis, an examination of the blood revealed the meningococcus some days before the supervention of any symptoms of meningitis. An observation recorded by Dr. A. Tournay in 1917 that inequality of the pupils is a physiological phenomenon when the eyes are directed to either side has been confirmed, the eye which is directed outwards towards the temple having the larger pupil. The fact that the phenomenon is found not only in healthy eyes but in blind ones points to its being not a true reflex but an associated movement of the pupil like contraction to accommodation. Coming to more exclusively ophthalmic observations, Morax and Fourrière record the results of sclero-iridectomy in hospital practice. In 16 cases of acute glaucoma, Holth's operation was performed in 12 and Elliot's in three. Tension was reduced to normal in all, but Elliot's method proved more efficacious in producing a filtering cicatrix. In subacute and chronic cases the same held good roughly. After 12 Lagrange operations there were 3 filtering cicatrices, after 22 Holth operations 6, and after 41 Elliot operations 22 filtering cicatrices. Late complications were rare, numbering only 5 after 500 operations.

SIR Frederick Andrewes and Sir Cuthbert Wallace have been appointed to fill the vacancies on the Medical Research Council created by the retirement in rotation of Mr. C. J. Bond and Prof. William Bulloch. The new appointments date from Oct. 1st.

THE Dental Section of the Students' Guide, for which space could not be found in our issue of August 27th, appears in our present issue. We commend it to the attention of the parents and guardians of intending dental surgeons. The future of dentistry is bright with possibilities.

WE print on p. 732 the names of some hundreds of medical men and women whose present addresses are not known to the Registrar of the General Medical Council. These practitioners are running the risk of having their names removed from the next issue of the Medical Register, and they should take immediate steps to keep their registration entry up to date. Removal from the Register has sundry inconvenient consequences on which we have often insisted.

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[1] THE LANCET, 1920, ii., 1153.

[1] Paris Médical, Sept. 3rd, 1921.

The case seen by the writer in the Philippines was in a man who had come from the United States and who had never before been abroad, and it is concluded the infection was picked up there. The only cases which cannot even indirectly be connected with the war are two described by Porter in natives of South Africa. It remains to be seen whether the parasite which has been distributed about the world will now take a firm hold in distant countries with creation of new endemic centres. There appear to be four other coccidia of man, but they belong to the genus *Eimeria*, like the common coccidium of the rabbit, and are much more rarely met with than the *Isospora*. As regards the investigations recorded by the writer, he has little new information to add to what is already known. He has shown, however, that the oöcysts of *Isospora* can withstand exposure to a tropical sun for three hours, during which complete desiccation of the material in which they occur takes place. The oöcysts of coccidia are notoriously resistant structures and complete drying does not prevent the development which must take place outside the body in order that they may bring about infection when swallowed by another human being.

SILICOSIS AMONG STONEMASONS.

THE discovery that dust-phthisis is only associated with the inhalation of silica dust narrowed the issue in relation to this disease so that the claim for compensation of workers became irresistible. The provisions of the Workmen's Compensation Act, 1906, were found not to be applicable to a disease so slow in onset; moreover, experience had shown certain defects in the working of this Act. Powers were therefore obtained in 1918 to grant compensation for dust-phthisis, or, as it should more correctly be called, silicosis or silicosis complicated by tuberculosis. Under the new Act different machinery is established to meet the liability imposed; any industry brought under its provisions is called upon to insure itself by some approved scheme to which all members of the industry are obliged to belong. Liability can no longer be transferred by insuring with some company; action on these lines in the past has not resulted in employers looking upon the liability as an incentive to preventive measures. The first scheme accepted under this new Act, that applying to the "refractories" industry, has made medical supervision of the workers, as well as compensation claims, a charge upon the employers. The medical supervision established is exerted by the officers of the tuberculosis authorities in the areas where the industry is carried on. Probably similar provision will be made in schemes made applicable to other industries as the powers of the 1918 Act are extended by order of the Secretary of State. Steps in this direction are already being taken.

The Safety and Welfare Committee of the Industrial Council for the Building Industry, of which the members were directed in November, 1920, to consider whether stonemasons should be brought within the scope of the Workmen's Compensation (Silicosis) Act, 1918, have now presented a preliminary report on the subject. A memorandum was prepared for the committee by Prof. E. L. Collis, and communications were sent to various associations and bodies concerned with the work of stonemasons; conferences were held with the Joint Industrial Council for the Quarrying Industry and with several trade-unions, and after further information from these and from other sources has been received and considered a further report will be issued. The above-mentioned memorandum is included in the report, and contains interesting details of the subject under consideration by the committee. During the years 1910–1912 there were in England and Wales 6559 deaths from all causes out of a total of 99,274 stone-getters, dressers, and masons aged 25 years and over. The normal percentage of deaths due to phthisis and fibroid disease among all males of similar ages was less than 12; at that rate about 780 masons would have died from these causes, whereas 1135 masons actually died—an excess of 355 cases in three years. Had the Compensation Act applied to masons it is reasonable to suppose compensation for death would have been payable for at least this number, together with compensation for various degrees of disablement in a larger number of cases. The Act, framed for provision of compensation to persons suffering from silicosis and from silicosis complicated by tuberculosis, applies only to such industries and processes as may be determined by the Home Secretary. The inhalation of silica dust results in a high incidence of fibroid disease, and of phthisis which frequently is implanted upon it, among gold-miners, tin-miners, ganister-miners, and brick-makers, all of whom deal with quartzite rock; among grinders of metal, who use sandstone wheels; among potters and flint-knappers, who work with flint; and among the stonemasons in whose interest the inquiry was particularly undertaken. Of stones used in building, sandstones contain silica in high proportion, granites contain a low proportion, and limestones are practically free. Thus the distribution of deaths among masons is strikingly irregular, depending on the district inhabited and the stone worked. In order to avoid misleading inferences due to the age-distribution of any particular class of worker, the Registrar-General has prepared figures for a "standard population"—i.e., the actual number of males of all classes living at the various age-periods—enabling fair comparison to be made between the respective death-rates of masons and of the general population. The figures afford material for considering whether or not to include members of the building industry under the workings of the "Silicosis" Act.

A MEDICAL BENEFACTOR.

THE sudden death on Sept. 22nd from heart disease of Sir Ernest Cassel has removed a man with a natural aptitude for acquiring wealth and the rare faculty of bestowing it where needed. Born in 1852, the son of a Cologne banker, he became the friend of British medicine. Only in the spring of this year he gave £225,000 to found and endow at Penshurst a hospital for functional nervous disorders. He was a liberal contributor to the Red Cross and to King Edward VII. Hospital Fund for London, twice giving £50,000 to the Fund. He built and endowed the sanatorium at Midhurst, which bears the name of King Edward VII., and made it possible to start the Papworth Industrial Colony for Consumptives. The Radium Institute owes largely to him and to Lord Iveagh its supply of that precious element, amounting to several grammes. Other benefactions, not so well known, were no less well placed.

CAUSES OF DENTAL DECAY.

THE Medical Research Council, in consultation with the Ministry of Health, have appointed the following Committee for the investigation of the causes of dental decay: Prof. W. D. Halliburton, M.D., F.R.S. (chairman); Mr. Norman G. Bennett, M.B., L.D.S.; Dr. Leonard Colebrook; Dr. J. M. Hamill (secretary); Sir Arthur Keith, M.D., F.R.S.; Mrs. May Mellanby; Mr. J. Howard Mummery, M.R.C.S., L.D.S.; Dr. C. J. Thomas.

The appointment of the Committee will be welcomed by all who have at heart the improvement of the physique of the nation. It has been the custom for some time for medical officers of health to class dental decay among the preventable diseases, but there has been no unanimity as to how prevention is to be secured. At one time "tooth-brush drills" were fashionable, but now there is a tendency to regard the tooth-brush with some fear as a source of septic trouble and to rely upon finishing the meal with a so-called tooth-cleansing food. If tooth-brush drills have served no other purpose they have certainly acted as an advertisement—perhaps like baby shows in the case of infant welfare—of the urgent need for something to be done. An increasing body of which proposes to deal, as a start, with children of 6 and 7 years of age, including a few older children. It is hoped, however, that all children will eventually be passed under review each year. During the year it was found that only 31·8 per cent. of the children had sound teeth, as against 32·4 per cent. last year; amongst "leavers" the rate was only slightly higher, 34·3 per cent., as against 35·8 the previous year. Under the new scheme this percentage should be considerably raised in a few years' time. Normal vision was found among 77·4, and normal hearing in 99·8 per cent. Operative treatment was received by 41 per cent. of the nose and throat cases, and Dr. Charles E. Paget urges regular breathing exercises as a routine part of physical education in the schools. There were 13 definite cases of pulmonary tuberculosis in the county. Physical deformities were detected in 1 per cent. of the children examined, and in addition 1·6 per cent. were found to be suffering from heart disease. There was a marked diminution in the amount of anæmia amongst leavers, 0·67 per cent., as against 2·6 per cent. the previous year. During the year 59 schools were closed for measles—in this county the old order evidently still prevails in the case of infectious disease.

INDUSTRY AND PREVENTIVE MEDICINE:

CONFERENCE AT OXFORD.

A CONFERENCE organised by the Industrial Welfare Society was held at Balliol College, Oxford, from Sept. 15th to 20th. Here, sent by their firms, there were gathered for a few days in college life representatives of great industrial concerns, including engineering works, textile mills, railways, coal mines, shipbuilding yards, chemical works, and food factories. The programme included lectures by distinguished experts, but much solid work was done at informal meetings of groups held in rooms or in the quadrangle which were always taking place from morn to midnight; indeed a far more businesslike atmosphere was present than is usually found at scientific conferences.

The proceedings were opened by Lord **GORELL**, who announced that acceptance of office in the Air Ministry had necessitated his retirement, in favour of Lord Chelmsford, late Viceroy of India, from the Chairmanship of the Miners' Welfare Committee established under the Mining Industry Act, 1920. He dwelt upon the epoch-marking provision of this Act which makes a levy on the industry to be devoted to betterment purposes, and sets up a committee to allocate the fund. The scope of the work is to include education, health and safety, recreation, and research, so covering the whole field of human life.

Industrial Welfare as a Science.

The correctness of this view of welfare was shown by the subjects dealt with by other speakers; thus Dr. C. W. **KIMMINS** (London County Council) dealt with the educational aspect and pointed to the magnificent opportunity opening up before welfare supervisors as juvenile education under the 1918 Act comes to be carried on part-time with occupational life, and to the scope so afforded for vocational guidance. The theme so opened was developed on the industrial side by Mr. **ERIC FARMER**, who claimed that industrial psychology could be considered as a continuation of education, that it should be concerned with the human element and not be tied down by the needs of efficiency or production. Efficiency and production will certainly benefit, but this benefit should not be the only aim of industrial psychologists and physiologists: their aim should be to improve industrial activity and discover the boundary where activity becomes overstrained, the parent of irritability and discontent.

The principles of physiology underlying health were laid down by Prof. E. L. **COLLIS** (Cardiff), who pointed out the part the public can play if only these simple principles are grasped. He claimed that industrial welfare was a science, although yet a young one; he pointed out that no science could exist without means of measurement. The means in this case were labour turnover and lost time. He urged welfare supervisors to use these means and become masters of them; through them research could be carried out, without which the welfare movement could not progress. He uttered a warning that a science which was not progressing must become retrograde.

The subject of recreation was taken up by Mr. R. S. **WOOD** (Secretary of the Juvenile Organisations Committee), who dealt with camping—the rightful heritage of every boy. He placed before the conference much useful and practical information on the economic running of camps, and advocated that two or three smaller camps were more advantageous than one large one. Another aspect of recreation was delightfully demonstrated by Mr. G. J. **SHARP**, a well-known authority on folk dances and folk music. Only the best of these dances and songs have come down to us. Their value becomes apparent from the way in which they are quickly adopted and practised when once they are introduced. Play is as necessary to life as work, especially in a country long known in Europe as Merry England. Folk dances and songs which have stood the test of centuries should not be disregarded in favour of modern and less tried forms of recreation.

The Practice of Welfare.

The strength of the industrial movement was, however, made more obvious when it was spoken of by employers such as Sir **ANDREW DUNCAN** (Shipbuilding Employers' Federation), and representatives of labour, Mr. F. **BRANLEY** (Trade Union Congress) and Mr. F. S. **BUTTON**. In each case the speakers presented their point of view with what they thought some temerity. Each welcomed the welfare movement, but saw the necessity for limitation of its activities. The surprising matter was that when the two positions were thus stated no conflict whatever was found, nor did either position conflict with the work which welfare supervisors are undertaking. Both Sir Andrew Duncan and Mr. Branley considered that welfare work should concentrate upon juveniles, and only seek to permeate industry as these juveniles grow up to adult life and carry with them the spirit which welfare has implanted. Sir Andrew Duncan particularly pointed out that the outward form of welfare work was of minor importance compared with the spirit, and with recognition that there is an obligation and burden upon an industry with regard to the welfare of those engaged in it which it must itself discharge. Mr. Branley's point of view was that organised labour would give its unqualified support, without reserve, to genuine schemes of factory and workshop welfare. He looked upon the welfare movement as the ally of organised labour, working in a field particularly its own. There could be no doubt that an employer who became an enthusiast for welfare could not at the same time advocate low wages or unreasonably long hours.

Aspects of the subject put forward by different speakers were all submitted to keen discussion. The duty lay with Mr. R. R. **HYDE** (Director of the Industrial Welfare Society) to report present progress. He was able to state that the movement, which saw its birth in the stress of war-time and grew during the trade boom that followed, had held its own in a wonderful way during the unprecedented slump from which we are only just beginning to emerge. Now he could state that firms who have once adopted welfare were continuing it whatever the conditions of trade. Apart altogether from its high aims and aspirations as a branch of social service, welfare had value in providing common ground upon which employers and employed could meet in amity.

Those who attended this Conference could not help being struck by the earnestness and enthusiasm which inspired it. All present were bent upon ensuring the success of what promises to be the foundation of a new spirit of health and contentment in the industrial world.

which in 1898 was 61·0, had risen in 1905 to 75·8. About this time a Bill was introduced into Parliament relaxing the conditions under which exemptions could be obtained; and the Vaccination Act of 1907 made the getting of an exemption a mere formality, so that it was obtainable by any parent. All that the parent now does is to fill up the form and hand it to a magistrate for signature, no questions being asked by either party. In this way unthinking and selfish parents make use of the exemption clause in order to shirk their responsibilities to their children, and evade some small and temporary inconvenience to themselves. The effect of the 1907 Act has been to make vaccination in many districts a dead letter. In 1919, the last year for which figures are as yet available, the percentage of vaccinations to births had fallen to 40·6. From the statistical tables given in the pamphlet of the Ministry of Health, it appears that in the 10 years 1910 to 1919, allowing for those who have died, there still remain 2½ millions of children who have been "legally" exempted from vaccination, and who are therefore totally unprotected against small-pox. Moreover, by the operations of the 1907 Act a further 250,000 exempted children are being added every year to the unprotected population of this country. We are therefore rapidly reverting to the conditions which existed in pre-vaccination days. The pamphlet of the Ministry of Health should be spread broadcast.

THE GROWTH OF BIOCHEMISTRY.

RECENTLY we have devoted an increasing amount of space to reviews of books and journals dealing with biochemistry. Last week it was a new text-book by Dr. Benjamin Moore and an issue of the *Biochemical Journal*; this week it is the *Journal of Biological Chemistry*, which is strong on the side of technique. The recent meeting of the British Association gave great attention to biochemistry. "The Laboratory of the Living Organism" was the title of the presidential address to the Section of Chemistry, and a joint meeting of the Sections of Chemistry and Physiology was opened by Prof. F. G. Hopkins with a paper on Oxidations and Oxidative Mechanisms in Living Tissues. We are thus confirmed in the belief that biochemistry in its fullest sense is of fundamental importance not only in the daily life of every citizen, but still more in the special field of medicine. Nowadays, biochemistry is all-embracing, including as it does the fundamental principles of organic chemistry (from which it is derived); of inorganic and physical chemistry; together with such particular branches as food analysis (including the question of vitamins), sewage treatment, industrial fermentation processes, the changes occurring in blood coagulation, immunity, digestion, secretions of special glands. Few of our readers will be able to follow continuously all this modern work and the journal abstracts are offered on this account. Chemistry has always been intimately associated with medicine, but with the rapid development of the two subjects they have recently grown apart; happily, the connexion is again being established by the progress of physiological chemistry. The extension of biochemistry will necessitate modifications in the teaching in our medical schools. At present there is little or no coördination during the several years of study and even less scope for post-graduates to take up a particular branch for further knowledge and research. It is not easy to find a solution to this problem of ever-increasing demands upon teachers and students, but some radical change must be made. This alteration might consist, in the first place, in the appointment of a biochemist as professor of medical chemistry, who should coördinate and be responsible for the whole range of chemical subjects in the medical curriculum. With a suitable staff the early part consisting of inorganic and organic chemistry, the intermediate part of physiological chemistry, and the final parts of pathological chemistry and hygiene, could be welded into a succinct and shorter course than is provided at present, with the elimination of much encumbering material. At the same time the department should offer sufficient accommodation to post-graduates for special work and to permanent research workers. All needs would thus be met. Departments of medical chemistry planned on such a basis would attract younger men as assistants, who, in course of time, would become familiar with the whole range of the work and ultimately become the chiefs. The same department in our universities could undertake the general chemical course for students of botany and, if required, provide for advanced work with suitable assistance. Though organised as an independent whole, contact should be maintained with physiology, pathology, and other medical subjects. Under the existing arrangements, with each branch under the care of a separate lecturer, there is little opportunity for the several chemical teachers to become acquainted with the whole range of medical chemistry. They cannot take the proper interest in the medical side of the subject and have to seek eventually other appointments unconnected with medical science. Moreover, a chemist who has had no training in physiology lacks real sympathy with the medical curriculum and the subject of medical chemistry is stultified. If professorships of medical chemistry were founded at each medical school medical chemistry would flourish amazingly.

SPIROCHÆTES IN PERIODONTAL DISEASE.

IN the *Dental Cosmos* for September, Kritchevsky and Ségun give some interesting facts with a bearing on the pathology of periodontal disease. In syphilitics with clinically healthy gums they found no spirochætes, but of 24 cases where there was characteristic periodontal disease 22 showed spirochætes, and in 70 per cent. of these cases the spirochætes disappeared after the administration of neosalvarsan. As a result of further investigation the authors are of the opinion that spirochætes in association with the *Bacillus fusiformis* are the primary cause of all necrotic conditions of the gum margins, the process of destruction being completed by pus-forming aerobic and anaerobic cocci. The authors do not consider there is one specific spirochæte but several varieties. A number of experiments were conducted on guinea-pigs, the secretion being taken from different affections of the mouth, such as pyorrhœa alveolaris, Vincent's angina, mercurial stomatitis, and injected subcutaneously. Characteristic abscesses were obtained, sections of which showed, in the centre, pus containing cocci, spirochætes, fusiform bacilli, and vibrios. Outside this was a layer of total necrosis exclusively filled with fusiform bacilli; beyond this, again, a zone of greatly altered tissue filled with fusiform bacilli and spirochætes; then a zone with but few fusiform bacilli; and, finally, a region with pure spirochætes only. From their observations the authors came to the conclusion that in the first place there is an invasion by spirochætes which, by their toxins, prepare the tissues for the final destructive and necrotic action of the fusiform bacillus. The tissue is then secondarily infected by different aerobic and anaerobic cocci.

LUNACY CONTROL.

THE annual report for 1920 is the seventh issued by the Board of Control since its inception in 1913. In May, 1920, the bulk of the powers of the Secretary of State under the enactments relating to lunacy and mental deficiency were transferred to the Ministry of Health, and the Board rejoices not only in the administrative advantages thus gained but in the hope that this step may help to dispel prejudice and may ensure the linking up of preventive measures and after-care with curative treatment. The close association with the Ministry of Health may serve to create by Pasteur's method typical symptoms of the disease developed 40 days after the bite. The animal survived for five days. The manifestations, which were carefully observed, were almost the same as in man; the cramps could, however, be checked for six to eight hours by administration of a large dose of salvarsan (4·5 g.).

Grippe as an easy Diagnosis.

Dr. Kovacshazi has expressed the opinion that most of the cases called influenza are ordinary colds, which it has become a fad to speak of as grippe. In a number of cases in which microscopical examinations were made for the bacillus it was found once only, and that in an unsuspected case. It would be a blessing if the term "grippe" were now abandoned; it is applied to every form of affection that occurs as the result of cold weather, from cold in one nostril to terminal pulmonary tuberculosis. Grippe is a soothing diagnosis to make. It prepares the family for the worst at once. Any number of complications may occur, and the doctor can scarcely be held responsible. It would be better if the affections seen were called by descriptive names such as laryngitis, pharyngitis, and bronchitis.

Sept. 14th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. W. S. H. Sequeira is placed on Retd. List at own request, with rank of Surg. Capt.

The following appointments are announced: Surg. Lieut.-Comdrs. A. R. Sharrod to *Collingwood;* and A. E. Malone to *Kellett* (temp.).

ROYAL ARMY MEDICAL CORPS.

Temp. Lieut.-Col. A. Simpson relinquishes his commn. and retains the rank of Lieut.-Col.

Maj. A. G. Cummins retires on ret. pay.

The undermentioned temp. Capts. relinquish their commns. and retain the rank of Capt.: R. T. G. Aickin and N. W. Furey.

J. M. Semple to be temp. Lieut.

SPECIAL RESERVE OF OFFICERS.

The undermentioned Capts. relinquish their commns. and retain the rank of Capt.: G. R. Hubbard, C. G. J. Rayner, and I. H. Zortman.

TERRITORIAL FORCE.

Maj. A. B. Sloan resigns his commn. and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. D. Dickie resigns his commn. and retains the rank of Capt.

ROYAL AIR FORCE.

Flight-Lieut. H. J. Swan relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

INDIAN MEDICAL SERVICE.

J. Rodger (late R.A.M.C.) to be Capt.

The King has approved the relinquishment of their commns. by the undermentioned officers and the grant of rank as shown: Capt. Nagendra Nath Maitra, and are granted the rank of Capt. on relinquishing their commns.: Maneck Sohrabjee Hormusjee Mody, Narayan Raghanath Satpute, Khagendra Mohan Basu, and Narayan Hari Kulkarni.

DONATIONS AND BEQUESTS.—The governors of the Manchester Children's Hospital during the past month have received donations and legacies totalling £2117, which includes a sum of £1203 from the Manchester and Salford Hospital Sunday Fund.—The late Mr. George Marsden, of Birkdale, Lancs, has bequeathed £500 to the Children's Sanatorium, Southport.—By the will of the late Mr. John Joyce, J.P., Wallasey, Cheshire, the Liverpool Royal Infirmary will receive £500, the David Lewis Northern Hospital and the Royal Southern Hospital £250 each, and the Victoria Central Hospital, Liscard, £100.—Under the will of the late Countess Eldon, of Tilehurst, Bucks, the testatrix left £500 to the Cripples' Fund of the Lord Mayor of London, £500 to the Victoria Hospital for Children, £500 to the Cancer Hospital, £500 to the Hospital for Diseases of the Heart, £250 to the Evelina Hospital for Sick Children, and £250 to the National Anti-Vivisection Society.

Correspondence.

"Audi alteram partem."

X RAY TREATMENT OF OTOSCLEROSIS.

To the Editor of THE LANCET.

SIR,—I have read with interest Dr. J. H. D. Webster's article on the X Ray Treatment of Otosclerosis in your issue of Sept. 24th, for we must all agree with Gray's remark, which he quotes, that in this disease we are "confronted with one of the most difficult and obscure problems in modern medicine." Nevertheless, I regret that he has published his article at this early stage, for it is likely to raise premature hopes among the numerous unfortunate sufferers from this affection, and to embarrass those practitioners who do not wish to experiment with a new method until there appear more solid grounds for expecting a successful result, for the a priori reasons for believing that the early stages should be amenable to radiation treatment do not seem very convincing. As it is well known that long stationary periods occur in this disease, Dr. Webster's two cases are much too recent to base any conclusion thereon. Prof. Siebenmann himself, whose method Dr. Webster has followed, finds the results "only to a small degree positively encouraging," and wisely states that "his trial of the method has not continued long enough for him to come to a definite conclusion." Neither has he as yet published his technique, which Dr. Webster is therefore unable to quote in print. On these grounds it is wise to accentuate the note of caution which, it is fair to say, Dr. Webster sounds in his paper.

I am, Sir, yours faithfully,
HAROLD BARWELL.

Queen Anne-street, W., Sept. 24th, 1921.

THE DANGERS OF THE PUBLIC SWIMMING BATH.

To the Editor of THE LANCET.

SIR,—Your annotation on the Swimming Bath and Catarrhal Otitis in THE LANCET of Sept. 3rd, and subsequent correspondence from Dr. Dan McKenzie and Dr. F. W. Alexander have served to revive the important questions of the dangers resulting from the pollution of public swimming baths and their prevention. The subject was dealt with at some length in a paper read by me over nine years ago which was fully discussed at a meeting of the Medical Officers of Schools Association and published in *School Hygiene* in May, 1912.[1] This paper was based on bacteriological examinations of the water from a small swimming bath in use at one of the London County Council's Industrial schools. The number of boys using the bath daily varied from one to two dozen, each soaping himself over thoroughly before going in. The water was changed twice weekly, but no disinfectant was applied. The unpolluted water taken shortly after filling the cleansed bath yielded a count of about 100 organisms per c.cm., chiefly of the *Proteus* group, whereas the samples obtained after the bath had been in use for two to three days gave an average of 4000 organisms per c.cm., among which *Streptococcus fæcalis, Staphylococcus pyogenes aureus, B. coli communis, Proteus,* as well as Gram-negative diplococci occurring in normal saliva, and certain skin contaminations, were isolated and identified, alike from the polluted water and the slime deposited on the floor and sides of the empty bath. Reference was made to investigations carried out by Drs. G. H. Pearce and Sutherland[2] on the water of the public swimming bath at Batley in Yorkshire in June, 1910, where the degree of microbic pollution was found to vary considerably, according to the class and number of persons using the bath and their condition of cleanliness. Bacterial counts ranging from under 3000 to about 300,000 organisms per c.cm.

Public Health Services.

THE MARRIAGE BAR.

THE injustice that may be involved in the application of a general principle to a particular case is well illustrated by current events in the Borough of St. Pancras. The Borough Council recently passed a resolution to terminate the appointments of married women on their staff whose husbands are in receipt of salaries sufficient to support their wives. This resolution is now found to apply to the assistant medical officer for maternity and child welfare, and the Ministry of Health, which pays half her salary, was asked to sanction a request to Dr. Gladys Miall-Smith to resign her post in view of her recent marriage. The Minister observed in reply, that, while the proposal did not require his sanction, he considered that in view of the special qualification and capability of Dr. Miall-Smith, and the present shortage of women medical officers trained in this work, the Borough Council would be well advised to retain her services provisionally if their rules permitted. The case as put by the assistant medical officer herself was, briefly, that no marriage disqualification or resignation clause was inserted either in the advertisement of the post which appeared in the medical press in January, 1920, or in the forms of application or appointment submitted to her; that in fact a married woman was among the three applicants finally selected by the Public Health Committee. She points out that the attitude of the council up to the present has led her to suppose that they concurred in the general view that marriage was an added qualification for any work connected with maternity and child welfare, inasmuch as a large proportion of the doctors appointed and paid by the council to work at the infant-welfare centres, and in particular those recently appointed, are married medical women. Moreover, there being no unemployment problem at the present moment amongst medical women, the question of her keeping a single woman out of employment does not arise. Since her appointment Dr. Miall-Smith has obtained the D.P.H., thus further qualifying herself for the work she undertakes. Letters in support of her claim were received by the Council from the British Medical Association, the Society of Medical Officers of Health, the Federation of Medical Women, the National Association of Local Government Officers, the London Society for Women's Service, and the superintendents of local welfare centres. The arguments in these letters were largely amplifications and extensions of those advanced by Dr. Miall-Smith herself, except in so far as they emphasised her exceptional qualifications, efficiency, and local popularity. The British Medical Association urged that, whatever the council's attitude on the general question of the employment of married women, there could be no doubt of their suitability for child-welfare work, and asked that the council should seriously consider the advisability of retaining Dr. Miall-Smith's services. The Federation of Medical Women spoke of the special suitability of work with fixed hours for married women, and of the value to the community of one who may have intimate knowledge of children of her own; also of special arrangements whereby absence for confinement would involve no loss to ratepayers. Eventually, after some discussion, the decision to ask Dr. Miall-Smith to resign was upheld. It remains to be seen whether the council will now proceed to ask for resignations from the married women doctors employed by them at the local welfare centres and whether they will presently extend this attention to married men in their employment whose wives are in receipt of salaries sufficient to support their husbands.

WOMEN PRACTITIONERS AND A RESTRICTED PANEL.

Early in the year four women practitioners on the London medical list, preferring not to undertake the treatment of men patients, were deprived of 7½ per cent. of their share in the practitioner's fund, and this in accordance with the terms of the 1921 contract as interpreted by the London Insurance Committee. We expressed a doubt at the time whether Section 5 of the Distribution Scheme was intended to have this construction placed upon it. Later the Committee decided that, subject to the approval of the Ministry of Health, a reduction of 3¾ per cent. only in the practitioner's credit should be involved in the limitation of the panel list to patients of one sex. The Ministry have approved the amendment of the clause by the addition of the words: "by 3¾ per cent. in the case of a woman practitioner limiting her list to patients of her own sex." As the converse case is hardly likely to occur the Ministry presumably decided to legislate in this instance for women only.

SCHOOL MEDICAL SERVICE.

Leicestershire.

IN this county the school nurses carry out the duties under the Notification of Births Act; they are also inspectors of midwives and infant life protection visitors. The school doctors, too, are medical officers to the infant welfare centres, in this way ensuring coöperation of effort in dealing with children from birth to the end of school life. Dr. T. Robinson, however, has to deplore the number of changes in the nursing staff. During the past year over 12,000 children were submitted to routine examination; of these, 681 required treatment for defective vision, 487 for enlarged tonsils and adenoids, 673 for dental disease, and 93 for ear troubles. Six hundred and forty-four of the defective vision cases obtained treatment, 473 of those suffering from enlarged tonsils and adenoids, 290 of them being operated on. Out of 6899 children dentally inspected, 3092 were referred for treatment and 2791 actually treated. A central dental clinic is about to be opened in Leicester for the treatment of children on Saturdays; it will be interesting to see with what success, as Saturday clinics so far have not proved popular.

Leeds.

The total cost during the past year for medical services was high—just over 8*s*. per head of attendances at the elementary schools. The efforts of the late Dr. W. Angus, when medical officer, are bearing fruit and Leeds is coming into line in respect of care for its children. Children found to be defective seem to be given some six weeks in the hope that the parents will provide remedy; then they are marked off to clinics—Leeds excels in clinics. Seven of these had 174,446 attendances, and this total apparently does not include cases of enlarged tonsils and adenoids, for which the authority does not provide treatment. On the fate of these "no definite information is available." Dental attendances were 16,735, making a total of over 190,000. The work of the school nurses appears very satisfactory; two-thirds of their time is spent in the clinics, and only one-tenth in home visits. This determined effort to clear diseased conditions out of the schools is not equalled by preventive measures, for although there are some playground classes and nine play centres Leeds has no open-air schools, which would be much appreciated in a town. Other lacunæ, such as absence of schools for cripples and for epileptics and classes for the dull and backward, are also noticed. A house has, however, been purchased to serve as a nursery school. The number of children examined during the year was 26,759 in the elementary schools and 1792 in the secondary and special schools. The total number of cases referred for treatment was 11,528, defective vision accounting for 2360 and uncleanliness for over 3000. Ten per cent. of the secondary school children were suffering from malnutrition. It is unfortunate that the medical officer does not attend the advisory committee for juvenile employment, where his advice would be helpful.

Northamptonshire.

The most noteworthy feature of the school medical work this year is the new scheme for dental treatment designed for radiography or fluoroscopy, is essentially unfitted for the work, as it is constructed to give as large a *quantity* (milliamperage) as possible through a medium tube for a short time, while for these treatments a small milliamperage, through an excessively hard tube, is required for hours consecutively. The method of measuring the rays is also special, as these very hard rays—filtered as they are through 0·5 mm. zinc (=about 12 mm. aluminium) cannot be measured by Sabouraud pastilles, which are, according to Prof. Sidney Russ, "hopelessly transparent to very penetrating types of radiation." Dr. Charles Guilbert, in his recent work on deep therapy, agrees with the Erlangen school that the only reliable method of measuring X ray dosage is that based on ionisation (iontoquantimeter). It is only by some such means as this that it is possible to estimate accurately what percentage of the dose falling on the skin is absorbed, and is therefore of therapeutic value at varying depths in the tissues.

Deep therapy, similar in principle though at times differing in the details of the technique, is being practised at most large continental hospitals; there are five installations suitable for the treatment in constant use at the late Prof. Wertheim's clinic in Vienna. From what I saw at Erlangen I am of opinion that this treatment of malignant disease offers, in suitable cases, as good results as regards cure and the absence of the likelihood of metastasis as Prof. Wintz claims.—I am, Sir, yours faithfully,

J. CURTIS WEBB,
Hon. Radiologist, Gloucester Royal Infirmary.
Sept. 22nd, 1921.

THE COUGHING CUP.

To the Editor of THE LANCET.

SIR,—I should like to endorse the suggestion of the "coughing cup" for the prevention of tuberculosis contained in the letter of Dr. T. M. Allison in THE LANCET of Sept. 17th. But I would go one further and suggest that everyone suffering from a cough should use a coughing cup. Post-mortem findings and the Pirquet reaction support the hypothesis that the tubercle bacillus is ubiquitous among civilised communities and that everyone is infected at some period of his existence and possibly a danger to the community while carrying the organism. I further suggest that the cough spray is the *chief* mode of infection and that the apparently non-tuberculous, being in the large majority, are responsible for the widespread dissemination of the bacillus to at least an equal extent as the obviously tuberculous. A few of the apparently non-tuberculous are incipient cases without physical signs or signs sufficient to bring them under the scrutiny of a medical officer, but the great majority of this class, although reacting to the Pirquet test, never develop the disease as it is known to the clinician. It has been demonstrated how the meningococcus can pass through a community under certain conditions—namely, those of overcrowding and bad ventilation, and that the process is accelerated by the presence of coughs and colds. The inference that the tubercle bacillus, which is so widespread in its distribution, is disseminated in the same manner as the meningococcus is strongly supported by facts.

I am, Sir, yours faithfully,
D. H. C. GIVEN, M.D., D.P.H.,
Sept. 19th, 1921. Surgeon-Commander, R.N.

ROYAL MICROSCOPICAL SOCIETY.—A conversazione will be held at the Mortimer Halls, Mortimer-street, London, W., on Wednesday next, Oct. 5th, from 7.30 to 10.30 P.M., the President, Prof. John Eyre, receiving the guests. A preliminary programme of meetings for the coming session has been issued. The papers to be read include one by Dr. Lancelot T. Hogben, entitled Preliminary Account of the Spermatogenesis of Sphenodon; a paper by Prof. Eyre on Microscopy and Oyster Culture, and one by Mr. Joseph G. Barnard on the Future of the Microscope in Medical Research. Further information can be obtained from the hon. secretaries, Mr. J. G. Barnard and Dr. J. A. Murray, 20, Hanover-square, London, W. 1.

Obituary.

CAREY PEARCE COOMBS, M.D. LOND.

THE death of Dr. Carey Pearce Coombs, of Castle Cary, Somerset, has removed a familiar figure from the ranks of the medical profession in the West Country. Dr. Coombs was born at Frome, where he went to school. At the age of 14 he was apprenticed to his uncle, who was practising in the same town, and two or three years later went to St. Mary's Hospital, Paddington. This school was then in its infancy, and the successes gained by the young Coombs at the University of London (honours in several subjects in the First M.B., and a final pass at the age of 21) were all the more welcome. During these years he lived with and assisted Mr. Fitzpatrick in Lisson-street, near the Edgware-road. He was assistant demonstrator of anatomy at St. Mary's, and subsequently house surgeon, but any hope of promotion to the honorary staff was frustrated by the death of his father, which made it necessary for him to take a share in his uncle's practice in 1865. He went to live at Beckington, near Frome, and in 1866 married Mary Leslie, daughter of Mr. William Franklin, of Coventry. In 1867 he took a small practice, one of several then existing in the town of Castle Cary. After passing his M.D. in 1869, Coombs gradually absorbed the other practices, and was in active work till 1911, when he retired, after a seven years' partnership with Dr. David Price who succeeded him.

During this period of 44 years he endeared himself to the whole neighbourhood, not only by his professional efficiency, but also by his kindly and unselfish disposition. He held various local appointments, among them the medical officership to the Castle Cary district of the Wincanton Union, and the Ditcheat district of the Shepton Mallet Union. His principal contributions to medical literature dealt with electro-therapeutics, in which he took the greatest interest. In 1875 Sir William (then Dr.) Broadbent, in his preface to the seventh edition of Tanner's "Practice of Medicine," stated that the section on electro-therapeutics had been written by his "friend and late pupil, Dr. C. P. Coombs." Twenty years later the subject of his presidential address to the Bath and Bristol Branch of the British Medical Association was "Galvanism in the Treatment of Neuritis," an address which he expanded into a small volume, published in 1896. Although he held no public health appointment, he was largely responsible for securing for Castle Cary a safe water-supply, and was the first chairman of the water company formed in 1908.

Throughout his life the character of Dr. Coombs was marked by a singular catholicity of temper as of taste. Brought up as a Free Churchman, he attended the Congregational Chapel at Castle Cary from the time when he settled in the town until his death. For nearly 50 years he was treasurer to the Chapel, and in many other ways gave his services to the cause. In spite of this fidelity to conviction—a course difficult for a young doctor to take in a country town 50 years ago—he made numerous friends among those of other persuasions, and was wont to say that the proudest moment of his life was that in which he had been helped into his overcoat by four rural deans! For many years he was president of a non-sectarian men's adult school. He was fond of music, and for nearly 30 years was president of the local choral society which he helped to found. Among his other hobbies were painting and wood-carving. He was no mean archæologist, and in a neighbourhood affording unlimited material for such studies he was an unerring guide.

After his retirement in 1911 he was made a Justice of the Peace, and chairman to the Castle Cary school managers. He was also chairman of Messrs. John Boyd and Co., Ltd., for many years, and trustee of the Jubilee Cottages founded by that firm for their superannuated workpeople. His personal appearance

FOOD POISONING OUTBREAKS:

MEMORANDUM ON THE COLLECTION AND TRANSMISSION OF SAMPLES.

A CIRCULAR letter issued by the Ministry of Health to medical officers of health on Food Poisoning Inquiries includes a memorandum by Dr. W. G. Savage, setting forth how to obtain and transmit specimens. Outbreaks, it is stated, differ so much in character that uniformity of requirement in regard to specimens is not possible, but the following should be collected.

(1) *Any Portions of the Supposed Peccant Food.*—These should be actual portions remaining over from the food which caused the illness. Even small scraps, remains in tins (if a tinned food) are better than nothing. Samples of food of similar origin are usually of little assistance but occasionally are useful.

(2) *Post-mortem Materials from Fatal Cases.*—The spleen, pieces of liver, piece of small intestine, kidney, are the most useful. The stomach (ligatured) with unopened contents is valuable if metallic poisoning is suspected, but not of much use otherwise.

(3) *Pathological Material from the Cases.*—From all cases, and especially when (1) is not available, and (2) only problematical, endeavours should be made to collect and transmit material from the actual sufferers while in the acute stages. The samples should be excreta samples and vomit. Of these, excreta samples are both the easier to obtain and the more valuable.

(4) *Samples of Blood for Serological Examination from the Sufferers.*—There is no urgency about these samples since any serological reactions persist for many weeks, while in any case they will not develop until a week or more after the onset. It is better, therefore, to wait to collect these samples until after the bacteriologist has the other samples, and also the preliminary information as to the outbreak, so that he can indicate exactly what he requires.

Transmission.

Outfits are available at the Bristol Laboratory, but usually there will not be time to send for these, and the transmittors must use their laboratory outfits or an emergency one. Excreta specimens can be sent in clean wide-mouth bottles. The food can be put in a clean tobacco tin. The organs from fatal cases should each be wrapped in a piece of clean cloth wetted and wrung out (only damp, therefore) with 1 in 500 corrosive sublimate solution. All the organs can be placed so wrapped in one large tobacco or other tin. Outfits for blood samples will be sent from the laboratory.

If possible, the samples should be sent packed in ice. An impromptu ice box can be made by using a fairly large biscuit tin, and packing the tins and bottles in one side of this and filling the other part with dry ice in small pieces. The tins and bottles must be secured from rolling about when the ice melts, by means of cloths and wood partition, or other device. The biscuit box should be packed in a wood box with at least two inches everywhere of sawdust between the two boxes. If ice is not procurable the samples must be sent without it rather than delay.

Samples should be sent by passenger train to Mr. Bruce White, Pathology Department, University of Bristol, who should be informed at once by telegram of their despatch, and, if possible, of the time of arrival, so that everything may be in readiness at the laboratory.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

The Prevention of Summer Diarrhœa.

Dr. Blumenfeld, who is in charge of a large children's hospital, had this year an unusually large number of cases of diarrhœa under his care. He ascribed the increased incidence of the complaint to the excessive heat, which reduced infantile resistance and promoted the multiplication of bacteria in milk. In an address on the subject he outlined the general care of the infant during this period, the necessity of open air, cool clothes, cleanliness, properly prepared milk, and suitable intervals of feeding. He detailed the contents of a leaflet to be distributed to mothers and physicians, and suggested instruction in the schools, especially the high schools, of matters relating to infant hygiene, and also proposed that the milk commissioners now appointed in several cities should be increased in number. He suggested the idea that a municipal model dairy, under medical supervision, and a milk plant which would sell to the poor at cost price, should be established in every city. He condemned wholesale pasteurisation, as the numbers of bacteria in milk actually increase under this treatment, whereas home pasteurising does not have the same effect.

The Heroin Habit.

Dr. Vidakovich notes the variety of cases of addiction to heroin, and reports one occurring in his practice. The patient was a spinster, aged 41, of nervous heredity, to whom the drug had been given as an anodyne with the assurance that there was no danger of forming a habit. She continued to take the drug after the original indication for its use had disappeared, and when coming under treatment was giving herself 0·06 g. hypodermically in divided doses daily. A cure resulted from immediate withdrawal with symptomatic, sustaining, and eliminative treatment. The abstinence symptoms were, however, so severe that Dr. Vidakovich observes that in future he would resort to gradual withdrawal.

Morphine-Scopolamine Narcosis.

Dr. Frater, surgeon at a large provincial hospital, one of the most conservative operators in the country, states that morphine and scopolamine alone as a narcotic are hardly ever safe, the dose of the former drug being too high. Small doses are, however, highly to be recommended if followed by one of the usual anæsthetics (morphine hydrochloride, 0·01 to 0·02 g.; scopolamine hydrobromide, 0·0005 to 0·001 g., in fresh solution). Either chloroform or ether may be used, but the advantages of ether are perhaps more marked. The excitation stage is shorter, less anæsthetic is necessary, salivation is never troublesome, and the danger of post-operative pneumonia is considerably diminished. Some 800 cases have been reported, with a mortality of 1 per cent., but many of the patients were already in a moribund condition when operated on. It may also be advisable to resort to the two drugs in smaller doses in Schleich's infiltration anæsthesia.

Headache the only Symptom of a Case of Malaria.

Dr. Sümegi, who recently returned from imprisonment in Russia, reports a peculiar case of malaria, without temperature symptoms, occurring during a severe Siberian winter. The patient was his brother, a sergeant; the only symptom he complained of was headache, which appeared each forenoon and lasted a few hours. The patient had no previous malarial infection. Dr. Sümegi had no occasion to examine his brother's blood, nor did he suspect the presence of malaria. However, when the brothers were returning through Moscow, Dr. Sümegi visited a friend of his, a hospital bacteriologist, who advised an examination of the blood. This was accordingly done; no perfect organisms were shown, but numerous malarial spores were present, which rapidly disappeared, together with the symptoms, under quinine. Dr. Sümegi regrets that the blood examination was not made earlier, and the exact character of the parasite determined; the appearances indicated the tertian organism.

Favourable Health Conditions in Budapest.

The death-rate in this city for the first six months of this year was considerably lower than for the corresponding period in 1920; but for scarlet fever the figures would have been the lowest for many years. The death-rate for the past six months was 19·75; for 1920, 21·68; and for 1903, 19·11.

Rabies in a Horse.

Rabies is supposed to be uncommon in horses. In a small village among the Carpathians a horse was recently bitten by a rabid dog. Although inoculated

MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS.

WE are requested by the Registrar of the General Medical Council to give publicity to the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. The list includes all untraceable names on the colonial and foreign lists, but only those from P to Z on the body of the register, as it is only this section which has come under review this year. Anyone who finds his or her name included in this list should communicate immediately with the Registrar (E) of the General Medical Council, 44, Hallam-street, Portland-place, London, W. 1.; or (S) of the Scottish Branch Council, 20, Queen-street, Edinburgh; or (I) of the Irish Branch Council, 35, Dawson-street, Dublin.

Packard, Henry C., M.B., Ch.B. 1895 (E).
Paget, Peter, M.R.C.S. 1889 (E).
Palmer, Henry D., M.R.C.S. 1870 (E).
Panioty, John E., L.R.C.P. 1882 (S).
Parbury, Frederic D., M.R.C.S. 1902 (E).
Parkinson, Charles J., M.R.C.S. 1882 (E).
Parkinson, Kathleen H., M.R.C.S. 1915 (E).
Parry, Robert C., M.R.C.S. 1913 (E).
Parsons, Charles, M.R.C.S. 1858 (E).
Parsons, Irene G., M.R.C.S. 1918 (E).
Patel, Edalji D., L.K.Q.C.P. 1881 (I).
Paterson, Alexander, M.B. 1866 (S).
Paterson, Andrew G., L.R.C.P. 1877 (S).
Paterson, Arthur T., M.B., Ch.B. 1907 (S).
Paton, Kate K., L.R.C.P. 1893 (S).
Pattee, Frank J., L.R.C.P. 1901 (S).
Patterson, George H., L.S.A. 1878 (E).
Pattie, Charles F., M.B. 1907 (S).
Paul, David R., L.R.C.P. 1883 (S).
Paul, George W. F., M.R.C.S. 1885 (E).
Pauling, William T., M.R.C.S. 1892 (E).
Pauw, Jacobus C., M.R.C.S. 1919 (E).
Payne, Florence M., L.S.A. 1902 (E).
Peacock, Edward V., M.B. 1893 (E).
Peake, Sydney J., M.R.C.S. 1900 (E).
Pearse, Robert R., L.S.A. 1889 (E).
Pearse, William H., M.R.C.S. 1897 (E).
Pearson, David C., M.B., B.Ch. 1904 (I).
Pearson, John C., M.B. 1875 (E).
Peirce, James E., L.S.A. 1868 (E).
Peirce, Thomas D., M.R.C.S. 1857 (E).
Pellissier, Wilfred V., M.B., B.Ch. 1917 (I).
Pemberton, Charles A., M.R.C.S. 1907(E).
Penberthy, Clifford P., M.B., Ch.B. 1916 (S).
Percival, Arthur P., M.B., C.M., 1894 (S).
Pereira-Marques, Laurence, L.R.C.S. 1877 (I).
Perkins, Matthew J., L.R.C.P. 1903 (S).
Perlman, Archie, M.R.C.S. 1910 (E).
Petty, Michael John, L.R.C.P. 1885 (E).
Peyton, Henry R., L.R.C.S. 1881 (I).
Phillipson, Burton R., L., L.M.R.C.P. 1897 (I).
Pick, Arthur, M.R.C.S. 1903 (E).
Pickett, Jacob, M.R.C.S. 1858 (E).
Piel, Paul A., L.R.C.S. 1884 (I).
Pillay, John J., L.R.C.P. 1891 (E).
Pink, Thomas, L.S.A. 1873 (E).
Plant, Alexander W., L.S.A. 1886 (E).
Platt, Akkey B., M.B., Ch.B. 1917 (E).
Pochin, Courtenay H. G., L.R.C.P. 1913 (E).
Pollock, John Hackett, M.B., B.Ch. 1913 (I).
Potter, Harry, M.R.C.S. 1883 (E).
Potter, Mary E., M.B., Ch.B. 1901 (S).
Powell, Henry A., L.R.C.P. 1880 (E).
Powell, Joseph H., L.R.C.P. 1883 (E).
Power, John E., M.B., Ch.B. 1914 (I).
Power, John W., L.K.Q.C.P. 1886 (I).
Power, John W., M.B., Ch.M. 1904 (E).
Power, Patrick J., L.R.C.S. 1886 (I).
Preston, Arthur B., M.R.C.S. 1914 (E).
Preston, Charles E., L.R.C.P. 1906 (S).
Price, Lloyd T., M.B., Ch.B. 1901 (S).
Price, Maurice D., L.R.C.P. 1907 (E).
Priddle, Alfred E., L.R.C.P. 1899 (E).
Prior, Norman H., *M.C.*, M.B., Ch.B. 1907 (S).
Proctor, Samuel P. P., M.B., Ch.B. 1910 (S).
Propert, Walter A., L.R.C.P. 1894 (E).
Pugh, Robert, M.B., Ch.B. 1898 (S).
Purdy, John S., *D.S.O.*, M.B., C.M. 1898 (S).
Purkis, Kenneth N., *M.C.*, M.R.C.S. 1915 (E).
Pushong, Edwin S., L.S.A. 1899 (E).
Puttana, Dodballapur S., L.R.C.P. 1912 (S).

Quicke, William J., L.S.A. 1876 (E).
Quinlan, Catharine J., M.B., B.Ch. 1914 (I).
Quirk, Francis P., L.R.C.P. 1911 (S).
Raine, Arthur R., L.S.A. 1879 (E).
Raine, George R., M.R.C.S. 1866 (E).
Raitt, Oswald, M.B., C.M., 1896 (S).
Ralston, Frederick G., M.B., Ch.B. 1899 (S).
Ralston, Robert G., M.B., C.M. 1896 S).
Ranking, George L., L.R.C.P. 1907 (E).
Rao, Koty V. R., M.R.C.S. 1913 (E).
Rao, Srinivas Ram, L.A.H. 1912 (I).
Rasul, Sheikh G., L.R.C.P. 1912 (I).
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Roche, Augustine K., M.B., B.Ch. 1914 (I).
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Sampson, Arthur T., M.B., C.M. 1896 (S).
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were obtained on different occasions. Among them were found coliform or intestinal flora, *B. enteritidis sporogenes*, *Staphylococcus pyogenes aureus*, *Streptococcus pyogenes* and *Proteus vulgaris*. The bacteriological evidence of bath water pollution provided by these two independent investigations, it was claimed, pointed to the possible causation of such inflammatory conditions as otitis media, conjunctivitis, &c., and the further possibility that the contaminated bath water might well become a vehicle of other infections, notably diphtheria, influenza, tuberculosis and enteric fever, despite the want of clear proof of such mode of infection. The purification of swimming baths was fully discussed, and in particular the method employed in Poplar, as introduced by Dr. Alexander and referred to in his letter of Sept. 17th, was strongly advocated for universal use. Its value was also emphasised in the discussion following the paper and the whole subject was recommended for further investigation. This recommendation was met in November, 1912, by the report on "The Purification of the Water of Swimming Baths" issued by a committee of the Royal Sanitary Institute, as already mentioned by Dr. Alexander. In this report the risk of massive infection to bathers by swallowing the recently ejected mucous discharges of persons suffering from disease, and the ease with which among other results catarrhal or septic conditions of the nose, throat and ear might supervene, were pointed out. The treatment of bath water by hypochlorite of magnesia solution, or the electrolytic fluid used at Poplar, was fully investigated and very much impressed the committee with the good results obtained.

Since the date of this publication and until the recent correspondence in your columns the subject, though undoubtedly one of considerable hygienic importance, has been allowed to lapse in this country. It has, however, received some attention in America. S. C. Markley, in his M.Sc. thesis at Yale University in 1913, described the value of the use of chloride of lime in the purification of swimming baths and the method of its application. In January, 1917, Dr. W. A. Manheimer[3] published a paper in the *American Physical Education Review* from the Research Laboratory of the New York Department of Health on a "Comparison of Methods for Disinfecting Swimming Pools." His report included results of investigation as to:—

1. Ultra-violet light, on the value of which he was unable to form a decided opinion.
2. Lectrocide, obtained through electrolysis of brine and mainly composed of sodium hypochlorite—found to possess a high coefficient of disinfection.
3. Copper sulphate—1 part to 100,000 of the water—showed the least efficiency and highest cost of all chemicals used in pool disinfection.
4. Chlorine gas, injected into tap water feeding the pipe to the pool, was proved to yield high efficiency at very low cost and was easily applied. Calcium hypochlorite was found for similar reasons to be very efficacious.
5. Ozone was thought likely to be of considerable value and was to be the subject of future tests.

In the same publication a year later "The Sanitary Aspects of the Swimming Pool at Cornell University" were considered by Henry N. Ogden[4] and the few instances of alleged transmission of communicable disease were quoted. Among these were the prevalence of influenza, colds, sore-throat, and occasionally pneumonia, restricted to users of the swimming tank in the North Western University, noted by W. L. Lewis, and a mild epidemic of typhoid fever ascribed to swimming bath infection and reported by R. J. Reece in the Local Government Board Reports, 1908–1909, also affections of the nose and ear among members of the swimming team at Brown University in 1910 described by Bunker (comparable, indeed, to the recent outbreak of conjunctivitis and catarrhal otitis among members of the swimming club at Freiburg as described by Amersbach, the subject of the annotation in THE LANCET of Sept. 3rd). Ogden's paper includes an account of bacteriological tests applied to swimming bath water at Cornell and a number of other American Universities, together with the methods of disinfection employed. The results were described as unqualifiedly convincing of the value of the disinfectant used (solution of chloride of lime yielding one and a half parts available chlorine per million gallons) and of the good quality of the water so treated. As far back as 1898 an outbreak of acute contagious ophthalmia was described by Yaginsky as having been conveyed by children in a public bath in Berlin, where also in 1899 the spread of granular ophthalmia was reported as due to swimming bath infection. A similar connexion was suggested as responsible for the occurrence of conjunctivitis among children at one of the London industrial schools in 1912, but the evidence was not conclusive. The risk of ear infection which has been strongly urged by Dr. Dan McKenzie is no fanciful one, and is incurred alike in the public swimming bath and in sea bathing. Attention has been drawn to the latter by H. V. Blackwell in a paper published in the *Medical Record* of 1916, entitled "The Salt-water Ear," and a warning is uttered against the danger of otitis media, occurring particularly among those with a history of previous ear trouble or subject to otorrhœa.

At the risk of trespassing too much on your valuable space I would quote the following case of acute meningitis which I saw some 12 months ago in a girl of 14, who provided in striking and tragic fashion clear evidence that the swimming bath was *directly* responsible. In previous good health and with no history of past ear trouble the girl visited a public swimming bath on a Thursday, earache being complained of on the next day. On Saturday afternoon, when I first saw her, the left ear was discharging, she was unconscious with definite signs of meningitis, further demonstrated by the fluid obtained from lumbar puncture. Death occurred the following morning.

It is much to be hoped in the interests of the very large numbers using the public swimming baths that the publicity which the correspondence in your columns has given to the subject of swimming bath pollution may lead to the universal adoption by the responsible authorities of some such system of purification as is so successfully carried out at Poplar.

I am, Sir, yours faithfully,
J. GRAHAM FORBES.

Savoy-hill, W.C., Sept. 22nd, 1921.

References.—1. The Pollution of Swimming Baths, School Hygiene, vol. iii., No. 2, May, 1912. 2. THE LANCET, August, 1910, p. 542. 3. Amer. Phys. Educ. Rev., p. 22, January, 1917. 4. Ibid, p. 5, January, 1918. 5. Medical Record, 1916, vol. lxxxix., p. 912.

THE ERLANGEN TECHNIQUE IN X RAY THERAPY.

To the Editor of THE LANCET.

SIR,—Having just returned from Erlangen after a week of study of the methods of deep X ray therapy as practised there, notably in the treatment of malignant disease, it might be interesting to others if I record my personal impressions. In the first place, the X ray therapy devised by Prof. Seitz and Prof. Wintz differs radically from that generally practised in this country. In conjunction with the manufacturers, they have devised an apparatus and tubes capable, with suitable filtration, of giving out, and of sustaining, homogeneous rays—that is to say, rays the absorption of which (and therefore the therapeutic effect) is more or less uniform per centimetre of tissue traversed. They have been able, by the iontoquantimeter, to ascertain the exact proportion of the skin dose that is absorbed at varying centimetre depths. They have demonstrated that there must be a *definite* unit skin dose (U.S.D.) which causes certain *definite* effects, and that there is a *definite* percentage of this U.S.D. (which they designate as 100) which is lethal to the cancer cell, another percentage which causes the death of sarcoma cells, and so on.

The whole process is mathematical and accurate, but to secure results special apparatus is required. The ordinary X ray outfit, however powerful, if

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Birnie, George A., *M.C.*, M.B. 1914.
Blair, James H., M.B. 1916.
Blakeley, Thomas N., M.D. 1915.
Bobart, Albert, M.B. 1889.
Boulton, Nigel P., M.B. 1912.
Bradley, Clement H. B., M.B. 1907.
Brandon, John V., M.D. 1915.
Brown, Edmund E., M.B. 1910.
Brown, John Ebenezer K., M.B. 1912.
Buchanan, James H., M.D. 1914.
Burden, Frederick W., L.M.S. Nfd. M. Bd. 1914.
Burke, Michael C., M.D. 1915.
Burns, Harold S., M.B. 1907.
Burrows, Frederick L., M.D. 1914.

Cameron, Wyman A., L.M.S. N. Scotia, P.M. Bd. 1915.
Camilleri, Victor, M.D. 1913.
Campbell, Edgar A., M.D. 1916.
Canteenvalla, Jehangir P., L.M.S. 1913.
Chak, Chin H., M.B. 1914.
Champion de Crespigny, Constantine T., M.B. 1903.
Chattopadhya, Shyama P., L.M.S. 1909.
Cohen, Benjamin, M.B. 1918.
Cohen, Rachel, M.B. 1897.
Colquhoun, Keith G., M.B. 1909.
Commissariat, Sherin H. (Miss), F.R.C.S. 1904.
Cotton, George R. C. M.B. 1907.
Coutts, Eldon D., M.B. 1915.
Croom, Stuart P., M.B. 1909.

Daniel, Charles J., M.B. 1909.
Dark, Eric P., *M.C.*, M.B. 1914.
Da Silva, Augustin P., L.M.S. N. Scotia, P.M. Bd. 1919.
David, William E., *M.C.*, M.B. 1913.
De, Rai B. C. M., L.M.S. 1895.
De Beaupre, E. J., M.B. 1915.
Dew, Harold Robert, M.B. 1914.
D'Mello, John F., L.M.S. 1899.
Dolman, Henry, M.B. 1916.
Donovan, Charles O. G., *D.S.O.*, M.B. 1915.
Douglas, Leon A., M.C.P. & S. 1910.
Dowd, William R., M.C.P. & S. 1918.
Dyas, Alexander D., L.M.S., N.B. Co. P. & S. 1913.

Eastwood, Francis H., M.B. 1881.
Edwards, William A., M.B. 1914.
Elliot, Hugh A., M.C.P. & S. 1916.
Ewing, Thomas, M.B. 1909.

Fairley, Neil H., M.B. 1915.
Farrar, John W., *O.B.E.*, M.B. 1914.
Ferguson, Norman H., M.C.P. & S. 1902.
Fetherstonhaugh, Trevor G., M.B. 1915.
Finlay, Donald F., M.B. 1914.
Flecker, Hugo, M.B. 1908.
Foster, Bryan, M.B. 1904.
Fowler, Cosmo W., M.B. 1913.

Gaina, Nariman J., M.B. 1912.
Gallagher, Michael J., M.B. 1913.
Giblin, William E., M.B. 1908.
Gibson, Harold R., M.B. 1916.
Ginsburg, Bernard J., M.D. 1917.
Godinho, Louis G., L.M.S. 1889.
Gower, George W., M.B. 1910.
Graham, Malcolm R., M.B. 1906.
Gregg, Norman Mc.A., M.B. 1915.
Gupta, Syama P., L.M.S. 1909.
Guymer, Arthur H., M.B. 1915.

Halloran, Garnet R., M.B. 1912.
Hamilton-Browne, Elizabeth I., M.B. 1909.
Hardstaff, Roy J., M.B. 1916.
Harris, William H., M.B. 1897.
Harvey, Francis R., M.B. 1910.
Haslett, Selwyn L., M.B. 1915.
Hesterlow, Alfred J., L.M.S. 1885.
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Hodge, William R., M.B. 1915.
Hotop, Francis R., M.B. 1903.
Humphreys, Stanley E., M.B. 1914.
Hunter, Thomas V., L.M.S., N.B.Co.P. & S. 1906.
Hyett, Harold R., M.B. 1916.

Illesinghe, Richard De S., L.M.S. 1900.

Jagger, Thomas R., M.B. 1915.
Jamieson, James I. M., M.B. 1914.
Jenkins, James A., M.B. 1917.
Jhirad, Jerusha J. (Miss), L.M.S. 1913.
Jinadasa, M., L.M.S. 1895.
Jones, Edmund Britten, M.B. 1910.

Keane, Francis E., *M.C.*, M.B. 1910.
Kennedy, Basil C., M.B. 1913.
Krolik, Melville, L.M.S.N.Scotia P.M.Bd. 1915.

Lal, Kananji, L.M.S. 1898.
Lambert, Joseph G., M.D. 1914.
Langham, John D., M.D. 1916.
Lawrence, Arthur P., *M.C.*, M.B. 1916.
Leary, Edgar J., M.B. 1912.
Leonard, Elsie F. (Mrs.), M.B. 1908.
Lloyd, Charles H., *M.C.*, M.B. 1914.
Lobo, John F., L.M.S. 1910.

MacCallum, Arthur J., M.B. 1916.
McCarthy, Francis J., M.B. 1914.
McInnes, John S., M.D. 1916.
McIntyre, Edward L., M.B. 1911.
Mackasey, William P., M.D. 1914.
McKay, Daniel A., L.M.S. N. Scotia P.M.Bd. 1906.
MacLaren, Peter S., M.C.P. & S. 1896.
MacLean, Jean A., M.D. 1914.
MacLeod, Donald A., M.D. 1911.
McShane, Cletus, M.B. 1909.
Magarey, Archibald C., M.B. 1907.
Marshall, Thomas E., M.B. 1916.
Martin, Colin H., M.B. 1915.
Masters, Francis H., M.B. 1897.
Mendelsohn, Harris, *M.C.*, M.B. 1916.
Menezes, Laetitia L., L.M.S. 1908.
Middleton, John J., M.B. 1912.
Mitchell, Henry K., M.B. 1915.
Mody, Lovji S., L.M.S. 1908.
Mollison, Arthur J., M.B. 1912.
Moolan Feroze, Gehangir K., M.B. 1914.
Morgan, Edward A., M.B. 1909.
Morgan, Vincent H., M.D. 1887.
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Newell, John A., M.B. 1891.
Nixon, Albert C., M.C.P. & S. 1915.
Nye, Leslie J. J., M.B. 1914.

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Old, George G., M.B. 1900.
Ormiston, Martha I., M.B. 1907.
Orok, William F., M.C.P. & S. 1916.
Osborne, John K., M.B. 1903.
O'Shea, Joseph P., M.C.P. & S. 1911.

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Paquin, Rene P., M.D. 1918.
Parker, Thomas E., M.B. 1910.
Patel, Khusroo K., L.M.S. 1912.
Paterson, Murray H., *M.C.*, M.B. 1914.
Pellew, Leonard J., M.B. 1906.
Petrie, George A., M.D. 1915.
Pilot, Frederick W. H., M.D. 1904.
Playford, Thomas G., *M.C.*, M.D. 1917.
Pogue, Osman A., M.B. 1908.
Postwalla, Rustam M., M.B. 1914.

Ray, William, M.B. 1906.
Roberts, Alan T., M.B. 1914.
Robinson, Matthew E., M.B. 1909.
Rommel, Ernest, M.C.P. & S. 1913.
Roseby, Edmund R., M.B. 1900.
Row, Narsing, M.B. 1909.
Roy, Raghu N., L.M.S. 1909.
Rutherford, Constance M., M.B. 1908.

Sa, Ma S., L.M.S. 1912.
Salter, Alexander G., M.B. 1895.
Sanzgiri, Vasant R., M.B. 1916.
Sapsford, Clinton P., M.B. 1905.
Saunders, John H., M.B. 1889.
Savory, Philip M. H., L.M.S. N. Scotia P.M.Bd. 1919.
Scott, Malcolm L., M.B. 1904.
Scribner, John F., M.D. 1911.
Seifert, Frederick W., M.D. 1905.
Sherwin, John A. H., M.B. 1908.
Sinclair, James W., M.B. 1918.
Sinha, Kamal K., M.B. 1918.
Sloane, John G. M., M.B. 1895.
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Smith, William W., M.B. 1912.
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Stawell, Richard R., M.D. 1887.
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Stewart, Floyd C., M.D. 1914.
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Teoh, Cheng T., M.B. 1915.
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Weld, Elizabeth E., M.B. 1901.
Wettenhall, Roland R., M.B. 1906.
Whelpley, Ernest H., M.D. 1916.
White, Samuel G., M.C.P. & S. 1913.
Whyte, John J., M.D. 1889.
Wilkin, James T. W., M.B. 1906.
Willcocks, George C., M.B. 1913.
Williams, Gerald S., M.D. 1913.
Williams, William E., L.M.S. M.Co., P.E.I. 1915.
Willoughby, John B., M.B. 1916.
Wilson, Ivan S., *M.C.*, M.B. 1907.
Writer, Jamsetji H., L.M.S. 1907.
Wyllie, Hugh A., M.B. 1915.

Young, Hugh M., M.C.P. & S. 1912.

FOREIGN LIST.

Abrassart, Maurice A., M.D. 1904.
Allo, Gustave, M.D. 1892.

Bury, Lucien N. J. J., M.D. 1901.
Bussens, Jules, M.D. 1908.

Cook, Edward, M.D. 1904.
Cools, Henri, M.D. 1899.
Crousse, Rene, M.D. 1912.

De Caestecker, Jules, M.D. 1913.
De Castro, Antonio, M.D. 1909.
Deckx, Henry M., M.D. 1899.
De Gheldere, Charles, M.D. 1898.
De Groot, Arthur, M.D. 1910.
De Lacy, Georges, M.D. 1899.
De Nobele, Jules, M.D. 1891.
Di Geronimo, Giuseppe, M.D. 1901.
Faraci, Giuseppe, M.D. 1889.

Gardini, Luigi, M.D. 1900.
Garetti, Giulio, M.D. 1896.

Hamanaka, Kotaro, M.B. 1904.
Harada, Yakuo, M.B. 1909.
Houtsaeger, Camille, M.D. 1900.

Janssens, Alphonse, M.D. 1909.

Laenen, Jan M., M.D. 1889.
Lagrange, Jules, M.D. 1886.
Le Docte, Joseph, M.D. 1919.

Masschelein, Fernand, M.D. 1908.
Mertens, Jules, M.D. 1901.
Morishima, Kanichiro, M.B. 1911.
Mostaert, Georges, M.D. 1890.
Mourne, Fernand, M.D. 1912.

Oiye, Takeo, M.B. 1908.

Pollart, Achille, M.D. 1901.

Restaldi, Vittorio, M.D. 1899.
Rossi, Gaetano, M.D. 1900.

Sakurai, Fumio, M.B. 1912.
Sala, Robert, M.D. 1914.
Saporiti, Giuseppe M., M.D. 1893.
Suzuki, Tadashi, M.B. 1908.

Takahashi, Yasuo, M.B. 1909.
Tombeur, François J., M.D. 1912.
Tsukano, Toyojiro, M.B. 1908.

Van den Dungen, Eugene G., M.D. 1898.
Varese, Edoardo, M.D. 1901.
Verheyden, Englebert, M.D. 1905.
Vincke, Georges, M.D. 1904.
Vogel, Heinrich, M.D. 1910.
Vrebos, Amaury, M.D. 1900.

EPSOM COLLEGE: SIR WALTER BUCHANAN SCHOLARSHIP.—The Council will shortly award a Sir Walter Buchanan Scholarship, the value of which is about £33 a year. The rule fixed by the founders of the scholarship is as follows: The Sir Walter Buchanan Scholarship is primarily intended for the sons of deceased or prematurely invalided officers of the Indian Medical Service, or failing any such candidates for the sons of legally qualified medical men of pure British parentage in necessitous circumstances who have practised medicine for at least five years in India. Applications should be sent to the Secretary, Mr. J. B. Lamb, 49, Bedford-square, London, W.C. 1.

was striking. Tall, big, and ruddy, with a kindly expression, he looked, as indeed he was, the incarnation of all that is best in British medicine.

Though for some months his strength had been failing, Dr. Coombs's final illness was brief and painless. He died on Sept. 13th, in his eightieth year, leaving his widow and four children to mourn their loss. His only son is Dr. Carey F. Coombs of Bristol.

JOHN WARD COUSINS, M.D.LOND., F.R.C.S.ENG.,

CONSULTING SURGEON TO THE ROYAL PORTSMOUTH HOSPITAL.

Dr. J. Ward Cousins, whose name is well known to the medical profession both as a general surgeon and as a medical politician, died on Sept. 22nd. The second son of the Rev. T. Cousins, an Independent minister, he was first apprenticed to Dr. E. J. Scott, surgeon to the Royal Portsmouth Hospital, and then in 1853 entered as a medical student at St. Thomas's Hospital, where three years later he gained the Cheselden medal. In the same year he qualified M.R.C.S.Eng. and L.S.A. In 1858 he graduated M.B. at the University of London, taking the M.D. in the following year. A year later he became F.R.C.S.Eng., by examination. After holding a resident appointment at the City of London Hospital for Diseases of the Chest he became attached to the staff of the Royal Portsmouth Hospital in 1863, and to the Portsmouth Eye and Ear Infirmary. From 1895 to 1899 he was a Member of Council of the Royal College of Surgeons of England and their representative on the Central Midwives Board. In the affairs of the British Medical Association Dr. Cousins took a lifelong interest; he was for many years hon. secretary of the Portsmouth division, becoming president of the Central Council, and president of the Association on the occasion of its visit to Portsmouth in 1899. His wide range of interest is reflected in his writings, which include a Review of the Treatment of Stone, the Treatment of Tinnitus Aurium, Ectopic Gestation, and Tuberculous Disease of Joints. A variety of surgical instruments which he invented or improved bear witness to his inventive genius, being rewarded by a British Medical Association prize and by a gold medal at the International Inventions Exhibition. He was on the Commission of the Peace for the borough of Portsmouth. Able surgeon, faithful colleague and good citizen, his place will be hard to fill.

WILLIAM ARTHUR LOXTON, M.B., CH.B. BIRM., F.R.C.S. EDIN.

THE death of Dr. W. A. Loxton took place last week at Budleigh Salterton, where he was on holiday. Dr. Loxton was educated at Birmingham University, where he took the degree of M.B., Ch.B. in 1904, having qualified M.R.C.S. Eng., L.R.C.P. Lond. in 1887. He served as house surgeon to the Queen's Hospital, Birmingham, before specialising in diseases of the skin, which, with venereal diseases, formed his principal interest. He was appointed to the honorary staff of the Birmingham Midland Hospital for Skin and Urinary Diseases in 1890, and for the last three months of his life was the senior member of the staff. He was also medical officer to the Birmingham Venereal Clinic, and the author of several publications dealing with venereal diseases. Dr. Loxton was at one time president of the Midland Medical Society. He leaves a widow and a daughter.

BENJAMIN POPE VIRET, M.B. LOND.

Dr. Benjamin Pope Viret, who died on Sept. 16th at his residence in Horton-lane, Bradford, Yorks, bore the name of his father, a well-known civil servant, and was educated at St. Paul's School and St. Bartholomew's Hospital. He became M.R.C.S. Eng., L.R.C.P. Lond. in 1890, and graduated M.B. Lond. in 1893. After an appointment as house surgeon to the Dorset County Hospital he entered into private practice in the city of Bradford, where he remained for the last 24 years of his life. He was a referee for the Pearl and other insurance companies and one of the factory surgeons in the city. While engaged in his professional duties he contracted an infected wound, which set up septic pneumonia, from which he died with tragic suddenness. A cultured man of wide reading and fond of his profession, Dr. Viret did not seek publicity. He was 54 years of age and leaves a widow and three children.

ROBERT A. FLYNN, F.R.C.P. IREL.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

THE death occurred last week of Captain R. A. Flynn who, before the war, was a well-known gynæcologist practising in Dublin. Having taken his medical qualifications in 1887, Flynn served the usual period as Assistant Master in the Rotunda Hospital, and then began practice in Dublin. He was for many years gynæcologist to the Drumcondra Hospital. Early in the war he accepted a commission in the Royal Army Medical Corps and, liking military work, he accepted re-engagement in preference to demobilisation after the armistice. For the past two or three years he was stationed in Dublin. He suffered for some time from heart disease, but his death came as a surprise to his many professional friends in Dublin.

THE LATE DR. T. B. STEDMAN.—Thomas Bernard Stedman, late deputy coroner for N.E. London, who died at his residence, Sheffield, on Sept. 21st., aged 49, had been an honorary demonstrator in toxicology at the University of Leeds and medical officer of health for Leighton Buzzard. Receiving his medical education at University College, London, he qualified M.R.C.S., L.R.C.P., in 1893, and in the same year graduated M.B. with honours at the University of London. He took his M.D. in 1895, and obtained the Diploma in Public Health at Cambridge in 1897. He was a Barrister-at-Law of the Middle Temple.

ROYAL MEDICAL BENEVOLENT FUND.

THE annual report for 1920 of the committee of management of the Royal Medical Benevolent Fund opens with the statement that the diminished purchasing power of money makes it essential that the average amount of the grants, which at present is quite inadequate, should be considerably increased. New subscribers, it is pointed out, are best obtained by a personal canvass, and those interested in the Fund are urged to make its wants more widely known throughout the profession. The total amount received in donations and subscriptions was £3395 4s. 7d., as compared with £2805 3s. 10d. in the preceding year. The total distributed in grants during the year, including Christmas gifts of 30s. to the more urgent cases, was £2708 11s. 1d., of which £216 0s. was provided from the dinner fund account. The total granted the previous year was £2532 1s. Grants were made to 219 cases, and if it were possible to increase the income by £1000 a year it would, with the assistance of the dinner fund, which is kept for special cases and emergencies, be possible to raise the average of the grants by £6. The amounts distributed in annuities during the year totalled £1021 1s. 10d., as against £3897 0s. 5d. in the previous year. The annuitants (who must be over 60 years of age) numbered 178; in December, 1920, it was agreed to increase the amount of 38 of the pensions from £20 to £26.

The Royal Benevolent Medical Fund Guild, which raises subscriptions for the provision of clothes, invalid comforts, and holidays for those who are assisted by the Fund, and also helps in the education of children, is rapidly developing, and the personal interest taken by its members in the applicants is a very valuable form of work. The War Emergency Fund received in January, 1921, a grant of £10,000 from the Committee of the National Relief Fund, to be expended for the benefit of those members of the profession who held commissions and had suffered financial loss in consequence of military service. Grants to the amount of £5926 17s. 6d. were made for this purpose. During the next few years the assistance of young people in the matter of training for a profession will be carried out on a more extensive scale. The committee have already agreed to bear the cost of the education of 25 boys and girls at public schools, and they would welcome applications for such purpose on behalf of any who are eligible for help from the Fund. The expenses of administration, which show a small increase due to the enhanced cost of clerical assistance, of postage, and printing, amount to less than 9 per cent.

London Dermatological Society.—The first meeting of the winter session will be held at 4.30 p.m., on Tuesday, Oct. 18th, at 49, Leicester-square, London, W.C. The opening address on "Skin Eruptions Related to Intestinal Stasis" will be delivered by Sir W. Arbuthnot Lane. All members of the medical profession are invited.

Milk for Mothers and Infants.—At an emergency committee meeting of the National Association for the Prevention of Infant Mortality the following resolution was passed:—

> That this committee is strongly of opinion that the distribution of milk by sanitary authorities is a valuable measure for the protection of infant life. The committee therefore urges the Minister of Health, while doing everything possible to curtail extravagant expenditure, to continue the 50 per cent. grant to those authorities who are complying with Circular 185.

The resolution was based upon the feeling that this relief should be left in the hands of infant welfare centres, since these are able, by means of the expert physicians attached to each, to prescribe the right amount of milk and watch the results on mother and child. No such supervision would be possible if relief in the form of milk-giving were placed in the hands of the guardians, who have not the necessary machinery for such work.

Milk-supply of Dublin.—Last week the Commission on the Industries and Resources of Ireland, appointed in 1919 by Dail Earann, took up the question of the milk-supply of Dublin, and heard a good deal of medical evidence. Dr. M. J. Russell, medical officer of health for Dublin, gave evidence of the difficulties which confront his department in endeavouring to safeguard the milk-supply of the city. In the first place, the corporation has no power to inspect or control sources of supply which lie outside the city. In the next place, the police magistrates are notoriously lax in the penalties they think fit to impose even on the most hardened offenders among milk dealers. Dr. Russell suggested that the penalty for a second offence should be prohibition to trade in future.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Oct. 4th.

SURGERY: SUB-SECTION OF ORTHOPÆDICS, at 5.30 p.m. (Cases at 5 p.m.)

Cases:—The following will be shown by:—

The President (Mr. Laming Evans): Phocomelia.

Mr. H. A. T. Fairbank: (1) A Case of Subluxation of the Hip-joint of Doubtful Origin. (2) Bilateral Snapping Hips—a further Report on a Case already shown.

Mr. R. C. Elmslie, Mr. W. H. Ogilvie, and Mr. W. Rowley Bristow will also show cases.

Wednesday, Oct. 5th.

HISTORY OF MEDICINE: at 5 p.m.

Statement by the President (Dr. Singer) with regard to the Third International Congress of the History of Medicine to be held in London in 1922.

Approval of the invitation extended to the Congress.

Nomination and election of an Executive Committee, &c. To this meeting all those interested in the matter are cordially invited, whether Fellows of the Society or no.

Thursday, Oct. 6th.

OBSTETRICS AND GYNÆCOLOGY: at 8 p.m.

Specimens:

Mr. Malcolm Donaldson: Malignant Disease of the Cervix Uteri associated with a Malignant Omental Cyst.

Professor Henry Briggs: Green Intraperitoneal Exudate found on the Uterus during Cæsarean Hysterectomy for Uterine Fibroids at Full Term.

Short Communications:

Dr. Barris and Dr. McCurrich: Case of Hæmatoma of the Vulva following Labour.

Dr. Robert A. Hendry (Liverpool): Case of Prolonged Gestation.

Paper:

Dr. Frank A. Nyulasy (introduced by Dr. D. Colquhoun and Mr. Dunhill): Polypoid Decidual Endometritis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Oct. 3rd.—2 p.m., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. 2.30 p.m., Mr. T. Gray: Visit to Surgical Wards.

Tuesday.—10 a.m., Mr. Steadman: Dental Department. 11 a.m., Dr. McDougal: Electrical Department. 2 p.m., Dr. Burrell: Medical Out-patients. 2.30 p.m., Mr. Addison: Visit to Surgical Wards.

Wednesday.—10 a.m., Mr. MacDonald: Genito-Urinary Department. 2 p.m., Mr. Addison: Operations. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards.

Thursday.—2 p.m., Mr. D. Armour: Operations. Mr. MacDonald: Surgical Out-patients.

Friday.—2 p.m., Mr. T. Gray: Surgical Out-patients. 2.30 p.m., Dr. Pritchard: Visit to Medical Wards.

Daily:—10 a.m., Visit of Post-Graduates to Wards. 2 p.m., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N. Special Intensive Course.

Monday, Oct. 3rd.—4.30 p.m., Clinical Lecture:—Lieut.-Col. W. Byam: The Invalid from the Tropics.

Tuesday.—4.30 p.m., Clinical Lecture:—Dr. A. Giles: Sterility.

Wednesday, 4.30 p.m., Clinical Lecture:—Mr. H. D. Gillies: Plastic Surgery in Civil Cases (lantern).

Thursday.—4.30 p.m., Clinical Lecture:—Sir William Willcox: Diabetes.

Friday.—4.30 p.m., Clinical Consultations on Obscure Cases.

Saturday.—11 a.m., Dr. F. Thomson (at the North-Eastern Fever Hospital, St. Ann's-road, N.): Cases illustrating the Early Diagnosis of the Infectious Fevers.

Daily:—10.30 a.m. and 11.45 a.m., Demonstrations of Clinical and Laboratory Methods. 2 p.m., Demonstrations of Groups of Clinical Cases. 3 p.m.: General Hospital Work. 4.30 p.m., Clinical Lecture (free to Medical Practitioners).

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.

Monday, Oct. 3rd.—11 a.m., Dr. J. S. Goodall: Out-patients. 2 p.m., Dr. R. O. Moon: In-patients.

Tuesday.—9.30 a.m., Dr. B. T. Parsons-Smith: Out-patients. 10 a.m., Dr. F. W. Price: In-patients. 2 p.m., Sir Sidney Russell-Wells: Out-patients.

Wednesday.—9.30 a.m., Dr. John Parkinson: Out-patients. 2 p.m., Dr. Moon: Out-patients.

Thursday.—2 p.m., Dr. Moon: In-patients. Dr. Price: Out-patients. 6.30 p.m., Dr. P. Hamill: Out-patients.

Friday.—9.30 a.m., Dr. Parsons-Smith: Out-patients. 2 p.m., Dr. Parkinson: Out-patients.

Saturday.—10.30 a.m., Dr. Hamill: In-patients.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, Oct. 6th.—4 p.m., Lecture:—Dr. Thursfield: Types of Meningitis.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN 49, Leicester-square, W.C.

Thursday, Oct. 6th.—6 p.m., Chesterfield Lecture:—Dr. W. Griffith: The Elementary Lesions of Skin Diseases.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

Wednesday, Oct. 5th.—6 p.m., Lecture I.:—Causes of Infant Mortality.

Friday.—6 p.m., Lecture II.:—How to Conduct an Infant Consultation, Examine an Infant and keep Records.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

Tuesday, Oct. 4th.—4.30 p.m., Lecture:—Mr. J. W. Smith: Duodenal Atony.

Appointments.

Stevens, B. C., M.D., M.S. Durh., D.P.H., has been appointed Medical Officer of Health for Grimsby.

Willoughby, J. F. D., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Southwell District of the county of Nottingham.

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary and Cardiganshire General Hospital.—Res. H.S. £250.

Benenden, Kent, National Sanatorium.—Asst. M.O. £250.

Bethlem Hospital.—Res. H.P. £25 per quarter.

Birkenhead Borough Hospital.—Sen. H.S. £250.

Bournemouth, Royal Victoria and West Hants Hospital, Poole-road Branch.—Res. M.O. £200.

Bradford Children's Hospital.—H.S. £180.

Bradford Royal Infirmary.—Two H.S.'s. £200.

Bridgwater Hospital.—H.S. £165.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £140. H.S.'s. £140.

Cardiff, City of.—Female Asst. M.O. £550.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Phys. to Out-patients.

Coulsdon, Netherne Mental Hospital.—Third Asst. M.O. £400.

Derby, Derbyshire Royal Infirmary.—Hon. Asst. Surg.

Eastbourne, Princess Alice Hospital.—H.S. £175.

Elizabeth Garrett Anderson Hospital, Euston-road.—Female Asst. S.

Exeter City Mental Hospital.—M.O. £350.

Frimley, Brompton Hospital Sanatorium.—Asst. Res. M.O. £250.

Glasgow Asylum Service.—Asst. M.O. and Pathologist. £275.

Smith, Robert G., M.B. *1874 (E)*.
Smith, Sydney H., M.B. 1895 (S).
Smithwick, Gerald W., L.R.C.P. 1901 (S).
Smyly, Henry J., M.B. 1911 (I).
Smyth, Andrew, L.R.C.P. 1902 (S).
Smyth, Thomas, M.B. 1912 (I).
Soderstrom, Erik D., M.B. 1916 (S).
Sodhi, Baba M. S., M.B. 1902 (E).
Somerville, John, M.B. 1888 (S).
Souter, John F., M.B. 1889 (E).
South, Frederick W. B., L.S.A. 1886 (E).
Southam, John B., M.R.C.S. 1868 (E).
Spelman, Andrew P., M.B. 1916 (I).
Spencer-Daniell, John, M.B. 1906 (S).
Spring, Douglas N., M.B. 1909 (S).
Sproule, Robert, M.B. 1902 (S).
Stack, Catherine F. M., L.R.C.P. 1901 (S).
Stacpoole, Adam R., L.R.C.S. 1883 (E).
Stainer, Edward, M.B. 1897 (E).
Stals, Albert J., M.D. *1909 (I)*.
Stead, Dryden, M.R.C.S. 1892 (E).
Steele, Edward E., L.R.C.S. 1913 (E).
Steggall, Septimus L. J., M.R.C.S. 1892 (E).
Stegman, Daniel A., L.R.C.P. 1919 (S).
Steven, *Arthur R.*, M.B. 1916 (S).
Stewart, Andrew, M.B. 1900 (S).
Stewart, Charles H., L.S.A. 1893 (E).
Stewart, Charles J., M.R.C.S. 1911 (E).
Stewart, Charles R., *O.B.E.*, M.B. 1902 (E).
Stewart, Edward E., M.B. 1910 (S).
Stewart, Margaret A. H., M.B. 1916 (S).
Stewart, Roger P., M.B. 1912 (E).
Stewart, William A., M.R.C.S. 1913 (E).
Stewart, William J., M.B. 1913 (I).
Stirling, Robert A., L.R.C.P. 1881 (E).
Stock, William S. V., M.R.C.S. 1898 (E).
Stockwell, George E. St. C., B.C. 1902 (E).
Stodart, David E., M.B. 1910 (E).
Stogdon, Mildred B., M.R.C.S. 1913 (E).
Stone, John William, L.S.A. 1886 (E).
Stones, Thomas, L.R.C.P. 1871 (E).
Stoney, William W., M.B. 1893 (E).
Storey, *Thomas C.*, *M.C.*, M.B. 1912 (E).
Strange, Arthur, M.R.C.S. 1892 (E).
Stringer, Louis B., M.R.C.S. 1912 (E).
Strong, Robert G., L.R.C.P. 1880 (E).
Stubbs, Edward J., L.R.C.P. 1906 (S).
Studdert, John M., L.R.C.P. 1876 (I).
Sturgis-White, Russell, M.B. 1890 (E).
Stutt, Albert E., L.R.C.P. 1881 (S).
Suares, Jerome, L.R.C.S. 1914 (I).
Sutcliff, Joseph H., M.R.C.S. 1854 (E).
Sutcliffe, Edward, M.R.C.S. 1907 (E).
Sutton, William H. R., B.C. 1907 (E).
Swanseger, Percy C. B., L.R.C.P. 1895 (S).
Sykes, Lilian E., L.R.C.S. 1897 (E).
Symons, Herman B. T., L.S.A. 1891 (E).
Syree, Anton H., M.R.C.S. 1883 (E).

Taaffe, John F. H., L.S.A. 1883 (E).
Taaffe, Oliver G., L.R.C.P. 1884 (E).
Tabb, John F., M.R.C.S. 1879 (E).
Tahmisian, Paul B., M.R.C.S. 1896 (E).
Takaki, Kanehiro (Baron), L.R.C.P. 1878 (E).
Takaki, Kenji, M.R.C.S. 1904 (E).
Takaki, Yoshihiro, M.R.C.S. 1899 (E).
Tannahill, Thomas F., M.B. 1880 (S).
Tarrant, Hugh S., M.B. 1900 *(I)*.
Tayler, William G., M.R.C.S. 1861 (E).
Taylor, Adrian H., L.R.C.P. 1873 (I).
Taylor, Alexander J. R., M.B. 1915 (S).
Taylor, David S., L.R.C.P. 1916 (E).
Taylor, Edward H., M.B. 1890 (I).
Taylor, Emma (Mrs.), L.R.C.P. 1902 (S).
Taylor, Hugh W. Y., M.B. 1919 (S).
Taylor, Rogers W. G., M.B. 1877 (I).
Taylor, William, L.R.C.P. 1909 (S).
Taylor, William A. O., M.B. 1906 (E).
Teasdall, Walter J., L.S.A. 1886 (E).
Teeger, Bernard, M.B. 1911 (I).
Teichelmann, Ebenezer, L.K.Q.C.P. 1887 (E).
Telfer, Charles, M.B. 1895 (E).
Tellet, Frederick S., L.R.C.S. 1869 (I).
Tempest, James, M.R.C.S. 1897 (E).
Tennekoon, John P. R., M.R.C.S. 1917 (E).
Thacker-Neville, William S., M.B. 1908 (I).
Thayer, Linus O., L.S.A. 1875 (E).
Thistle, William R., L.R.C.P. 1887 (E).
Thom, George, L.R.C.P. 1905 (E).
Thomas, David J., M.R.C.S. *1908* (E).
Thomas, Harold S., M.R.C.S. 1891 (E).
Thomas, Walter R., L.S.A. 1891 (E).
Thompson, Charles E., L.K.Q.C.P. 1886 (I).
Thompson, John, M.R.C.S. 1859 (E).
Thompson, Samuel G., L.R.C.P. 1882 (S).
Thomson, *Malcolm E.*, L.R.C.S. 1881 (E).
Thomson, Thomas, L.S.A. 1880 (E).
Thornton, Philip, L.S.A. 1870 (E).
Tillcke, William G., M.R.C.S. 1919 (E).
Tilling, Harold W., M.R.C.S. 1910 (E).
Tindale, Wentworth R., M.R.C.S. 1866 (E).
Tizard, Henry J., M.R.C.S. 1890 (E).
To, Ying K., M.B. 1917 (S).
Tobit, Perry P., L.S.A. 1902 (E).
Tomlinson, William R., L.R.C.S. 1883 (I).
Toombs, Herbert G., M.R.C.S. 1894 (E).
Tooth, Frederick, M.R.C.S. 1914 (E).
Torley, John Lawrence, M.B. 1916 (S).
Tothill, Alfred R., M.R.C.S. 1918 (E).
Trail, Alexander F., M.B. 1874 (S).
Traill, Ralph R., M.R.C.S. 1916 (E).
Tren, Herman, M.B. 1915 (S).
Trenow, Nigel A. A., L.S.A. 1890 (E).
Truman, Charles E., M.R.C.S. 1875 (E).
Turner, Charles, M.R.C.S. 1853 (E).
Twidale, Frederick W., M.B. 1896 (E).
Tyndall, John, L.R.C.S. 1866 (I).
Tyrrell, James *H.*, L.R.C.P. 1874 (S).

Usher, Victor F., M.B. 1907 (S).
Uttley, William W., M.R.C.S. 1909 (E).

Vaillant, Marie E., L.R.C.P. 1900 (S).
Van der Merwe, Cornelius J., M.B. 1917 (S).
Vaughan, James C., M.B. 1918 (S).
Venn, Albert J., M.B. 1873 (E).
Venugopal, Sadanala B., M.R.C.S. 1914 (E).
Vertannes, Carr A., M.R.C.S. 1896 (E).
Vickers, William H. P., M.B. 1890 (I).
Vigne, Alfred, M.B. 1890 (I).
Vijver, Gifford T. van der, *M.C.*, M.B. 1914 (S).
Violette, William B., M.B. 1881 (E).
Visser, Andries G., M.B. 1906 (S).
Voisin, Alexander B., M.R.C.S. 1881 (E).
Von Himpe, Emilie T. V., L.S.A. 1895 (E).
Von *Mengershausen*, Hubert M., M.B. 1915 (E).
Von Wyss, Walter H., M.R.C.S. 1913 (E).

Wace, Cyril, M.R.C.S. 1983 (E).
Wace, Richard H., M.B. 1894 (E).
Wacher, Geoffrey, M.R.C.S. *1906 (E)*.
Waddell, Alexander G., M.B. 1911 (S).
Waddell, Laurence A., M.B. 1878 (S).
Waddell, Sydney, M.B. 1900 (I).
Wahby, Behdjet, M.R.C.S. 1907 (E).
Walker, Alexander, M.B. 1876 (S).
Walker, Ernest F. D., M.B. 1896 (S).
Walker, James D., M.B. 1891 (S).
Walker, John, M.R.C.S. 1902 (E).
Walker, Margaret, M.B. 1915 (S).
Walker, Robert W. S., M.R.C.S. 1907 (E).
Walker, Thomas M., M.R.C.S. 1899 (E).
Walker, Walter W., M.B. 1892 (E).
Wall, Arthur P., M.B. 1906 (S).
Wall, Hon. Frank E., M.B. 1907 (S).
Wall, James M., L.M.S.S.A. 1916 (E).
Wall, Kathleen G., *L.R.C.P.* 1913 (I).
Wallace, Robert F. S., M.R.C.S. 1893 (E).
Wallace, Thomas, M.B. 1918 (I).
Waller, John, M.R.C.S. 1866 (E).
Walsh, Edward, M.B. 1916 (I).
Walsh, John H., L.R.C.S. 1895 (I).
Walsh, *John Joseph*, L.R.C.S. 1888 (I).
Walsh, Richard F., M.B. 1916 (I).
Ward, Oswald E., M.R.C.S. 1900 (E).
Ward, Sidney H., M.R.C.S. 1909 (E).
Wareham, Harold E., M.B. 1901 (S).
Watermayer, Herbert A., M.R.C.S. 1913 (E).
Watkins, William L., *L.R.C.S.* 1866 (I).
Watson, Charles H., *O.B.E.*, M.B. 1899 (S).
Watson, *Isabella A.*, L.R.C.P. 1900 (S).
Watson, John, M.B. 1887 (E).
Watson, Samuel E., M.B. 1911 (I).
Watson, *Thomas A.*, M.B. 1884 (S).
Watson, William S., M.B. 1908 (S).
Watt, Alexander, M.B. 1902 (S).
Watt, James, M.B. 1895 (S).
Watt, William W. W., *L.R.C.P. 1912* (S).
Watts, Adeline M., L.R.C.P. 1908 (S).
Watts, Rattan C., M.B. 1917 (E).
Waugh, Robert James, M.R.C.S. 1902 (E).
Way, Frederick W., M.R.C.S. 1856 (E).
Webb, Hermann W., M.B. 1911 (S).
Webster, *Frederic L.*, M.R.C.S. 1915 (E).
Webster, George A., M.R.C.S. 1886 (E).
Webster, Joseph H., L.R.C.P. 1872 (E).
Weddick, John, L.R.C.P. 1874 (I).
Weinman, Leonard O., L.R.C.P. 1914 (S).
Weir, Crosbie, L.Med.L.S. 1916 (I).
Welch, Frederick D., M.R.C.S. 1901 (E).
Weld, James C., L.R.C.P. & S. 1872 (I).
Welsby, Claude B., L.M.S.S.A. 1912 (E).
Welsh, William *K. R.*, M.R.C.S. 1872 (E).
Wessels, Cornelius A., M.R.C.S. 1899 (E).
Westcott, William W., M.R.C.S. 1870 (E).
Wheat, *Ernest G.*, M.R.C.S. 1908 (E).
Wheatley, Thomas D., M.R.C.S. 1851 (E).
Wheeler, Percy C. E. D'Erf, M.R.C.S. 1885 (E).
Wheeler, William A., M.D. 1889 *(I)*.
Whish, George M., M.B. 1912 (S).
Whitaker, *Roy H. R.*, M.R.C.S. *1901* (E).
White, Edmund L., M.B. 1914 (S).
White, Edward B. C., M.R.C.S. 1908 (E).
White, Michael, M.D. 1873 (I).
White, Walter W., L.R.C.P. 1886 (E).
Whitehead, Alfred, M.R.C.S. 1871 (E).
Whitehead, Jerry, M.B. 1909 (E).
Whitelaw, John, M.B. 1919 (S).
Whiteley, George W., M.R.C.S. 1879 (E).
Whitford, William, M.D. 1878 (E).
Whitney, Willis N., M.D. 1881 (E).
Wickham, George W., L.R.C.P. 1892 (E).
Wicks, Frederick, M.R.C.S. 1870 (E).
Wigmore, Arthur W., *L.R.C.P.* 1887 (E).
Wilcock, Arthur G. E., L.M.S.S.A. 1916 (E).
Wilkin, *Richard McK.*, L.R.C.P. *1900 (I)*.
Wilkins, John C., M.R.C.S. 1865 (E).
Wilkinson, John H., M.R.C.S. 1911 (E).
Williams, Arthur J., L.R.C.P. 1895 (S).
Williams, David E., L.R.C.P. 1892 (I).
Williams, David P., M.R.C.S. 1909 (E).
Williams, Edward J., L.R.C.S. 1886 (I).
Williams, Gomer, M.B. 1913 (S).
Williams, Howell M., M.R.C.S. 1908 (E).
Williams, James A., M.B. 1915 (S).
Williams, James T., M.B. 1897 (S).
Williams, John E., M.R.C.S. 1890 (E).
Williams, Josiah, L.R.C.S. 1878 (E).
Williams, Neville, M.R.C.S. 1875 (E).
Williamson, Gladys R. M. V., M.B. 1916 (S).
Williamson, Wilson T., M.R.C.S. *1906* (E)
Willmore, James G., M.R.C.S. 1906 (E).
Wilson, Colin, M.B. 1914 (E).
Wilson, Frederic E., M.B. 1901 (S).
Wilson, Geoffrey P., M.R.C.S. 1902 (E).
Wilson, Gwendolen J. E., M.B. 1918 (S).
Wilson, *Harry M.*, B.C. 1904 (E).
Wilson, James A. K., L.R.C.P. 1887 (S).
Wilson, John H., L.S.A. 1898 (E).
Wilson, John S., M.R.C.S. 1873 (E).
Wilson, Robert Archibald, M.D. 1873 (S).
Wilson, Thomas, L.S.A. 1882 (E).
Wilson, Thomas, M.B. 1902 (E).
Wilson, William J., *M.B. 1898 (I)*.
Wilson, William T., M.R.C.S. 1873 (E).
Windsor-Aubrey, Henry W., M.R.C.S. *1885 (E)*.
Wiseman, John G., M.R.C.S. 1867 (E).
Wolfe, Robert I., L.S.A. 1887 (E).
Wollaston, Alexander F. R., M.R.C.S. 1903 (E).
Woo, Arthur W., M.R.C.S. 1913 (E).
Woo (Ng) Tin P., M.B. 1915 (E).
Wood, Francis H., L.R.C.P. 1876 (S).
Wood, George E. C., M.B. 1885 (S).
Wood, William B. H., M.R.C.S. 1897 (E).
Woods, Eric A., M.R.C.S. *1918 (E)*.
Woods, Francis H., M.R.C.S. 1859 (E).
Woods, John R. L., M.R.C.S. 1902 (E).
Woods, Leonard H., M.R.C.S. 1917 (E).
Woodward, Ernest A., M.B. 1888 (S).
Woodward, Martin, M.R.C.S. 1858 (E).
Woodward, William, M.R.C.S. 1887 (E).
Woolf, Montague S., M.R.C.S. 1911 (E).
Woollard, Charles, M.R.C.S. 1910 (E).
Woolmer, Shirley L., L.S.A. 1884 (E).
Wordsworth, William J., M.R.C.S. 1886 (E).
Woudberg, Peter C., M.B. 1911 (S).
Wreford, John, M.R.C.S. 1887 (E).
Wright, George, L.R.C.P. 1890 (S).
Wright, John W., L.R.C.P. 1879 (E).
Wright, Martensz J., M.B. 1882 (S).
Wright, Thomas N., L.R.C.P. & S. 1884 (I).
Wright, Walter S., L.S.A. 1891 (E).
Wrigley, Frederick H., L.A.H. 1876 (E).
Wyer, John F. W., M.R.C.S. 1914 (E).

Yates, George D., M.B. 1914 (S).
Young, Andrew, L.R.C.P. 1902 (S).
Young, Ernest W. G., *O.B.E.*, *M.C.*, M.B. 1910 (E).
Young, Francis B., M.B. 1906 (E).
Younger, Isabella H., M.B. 1914 (S).

COLONIAL LIST.

Ainley, William E., M.D. *1904*.
Allison, Gerald, M.B. 1915.
Ardill, Katie, M.B. 1913.
Armitage, Charles H., M.B. 1915.

Baillie, Samuel A., M.D. 1902.
Ball, Stanley S., M.B. 1915.
Balsara, Maneckji N., L.M.S. 1906.
Banker, Shiavax S., L.R.C.P. 1912.
Barton, Oswald, M.B. 1914.
Bastedo, Albert F., M.B. 1914.
Beaton, John, M.D. 1912.
Beaton, Wesley G., M.D. 1919.
Bernard, Samuel D., L.M.S.N. Scotia, P.M. Bd. 1917.
Bhat, Sadashiv V., L.M.S. 1910.
Bhiwandiwala, Peshotan D., L.M.S. 1910.

"points douloureux" of Valleix. This condition is known in another undoubted nervous disease—alcoholic polyneuritis. In this complaint the nerve trunks are relatively only slightly painful, while the muscles are extremely painful.

But deprived of this argument, the whole fabric of Helweg's proof that the nerve is not the seat of the trouble vanishes. And his only evidence that pathological changes are found in the muscles is that they are tender and their consistence is altered. But this need only indicate that they are *in* a condition of partial contraction. Microscopic examinations or animal experiments were not performed by Helweg. He has therefore in no way proved that sciatica is a muscular disease, and by his theory the explanation of a number of facts becomes difficult. For instance: (1) That the tenderness closely follows the course of the nerve along the back of the leg and its furthest branches as far as the foot. (2) The position of Valleix's points: centrally on the posterior aspect of the thigh; in the middle of the popliteal space; in the middle of the calf; at the side of the leg; behind the external malleolus. (3) The disturbances of sensation and localised paralysis met with now and again in sciatica. (4) The suddenness with which many cases of sciatica arise, and with which, on the other hand, they frequently get well; for example, after a salt water injection. (5) That sciatica is, as a rule, unilateral. Bilateral sciatica is rare, and arouses suspicion of a tumour of the vertebral column, or diabetes. Following Helweg, it might be expected that the disease is often bilateral because the patient involuntarily stands more upon the sound leg than the diseased one, which might lead to hyperfunctioning of the muscles of the normal leg. (6) That sciatica is such a typical disease. According to Helweg, one would expect to find many different forms with pain localised at one time in a certain muscle, at another time in some other muscle dependent upon the work and activity of the patient. The pathogenesis of the disease suggested by Helweg does not satisfactorily explain a number of phenomena. Helweg will not admit the existence of a toxic or infectious sciatica, or of that form due to pressure. But he brings forward no proof that pressure cannot give rise to neuralgia, especially sciatica. It is impossible to support Helweg in his view of the pathology and clinical side of sciatica, but it must be admitted that he has performed a service in emphasising muscular hyperaction as a pathogenetic factor, as it undoubtedly plays a part in many different diseases, and—as we shall see—presumably also contributes to the pathogenesis of a number of cases of sciatica.

Views of Lindstedt.

Folke Lindstedt, a teacher at the Koroline Institute in Stockholm, has published some papers on sciatica[2] in the last few years, in which he supports the following view: Sciatica, in the large majority of cases, is a pure neuralgia, a functional disease without anatomical findings in the nerve. It arises from the presence of painful or merely irritating conditions in the periphery of the nerve which cause pain *radiating* into the whole of the sciatic area in the same way that toothache can produce trigeminal neuralgia. The irritation must have a certain amount of persistence or strength, and the person must have a susceptibility to neuralgia. If the susceptibility, "the neuralgic disposition," is great—in other words, if the individual is markedly neurasthenic—the "irritamentum" need only be trifling.

In an investigation of 100 cases of sciatica Lindstedt claims to have found the irritamentum in 91, as follows: tumours in 3 patients; lesions of the spinal column, 8; salpingitis, 2; appendicitis, 1; chronic arthritis of the hip-joint, 9; acute ditto, 2; fracture of the femur, 2; trauma of the knee-joint, 11 (N.B.—Often many years back); chronic arthritis of the knee-joint, 3; genu valgum, varum or recurvatum (total), 8; trauma of the feet, 5 (N.B.—Often many years ago); flat foot (Insufficientia pedis), 11; polyarthritis, 12; varicose veins, 8; infantile paralysis, 1; constitutional weakness, 3; septic affections, 2. As a rule these diseases do not exert their irritation directly, but through causation of muscle contractures and static abnormalities. On account of these, certain muscles are overtaxed and become painful, and it is these pains which constitute the peripheral "stimulus." He also considers, however, that painful affections in the periphery can directly give rise to referred pain without involving the muscles. The referred pain need not necessarily extend into the whole of the sciatic area, it may be restricted to a single division, but it can also involve neighbouring regions such as the lumbar. In this way Lindstedt explains the frequent association of lumbago and sciatica. He discusses the possibility of muscle contractures directly causing pain by pressure on the nerve trunk, as suggested by Petrén in 1908; but he rather discounts this by assuming that there is not always contracture present.

Comparative Views.

It is clear there is a marked difference between the points of view of Lindstedt and Helweg. A superficial similarity exists in the fact that Lindstedt allows muscular contracture and tenderness to participate in his explanation of sciatic neuralgia. But he entirely scorns the idea that the muscles themselves are the seat of the trouble. On the other hand he is inclined, like Helweg, to look upon the neuritic symptoms, anæsthesia and paresis, as functional and due respectively to exhaustion of the central receptive apparatus and of the muscles. He indicates that Lasègue's symptom may possibly be caused by tightening of the muscles, and does not feel sure that the nerve trunk itself is painful. Lindstedt's view will certainly receive the greater measure of support. The prominence he gives to the neurasthenic element, "the neuralgic disposition," is undoubtedly just; one can also agree with him that many of the pathological lesions he cites as causes of the disease play a part—for instance, the chronic hip and knee-joint affections, spondylitis and flat foot. But he certainly goes too far when he makes trauma of the foot and knee, acquired years ago, responsible for sciatica, or when he sees a causal nexus between appendicitis, salpingitis, varicose veins, polyarthritis, and many other affections occasionally found in a sciatic patient, and sciatica itself. Lindstedt is unable to bring forward any sound evidence of a connexion; the combination can just as well be explained as fortuitous. There is, after all, something forced in this attempt to view all cases of sciatica as secondary. In most cases sciatica is apparently a true disease with a typical course and of limited duration. The pathogenesis championed by Lindstedt is better adapted to chronic conditions with occasional sciatic pains. Moreover, he himself points out that material from the out-patient department might possibly have afforded more cases of genuine sciatica; the above-mentioned investigation deals only with in-patients.

Ljungdahl's Hypothesis.

Ideas of a similar nature are held by Ljungdahl.[3] But *there is a not inconsiderable difference. Ljungdahl only* deals with sciatic pain in spondylitis deformans and osteoarthritis deformans coxæ. He is not out to show that the pain is caused by these maladies, but simply constructs an hypothesis for the way in which they arise. The hypothesis is this: the pain is a reflex phenomenon similar to Mackenzie's viscero-sensory reflex. What gives rise to the reflex is the early destruction in the diseased portion of the bone or cartilage. He regards the conditions as traumata threatening the tissues with destruction or breaking down. The pain is the patient's signal of distress; the simultaneous contractures in the surrounding muscles are similarly the self-defence of the organism, analogous to Mackenzie's viscero-motor reflex. Ljungdahl, therefore, does not think that the muscle contractures and the associated tenderness contribute to cause the pain; in other words, he does not consider that the extent of the contractures and the amount of pain bear a close relationship to one another. Nor are Ljungdahl's views entirely in harmony with the theory of referred pain, since this postulates primary pain which overflows into other channels. Ljungdahl regards every explanation connected with myositis—that is, all inflammatory conditions of the muscles—and the extension of the trouble, perineuritis, as having no foundation, and does not agree that inflammatory infiltration of the muscles could produce nerve tenderness, from pressure. But he passes over the possibility of muscular contracture being able to cause it. He talks about exhaustion myalgia, but does not make use of it in the pathogenesis of sciatica.

General Conclusions.

I will review, in conclusion, what emerges from the above considerations on sciatica, as far as I am able to judge.

Sciatica is a symptom-complex which can arise under the most diverse circumstances. There is certainly a group—perhaps not large, but certainly existent—of neuritic sciaticas. It comprises the following: cases where the nerve fibres themselves are affected; alcoholic and lead neuritis especially localised in the sciatic nerve; the not uncommon sciatic neuritis in diabetes, which can only be cured by an appropriate diet; herpes zoster neuralgia in the sciatic nerve, in which, of course, there is affection of the spinal ganglia—probably a number of cases of influenzal and malarial neuralgia (and neuritis) also belong to this class; lastly, malignant growths in nerves. There is

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[2] E. F. Lindstedt: Bidrag t. u. Kännedomen om Ischias' patogenes och Etiologi (Contribution to our Knowledge of the Pathogenesis and Ætiology of Sciatica). Sv. läkaresällskapets förhandlingar, Hft. 9, 1919. Read at the Medical Congress in Copenhagen, August, 1919. F. Lindstedt: Ueber die Ætiologie und Pathogenese der Ischias, Acta Medica Scand, May, 1920.

[3] M. J. J. Ljungdahl: Nerv-och muskelsymptom vid deformerande arthritis. Ett bidrag t. u. Ischias' patogenes (Nerve and Muscle Symptoms in Arthritis Deformans. A Contribution to the Pathogenesis of Sciatica), Alm. svenska läkartidningen, 39-40, 1919.

Medical News.

THE eleventh London Medical Exhibition will be held at the Central Hall, Westminster, from Oct. 3rd to 7th inclusive, open each day from noon to 6 P.M. This exhibition is limited to members of the medical profession, who can obtain cards of admission on application to the Secretary, at 194, Bishopsgate, E.C., or at the Hall during the exhibition week.

SOCIETY OF M.O.H.'S.—The annual dinner will be held at the Café Royal, Régent-street, London, W., on Friday, Oct. 21st, at 7.30 P.M., when Sir A. Mond, Sir Gordon Hewart, Sir Norman Moore, Sir Anthony Bowlby, Sir George Newman, and Sir Philip Magnus, among others, are expected to be present. Ladies are invited, and early application for tickets (price 12s. 6d.) should be made to the Executive Secretary, at 1, Upper Montague-street, London, W.C. 1.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—The following entrance scholarships have been awarded for the sessions 1921–22:—

University Scholarships of 50 guineas each.—N. F. Adeney, B.A., St. John's College, Cambridge; W. R. H. Pooler, B.A., Downing College, Cambridge. *University Exhibition of 30 guineas*: G. B. Wood Walker, B.A., King's College, Cambridge. *Entrance Scholarships in Natural Science.*—£100: B. W. Goldstone, Haberdashers School and Cheltenham College; £50: M. Odess, School of Mines and Technology, Johannesburg. Palmer Scholarship, £25: E. I. Puddy, Mercers School, Holborn. Epsom College Scholarship (by nomination): G. E. G. Pierce.

AMERICAN DIETETIC ASSOCIATION.—The fourth annual meeting of this Association will be held in Chicago on Oct. 24th, 25th and 26th. Among the papers to be read are: the Newer Ideas on the Dietetic Management of Diabetes and their Working Out in the Hospital, by Dr. R. T. Woodyatt; the Dietary Needs of a Children's Hospital, by Dr. A. L. Daniels; and the Hospital Dietitian, by Miss Marion Peterson. Papers on the dietary customs of various nationalities will be communicated by various observers, and round table discussions will be held on activities in dieto-therapy, laboratory research, and its clinical application. The Secretary of the Association is E. M. Geraghty, 801, S. Wright-street, Champaign, Ill.

MINISTRY OF PENSIONS.—The Minister of Pensions has now taken steps to make more widely known the benefits available to disabled officers and nurses and the relatives of those deceased. With this object a new series of leaflets (officially described as "M.P.O. Leaflets") is being issued, dealing with the following matters: No. 1, general information for disabled officers; No. 2, provision for disabled nurses; No. 3, medical treatment of disabled officers and nurses; No. 4, supply, renewal, and repair of surgical and artificial appliances (other than artificial limbs); No. 5, alternative retired pay; No. 6, pensions and allowances to widows and other relatives of deceased officers; No. 7, supply of artificial limbs (in preparation); No. 8, special grants committee's arrangements for officers and nurses and their dependents. Copies of Nos. 1, 2, 5, and 6 can be obtained on application to the Secretary, Officers' Branch, Ministry of Pensions, Cromwell House Annexe, Millbank, S.W. 1; of Nos. 3, 4, and (later) 7, to the Commissioner of Medical Services at any of the regional offices of the Ministry; and of No. 8 to the Special Grants Committee (Officers), Thorney House, Smith-square, London. S.W. 1.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—The annual members' conference will be held on Oct. 6th–8th. On Thursday, Oct. 6th, at 11 A.M., a lecture will be given by Sir James Purves Stewart on "Disseminated Sclerosis" at the Mortimer Hall, 93, Mortimer-street, London, W. 1. At 3 P.M., demonstrations on "The Treatment of Empyema" and "The Tests and Progression of Muscular Work in Heart Cases" will be given by Miss Angove in the Physiological Theatre of Guy's Hospital, London, S.E., and the massage department of this hospital will be visited. At 6 P.M. Dr. Arthur F. Hurst will lecture on "Massage and Exercises in Gastro-Intestinal Disorders," at the Steinway Hall, 15, Lower Seymour-street, London, W. 1. On Friday, Oct. 7th, at 11 A.M., Sir Henry Gauvain will lecture on "The Treatment of Surgical Tuberculosis, with Particular Reference to the Indications for Massage," at the Mortimer Hall. At 3 P.M. Miss Stansfeld will give a lecture-demonstration on "The Importance of Physical Fitness for the Professional Woman," at the same place. At 6 P.M. Dr. J. B. Mennell will lecture on "Passive Movement," at the Steinway Hall. On Saturday, Oct. 8th, at 11 A.M., Dr. H. Crichton Miller will speak on "The Psychological Significance of Rest," at the Mortimer Hall.

LONDON TELEPHONE EXCHANGES.—Transfer from Paddington 1814 to Langham 2567, H. W. Carson; from Paddington 2608 to Langham 2551, C. W. Chapman.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held at 90, Buckingham Palace-road, London, S.W., on Oct. 12th, at 4 P.M., when a discussion will take place on Plumbing and Sanitation on Board Ship, Sir Henry Tanner presiding.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—The autumn session of the College will commence on Monday, Oct. 10th. Particulars of lectures, clinics, and classes will be found in our medical diary.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—A meeting will be held at 11, Chandos-street, Cavendish-square, W., on Oct. 21st, at 4.15 P.M., when the subject of Games for Girls will be discussed.

AMALGAMATION OF LONDON HOSPITALS.—The negotiations for the absorption of the Royal Chest Hospital by the Great Northern Central Hospital, Holloway, having come to a successful issue, the committee of the latter institution have been made, by an order of the Charity Commissioners, responsible for the management of the Royal Chest Hospital as from Sept. 6th.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The opening ceremony of the eightieth session of the School of Pharmacy will be held at 17, Bloomsbury-square, W.C. on Wednesday, Oct. 5th, at 3 o'clock. The presentation of the Pereira Medal will take place, and the inaugural sessional address will be delivered by Sir David Prain, F.R.S., director of the Royal Botanic Gardens, Kew.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A course of elementary lectures on infant care, for infant welfare workers, mothers, teachers, &c., will be held at Morley Hall, George-street, Hanover-square, W., on Mondays, 6–7 P.M. from Oct. 3rd to Nov. 7th, and at the lecture hall of the Central Council for Infant and Child Welfare, 117, Piccadilly, on Mondays, 6–7 P.M., from Nov. 14th to Dec. 19th, in preparation for the elementary certificate of the Association.

Y.M.C.A. MEDICAL LECTURES.—A series of popular medical lectures is to be delivered on Mondays (6 to 7 P.M.), Oct. 10th to Dec. 12th, at the Central Y.M.C.A., 186, Aldersgate-street, London, E.C. The lecturers will be Sir James Cantlie, Sir Charters Symonds, Sir James Dundas-Grant, Sir Nestor Tirard, Sir Bruce Bruce-Porter, Prof. W. D. Halliburton, Sir Robert Armstrong-Jones, Sir Frank Colyer, and Sir Sydney Russell-Wells.

BIRMINGHAM GENERAL HOSPITAL.—Owing to the serious financial position of the hospital the board of management recently decided to close two wards, containing 50 beds. This resolution took effect on August 1st, one ward having previously been closed at the Jaffray Hospital, which works in conjunction with the General Hospital and relieves it of many chronic cases. The position is the more serious as Birmingham was already insufficiently provided with hospital beds, and it had been calculated that an additional 1000 beds were required to meet the needs of hospital patients. On August 20th a letter, signed by the Vice-Chancellor and Principal of the University with the Dean of the Medical Faculty, was addressed to the chairman of the board of management, expressing the regret of the Faculty of Medicine at the closure of the two wards. The Faculty is specially concerned in the matter because of the large entry of students since the war. Those responsible for the clinical teaching had drawn up a scheme so that each student might have a proper amount of clinical material allotted to him; this scheme had been prepared with considerable trouble, on the assumption that the full number of beds would be available. The Faculty expresses the hope that the public will realise the seriousness of the position which has been created, and will, by a prompt and liberal support, enable the board of management to reopen these wards at an early date. The chairman of the board, in reply, stated that such a serious course as the closing of beds had been taken only after the most careful consideration, and had, perhaps, been delayed even longer than it should have been in view of the financial situation. The board realise that, owing to the large influx of students, the duties of the Medical Faculty are exceptionally heavy at the present time, and they regret that these difficulties should be added to by the closing of wards. Special efforts have for some time past been made to increase the income of the hospital, and, although these are meeting with a certain measure of success, there is still so large a difference between income and expenditure that the board are quite unable to say when they are likely to be able to reconsider their decision.

"the healthy instinct of reproduction, beautified in the attractive colours of youthful love, in the strong tones of passion, in the delicate tints of spiritual harmony," and have nothing in common with prostitution, "which is offensive because it is an act of violence on the part of the woman over herself, brought about by the pressure of fortuitous and external advantages; in prostitution there is no place either for love or for passion, nor is there any healthy instinct for the production of offspring. It is an act of deliberate calculation merely. Where passion or attraction enters prostitution ceases."

INFLUENZA IN MAURITIUS.

"THE Spanish Influenza in Mauritius" is the title of a brief account of the 1919 epidemic on that island, written by Mr. A. F. Fokeer, a layman who has been at pains to collect and summarise medical opinion concerning the infection and its treatment. Mr. Fokeer claims that up till the cholera epidemic of 1852 Mauritius was one of the healthiest places in the world; increase of population with no corresponding increase of housing facilities, and with defective sanitation, have considerably dimmed its reputation, and the account opens with an indignant denial of the allegation that present conditions are chiefly due to the large Indian section of the community. However that may be, isolated cases of influenza appeared in April, 1919; by May 14th the epidemic had broken out, and in the period from that date till the end of July it carried off 15,000 people—i.e., between 5 and 6 per cent. of the population of the island. There was an almost complete stoppage of trade and public business; the newspapers appeared intermittently, and the railway service was reduced to a minimum. Energetic measures were taken by the Government to combat the epidemic; the civil service and various voluntary organisations rendered valuable aid, but for an interval there were neither sufficient temporary hospitals to house the sick, nor time and materials for proper burial of the dead. Mr. Fokeer worked for a fortnight in a hospital mainly staffed by a Roman Catholic brotherhood, and then fell ill himself. One chapter which is occupied with a discussion on the possibilities of personal survival after death seems hardly relevant to the reader, although the author doubtless found it otherwise. Of more medical interest is the section devoted to the Ayurvedic view of influenza and its treatment.

SAFE CUSTODY OF DRUGS.

CONSIDERABLE publicity has not unnaturally been given in the press to the death of four patients at Powick Mental Asylum through a member of the medical staff of the institution having made up for them and six others glycerine and belladonna instead of glycerine and cascara. The medical man who made the mistake gave a perfectly frank account at the inquest on three patients who died almost immediately, and at a later inquest on a fourth who was thought to be recovering, but who succumbed to pneumonia. He explained what he had done by saying that he never expected that belladonna would be found placed in juxtaposition with castor oil and other drugs of similar harmless character. A verdict of death by misadventure was returned. It may be said in comment that neither a drug such as belladonna nor any other drug for use in a dispensary should be kept in a bottle or other receptacle bearing no inscription or ready means for identifying it without possibility of mistake; and also that insistence on orderly arrangement in accordance with fixed rules would provide a further potent safeguard. With regard to this a woman medical correspondent writes to us to lay emphasis on the necessity for impressing such orderliness upon all who have charge of drugs of any kind, including medicines, lotions, and liniments whether professionally or otherwise. She refers in particular to the giving of instruction in such matters to school children and others in the course of lessons on hygiene. Orderly habits can certainly be taught, particularly where the necessity for them can be pointed out to, and impressed upon, the pupil. In homes as well as in hospitals they should be matters of discipline and routine.

PRESENT-DAY GOLF.

IN a book with this title,[1] by George Duncan and Bernard Darwin, with photographic illustrations by G. W. Beldam, all tastes and handicaps are catered for. The scratch man, we imagine, will give his attention chiefly to the first part, in which Duncan describes and analyses the methods by which famous players achieve their results, and discusses such matters as putting and wrist work, the distribution and transference of weight, and the correct use of the various clubs. All this is rather strong meat, and if we had any hope that our advice would be taken, we should urge the long handicap man to be cautious in practising the principles which Duncan sets forth, for the strong man's diet may well prove fatal to infants and invalids. But there is no one more hopeful than the hopeless duffer, and certainly if the game can ever be learnt from books, it can be from this one. The illustrations to these chapters are numerous and excellent. Particularly fine is one which shows the author's follow through; it is a model of controlled abandon. Mr. Darwin, who is responsible for two-thirds of the volume, writes in his own inimitable way of heroes past and present, famous courses and famous finishes, handicapping, and a host of other things. Particularly delightful is his chapter on children and golf; it could only have been written by one who is richly endowed with the spirit of both. We have no doubt that this book will prove a source of profitable enjoyment to keen golfers who spend the long winter evenings reading, talking, and thinking of their favourite game.

COLOUR EQUATIONS.

AN important method of examining the colour-sense is that of equations of colours, and the white equation is the one usually employed. Two or three colours, for example, spectral red, green, and violet, are mixed until the resultant is indistinguishable from simple white. By means of the Abney apparatus, as modified by Fulton, Mr. F. W. Edridge-Green has recently[1] isolated these colours from the spectrum of a 1000 c.p. "Pointolite" lamp, and then recombined them by means of a lens. The equation obtained after the observer's eyes had been fatigued by light from the red end of the spectrum showed a much lower proportion of green, approximately half the amounts obtained under normal conditions. A variation in the same direction was found also in the colour-blind. The importance of these observations lies in the supposition that red light affects only the hypothetical red sensation, and Mr. Edridge-Green considers them quite inconsistent with the three-sensation theory.

THE BOTTLE-FED BABY.

A SMALL pamphlet[2] written for the Society for the Prevention of Sickness embodies much of the more recent teaching on the artificial feeding of infants, its 22 pages being packed with practical and detailed instruction for mothers. In an introductory note, Dr. Emile Berliner points out that before the introduction of milk pasteurisation one bottle-fed baby out of four died before the end of the first year, and though these figures have been greatly reduced, there is no doubt that if the advice given in these pages were to be more generally followed a still further reduction would be ensured. The first three pages of the pamphlet are devoted to the subject of breast feeding, intervals of three hours being advised from the third day till the end of the eighth month, with six feeds in the 24 hours during the last four months. The author perpetuates the old idea, somewhat discredited of late, that malt liquor is a galactogogue. With regard to the treatment of cow's milk, while pasteurisation is approved of for older children, Dr. Steinberg strongly recommends the scalding or boiling of milk for babies as rendering it more digestible. In this connexion photographs published by Dr. Joseph Brenneman are reproduced, illustrating the appearance of raw whole milk, pasteurised milk, and boiled milk respectively, after 30 minutes to two hours in the stomach, pointing the moral that raw milk is like a solid food in the stomach and unsuited to the baby's powers of digestion. Simple but detailed directions are given for the preparation of the baby's bottle, as also for the use of milk powder, schedules of feeding up to one year old being also appended. The pamphlet has an appreciative foreword by Prof. George M. Kober, Professor of Hygiene and Preventive Medicine at Georgetown University.

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[1] London: Hodder and Stoughton, Ltd. 1921. Pp. 308. 15s.

[1] Proc. Roy. Soc., B., vol. xcii.

[2] The Bottle-fed Baby. By Alfred J. Steinberg, M.D., Washington: Jim Publication Co. 1921. Pp. 22.

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THE *Chief Inspector of Factories* announces the following vacant appointment:—Bradford, West (York, West Riding).

THE *Secretary of State for the Home Department* gives notice that he proposes to appoint a Second Medical Referee under the Workmen's Compensation Act, 1906, resident preferably in West Norfolk, for the Attleborough, Aylsham, Downham Market, East Dereham, Fakenham, Holt, King's Lynn, North Walsham, Norwich, Swaffham, Thetford, and Wymondham County Courts, in Circuit No. 32. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Oct. 19th, 1921.

Births, Marriages, and Deaths.

BIRTHS.

BOOTH.—On Sept. 19th, at Wellington, Madras, the wife of Major E. B. Booth, D.S.O., R.A.M.C., of a daughter.

DODSON.—On Sept. 19th, at the Corner House, Caythorpe, Grantham, the wife of Major Charles S. Dodson, late R.A.M.C., of a son.

DUNLOP.—On Sept. 24th, at Golders Green-road, N.W., the wife of Dr. W. A. L. Dunlop, of a daughter.

HUNOT.—On Sept. 17th, at Victoria-road South, Southsea, the wife of Surgeon-Lieut.-Commander F. C. Hunot, R.N., of a daughter.

MICKLEM.—On Sept. 12th, at King-street, Great Yarmouth, the wife of T. E. Micklem, M.B., of a son.

MARRIAGES.

GOSSET—HUTCHINSON.—On Sept. 6th, at the Parish Church, Ilfracombe, A. Christopher Vidal Gosset, M.R.C.S., L.R.C.P., to Marjorie M. Caldwell, youngest daughter of Mr. and Mrs. Hutchinson, of Ilfracombe.

HERAPATH—BRACEY.—On Sept. 21st, at St. Nicholas Church, Great Yarmouth, Charles Edward Kynaston Herapath, M.C., M.D., to Phyllis Gertrude, eldest daughter of H. J. Bracey, Marine Parade, Great Yarmouth.

READ—SADLER.—On August 4th, Harold Read, M.R.C.S., L.R.C.P., L.D.S., of 17, Welbeck-street, W.1, to Georgina Constance Sadler, of Netherwood, East Molesey.

DEATHS.

LEYTON.—On Sept. 21st, at Great Shelford, Cambridge, Albert Sidney Leyton, M.D., Sc.D., F.R.C.P., D.P.H., aged 52 years.

LOXTON.—On Sept. 20th, at Budleigh Salterton, Devon, Arthur Loxton, M.B., Ch.B., F.R.C.S. Edin., Senior Surgeon to the Birmingham Skin and Urinary Hospital, of Oxford-road, Moseley, and Cornwall-street, Birmingham, the dearly loved husband of Kathleen Loxton. Heart failure while bathing.

STEDMAN.—On Sept. 21st, at Fulwood-road, Sheffield, Thomas Bernard Stedman, M.D. Lond., M.R.C.S., L.R.C.P. Lond., D.P.H. Camb., aged 49 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SCIATICA:

SOME RECENT SCANDINAVIAN INVESTIGATIONS ON ITS PATHOGENESIS

BY DR. HANS JANSEN,

DIRECTOR OF THE DEPARTMENT FOR MASSAGE AND HYDROTHERAPY AT BISPEBJERG HOSPITAL, COPENHAGEN.

OF late years there has been a tendency to look upon the neuralgias as forms of neuritis; that is to say, it is presumed there is in all these diseases an inflammatory condition in the nerve or in its sheath. K. A. Petrén in particular has supported this view in the Scandinavian Text-book of Medicine, 1916. On the other hand, Wertheim Salomonson and Oppenheim continue to regard neuralgia as a purely functional irritation of the nerve without demonstrable anatomical changes. This view is also held with regard to sciatica. Petrén previously explained in a similar way certain cases of sciatica, in which he found myositis (or at any rate spasm) in the deep gluteal muscles, and he thought that this condition alone might possibly cause sciatica by pressure on the sciatic nerve. This muscular origin of sciatica is discussed in Kleen's handbook on massage, and is well known to all masseurs and doctors skilled in that subject.

Helweg in Denmark and Lindstedt and Ljungdahl in Sweden have busied themselves with the subject, but while Lindstedt and Ljungdahl are content with classing sciatica as a pure neuralgia, Helweg goes further, excluding it from the neuralgias and looking upon it as a muscular complaint.

Helweg's Theory: Sciatica a Muscular Disease.

Helweg's point of view is as follows[1]: "Sciatica is a disease of the kinetic system, caused by overwork, and dependent upon disturbance of muscular coördination." Osteo-arthritis deformans coxæ may, for example, be the starting-point. Chronic hip disease leads to more or less contracture or spasm of the local muscles. They perform static work, which is very fatiguing. If the patient continues to get up and do his work, which means that in addition to the static work the muscles have also to perform ordinary (dynamic) work, then the hip muscles get overtired, and this will mean greater demands on the other muscles "of the same synergic group"; that is to say, muscles which take part in the performance of the same function—for example, in the case of walking, the muscles on the posterior aspect of the thigh. By degrees these muscles may also become exhausted and the hyperfunction reach right down the leg. The same thing takes place in spondylitis deformans, where the point of origin is the disease in the vertebral column, which leads to "static function of the erector spinal muscles in order to fix the affected area." Lastly, "unsuitable attitudes assumed during work, or working at an inconvenient rate," can produce the same result, because certain groups of muscles become exhausted with the result that others have to function excessively, and so on. That the individual does not stop in time may be due to pressure of work, effect of alcohol, &c. Helweg considers the overworked muscles become the seat of pathological changes. He points to lactic acid as the offending substance in accordance with an experiment of J. Lindhard, which shows that lactic acid accumulates in the statically functioning muscles. The muscles are tender in all cases, and in the aggregate these tender and painful muscles along the back of the leg—according to Helweg—afford the clinical picture of the disease we call sciatica.

Sensibility of the Nerve Trunk.

There are many important objections to this theory. In the first place Helweg has not brought any incontestable proof that the disease is not situated in the nerve, or at any rate implicates it. His main thesis is this: when we examine the external popliteal nerve, which is the only part of the nerve trunk which can be directly palpated, we find it is not tender. Now this is not quite correct: even if one is satisfied with "stroking" the nerve, as Helweg is, it will often be found more sensitive than a normal nerve. But on the other hand there is nothing at all unusual in the fact that a thick nerve trunk, composed of motor and sensory fibres and surrounded by dense connective tissue is relatively insensitive. As is rightly pointed out by Wertheim Salomonson, it is not the nerve trunk, but its cutaneous branches, which are tender and give rise to the which were to be done daily before the ordinary physical training began. At the end of a month they were placed together and again examined without questions being asked and in such an order that it was not possible to know to which group the recruit belonged. Unfortunately the exigencies of the service at the time caused a loss of 13 recruits from each batch. From the table below it will be seen that the individuals who had had the special respiratory and circulatory training improved considerably more than did those who had no such training. It is interesting to note that in the former the pulse-rate per minute is greatly reduced, the power to hold the breath and the expiratory force increased, and the bodily endurance as shown by the 40 mm. Hg test raised almost to normal. Such is not the case with the other group. The result in regard to vital capacity is interesting as showing the fact that a good midday service meal considerably decreases the vital capacity of certain individuals who were examined shortly after the meal. When examined next day about 11 A.M., it was found that there was reduction of the vital capacity in only one individual. It is also of interest that many of the individuals who had had the special exercises voluntarily offered statements to the effect that their "wind was greatly improved" or "they could now run without getting blown." (Table I.)

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[1] Joh. Helweg: Ischias. En Klinisk Studie ([illegible] study). Thesis, Copenhagen, 1920.

TABLE I.

Two groups of records with and without special exercises.	Pulse standing per min.	After exercise per min.	Return to normal in secs.	Vital capacity in c.cm.	Expiratory force in mm. Hg.	40 mm. test in secs.
Group A.						
Before training ..	89·3	115	26·4	3906	88	32·5
After training ..	84	107	25	3840	95	33·8
Group B. (Special exercises.)						
Before training ..	95	119	26·6	3673	84·6	33·8
After training ..	79	97	19·1	3837	117	46

As showing some of the best results obtained, the individual results of three recruits on the special exercises are given. (Table II.)

TABLE II.

Three individual recruits.	Records before and after the special exercises.	Pulse standing.	After exercise.	Return to normal.	Vital capacity.	Expiratory force.	Secs. of supporting 40 mm. Hg.
Bo.	Before.	96	120	30	3580	86	22
	After.	84	96	15	3790	128	37
Br.	Before.	108	132	20	3480	90	38
	After.	96	108	15	4000	114	64
Co.	Before.	96	120	40	4080	78	22
	After.	72	96	20	4520	88	47

It is not suggested that an experiment with such small numbers is conclusive, and it is hoped, when the conditions of the service permit, to undertake a similar experiment with a much larger number of subjects.

My friend, Squadron-Leader H. Harvey, R.A.F.M.S., has made extended observations upon subjects during their course at the School of Physical Training. His results show that certain individuals fall away as regards respiratory and circulatory fitness after a strenuous period of training, the individuals themselves being aware of the fact that they are going "stale." Any system of physical training should first and foremost make a man fit as regards the circulatory and respiratory systems, giving him a pulse not unduly quickened by exercise, a high diastolic pressure within physiological limits (80–90 mm. Hg), efficient respiratory capacity, and good expiratory force.

A SYSTEM OF TEN EXERCISES.

I have, therefore, elaborated a system of ten exercises which take about ten minutes daily to perform, based upon the physiological principles already laid down. In devising these exercises I have looked to nature for guidance, incorporating so far as possible, natural movements. The human baby takes about 12 months before it assumes the upright posture. During this time it performs its own system of physical exercises. Observation shows that these consist, at first mainly, of leg movements on the trunk or of trunk movements on the legs; all such movements, however, being directed towards developing the abdominal and back muscles so essential for efficiency in the upright posture. While lying quietly the infant imitates the correct movements of inspiration and expiration (basis of exercise No. 1); when placed on its back the new-born child kicks and performs leg movements on the trunk (basis of exercise No. 4). Later it begins to try to sit up (basis of exercise No. 2), then it begins to try and turn over to get on to its hands and knees (basis of exercise No. 5), performing also in the endeavour various movements on which exercises No. 6–8 are founded. Finally, having assumed the upright posture, it acquires strength of leg and bodily coördination in the upright posture (exercise No. 10). Exercise No. 9 is included especially as an exercise for massage of the abdominal organs. There is also a psychological consideration in the order in which the exercises are arranged. To many people it is a great mental effort to jump straight from bed on a cold morning and start performing physical contortions. These exercises start by inducing the correct movements of respiration while still lying in bed covered by the bed-clothes. In themselves these movements are the waking-up process, but they are followed by two exercises in which the bed-clothes are rolled back to below the waist and then by one in which the bed-clothes are completely removed. Having proceeded thus far, the process of getting up and continuing the exercises becomes considerably less of an effort, since the respiratory and circulatory mechanisms are already working vigorously, and the mind is now thoroughly awake. Especially important is the realisation that these exercises are more or less "go as you please" exercises. Although for exercises 1–8 five times for each is the number laid down, this number need not be attempted at first, especially if the exercises be employed for people who are not in a good condition of health. When employed for such cases also, it is advisable for the subject to get out of bed and perform a number of respiratory and abdominal movements (exercise No. 1) while sitting on the side of the bed before assuming the vertical posture. When a certain degree of proficiency is obtained the number of the exercises is not increased, but the length of time over each respiratory process and movement is increased, all inspirations and expirations being more slowly and forcibly made.

It is sometimes stated that it is harmful to perform exercises with the breath held. There is, so far as I am aware, no real evidence for this statement. The young infant almost invariably performs its first muscular efforts with the breath held and then pants afterwards. It is conceded that it is desirable to teach subjects to acquire rhythmic coördinated breathing and to overcome, in certain circumstances, the tendency reflexly to hold the breath when engaged in acts requiring attention. For example, it is desirable that an airman using his machine-gun at great altitudes should continue to breathe as normally as possible and not to hold his breath in the rarefied atmosphere. But this is different from stating that any physical-training exercise which impedes the breathing is harmful. The absurdity of the position is seen when it is realised that a man who is told not to hold his breath or to impede his breathing (because it is harmful) while he is bending his head backwards and forwards on his trunk, may within a few minutes be practising for a 100 yards race in which the breath is (if possible) held for 10 seconds or more, while most violent muscular effort is performed. In certain sports and games, particularly in Rugby football, boxing, and under-water swimming, much muscular another group in which direct pressure upon the nerve trunk or its roots is just as good an explanation as do referred or reflex phenomena, such as the ordinary sciatic pains of pregnancy, sciatica with benign and circumscribed malignant tumours of the pelvis, deep abscesses, hæmatomata, abundant formation of callus after fracture, &c. So long as it is not disproved that neuralgia can originate in a nerve exposed to abnormal pressure, this pathogenesis cannot be rejected.

Cold can undoubtedly increase the severity of sciatica, and perhaps even cause it to appear; but probably the rationale is that cold induces muscle contracture which gives rise to referred pain, or pain due to pressure. There are also cases in which the theory adopted by Lindstedt is the most probable. Flat foot and similar static abnormalities in the lower extremity can undoubtedly cause sciatica. Here again the route is doubtless via the muscles. Many other painful affections of the leg can also on occasion produce the disease; thus in my student days I learnt that a corn could be the starting-point. Perhaps here also the muscles are interposed in the chain of causation by occasioning a defective way of walking, or certain muscles are strained to avoid the pain. I can well imagine that hyperaction of the flexor muscles of the leg alone could bring on sciatica, the over-worked and tender muscles causing a referred neuralgia of the sciatic region. Lastly, there are the sciatic-like pains often met with in osteoarthritis deformans coxæ and spondylitis deformans—particularly, as Ljungdahl points out, in the early stages. Ljungdahl's view that trauma of the tissues can be a causative factor seems to me interesting, but I do not think one can exclude the possibility of muscle contractures in the lumbar and gluteal regions contributing to the pain. In fact, I cannot dismiss the old-fashioned idea that contractures can produce sciatic pain directly by pressure on the nerve trunk, the pyriformis and gemelli muscles contracting simultaneously.

Sciatica due to Traumatic Lumbago.

There are still very many quite ordinary cases of sciatica which do not fall into the above categories. These are cases consequent upon traumatic lumbago. There is a distinct tendency to discount, or completely neglect, this condition; insurance doctors are particularly afraid of it, because they think patients are only too willing to talk of "overstraining," immediately they get a pain in the loin. But as a matter of fact our back muscles very often run the risk of overstrain. Many people have had the experience at one time or another of lifting something which was distinctly heavier than expected, or have given a sudden energetic jerk to avoid a fall, and have thus straightway acquired lumbago; moreover, in some of the more severe cases many have no doubt noticed a tendency to sciatic pain. I have met with a large number of patients whose sciatica was doubtless only an aggravation or further development of lumbago.

Symptoms.

It only remains to deal with the symptoms. The pain follows the course of the nerve, particularly the cutaneous branches with their sensory fibres; also the branch coming directly from the sacral plexus—namely, the small sciatic nerve. The latter reaches as far as the popliteal space, and it is possibly its end branches which are responsible for hypersensitiveness in this situation. Valleix's points are for the most part caused by the cutaneous branches. On the leg and foot they are the cutaneous branch of the internal popliteal nerve, the external cutaneous, the external saphenous, and the cutaneous branches of the internal plantar nerve. Lasègue's sign can easily be elicited in most cases by stretching the nerve, but it must be admitted it can also be obtained by stretching the contracted hamstring muscles, in the form of referred pain in the nerve. Some people have extremely short ham-string muscles, so that stretching begins much earlier than usual on both sides. Anæsthesia and paralysis—and, presumably, also absence of the Achilles tendon reflex—should probably be taken as a sign of neuritis. Atrophy I consider to be most frequently due to inactivity.

Ordinary uncomplicated sciatica is a benign disease which of itself tends to get well. When it appears to be chronic, it is either because it is secondary to one of the many cited chronic complaints, or because it has produced a kind of traumatic neurosis in the patient. In such a case it can always be dissipated by appropriate suggestion. In treating sciatica the neurasthenic element must always be kept in mind. Bromides are therefore good drugs to administer, and excellent results can be obtained by the most diverse means from the ordinary camphor oil injections to cauterisation of the external ear. Injections of salt water also have a transitory deadening effect. The first part of the treatment should be designed to combat the muscle cramps and contractures. Heat and massage are the sovereign remedies. The massage should be "dispersing," and principally applied to the lumbar and gluteal regions. Friction and similar stimulating manipulation of the nerve is useless. The musculature of the whole extremity, later on in the treatment, will benefit from massage directed against atrophy. And, finally, at the close of treatment of every case of sciatica, remedial gymnastics should be prescribed to revive the natural function and correct the acquired faulty position.

SOVIET RUSSIA AND PROSTITUTION.

THE conclusion of Mme. Alexandra Kollontay's speech[1] to the Russian Communist Party has come to hand and it is disappointing to find no definite indication of policy in regard to checking the spread of venereal disease. This second instalment contains a terrible description of how prostitution has increased under Bolshevist rule. The central organ of the People's Commissariat of Social Welfare organised, under the leadership of Dr. Golman, an Interdepartmental Commission to Combat Prostitution. The Commissariats or Ministries of Justice, Health, Education, Labour, and other public services were also called upon to help. Discussions were held on the causes, especially the economic causes, of prostitution, without reaching agreement as to practical measures to protect the health of the people. The Interdepartmental Commission officially states that, while professional prostitution is not widely developed in Russia, clandestine prostitution prevails everywhere. Thus, before the revolution there were at Petrograd from 6000 to 7000 registered prostitutes and more than 50,000 women were clandestine prostitutes. To-day we are told: "Prostitution is practised by the Soviet office employees, in order to obtain, by the sale of their bodies, boots that go up to the knee; prostitution is resorted to by the mothers of families, working women, peasant women, who are out after flour for their children and sell their bodies to the manager of the rations division in order to obtain from him a full bag of the precious flour. Sometimes the girls in the offices associate with their male superiors, not for manifestly material gain, for rations, shoes, &c., but in the hope of advancement in the office. And there is an additional form of prostitution, 'careerist prostitution,' which is also based in the last analysis on material calculations."

"Deserters from Work."

At first the idea of prosecuting prostitutes was discussed, but the Ministry of Justice and the other authorities concerned agreed that the only crime for which a prostitute could be arrested was that of being a "deserter from work." In that case, however, a lawful and virtuous wife existing in idleness on the means her husband provided was also a deserter from work. The only thing harmful to the interests of the workers, according to Mme. Kollontay, is the substitution of crassly materialistic calculation of gain for a free association of the sexes on the basis of mutual attraction. This is inadmissible, for it destroys the feeling of equality and solidarity between the sexes, yet no sufficient definition could be given to make it punishable by law. It was, therefore, decided that all persons found wandering about the streets should be placed at the disposition of the Commissariat of Social Welfare and thence sent out after inquiry either to the Sections for the Distribution of Labour Power, or to the People's Commissariat of Labour, or to sanatoriums, hospitals, &c.; and only after evidence of malicious intent to desert from work would the individual be condemned to forced labour, but there is no special culpability attached to prostitutes. No details are given as to the measures taken to decide whether they should be sent to a hospital; we are only told prostitutes must not be separated from or treated differently than other deserters from work. Indeed, all the reports deal with the difficulty of defining prostitution as a crime and of excluding the man from punishment. If the crime consists of the purchase and sale of caresses then the husband of a woman who married him for his money should also be punished!

Remedies.

In spite of all these obstacles, there is a general agreement that if all women had work to do and were sufficiently paid for their work, the principal cause of prostitution would be removed. Consequently the Soviet has adopted a law that the earnings of working men and working women shall be equal. Unfortunately, the majority of women are unskilled workers and are generally insufficiently paid. Better education, especially technical education, better housing, the special teaching in schools of history of the relationship of the sexes on a rigidly scientific basis, are therefore advocated as remedial measures.

Such are the principal points Mme. Kollontay has brought out, based on official reports to the Soviet Government. To her mind, the realisation of the proposals made will tend to do away with the old form of family life and of prostitution. There must be no material calculations in the conjugal relations of the future. They must arise from was at the time that most of this work was done, and particularly to Sir Walter Fletcher for the interest he has shown in the progress of this investigation. My thanks are also due to Lieut.-Colonel A. P. Bowdler, Squadron-Leader E. G. Clarke, and particularly to Flight-Lieut. G. S. Marshall, for help in the preparation of these lectures. Finally, I wish to acknowledge the helpful consideration I have always received from my brother officers of the Royal Air Force, both past and present, and to express my admiration for the courage, skill, and bodily endurance which they so persistently displayed throughout the late war.

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[1] THE LANCET, August 20th, 1921, p. 421.

Hunterian Lecture

ON

MUCOCELE AND PYOCELE OF THE NASAL ACCESSORY SINUSES.

Delivered before the Royal College of Surgeons of England

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INSTANCES of the condition with which I propose to deal have been recorded from time to time under various designations, but only within recent years has an attempt been made to systematise our knowledge of the subject and to give it its proper place as an explicable surgical occurrence. Logan Turner in this country, and Gerber in Germany, were chiefly responsible for elucidating the condition and placing it upon a scientific basis, and it is only the comparative neglect of their work that has impressed upon me the advisability of reconsidering the subject in the light of recent knowledge and experience.

MORBID ANATOMY.

By the term mucocele of a sinus is meant the accumulation and retention within it of a mucous secretion owing to obstruction of its outlet with thinning and possible distension of one or more of the walls of the sinus. When the contents of the cavity are purulent in character the condition is referred to as a suppurating mucocele or pyocele.

The occurrence of mucoceles is not by any means uncommon, and records are to be found of a considerable number of cases, but often the true condition does not seem to have been appreciated; for instance, many cases recorded as bone cysts in the region of the orbit or accessory sinuses would appear to have been true mucoceles. Any of the accessory sinuses may be affected, but I have not met with a case in which the sphenoidal sinus was affected, and it is difficult to find satisfactorily recorded cases. I have not met with a case of mucocele of the maxillary antrum in my own practice, and a study of recorded cases leaves some doubt in the mind as to whether dentigerous or other cysts connected with the teeth had not obliterated the antrum and been mistaken for it; but the occurrence of mucocele of either cavity, though apparently extremely rare, is of course possible.

My own cases, which are 14 in number, have all been connected with the frontal sinus and the anterior part of the ethmoid labyrinth; other recorded cases also seem to show that this may be regarded as by far the commonest situation. In the ethmoid group of my series I do not include those cases where an abnormal air cell in the anterior end of the middle turbinate has become distended by retained mucus and given rise to purely intranasal manifestations. It is true that the middle turbinate is merely a folded-over portion of the ethmoid labyrinth, occasionally containing an accessory air cell the ostium of which may get blocked, but these cases (of which I have seen three) should, I think, be placed in a separate category.

When a mucocele of the frontal sinus occurs the increasing pressure of retained fluid makes itself felt on the bony walls of the sinus, and the thinnest wall, as would naturally be expected, most usually gives way. The inferior wall of the frontal sinus is the thinnest; it is most usual to find a swelling appearing in the roof of the orbit, either in the region just behind the trochlear fossa or somewhat external to it. Any of the walls, however, may be affected; in three of my cases the anterior wall was absorbed, whilst in three others the posterior wall was absorbed and a considerable area of the dura mater consequently exposed. Occasionally more than one wall may be involved; I have one case in which the floor and anterior wall of the right frontal sinus and the anterior wall of the left frontal sinus were involved, the partition between the two sinuses being absent or having been absorbed.

In the ethmoid labyrinth such a varied anatomical formation is met with that it is not easy to say which wall is most commonly affected. Usually the ethmoid is made up of ten or a dozen cells, and when a mucocele arises in this type of labyrinth the partitions between the cells are the first to disappear owing to pressure atrophy and the complicated labyrinth thus converted into one large cavity before the anterior wall shows any sign of absorption. Occasionally ethmoids are met with which normally consist of two or three large cells only, but it would appear that this type of ethmoid is not so likely to be affected.

CLINICAL FEATURES.

The main clinical features of both frontal and ethmoidal mucoceles are orbital in character, so that cases very often come under the notice of the ophthalmic surgeon in the first instance. A swelling is noticed at the inner and upper angle of the orbit. This may feel hard and bony, or the bone may be so thinned that it gives a parchment-like sensation to the touch; in other cases the swelling is definitely elastic or fluctuating, a portion of the bony wall having been absorbed. When this occurs the edges of the gap in the bone can usually be felt, and it is sometimes observed that the bone in this situation is thicker than normal from a deposit of new bone.

There is no tenderness or pain on manipulation, and the skin is unaltered in appearance and freely moveable over the swelling. Pressure on the swelling does not alter its size. The swelling may remain practically stationary for years, but usually when the bone has been absorbed the condition progresses more rapidly and symptoms of pressure on the orbital contents begin to appear. The eyeball is usually displaced downwards and outwards, sometimes forwards as well; the latter occurrence taking place when the mucocele has pushed through the floor of the frontal sinus or the os planum of the ethmoid somewhat farther back in the orbit than usual. As the globe of the eye is displaced diplopia may appear, the images usually being seen one above the other. In some cases a high degree of displacement may occur without any diplopia, whilst in other cases it is one of the earliest signs. The movements of the eyeball are not usually affected.

When the mucocele is purely ethmoidal the swelling may be somewhat lower down, and as it pushes forward may involve the lacrymal apparatus. This may lead to mistakes in diagnosis and a wrong form of treatment. In three of my cases this occurred. I will mention one as an instance. A boy of 12 was playing football at school and received a severe blow in the left eye from another boy's elbow. An extensive black eye resulted which got better in 10 days. Four months later a swelling appeared in the region of the lacrymal sac; in a few weeks' time this was incised and some clear fluid evacuated. He came home and a month later an operation for removal of the lacrymal sac was decided upon and undertaken. The swelling reappeared and five weeks later a second

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The Milroy Lectures
ON
RESPIRATORY EFFICIENCY IN RELATION TO HEALTH AND DISEASE.

Delivered before the Royal College of Physicians of London

BY MARTIN FLACK, C.B.E., M.B., B.CH. OXON.,
WING COMMANDER, ROYAL AIR FORCE MEDICAL SERVICE.

LECTURE III.*

In my last lecture I endeavoured to show that flying strain, in its physical aspect—i.e., apart from the mental aspect—is characterised in many cases by *a diminution of the* vital capacity, a loss of expiratory tone, and an instability of the medullary centres—conditions which frequently lead to signs of cardiovascular insufficiency and general nervous instability. Such a bodily condition is not confined to airmen, but may frequently be found in those who have never taken part in flying. It is a condition especially characteristic of bodily inefficiency and of lack of bodily endurance; it may occur in those who have led sedentary lives or who have been debilitated by disease. For bodily efficiency I have put forward for consideration certain points which may be summarised as follows:—

1. Efficient inspiration is necessary for the proper distension of the lung in all its parts. Diaphragmatic breathing is particularly important, otherwise the apex of the lung is not adequately expanded and becomes particularly liable to attack by tuberculosis. By virtue of lack of exercise, trade occupations, mode of clothing, &c., the inspiration of many people of *the present day is defective and of wrong character,* which may help to account for the relatively large amount of tuberculosis of the lung found in town dwellers during the taking of the war physical census.

2. For efficient respiratory interchange of gases *under circumstances demanding the full respiratory* ventilation capacity it is important that the residual air left in the lungs at the end of deep expiration be as near the physiological minimum as possible. This is brought about by active expiration, the contraction *of the abdominal muscles being the most important.* Fit individuals are possessed of good abdominal tone. When such abdominal tone is lacking the vital capacity of the individual falls away, the residual air increases in amount, the ventilation capacity of each breath is *diminished, and the individual becomes easily breathless,* panting to ensure sufficient ventilation instead of breathing deeply.

With this increase in the residual air there is a tendency, *owing* to the condition of slight anoxæmia *induced, for the respiratory* and other bulbar centres to become more excitable, a condition which, in many cases, reflects an increased irritability *of the whole* nervous system. This condition is found particularly in neurasthenia due to stress, and it is possible that this respiratory defect may in some cases be actually the exciting cause of the nervous condition.

3. By virtue of the effect of gravity *the assumption* of the upright posture in man has thrown stress upon the circulatory mechanism. *One of the chief adjuncts* to the heart in combating this stress is efficient respiration. During inspiration the downward plunge *of the diaphragm, during expiration* the contraction of the muscles of the abdominal wall, play a great part in the forcing of blood onwards *from the venous* reservoir towards the heart. The tone of the abdominal muscles is particularly important; when this is lost blood tends to collect in the abdominal vessels and the diastolic pressure in the arteries to fall. It is this condition which probably *accounts for the large* percentage of cases of venous varix found among the general population during the war physical census.

4. Efficient respiratory movements are necessary *for the* preservation of the muscular tone of the alimentary tract. Deficient *respiration is* indirectly a cause of constipation and its attendant ills. The *deep respirations* induced by exercise massage the intestines and serve to combat the tendency to constipation which arises from a sedentary life or occupation. In this connexion good tone *of the belt* of abdominal musculature is also of particular importance.

NECESSITY OF SIMPLE EXERCISES FOR SEDENTARY WORKERS.

It will be seen that in addition to attaching importance to efficient respiratory movements considerable stress is laid upon the disadvantage of the upright posture in man. The evolution of the upright posture was gradual, but it was characterised by much bodily activity, by which the whole belt of abdominal musculature was efficiently developed. To-day, however, after a period of bodily activity *in infancy* during which the upright posture is gradually assumed, and *after a* childhood *for the* most part fairly active, man does not take, either on account of the nature of his employment or through lack of opportunity, the exercise necessary to maintain the tone of the abdominal musculature and thus preserve efficient respiration and *circulation.* Hence bodily inefficiency develops as was shown by the *figures* of the war physical census; this is particularly the case when the days of childhood and childish activity are passed and the struggle for *life* under modern conditions begins. There is a marked deterioration in efficiency between the years of 18 *and 23, which is particularly marked in those* whose occupations do not lend themselves to the expenditure of great physical energy. It is obvious that if man is to continue to be fit physically and to preserve bodily endurance, efficient respiration and circulation must be maintained. One of the *most urgent needs of the moment* is some set of simple exercises which will so maintain the efficiency of the individual that he will remain fit for the continuous sedentary life which is the lot of so many people at the present day, and also preserve such a state of bodily efficiency as will allow of indulgence *in occasional* exercise without undue *fatigue of the respiratory and circulatory mechanisms.* At present it frequently happens that when exercise is taken by a person leading a sedentary life there is a failure of such mechanisms, with the result that the exercise induces profound *lassitude and* does more *harm than good.*

ILL-EFFECTS OF INDISCRIMINATE PHYSICAL TRAINING.

It is a common experience that as the result of a course of *physical training in recruits* certain individuals are in no way benefited but rather deteriorate, and have to be sent to the medical officer for his opinion as to their efficiency. There is no doubt that this is because the exercises employed in most systems *of physical training are not* devoted, in the first place, to building up respiratory and circulatory efficiency. Under ordinary circumstances attention is devoted to general muscular development and accurate muscular coördination particularly of the limbs. *In most systems of physical* training it is a matter of good fortune rather than of foresight that in the majority of *individuals respiratory and* circulatory efficiency are developed at the same time. In the individuals who break down the respiratory and circulatory mechanisms are not equal *to the stress* imposed upon them by the system of training. If in the first place *attention* were directed to the attainment of respiratory and circulatory efficiency, such *individuals* with graduated *training* would *not* fail. This can be seen from the results obtained *upon a* batch of what might almost be termed "C3" recruits. *For the* experiment a batch of 50 such recruits was taken. They were tested by certain of the physical efficiency *tests and* divided into two groups—man for man of relatively equal efficiency. One batch was placed upon physical training without special circulatory and respiratory exercises, the other upon a few special circulatory and respiratory exercises picture is markedly altered. Such occurrences do arise, as the ostium frontale and the ostium ethmoidale, though closed enough to bring about the retention of the contents of the sinus, cannot always prevent the spread of any infective process from the nose. I have only one instance in my series of such an occurrence.

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* Lecture I. was published in THE LANCET of Sept. 17th and Lecture II. appeared on Sept. 24th and Oct. 1st.

A soldier in the Irish Guards had noticed for many years before the war a swelling in the situation that we regard as typical. He had not had any inconvenience until 1916, when the swelling became larger and his eye was displaced outwards for nearly half an inch. He was sent home to the depôt; some weeks afterwards, when he had a severe cold, he complained of tenderness of the swelling, with some redness of the skin. It was thought to be a lacrymal abscess, and incised, but the ophthalmic specialist was considerably surprised and disconcerted to find that his probe went backwards through the swelling for a distance of nearly three inches. The patient then came under my care and a radical operation revealed a large pyocele that had converted the whole ethmoidal labyrinth into one large cavity. No doubt, this had become infected from the nose and given rise to the acute symptoms.

Cystic dilatation of the lacrymal sac may be confused with ethmoidal mucocele, but in the former condition firm pressure will usually express some of the fluid through the nasal duct into the nose or through the punctum lacrymale into the inner canthus.

Much more difficulty is presented by tumours of the frontal sinus and of the orbit, more especially osteomata and fibro-sarcoma. I have been able to find records of nearly 200 cases of osteoma in the literature. They often grow from the under aspect of the supraorbital margin and push forwards more externally in the orbit than the mucocele. Their solidity compared with the comparative compressibility of the mucocele is a diagnostic point, whilst X ray examination may show the tumour to be very dense. My experience is that X ray examinations in mucoceles are of little if any help in diagnosis.

Osteomata of the frontal sinus may not be so obvious as those of the orbit and may even give rise to acute symptoms; a case was recorded a year or two ago in which a Bavarian soldier went sick with headache, rise of temperature, and swelling of the left upper lid. At the operation a large osteoma was found to be occupying the whole of the left frontal sinus and ethmoid labyrinth.

Malignant tumours usually present less difficulty, although several cases recorded as mucoceles turned out to be malignant growths. Dermoid cysts usually occur at the outer canthus, but I had a case a few years ago of a boy of 10 in which one was present at the right inner canthus. There was, however, no displacement of the eye. Meningoceles have also been described as occurring in this situation, whilst suppurating sebaceous cysts have occasionally caused difficulties in diagnosis.

Duration.—It is difficult to say how long the condition has lasted in any individual unless the occurrence of an accident fixes the probable date of onset. From a study of recorded cases one gets the impression that a large number are of many years' standing; cases are mentioned where 20 years has been given as the probable duration, whilst in others a few weeks is regarded as the probable time.

In my series the group of five traumatic cases gives an idea, in them at least, of the time elapsing between the accident and the first onset of symptoms or of external swelling. In one case of a man who ran into the edge of a heavy oak door and sustained a severe black eye an external swelling appeared in the typical situation about a year afterwards, but caused him no trouble, and it was not until seven years after that that the swelling got larger and he began to notice occasional diplopia and so came under my observation. Of the other traumatic cases three years was the interval between a blow from a piece of shell and the noticing of the external swelling.

In the other three about four months was the time given. In one of these, however, that of the Air Force officer, whom I have mentioned previously, the symptoms were simply watering of the eye, and he went on flying for another year. Very little useful information results from an examination of the other cases, and as there is nothing to date the onset, one seldom gets a history of more than six or eight months.

Age.—The age of the patient is not of much importance, but in this connexion I should like to point out the fallacy of drawing deductions from a small series of cases like mine. Of the non-traumatic cases the oldest was 85 and the youngest 41, whilst the average of the others was over 60, so that one might be inclined to say that the condition was more prone to occur in elderly people. From Logan Turner's series of 10 cases, however, the impression that one would form would be that the affection was one of early adult life. Thus, in this instance, the two series of cases are a useful corrective to each other.

Similarly, as regards the *sinus affected*, my cases show 10 cases where the frontal sinus was affected, 2 where the frontal sinus and the ethmoid were involved, and only 3 purely ethmoidal cases, whereas, a review of recorded cases leads one to the belief that purely ethmoidal cases are much the more common. The lining membrane of mucoceles has been investigated by Onodi and other observers, and detailed accounts published of the microscopical appearances. These serve to show that changes of a chronic inflammatory nature are present both in the lining membrane and in the underlying bone, the latter undergoing erosion and absorption. Where the bone was in process of erosion, large bone cells of the nature of osteoclasts were seen.

Contents of the cavity vary very much in the cases. It is most usual to find it filled with a thick glairy opalescent and almost gelatinous fluid, but the colour and consistence may vary considerably. In those cases where an infection had probably occurred at some time the pus was usually thick and yellow. In all my cases where cultures were made from pus the latter was found to be sterile.

TREATMENT.

Treatment should, I think, consist in exploration of the swelling through an external incision, and then establishment of free intranasal drainage.

The usual eyebrow incision is made, the periosteum with the pulley of the superior oblique is stripped up, and the orbital contents retracted outwards. One can then estimate the extent of the condition and plan the future steps of the operation after the thin bony wall in the upper and inner angle has been removed and the contents of the mucocele evacuated. As much of the bony floor of the sinus as is thought advisable should be removed and a large opening made through the lateral mass of the ethmoid into the nose. The lining membrane of the cavity should not be disturbed except where it has been removed with the bony wall. A large rubber drainage-tube should be passed from the sinus into the nose and sewn to the ala. The external incision should be completely sutured. The drainage-tube may be left in the nose for ten days. If it gets blocked a probe should be passed up it and after the third day some warm lotion may occasionally be syringed up it. No further treatment is required. By making a very large opening into the nose and by removing the floor of the mucocele one practically makes the mucocele part of the roof of the nose. The fact that a considerable area of dura mater may be exposed posteriorly is of no moment, as the rest of the dura is already shut off and the exposed portion considerably thickened.

MANCHESTER ROYAL INFIRMARY.—The post-graduate lectures and demonstrations on medical, surgical, and special subjects given by the honorary staff were resumed this year on Tuesday, Oct. 4th, when Mr. J. W. Smith lectured on Duodenal Atony. Lectures will be held each week (with the exception of Tuesdays, Dec. 27th, Jan. 3rd, April 18th) till May 2nd, 1922, and will be announced in our Medical Diary.

effort is performed with the breath held, and experience has shown that such individuals make particularly *efficient fliers in the rare air of high altitudes.* In my opinion it is decidedly beneficial for an individual to accustom himself to the performance of muscular work with the breath held; he is then more likely to remain efficient in times of physical stress.

As supporting in some measure my views in regard to physical exercises I quote from an article by the late Sir Hermann Weber, written at the age of 83, in regard to his method of using exercise for the prolongation of life.

"I have mostly commenced with moderately deep inspirations and expirations, continued during three to five minutes once or twice a day, and have gradually increased the exercises to ten minutes or one-quarter of an hour. The depth of each inspiration and expiration and the duration of holding the breath are likewise to be only gradually increased. At the beginning one-quarter of a minute for every inspiration or expiration ought to be sufficient. If this is well borne, each act may gradually be prolonged in duration so that in the majority of cases each inspiration and each expiration may be brought up to a minute. All the movements are to be made slowly, not rapidly. I usually advise to inspire in an upright position, with raised arms and closed mouth, to bend down the body during the expiration so that the fingers touch the ground or the toes. By degrees, one can do several up-and-down movements during every inspiration and bend and raise the body several times during the expiration. By this alternate bending and raising of the body we can gently strengthen the lumbar muscles, and through this successfully combat the tendency to lumbago.

"Another useful combination with the respiratory exercises is the turning of the body around the axis of the spinal column alternately, with deep inspirations from left to right and with expirations from right to left, the arms being half raised. By this movement we bring into action some of the muscles of the spine, which are apt to be only imperfectly used by most persons in advanced years, and the stiffness of the neck and spine and the tendency to stooping so common in old persons can be to some degree corrected by this kind of movement. If commenced in good time and practised regularly and thoroughly, swinging the arms around the shoulder-joint is likewise useful, and other combinations with muscle and joint movements will occur, but they should have accustomed themselves to these respiratory movements. The latter ought always to have our principal attention since to them the beneficial effect on the heart and the lungs is mainly due. In addition to the influence on the circulation, the respiratory movements keep up the nutrition and efficiency of the lungs, which undergo in old age a kind of atrophy. The walls of the smallest divisions and air-cells become thinner, and a kind of senile emphysema is developed which by this exercise is to some degree prevented. Another important influence consists in maintaining the elasticity of the chest walls, which are apt to become stiff in old age and thus to interfere with free movements of the lungs and pleura. If, for some reason, the erect position should be inconvenient, respiratory movements can be made also in the horizontal and sitting positions."

In addition to these exercises, taken regularly every morning, Sir Hermann Weber advised a walk lasting from one-half to three hours, part to be taken in the morning and part later in the day, and once a week he recommended a day or more prolonged exercise, and a holiday once or twice a year spent in a walking or climbing tour of three or four weeks.

DEMONSTRATION.

I will now ask the instructor present to demonstrate the ten exercises, directions for which I have laid down as follows. It is to be especially noted that in all these exercises it is of great importance that the process of inspiration is initiated by the contraction of the diaphragm, protruding the "pit" of the abdomen together with a movement of the lower ribs, full inspiration being attained by a wave-like movement spreading from the lower ribs to the upper part of the chest. On no account must the upper part of the chest be expanded first. Expiration is accomplished by the contraction of the muscles of the abdomen and of the lower part of the chest.

Physical Efficiency Exercises.

In Bed.

1. (*a*) Lying flat, inhale to the fullest extent, at the same time raising the hands above the head in a natural "stretching" motion. (*b*) Exhale to the utmost extent, using the abdominal muscles forcibly to press out as much air as possible from the lungs, at the same time carrying the arms to the sides. Repeat five times.

2. Using the weight of the bedclothes turned down to the hips as a means of keeping the legs down, raise the body from the hips and bend forward as far as possible, at the same time breathing out forcibly to the fullest extent, then slowly return to the lying posture, inhaling deeply meanwhile. Repeat five times.

3. (*a*) Using the bedclothes as before, from the lying position raise the trunk, with the hands by the sides, through an angle of 45°, then twist round the trunk upon the hips, keeping the legs flat and endeavour to make the forehead touch the bed, meanwhile exhaling forcibly as far as possible. (*b*) By a reverse movement assume the lying position, inhaling deeply meanwhile. Repeat five times to right and left sides.

4. (*a*) From the lying position, flat on the bed, with the hands clasped behind the head, raise the legs from the hips, carrying them as far over the head as possible, inhaling as deeply as possible meanwhile. (*b*) Lower the legs slowly to the fullest extent, meanwhile exhaling deeply and forcibly. Repeat five times.

Out of Bed.

5. (*a*) By a kind of "stretching" movement raise the arms slowly and strongly forward and upward, then lower them sideways until they are in line with the shoulders which are well thrown back, meanwhile inhaling to the fullest extent. Brace up the muscles of the abdomen and all accessory muscles of inspiration. (*b*) Keeping the body as upright as possible, carry the arms forward until they overlap and hold sides of trunk; expire meanwhile to the utmost extent, working specially the lower chest and abdominal muscles. When in the position of full expiration brace up all muscles of lower chest and abdominal wall. Repeat five times.

6. (*a*) With the feet about 18 in. apart † (or other comfortable distance) carry the arms forward, upward, and backward, inhaling meanwhile to the fullest extent. (*b*) Bend trunk forward and full downward, carrying the arms between the legs to touch the ground with the fingers as far as possible behind the feet, meanwhile exhaling to the fullest extent. Repeat five times.

7. With the feet about 18 in. apart † and arms raised sideways and in line with the shoulders, bend the trunk to the left (right) until the left (right) hand touches or nearly touches the ground, keeping legs straight, meanwhile breathing naturally or holding the breath. Repeat five times to each side.

8. (*a*) With the feet about 18 in. apart † carry the arms forward, upward, and backward, inhaling meanwhile to the fullest extent. (*b*) Turn and at the same time bend the trunk to the left (right), and touch the ground on the outside of the left (right) foot, expiring meanwhile to the fullest extent. (*c*) Stretch trunk upward to upright position, inhaling meanwhile to full extent. Repeat five times to each side.

9. Inhale as fully as possible, then exhale sharply to the fullest extent, and, with the chest and abdominal wall held in position of expiration, work all the abdominal muscles, alternately forcibly contracting and relaxing. Repeat two or three times.

10. Stationary running (often known as the 100 up); shadow skipping; shadow boxing; rhythmic balancing exercises; jumping or any other form of exercise preferred by the subject, until out of breath.

The exercises may be followed by a tepid or cold bath or a rub down with a hard towel wetted with warm or cold water according to the taste of the individual.

In my experience these exercises have given good results; as I have already stated, I believe that they will be found useful in preserving the physical efficiency of those engaged in sedentary occupations and will enable them to indulge in open-air exercise without undue fatigue. They are in no way designed to supplant recreational exercise nor to replace more elaborate systems of physical training. In regard to the latter, it is believed that they will give the correct circulatory and respiratory efficiency which at present may or may not be obtained.

In conclusion, I wish also to thank my friends, Sir Arthur Keith and Dr. Leonard Hill, for the great help and encouragement they have always given me both in connexion with the present work and also in the past. I also wish to place on record my thanks to the Medical Research Council, in whose employ I

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† These distances can be gradually decreased as, [illegible] is attained.

been a consequence of under nutrition. As the former comparison was adopted in the previous investigation it has been adhered to in the present paper (Table II.).

TABLE II.—*Average Height and Weight of Viennese Children at Different Ages, compared with British Anthropometric Standard Average.*

Middle-class, Town, Sexes Combined.

(A) = Per cent. under Anthropometric Average.

Age in years.	No. of children.	Weight.		No. of children.	Height.	
		Pounds.	(A)		Inches.	(A)
1–2 ..	6	18·8	8·7	—	—	—
2–3 ..	10	20·5	27·3	9	26·2	20·8
3–4 ..	14	26·4	19·1	14	33·1	9·4
4–5 ..	8	29·5	18·8	8	33·4	12·9
5–6 ..	9	33·7	14·1	9	37·5	7·8
6–7 ..	5	34·8	19·2	5	38·1	12·4
7–8 ..	9	41·4	14·7	9	40·8	9·6
8–9 ..	15	45·2	15·3	14	45·6	2·7
9–10 ..	5	49·6	16·2	5	48·1	2·8
10–11 ..	8	54·8	15·2	8	49·8	3·1
11–12 ..	5	62·4	11·1	5	51·7	1·1
12–13 ..	4	58·5	23·3	4	52·4	4·9
13–14 ..	2	72·3	17·2	2	55·5	3·8

It will be seen from this and from Table VI. that under 2 years of age the nutrition of the children of the middle-class families as indicated by the percentages of weight under the Anthropometric Standard is better than that of the labouring classes—8·7 to 14·8 below. It is also slightly better between 3 and 4 years—22 against 26·5. From 4 to 9 it becomes worse —16·0 to 13·2, and from 10 to 14 it is even more distinctly worse—21·5 to 15·5.

Condition of Families in the Country.

The same accuracy of results cannot be claimed for the studies of the rural families as for those in town, because it was impossible to visit them every day, and the statement of the mother as to the amount of food consumed had to be accepted in many instances. The families visited live within a radius of 45 kilometres of Vienna. The country is one of hills covered with woods of every description. Most of the families live in small villages or in little shepherds' huts right away up in the hills. The houses are mostly small, and in many cases the animals live with the family. In the villages the floors of the houses are mostly below the ground level. The children are out a great deal, both in summer and winter. The families were not selected. The names were given by the nurses of the welfare centres as children who did not attend there. They were not families who had received rations from the Friends' Relief Mission, though those who attended school received a meal from the American Relief Administration. This is allowed for in our tables.

The condition of these families varied greatly, some being fairly well-to-do, some being very poor, some depending entirely upon food purchased, others having some produce from their land. In many cases the food-supply varied greatly from week to week and at different seasons. Many had garden produce and goats' milk and butter in summer, but these were not available in March when the studies were made. Probably in some cases all the food consumed has not been noted, but it is of interest that the average energy value of the diets is slightly higher than that of the urban working classes, that the average protein content is rather higher, and that the fat content is very markedly higher on account of the greater use of milk and butter (Table III.).

Family 17 is described as living mainly on bread made at home with water and as keeping poultry. Family 39 use home-made butter which accounts for the high intake of fat. About 40 it is noted that the diet varies greatly from week to week and that during some weeks they are starving. During the week of study they were having vegetables, beans, fish, bread, and flour. The data as regards two families living in the hills and of the family of a carter are so imperfect that they have been excluded.

Nature of Food.

The character of the food differed considerably in the two groups, as shown in Table IV., a larger proportion of country families using fresh milk and butter, a higher proportion of town families using margarine and lard.

TABLE III.—*Investigation of Country Families round Vienna.* (*Calculated as per man per day.*)

A.—WITH RICKETS (24).

No.	Persons in family.			Weekly income in kronen.	Percentage of income spent on food.	Total weekly expenditure.	Particulars of diet per man per day.		
	Adult.		Under 14.				Calories.	Protein g.	Fat g.
	M.	F.							
1	1	1	2	689	89·4	—	2130	68·2	93·1
3	1	1	3	1200	—	—	1840	42·2	31·4
4	1	2	5	1000	—	—	2416	57·8	81·7
5	1	1	2	750	—	—	1941	58·6	38·0
6	1	1	1	550	—	—	1844	52·4	35·8
10*	3	1	4	1700	42·4	1007·20	2666	62·1	77·1
11*	1	2	7	1000	43·7	1101	1662	35·9	71·6
12	1	1	4	610	80·5	653	1830	48·9	23·1
14	1	1	3	700	73·5	568·90	1866	57·5	52·6
17*	1	1	4	650	63·2	495·70	4137	134·1	82·0
18*	1	2	4	1100	48·2	874	1409	40·5	42·2
24	1	1	3	500	52·6	—	1923	62·0	62·0
26*	1	1	4	1000	31·4	801	1518	51·0	45·5
27	1	1	2	—	—	—	1895	51·4	48·5
30	1	1	5	1100	75·7	1093·50	1957	53·8	40·3
34*	2	3	5	1000	80·5	995	2145	49·1	55·1
35	—	1	2	500	109·8	529	2429	64·8	45·3
38	1	1	3	800	62·4	795	2684	67·3	88·5
39	1	1	2	600	70·5	600	4056	69·6	95·3
41*	—	1	2	800	46·2	—	2774	83·3	49·0
43	1	1	2	600	—	—	2624	112·3	82·2
44*	2	1	5	1500	55·4	1255	1926	53·7	37·2
47*	1	1	3	990	76·4	956	2808	81·9	89·5
50	1	1	2	550	58·0	529	1822	58·5	27·2
Average ..				864·7	64·4	—	2262·1	63·3	58·2

Father's occupation.—(1) Plumber, (3) gardening, (4) land labourer, (5) carter, (6) road man, (10) builder, (11) railway man, (12) labourer in vineyards, (14) road cleaner, (17) vineyards, (18) tree feller, (24) casual worker, (26) timber worker, (30) woodcutter, (34) railway porter, (35) [carpenter], (38) road mender, (39) furniture factory, (41) [in factory], (43) casual worker, (44) shoemaker, (47) vineyards, (50) unemployed.

B.—WITHOUT RICKETS (23).

No.	M.	F.	Under 14.	Weekly income in kronen.	Percentage of income spent on food.	Total weekly expenditure.	Calories.	Protein g.	Fat g.
8	1	1	3	550	—	—	1795	53·1	31·5
9	1	2	1	1500	—	—	1876	53·1	31·8
13	1	1	1	1100	53·8	1012	1975	55·5	78·6
15	2	2	2	1000	45·5	1066	2146	68·2	23·1
16	1	1	2	600	34·3	473·50	2056	75·2	46·7
19*	—	1	2	450	91·3	485	3810	127·8	98·0
20	1	1	1	550	100·3	551·50	2480	80·7	52·2
21	1	1	1	550	53·1	505·30	2342	71·8	50·5
22	2	2	1	1200	—	—	2254	70·4	57·5
23	—	1	2	350	87·4	346	2564	87·0	37·3
25	1	1	4	600	123·6	800	2009	65·3	64·8
28	1	1	1	760	46·9	659·50	2101	69·1	39·3
29	1	1	3	1000	50·7	1003·50	2562	90·7	59·3
31	1	1	2	1100	23·9	919	2397	80·2	75·1
32	1	1	1	900	49·5	665	1400	43·4	35·3
36	2	1	2	700	61·7	600	1447	41·2	21·0
37*	1	1	2	1000	27·8	—	2414	61·8	68·8
40	1	1	2	1000	52·9	853	4078	178·4	60·7
42*	1	1	3	900	—	—	2324	58·8	33·4
45	1	1	2	750	72·3	724	2830	92·1	86·5
46	1	1	1	550	71·5	494	3091	85·5	118·2
48	1	1	1	684	81·3	681	2890	112·9	78·7
49*	1	1	3	1500	42·5	—	2377	83·3	69·5
Average ..				838·6	61·6	—	2400·8	78·5	57·3

Father's occupation.—(8) Land labourer, (9) farmer, (13) land labourer, (15) boots in hotel, (16) unemployed, (19) [woodcutter], (20) farm hand, (21) casual worker, (22) on farm, (23) [—], (25) blind, (28) boatman, (29) stapler, (31) land worker (casual), (32) coachman, (36) carpenter, (37) sweep, (40) steel factory, (42) shoe factory, (45) vineyards, (46) stableman, (48) vineyards, (49) policeman.

General Considerations.

When the results of these studies are brought together the following comparison of the nutrition of the children can be made. For the reasons already given we compare weight with age, using the British Anthropometric Standard. Table VI. gives a comparison of the percentage deficiency of weight compared with the Anthropometric Standard in the different classes.

operation was performed and a third one four weeks after that. When seen it was clear that there was a slight swelling rather above the lacrymal sac, and this gave the clue to the diagnosis, and on operation proved to be a mucocele involving the anterior part of the ethmoid.

Several cases are recorded where epiphora has been the first symptom noticed; this was so in one of my cases. It may be a useful early sign, but can occur in other tumours about this region; I recall a case in which epiphora and then dacryocystitis were said to have been for months the only symptoms of a patient who eventually died of sarcoma of the superior maxilla.

A thorough intranasal examination is naturally undertaken in all these cases, but is usually of little assistance in the diagnosis. In only two of my cases was anything abnormal detected. In both cases nasal polypi were found. In one case, a male aged 85, they were entirely unsuspected and had not given rise to any trouble. In the other case the patient said that he had had them for 14 years and had had them removed on many occasions. Other observers have recorded cases in which the outer wall of the nose was bulged inwards by the mucocele and on being punctured the size of the external swelling was considerably reduced. It is somewhat remarkable that this occurrence is not more common; it did not occur in any of my cases.

ÆTIOLOGY AND PATHOGENESIS.

The onset of these cases is often so gradual and the course so slow and painless that it is very difficult to assign a definite cause in an individual case, still less to point to any ætiological factor that is common to them all.

I will not attempt to deal with the various theories that have been brought forward, as it seems to me that for the production of the condition partial or complete blocking of the natural ostium must occur and any attempted explanation must have reference to this occurrence. There are certainly two ways in which this may be brought about. Logan Turner thinks that "one may be justified in regarding a pre-existing catarrh as the cause of the chronic inflammatory changes which take place in the affected sinuses. In consequence of the catarrh the ostium becomes temporarily or permanently obstructed and there is an accumulation of the mucous contents of the cavity and gradual thinning and absorption of one or more of its bony walls." This is certainly a good explanation of some cases, even though it is not possible to establish definite evidence of the initial catarrh, and one knows that absence of any abnormal nasal discharge is a very characteristic feature of the condition when well established. The occurrence of an injury has been suggested by Killian and others as a possible explanation and sporadic cases brought forward, but in Logan Turner's series of ten cases there is no instance of it, and he is inclined to discount it. Gerber is also very sceptical.

In my series I have at least five cases in which it can, I think, be said that a severe injury was the exciting cause. The case of the small boy who got a severe black eye at football four months before the onset of the external swelling has been mentioned, and I will briefly describe some other cases.

A lieutenant in the Air Force, whilst getting into his aeroplane, was struck in the eye by a stone thrown up by an H.E. shell. He had a black eye; it ached a good deal and never got quite right. The eye began to water, and four months later he noticed a swelling at the right inner canthus. This increased but he had no diplopia and went on flying for a year; he was then sent to England for an operation, but nothing was done, and he returned to France. Six months later double vision began and he came to England and under my care. I operated on him and found a large mucocele of the frontal sinus and ethmoidal cells. He got quite well and his diplopia disappeared in three weeks.

Another officer having been hit in the left eye by a piece of shell, went into hospital, but nothing was done. He had no trouble with his eye for nearly three years, and then noticed a swelling near the left inner canthus. He was sent home a few months afterwards with a typical mucocele of the left ethmoid, upon which I operated.

The third case I will mention is a most remarkable one.

A private soldier was bending down to pick up a bucket when something hit the ground and rebounded into his eye, causing a lacerated wound near the inner canthus; after ten days in hospital he was all right and returned to duty. Several months afterwards he noticed a swelling near the left inner canthus, and later was troubled with diplopia. Some months afterwards he came to England and was under my care. He then had a mucocele which I proposed to operate upon, and on having the usual X ray photograph of the sinuses taken we were very surprised to find that he had a large piece of metal in his sphenoidal air sinus just below the pituitary fossa. It was then clear that the piece of metal had struck the floor of the frontal sinus, ploughed through the ethmoid, and come to rest in the sphenoidal sinus. I did the radical operation on the mucocele, but thought that it would be meddlesome surgery to interfere with the piece of metal. It is still in the same place and has caused no symptoms except occasional headaches during the last three years.

Injury can, I think, undoubtedly be accepted as a cause of the condition, so that we have therefore at least two methods of causation—one inflammatory, the other traumatic. But it may be wondered why everyone who gets a nasal catarrh or sustains a severe black eye does not develop a mucocele.

My own belief is that the condition depends largely on the ethmoid, only arising when the ethmoid is of a definite anatomical configuration—that is to say, when some of the anterior cells come much further forward than usual and are found in front of the fronto-nasal duct, even in front of the lacrymal bone, and bulge into the floor of the frontal sinus. When this condition is present and the fronto-nasal duct much narrowed by it, it would take but a small amount of plastic inflammation to block it, whilst a blow near the inner canthus would readily crush this cell into the fronto-nasal duct or obliterate its own ostium. Normally, the anterior ethmoidal cells lie well behind the ascending process of the superior maxilla and are protected by it, but an unusually anterior one would be correspondingly more vulnerable.

While this seems to me a likely explanation for the majority of cases, there will always remain some few in which another cause will be revealed at the time of operation. I refer to those cases in which an osteoma growing in an anterior ethmoidal cell or near the fronto-nasal duct may gradually cause blockage.

Luc and Laurens have each recorded a case of this, whilst only the other day, as I was operating by the external route on an ethmoid I came upon a very anterior cell almost completely filled by an osteoma, which might easily have caused trouble later on.

SYMPTOMS.

One of the chief characteristics of the condition is the entire absence of symptoms until an external swelling appears. Then symptoms may arise which lead the patient to seek advice from an ophthalmic surgeon, either on account of the alteration in vision due to displacement of the globe or on account of some affection of the lacrymal apparatus.

Headache is occasionally complained of, and may be a simple "brow ague" or a generalised ache. The bursting headache usually associated with increased intracranial pressure is seldom if ever present. Only three of my patients complained of headache; in two of them the posterior wall of the sinus was found to be absent at the time of operation; the dura being exposed, was naturally somewhat pressed on by the contents of the mucocele. It is, perhaps, surprising that the headaches were not more severe in intensity, but the frontal lobes of the brain can put up with a good deal of slow compression without the rise of any untoward symptoms.

Differential Diagnosis.—The recognition of the condition may be quite easy if we have to do with a straightforward case that presents the classical signs and pressure symptoms. Some confusion may occur if an acute inflammatory process is grafted on to the previous long-standing condition and the clinical

The conclusions of previous investigators that rickets tends to affect the later members of large families is borne out by these observations.

This and the familial incidence of the disease is strikingly shown in families 11, 12, 18, 30, and 34 of the rural series.

General Conclusions.

The general conclusions of all these studies is that a state of under-nutrition affecting the growth of the children has existed in Vienna and the adjoining country. No evidence is afforded that this has been associated with any marked increase in the incidence of rickets. Life and a certain amount of activity have been sustained upon a gross energy intake of little over 2000 calories per man per day, which must be explained in the light of Benedict's finding that undernutrition markedly decreases the basal metabolism.

The great help received from the Friends' War Victims Relief Committee, who have done so much to save the lives of these children, made it possible to carry out the investigation. The expenses of the work were partly defrayed by the Medical Research Council.

PROGNOSIS IN PATIENTS PRESENTING RAPID ACTION OF THE HEART.*

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THE difficulty and fascination of prognosis give it a foremost place in the elements of the science of medicine. Many factors are required before a satisfactory attempt can be made to forecast the future of a patient; but patients and their relatives are entitled to a clear expression of opinion. There is no more searching test of a man's knowledge of medicine than his power of accurate prognosis; such a prognosis is only possible in the presence of an accurate diagnosis, familiarity with the usual course of the disease, a correct valuation of the various symptoms, and a sure knowledge of treatment. There is no better exercise in humility than the habit of writing out the prognosis in full, and checking it by results. My subject is confined to that of prognosis in patients manifesting rapid heart action, the question of prognosis in heart disease generally being far too comprehensive to be dealt with satisfactorily in a short paper.

There is no more common deviation from the normal rhythm of the heart than increased frequency. We meet with it constantly, for the rate of the heart is at the mercy of any passing emotion, transient pyrexia, or physical effort. In most instances the cause of rapid action can be accurately recognised and rapidly assessed; but this is not always so, and it is of considerable importance that the significance of this physical sign should be recognised and its bearing on prognosis determined.

The foundation of a correct prognosis is correct diagnosis, but much more is required; a clear understanding of the nature of the rapid action may coexist with a hazy and uncertain conception of the course of the illness. The character of the heart's response to the tachycardia must be appreciated; does the heart manifest signs of distress, or does it accept the increase in rate with equanimity? The health and adequacy of the other organs must also be taken into consideration, and before any definite opinion can be ventured on it is essential that the response to treatment should be observed. All the above factors must be correlated in order to arrive at an accurate prognosis.

Two Groups of Cases: Causes of Rapid Action.

The first essential in considering any case of rapid heart action is to determine whether the rapid action is due to an acceleration in the normal stimulus

the inception of an abnormal rhythm, as fibrillation of the auricle. It is obvi accurate prognosis is possible if this qu settled. In by far the greater number senting increased rapidity of heart action is due to influences acting on the heart nervous mechanism by depressing th stimulating the accelerator nerves, or b tion of both, and the consequent distur normal balance. In the smaller group, ences are no longer effective. The sino-a is not responsible for the orderly contr heart, the "pace-maker" is side-track other point in the heart dominates the r

Under normal conditions the rate o constantly changing, and as a rule the rate are part of a compensatory mech are complementary; the change in rat of many alterations in the circulation towards an increased efficiency. The quicker in order to meet some stress Variations in blood pressure are ass variations in rate.

Function of the Heart.

The heart's only function is to supp the actual tissues. There must be supply of oxygen for "the capillary bed, space in which the real business of life is as Osler described it. For this function t there must be an adequate output of o blood from the heart every minute. increase in effort is associated with higher of oxygen by the muscles; this necess supply of blood, and the heart beats in order to increase its output. The va latter is remarkable; at rest the gener minute is 3 to 5 litres; with moderate litres; during heavy work it may reach minute—four times the amount discha rest—an increase showing the reserve normal heart and the call that may be m circulation. The two factors determini increase of output per beat and accele heart rate. The increased rapidity of chiefly responsible for increased outpu highly trained athlete there is a de output with each systole. Such is the a normal heart in an average state of hea a heart an increased rate, when a grea required, is all to the good. It is ev accurate compensating mechanism. Wh the rate is maintained at a high level w crease in output, or in the absence of an increased output, the efficiency of the he and a high rate is then detrimental.

Physiological Causes of Rapid

The causes of rapid action of the heart rhythm is physiological are emotion, effor or defective myocardium, anæmia, pyre exophthalmic goitre, neurasthenia, D.A. In all these instances a graphic record wo the auricles and ventricles contracted relation to each other. In each, the caus action is a factor outside the heart, wo the nervous mechanism, which causes th to become more active. This holds tr the heart is itself diseased, for then th rate is an attempt to provide an adeq tion with an inadequate heart; the output per beat is neutralised by t number of beats per minute. An incr cases of organic disease is an evidenc inadequacy, and is of importance in pro physical sign is of considerable value in c regurgitation, where a persistent deg tachycardia, such as 90 to 100 per min rest, is ominous. The same holds goo

NUTRITION IN VIENNA.

II.

BY MADGE R. GRIBBON, M.A.,
AND
D. NOEL PATON, M.D., F.R.S.,
Assisted by MARGARET FERGUSON, M.A., AND
ANNABEL M. T. TULLY, M.A.
(From the Institute of Physiology, University of Glasgow.)

IN the present paper* we deal with the condition of (1) the middle classes in Vienna; and (2) the rural classes in the neighbourhood of that city.

Condition of the Middle Classes in Towns.

Middle-class families have suffered more severely than those of the working classes from the adverse economic conditions because the increase in their incomes, proportionately to the increased cost of living, has been smaller and because pride has prevented them from seeking or accepting charitable help. They have been reduced to a state of penury which contrasts cruelly with their previous condition of comparative affluence. It was difficult to secure consent to a study of their conditions of life and to gain coöperation, but when this had been achieved they gave most intelligent help and rendered accuracy of result much more easy to attain than in the case of the labouring classes. They kept their ration ready to be weighed on the visit of the investigator and were scrupulously careful to note any small additions to the food such as a gift to one of the children of an extra piece of chocolate. The investigator weighed the younger children on her own balance and measured them, while she obtained the weights and heights of the others at their schools. The families were not selected but were taken as their names were given. Living in good homes—because unable to get other accommodation—the children are often forced to be absent from school for want of clothing and in some cases they are sleeping three to four in a bed as the other beds had to be sold to meet expenses. Under the present régime no room is allowed to remain unoccupied and every family, if not using all the rooms, is bound to take in lodgers. The majority of the rooms are small, on an average from 10 to 14 feet square, and such a room may be occupied by three or four people. Though the main buildings may be well ventilated, the rooms seldom are. The Viennese rarely open windows and the children are kept much indoors. Rents have not risen to any great extent, but few people are able to move from one house to another. The incomes often do not cover the weekly expenses and too frequently at each visit another article of furniture was seen to have disappeared. Blankets are made into clothes and one garment is made to do for the whole family.

Table I. gives a summary of the results of these studies.

In the families marked with an asterisk in the tables one or more of the children received a meal at school from the American Mission. The equivalent for this is stated in nems and in allowing for it the composition is taken as the same as the Friends' ration, containing 27 g. protein and 45 g. fat to 1000 calories. Two of the families with rickets—41 and 44—give results so divergent from the others that probably they should have been excluded from the series. In 41 it is noted that the mother—a widow—gets much help from her parents and could give little information. Forty-four was a country family who used some of their own products. But, since these cancel one another, it was considered better to leave them. Among the non-rachitic families several require further consideration. In 5 it is noted that the food was chiefly bread and the children were undernourished. In 20 there is no special note except that they had been selling furniture and that it was impossible to ascertain all the household expenses. For 27 it is noted that the family had a very precarious living, one week much better than the other. In 29 more than the whole income goes for food and the same is the case with 46.

In March, 1921, an attempt was made to study the diets of 10 middle-class families, including the families of three university professors at Graz and Salzburg. Although the average income exceeded that of the Viennese families, being 1435 as against 1140 kronen, the food consumed yielded on an average only 1200 calories with a minimum of 770 and a maximum of 2023 calories. It is difficult to accept such figures and the suspicion is aroused that we failed to secure a complete record of the food actually consumed. We therefore do not publish a table of the results.

TABLE I.—*Investigation of Middle-Class Families in Vienna. (Calculated as per man per day.)*

A.—WITH RICKETS (14).

No.	Persons in family. Adult. M.	F.	Under 14.	Weekly income in kronen.	Percentage of income spent on food.	Total weekly expenditure.	Particulars of diet per man per day. Calories.	Protein g.	Fat g.
2	1	1	2	1145	48·1	946·5	2094	79·3	31·2
4*	1	1	3	1500	40·0	1242	1964	54·8	49·0
8	1	1	2	1000	79·2	1016	2450	75·3	58·3
12*	1	1	2	1200	37·2	1166	1984	62·8	60·6
13	1	1	1	800	62·7	752	2074	72·6	29·6
14*	1	1	4	1400	41 2	1208	1694	49·4	56·2
17*	3	1	3	2500	43·6	2089	2541	70·9	64·8
21*	1	1	2	900	61·1	750	1221	45·0	20·8
22	1	1	2	800	93·2	895	2134	61·6	56·1
25*	1	1	1	890	53·3	674	2144	51·0	84·0
28	1	1	1	750	77·8	934	1417	35·6	37·6
41	–	1	–	730	49·4	620	3807	131·0	70·0
44	1	1	2	900	—	—	986	28·0	33·0
50	1	1	2	1000	96·4	1063·5	2090	45·8	52·0
Average ..				1100	60·5	—	2049·3	61·8	50·2

Father's occupation.—(2) Professor, (4) dentist, (8) town clerk, (12) clerk, (13) teacher, (14) musician, (17) wood factory, (21) ivory polisher, (22) shoe factory, (25) hospital clerk, (28) doctor, (41) [clerk], (44) clerk, (50) vineyards.

[Square brackets indicate decease.]

B.—WITHOUT RICKETS (25).

No.	Persons in family. Adult. M.	F.	Under 14.	Weekly income in kronen.	Percentage of income spent on food.	Total weekly expenditure.	Particulars of diet per man per day. Calories.	Protein g.	Fat g.
1*	1	1	1	522	77·3	948·5	2559	83·5	33·6
3*	1	1	2	600	117·2	813	2336	62·0	64·2
5	1	1	3	320	108·6	347·5	1495	44·3	28·2
6	1	1	1	1120	45·8	1216	2267	68·1	41·6
7	1	2	1	1500	44·8	1172	2123	56·8	41·2
9	1	1	2	2500	39·7	2442	2588	57·6	87·7
10*	1	1	2	1750	50·5	1650	2103	63·9	52·0
11*	1	2	4	3000	28·7	2387	2813	79·0	79·5
15	1	1	1	1000	59·1	1151	2619	72·7	101·2
16*	1	1	2	850	69·6	—	2230	56·0	47·4
18	–	1	1	1000	38·0	930	2921	86·0	44·6
19	–	1	2	995	59·6	350	2685	74·4	64·4
20*	1	2	2	1000	42·4	—	1017	30·4	29·3
23*	–	1	2	800	95·4	970·5	1637	34·8	100·0
24	2	1	4	3000	38·2	2835	2167	61·1	49·1
26	1	1	1	1550	34·1	1128	2088	88·1	75·6
27	1	1	1	700	87·6	700	1399	41·9	51·6
29	1	1	1	800	102·4	919·5	1286	43·8	13·2
30	1	1	3	1000	62·5	924·5	1722	49·5	49·1
42*	1	1	1	750	74·2	756	1524	43·0	32·5
45*	–	1	1	1000	38·0	952	1701	44·9	61·2
46*	1	1	2	400	115·8	563·5	1437	33·8	42·0
47	–	1	1	700	90·8	736	2595	78·7	37·3
48*	1	1	2	560	50·4	532	1736	48·4	44·6
49*	–	2	4	1500	36·6	1369	2166	53·8	64·0
Average ..				1156·7	64·3	—	2053·5	58·3	53·5

Father's occupation.—(1) Librarian, (3) clerk, (5) ivory polisher, (6) teacher, (7, 9) doctor, (10) burgomaster, (11) librarian, (15) clerk, (16) musician, (18) [clerk], (19) [asst. editor], (20) teacher, (24) stationer's shop, (26) horse-stables, (27) musician, (29) in post office, (30) accountant, (42) clerk, (45) [baker], (46) retired officer, (47) [retired officer], (48) retired officer, (49) [town clerk].

Nutrition of the Children.

While probably the weight to age ratio fails to give a thoroughly satisfactory representation of the nutrition of the children, the weight to height ratio seems also unsatisfactory in conditions where stunting of height as well as decreased gain of weight may have

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* Section I. consisted of an account of a study of the diets and state of nutrition of the working classes in Vienna during the past year and appeared in THE LANCET, 1921, i., 474.

Auricular Flutter and Fibrillation.—When the tachycardia is caused either by auricular flutter or by fibrillation the ventricular rate is increased because of the inception of an abnormal rhythm in the auricles as already described. Flutter and fibrillation are closely related, and flutter is often the precursor of fibrillation. In both the onset is sudden, but it does not follow that the patient is aware of this change in the action of the heart. Any persistently steady heart rate of 120 or over in an elderly person should suggest the presence of flutter, especially so if there be significant variations in rate, such, for example, as a rate of 106 changing to 160, or dropping to 80. The relationship of these numbers is very suggestive. The auricles are probably contracting 320 times per minute, and each ventricular rate is a fraction of that number. At first the ventricles respond to every third auricular beat—106—107—then to every second—160—then, with a pulse at 80, to every fourth; such figures justify a definite diagnosis of flutter.

Another point of importance is the presence or absence of irregularity. With the exception of extra systoles or a sinus arrhythmia, the irregularity associated with tachycardia is almost always evidence of auricular fibrillation, and it is well to remember that extra-systoles and a sinus arrhythmia are most unusual in a rapidly acting heart. An irregular action may, however, be met with occasionally in auricular flutter.

We are on safe ground then in diagnosing a pathological rhythm when both tachycardia and irregularity are present. I propose to cite a few typical cases of pathological tachycardia and discuss the prognosis in each.

CASE 1.—A man of 70 noticed some irregularity of the heart, and that he was more easily out of breath than formerly, but otherwise there was nothing to complain of. He did not know when these symptoms first began, but thought they had developed within the last 12 months. On examination he was found to be organically sound. There was slight enlargement of the heart, no evidence of valvular disease, blood pressure not unduly raised, action disorderly and heart rate varying from 90 to 100. Exercise increased both the irregularity and the rate. He was suffering from fibrillation, and its inception had not unduly disturbed him; the myocardium carried the extra disability comfortably, the rate was not excessive, and the circulation was relatively efficient. The prognosis was clearly favourable, the reserve power was diminished but still adequate. With some restriction in the amount of physical effort he should (and did) live for years.

CASE 2.—This case is that of a young woman of 30 propped up in bed in acute distress, rapidly becoming worse; she was cyanosed, the jugular veins were distended, her breathing was rapid, and she was expectorating blood; abdominal wall tender and resistant, liver enlarged, œdema of the legs, scanty urine, præcordium tender, heart dilated, diffuse forcible slapping impulse, rate 180 to 190 per minute; action disorderly, many beats failing to reach the radial artery. First sound short, loud and sharp, accompanied by a short systolic murmur of varying intensity. The history was that she suffered from rheumatic fever when 14, at which time her heart became affected. In spite of frank mitral stenosis she had led a moderately active life with comfort. Six days previously she noticed her heart beating more rapidly, and she became short of breath. Her condition had become worse, there was troublesome vomiting and she was obviously losing ground. The acute cardiac failure from which she was suffering was due to fibrillation of the auricle attacking a damaged heart. The heart was failing rapidly, and the immediate failure was due to two factors: (1) the tachycardia; and (2) the irregularity, which interfered with adequate diastolic filling. The patient would die, and that soon, if the tachycardia persisted, her state being clearly desperate.

The immediate prognosis depended on whether her heart would respond speedily to treatment, and seeing that it was a fibrillating rheumatic heart one was justified in feeling hopeful. She had to be brought under the influence of some member of the digitalis group, but on account of vomiting the digitalis administered at the beginning of the attack had been stopped. The vomiting was obviously not due to the toxic action of the digitalis, but more probably to an engorged and irritable stomach. There were two options—either to risk the vomiting and give big doses, ♏xx. of tinct. digitalis by the mouth four-hourly, well diluted, accompanied by a hypodermic injection of morphia; or to inject a milligramme of strophanthin into a vein. In this patient the former method succeeded, and within 24 hours she was obviously improving and out of immediate danger.

Before the onset of fibrillation her heart was moderately efficient in spite of the mitral stenosis, and in such a case it is reasonable to take the view that so long as the rate is controlled by digitalis the patient will get along comfortably. Her reserve power will necessarily be less than before the onset of fibrillation; she will have to live at a lower level of physical endeavour. If she neglects to take the small daily dose of digitalis required, her heart will again race and her life will be endangered.

CASE 3.—In contrast to Case 2 consider another, a successful business man of 60, energetic and capable, who had always lived an extremely active life, and believed himself to be in perfect health. He woke in the early morning in some discomfort and distress which rapidly became urgent; sat up in bed, gasping, his face pale, almost livid, anxious expression, forehead dripping with cold sweat, complaining of pain over the heart. The cardiac thrust was outside the nipple, the action of the heart tumultuous and very rapid, the radial pulse less rapid, some of the beats full and bounding, others small and almost imperceptible; the vessel wall was unduly palpable. The interpretation was not difficult. Fibrillation of the auricle had attacked a man suffering from high blood pressure. When the heart was beating at a moderate pace the large left ventricle, though with diminished reserve, was quite capable of maintaining an efficient circulation, but the sudden increase of the rate, the irregular filling during diastole and the necessity of maintaining a relatively high blood pressure had proved too much for the left ventricle.

Here, again, the immediate prognosis depended on one thing and one thing only—could the heart be slowed? The probabilities were against it; this type does not respond so readily as the rheumatic. Strychnine, caffeine, camphor, are all useless, and atropine positively detrimental. It is of no use attempting to stimulate the myocardium—the one imperative need is to slow the heart. Given a slow action the ventricle may manage comfortably. Digitalis or strophanthin must be exhibited and the shock and distress of the patient mitigated with morphia.

The immediate prognosis was very bad; but if the heart did respond and slow down there was a possibility that the attack of fibrillation might prove transitory after persisting a few days, but there would always be a liability to recurrence. If fibrillation persisted and the heart responded to treatment, there might be difficulty in this patient in maintaining the blood pressure at a sufficiently high level, the necessary optimum required for this man, with the result that he would be permanently crippled, and at not too distant a date his heart would fail, in spite of the British Pharmacopœia.

I should mention here that in patients suffering from fibrillation there are certain features revealed by the electrocardiograph, which when present indicate damage to the myocardium and add gravity to the prognosis. I refer to ectopic beats and variations in the Q.R.S. portion of the ventricular complex; but the essential guide is the response of the heart to its new burden as indicated by the symptoms of distress.

I have lightly sketched the pictures of these three cases attacked by fibrillation of the auricle, showing how each responded. It is manifest that the response depended on the capacity of the heart to tolerate the additional load of a rapid and irregular heart.

A Different Type of Pathological Rhythm.

It is well in formulating prognosis to remember that fibrillation may occur in short paroxysms, transient in duration. It tends, however, to become permanent. Let me relate an example of a different type of pathological rhythm:—

CASE 4.—A male, aged 31, who came under observation because of variations in his pulse-rate; he experienced little, if any, discomfort, but his medical attendant was anxious about him because, without apparent reason, the heart contracted at 140 per minute for a time, and would then drop to about 90 or possibly become irregular. The history was that four months before, when at sea, he had "gone sick," and a diagnosis of pericarditis had been made. On reaching Liverpool he was admitted to a hospital where he remained three months, being treated for "pericarditis." During this time his heart rate varied, and on being cross-examined he gave the prevailing rates as 70, 90 to 95, and sometimes a very rapid action. Treatment had entailed rest and some digitalis. When discharged the action of the heart was still unsatisfactory, although it caused him no distress. The prognosis was of special importance because

It will be seen that in all three the nutrition is least affected during the first two years, that it is most markedly affected during the years of active growth following weaning, that during the period of decreased rate of growth from 4 to 10 it again falls, but that in the town families it shows a tendency to become more marked during the second period of active growth, above 10 years of age. This is least marked in the country families and most marked in the middle-class families. The country families suffer less than the urban and this may be correlated either with their more open-air life or with their somewhat better diet as shown in Table VII.

TABLE IV.—*Number of Middle-Class Families using the various Foods.*

—	Urban.	Rural.
Fresh milk	15	38
Butter	5	15
Margarine	18	15
Lard, fat, &c.	29	18
Pork	7	13
Goats' flesh	—	7
Beef, veal, or mutton	15	8
Sausage	14	8
Green vegetables	31	39

TABLE V.—*Nutrition of Children: Average Height and Weight of Country Children at Different Ages, compared with British Standard Average.*

(*Sexes Combined.*)

(A) = Per cent. under Anthropometric Average.

Age in years.	No. of children.	Weight.		No. of children.	Height.	
		Pounds	(A)		Inches.	(A)
1–2 ..	17	19·3	5·4	—	—	—
2–3 ..	18	22·6	21·1	14	28·4	13·6
3–4 ..	15	25·7	21·8	14	33·0	9·8
4–5 ..	15	30·2	17·2	15	33·4	13·0
5–6 ..	8	33·1	15·1	8	34·8	14·5
6–7 ..	6	38·8	7·6	6	37·9	11·8
7–8 ..	6	43·2	11·7	6	42·0	7·6
8–9 ..	9	47·2	10·2	8	42·0	10·2
9–10 ..	2	49·8	13·8	2	42·3	14·1
10–11 ..	2	55·9	13·6	2	47·3	8·3
11–12 ..	4	61·7	11·8	4	49·0	8·1
12–13 ..	2	68·8	10·5	2	51·5	7·3
13–14 ..	3	72·7	13·3	3	50·0	12·6

TABLE VI.

Age in years.	Average percentage deficiency in weight.		
	Working class (town).	Country families.	Middle class (town).
Under 2 ..	(7) 14·8	(17) 5·4	(6) 8·7
2–4	(23) 26·5	(33) 21·4	(24) 22·5
4–10	(62) 13·2	(46) 13·4	(51) 16·0
10–14	(21) 15·5	(11) 12·3	(21) 21·5

TABLE VII.—*Comparison of Town and Country Families.*

—	Per man per day.		
	Calories.	Proteins.	Fats.
Viennese.			
Working-class—			
Non-rachitic	2325	71·6	38·8
Rachitic	1885	68·4	41·5
Middle-class—			
Non-rachitic	2053	58·3	53·5
Rachitic	2019	61·8	50·2
Rural.			
Non-rachitic	2401	78·5	57·5
Rachitic	2262	63·3	58·2

Up to about eight years there is no marked difference in the deficiency of height in the three groups, but after this age the rural children fall more markedly below the standard of height, while showing a less deficiency in weight. The cause of this is not apparent. In all three groups the height of the mother was rather above the Anthropometric Standard, but in the rural families the fathers were more distinctly below it than in the other groups. In the working-class families they were actually above it. Possibly growth may have been reduced by too early work in the fields.

Rickets.

Our study included 424 children, urban middle-class, urban working-class and rural, and 108 of these, or 25 per cent., showed signs of rickets, past or present. MacGregor † found that of 1277 children between the ages of 6 months and 10 years admitted to a Glasgow fever hospital, 44·4 per cent. of those born in Glasgow of Glasgow parentage, 33·8 per cent. of those born in Glasgow but having country-bred parents, and 25·1 per cent. of country-born children of country parentage showed evidence of rickets. Further, Kassowitz, before 1910, stated that 89 per cent. of children admitted to hospital and 59 per cent. of his private patients in Vienna manifested signs of rickets.

The evidence thus does not indicate that there has been the marked increase in the disease since the war which is commonly stated to have occurred. It would rather seem that attention being directed to the condition has led to its diagnosis in children in whom it would not have attracted attention in former times. In Glasgow and in other cities where rickets is prevalent—and Kassowitz's figures indicate that it was so in Vienna—parents are apt to regard it as inevitable and of little moment and they rarely consult a doctor about it unless in severe cases. Further, the fact that in so many families a considerable proportion of the children above the age of 6 show rachitic deformities indicates that the condition had developed before war conditions were established. The cases of rickets were distributed among the different groups as shown in Table VIII.

TABLE VIII.—*Distribution of Rickets.*

—	Total No. of children.	Rachitic children.	
		Number.	Per cent.
Working class (urban) ..	153	43	28
Middle class (urban) ..	124	21	17
Working class (rural) ..	117	44	30

In the working-class families it occurred in 58 per cent. of the families. In the middle-class families it occurred in 35 per cent.: the type was generally mild and it usually affected the younger children. In the rural families 26 out of 50 families had cases of rickets —52 per cent.—and the deformities were frequently very marked.

The high incidence of rickets in the rural families with their higher intake of natural milk fats is of interest. A comparison of the diets of the three groups (Table VII.) does not indicate that the lesser incidence of rickets in the middle classes is associated with a greater consumption of milk or other fats.

TABLE IX.—*Rickets in Relation to Average Size of Families.*

—	With rickets.	Without rickets.
Urban working class ..	3·1	2·1
Urban middle class ..	3·0	2·25
Rural working class ..	4·2	2·0

TABLE X.—*Rickets in Relation to Age.*

Reference No. of family.	Age of children. (Rachitic children in brackets.)							
11 ..	11	(8)	(7)	(4)	(3)	(1)	—	—
12 ..	8	(3)	(3)	(1)	—	—	—	—
18 ..	23	22	19	(12)	7	6	(4)	—
30 ..	22	20	14	(11)	(9)	(8)	(4)	(2)
31 ..	17	16	14	12	11	(8)	(4)	(1)

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† MacGregor: Proceedings of the Glasgow Philosophical Society, vol. xl., p. 156.

case being 10–15 mg. A lower potency than this has been observed by us in a well-known brand of Norwegian medicinal cod-liver oil sold in this country. It is to be noted that these liver oils originate from fishes belonging to the genus Gadus, and we are now investigating whether oils of other genera also exhibit this exceptionally high vitamin-A potency. The relative potency of Lofoten and Finmarken medicinal oils and the influence of the mode of preparation of the liver oils on the vitamin content will form the subject of a separate communication.

The expenses of this research were defrayed from a grant made by the Medical Research Council, to whom our thanks are due.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

GANGRENE FOLLOWING MEASLES.

By Eustace Thorp, O.B.E., L.R.C.S. Edin., D.P.H.,
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The following case appears worthy of record owing to the rarity of gangrene as a complication of measles and to the extreme youth of the patient. I have up to the present found no other case recorded.

M. M., aged 4½ years, was admitted to the borough infectious diseases hospital under my care on the fourth day of disease suffering from measles. She had had bronchitis at nine months and pneumonia when aged 2. On examination she presented a typical measles rash and signs and symptoms of broncho-pneumonia. She was obviously very ill, temperature 104°F., breathing difficult, and some cyanosis. Temperature remained high, in the region of 104° and 105°, and on the ninth day some meningeal symptoms intervened. These subsided on the eleventh day, and on this day a few dark purple spots were observed on the left leg and both limbs showed signs of circulatory troubles and became cold and pale. Active treatment was begun. a few septic spots were observed on the cheek and one on the abdomen. Within the next 24 hours gangrene made its appearance on the toes of the left leg and rapidly spread up that leg to the region of the knee-joint, a well-marked line of demarcation forming at the level of the junction of the *upper and middle thirds of the tibia*; at the latter part of this period of 24 hours a patch of dry gangrene was observed on the great toe of the right leg. The condition of the child was such that it was not thought advisable to operate and she died on the fifteenth day of the disease. A post-mortem was refused. Blood specimens were submitted to the bacteriologist and negative results obtained for the Widal test and for pathogenic organisms.

A CASE OF MULTIPLE SARCOMATA.

By John A. C. Macewen, M.B., C.M.,
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SURGEON, GLASGOW DISTRICT HOSPITALS.

The following case presents some features of interest.

J. G., a woman of 46, was admitted to Duke-street Hospital in February complaining of tumours in both breasts and one on the back. She had had 11 children, the youngest being about a year old, but the right breast had never lactated. The tumour on the back had been present for about eight years, had steadily increased in size, and had always been painful. That in the right breast had been present for about six weeks prior to admission, while that in the left she had only noticed recently.

On examination the tumour in the lumbar region was seen to resemble a spina bifida in shape and general appearance, and was covered with glazed, dark-coloured skin. It was not movable, and while firm to the touch suggested fluctuation on deep palpation which, however, caused considerable pain. The tumour in the right breast presented as a hard irregular mass in the upper and outer quadrant, and was slightly tender to palpation. The breast as a whole was unduly firm, but moved freely on the underlying structures. There was no puckering of the skin, retraction of the nipple, or enlargement of axillary glands. The left breast presented a small hard and tender swelling on the inner side. The tumour in the lumbar region was first operated on and removed without particular difficulty. It contained about 2 oz. of blood-stained fluid surrounded by quantities of necrotic tissue, and it grew apparently from the spines of one or two lumbar vertebræ, portions of which were removed along with the tumour.

Dr. R. M. Buchanan reported the fluid negative to tests for cerebro-spinal fluid. The tumour presented a highly vascular capsule encircling tumour tissue in great part necrosed. Another portion of tissue examined presented a dense fibro-vascular capsule of very varying thickness with small spicules of bone in places, and, centrally, tissue of the character of spindle-celled sarcoma. The right breast was also removed and Dr. Buchanan reported the tumour as a spindle-celled sarcoma.

Patient declined further operation and left the hospital, but in the interval the mass in the left breast had increased in size, the nipple was retracted, and the glands in the axilla were enlarged. We were informed that she became blind some time after leaving hospital.

Were the tumours in the breasts primary or were they secondary to the tumour in the lumbar region, and, if so, what was the channel of metastasis? Unfortunately, the pathological characters of the tumour in the left breast, clinically resembling a carcinoma, could not be ascertained.

A CASE OF

INTRAPERITONEAL RUPTURE OF THE BLADDER

DUE TO RETROVERSION OF THE GRAVID UTERUS.

By Dorothy Chattaway, M.B., Ch.B. Birm.,
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With a Note by Lewis Graham, M.S. Lond.,
F.R.C.S. Eng.

The following case is of sufficient interest to merit record.

Mrs. P., aged 25, was admitted to the Maternity Hospital, Birmingham, on June 10th, 1921, with acute abdominal symptoms complicating a four months pregnancy. Her general health had been good; she had had two previous labours, the first a breech presentation, the second normal. The history was that a fortnight before admission the patient had retention of urine for 48 hours followed by incontinence. No catheter was passed. On the afternoon of June 9th—i.e., 30 hours before admission—she became rapidly worse. She was seized with sudden acute abdominal pain and passed no urine after this.

On admission she was obviously very ill, pale, and collapsed, pulse 120 and feeble, temperature 99·2° F., respiration 40. She complained of severe abdominal pain. The abdomen was distended and tender all over. The uterus could be felt the size of a four months pregnancy. There was free fluid in the abdominal cavity. A catheter was passed and 20 oz. of urine withdrawn. This contained thick pus, blood, and shreds of bladder epithelium. The patient had a slight "show" shortly after admission. On vaginal examination the os was dilated and the foot presenting.

The case was seen by Mr. Lewis Graham and a diagnosis of intraperitoneal rupture of the bladder made. The abdomen was opened at once. The peritoneal cavity contained over a gallon of turbid foul urine. The bladder was contracted and a rupture about 2 inches long was present at the fundus. This was sutured with catgut. The abdomen was drained by one large drainage-tube. The patient's condition after operation was very grave and an intravenous saline was given. The fœtus was expelled at 8 A.M. the following morning, the placenta, which was adherent, being removed manually.

The patient made a good recovery. She wore a self-retaining catheter for a fortnight and was catheterised at regular intervals till June 25th when she first passed urine normally. She left hospital on July 11th quite well.

Note by Mr. Lewis Graham.—The interesting features of this case are its great rarity and the fact that a patient was able to make an uninterrupted recovery after having a large amount of foul urine in the peritoneal cavity for 30 hours. The diagnosis was obvious and the treatment easy, although when first seen the patient appeared moribund and not worth operating on. However, an operation was her only chance, and she made the above remarkable recovery.

In patients belonging to this group the diagnosis is generally obvious, and the prognosis is dependent on the general condition rather than the tachycardia. I do not propose to deal with them in detail, but will touch on one or two points of importance.

Tachycardia in Children: Toxic Tachycardias.

Not infrequently children are brought for an opinion because of rapid heart action. On examination the heart is found normal in size and there is no evidence of valvular disease, but the rate is 100 to 120 per minute and often more after games. With this the child is otherwise healthy, joins in the games vigorously, without discomfort or distress. It is well to remember that excitement and exercise may affect the heart rate in children to a remarkable degree, and if the child is healthy in every other respect, if the tachycardia is not accompanied by distress or discomfort and does not interfere with eating or sleeping, then I should not veto ordinary school life and games, provided there is reasonable supervision.

The tachycardias due to toxæmia are important, and the prognosis in any particular patient depends on whether the source of the toxin can be localised and dealt with. The gums, the accessory sinuses, the tonsils, and the gastro-intestinal tract must be surveyed. These patients present, perhaps, the greatest difficulty.

A most important form of toxic tachycardia is that met with in early tuberculosis, in which a rapid action of the heart may be the dominant physical sign, associated with some degree of pallor and lassitude. Physical examination of the chest may give little help—frequently there is a moderate degree of pyrexia, and this in itself may partially account for the tachycardia; but tachycardia is sometimes present in the absence of pyrexia—the apyretic tachycardia of early tuberculosis. Such a combination of tachycardia and normal temperature in early tuberculosis is significant and justifies a very grave prognosis. Such patients rarely respond well to treatment; their progress is steadily downward.

Value of Response to Effort.

In the attempt to arrive at a prognosis in nervous patients and those suffering from neurasthenia and D.A.H., *the response to effort is helpful.* For example, if the rate of the heart is 110 when seated, reaches 130 or 140 after a short period of moderate exercise, and then drops within three minutes to 80 or 90, the probability is that the myocardium is sound and exercise beneficial, if carefully supervised. The response to effort should also be estimated by careful cross-examination concerning the degree of the distress induced by the actions of ordinary life; the mentality of the patient being taken into account, and when possible the accuracy of the statements checked by personal observation.

It might be well to emphasise here the fact that in many instances tachycardia occurring in patients with valvular disease is not caused by or due to the valvular trouble, but is a pure neurosis. This is noticeable in patients suffering from mitral stenosis.

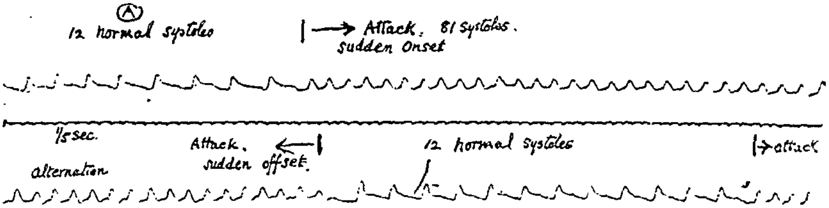
In the group which we have been considering it is of the greatest importance to discover the cause outside the heart responsible for the tachycardia, which is secondary to emotion, effort, anæmia, sepsis, or some other cause.

Primary Tachycardia.

In the second group the tachycardia is primary; the cause of the rapid action is in the heart itself, and in such patients the first step is to recognise the nature of this essential change. There are three forms: (1) Paroxysmal tachycardia; (2) auricular flutter; and (3) auricular fibrillation.

Paroxysmal Tachycardia.—One characteristic of an attack of this type is the suddenness of its onset, of which patients are often able to give a clear and decided account. When the tachycardia occurs in short spells the offset is also definitely dramatic. The attack terminates abruptly, and quite unlike the gradual slowing down of a burst of palpitation in a nervous patient. Rest, emotion, or effort do not modify the frequency during an attack of paroxysmal tachycardia.

The tracing here shown is from a patient during recurrent attacks of paroxysmal tachycardia. The paroxysm was preceded by 12 normal beats, consisted of 81 abnormal beats, and was followed by another series of 12 normal systoles before the recurrence of the pathological rhythm. In this patient the rapid action of the heart sometimes persisted for hours or even days. This condition of paroxysmal tachycardia is not common, and a diagnosis from simple palpitation with rapid action, in the absence of any opportunity of investigating an attack, *may have to be made solely on the description elicited* by careful cross-examination of the patient.



Radial records showing the onset and offset of a short attack of paroxysmal tachycardia. Alternation is present in some portions of the record.

In most instances the outlook is not grave. The patients are usually young, and the healthy heart of the young tolerates short paroxysms of rapid action without much discomfort; fortunately the paroxysms are rarely prolonged. The outlook is less satisfactory when the rate is extreme, when the duration of the bursts of heart hurry extends *into days or weeks*, and when the heart shows *signs of distress*. This is especially likely *to be the case* if there is old-standing *heart disease*, when a persistent rate of 150 to 200 beats *per minute* soon exhausts the myocardium, and *the patient runs* the risk of dying of cardiac failure. Even a healthy heart shows signs of distress as the result of a prolonged paroxysm, but it is possible to promise a rapid and remarkable return to a normal condition with the cessation of the paroxysm.

The most important *factor* influencing prognosis is the *extent to* which the presence of the rapid *rate distresses* the patient; this will depend on the rate of the heart during an attack, on *the age* of the patient, the presence of cardiac disease, and the frequency and duration of the paroxysms. In a small percentage of the cases the ectopic stimulus arises in the ventricle and not in the auricle or node, and it is agreed that in such patients the outlook is bad. This fact can only be recognised by means of the electrocardiograph.

its use in medicine. The paragraphs on the use of digitalis are open to criticism, for the action of the drug and indications for its use are not stated in clear terms, as is possible in the light of the newer exact knowledge that we have of its action. The author appears to think that it raises blood pressure, an opinion that requires definite qualification; moreover, the discussion of its applicability in mitral and aortic disease before the statement of its use in auricular fibrillation tends to give a wrong impression.

More than a hundred pages are devoted to the endocrine glands and organo-therapy, and the author's remarks on this subject are a useful counterpoise to the optimism of the advertisements and brochures that describe commercial preparations of endocrine glands; at the same time the account of the clinical application of certain preparations, the specific activity of which is still in doubt—for instance, of corpus luteum extract—seems unduly confident. There are excellent chapters on practical therapeutic measures, specific therapy, and the general principles of dietetics. Separate parts are devoted to the consideration of general physical measures, such as electricity, hydrotherapy, massage and climate, of drug and industrial poisoning, the treatment of emergencies and some simple skin lesions. The last chapters deal adequately with medical ethics and contain useful advice to young physicians.

It will be seen that the book covers an immense field. The author is obviously inspired with high ideals and his writing is something more than an expression of opinion and a record of fact. His style is epigrammatic and direct, and one of the themes which run through the work is the effort to remove the mystery that tends to cling to drug treatment by demonstrating its real value on simple lines.

First Aid and Rescue Work in Mining.

By LOUIS G. IRVINE, M.D., B.Sc. Edin. With Prefatory Note by J. S. HALDANE, M.D., F.R.S. Johannesburg: South African Red Cross Society. 1921. Pp. 348.

IN a little book which presents an entirely new combination of facts and knowledge on first aid and mine rescue work, Dr. L. G. Irvine contends that "it is far better in practice to train a limited number of persons well, than to give a smattering of knowledge to a larger number." The value of public first-aid competitions and demonstrations in maintaining efficiency is undoubted, and Dr. Irvine's book will stimulate interest in these matters in South Africa, where interest is much needed. The subject of mine rescue work is advancing so fast in this country that text-books dealing with its practice are soon behind the times. For example, the few pages devoted to training and organisation of mine rescue work seem to be behind that suggested by our Coal Mines Act. The regulations of this Act provide an excellent scheme of organisation which has been put into practice, especially in the northern colliery district.

Part I. deals with anatomy and physiology on similar lines to our advanced manuals on the subject. Special emphasis is laid on first aid in mining accidents, with useful practical points often omitted in such handbooks. The physiology of respiration is not as detailed as it might have been, while the illustrations are more than usually clear and explanatory. In Part II. the equipment and organisation of first aid in mines is brief, little more than two pages of South African law being included in this section. The Red Cross plank stretcher is ceratinly worthy of adoption by mine managers in this country, owing to the impracticability of our ordinary stretchers in the awkward places met with during transport in a mine. The chapter on gaseous impurities in mines and their effects gives a good résumé of known facts, though the matter might be more clear and concise. The author gives precedence to nitrous fumes over sulphuretted hydrogen as a mine air impurity, a point which has long been neglected by previous authors on this subject. The description of sulphuretted hydrogen gas as reminiscent of "rotten eggs" is omitted in this volume; Dr. Irvine suggests "gob stink," a somewhat undefinable odour, as an indication of the presence of this gas, and repeats the same warning as a means of detecting carbon monoxide.

The account of the ways of detecting gases for mine rescue purposes is poor. Dr. Irvine maintains that a canary is not to be depended on to detect CO/0·1 per cent. (p. 332), although he admits the use of canaries as the only practical means of detection of this poisonous gas, without adducing experimental evidence to support it. He also states that if air is seriously deficient in oxygen, small animals will show symptoms of embarrassment before effects are produced on man. It has been shown, however, that a mouse will live in 7 per cent. or even less of oxygen, where a man would probably collapse, and in this country at least the condition of a mouse or canary cannot be used to give warning of deficiency of oxygen.

This book on the whole contains a handy collection of data which should be a valuable addition to first aid and mine rescue literature.

Intestinal Toxæmia;

or, Auto-Intoxication in the Causation of Disease. By ALEXANDER BRYCE, M.D., C.M., D.P.H.Camb. London: Andrew Melrose, Ltd. 1921. Pp. 180. 6*s.*

THIS book deals with a subject of great interest to the medical profession, for whom it is chiefly written; at the same time the author expresses a hope in the preface that his book may appeal to a wider public. Intestinal toxæmia is defined as "the auto-intoxication which owes its origin neither to food contaminated before it is swallowed, nor putrefying because of its content of noxious germs, but which arises from the digestion of foods by the bacteria normally present in the digestive tube." Had the subject been limited by this definition it might have been dealt with in the 180 pages which make the book, but unfortunately the author has been carried by his enthusiasm over an immense field of medicine which is largely unknown ground. Thus, on p. 27 the following among others are given as the causes of intestinal toxæmia: all dyspepsias, stasis from whatever cause, muco-membranous or other colitis, chronic nasal catarrh, adenoids and enlarged tonsils; all infectious disorders such as influenza and measles, and all conditions which reduce the toxicolytic power of the bowel, such as deficiency of digestive juices, alcoholism, tubercle and rheumatism. Only a method as orderly and condensed as that adopted by Liddell and Scott in the compilation of their dictionary, or as general in treatment as that adopted by H. G. Wells in writing a History of the World, could succeed in giving a clear view of the subject in so small a compass. Dr. Bryce's weakness is in his method, which consists alternately in explicit quotation from scientific work with exact reference to page and volume, and bald statement of a highly speculative kind. For instance, on p. 68, "it is an absolute certainty that pernicious anæmia can be produced by such small amounts of toxins as can be absorbed into the system from pyorrhœa alveolaris." There is also a tendency to express theories as facts, as in the statement that Still's disease "is due to an infection of the alimentary canal by the staphylococcus citreus." The book is written with the ardour of a missionary, and many diverse and interesting facts discovered in the course of recent research are correlated in a manner that stimulates the reader to new lines of thought and reflection. Putting aside the questions of sub-infection and bacteriæmia there are few who will disagree with the author's main thesis that intestinal toxæmia is responsible for much ill-health.

he wished to get married. Medical justification for marriage depended in the first instance on the diagnosis.

Whether he had ever had pericarditis I do not know; there was certainly no evidence of it when I saw him, but his statements as to the peculiar and significant variations in his pulse-rate during his illness were most suggestive and indicated the presence of auricular flutter. A pulse-rate of 70–94–140 is most easily explained by an auricular rate of 280 with a 4 : 1 or a 3 : 1 or a 2 : 1 ratio, and this was proved to be the case by polygraph and electrocardiograph. A condition of auricular flutter having been demonstrated it was satisfactory to find that the patient was little, if at all, disturbed by the varying rhythm, and though the heart was larger than normal there was no evidence of valvular disease or cardiac distress. Up to this point the outlook was good if the flutter could be arrested. Had the flutter persisted in spite of treatment, the prognosis would have varied according to the degree of slowing produced and maintained by digitalis.

Prognosis now depended on the response to treatment. To test the possibility of cutting short the flutter, the patient was again put to bed, and on May 7th 1 drachm of the tinct. digitalis was given daily. After 7 drachms had been taken the flutter ceased and was replaced by fibrillation. The dose of digitalis was then increased to ʒ ii. daily, and within 24 hours the action of the heart was normal. The question had become narrowed down to the probability of further attacks of a similar nature; no certain answer could be given, because there is a definite tendency to recurrence when once flutter has manifested itself, but it was reassuring to know that even if they recurred, adequate treatment would probably cut them short. Under the circumstances one did not feel justified in standing between the patient and his marriage.

Flutter, then, may present itself as an isolated attack which is never repeated. There may be numerous short paroxysms extending over many years, or the flutter may continue for months or years, and eventually pass into a normal rhythm. Much less satisfactory is the change into fibrillation when and if the latter persists, for this rhythm proves a still greater strain on the staying power of the heart. Experience has shown that when flutter occurs in paroxysms the first is generally the least severe. The most reliable guide to prognosis is the degree to which the heart and circulation are distressed by the rapid action, and the prognosis is always unfavourable in the presence of old-standing myocardial or chronic valvular disease.

Summary and Conclusion.

The rapid action met with in Group 1 is a symptom and nothing more; the manner of systole is normal, the rhythm is physiological. The element of danger is not in the rapid action but in the reason for its presence. The prognosis will depend on an accurate understanding of the primary cause and the possibility or otherwise of remedying it. In Group 2 the rapid action is fundamentally different. It originates in the heart itself. It is a disease rather than a symptom. The actual contraction of the heart is abnormal and less efficient. In some patients the auricles and ventricles contract simultaneously, and in the majority the auricles have ceased to take any share in the circulation. The presence of tachycardia and irregularity is evidence of the existence of a pathological rhythm.

The immediate danger to the patient results from the exhausting effect of the rapid and relatively inefficient action of the heart. The faster the rate the greater the danger. The prognosis improves as treatment is effectual in slowing the heart. Rate for rate the prognosis is graver if the action is irregular. Irregularity results in inadequate filling of the heart during diastole.

In every case the immediate prognosis depends on the manner in which the heart has responded to the extra strain entailed by the sudden change in the rhythm. The accuracy of the more remote prognosis will depend on an acquaintance with the usual course, followed by the various forms of rapid action under differing conditions.

Of the three divisions of Group 2 the following is the order of severity: (1) paroxysmal tachycardia; (2) auricular flutter; (3) auricular fibrillation; and of the rheumatic and arterio-sclerotic types of fibrillation the rheumatic is on the whole more amenable to treatment.

VITAMIN-A CONTENT OF OILS

PREPARED FROM LIVERS OF THE COD, COAL-FISH, AND HADDOCK.

BY S. S. ZILVA, D.Sc.,

AND

J. C. DRUMMOND, D.Sc.

IN a previous communication in THE LANCET[1] attention was drawn to the exceptionally high content of vitamin A in cod-liver oil. The necessity of studying the preparation of this oil was urged in order to ascertain whether the best conditions were observed in its preparation. This problem has since been taken up by us as a part of an extensive investigation on the vitamin-A value of edible oils. During the early part of this summer we had the opportunity of visiting the Norwegian fishing grounds, where we inspected a number of cod-liver oil factories and where we collected numerous samples of oils of different origin and from different stages of the various processes of preparation. These samples are now in progress of being investigated in our laboratories.

The origin of the livers from which the medicinal cod-liver oils are prepared is of special interest. The Norwegian cod-liver oils are made from livers of fish caught near the Lofoten Islands and off the Finmarken coast. The fishing off the Lofoten Islands takes place between the end of January and the end of April. The catch during this season consists almost exclusively of mature cod which come to spawn on the coastal banks of the islands. After the spawning season is over these cod migrate to the Finmarken and eventually to the Murmansk coast. They reach the former place the end of May, where they join shoals of immature cod coming from the north. The physiological condition of the cod fished off the Finmarken coast is therefore different from that of the cod fished off the Lofoten Islands, since the Finmarken cod consists mostly of spent mature and immature fish. Another striking characteristic of the Finmarken oils is that they are mixed, owing to the fact that besides the cod (*Gadus morrhua*) other gadoids—namely, coal-fish (*Gadus virens*) and haddock (*Gadus aglefinus*) are being caught at this time in the Finmarken waters. In most of the Finmarken cod-liver oil factories the livers of the fishes mentioned above are worked up together, and consequently the so-called "cod-liver oil" from Finmarken is seldom pure cod-liver oil and may even sometimes contain no cod-liver oil at all. It was therefore our first problem to ascertain the relative potency of cod, coal-fish, and haddock liver oils.

The oils were tested out quantitatively by the method devised by Zilva and Miura and described elsewhere. By this method it was previously found that a daily addendum of 2 mg. of certain crude cod-liver oils was sufficient to promote growth in rats which had ceased growing owing to a deficiency of vitamin A. The high potency of such oils can be realised when one remembers that as much as 0.5 g. of butter is sometimes required to achieve the same result. The above oils were, however, of unknown origin. The oils utilised in this experiment, on the other hand, were collected by us personally in Finmarken, and prepared from the unmixed livers of the respective fishes caught this season in that locality. They were clear, slightly yellow oils, composed of the first two fractions drawn off the steamed livers. The pure cod oil was found just as potent as the liver oils hitherto tested out quantitatively, a daily dose of 2 mg. being required to induce the resumption of growth in rats. Coal-fish oil was even a little more active; slightly less than 2 mg. was found to be the minimum daily dose. Haddock oil, although not so active as the cod and coal-fish oils, showed also a high potency, the minimum daily dose in this increased sexual desire" (p. 69), but does not point out that it is purely speculative, though expressed in anatomical terms that seem much more convincing than psychological ones. The chapter on Ethical Considerations is a plea for reality-thinking instead of the false modesty and prudery that lead youth to learn in a prurient school a faulty antithesis between morals and reality. The final chapter, on Treatment, contains a demand for knowledge on the part of the instructor, and its tone can be indicated by the sentence, quoted from Brill: "It must not be imagined that robbing masturbation of its horrors encourages the practice."

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[1] Zilva, S. S., and Miura, M.: THE LANCET, 1921, i., p. 323.

The book is not a mere product of enthusiasm, as so many on "sex enlightenment" tend to be, but a scientific study of a subject the complexities of which are fully realised by the author.

A MANUAL OF VETERINARY PHYSIOLOGY.

By Major-General Sir F. SMITH, K.C.M.G. Fifth edition. London: Baillière, Tindall, and Cox. 1921. Pp. 892. Price 31*s*. 6*d*.

IN this well-tried manual Sir Frederick Smith's aim has been to show the bearing of physiology on the practice of veterinary medicine, surgery, and hygiene, a task of no little difficulty in view of the still very imperfect knowledge of the pathology of disease in animals. As Director-General of the Army Veterinary Service his opportunities of observing the working of the digestive and locomotor systems in horses were unrivalled. It is natural, therefore, for the book to be more confident in its treatment of equine than of bovine physiology. The arrangement of the subject is a section on each bodily system in turn, beginning with the blood and the heart, and ending with generation and development, two more general chapters dealing with Growth, Decay, and Death, and the Chemical Basis of the Body completing the book. The author has not only produced a noteworthy book but has known how to keep pace with the advancement of his subject. Undoubtedly, he is right in regarding laboratory team-work as essential for further progress.

VITAMINES—ESSENTIAL FOOD FACTORS.

By BENJAMIN HARROW, Ph.D., Associate in Physiological Chemistry, College of Physicians and Surgeons, Columbia University. London: George Routledge and Sons, Ltd. 1921. Pp. 219. 10*s*. 6*d*.

DR. HARROW has made a good effort to present in a popular form the subject of nutrition, with special reference to accessory food factors. The title of the book is rather misleading, as only the second half deals with vitamins, the first part being devoted at considerable, if not unnecessary, length to calorie values, carbohydrates, fats, and proteins. The chapter on amino-acids and quality of proteins is the most succinct. The space so occupied might well have been given to the subject of vitamins, since this important part of the work consequently suffers from curtailment. Many more illustrations of the effects of the deficiencies due to absence of vitamins in the foods could have been included so as to emphasise the importance of these factors in the diet. In fact, the description of the vitamins is not quite on the level of recent teaching, and several minor errors occur. Extreme sensitiveness to touch is not characteristic of rickets, this symptom being due to complication with infantile scurvy. Bloch's cases of keratomalacia, which were cured by cod-liver oil and a whole-milk diet, are quoted as evidence of an association between vitamin A and rickets. If rickets is mainly associated with the absence of vitamin A (assuming sufficient B and C vitamins to be present in the ordinary food) it should now be possible to cure and prevent the disease. In any case the general reader will do well to keep himself informed of the work being done on this and kindred questions, and a popular book such as Dr. Harrow's should help to disseminate useful knowledge.

MATERIA MEDICA,

With Notes on Prescription Writing. By JAMES BURNET, M.A., M.D., Ch.B., M.R.C.P. London: J. and A. Churchill. 1921. Pp. 80. 4*s*. 6*d*.

THIS small book is one of the "Students' Synopsis Series," and is intended to aid the medical student in his study of materia medica. The various chemicals and drugs are arranged alphabetically, a very brief description being given of each; the doses are noted and the official preparations are enumerated. We think the author has made too great sacrifices for brevity. The information supplied is often incomplete; botanical source and natural order of the vegetable drugs are only rarely stated, and the descriptions are sometimes inadequate for recognition purposes. The last ten pages of the book contain a few useful notes on Prescription Writing, Incompatibility and Solubility.

JOURNALS.

BRAIN. Vol. XLIV., Part 2.—Percy Sargent: Lesions of the Brachial Plexus associated with Rudimentary Ribs. This is an analysis of 65 cases and the author's conclusions are as follows: (1) Variations in the composition of the brachial plexus are apt to be associated with costal abnormalities, prefixation with a seventh cervical rib, and postfixation with an abnormal first thoracic rib. There is, however, no regular relationship between the costal and neural anomalies. (2) Of the several different types of cervical rib met with clinically that which most frequently requires treatment by operation is represented by an abnormally large non-jointed costal process, continued onwards as a dense fibrous band, to be attached to the first thoracic rib behind the sulcus nervi brachialis. (3) Symptoms of gradual onset result from continual slight traumatism to the eighth cervical root or lowest cord of the plexus, caused by the tightening of the band during respiration and in certain movements of the arm. (4) With a post-fixed plexus symptoms referable to the first thoracic root may be caused by the pressure of a normal first thoracic rib. (5) Vascular symptoms are vaso-motor in origin and result from injury to the sympathetic fibres shortly after their entrance into the eighth cervical and first thoracic roots. (6) The results of operative treatment in 50 cases have been traced for a period of from 2 to 12 years. Pain was cured in 19 cases and relieved in 8. Muscular wasting was cured in 12 cases, relieved in 12, and unrelieved in 7. Vaso-motor symptoms were cured in 14 cases, relieved in 6, and unrelieved in 2. Operation is not called for in all cases. Gentleness of manipulation, clean dissection, and a bloodless operative field are essential.

C. U. Ariens Kappers: On Structural Laws in the Nervous System; the Principles of Neurobiotaxis. After some historical remarks the author begins with the observation of Cajal that "if during embryonic development new axons pass to some region of the central nervous system, ganglion cells may approach these axons in two different ways, either by sending forth long dentrites or by a migration of the cell body itself." Kappers has found that this shifting of nerve cells is a very common occurrence, and he maintains as a result of his comparative researches on the topographic differences of homologous cell-groups in the central nervous system of vertebrates that it is determined by the places from which the largest number of excitations reach the cells; further, that not all excitations but only those with a functional relationship to the cell-group in question will cause this shifting. Next, whereas the growth of the dentrites is a stimulo-petal tropism, the growth of the axon bears a stimulo-fugal character. The occurrence in the same cell of two opposed tropisms the author believes to be due to a bio-electric influence, a species of galvano-tropism. The investigations of Sven Ingvar recently have proved the electric-galvanotropic character of the outgrowth of the axon.

A CASE OF
COMBINED EXTRA- AND INTRA-DURAL HÆMORRHAGE; RECOVERY.

BY M. L. TRESTON, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN, I.M.S.; SURGICAL SPECIALIST, INDIAN ARMY.

THE case here described is that of a young, well-developed Hindu. He was found unconscious, in the early hours of the morning, some distance from his camp, and was sent to the nearest base hospital, at Basra. On investigation it appeared that he had had an argument with one of his companions the night before which ended in a set-to fight with sticks.

On admission.—The patient was comatose and breathing stertorously. Temperature 102° F., pulse low and bounding. There was marked bruising, but no external wound, over the left side of the scalp, with congestion of both eyes, slight proptosis of the left eye, and dilatation of the left pupil. The right upper extremity was paralysed. A diagnosis of extra-dural hæmorrhage was made, and an immediate operation undertaken. There was no fracture of bone to be discerned beneath an extensive and œdematous skin flap. A ¾ inch trephine was applied over the Sylvian point, and on removal of bone blood gushed out, dark and with clots at first, but rapidly becoming arterial. It was found to be coming in jets from the bony canal of the middle meningeal artery, at the antero-inferior angle of the parietal bone. The bone was carefully chipped away, and the proximal end of the artery found and ligatured.

This part of the operation completed, the dura projecting into the wound was seen to be bluish-black in colour, tense, and pulseless. A crucial incision was made into it, and a mass of blood clot gently removed. The clot, about 1½ inches in extent, was lying over the divisions of the Sylvian fissure, and extended into the main limb of the fissure for a short distance. No bleeding points were observed after removal of the clot, and the brain surface appeared healthy. The opening in the dura was closed and the skin flaps sutured.

Progress.—The patient regained consciousness 12 hours after the operation. The wound healed by first intention, and the movements in the upper limb began to return slowly. But there was complete motor aphasia; the patient could not write, and his efforts at speaking only resulted in a long drawn ŏ. He understood what was said to him and could read and make his wants understood by signs. During the four weeks he was under observation improvement in arm movements continued, but the aphasia remained the same.

The case is of interest in view of recovery from extra-dural hæmorrhage, combined with intra-dural hæmorrhage, and with damage to the motor speech area.

TWO UNUSUAL GYNÆCOLOGICAL CASES.

BY J. C. HOLDICH LEICESTER, M.D., B.S., B.Sc., M.R.C.P. LOND., F.R.C.S. ENG.,
LIEUT.-COLONEL, I.M.S.; PROFESSOR OF MIDWIFERY AND GYNÆCOLOGY, MEDICAL COLLEGE, CALCUTTA; SURGEON TO THE EDEN HOSPITAL FOR WOMEN, CALCUTTA.

THE following cases are sufficiently unusual to be worth recording. The first, an example of malignant disease infecting the cervix after a subtotal hysterectomy for what was apparently a simple fibroid growth, also shows what an extensive growth can be present with such a short and trifling history.

CASE 1. *Columnar carcinoma occurring in the cervix left after a subtotal hysterectomy.*—Mrs. W., aged 40, came to see me on August 3rd, 1920, with the following history. She had been twice married, had had three children, the last 16 years ago, and one miscarriage at the fifth month, 14 years ago. In 1913 she had had the uterus removed by subtotal hysterectomy, apparently for "fibroids," and had not menstruated since. Two months ago she had a very slight blood discharge from the vagina; this occurred again one month ago, lasting only half an hour or so in each case; otherwise she was feeling perfectly well. On abdominal examination nothing abnormal was detected except a movable right kidney. On pelvic examination the cervix was found to be freely movable, but rather hard, with slight ulceration on the left side, bleeding on examination. On August 5th, under chloroform, I removed a small wedge-shaped piece of the cervix for examination which Major F. P. Mackie, Professor of Pathology at the Calcutta Medical College, kindly cut for me and reported as definitely showing malignant changes. On the 20th, under chloroform, I removed the whole cervix and upper part of the vagina by the extended method of Wertheim. None of the glands were involved. The patient made an uninterrupted recovery and was discharged on Sept. 25th; the vagina had healed and there was no thickening to be felt anywhere. The patient then underwent a course of radium treatment and has remained well up to now. Major Mackie kindly examined the specimens for me and reported an extensive growth of columnar carcinoma in the cervix, but so far as could be seen the operation had removed a good margin of healthy tissue all round.

CASE 2. *Early rupture of a tubal gestation.*—P. M., a Bengali, aged 27, was admitted to the Eden Hospital on Feb. 5th, 1920, with the following history. She had had seven children, the last seven months ago. She had had two menstrual periods since her confinement, the last being from Jan. 12th to 17th, which was normal in every respect, and came at the proper date. At 7 A.M. on Feb. 5th, on getting out of bed, she suddenly felt very ill with pain in the lower abdomen on the right side, which had gradually increased up to the time of her admission to hospital at 2 P.M. Condition on admission: patient blanched, pulse 142, soft and small; abdomen was somewhat distended and tender but not hard; some dullness in both flanks. Per vaginam some sense of fullness noted on the right of the uterus. A diagnosis of ruptured ectopic pregnancy was made. The patient was prepared for an operation, which was performed about two hours later. On opening the abdomen I found a fair amount of dark blood-clot, and on examining the pelvic organs there was a slight dilatation of the right Fallopian tube in the isthmic portion, about the size of a marble, which had ruptured. The tube was removed and the abdomen closed, 1¼ pints of normal saline being left in the peritoneal cavity. Nearly one pint of blood and blood-clot had been removed from the abdomen. The patient had some fever for the first four days, but after this she made an uninterrupted recovery.

Reviews and Notices of Books.

THE PRINCIPLES OF THERAPEUTICS.

By OLIVER T. OSBORNE, M.A., M.D., Professor of Therapeutics, Yale University. Philadelphia and London: W. B. Saunders Company. 1921. Pp. 881. 35s.

THERE is an opinion prevalent in certain advanced circles that the drug treatment of disease is relatively useless and that the prescription of a bottle of medicine will soon be a thing of the past. It is a refreshing change, therefore, to read the dicta of Prof. Osborne that "the absolutely drugless treatment of acute and really tangible chronic illness is a myth"; that "drugs must be, and are used legitimately for the vast majority of all patients"; and that "if there is nothing the matter with a patient, of course he can be cured of what he did not have by what he does not get." The book is divided into 15 parts, of which the first deals with general principles, and in it the need for the introduction of the metric system is emphasised. Parts 2 and 3 concern the preparations, prescription, and therapeutics of the valuable drugs of the U.S.A. Pharmacopœia. Only useful drugs that have a demonstrable activity are described, and the author advises simple prescriptions containing the best official preparation of the drug and, if soluble, in the most agreeable solution. The therapeutic action of drugs is discussed on sound lines from the clinical and empirical standpoint, and the subject is simplified by the exclusion of drugs of doubtful value and the omission of many preparations. Readers may vary in their opinion as to whether the author has made a wise selection in his choice of drugs, and some will find their favourite drugs omitted; thus there is no mention of sodium bicarbonate and sodium chloride in the treatment of cough, nor is there any reference to tolu among expectorants. Prof. Osborne states that there is no excuse for the use of squills as an expectorant, and that heroin has no activity not shared by codeine; he even says that the tendency of heroin to cause a pernicious habit should preclude

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of
Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

ARTERIAL HYPERTENSION:

ITS CLINICAL MEASUREMENT, PATHOGENESIS, PROGNOSTIC VALUE, AND TREATMENT.

BY DR. L. A. AMBLARD,
FORMERLY INTERNE, PARIS HOSPITALS; MÉDECIN CONSULTANT, VITTEL.

THE earliest research work upon arterial tension and its application to current clinical practice, was carried out at the same time by Potain in France and Bach at Vienna. During the period from 1897 to 1907 practically all the work on the necessary instrumentation, on pressure, and on the methods of use of the knowledge gained, was performed outside France, by Mosso, Sahli, Riva-Rocci, Recklinghausen. Hill and Barnard, Oliver, Janeway, Erlanger, and others. In France, however, Marfan, Teissier, and Bouloumié must be mentioned; also Huchard, who demonstrated in a continuous series of publications the extreme importance of arterial hypertension, making of it the capital symptom of arteriosclerosis. In other countries the various pressures, systolic, diastolic, and mean, together with pulse pressure, were studied; in France up to 1907, before the publications of Amblard (of Vittel), the systolic pressure alone had been the object of measurement and study.

At this time Amblard showed the importance of simultaneous measurements of maximum and minimum pressures, and described the method, based on the work of Marey, and called the "oscillation method," which is now most commonly employed. Shortly afterwards he produced his sphygmometroscope for measurement of the two pressures; by this oscillation method the maximum pressure is obtained automatically and with precision.

Eventually Pachon produced his manometric sphygmometer, a perfected form of Pal's sphygmoscope, the coloured liquid indicator of which is replaced by a needle moved by the modifications of a capsule which retains a constant tension no matter what degree of pressure is applied to it. Since that time new work on arterial tension and its measurement, symptomatology, diagnosis, and prognosis, has constantly been published. Amongst all this research may be especially noted that of Vaquez. Widal, Josué, Amblard, and Gallavardin, in whose recent considerable work on "Arterial Tension in Clinical Practice" are set forth and discussed the most recent advances in this subject. The perfecting of apparatus has facilitated very complete clinical study of tension; the knowledge now at hand of maximum and minimum pressures links this clinical study up with physiological study, and considerably enlarges a hitherto narrow field of clinical research, permitting the hope that in a short while the estimation of the functional power of the heart will become a matter of ease; its difficulty is lessened almost daily by the publishing of fresh information.

Causation of Arterial Tension.

Arterial tension is the result of two antagonistic elements which equilibrate each other: (1) the force of contraction of the left ventricle, which tends to drive the blood from the centre to the periphery, and (2) the resistance offered to the flow by the more or less accentuated closing up of the small peripheral blood-vessels. This resistance to the flow is only susceptible to minimal variations from one moment to another. The force of ventricular propulsion is intermittent in its increase of the blood content of the arterial system. The pressure to which the arterial wall is subjected varies constantly, growing under the influence of the blood increase to a maximum—the maximum arterial tension, rapidly attained and then rapidly diminishing during the period separating one wave of increase from the next. Maximum arterial tension, then, is the index of ventricular effort; minimum tension is the index of resistance to the blood flow. In a young man the space separating these two pressures—the variable or pulse pressure—is about 60 mm. Hg, and the figures of normal tension range from 120 to 140 mm. Hg maximum, and from 70 to 85 mm. Hg minimum. When either factor—either cardiac contraction or peripheral flow—is modified, modification also results in the figures noted above. If modifications take place in the same direction, the conclusion may be drawn that the degree of tension has varied in the same direction; if the modifications are in opposite directions, no immediate conclusion can be arrived at concerning the modification of the degree of tension. That is to say, it is absolutely necessary, in order to estimate the arterial pressure of a subject, always to note the maximum and minimum pressures.

Measurement of Arterial Tension.

The importance accorded at the present time to arterial tension necessitates precise measurement. Some writers have attempted manometric improvements, others have worked to limit as far as possible the subjective element of measurement, and to substitute the automatism of a tactile instrument. At present two fundamental methods of measurement are employed in France, being undertaken by different means. The first of these methods is that of appreciation of tension by observation of altered blood pressure in a segment of a limb under the influence of a compressor placed on that limb. Of this type is Potain's sphygmomanometer, in which a rubber bulb is used to compress the radial artery, this bulb being connected with a metal manometer which indicates the degree of external pressure on the artery; the indicator, placed on the radial artery below the point of compression, shows the modification of blood pressure caused by that compression; the point of disappearance of pressure indicates the maximum. This instrument, the first to be designed for the purpose, is difficult to handle in spite of its apparent simplicity, and its recording of results is so influenced by personal equation that its employment is rapidly becoming more restricted. Based on the same principle of compression are the method of Riva-Rocci and those derived from it, in which is used a rubber brassard, the moment of disappearance of the pulse at the radial artery being registered. Satisfactory results are thus obtained, mainly because digital palpation is replaced by an oscillating indicator which, as in the methods of Vaquez and Barré, permits very exact measurement of the maximum tension. The Riva-Rocci apparatus also permits study of minimum tension by means of two procedures based on modification of pressure below a compressed point. One of these, called Ehret's method, consists of progressive decompression of a previously distended brassard; the growing amplitude of pulsation is felt by a finger inserted beneath the edge of the brassard. At a certain moment a particular vibration of the pulse is felt; this point past, the pressure rapidly diminishes. The figure read on the manometer at the moment when the amplitude of the brachial pulse begins to diminish is that of minimum pressure. The other method, called that of Korotkow, consists of the same application and inflation of the Riva-Rocci brassard, and of estimation of the sounds made by the passage of the

PHARMACY.

Materia Medica and Pharmacy for Medical Students. Fourth edition. By REGINALD R. BENNETT, B.Sc. Lond., F.I.C., Pharmaceutical Chemist. London: H. K. Lewis and Co., Ltd. 1921. Pp. xxiii.+264. 7*s.* 6*d.*

THAT a fourth edition of this handy summary of materia medica and pharmacy has been called for is in itself evidence of the value of the book, and shows that it fills a useful place in the student's library. The present edition resembles its predecessors, but has been enlarged by the inclusion of further information regarding the action and uses of the drugs and the conditions and diseases in which their preparations are given. The first 24 pages are introductory, and define various pharmaceutical terms used in the pharmacopœia and others in common use but unofficial. Then follow brief remarks upon the nature of the various plant principles, and a summary of the system of weights and measures used in medicine. In the main part of the book all the drugs in common use are described, with their botanical source, constituents, and official preparations; they are grouped according to their pharmacological action. The last sections give valuable dose tables, and four appendices deal with various types of incompatibility and with the phraseology of Latin directions in prescriptions. A good index completes the volume. The information given is both concise and reliable, and we recommend the book to medical students.

Drugs in Commerce: Their Source, Preparation for the Market, and Description. By JOHN HUMPHREY, Ph.C., F.J.I. London: Sir Isaac Pitman and Sons. 1921. Pp. ix.+116. 3*s.*

THIS volume is the latest addition to the Common Commodities and Industries series. Mr. Humphrey begins with a short introductory chapter describing the routes by which drugs are brought to this country and the kind of packages in which they arrive. There follows a series of six chapters giving a brief account of the commoner drugs (including those official in the British Pharmacopœia) arranged in alphabetical order. Each is briefly described in such a way that the reader may be able to identify it; the botanical and geographical sources are given and the active principles enumerated. A brief account of the method of collection and preparation for the market is included; but the natural orders of the plants and animals yielding the drugs are not given. The book is intended more for the general reader than for the specialist in pharmacognosy, and will serve a useful purpose in giving concise and accurate information on roots, rhizomes, stems, leaves, flowers, fruits, seeds, gums, resins, gum-resins, &c., as well as on the products of animal origin used in medicine, either in a crude state or for the preparation of galenicals. The illustrations include several photographs of drug packages and sale rooms, and line drawings of a number of the more important drugs.

THE CARE AND FEEDING OF CHILDREN.

Ninth edition. By L. EMMETT HOLT, M.D., LL.D., Professor of Diseases of Children in the College of Physicians and Surgeons, Columbia University. London: D. Appleton and Co. 1921. Pp. 149. 4*s.*

THIS little manual, which first appeared in 1891, has now reached its ninth edition, having been revised and enlarged so as to incorporate the more modern teaching on infant care. The book is written in the form of a catechism, the directions and explanations being given throughout in such simple language as admirably to adapt it for the use of the mothers and of the nursery nurses to whom it is addressed. Some, at least, of the recommendations made by Dr. Holt would not be unreservedly endorsed in this country. The five meals daily advocated for children during their second year would be considered excessive by many authorities. The quantity of milk recommended is also far in excess of that usually given during the second year, about 40 oz. daily being advised, and for children of three to seven a quart daily. Excellent formulæ are given for the various modifications of cows' milk, but there is no mention of the citration of milk as an alternative to excessive dilution. A valuable feature in the book is the stress laid upon the principles underlying infant feeding. An introduction is contributed by Dr. Eric Pritchard, who expresses the belief that the manual will act as an incentive to the establishment in this country of training schools for nursery nurses similar to those founded in America by the author.

MEDICAL CONDUCT AND PRACTICE.

A Guide to the Ethics of Medicine. By W. G. AITCHISON ROBERTSON, M.D., D.Sc. London: A. and C. Black, Ltd. 1921. Pp. 168. 6*s.*

THIS is a very good little book, and contains information upon more subjects than the important one of how the young practitioner should behave. Ethics for medical men, and indeed for all men, are admirably summed up in that portion of the Catechism of the Church of England which is known as "My Duty towards my Neighbour." But there are special problems connected with medical work and practice which can only be answered by a medical man who has attained ripe years. Dr. Robertson's book contains the solution of such problems, together with counsel upon the period between qualification and the commencement of practice. The advice in this chapter and, indeed, throughout the whole book is full of sound common sense, and the young practitioner who follows it will be saved many a stumble in his professional walk of life. Chapter XIV. deals with the question of medical secrecy, which is at the present moment exercising the minds of medical men to a great extent, and all will not agree with some of Dr. Robertson's views as expressed in the chapter which we have mentioned. One very useful part of the book is an indication of the manner in which Scots law differs from that of England in certain points. Considering its size, the book is extraordinarily complete, and there is only one matter in which we think that Dr. Robertson has failed to be explicit, namely, in the paragraph about the administration of anæsthetics (p. 153), where he would have done better to give a warning that it is unwise for a medical man to administer an anæsthetic to a female patient except in the presence of a third person.

AUTOEROTIC PHENOMENA IN ADOLESCENCE.

Second edition. By K. MENZIES. London: H. K. Lewis. 1921. Pp. 100. 5*s.*

IN a recent number of a well-known American medical journal we read: "The climax . . . . . is not infrequently consummated in the doctor's office when the youth is bluntly confronted by the crippling results following masturbation." The underlying assumption is common in this country, and when evidence for it is sought there often arises a storm of protest such as follows only when our most irrational beliefs are questioned. The laity firmly believe in the dreadful effects of masturbation, and there results an enormous amount of mental conflict and remorse, often increased if the sufferer seeks aid or advice. The only literature likely to reach him is written by quacks, or by well-intentioned people who vie with them in attributing a terrifying host of evils to the practice.

Most medical text-books give scanty and almost furtive references to the subject, and the appearance of a second edition of Mr. Menzies's book indicates that it has satisfied a want. He accepts and uses psycho-analytical theories (perhaps a time will come when it will not be necessary for so many writers to give us preliminary expositions of these theories), but he quotes freely from authors of all views. He mentions Bang's view that "with every irritation of the urethra there is a corresponding irritation of a certain portion of the brain, which irritation excites the person to true arterial hypertension has been made possible without danger of confusion with other circulatory states having the appearance of hypertension. Measurement of maximum tension alone, when abnormally high, as in patients with aortic insufficiency, has led to these cases being considered hyperpietic; but the complementary information given by concomitant measurement of minimum tension furnishes an important distinction between pure aortic insufficiency—e.g., in typhoid and rheumatism—and insufficiency due to specific aortitis. In the former class the affected valve no longer opposes during diastole the reflux of blood from the aorta towards the ventricle (this condition is indicated by a diastolic murmur); an abnormal depression of tension in the arterial system at the moment of diastole is the result. There is, then, diastolic hypotension. But as it is necessary to ensure circulation that the blood be impelled from the heart towards the periphery under a certain mean pressure, minimum hypotension must be compensated by an exaggeration of maximum tension; thus in pure aortic insufficiency are found habitual tensions of 170–60, the maximum exceeding the normal maximum of 140 by 30 mm. Hg and the minimum not attaining the normal minimum of 80. In specific aortic insufficiency the pressure readings may appear to be those of pure insufficiency so long as a renal sclerosis has not produced its customary effect of hypertension. At that moment it is not possible to distinguish the nature of the trouble by measurement of tension alone. Only when renal sclerosis has progressed sufficiently does distinction become possible, for at that moment the elevation of minimum tension to the normal level—or above it—indicates the specific nature of the cardiopathy. With the figures 240–100 mm. Hg, for example, specific aortic insufficiency is certainly present, with an already considerable renal lesion. I do not emphasise the fact that the transient hypertension arising by painful crisis in tabes, or that due to excitation of a heart already prodigal of effort, or an excessive tachycardia, can slightly raise the pressure; I prefer to confine my attention to true persistent hypertension.

True Persistent Hypertension.

Two principal factors may modify the pressure: exaggeration of the force of ventricular contraction (maximum hypertension) and exaggeration of resistance to the flow (minimum hypertension). Except in cases where under some transient influence—e.g., emotion—contractile energy is momentarily exaggerated, the maximum tension is only exaggerated to the precise degree necessitated by that elevation of the minimum tension to which it is subordinate. This minimum hypertension can be referred to two mechanisms: (1) The venous congestion which, supervening in advanced phases of valvular affections, cannot be without effect on the flow of blood in the small peripheral arterioles; (2) much more important, the obstruction of these small arterioles. The true hyperpietic subject is one in whom a peripheral spasm raises the minimum tension and renders necessary a maximum tension sufficient to maintain the outward circulation from the centre to the periphery (Amblard). Normally minimum tension is about 70 mm. Hg, and maximum about 130 mm Hg, the various arterial pressures which arise being contained within the limits of 60 mm. Hg. A minimum hypertension of 40 mm., for example, necessitates a maximum hypertension of 100 mm. But various intervening factors (notably the elasticity of the arterial wall, which varies with the causal malady and with functional abnormality) so modify normal functions that the rise of minimum tension is always accompanied by a proportionately larger rise of maximum tension—e.g., a minimum of 120 mm. Hg demands a maximum of from 200 to 220 mm. Hg. If the necessary space between the maximum and minimum figures is maintained, circulation will be ensured under conditions abnormal but relatively satisfactory. The cardiac muscle becomes hypertrophied to perform the extra work imposed upon it by the anatomical or functional defect of the arteries until it slowly or rapidly breaks down. Clinically, hypertension sometimes appears, frequently associated with more or less marked troubles relating to renal insufficiency; but sometimes very careful investigation—qualitative and quantitative—of renal function and of the rhythm of urinary elimination gives no sign indicating disturbance of these functions; arterial hypertension is then the only symptom reported. In the first instance it is easy to connect the hypertension with a renal lesion and to act accordingly (hyperpietic nephritis of Widal); in the second instance it is more difficult to confirm this relation.

Any infection can cause lesions of chronic nephritis and the condition of hypertension. But the latter seems particularly closely allied to the evolution of syphilis (which disease should always be examined for in a hyperpietic patient), apart from several very clear cases where supervening events can be unhesitatingly connected with a recent affection (e.g., scarlatina) frequently complicated by nephritis, or with an evident intoxication (e.g., lead poisoning).

Clinical Divisions of Hyperpietic Subjects.

Clinically, hyperpietic subjects may be divided, from an ætiological standpoint, into several groups, as follows:—

1. Patients, usually young, in whom hypertension follows more or less recent scarlatina or acute infection.
2. Cases of industrial lead poisoning, common in the labouring class, exceptional in other classes.
3. Young hereditary syphilitics, the type of whom is the arterio-sclerotic of about 25 years of age, with hard arterial walls, whose radial arteries "roll" beneath the finger, who have apparently healthy kidneys and an arterial tension of about 170–100 mm. Hg, and in whom arterial hypertension is connected with a sclerosing process resulting from specific hereditary distrophy.
4. Hereditary syphilitics at a later age, when renal lesions at first insignificant have developed; and also other syphilitics, 20 years after their infection, the type of whom is the hyperpietic patient of 45, who admits infection, or denies it deliberately or in good faith.
5. Senile sclerotics, the type of whom is the hypertensive patient of 65 or 70, in whom the hypertension is of mixed origin, being partly functional, due to peripheral arterial spasm, but chiefly connected with senescence of the arterial walls.
6. Other patients in whom syphilis is not detected, who are perhaps sound in that respect, but have gout or diabetes (although in many cases of hypertension during these two diseases syphilis, hereditary or acquired, must be suspected, and only dismissed from possibility after very careful examination).
7. Lastly, patients with transient forms of nephritis of unknown infective origin, in whom the hypertension remains constant for a while, but diminishes with the causal affection.

I consider all permanent hypertension to be of renal origin, and clinical evidence seems to support the contention; the hypertension, at first isolated, has added to it by degrees various disorders, not previously present, of renal insufficiency. When there is no albuminuria, no abnormality of diuretic rhythm, no disorder of renal function, it does not follow that the kidney is anatomically intact; possibly we owe this apparent anomaly to insufficient means of appreciating renal function. In the statistics of Janeway, and in those of Fischer, dealing with post-mortem findings in numerous cases presenting permanent arterial hypertension, the cases showing indubitable renal lesions were very few.

Causation of Hypertension.

It is, however, the possible existence of these cases of isolated hypertension which has permitted Gull and Sutton to attribute to hypertension another cause—namely, hindrance to the flow of blood by generalised arterial lesions, the kidney being ultimately affected, but the morbid condition arising in the arteries. The results of Tripier and Brault seems to run counter to this theory; these writers scarcely recognise the existence of generalised arterio-sclerosis, admitting only that of lesions localised in

That the galvano-tropism of the dentrites is actually opposite to that of the axon has also been confirmed experimentally by him. In trying to explain this opposite tropism we are immediately struck by the fact that this cathodic shifting only occurs with those parts of the neuron which contain Nissl substance; the axon which contains no Nissl substance exhibits a shifting in the opposite direction. This chromidial substance has been shown to have an acid character, and Hardy's researches show that acids favour the shifting towards the cathode of the colloidal fibrillæ that are suspended in it. The neurotropic theory explains mono-axonism as a result of the polar localisation of the anodotropic part of the cell, whereas poly-dentritism is based on the fact that the cell plasm has no place of predilection and is everywhere sensitive to the cathodic tropism. Lastly, the selectivity in the formation of neuronal connexions may be explained by the raised positive surface potential which appears near the cell shortly after some previous stimulation and which immediately follows its stimulation. Therefore the axon of a cell will be attracted to that cell among many adjacent ones with which it is functionally correlated, and upon this, no doubt, depends the connexion of the nervous system with the muscles.

J. L. Birley and L. S. Dudgeon: A Clinical and Experimental Contribution to the Pathogenesis of Disseminated Sclerosis. The paper contains the results of the clinical and bacteriological examinations of 35 cases, together with animal inoculations in 15 instances and a critical résumé of the work published in recent years on this subject. The clinical records are very full and illuminating. The following are the main conclusions. It is useful to recognise two clinical types of disseminated sclerosis: a remittent type and a chronic progressive type, which occur in the present series in the proportion of six to one. In early cases of the remittent type, once the acute disturbance has subsided the patient may present no clinical evidence of organic disease over prolonged periods. The possibility of spontaneous cure cannot, therefore, be entirely denied. The two types are to be regarded as manifestations of one and the same disease. The result of cultural and microscopic examination of the cerebro-spinal fluid is negative and no specific organism has been isolated in this series of experiments. The authors regard the transmissibility of the disease from man to animal unproved. They consider that the evidence in favour of the assumption that the pathogenic agent is a spirochæte is incomplete and in many respects unsatisfactory, and that the origin and nature of the morbid agent must for the present remain sub judice. But the evidence is overwhelmingly in favour of the view that the morbid process underlying the disease is inflammatory in character.

W. E. Gye: The Experimental Study of Disseminated Sclerosis. This is a record of the injection of cerebro-spinal fluid from cases of disseminated sclerosis into 129 rabbits and 15 guinea-pigs. Seventeen of the rabbits became ill and paralysed; the guinea-pigs all remained in good health. The author discards the suggestion that the animals which became paralysed suffered from that form of paralysis which is a frequent occurrence in rabbits kept in captivity, and he concludes, therefore, that disseminated sclerosis is probably an infectious disease and that the virus may sometimes be found in cerebro-spinal fluid.

M. G. Marinesco: Report on a Case of Myoclonic Encephalomyelitis of Malarial Origin. The case simulated the myoclonic form of encephalitis. The majority of the voluntary muscles were subject to myoclonic movements; the tendon reflexes of the limbs were abolished; the pupils were equal and reacted to light and accommodation; the abdominal and plantar reflexes were absent. There was slight rigidity of the neck and delirium. Lumbar puncture showed ten lymphocytes by division and the blood an intense mononuclear leucocytosis with numerous hæmatozoa and crescents. Post mortem, the striking features were thrombi of leucocytes in the veins of the cerebral cortex, the optic thalamus, the lenticular nucleus, the caudate nucleus, the grey substance of the peduncle, the red nucleus, and the corpora quadrigemina. In the white substance there was new growth of neuroglia of peculiar formation resulting in nodules. The size of these nodules was from 130 to 210 μ and they have been seen only in the deep white matter. Marinesco gives them the name "malarial nodules." Hæmatozoa were found in many cerebral capillaries in large numbers, but a search for them in the spleen, liver, suprarenal capsules, and ovaries was without result.

J. T. Wilson: The Double Innervation of Striated Muscle.

ANNALS OF MEDICAL HISTORY. June, 1921. New York: Paul B. Hoeber. 1921. Pp. 201. $2.50.—The editor, Dr. Francis Packard, may be congratulated upon this number of the Annals; Cardan and Montaigne, Byrhtferd of Ramsey are names which should interest everyone, though most probably the last named is unknown to the majority of English-speaking readers. There are also striking sketches of two American medical men—namely, Charles Caldwell and Lafayette Bunnell, the discoverer of the Yosemite. Dr. J. S. Taylor's paper on "Montaigne and Medicine" will certainly lead those who know their Montaigne to read him again, and those unfortunates who do not, to widen their minds by making a beginning of study.—Dr. Charles L. Dana recalls Cardan's famous visit to Edinburgh in 1552 to consult upon the case of that singularly disreputable prelate John Hamilton, Archbishop of St. Andrews, the very type of bishop to have "ordered a tomb in St. Praxed's Church" had his life not been cut short by the hangman. Dr. Dana mentions that Cardan on his return journey from Edinburgh went to see Frisius, the mathematician of Louvain, and incidentally remarks that "Doctors were often mathematicians in those days"; but he makes a slip when he goes on to illustrate this point by referring to Sancho Panza's remark when he fell off his mule, "Send for an algebraist." The word "algebra" in mediæval and even later times meant primarily redintegration and so bone-setting, while the Spanish word for a bone-setter is still "algebrista." That was what Sancho asked for, and not for a mathematician. The term occurs again in the incident of the fight with the Knight of the Mirrors (p. 35, vol. iii., of Duffield's translation): "The two went on . . . . until they reached a village where they had the good luck to find an algebraist who prescribed . . . ."—One of the most interesting papers in the number before us is that by Charles and Dorothea Singer entitled "An Unrecognised Anglo-Saxon Medical Text," being an account of the Handbook of Byrhtferd, an eleventh century MS. in the Bodleian. The MS. did contain a diagram, of which only a fragment remains, but fortunately this diagram had been copied into a MS. existing in St. John's College, Oxford, which is reproduced. The diagram illustrates the correlation of the macrocosm and the microcosm and the doctrine of the physical and physiological fours—e.g., four seasons and four ages of man; four humours and four cardinal winds, and so on. The diagram also contains two circles showing the relations of the months to the movements of the moon.—Dr. William Middleton gives a graphic account of Dr. Charles Caldwell. He was active in sanitary reform, but his character made him difficult to get on with.—A particularly interesting paper is that by Dr. Casey Wood on the First Scientific Work on Spectacles, published in Seville in 1623 and written by Benito Daca de Valdez, Notary of the Holy Office.—Among the reviews is one by Dr. David Riesman upon the Regimen Sanitatis. Therein he makes a statement which cannot be allowed to pass without protest; he talks of "the short stirring couplets of Celano's 'Dies Iræ.'" That wonderful composition happens to be written in trochaic triplets.

the pressure is not compatible even with very defective function of the vascular system, and the patient dies of progressive asphyxiation.

In other cases the heart fails slowly, with a terminal phase of progressive weakening of maximum pressure, whilst the minimum pressure remains at a sufficiently high level on account of the spasmodic toxic element which previously necessitated its elevation, and of the disorder induced in the peripheral flow by venous congestion associated with dilatation of the cavities on the right side of the heart. This failure is marked by an important auscultatory sign—i.e., presystolic gallop—and by modifications of the pressure curves during routine exercises, which were used, notably during the war, to record the coefficient of myocardial resistance to effort in soldiers undergoing examination. When the heart is beginning to tire, and can scarcely continue to perform the work entailed by persistent hypertension, the maximum and minimum pressures rise, but the elevation of maximum is not what it should be, because of ventricular deficiency; the necessary effort is made through a rapid and considerable increase of pulse-rate. Signs of circulatory trouble (œdema of the limbs, hepatic and pulmonary visceral stases, ascites) habitual in valvular patients correspond, in the last phase of arteriosclerosis, to these disorders of pressure.

Importance of Recording Pressures.

The possibility of recording hypertension when the condition apparently exists alone and only displays a slight degree of renal insufficiency makes of the pressure reading a clinical sign of capital importance, since it permits treatment of nephritis from its onset, before it has been manifested by any trouble otherwise appreciable. At this stage modifications of diet and certain drugs have more chance of slowing down the process of sclerosis; arterial hypertension is in this case an important danger-signal—its mere appearance proving an apparently completely healthy subject to have already received serious damage. As regards prognosis, hypertension seems to assume a degree of gravity in accordance with the age of the subject. In the aged, where the sclerotic and atheromatous process is long established and where renal insufficiency often exists, hypertension does not seem so important as in younger subjects. By the latter are meant patients of 45, in whom the symptom is always serious, and sometimes very serious. Although the gravity of very high figures cannot be denied in a general sense, the degree of maximum hypertension does not exactly indicate the patient's danger. The relation between maximum and minimum is more important in this respect, and the pulse pressure, which shows the functional value of the left ventricle. As the minimum pressure is raised, the maximum pressure is also raised—for reasons which cannot be detailed in this short study—but to a greater extent.

Treatment of Hypertension.

In spite of the knowledge recently acquired concerning the pathogenesis of hypertension, the secretion of hyperpietic renal substances, and the excess in the blood of adrenalin, cholesterin, or uric acid, therapeutic progress has not been remarkable. Whatever may be the starting point, the essential cause, of excess of pressure, it appears that a slow progressive thickening of the kidney necessitates a continuous and progressive exaggeration of arterial tension in order to ensure satisfactory urinary depuration. The excess of minimum pressure, due to peripheral spasm, only exists to the degree in which it is useful, and the excess of maximum pressure only to the degree rendered indispensable by the elevation of minimum pressure. It would be illogical to attempt directly to lower the maximum pressure, for such a lowering would only express the insufficiency of myocardial effort to perform an indispensable supplementary task. What must be aimed at is the lowering of maximum pressure by removal of its cause—i.e., the elevation of the minimum pressure. The latter is due to toxic disorder; as Huchard has constantly pointed out, the treatment of arterial hypertension resolves itself into treatment of organic intoxication by decreasing the supply of toxin with an appropriate dietary régime, and by facilitating the removal of endogenous toxins by stimulation of normal functions of intestinal, renal, and cutaneous elimination.

With the exception of certain cases in which sudden pressure arises during habitual hypertension and necessitates urgent methods (bleeding, cupping by scarification, use of amyl nitrite, sodium nitrite, erythrol tetranitrate, &c.), the treatment of hypertension is lengthy. Together with antitoxic measures, treatment of the arterial walls is attempted; potassium iodide has been used with success, although the mechanism of its action remains unexplained. At the same time direct attempts to reduce pressure may be cautiously initiated; the Royat baths are indicated as inducing a lowering of pressure. Bubbly and thermo-electric baths, particularly the latter, have also a violent effect upon circulation; their administration should be carefully supervised, and since the effect produced is rapid but transitory, they can only be considered as an adjuvant form of treatment. Electric treatment with high-frequency currents is also an adjuvant, having no clearly perceptible effect on hypertension, but being of use in the restoration of sleep and diminution of nervous troubles associated with hypertension in irritable patients.

It must be borne in mind that the condition begins, has its continuation, and ends through intoxication (Huchard); a diet as little toxic as possible is therefore indicated. Milk, cream, butter, fresh cheese, well-ripened fruit, and vegetable soups form the basis of treatment. It cannot be too often emphasised that only by continuous adherence to the alimentary régime can a marked and lasting lowering of pressure be obtained. Only small quantities of salt must be permitted, less on account of the disputable hyperpietic action of sodium than on account of knowledge of the nephritic origin of hypertension and the fear of more or less latent chloruria.

Although the absorption of meat seems in some hyperpietic patients to have no effect on the pressure figures, it is nevertheless certain that in the majority of cases the dropping of meat diet is accompanied by a diminution in those figures, together with disappearance of toxic troubles accompanying pressure, notably dyspnœa and headache. Although a continued milk, or milk and vegetable, diet may often be unacceptable to the patient, and although in some cases it may even be impossible to overcome individual intolerance to it, there is at present no other means of maintaining a lowered pressure. Intestinal stasis is combated with frequent purgatives, and diuresis is ensured by the use of theobromine; the former difficulty of the insolubility of this very active medicament has been overcome by utilisation of a new composition sufficiently soluble even for subcutaneous injection. To various diuretic preparations may be added tisanes of couch-grass, cherry stalks, and maize. A few doses are sufficient.

In conjunction with these methods of securing diuresis it is necessary to prescribe a diuretic mineral-water cure at Vittel or Evian; the waters at Vittel are more active, being cholagogue and laxative as well as strongly diuretic. Diuretic cures cannot be satisfactorily carried out except in these spas. There is no doubt that the ingestion of large quantities of water augments œdema or raises the arterial pressure. It can be affirmed, in accordance with the views of specialists in these treatments, that, far from augmenting the quantity of water retained in the system, the diuretic cures—however paradoxical the statement may seem—are essentially dehydrant cures; the dechloridising action of the Vittel waters also contributes to the explanation.

In conclusion, the foregoing has shown that if the diuretic cures almost always provoke hypotension on rational lines, this is only one of their many advantages; the disappearance of other signs of intoxication, when the latter are present, affords a proof of the fact.

blood through the brachial artery during decompression. These sounds are noted by means of a simple binaural stethoscope, or of a similar stethoscope in which the end-piece is replaced by a small metal cup at the edge of which is stretched a tense membrane (Laubry's sphygmomanometer). After sufficient education of the ear it becomes possible to recognise the arterial sounds to which the figures of maximum tension correspond, and the cessation of clear arterial sound, to which correspond the figures of minimum tension.

The Oscillometric Method.

Another method, based on Marey's experiments, is that in which measurement is obtained by the study of modifications in blood pressure induced by various known counter-pressures applied by means of a brassard placed as in the methods previously mentioned. This last is a principle absolutely different from that on which the apparatus described above is founded. In England Hill and Barnard had already utilised the oscillations of a manometric needle to measure minimum tension; I myself first described the technique of measurement of maximum and minimum tensions by this method, which I named the "oscillation method." Its advantage lies in the certainty of the physiological data obtainable, and in the knowledge of maximum and minimum tensions and pulse pressure, and (by means of suitable apparatus) of the action of the circulation during application of various known pressures. My "sphygmometroscope," which I invented for the clinical application of this oscillation method, consists of a brassard 17 cm. broad fitted tightly to the arm and connected with a sensitive manometer of a large size, arranged to record by oscillations of a needle the exact size of impulse, irrespective of the degree of counter-pressure on the elastic capsule. Compression is obtained by means of a rubber bulb, which permits counter-pressure between 50 mm. Hg and 300. After application of the brassard the pressure is raised progressively; the needle of the manometer is displaced like the hands of a watch, soon showing slight oscillations which may be ignored. At about 80 mm. Hg, however, in normal cases a sudden sharper and larger oscillation appears, and the figure then indicated on the dial of the manometer is that of the minimum pressure. If compression is continued a zone of large oscillations is observed, followed by diminution of their amplitude and by their final disappearance. The point of their complete extinction is that of maximum tension. The modifications of amplitude can also be studied during progressive decompression after previous establishment of a high counter-pressure. This method, which is used equally with Pachon's sphygmometric oscillometer, presents one considerable inconvenience; in most cases the observer is compelled to fix the maximum tension arbitrarily. Actually, the oscillations of the needle do not appear abruptly; before they become marked there is a zone, sometimes extending over several centimetres, in which small oscillations of practically equal size take place, due, as I have shown, to the circulatory beat at the edge of the brassard in the zone of the limb just above it. To remove all subjectivity from the reading of the result I have modified my earliest apparatus; and at present my "sphygmometroscope" admits of automatically exact measurement of both maximum and minimum tensions.

Apparatus Now in Use.

The apparatus at present in use consists of a leathern brassard 17 cm. wide, lined with two rubber bands, not intercommunicating, but both connected with a compressor and furnished with a delicate manometer of large size. A tap, fitted with a screw, secures it in position, whether inflated or deflated, or half inflated—i.e., the position for record of oscillations—when only the lower band is connected with the manometer. In this way the technique of measurement is rendered rapid and simple. A counter-pressure is first obtained, so that the manometric oscillations have entirely ceased; then decompression is begun, centimetre by centimetre, care being taken to keep the manometer in communication with the lower band only. The highest point at which the slightest oscillation reappears is that of maximum tension, for at that point oscillation can only be due to the blood stream and not to the pressure of blood against the upper edge of the brassard, where there is no counter-pressure. The maximum pressure may thus be read accurately within a millimetre. Minimum pressure is obtained by continuing the decompression; first the oscillations increase, and then are suddenly reduced again; the reading at the latter point gives the minimum pressure.

Consideration of Various Curves.

In this way may be obtained maximum and minimum pressures, pulse pressure, and lastly the oscillometric index, which has recently been applied to clinical work. In this communication only passing reference to its interest can be made; readers are referred to the bibliography. Certain writers have recently attempted to represent by a curve drawn by hand, after examination of the arterial circulation by the oscillatory method, the modifications of the arterial beat shown by the needle, and thereby to establish an oscillometric index and obtain a curve which may be studied at leisure. This curve is generally obtained by taking for abscissa the successive intensities of counter-pressure, and for ordinates the corresponding amplitudes of oscillation of the needle. Harlé (Bordeaux), insisting on the greater interest of a double tracing for purposes of clinical study of the normal and pathological functions of the heart and blood-vessels, has proposed a curve composed of two branches, of which the upper gives the heights reached by the needle above its starting-point, and the lower curve the depths reached below that point. According to Pachon: (1) In the absence of any complicating factor in the artery concerned, the oscillometric index expresses the strength of the cardiac impulse; (2) in the absence of any complication concerning the cardiac impulse, the oscillometric index expresses the vascular calibre—i.e., the state of constriction or relaxation of the arterial vessels. But the clinical application of these data is a very delicate matter, and I only refer to the methods by which they are obtained in order to indicate the direction now taken by research into methods of diagnosis of functional disorders of the cardio-vascular system.

No curve traced by hand can better a direct tracing, and inquiry is now being directed towards the construction of apparatus for graphic expression of the circulation of blood under various counter-pressures. Strohl has made use of a contrivance designed to record the oscillations of a manometric needle under constant conditions and varying pressures, which has enabled him, together with Barré (Strasbourg), to publish curves reproducing the modifications of the arterial beat under the influence of increasing and diminishing counter-pressures, and has provoked interesting discussion on the precise points of fixation of maximum and minimum pressures. But the drawback of this contrivance lies in its clumsiness for clinical use; it is more of a laboratory apparatus. I have now attached to my own sphygmometroscope a recording contrivance: the combined apparatus is neither heavy nor difficult to carry about, and it permits of rapid and accurate registering of variations in the arterial beat, disturbances of rhythm, and maximum and minimum pressure points.

The graphic study rendered possible by means of these apparatus has already roused numerous discussions, notably concerning the points on the curves at which the maximum and minimum pressures are to be recognised. For close consideration of this point, I must refer readers to the works on the subject.

The Study of Hypertension.

The perfecting of apparatus has permitted real and rapid progress to be made in knowledge of hypertension and its consequences. First, definition of

Respiratory Efficiency.

In his Milroy Lectures on Respiratory Efficiency in Relation to Health and Disease, of which the conclusion appears in the present issue, Wing Commander Martin Flack has raised the question of physical efficiency tests and the value of special physical training. The results of his investigations in the Royal Air Force Medical Service are valuable contributions to physiological knowledge on a subject of great practical importance; they have a bearing, too, upon the value of gymnastic exercises as compared with out-door games and sport, a matter in which the medical man takes a personal as well as a professional interest. Dr. Flack's evidence proves that success in respiratory tests connotes general good health and failure to reach a certain standard is evidence of unfitness. But granted that respiratory efficiency is a good test of physical fitness, little evidence has yet been adduced in favour of the view that respiratory exercises, as such, will result in physical efficiency. In the past the Services have produced strong advocates of this view. The expanded pouter-pigeon type of chest has disappeared, to be followed by the Swedish system of physical training embodying so-called breathing exercises, and it is noteworthy that a physiologist of the standing of Dr. Flack should have elaborated a system of ten exercises which, with one exception, are modified breathing exercises. Their author assures us that they are in no way designed to supplant recreational exercise nor to replace more elaborate systems of physical training, but in regard to the latter, Dr. Flack is assured that the exercises will give the correct circulatory and respiratory efficiency.

Examination of respiratory efficiency in animals and man shows that the living organism must be considered as a whole. If life arises from life, there is no beginning of respiration; the so-called tissue respiration of the ovum and spermatozoon passes into the respiration of the embryo and fœtus, and the change from placental to pulmonary respiration at birth has been foreshadowed by the movement of the diaphragm and other respiratory muscles, which can be observed during fœtal life. The new-born infant breathes through its nose, for otherwise it could not suck, and respiratory efficiency is a natural result of the increasing demands of an actively growing body. In a similar way the young child or animal needs no special training of its respiratory system; it develops its heart and lungs in response to the great muscular activity of play, which is a characteristic of the young. Athletes, horses, and dogs are trained by progressive muscular exercise, *and the teaching of trainers has been often in advance* of scientific knowledge, or more correctly stated, their knowledge based upon experience has not been regarded as scientific. We have a right to ask the physiologist what is the true basis for the so-called breathing exercises; there is no apparent reason for taking in more oxygen than the body needs or for discharging an undue amount of carbon dioxide. Unless there is increased oxidation produced by muscular work, the body compensates for forced breathing by a subsequent period of decreased breathing or apnœa. The expansion of the apices of the lungs does not in itself protect against tuberculosis, although progressive muscular work in the open air, by increasing the metabolism, can raise the resistance.

The contest between the advocates of thoracic and of abdominal breathing has not been fruitful of practical result; the healthy body has a way of using the method which the occasion demands. The young boy with mobile chest and thoracic breathing at rest throws into powerful activity his diaphragm directly he runs and needs a greater ventilation of his lungs. Muscular exercise either in the form of work or sport has abolished tight-lacing in women for a similar imperative reason. If the man or woman be engaged in manual labour requiring the fixation of the shoulder-girdle, the chest becomes less mobile and the relative rigidity of the thorax is an advantage. What is the place of respiratory exercises we do not know; they may be justified in special cases of disease, but only the sick need the physician. Biological knowledge agrees with the experience of the trainers of athletes, horses, and dogs, that efficiency is best obtained by progressive muscular exercise, by learning to perform work well by doing it. Out-door work, games, and sport may be expected to give better results than the set exercises of the gymnasium.

The Opening of the Session.

A good send-off, with friends on the quay and a message of greeting and advice from an experienced traveller who has not forgotten his own first voyage, is encouraging to one embarking on such a long and arduous pilgrimage as a medical career, and it is matter for regret that some of the more important schools in the metropolis should have discontinued a formal opening function. The student listens to addresses with diminishing eagerness as he grows more self-reliant; to the experienced worker a lecture is apt to convey less information in a given time than a book. But on his first day the scholar arrives with keen appetite, and a savoury hors d'œuvre may materially affect his appreciation of the solid five or six course dinner which he will have not only to eat but inwardly to digest.

The two addresses which we abstract on p. 771 were excellent examples of their kind. The selection of a medical school, whether dictated mainly by athletics, geographical convenience, examination successes, or family tradition, is to many students a harassing business. Others, a place in the school of their choice having been forbidden them, may start their career disappointed and vaguely suspicious of the school to which they have become attached as a second-best. Dr. A. Abrahams discussed what was to his hearers a burning and topical question, and while the advantages of a big school were explained fairly, the compensations to be found in a smaller one were so convincingly set forth that the Westminster students at least must have come away full of cheer and loyalty to their new school. Dr. Louisa Martindale *was equally helpful on different lines*; she laid down certain guiding principles which the woman student will find the more convincing in that some at least will accord with her inclinations. Dr. Martindale's survey of medical work was wide and her conclusions inspiriting—though to those who are still laywomen the acknowledged ignorance of even senior practitioners may seem depressing. The time for her hearers to recall these words will be the inevitable period of self-sufficiency that follows qualification, and especially the first resident appointment. Medical teaching has lost the pseudo-scientific arrogance of the latter part of the nineteenth century, has become more humble and less didactic, even in hospitals. And in the five years or more before the new students reach maturity as practitioners, we may hope that the efforts now being made to bridge the gap between hospital teaching and the difficulties of general practice may have borne fruit.

certain regions. The dependence of arterial hypertension on local and extrarenal arterial trouble, as affirmed by Teissier (Lyons), does not seem to me to be admissible. Lastly, Huchard, who upheld the connexion between hypertension and renal sclerosis, wished to attribute hypertension to a generalised spasm of the peripheral arterioles—a spasm developed under the influence of retention in the organism of vaso-constrictor poisons owing to insufficiency of urinary excretion. If this mechanism is the most probable, the origin of this spasm has not been attributed by all writers on the subject to the same cause. Besides Huchard's theory—which has in its favour results of experience, for in a very general sense the meatless diet leads to a fall of pressure in hyperpietic subjects—other factors have been invoked. The work of Vaquez and Josué, Widal and Boidin, leads readers to think that arterial hypertension can be provoked in subjects presenting no nephritis, and in subjects in whom it has already been found, by suprarenal hyperplasia, and that even in those cases where nephritis is evident hypertension is only brought about by a reaction of the suprarenal capsules. The action on the organism of adrenalin, investigated by Sergent and Léon Bernard, gives a certain probability to this hypothesis. There are, however, two objections to acceptance of this suprarenal origin of hypertension—first, that anatomical lesions are usually found in the cortical region of the gland, since the medullary region is considered to be productive of adrenalin; secondly, that numerous observations have shown the inconstancy of suprarenal hyperplasia in patients suffering from accentuated hypertension, since it was found to exist in other cases where hypertension had never been manifested. Research into the adrenalin content of the blood of hyperpietic subjects has given such contradictory results in this connexion that it is impossible to draw any other conclusion.

Possible Renal Origin of Hypertension.

Is the kidney itself productive of a vaso-constrictor substance, accumulation of which results directly in arterial hypertension? A non-dialysable and hyperpietic substance has been extracted from the cortical layer of the kidney—i.e., renin—which is found in the renal veins, but the results of this research have not been confirmed in practice. The study of cholesterin content in the blood of cases of Bright's disease—which shows a large increase of this substance—has led Chauffard to consider that there may be a connexion between hypertension and the accumulation of cholesterin in the blood, the latter being considered as a defensive element. The presence in the blood of products of the oxypurins—hypoxanthin, xanthin, and uric acid, which are powerfully hyperpietic—may also, according to this writer, originate modifications of pressure. That hypertension may frequently be associated with chloruræmia or with azotæmia is easily understood once we have admitted its essentially renal origin, but it seems to me that it cannot be derived from these two affections; it is frequently met with separately, representing, sometimes at least, a type apart—hyperpietic nephritis—accompanying the two other groups, azotæmic and chloruræmic nephritis.

The Latent Phase of Hypertension.

Recognition of hypertension can only be made possible by systematic research; in an apparently healthy subject the first phase of its evolution is not betrayed by any functional symptom noticeable to the patient himself; this is the "presclerotic" phase of Huchard, the "latent" phase of Gallavardin. There may exist no functional symptom at all, not even dyspnœa—which nearly always dominates the clinical picture at some stage of the condition—or albuminuria, or disorders of urinary elimination. Radioscopic examination, however, often shows slight hypertrophy of the left ventricle, for it is the heart's effort in face of the demand made upon it which permits this phase of latency or compensation. As to the duration of this phase, the possibility of checking it, and the fatal results of the disease, practical difficulties prevent clear answers being given. Most frequently hypertension, when unaccompanied by any appreciable disorder, and only noted by accident, has doubtless existed for some time; in some cases in the course of acute nephritis, the increase of pressure will be rapid; but in chronic nephritis the slowness of development, the possible arrest of progress in the condition, and the absence of knowledge concerning its onset, render it impossible to make even an approximate estimate of the latent phase. As to a return to normal of a pressure constantly raised for some time, although it is never reported after the condition is clearly established and allied with other signs of renal insufficiency, it is difficult to deny its possibility in cases where hyperpietic conditions have been under observation from their onset.

The Phase of Sclerosis.

To this first phase succeeds another, which is often the earliest to be clinically observed—a phase in which other symptoms of a toxic nature are ranged alongside hypertension; this is Huchard's period of sclerosis. To name only affections of the whole circulation, there arise certain aphasias and transitory pareses, epistaxis, retinal hæmorrhage, tinnitus aurium, and dyspnœa, the latter due partly to mechanical hindrance of cardiac function, and partly to intoxication of the subject. The evolution is variable; and the terminal events which arise from toxic troubles only, or from their association with mechanical disturbances, may be determined exclusively by circulatory troubles, and are then manifested by vascular ruptures due to excess of pressure in vessels previously weakened by the causal malady or by cardiac insufficiency.

Myocardial Insufficiency and Pulmonary Œdema.

Insufficiency of the myocardium appears rapidly or slowly; when rapid there is acute œdema of the lung. In a hyperpietic patient, often apparently healthy but generally presenting aortic insufficiency together with hypertension (type of pressures, 250–100 mm. Hg), a rapid series of sequelæ is disclosed by extreme dyspnœa, pain at the apex of the lung, and characteristic salmon-coloured sputum; at the same time peculiar râles indicate rapid serous invasion of the lungs. This is the crisis of acute œdema, which sometimes results in death in several hours or even in a few seconds, before any help can be given to the patient. But if the patient can be brought through the crisis by therapeutic means, amelioration may be obtained, and the pulmonary sequelæ may die down, sometimes disappearing completely. But later, either with no apparent cause, or following a gap in treatment, or some emotion, the disorder will reappear, more or less rapidly—ending in death, or receding into the background again, but always threatening reappearance, and constituting a chronic subacute form of pulmonary œdema. The progress of the arterial pressure explains these various sequelæ. At the moment of appearance of the earliest sequel the pressure becomes rapidly modified. At first there is parallel rise of maximum and minimum pressures. The maximum is raised from one to two points, the minimum from two to three; thus the cardiac effort becomes much greater. Then the state of pressure is suddenly modified—the minimum falling three or four points, but the maximum even more. At this moment death may supervene, if the maximal depression persists. But with appropriate treatment (first bleeding, then cardiac tonics) the modification may be reversed; the minimum will rise one or two degrees, the maximum two or three; and the patient presents for a time pressures of maximum 180 and minimum 100 mm. Hg. Amelioration becoming more pronounced, the maximum tension may rise again, but never to the figure recorded before the crisis. Then it will once more fall rapidly, perhaps to rise no more, perhaps again to rise a few degrees; by a series of weakening changes it may come about that in a special room. In short, this home for healthy children was conducted as far as possible on the lines prevailing in babies' hospitals, the statistics the following year affording striking proof of the value of the new arrangements. The total mortality rate fell from 20·8 to 6·8, while that among infants in the first three months of life fell from 40 to 7·6 per cent. The number of infants sent to the clinic on account of serious illness was reduced from 20 to 5; a gradual and steady increase in weight was the almost invariable rule, and the last traces of hospitalism among the inmates vanished.

DR. WALFORD'S RETIREMENT.

The city of Cardiff in 1888, now nearly 34 years ago, appointed its first whole-time medical officer of health in the person of Dr. Edward Walford, who had already gained experience in public health administration at Ramsgate. Some estimate of the importance of the work Dr. Walford has carried out in this long period may be gathered from the fact that when he took office the population of the city was about 82,000. It is now over 200,000; during the period the water-supply of the town has been reorganised with, as a consequence, the entire disappearance of enteric fever; a scheme for isolating cases of infectious disease has been perfected with the establishment of the City Infectious Diseases Hospital, while the death-rate of the town, which in 1890 was 21·6, has fallen to a figure of 11·3 at the present time. Dr. Walford has not been allowed to leave the district and retire to live at Walmer without receiving recognition of the signal services he has rendered. On Sept. 24th a special meeting of the Welsh Branch of the Society of Medical Officers of Health, of which he had been president, was held, with Dr. Llewellyn Williams (Welsh Ministry of Health) in the chair. The new president, Dr. Howard Jones (Newport), on behalf of the branch, presented to Dr. Walford as a token of the esteem felt for him by the society a Kew standard barometer and a pair of Zeiss field-glasses. This occasion was not the only one on which Dr. Walford's friends and colleagues gathered to do him honour, for a gathering of over 40 medical men entertained him at a banquet on Sept. 28th, and a further and more intimate reunion took place on Sept. 29th at the City Hall, when Dr. Walford's immediate colleagues, along with present and past members on the staff of the public health department, met to present him with a bureau. Dr. Walford's career is a welcome reminder that it is within the competence of a sanitary officer to administer efficiently without forfeiting the affection and esteem of colleagues in clinical practice.

THE WASSERMANN REACTION IN CONGENITAL SYPHILIS.

In the course of a recent discussion at the Royal Society of Medicine on the diagnosis and treatment of congenital syphilis, Dr. H. Morley Fletcher stated, with fairly general approval, that the problem of the Wassermann reaction was not capable of solution by the clinician, but must be left to the laboratory worker for much further investigation. Other views are also current. Dr. E. Crawford and Dr. G. B. Fleming published in our last issue some additional laboratory findings on the power of certain drugs to convert the Wassermann reaction from positive to negative in cases of congenital syphilis. The authors seem to imply that this deflection of complement constitutes the crucial test of the efficacy of treatment, and that the amelioration of symptoms is of less importance. Thus they found that in a series of 12 children over 1 year of age they were unable to convert the positive Wassermann reaction to negative by means of the drug sulfarsenol administered intramuscularly, although Dr. Leonard Findlay, in his series of 20 children over 1 year of age exhibiting a positive Wassermann reaction, had, by means of intravenous injection of salvarsan or kharsivan, obtained a negative reaction in 50 per cent. of cases. It is, therefore, argued that intramuscular sulfarsenol is not so effective in the cure of congenital syphilis as is intravenous kharsivan. An observation of Mr. J. E. R. McDonagh's, adduced by him at the meeting already mentioned, throws new light on the value of complement-fixation tests in discerning the presence of syphilis in children. He found that in children born of treated syphilitic mothers the Wassermann reaction was, as a rule, negative and might remain so for some years, until clinical manifestations occurred. If the reaction then became positive for the first time at about the age of 3 years, it remained so despite treatment for the rest of the patient's life. Further, when the Wassermann reaction was positive during the first few months of life, even if the child was left untreated, the reaction tended to become negative about the age of puberty. As Dr. Crawford and Dr. Fleming did not give details of their series of children over 1 year of age, it is impossible to say whether or not they fall into the group of cases described by Mr. McDonagh, in which the Wassermann reaction becomes positive a few years after birth, and cannot be influenced by treatment. Should this be so, it is clear that the Wassermann reaction could not be considered as the crucial test of the potency of the drug sulfarsenol to cure congenital syphilis, and that the clinical symptoms must receive due recognition. Such doubts and difficulties are apt to occur whenever laboratory findings are divorced from clinical observations. Thus the absence of tubercle bacilli from the sputum does not prove that pulmonary tuberculosis is non-existent, and bacilli may be found without activity of the disease. The X ray shadows cast by tuberculous pulmonary lesions may be indistinguishable from those due to other pathological conditions. A positive Widal reaction does not necessarily indicate an active infection with the typhoid bacillus. Clinical and laboratory findings are two aspects of a picture, each of which is essential to give it any claim to reality.

CONGENITAL ATRESIA OF THE PUNCTA LACRYMALIA.

Dr. Harry Gradle,[1] of Chicago, who records an illustrative case, remarks that though congenital closure of the conjunctival openings of the lacrymal canals is supposed to be fairly common, comparatively few cases have actually been reported. In Graefe-Saemisch's "Handbuch," von Hippel states that atresia of the puncta with patent canaliculi and normal relations of the remainder of the tear passage has been described, the resultant epiphora being easily relieved by simple puncture of the epithelial covering. Examples of congenital atresia of one or more puncta have been reported by Ferron, Nielsen, Labegne, Bernhardt, and Webster Fox, amongst others. The last-named writer's case is of interest on account of the absence of epiphora for more than 20 years in spite of complete congenital absence of both puncta. The condition is not serious. In the treatment as little as possible should be done consistent with the restoration of function, and slitting of the canaliculi is quite unnecessary. The case reported by Dr. Gradle occurred in a nurse, aged 21, who had suffered from continuous lacrymation of the left eye as long as she could remember. There was no discharge from the eye, and lacrymation was only excessive under very irritating conditions of wind and weather. Examination showed that the right eye was normal in every respect, but that the openings of the puncta lacrymalia of the left eye, which were normally situated, were covered with a thin layer of epithelium. A cure was effected by breaking through the epithelial covering with the point of a Graefe knife, inserting a punctum dilator, and performing lavage into the nose both from the upper and lower puncta.

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[1] Archives of Ophthalmology, July, 1921.

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Health Insurance and the State.

A DISQUIETING feature of the economy campaign is the indiscriminate use of the knife, the cutting down of all expenditure whether productive or not. Expenditure on the Ministry of Health cannot be regarded as wasteful, seeing that it is intended to create and supply what the former head of one of the fighting services once characterised as the munitions of life. National Health Insurance is described in the preamble to the Acts as designed to provide for Insurance against loss of Health and for the Prevention and Cure of Sickness. No one now disputes that preventive medicine must be linked to clinical medicine for any real progress to be made in public health administration, and with the medical service set up by the Insurance Acts a real start has been made in bringing the general practitioner into the orbit of the Ministry of Health. Those who talk of abolishing National Health Insurance and getting rid of medical benefit also talk no less glibly of decontrolling the doctors. But the control of which they speak is really coöperation: coöperation which raises the standard of medical work and gives new ideals to general practice. Decontrol would spell not liberty but disorder. Medical benefit, as yet in its infancy, is now limited to what is known as general practitioner services, but the demand is steadily growing for further provision such as prompt hospital treatment, including major operations and the advice of specialists.

During the week the attitude of important medical groups has been made known. The executive of the Federation of Medical and Allied Societies has addressed a letter to the Minister of Health asking on reasoned grounds for a careful inquiry into the present working of health insurance before departmental action is taken. The Insurance Acts were an experiment in public health administration, for the success of which no sufficient data have yet been offered. The letter of the Federation refers to the criticisms levelled alike at the methods of the Health Ministry, the administration of the approved societies, and the services of the insurance practitioners: criticisms which may be ill enough informed and yet incapable of being refuted in the absence of exact information. Another gathering of 250 medical men at Birmingham, on Friday of last week, after listening to an address by Dr. ALFRED COX, medical secretary of the British Medical Association, passed a resolution to the following effect: That where it is necessary to organise or provide a general practitioners' service for any section of the community unable to pay the ordinary fees, such service is best given on the lines of the present panel system, and this meeting does wish medical benefit under the National Health Insurance Act to continue, so long as the conditions are such as will allow of a good service being given. Dr. Cox had logically set out the six ways by which medical attendance could be ensured for persons unable to provide it for themselves. Such provision might be made (1) by ensuring that every person willing to work should be paid wages enabling him to provide his own medical attendance by private arrangement; (2) by voluntary charity; (3) by the Poor-law; (4) by the club system; (5) by a whole-time State service open to everybody; (6) by a contributory insurance service. Alternatives 1 to 3 he eliminated at sight. Should contributory insurance be abolished, an alternative would doubtless be to resuscitate and develop the old discredited club system. How unsatisfactory that system was a generation ago is set forth briefly in an article on page 775. Dr. Cox roundly stated that apart from a whole-time State service he could see no practicable alternative to the present system of contributory health insurance. Of this system the fundamental principles were that every doctor had the right to take part in it; that every patient had the right to choose his doctor, and every doctor except in one-man areas to get rid of any patient; that the remuneration was fixed by central bargaining and was the same all over the country; and that doctors collectively had a great deal of control through the panel committees over their part of the system.

The Minister of Health has now formally notified insurance practitioners that after the end of the calendar year a reduction ought to be made in the present capitation fee of 11s. The amount of the proposed reduction has not yet been stated, nor have any grounds been given for setting aside the decision of the arbitrators in March of last year; but there is a risk that any reduction in the capitation fee will be countered on the part of the doctors by a reduction in the quality of their service. At all events, in the words of the Federation's letter, any reduction before full inquiry has been made into past results and future requirements would tend to alienate the goodwill of those practitioners whose coöperation is essential to the success of the service. What we fear is that great numbers of practitioners who have small panels as part of large general practices may resign from the panel when the reduction becomes operative. And it is just the practitioner of experience in good-class practice whose coöperation the State cannot afford to lose. Whatever the ideals of the insurance practitioner—and with few exceptions they are high ideals—the quality of work done must depend ultimately upon the conditions under which service is given. The insistent demand on the part of approved societies is for smaller panels and stricter limitation of lists. A serious reduction in the capitation fee will make this more difficult to secure. With a smaller fee it will be necessary for the practitioner to have a larger list in order to enable him to devote himself to his insurance work. Improve the conditions of panel practice, provide the necessary facilities, and the quality of the service can be guaranteed. It would be futile economy to drive out the best men by reducing the remuneration. The annual Panel Conference, which meets in London on Oct. 20th, is to be asked to reaffirm its opinion that 13s. 6d. is the lowest capitation fee that should be offered for an effective service, while not pressing at present for any increase on the 11s. in view of the serious state of the national finances.

of obscure vision continued for five days, this does not seem particularly probable. From the available evidence it would appear that arterial spasm may in rare cases affect the retina as in Raynaud's disease it affects the extremities, that the attacks of obscuration of vision so caused may be completely recovered from, but may, on the other hand, if the condition is sufficiently prolonged, cause blindness in the affected eye. The causation of the condition remains obscure.

OVARIAN HÆMORRHAGE APART FROM ECTOPIC GESTATION.

In a recent paper read before the Section of Obstetrics, Gynecology, and Abdominal Surgery of the American Medical Association, Dr. Edward A. Schumann[1] of Philadelphia discussed hæmorrhages of ovarian or tubal origin not associated with ectopic pregnancy. Pre-operative diagnosis is rarely possible except in cases in which the patient is undoubtedly a virgin. The clinical picture is that characteristic of sudden intraperitoneal hæmorrhage, variable in amount and usually accompanied by acute pain in one or other iliac fossa, although in a few cases initial acute pain may be entirely absent. Some distension usually supervenes with signs of shock and severe loss of blood, or there may be a sthenic reaction with rise of temperature, moderate leucocytosis, rectus rigidity, and the syndrome of the "acute abdomen." Dr. Schumann described a group of cases fairly common in growing girls, who during one of their early menstrual periods show all the symptoms of intraperitoneal hæmorrhage. He considers that such cases, of which he relates a typical example, are not uncommon and rarely end fatally even without surgical intervention. The hæmorrhage in these cases is probably due to an excess of bleeding from the wall of the mature Graafian follicle in the adolescent ovary without any demonstrable morphological change in the tissues. In this group of cases a pre-operative diagnosis may be hazarded, whereas in the more or less severe hæmorrhage which takes place from the ovary of mature women in whom ectopic pregnancy is a possibility, the diagnosis is extremely difficult. Three types of ovarian hæmorrhage have been described by Wolf—namely, interstitial, follicular and intra-follicular—all of which may occur in the same ovary. Whether a sclerocystic degeneration or a true fibrosis is the cause of the hæmorrhage is a matter of conjecture. Dr. Schumann reports a case of massive ovarian hæmorrhage in a married woman, aged 37, in whom microscopical examination of the ovary after removal showed a marked proliferation of the normal perifollicular vessels with excessive degenerative arteritis of these vessels. He is of opinion that while a certain degree of arterial degeneration is physiological in the vascular network embracing the mature follicle, massive hæmorrhage is never produced by physiological degenerative changes, and when such an accident occurs some pathological process such as a degenerative arteritis will be found responsible.

FORMALDEHYDE-GLYCERINE IN TUBERCULOUS EMPYEMA.

An interesting chapter in medicine could be written on the valuable remedies which have fallen into disuse for some obscure reason, and have been rediscovered years and even decades later, their revival depending not so much on any technical modification or improvement as on the enthusiasm, tempered with discrimination, of its latest sponsor. Many years ago Murphy advocated the introduction of half an ounce of glycerine-formaldehyde solution into the pleural cavity in cases of tuberculous empyema, and though the results were promising, his procedure does not seem to have been adopted in many European hospitals. In the June number of the *American Review of Tuberculosis* Dr. George B. Kalb reviews his experience of 12 cases of tuberculous empyema observed during the past four years. The seven patients who recovered were treated by the following method. All the purulent material that could be aspirated through a large needle being removed, from 1 to 12 ounces of a 2 per cent. solution of formaldehyde in glycerine were injected, the amount varying according to the quantity of fluid withdrawn. Care was taken at the first injection to introduce too little, rather than too much, and never to inject more than half of the quantity withdrawn. Air was then introduced until the manometer showed a pressure near the atmospheric, or, if the case was one of artificial pneumothorax, the pressure was raised to that usually reached in any particular refill. In two days to a week after the first injection the chest was again aspirated, and it was then common to find the contents of the pleural cavity sero-purulent. More formaldehyde in glycerine was again injected and left in the chest for three to ten days. This treatment was continued till the contents of the pleural cavity became sero-sanguineous; being sterile at this stage, the fluid was not aspirated, but left to be automatically absorbed. Each injection was followed by a more or less violent reaction, the temperature rising as high as 103° F., and a sense of pain and discomfort in the chest being provoked. This reaction rapidly subsided, and in two or three days the patient felt as comfortable as before. Murphy, apparently, advocated the introduction of only half an ounce of the glycerine-formaldehyde solution, but in other respects his procedure was much the same as that already described. In his *Clinics* of 1915 he suggested that the formaldehyde-glycerine solution acted by sterilising the pus and keeping up the polymorphonuclear leucocytosis. Dr. Kalb's seven recoveries out of 12 cases are the more encouraging, as several of the patients who died were already in extremis. His material is, however, small, and it would be interesting to learn what the experience is of other physicians who have adopted this treatment in a large number of cases. Billings has reported a death following an injection of formaldehyde in glycerine, but it is doubtful whether this fatality was due to the composition of the injected fluid. In considering such an isolated fatality the physician would do well to bear in mind that there are few drugs in common use the injection of which has not been credited with sudden death.

DIVERTICULUM OF THE BLADDER.

Judging by its absence from the index of current surgical text-books, diverticulum of the bladder is not frequently met with in this country. Mr. Russell Howard in his Practice of Surgery[1] gives a short paragraph on the subject with an illustration of a large diverticulum from the museum of the London Hospital Medical College. According to Dr. Robert H. Stewart[2] of Topeka, Kansas, who records an unusual case, until about ten years ago diverticulum of the bladder was regarded rather as a surgical curiosity than as a pathological condition, coming within the scope of most surgeons' experience. Recent investigations, however, have shown that it is not so rare as had hitherto been supposed. It occurs almost exclusively in the male sex, only a few examples having been observed in women. Two types of vesical diverticulum are encountered. The first, which is found in older subjects, is associated with enlargement of the prostate and urinary obstruction. The second type occurs in younger subjects, without evident prostatism or obstruction, but usually with even more pronounced retention than in cases of prostatism. In either type there may be a single diverticular sac, or there may be one large and several smaller ones. Trabeculation of the bladder wall is generally present. The initial sym-

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[1] Journal of the American Medical Association, August 27th.

[1] London: Edward Arnold, 1914.

[2] The Urologic and Cutaneous Review, August, 1921.

Annotations.

"Ne quid nimis."

THE GROWTH OF MEDICINE IN CHINA.

LAST month the building of the Union Medical College was completed in Peking. Chinese in external appearance, entirely Western in equipment and internal arrangement, the first great medical school of the Eastern republic is worthy of its purpose and of the generosity of the Rockefeller Foundation which built and endowed it. Some 80 students entered the medical course for the academic year 1920–21, and the numbers can now be largely increased, for there are 90 professors and teachers on the staff. But it is one thing, as the *Review* of the Foundation remarks, to give Chinese men and women a modern medical training; quite another to provide the conditions under which that training can be of largest service to Chinese communities. The chief agency for helping the native practitioner is the Western type of hospital, which aids him in maintaining his ideals and helps to disseminate in the community knowledge of the aims of curative and preventive medicine. These hospitals are for the most part under missionary auspices, and the story of the development of medical missions in China is ably told by Dr. Harold Balme, dean of the school of medicine in the Shantung Christian University at Tsinan, in his book on China and Modern Medicine. (London: United Council for Missionary Education. Pp. 224. Price 5s.) A hundred years ago, as Sir Donald MacAlister points out in his prefatory remarks, no human enterprise could have seemed more hopeless than the physical and spiritual transformation of China. Until a few years ago every occasion of discontent was accompanied by an outburst of anti-foreign feeling, frequently ending in bloodshed, whereas to-day political revolutions are invariably accompanied by proclamations holding the foreigner's life and property of the foreigner inviolate. This has been brought about in the main by the civilising influence of medical missions and the substitution of Western scientific ideas for superstitious Chinese methods. The pioneer of this work was Thomas Richardson Colledge, who founded the first voluntary hospital in China—the Ophthalmic Hospital at Macao—nearly a century ago. Much still remains to be done, and Dr. Balme asks that English and American doctors should visit the hospitals of China and acquaint themselves at first hand with the conditions of life and medical practice there. He very rightly demands the provision of better facilities in Western hospitals and laboratories for the post-graduate study by Chinese medical men and women. China offers special opportunities of medical research, for many pathological conditions occurring there are seldom found elsewhere, and disorders which are common to all lands are seen there in aggravated form owing to long years of neglect. We print on another page the substance of an address on medical missions in China delivered by Dr. Balme during a recent visit to this country.

MORE RADIUM.

A LARGE consignment of radium amounting to about 2 g. of the element has reached this country from the Czecho-Slovak State mines. The mines in question are those at Joachimsthal, from which radium was first separated by the labours of Prof. P. and Mme. Curie. The consignment, which arrived under the personal supervision of Prof. F. Soddy and Mr. Shepperson Wilson, is but the first of supplies which are expected to come for some years from the Radium Corporation of Czecho-Slovakia, whose offices are registered in Prague. This is the result of negotiations with the Imperial and Foreign Corporation of London. It is the intention of the latter body to arrange for supplies of radium to be devoted to the dual services of medicine and of science. Prof. Soddy, who is expert adviser to the Corporation, will be controller of such part of the radium as may be installed in laboratories at Oxford. Further than this, directional offices, possibly developing into an institute, will be set up in London, whereby the aims of the scheme may be secured. If facilities on a large scale are to be provided for the medical use of radium, it is obvious that this should be done in no indiscriminate manner, and the whole of these arrangements will be under medical direction. At the present time a scheme of investigation in radium therapy at various recognised centres in the British Isles has been put into operation by the Medical Research Council and valuable results are anticipated from this coördinated effort. It is safe to predict that further facilities for the use of radium will have an important effect in developing our knowledge upon its uses in disease, provided that these facilities are made the most of. The subject has, happily, passed the stage at which valuable results are looked for from haphazard methods, and it is no disrespect to individual enterprise to state that the interests of radium treatment are now best served by coördinated effort on the part of physicians, surgeons, radiologists, and pathologists. To what extent the needs of medical research, as well as medical practice, are to be served by the new radium service in question we have no positive information, but we trust that such a vital need will be kept well in mind.

HOSPITALISM IN INFANTS.

THE question of the prevention of hospitalism among children in creches has recently been discussed by Dr. Eduard Friedberg[1] of the University Children's Clinic in Freiburg, a particularly favourable opportunity for the study of the question having presented itself in the reorganisation at the end of 1919 of the St. Hedwighaus creche attached to the clinic. During the year 1919, out of the 139 children cared for in the creche, 29 died (22 in the clinic attached and seven in the creche itself), the mortality thus amounting to 20·8 per cent., and exceeding the death-rate in the Düsseldorf hospital, recently published by Schlossmann and favourably commented on, of 17·3 per cent. Dr. Friedberg appends a table showing that the morbidity and mortality rate was greatest in the case of the youngest babies (up to 3 months of age), half of whom had to be sent to the clinic for various forms of serious illness, and 40 per cent. of whom died. The older children came off better, but even in them careful examination brought out the fact that a large proportion showed signs of hospitalism in the form of poor mental and physical development, and even of rickets. This particular year having been unusually free from epidemic disease, including influenza, the medical care of the home adequate and the food good, the high morbidity and mortality rate could only be attributed to the cramped space and consequent overcrowding in the home and to the defective training of the nurses employed. At the end of 1919 an extension of the premises was effected and the creche completely reorganised, among the changes carried out being the setting apart of special wards for slightly infectious cases, as well as for the temporary accommodation of more serious cases pending their removal to hospital: the establishment of a quarantine block for new arrivals; and a careful classification of the children according to age, by which means special care could be lavished on the younger ones, and the more experienced nurses detailed to look after them. The minimum distance between the beds was rigidly fixed at a metre and a half, thus limiting the number of cases admitted; another regulation being that visitors who were restricted to two afternoons a week saw the children of early treatment of carcinoma, too often delayed owing to the very natural dislike of the patient to medical examinations. The terror was often allayed if a woman doctor was available, and if for no other disease than this, the existence of women doctors seemed to Dr. Martindale more than justified. She touched briefly on the pioneer work of medical women, and on their activities during and since the war, and mentioned that in private practice, especially in the provinces, women have worked up enormous practices, and have tried, often in vain, to find partners or assistants to help them in their overwhelming work. She herself prophesied that gynæcology would in the future fall more and more to the task of the woman doctor, just as men's diseases will remain in the hands of men doctors; but was aware that some of her colleagues considered that the future would bring no such change, but that the time would come when all sex distinctions in medical work would be abolished. In this connexion she said that recently in the Women's Factory Department at the Home Office there had been an entire reconstruction: women and men had been appointed irrespective of sex, and worked together, with no specialism even in the kinds of factories visited.

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[1] Deutsche Medizinische Wochenschrift, Sept. 1st.

Dr. Martindale offered to the student in preparation for her profession the following advice:—

1. Divide your lives roughly into three—eight hours' work (if you take off Saturday afternoons and Sundays it will mean ten hours work for five days). Eight hours for play, meals, and ordinary reading, and some art or music. Eight hours for sleep.

2. Remember that you will not reach anything like your ideal of being an efficient and useful doctor unless you know something of the world you and your patients live in. You must read widely and keep in touch with current politics, current literature and art, and municipal life, especially inasmuch as any regulations to do with public health are concerned. You must remember the importance of good manners, and suitable and pretty clothes, for it is unnecessarily annoying to a patient to have to put up with slovenly and ugly things to look at.

3. Keep before you your goal, which will not be reached unless you remember to train yourselves in—(*a*) Observation; (*b*) Note-taking—honestly dividing your cases into (1) clear cases, (2) cases in which the diagnosis is doubtful, (3) cases in which the diagnosis is impossible; (*c*) Self-reliance and independent thought; (*d*) Discretion and reticence: lastly, a self-control that will teach you, as Sir William Osler used to say, "To have your nerves well in hand," remembering that it is character in the end that will carry you even further than brains.

THE MERITS OF SMALLNESS.

THE introductory address at Westminster Hospital was given on Sept. 30th by Dr. ADOLPHE ABRAHAMS, who took as his subject the Advantages and Disadvantages of a Small Medical School. Dr. Abrahams said he was able to speak with some experience of both types of medical school; one of the largest in the Kingdom at which he received his own clinical education, and one of the smallest, of which he was proud to be a member of the staff. There were certain advantages which the large school can offer and of which the smaller must be deprived. On the social side a large medical school with perhaps 500 students could provide facilities for every kind of sport and recreation, and the smaller the school the fewer these opportunities. While exercise, and not merely exercise but competitive exercise, was of considerable value to the student, Dr. Abrahams said he could not regard with much sympathy the inducement to join a large medical school for its athletic advantages alone. In London a student could find an outlet for his athletic ambitions whatever they might be, and though it might be more convenient in some ways to play games for one's hospital instead of for a club without any relation to the hospital, students deprived of such advantages did not seem to Dr. Abrahams to merit much commiseration. It was in many ways an excellent thing to get right away in one's recreations from one's daily associates, more especially as medical students more than any other class of students were given to grooviness, want of interests outside their work, and a perpetual atmosphere of "shop."

Other elements of the social side of the student's life, such as societies and clubs, called merely for enterprise and enthusiasm on the part of some energetic members, and it was easier to establish a camaraderie in a small community than in a large one.

The admission of women students to certain small schools was germane to the discussion. For the most part the large schools had not yet opened their gates to women students. There had been during the last few years a remarkable increase in the number of medical students. No school, however large, could accept unlimited students, for which reason the more popular of the larger schools had been compelled not only to exercise a particular selection and subject applicants to a sort of competition, but even to refuse a certain number unconditionally. Dr. Abrahams was anxious not to be suspected of a want of gallantry nor to be ruthlessly misunderstood when he said that the smaller schools were not in the same position as the larger schools with the privilege of picking and choosing; and if the latter had had to refuse admission to women students, these had naturally turned to the smaller schools for, he would not say hospitality or shelter, but accommodation. Educational experts consulted by Dr. Abrahams had hesitated to be dogmatic, since the period during which co-education in medicine has been in vogue is still so short, but it had been suggested to him that the distraction from work which social intercourse at a susceptible age was bound to introduce must be counted as an item by no means to be belittled; whether jealousy or emulation arises from an inevitable sex competition he felt quite unable to decide.

On the desirability of the separation of intermediate from final studies, Dr. Abrahams said that assuming that elementary training had been adequate it was of no consequence that it had been provided by those not in touch with the clinical teachers. The translation of the preliminary sciences to an earlier stage so that they became part of general education had been recommended by Huxley, and in 1911 the General Medical Council decided to recognise the teaching of such subjects in approved secondary schools as qualifying for the first professional examination in medicine. In Dr. Abraham's experience there had never appeared to be any special anxiety in clinical teachers to attempt close coöperation with the medical school in its more important office. And surely there was no difficulty to an efficient teacher in extracting from the elementary sciences their proper clinical relationship merely because his environment was separated from that to which subsequently his charges would be committed.

Dr. Abrahams proceeded to consider the clinical training which he considered the really important office of any medical school. While a lecturer could serve 500 students as well as five, and a large audience must act as a keener stimulus than a tiny one, from the student's point of view there might be a very real advantage in listening to one who spoke to him face to face and might become a personal force with a life-long influence. Whereas the compulsory attendance at the performances of an articulate text-book which was so frequently the form taken by a compulsory systematic course of lectures was hated as a wicked waste of time. In actual instruction at the bedside the small school required no defence or justification. The smaller the class the more nearly the teaching approximated to the ideal of individual tuition; the examination pass-lists of the small schools were superior, often remarkably superior to those of the larger schools.

The staff of a large hospital was with comparatively rare exceptions recruited from its own students. To a not inconsiderable extent such appointments became a question of graduation and the selected candidate was not necessarily the best man from the students' point of view. But in the smaller school, vacancies

ACOUSTIC EXERCISES FOR DEAF-MUTES.

A paper, posthumously published, by the late Prof. Victor Urbantschitsch[1] of Vienna, whose death we recorded in our issue of July 16th, gives an interesting account of some of the results achieved by the systematic use of acoustic exercises in a large number of deaf-mute pupils at the Israelitic Deaf Institute in Vienna. It has been found on careful examination that in a surprisingly high percentage of cases believed to be totally deaf considerable residual hearing exists; this may, perhaps, be partly explained by a confusion between an inability to understand what is heard and an inability to hear. The acoustic exercises are begun by the repetition of individual vowels, called into the ear, the first vowels used being generally *a* and *o*, and the other vowel sounds being added by degrees. Words easily understood, such as *Mama*, *Papa*, *Auge*, *Nase*, are spoken slowly and in a sustained voice, the pupil, who is told in advance which word will be used, having to repeat the practice-word in order that wrong hearing impressions may be corrected. The words have in every case to be acoustically memorised. It is important that in the earliest stages the pupil should be trained by the same teacher, later on different voices being used. Practice with musical tones (harmonica, piano, wind and string instruments) to acquire pitch and to recognise melody are important. Prof. Urbantschitsch pointed out that the hearing perception in deaf-mutes is subject to much fluctuation, especially in the earlier stages, and perseverance is needed in spite of apparently discouraging results. "Acoustic-fag" is liable to occur and is a warning to limit the exercises, five- to ten-minute periods several times a day usually being enough in view of the intense degree of concentration needed on the part of the deaf pupil. Emphasis is laid upon the fact that even the acquisition of vowel perception in a pupil who has never heard is well worth while, this resulting in the modification of the normal toneless unmodulated voice of the deaf-mute.

In a much longer and more elaborate paper[2] Dr. Max A. Goldstein develops this theme, paying warm tribute to the work of the late Prof. Urbantschitsch, whom he describes as "perhaps the only one who has persisted in his training of the profoundly or totally deaf child by the acoustic method." After giving a brief review of the literature of this subject, and a classification of nerve-deafness into five groups—each group representing a different pathological process—Dr. Goldstein describes in detail his own application of the acoustic method, this being divided into passive and active education. Much use is made of sound comparison, which, as the writer points out, is a logical form of stimulation, awakening a mental differentiation in the brain as well as a physiological selective differentiation in the organ of Corti. A brief history of six illustrative cases is given, including instances of congenital deaf-mutism, marked improvement being shown in every case after two years of training.

JUBILEE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The American Public Health Association will hold its "semi-centennial" celebrations in New York from Nov. 8th to 18th. The scientific convention, to be held from the 14th to the 18th, will be divided into sections of laboratory work, vital statistics, public health administration, sanitary engineering, industrial hygiene, and food and drugs, with special programmes dealing with child hygiene, health education and publicity. Prior to the convention proper there will be demonstrations of the various types of public health activity in New York and its environs—the health department bureau, laboratories, health centres, clinics, and hospitals—in order that the health services may be seen in actual operation, especially those admitting of duplication in other cities. Dr. Stephen Smith, the founder and first president of the Association, is now in his 99th year; he will be the guest of honour at a banquet to celebrate his approaching centenary and the jubilee of the Association. At the beginning of October a historical jubilee volume entitled "Fifty Years of Public Health" will be published, with an introductory description of the earlier beginnings of the science. Detailed announcements and programmes will appear from time to time in the *American Journal of Public Health* and the *News Letter* of the Association, or may be had upon addressing the Association at 370, Seventh-avenue, New York city.

SPASM OF THE CENTRAL ARTERY OF THE RETINA.

Of the various causes of obstruction to the blood-flow in the central artery of the retina, spasm of the muscular wall of the artery is one of the rarest; indeed, some authorities have doubted whether it actually occurs. Ophthalmoscopic evidence on the point must be received with caution, since the apparently visible contraction of the artery or one of its branches, rapidly changing to a normal appearance and synchronising with an obscuration of vision in the affected eye, is a condition which might conceivably be caused by variations in general blood pressure where the inner lining of the arterial wall is so thickened by disease that the usual pressure of the blood from behind is only just sufficient to overcome what amounts to a partial obstruction. Some of the cases of obstruction from spasm which have been reported have probably been of this nature, but others, occurring in patients otherwise in good health, will hardly bear any other interpretation than that of actual spasm. So long ago as 1891 the late Mr. A. K. Benson, of Dublin, put on record one such case where an interruption in the blood column was observed repeatedly to move along the inferior temporal artery towards the periphery of the fundus as far as its bifurcation, and then cease. In 1906 R. A. Lundie recorded a case where the contraction occurred in a single branch, and was stationary until the condition of spasm passed off, the apparent contraction then disappearing. Other cases again have been reported where all the vessels have been observed gradually to diminish in calibre, and after a time to refill, the condition being in some cases accompanied by the œdematous retina and cherry-red spot at the macula, typical of embolism or obstruction of the central artery from any other cause. The most recent case is one reported by A. B. Bruner in the *American Journal of Ophthalmology* for July. A man of 31 had several attacks of loss of vision in one eye lasting for a few minutes. He was seen on the day when the attacks first occurred. Between them nothing abnormal was found ophthalmoscopically, but during them the fundus of the affected (left) eye showed the following striking picture:—

> The nerve and retina decidedly paler than in the right eye; the arteries are all markedly contracted, appearing as mere threads; the veins show entire cessation of blood-flow, the regular venous pulse ceasing entirely; the blood in the veins assumes a granular appearance due to the breaking up of the normal blood-column; in from one to three minutes the flow of blood in the veins recommences, at first slowly, then more rapidly, the venous pulse reappears, the arteries assume their normal calibre and appearance, and vision rapidly returns to normal. During the time of the attack no red spot was seen at the macula.

The attacks continued to occur for five days, during which they were observed with no variation of the ophthalmoscopic picture. At the end of that time they ceased spontaneously, and did not recur. No cause of the onset could be discovered by general examination of the patient, unless an alveolar abscess might be considered such, though, as the affected tooth was immediately extracted and the attacks of the first or at the beginning of the second year. To one brought up in English schools, where the student reaches his first contacts with clinical work and bacteriology simultaneously, this seems at first sight strangely early. It is not, however, difficult to appreciate that the fundamentals of the biology of bacteria and especially the all-important technique of bacteriology can be taught to advantage quite early in the curriculum.

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[1] The Laryngoscope, July, 1921.

[2] Ibid.

Pathology and Clinical Work.

The temporal relations between pathology and clinical work are thus quite different in America and England. In America the whole of the systematic course is taken before the student does any clinical work: in England the two subjects are begun simultaneously after the break in the curriculum which marks the completion of anatomy and physiology. The result is that in London under present conditions it is very difficult to find time for adequate laboratory work in pathology since the student, once he begins clinical work, very sensibly spends practically his whole time at it; in other centres in this country more time is available since as a rule only about half the day is given to ward work in the first year of clinical instruction. There is a growing feeling that some at any rate of the pathological course ought to be taken before clinical work is begun and this is the first important point in which I think we should do well to imitate American practice, though not to copy it too closely. A general elementary knowledge of, e.g., what inflammation is and what bacteria are and do is as necessary an introduction to the intelligent apprehension of disease as is anatomy or physiology: the case for the pre-clinical study of bacteriology is particularly strong. The end of his pre-clinical period also finds the student in a more suitable frame of mind for the proper reception of the principles of pathology than is generally present during his clinical work. For it is the experience in America as well as in England that when a student comes into real touch with sick people they are apt to absorb his whole interest and it is only as he proceeds further in his course—and often enough not even then—that he realises that what he neglects as intellectual and academic is an organic part of what he welcomes as humane and practical.

But it is very questionable whether the attempt which is made in many American schools to cover the whole range of bacteriology, morbid histology, morbid anatomy, and serology in the pre-clinical period is a satisfactory arrangement. Much anatomy and serology, for instance, are intelligible and of interest only in relation to particular human diseases and have little importance from a purely pathological standpoint—from the standpoint, that is, of the science which could exist if there were no human diseases or medicine or surgery at all. The plan which seems the best and which should not be difficult to carry out is to take "general" pathology and bacteriology in the pre-clinical period and "special" pathology all through the clinical period while the student is spending most of his time studying disease in the living. There is of course no clear boundary between "general" and "special" pathology. Roughly speaking, however, the former consists of those topics which are of importance to the general principles of the science, it may be irrespective of human disease, though by choice in relation to it, while special pathology considers the phenomena which are of moment in relation to the particular diseases which are the concern of medicine and surgery. The theory of tumours is general pathology; the various sorts of tumours of the breast, their nature, frequency, and so forth, is special pathology; the practical difference between encephaloid and scirrhus is clinical pathology. The relation of the animal economy to foreign proteids and the formation of antibodies is general, diphtheria antitoxin is special, the Widal reaction clinical. To recognise the existence of these categories is for the improvement of teaching; to insist upon them is to encourage the current vice of cutting up the curriculum into watertight compartments.

Teaching Materials: Post-Mortem Examinations, Museums.

Specimens in bottles and sections under the microscope look just the same in America as in England, and one's feeling of being at home among their friendly pathologists is encouraged by the fact that the methods of instruction are very much the same as ours—definitely more so than in physiology or medicine. In physiology the American students seem to do more for themselves and to embark on larger and more elaborate experimental observations than ours do; in medicine they are less independent than ours. Two points are worth notice. The study of morbid anatomy is greatly hampered by the difficulty of obtaining permission to make *post-mortem examinations*. The proportion of deaths in hospital which come to autopsy varies much in different places according to the composition of the local population (Roman Catholics, Jews, &c.), the skill and urbanity of the resident medical officers, and the general state of public opinion in the city on the subject; it seldom rises above 60 per cent. and may fall as low as 10 per cent. The disadvantages of this state of affairs needs no emphasis; but it is perhaps not easy for us, who have been brought up on almost universal post-mortems, to realise how great they are. In consequence there is a disinclination to allow the undergraduate student to do the actual work of the autopsy, the reason usually given being that they are liable to make a mess of valuable material. The question of striking a reasonable balance between doing the work in the best possible manner and allowing the student to learn in a real way seems to be generally settled against the student.

The other thing which strikes one is that *pathological museums* bulk much less largely than with us. The post-mortem difficulty is to some extent no doubt responsible for this, but it is chiefly due to the difference in the historical development of medical education in the two countries, for the museum cult in general is at least as highly developed there as here. Medical education and research in England had grown within a measurable distance of their present position before the experimental method began to make any great impress on the biological sciences; under these circumstances it was natural that the methods of Cuvier and Hunter should have a predominant influence, and the extensive collection of specimens from the dead-house was a corollary to the impetus which careful autopsy work was giving to medical science about the middle of the nineteenth century. In America the experimental method was well understood as a weapon of progress before the great reform in medical education began 15 or 20 years ago. The museum at that time had come to be relatively less important, and it had not established itself as one of the chief items of equipment before the interests of laboratory work reduced its comparative prestige. The truth probably is that we attach undue importance to an instrument of instruction that is of less moment than it used to be; in America a useful item is apt to be neglected. It is probably no harm that the form of oral examination, which hinges on the identification of museum preparations, is apparently unknown.

The Cult of Clinical Pathology.

The work which in England is commonly known as "clinical pathology" is pursued in America on a scale and with an intensity which is hardly known with us. In a few places the actual laboratory work is done by the pathological department, as commonly here, and this is more often the case with surgical investigations and bacteriology than with inquiries starting in the medical wards. In the better schools, however, the obvious truth that making a blood count is no more a part of "pathology" than is auscultation with the stethoscope has long since been realised, and the work which with us is done by the clinical pathologist is undertaken by the departments of ptoms are difficulty and frequency of micturition, with a burning sensation. Patients have all the clinical symptoms of severe cystitis. In old cases there may be a kidney infection, and renal insufficiency may be well marked. In some cases the diverticulum may be felt per rectum. The diagnosis of vesical diverticulum which these symptoms suggest is confirmed by cystoscopic and X ray examination. Stagnation of residual urine in a diverticulum favours infection. Calculi, single or multiple, are found in about 15 per cent. Cystitis extending from an infected diverticulum is very common. The mortality is high in cases of diverticulum complicated by carcinoma, calculi, or marked renal infection. The only successful treatment is radical removal of the diverticular sac either intravesically or extravesically. The latter method may be intra- or extra-peritoneal. In the absence of infection the results of operation are very good. In Judd's 44 cases all survived except ten, two of whom died immediately after the operation. In the 34 survivors the functional results were good. In Dr. Stewart's case, which occurred in a man aged 31, the diverticulum occupied the position of the right ureteral orifice and was complicated by a secondary cystitis in which the only micro-organism found was *B. coli*. Until a year ago the patient had been suffering from gonorrhœa of three years' duration. At the time of publication the case had not come to operation.

TRANSFER OF HEALTH JURISDICTION.

BY an Order (1921, No. 958) made under the Ministry of Health Act, four sections of the Factory and Workshop Act, 1901, are transferred from the jurisdiction of the Home Office to that of the Ministry of Health. These sections deal with (Sec. 61) the prohibition of employment of women after childbirth; the (Sec. 97–100) provisions relating to bakehouses; (Sec. 109) making of wearing apparel where there is scarlet fever or small-pox; (Sec. 110) prohibition of homework where there is infectious disease. Section 61 provides that the occupier of a factory or workshop shall not knowingly allow a woman or girl to be employed therein within four weeks after she has given birth to a child. This section was extended to laundries. Local authorities administering maternity and child welfare schemes are asked to assist occupiers of factories, workshops, and laundries in observing the provisions of this section. Under Section 98 the local authority will now have concurrent powers with the factory inspector to undertake a prosecution in the case of a bakehouse which is unsuitable on sanitary grounds. The powers and duties of local authorities under Sections 109 and 110, relating to homework in premises where there is infectious disease, are not materially affected by the transfer.

Dr. John Elder McIlwaine has been appointed to the chair of materia medica and therapeutics in the Queen's University of Belfast, formerly occupied by Sir William Whitla. Dr. McIlwaine, as one of the physicians of the Royal Victoria Hospital, Belfast, has devoted himself largely to the subject of cardiology.

THE LANCET of January 1st, 1921.

THE Manager will be obliged to readers who have not any further use for their copy of THE LANCET of the above date if they will kindly return it to him at 1, Bedford-street, Strand, W.C. 2. The postage on the number is three halfpence. He will be pleased to pay for those returned.

LITERARY INTELLIGENCE. — Oxford University Press announces among its new books from the Yale University Press: "The Dawn of Modern Medicine," by Albert H. Buck; "The Pathology of Influenza," by M. C. Winternitz, I. M. Wason, and F. P. McNamara; and "The Lethal War Gases: Physiology and Experimental Treatment," issued under the direction of Frank P. Underhill.

OPENING OF THE SESSION AT THE MEDICAL SCHOOLS.

MEDICINE FOR WOMEN.

THE inaugural address at the London School of Medicine for Women was delivered by Miss L. MARTINDALE, M.D., B.S., J.P., who began by alluding to recent criticisms made in the press as to the need of women doctors, their capabilities, and the attitude of the public towards them, and proceeded to a brief review of the position of the present woman doctor in Great Britain, her influence on the social and political life of the nation, her relations to the medical profession at the moment, and her place in the scientific, social, and political life of the future.

Dr. Martindale discussed the revolutionary changes in the prevention and cure of disease in modern times. She dealt first with infant mortality, pointing out that the 2000 or more infant welfare centres, the establishment of which had contributed to its reduction, were nearly all staffed by women doctors. She spoke of the maternal mortality of childbirth, practically undiminished since 1881, and of the ways in which this may be combated in the future; also of the need for research into the anæsthetics administered at childbirth. Of the future employment of women doctors in the insurance medical service, Dr. Martindale spoke in hopeful terms.

In the research into the initial stages of disease, now being conducted at the St. Andrews Institute for Clinical Research, Dr. Martindale was, like most practitioners, keenly interested. Speaking from her own experience as a general practitioner, she said:—

> In your hospital work you will be taught the ætiology, the signs and symptoms, the diagnosis, the prognosis and the treatment of the principal diseases that man is exposed to. You will see typical and advanced cases—and learn to recognise these diseases. When you start in general practice you will find to your dismay that many patients will come to you, complaining of feelings of exhaustion, of unfitness for work, of uncontrolled attacks of emotionalism or irritability, of unexplained sensory symptoms. You will examine them as you have been taught to do; you will go into their habits of life, their diet, and so on, and you will probably prescribe a change of air, a daily two hours' rest, and give them perhaps an iron or valerian tonic, and it will not be till later on, when you are collecting your cases together, and trying faithfully to index them according to their diagnosis that you will realise how inadequate your knowledge of the initial stages of disease is, and how inefficient your treatment will have been because you have really been quite unable to diagnose your case. About a year ago I was dissatisfied with my system of records of private patients. I started a fresh card-index, and got my secretary to index, not only according to the names of the patients, but also the diseases they were suffering from—and this was what I found. Of the 3307 cases that I had seen in private practice in consultation only (I did not include those I had visited at home, nor those I had examined in the ordinary routine of school or insurance examination, nor any of my intensive X ray therapy cases) I found that although I had divided those cases under the headings of 327 different diseases, there were still quite a number that were classified under their symptoms rather than their disease. Imagine my relief then when I found that this was the lot of every practitioner, and my interest to find that as an outcome of this experience Sir James Mackenzie had started an institute with the express object of investigating disease before the occurrence of any structural change in any organ of the body, and so providing a diagnosis at a period earlier than is possible by the methods now in use.

Dr. Martindale then described the general scheme of the St. Andrews Institute for Clinical Research, familiar to readers of THE LANCET.

On the question of the treatment of cancer, Dr. Martindale had some hope to offer. She described recent developments in intensive deep X ray therapy, and said that from her own experience in gynæcological X ray work she believed that many of the students of to-day would be radiologists in the future, having under their care many cases of cancer that to-day were still being submitted to surgical treatment. Dr. Martindale pointed out incidentally the importance

Rural Contract Practice.

As an example of the conditions prevailing in rural areas, Dr. S was attending in 1896 the 6000 inhabitants of the village in which he lived and the outlying districts within an area of three miles. In the environs there were lodges of two national friendly societies, a local friendly society admitting both men and women members, and a family club in the nature of a medical aid society giving no financial benefits. The subscription to the last-named was 9*d.* per quarter, out of which Dr. S paid 5 per cent. to a collector. In the village were eight medical aid clubs or societies without adhesion to which Dr. S believed he could not earn a sufficient livelihood; also a National Medical Aid Company which did not scruple to put children on its books for ½*d.* a week. In one case a child was put on the books on a Monday, and died before the week was out, Dr. S's fee for three visits and a death certificate being therefore ½*d.* The club practice was so extensive that 50 visits a day was a frequent programme, apart from surgery consultations. During the influenza epidemic the pressure was so great that Dr. S's health was shattered and he found himself out of pocket. The club members entered without medical examination and paid their medical officer 3*s.* a year; those suffering from tubercle became patients from their first week of membership. No stringent measures were taken to see that subscriptions were paid regularly; a member with lapsed payments could secure another card and present himself as a new member, avoiding payment when in good health. Lists could not be verified and Dr. S was at the mercy of the collectors, for it would have been suicidal to complain. The principal manufacturer of the district, paying £600 a week in wages and £50 a year in rates and taxes, was a member of one of the friendly societies and had to be attended at 4*s.* a year; he suffered from hæmoptysis. Not only the tradesmen avoided paying fees, but also the stewards of both political clubs, the minister of a chapel, one of the churchwardens, and in most cases the wives also of subscribers to medical aid organisations. Club patients governed the vote of guardians and district council, and complaint from Dr. S would simply have resulted in the appointment of a stranger as medical officer of health and Poor-law doctor. In the surrounding villages things tended just as much to the degradation of medical practice.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY, LTD.—The annual meeting of this society was held at Lincoln House, High Holborn, London, W.C., on Sept. 26th, when the first report submitted since the conversion of the society into a mutual company was adopted. The report stated that the number of policies issued in the sickness and accident fund was 302, for annual premiums of £4318 15*s.* 9*d.* Sickness claims paid amounted to £20,007 3*s.* The total premiums amounted to £41,066 12*s.* 1*d.*, and the accumulated funds amounted to £218,074 6*s.* 1*d.* The number of policies issued under the life assurance fund was 90, assuring £59,005 10*s.* (less re-assurances £10,200) for annual premiums of £1999 7*s.* 6*d.* and single premiums of £1387 7*s.* 8*d.* The claims paid amounted to £1187 10*s.*, and the total premiums amounted to £6365 1*s.* 8*d.* The total premium income of the society amounted to £47.431 13*s.* 9*d.*, and the expenses of administration were £5315 18*s.* 1*d.*, being 11·2 per cent. of the premium income. The chairman, Dr. F. J. Allan, said that as a result of the change to a limited company more business had been done every week than had been done in a month under the old régime. In the sickness fund the new annual premiums were nearly three times the average for the previous year. The ratio of expense only slightly exceeded that of 1919 and some of that expenditure might be regarded as extraordinary and not likely to occur again. There was no other company that could offer such good premiums in all branches of sickness and life assurance. Dr. Knowsley Sibley, who seconded the adoption of the report, pointed out that the society was the only one that issued a permanent contract so that a man once insured remained insured up to the full period. On the motion of Sir William Willcox, Dr. Harvey Hilliard, a retiring director, was reappointed, and Dr. Charles Buttar was elected in the place of Mr. E. M. Corner, who has retired on account of ill-health. The report is more than satisfactory.

Public Health Services.

PANEL REPRESENTATION IN PARLIAMENT.

THERE is a trust fund under the control of the British Medical Association known as the Medical Representation in Parliament Fund. Panel committees have subscribed to this fund in varying amount, Manchester with £200, Devon with £42, and York with £33 at present heading the list. The trustees of the fund hope to support at least two candidates of differing political colour, but the income so far does not justify more than one candidature. The trustees have recognised and are supporting Dr. H. B. Brackenbury, whose services to insurance practitioners are well known. He is believed to have a reasonable chance of success.

HEALTH INSURANCE IN IRELAND.

The threatened division of the Insurance Service between Northern and Southern Ireland is exercising the minds of the Approved Societies Association in that country. The chairman of executive of the Association described the working of the Insurance Act in Ireland as "a service of social reform which had ameliorated the condition of hundreds of thousands of workers . . . . and had materially assisted . . . . in restoring them to health and earning capacity." It was resolved to ask the Irish Insurance Commissioners to accede to a unanimous desire on the part of the approved societies to continue as at present at least until December, 1923.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Belfast.

THE annual report of Dr. H. W. Bailie, medical superintendent officer of health, for the year 1920 has just been issued. It is a full and comprehensive document and affords ample information upon all questions of health and sanitation. The population, as estimated by the Registrar-General to the middle of the year, was 413,000, an increase of 12,000. The birth-rate was 29·4, an increase of 3·7. The death-rate from all causes was 17·5, from zymotic diseases 1·5, and from chest affections 5·6 per 1000. There has been a decrease of 0·4 per 1000 of the population in the death-rate from all causes, and of 1·0 from chest affections. The deaths of children under one year old were 132 per 1000, an increase on the preceding year of 19 per 1000. The notifications of infectious diseases were 2689, a reduction on the previous year of 699. The zymotic rate has shown a progressive decline since the year 1901, when the rate was 3·3 per 1000. In the quinquennium 1901–5 the rate was 2·6 per 1000; in the next two quinquennia the rate was stationary at 2·0 per 1000; in the last quinquennium the rate was 1·5 per 1000. The improvement is largely due to the progressive decline in the incidence of typhoid fever, which was formerly very prevalent in Belfast, but which has now reached moderate proportions. The total number of cases of typhoid fever was 199, an attack rate of 0·48 per 1000 of the population. The deaths numbered 34, equivalent to a case mortality of 17·1 per cent. A large number of cases were traced to infected milk-supply. In 22 cases a history of having eaten shell-fish previous to the onset of illness was obtained. The report states the high death-rate from diphtheria, a case mortality of 16·5 per cent., could be considerably reduced if prompt action were taken to have all cases of throat trouble examined and treated. In many instances the cases are too far advanced before coming under medical treatment. There were 62 cases of puerperal fever with 39 deaths, equivalent to a case mortality of 62·9 per cent. Careful inquiry was instituted regarding the relatively large number of cases of the last-mentioned disease, and precautions were taken. Infection was in several cases traced to nurses, the mortality being least in cases treated on the staff occurred but seldom and few students were willing or able to wait for them. Thus in the open competition for these appointments no sentimental motives swayed the electors, and candidates must supply evidence not only of professional capacity, but of ability and willingness to teach. The larger school indeed suffered in this way from tradition, the members of its staff were speaking generally of a type, a highly desirable type, but there was small chance of penetration by the different ideas and ideals of other schools. Moreover, the newly elected member of the staff was likely to be a younger man than his colleague who joined the staff of a larger hospital.

> Few there are who can aspire to Kipling's exhortation to wait and not be tired by waiting, and to reach a hospital staff after many years of professional experience is not to find oneself in the best condition in which to apply oneself to the requirements of the elementary student. I think, too, the man of great experience—invaluable, of course, to the more advanced student—is not always the best teacher of the rudiments of clinical medicine and surgery. One may regard the pitfalls of diagnosis, the mistakes against which the elementary student must be warned, as the ruts over which the inexperienced traveller stumbles, the recollection of which will be more vivid to the younger specialist still sufficiently footsore to be wary than to the smoothly travelling automobilist whose comfort obliterates all memory of the weary pedestrianism of his youth. The student must be helped to pass his examinations. I can remember a most admirable teacher at my own medical school, a man who taught us no examination surgery, but the practical details of handling patients and patients' relatives. We whom he taught are indescribably grateful now for his invaluable instruction, but we took longer to qualify than our colleagues, and I am afraid did not appreciate him at the time, for we felt that our real education might legitimately begin after we were qualified, and that until we were qualified we were at too great a disadvantage to listen to him without restlessness.

Dr. Abrahams claimed as another advantage of the small school that a resident appointment, the value of which could not possibly be over-estimated, was so much less difficult to obtain. He spoke also of the greater facility of coördination, and of the more balanced allocation of duties to clinical clerks and dressers. The inducement offered by the tradition was not monopolised by the large school. There was no school throughout the kingdom which had not famous sons. Naturally, the larger the school the larger its list of celebrities; but we ought to remember that the school should be measured by its average, not by its exceptions. In conclusion Dr. Abrahams said :—

> I have attempted to represent to you without bias, so far as the absence of bias is possible, the pros and cons of the small medical school. I am sure that you will have sympathised with me in that although I have attempted fairly to look at the matter with unprejudiced eyes my inclination has been towards championship of our smaller medical institutions. And not from merely sentimental motives, for the problem must be squarely faced when so important a question as choice of an alma mater is under consideration. It is a question, too, of direct competition, not one of a small inferior institution in contrast with a large admittedly superior one. The large school must always make a strong appeal, so much so that the whole subject at first blush is one for dismissal with the cynical conclusion that it demands no more argument than would be necessary in the case of a debate upon the relative advantages and disadvantages of a small income. Yet even that subject cannot be summarily dismissed if one may judge by the appearance, far from self-satisfied, and the public pronouncements, far from enthusiastic, of the wealthy. Rarely, indeed, in anything can there be unqualified advantages, and I hope I have been able to show that there is so much to be said in favour of the small school that I may in all sincerity congratulate you upon the choice which you have made.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, LONDON, W.C.—A course of lectures, free to medical practitioners, will be given at the hospital on Thursdays, at 1 P.M., from October to December. On Oct. 13th Mr. O. L. Addison will lecture on Acute Infections of Bone. Subsequent lectures will be announced in our Medical Diary. Clinical instruction is given by the members of the staff at their visits; fees for three months' attendance are £5 5s., and for perpetual attendance, £10 10s.

NOTES ON THE TEACHING OF PATHOLOGY IN AMERICA.

BY A. E. BOYCOTT, M.A., D.M., F.R.S.,
GRAHAM PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LONDON.

BY the kindness of the Rockefeller Foundation I was able to spend some time in the spring of this year in studying the practice of medical education at the leading schools in the United States and Canada. The visit was extremely instructive, and one learned a great deal from what high ideals and pretty ample resources have been able to accomplish there by way of reforming the preparation of medical men. And along with a good many lessons in what to imitate, one learned a few in what to avoid.

Differences in Curriculum.

Leaving aside for the present more general matters, I want here to note a few points in connexion with my own subject which appeared to me specially useful. To make them intelligible, however, it is necessary to summarise briefly the differences in the general arrangement of the curriculum there and here. The "medical course" lasts four years, and it begins with anatomy. Chemistry, physics, and biology must be taken in a "pre-medical course," which is required to be of at least two, and sometimes four, years' duration in a university. Roughly speaking—and it will be understood that the details vary in different places and that no general proposition is true of all—the first two years of the medical course are occupied with anatomy, physiology (including biochemistry, which is treated amply), pharmacology and pathology, the third year with didactic clinical teaching and the fourth with practical work in the wards. Compared with our curriculum, relatively more time is given to laboratory work and less to actual contact with sick, a defect which is being widely recognised, so that a year's work as resident ("intern") is everywhere customary among the better men and in some places compulsory. The course is evidently longer than ours, the minimum being six years, the maximum nine. The university degree, which is reached at the end, does not give a qualification to practise which must be obtained from the relevant State Board. The number of students taken in each year is rigidly limited at all the better schools by selection from a considerably larger number of applicants.

Pathology is studied in the second medical year. The relations of bacteriology to the rest of the subject are various. In some places they are united as commonly in England, while in other schools they have separate departments and staffs. Local opinions differed as to which arrangement was the better, but they were tolerably unanimous that it was desirable that the two topics should to a large extent be taught as one—e.g., that the student should study the pneumococcus at the same time as he studies the histology of acute lobar pneumonia. This can be achieved either by taking bacteriology as a subsection of pathology or by an amiable coöperation between separate organisations; in the latter case sufficiently divergent ideals or incompatible personalities may cause considerable difficulties. The nominal arrangement which exists in Manchester and some other English schools whereby the "professor of bacteriology" teaches public health students, while the "professor of pathology" teaches bacteriology along with the rest of pathology to medical students, was not met with; schools of hygiene are at present quite rare in America. Bacteriology, whoever teaches it, usually precedes morbid anatomy and histology, a sequence which is undoubtedly the best suited to the preceding and succeeding subjects of the curriculum. It is sometimes taken early in the first year and not uncommonly along with physiology towards the end solution for varying periods according to whether the finished article is to be a 10, 20, 30, or 40 day gut. The catgut is then dried and wound into hanks supplied in cardboard boxes ready for "surface sterilisation" by any of the well-known methods. If preferred, the gut can be supplied in carbolised alcohol in sealed glass tubes, fully sterilised and ready for immediate use.

The most meticulous care is exercised in obtaining a reliable as well as sterile suture material. Thus every strand is tested at several points in its length both for tensile strength and evenness of diameter; and those which vary by any appreciable amount are rejected. When handled the catgut was found to be smooth, even, pliant without being limp, and of unusual strength. The surgeon can also rely on the gut lasting in the tissues for the required time, since the hardening process is the result of several years' experiment in man. It should be mentioned that the figure in days refers to normal adult muscle. Thus a 40 day catgut remains unabsorbed for just 40 days in muscle; in the peritoneum it is found to last about half that time, and when exposed to human digestive juices, as in the inner suture layer of a gastro-jejunostomy, only about 10 days.

A demonstration of the Souttar needle already described in THE LANCET was also given. The principle has now been applied to curved as well as straight needles, both of the round-bodied and cutting varieties, and mounted with various suture materials. Difficulty was experienced in obtaining an alloy for the shank that would "stand up to the work" on a curved needle, but it is believed that this difficulty has now been overcome.

The catgut and Souttar needles, the patent for which is owned by the London Hospital, are both marketed by Messrs. Allen and Hanburys by arrangement with the hospital, which receives the profits from the sale.

BRITISH ORTHOPÆDIC ASSOCIATION.

A CLINICAL meeting of the British Orthopædic Association was held on Oct. 1st and 2nd at the Shropshire Orthopædic Hospital, Oswestry. This hospital has recently removed from its well-known position at Baschurch to these larger quarters. On Oct. 1st Sir Robert Jones gave a clinical demonstration of a number of cases under treatment in the wards, including rickety and paralytic deformities and cases of tuberculous disease. Mr. Naughton Dunn demonstrated his stabilising operation for the treatment of paralytic deformities of the foot, the principle of which is that in severe cases of paralysis of the foot the deformity is corrected by a bone operation, which includes the removal of the cartilage surfaces from all the tarsal joints, so that these joints become fixed, leaving a foot which moves at the ankle-joint as a simple hinge. All the anterior muscles are thus left as pure dorsi-flexors of the foot, and the posterior muscles are transplanted into the tendo Achillis to act as plantar-flexors. Mr. G. R. Girdlestone demonstrated a method of treatment of Pott's disease carried out in the hospital, and showed a number of cases which had been treated by bone transplantation. Mr. D. McCrae Aitken demonstrated a method of correction of severe kyphosis and of scoliosis on the Abbott's frame. In the afternoon visits were paid to after-care centres, a number of which have been established throughout the county of Shropshire. The children under observation or treatment attend one day in each week, preferably on market day. They are seen weekly by the visiting nurse and once a month by a medical officer from the Orthopædic Hospital. Records, including photographs and plaster casts, are kept at the after-care centres, measurements for splints and appliances made, and simple plaster cases applied at these centres. On Oct. 2nd a series of operations were performed—namely: (1) Albee's operation for spinal caries, by Mr. Girdlestone; (2) osteotomy for mal-union of fracture of the femur, by Mr. Aitken; (3) stabilising operation upon a paralysed foot, by Mr. Dunn; (4) correction of a club foot in a child of 7 with the wrench, by Sir Robert Jones; (5) Souttar's operation for displacement of the anterior superior spine of the ilium as a means of correction of flexion of the hip, by Mr. Noble.

Correspondence.

"Audi alteram partem."

A MEDICAL SUPERANNUATION FUND.

To the Editor of THE LANCET.

SIR,—The formal notice from the Ministry of Health as to a reconsideration of the remuneration fee brings again an opportunity for the establishment of a superannuation and insurance fund for all doctors working under the National Insurance Act. This fund should form an integral part of any agreement between the Ministry and the panel committees. With an elastic scheme of benefits all possible contingencies could be dealt with. Existing insurances, the problems of varying size of lists, and the varying ages of the doctors, could, with actuarial assistance, be fairly and adequately met. Surrender values could easily be arranged for doctors leaving the service, changing their type of practice, or going abroad. Most important of all, the disaster of unexpected broken health could be generously dealt with by the committee of management of such a fund.

In 1913 such a scheme was suggested, and the late Sir George Hardy kindly helped to draw up certain tables. In 1919–20 the London Panel Committee passed resolutions in favour of a scheme for the establishment of a pension fund, and Dr. Addison expressed himself in favour of the principle. Now, again, an opportunity presents itself, and it is to be hoped that panel committees throughout the country will support the principle and leave the details to be formulated by the Insurance Acts Committee and the Ministry. Surely the medical profession cannot be so blind as to fail to realise the immense advantages to be gained under such a scheme. I am, Sir, yours faithfully,

H. H. MILLS.

St. Mary Abbot's-terrace, W., Oct. 3rd, 1921.

INQUIRY INTO THE INSURANCE ACTS.

To the Editor of THE LANCET.

SIR,—The executive council of the Federation of Medical and Allied Societies trusts that you will publish the following memorandum, with postscript, sent this day to the Minister of Health. It is the result of deliberations extending over the past four months and I am instructed to state that other medical societies wishing to add their support may do so without obligation.

To the Minister of Health,

"We, the undersigned duly appointed representatives of organisations coöperating in the Federation of Medical and Allied Societies (Inc.), being influenced solely by a desire to promote the health and contentment of the people with whose physical well-being we are intimately concerned, request the Minister of Health to consider the advisability of setting up an independent committee to take evidence in public, inquire into, and report concerning the working of the National Health Insurance Acts.

"The following reasons appear to justify this request:—

(1) The Acts were introduced as an experiment in public health administration and have been in force for over nine years. Yet no sufficient data are available by which to judge of their efficiency or inefficiency. Neither is it possible to estimate to what degree, if any, they have tended to raise the standard of national health.

(2) Criticisms, often ill-informed but none the less damaging to the smooth working of the Acts, are made of the Health Ministry's methods, of the administration of the approved societies and of the services the insurance medical practitioner provides.

(3) The Acts authorise certain medical services only and these, with the advance of knowledge in preventive and curative medicine, fall short of providing the insured with all that modern medicine has to give.

medicine, surgery, obstetrics, &c., as the case may be. This is an arrangement which it is difficult to value too highly from the student's point of view. No intelligent student will take what the pathologist tells him about medicine or surgery very seriously in comparison with what he learns from his clinical teacher. Since definite clinical pathological laboratories staffed by pathologists have been developed (mostly in the last 20 years) it has been consistently impossible to bring conviction to the student that observations made there are really just as much a part of genuine practical medicine as those requiring no special apparatus which he makes in the wards, that they are subject to the same sort of error, and require the same common sense in interpretation. The position has been aggravated by the fact that his clinical teachers have not always been able to form a critical estimate of the laboratory findings or to place them in their proper relation to the other data from which the diagnosis has to be deduced; the exaggerated respect of some has been as much misplaced as the contemptuous indifference of others. The laboratory work has in consequence been too often looked upon by the student as something curious and remote, possibly interesting, but of no particular concern to him as a practical doctor. In America the bulk of the routine "clinical pathology" is done as a matter of course by the residents; in the most highly developed institutions wards and laboratories form one department under the same head, and those who work in the laboratories are also in charge of patients in the wards. If laboratory examinations are of any value in practical medicine and surgery there can be no doubt that this arrangement is a great advance on our English plan. It achieves a unity of purpose, effort and result which can be obtained in no other way, and it is much to be hoped that in one form or another it will be widely adopted with us.

The advantage is not wholly with the clinical subjects. For if the rise of "clinical pathology" has not done so much harm to pathology as it has done good to medicine, it has done a good deal of damage by deflecting the minds and energies of pathologists from the science which they profess to its technical applications. If "clinical pathology" can be attached to its proper clinical sphere pathology will be the more free to make the genuine progress which lies open to it as a great branch of biological science. The activities of clinical laboratories in America include a good deal of work which in our curious terminology we should call "physiological." The problem of "bringing the physiologist and pathologist to the bedside," about which we have heard so much in recent years, is in this way solved. In America, at any rate, there is no insuperable difficulty in finding men with adequate training in laboratory methods whose real interests are clinical. It is not necessary to bring them to the bedside; they would go there any way.

CONTRACT MEDICAL PRACTICE:
CONDITIONS A GENERATION AGO.

THE conditions of contract medical practice have altered profoundly within the experience of many still in practice, and it may serve a useful purpose to recall briefly the state of affairs as it presented itself to the Special Commissioner of THE LANCET 25 years ago. He observed and inquired, recording what he saw and heard without hastening to point morals, but it then seemed clear to an impartial mind that, while schemes to secure medical attendance at low rates might be praiseworthy in aim, and while it did not necessarily imply disgrace to be medical officer to a medical aid association, nevertheless the schemes were unworthy if they involved oppression of other poor people, and were mismanaged if others than the truly necessitous received benefit from them. The following examples are taken from our Commissioner's experience, names of localities being omitted as no longer relevant.

Urban Medical Clubs.

In the year 1896 an area in a county town with a population of 50,000 was worked by two medical clubs, a Medical Institute and a Friendly Dispensary, about 20,000 of the inhabitants obtaining medical attendance through these clubs at reduced rates. The resident medical officers, though debarred from private practice, did not receive the whole of the money earned by their exertions. Thus in the latest completed year for the 4889 members of the Institute there were 24,173 medical consultations, 34,431 prescriptions were given, and 6934 visits were paid; for this medical aid £980 was collected from subscribers, of which only £384 reached the hands of the medical officers. Dispensers received £116, cab fares absorbed £65, drugs £161, and £32 was allotted to administration. But the remaining £231 was pocketed by the Institute in spite of a stipulation that no profit should be made out of the medical men. In the same year the Dispensary had 4398 members requiring 16,763 consultations, 27,255 prescriptions, and 7815 visits. Of the total receipts, amounting to £917, the three medical officers got only £478, a net profit of £134 being made by the Dispensary. To produce this profit the medical men in the service of the society were giving consultations and advice at an all-round average of 4½d. a time. All classes of the population were invited to join these institutions, and the medical officers had to attend wealthy tradesmen and others in a large way of business as well as those who had retired in affluence. The rate of subscription was 3s. 6d. per annum with an addition of 8s. for wife and any number of children under the age of 16. In the year mentioned 36 medical practitioners in the town agreed to ask that the capitation fee for members with an income exceeding £1 a week should be raised to 4s. 4d. per annum with 5s. for wife and 4s. 4d. for each child, not more than four children in any one family being charged for; further, that no member should be admitted with an income from all sources of more than £2 a week or a higher rental than £20; that extra fees should be chargeable for minor operations, confinements, vaccination, and examination previous to admission; and that the medical officers should receive the whole of the above fees after deduction of legitimate expenses. The medical clubs rejected these conditions and a Medical Protection Fund was started to maintain the medical officers who resigned in a New Provident Association.

Exploitation by Individual Speculators.

At the same period in a Midland city, medical men seemed so incapable of attending to their own business that laymen came to their assistance, naturally pocketing a large share of the profits as a reward of their greater organising capacity. The Medical Aid Association was conducted by a Mr. X, with the help of 40 or 50 house-to-house canvassers; he received for each patient 1d. a week or 4s. 4d. a year, paying the surgeons 3s. a year per member. In practice, however, the whole of this not very generous capitation fee did not reach the doctors, as 2 per cent. was deducted from the account for unexplained reasons, and the fees paid by the many members lapsing without completing a quarter went into the employer's pocket. Mr. Y was the proprietor of a Medical Self-supporting Society to which upwards of 2000 members contributed weekly 1d. apiece, making himself responsible for the payment of quarterly fees to the doctors. In this institution there were, to use Mr. Y's own words, no officers, no committee, no medical staff, no drug stores, no heart-burnings, no jealousies—only, in fact, Mr. Y himself. The doctors received their cheques regularly, but an income of £14 a quarter was the utmost to be obtained in Mr. Y's service, any request for explanation of the amount being met by the production of a perplexing array of figures. Medical officers were, however, freed from complaints on the part of patients, for Mr. Y was prepared to defend his employee against a customer just as a shopman would argue the excellent quality of his goods against a fault-finding purchaser.

dissecting room. The student is supposed to come to the dissecting room with knowledge of the laws and principles of mechanics; in the dissecting room this knowledge is taken for granted, and its application to the structure of the human body, so far as limits of opportunity permit, is brought to his notice there; when he passes on into the hands of the clinicians it surely becomes a part of their business to show him what happens when the normal state is upset, for they must take for granted that he is acquainted with the normal by this time. It is no part of anatomical teaching in the intermediate years to deal with the results of injuries, though demonstrators in the dissecting room frequently point a moral, and, we hope, adorn a tale with some reference to the bearing of their point on some clinical state not beyond the comprehension of their hearers. The teaching of "surgical" anatomy" would appear to be at fault. This unfortunate subject is mainly unfortunate in that it has been put into a compartment with a label of its own, nobody's child and everybody's whipping-boy, instead of running through the whole teaching of surgical diagnosis and treatment. One more point strikes me as calling for protesting comment in this matter: Is it fair to blame the teachers of his youth for the shortcomings of the mature practitioner? Surely a middle-aged man who fails to recognise what has happened in a large way to certain large bones about the ankle cannot be justified in saying that the fault lies with those who tried to instil principles into him 30 years earlier. If their pupils are never to develop their thinking minds, the ways of teachers will indeed be unhappy. But the main thing from the teachers' point of view is to insist on the application of anatomical mechanics to the understanding of injuries and disease being taught by the surgeons from day to day, and not left to the anatomists who may not have the experience, and certainly do not possess the material, to carry it out properly.

I am, Sir, yours faithfully,

Oct. 3rd, 1921. TEACHER OF ANATOMY.

CITY OF LONDON MEDICAL BOOK SOCIETY.

To the Editor of THE LANCET.

SIR,—Our unpretentious but lively little Society can now claim the distinction of having been in continuous existence for a hundred years. We possess the original minute-book recording the foundation of the Society by 20 general practitioners at a house in Frederick-place, Old Jewry, in September, 1821. The number of members is limited to 20, there is no subscription, fines for unpunctuality in forwarding books and for other misdemeanours provide a sufficient income, and, at the end of the year, the books are sold to the highest bidders among the members. An annual dinner is held, and failure to attend involves a fine equal to the cost of the dinner, so that we generally have a full gathering. We claim to be the oldest medical book society in the kingdom. This year the Centenary Dinner (Dr. A. T. Davies in the chair) is to be held at the Abercorn Rooms, Great Eastern Hotel, Liverpool-street, at 6.30 for 7 P.M., on Oct. 25th. All old members will be welcome if they will kindly intimate to me their intention of being present.

I am, Sir, yours faithfully,

ERIC BAYLEY.

21, Finsbury-square, E.C.2, Oct. 4th, 1921.

HISTORY OF BIOLOGY AND MEDICINE.—A course of lectures on the History of the Biological and Medical Sciences from the Earliest Times till the Seventeenth Century will be given by Dr. C. Singer at University College, Gower-street, London, on Thursdays, at 5 P.M., beginning Oct. 13th. A further course, bringing the history from the seventeenth century to the present day, will be given by Dr. Singer in the New Year. The lectures will be illustrated by lantern-slides. The fees are £1 11*s.* 6*d.* a term, and the course is open without fee to all students of the college.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. and Bt. Col. E. E. Powell relinquishes the actg. rank of Col.

Maj. A. G. Cummins retires on ret. pay.

REGULAR ARMY RESERVE OF OFFICERS.

G. T. Baker, late Capt., R.A.M.C., to be Capt.

TERRITORIAL FORCE.

Maj. T. W. Banks, having attained the age limit is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. F. W. C. Brown resigns his commn. and is granted the rank of Maj.

Capt. J. Kinnear (late R.A.M.C. Spec. Res.) to be Capt.

Capts. D. H. MacPhail, A. D. Downes, A. M. Stewart, and L. Beesley resign their commns. and retain the rank of Capt.

ROYAL AIR FORCE.

Dental Branch.—Flight-Lieut. G. Packham relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

THE MILITARY CROSS.

The King has approved of the Military Cross being given to Capt. Atul Krishna Kar, I.M.S., attd. 28th Punj., I.A., for distinguished service in the Field with the Waziristan Force, India:—

"On April 10th, 1921, during the action below Haidari Kach, this officer was sent out from camp to bring in wounded. All ranks of the regiment testify to his devotion and personal disregard to danger while binding up wounded and despatching them to camp under a heavy fire. Owing to his coolness and splendid organisation the wounded were systematically evacuated in very difficult circumstances."

DEATHS IN THE SERVICES.

Lieut.-Col. F. P. Maynard, I.M.S. (retd.), who died on Sept. 30th at Audlem, Cheshire, entered the Indian Medical Service in 1887 and afterwards became professor of ophthalmic surgery in the Medical College, Calcutta, and ophthalmic surgeon to the College Hospital. He was also surgeon superintendent of the Mayo native hospital. He had held the position of assistant editor of the *Ophthalmic Review*, published in London, of *Ophthalmology*, published at Seattle, and of the *Centralblatt für Praktische Augenheilkunde*, and published a "Manual of Ophthalmic Operations."

BIRMINGHAM DOCTORS AND THE PANEL SYSTEM.—A general meeting consisting of about 250 medical men was held on Sept. 30th under the auspices of the Birmingham Branch of the British Medical Association to hear an address by Dr. Alfred Cox on the National Health Insurance System. Dr. Thomas Wilson presided. Dr. Cox referred to the rumours that the remuneration of the insurance practitioners was to be reduced, and that the medical benefit part of the Insurance Act might even be abolished. He thought that the medical profession, after an experience of eight years, should say whether it believed it would be in the interest of the public and of the profession to drop the medical benefit or not. The national insurance system had not had a fair chance. It was born and spent its infancy in an atmosphere of politics and professional prejudice and fears. Then came the war and upset many of the calculations upon which it had been based, and made it impossible to introduce those developments which normally would have been introduced. Now attacks were made upon it by a large section of the press and by politicians in the interest of economy-at-any-price. Dr. Cox had no hesitation in saying that, with all its drawbacks and defects, the system was a great improvement on the conditions existing before the Act was introduced. It had given many working people access to medical treatment which they never had before except as a charity, and it gave the doctors payment for much work which they had previously done for nothing. The following resolution, proposed by Dr. H. G. Dain and seconded by Dr. T. M. Tibbetts, was carried unanimously:—

> Where it is necessary to organise or provide a general practitioner's services for any section of the community unable to pay the ordinary fees, such service is best given on the lines of the present panel system; and this meeting *does* wish medical benefit under the National Health Insurance Acts to continue so long as the conditions are such as will allow of a good service being given.

in hospital. In the late spring and early summer there was a fairly widespread epidemic of encephalitis lethargica, but precise information is not available. Of 9 cases admitted into the Purdysburn Fever Hospital 2 died, 5 were discharged completely cured, and 2 after a prolonged stay in hospital had not completely cleared up on discharge. Considerable progress was made during the year in the treatment of venereal diseases. Clinics are available at the Royal Victoria Hospital, the Mater Hospital, and the Union Infirmary. Salvarsan or its substitutes are supplied free of cost under certain reservations to medical practitioners; and the assistance of the pathologist or one of the medical officers from any of the established centres for consultation, or the taking of specimens for examination, and for carrying out the treatment is available. 3522 Wassermann tests and 484 microscopical examinations for the detection of spirochætes or gonococci were made during the year at the laboratories connected with the clinics and at the Queen's University. Steps were taken for dealing with cases of venereal disease in sailors visiting the port of Belfast.

There were 762 deaths from phthisis registered during the year, equivalent to a rate of 1·8 per 1000. The marked decline in the mortality from this disease in recent years is most satisfactory. In 1901 the death-rate from phthisis was 3·1 per 1000. In 1911 the rate had fallen to 2·1 per 1000, and the rate for 1920 is the lowest in the history of the city. Pneumonia, on the contrary, seems on the increase. In 1905 in an estimated population of 360,000 there were 577 deaths from this disease. In 1920 in an estimated population of 413,000 the deaths from pneumonia numbered 800, as against 712 in 1919. It is instructive to note the relative mortality from phthisis and pneumonia in a long series of years. In 1905 phthisis claimed almost exactly double the number of deaths as compared with pneumonia. The pneumonia figure crept up as that of phthisis declined, and now slightly exceeds the latter.

The least satisfactory item in the report is the relatively high rate of infant mortality, which shows an increase on the previous year. This is the more regrettable as great efforts have been put forth in connexion with the six maternity and child welfare centres. Dr. Bailie complains that expectant mothers do not take sufficient advantage of the information and advice offered at these centres. An infant mortality rate of 132 per 1000 is far too high even for a large industrial and manufacturing centre such as Belfast. It is significant that the rural rate in Ireland, even under poor hygienic condition, is very low, about 60 per 1000, and in some counties the rate is only between 40 and 50 per 1000. The influence of "congenital debility" and "prematurity" is often much exaggerated. The rate in Belfast was 143 per 1000 in 1913, so there has been some slight improvement.

A health exhibition was held in the city in May, 1920, and in connexion with the exhibition a series of lectures were given on housing, tuberculosis, milk, health in schools, oral sepsis, and kindred subjects. Ireland is still without a system of compulsory medical inspection of schools and scholars, a deplorable gap in the machinery of preventive medicine. During 1920 1768 visits to the various schools in Belfast were made, but the powers of the medical officer in this connexion are very limited. On 529 of these visits the number of pupils in attendance was found to exceed the school accommodation. In 11 schools various sanitary improvements were effected. The report is in many respects encouraging.

Ealing.

Ealing, as Dr. T. Orr tells us, is a favoured spot; the borough is almost entirely residential with a few small factories and no real slums, it is well supplied with parks, open spaces, and allotments, and with a lay-out giving plenty of space between the houses; as one would expect, its health statistics make a good showing even in a year of low death-rates. The estimated population in 1920 for birth-rate was 76,290 and for death-rate 76,129. The birth-rate was 17·8, the death-rate 8·8, the infant mortality rate 47, and the death-rate from all forms of tuberculosis 0·74. There has been trouble with the pollution of the Brent by the unsatisfactory effluent from the Wembley sewage works. There is a comprehensive maternity and child welfare scheme which will be rendered more complete by the agreement for the management of the Chiswick and Ealing Hospitals by a joint committee. By this agreement the Ealing Hospital will become the Isolation Hospital and the Chiswick Hospital the Maternity Hospital for the two districts. Eight cases of ophthalmia neonatorum were notified, in two of which permanent damage to the cornea resulted. The council took over a hostel with accommodation for 11 unmarried mothers and their babies in June, 1920. The work of the maternity and child welfare department and the school medical service is well coördinated and carried out in the same building, the only weak spot being that the council have not control of their own midwives. Dr. Orr points out that the two great needs of the school medical work are the provision of a school for mentally defective children and an open-air school for physically defective, anæmic, and poorly nourished children.

SUMMER DIARRHŒA IN LONDON.

The hot, rainless third quarter of the year was fortunately not associated with the devastating attacks of summer diarrhœa that might have been anticipated in light of the experience of the summers of 1899 and 1911. A sign of the topical interest in the extent of summer diarrhœa this year was manifested at the English-speaking Conference on Infant Welfare held in July, when the reading of a statistical paper on the influence of weather conditions on the mortality of infancy elicited an energetic discussion, in the course of which a medical officer of health stated that the number of infantile diarrhœal deaths this year would serve as a measure of the value of the increased supervision of infants instituted during the last decade. Fortunately, judged by this severe standard the work has been abundantly justified. The death-rate from diarrhœal diseases has remained consistently low during the last five years of varying meteorology; this year the records available at present show that, in London at least, although the weekly number of deaths has been considerably above the average of the last five years, nothing like the loss of life which occurred in 1911 has taken place. In 1911, during the weeks ending July 1st–Sept. 23rd, 1997 deaths from diarrhœa and enteritis under 2 years occurred: in 1921 for the same period the number of deaths was 1173.

CATGUT AND SURGICAL NEEDLES: DEMONSTRATION AT THE LONDON HOSPITAL.

ON Oct. 1st a demonstration was given at the London Hospital of the manufacture of ultra-tan catgut. Ordinary commercial catgut cannot with absolute certainty be sterilised by any method which does not also destroy its usefulness as a ligature and suture material, as the hospital found by unfortunate experience during the early part of the war. The London Hospital was, therefore, led to prepare its own surgical catgut under conditions which ensure its sterility. The material they now make and use is the result of several years' experience in manufacture, and gives complete satisfaction to the surgeons of the hospital and others who use it.

The secret of the success of the process is that the gut is rendered sterile throughout its substance at the earliest possible moment in its manufacture, and thereafter mere surface sterilisation is sufficient. The whole process, from the first cutting up of the fresh sheep's gut, is carried out in one building under conditions which resemble those of the operating theatre. The girls engaged in the process "scrub up," and wear caps and overalls; evidently they understand the principles of asepsis. The actual process of preparation consists, briefly, of cutting the gut into lengths, removing the mucous and muscular coats by scraping, and the fat by prolonged soaking in repeated changes of alkali, sterilising in a solution of biniodide of mercury, spinning while wet, and drying. The dried strands, strung separately on a frame which carries a score or more of strands, are then immersed in a hardening

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—Entrance scholarships have been awarded to Mr. H. Mannington, Mr. R. A. Graff, and Mr. F. D. M. Hocking.

GUY'S HOSPITAL PHYSICAL SOCIETY. — The inaugural meeting will be held on Oct. 13th, when Sir Alfred Fripp will give an address. Subsequent meetings will be held on alternate Thursdays throughout the session.

GUY'S HOSPITAL MEDICAL SCHOOL.—The following entrance scholarships have been awarded :—Senior Science Scholarship for University students (War Memorial Scholarship), £75, Bernard G. Scholefield, Christchurch, Oxford. Entrance Scholarships in Arts, £100, Russell C. Brock, Christ's Hospital ; £50, Arnim F. H. Stewart.

FOUR lectures on the Nervous System and the Mind, with its Normal and Abnormal States, will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, London, E.C., on Oct. 11th, 12th, 13th, and 14th, at 6 P.M. *Admission free to men and women.*

PUBLIC HEALTH IN EDINBURGH.—On Sept. 16th the new offices of the Public Health Department in Edinburgh were formally opened by Lord Provost Hutchison, The building in Johnston Terrace was acquired in pre-war times for £3000, being formerly the Church of Scotland Normal Training College, and with internal reconstruction will have cost over £13,000.

KING EDWARD VII. HOSPITAL, CARDIFF.—Sir John Lynn Thomas, having celebrated his sixtieth birthday, is retiring from his position as senior surgeon at this hospital under the age-limit rule. The value of the pioneer work in surgery which he has done at Cardiff, not only at the King Edward VII. Hospital but also in setting on foot the Prince of Wales Hospital, is common knowledge. We are glad to think that his retirement only means that he will now have more time at his disposal for devoting to the many other schemes in which he is interested.

HARROGATE INFIRMARY JUBILEE.—The jubilee of Harrogate Infirmary was celebrated on Sept. 24th. After a reception held by the committee, the Mayor unveiled a brass tablet to commemorate the conversion of the hall into a ward during the war, and the treatment therein of over 600 sick and wounded soldiers. Another tablet was unveiled to commemorate the work of the Harrogate Women's Sewing League, which made nearly two million articles for surgical and medical use. Dr. W. Bain, who presided at the ceremony, said that the total number of in-patients during the 50 years of the hospital's existence had been 16,579, and the total number of out-patients 62,594.

RETIREMENT OF DR. N. H. CHOKSY.—The retirement at the beginning of August of Khan Bahadur Dr. N. H. Choksy from the Arthur Road Hospital, Bombay, serves to recall the great plague outbreaks of the end of the last century in that city, and the distinguished services rendered by him during that period of distress. A pupil of Henry Vandyke Carter at the Grant Medical College, Dr. Choksy took charge in 1892 of the Arthur Road Hospital, which was the only public hospital in Bombay at the beginning of the plague epidemics. The large number of deaths of patients was regarded with suspicion by the ignorant populace of the city, and the hospital premises had to be guarded by troops and police, whilst the doctor and his assistants found armed protection necessary in the streets. The work carried on by Dr. Choksy gained for him the complete and lasting confidence of the authorities and of the white population ; for some years he had the care of a leper asylum, and in 1902 was put in charge of the Maratha Hospital, in addition to his work at Arthur Road. In his 34 years of service he dealt with 25 epidemics of plague, 16 severe epidemics of small-pox, 13 epidemics of relapsing fever, 6 of cholera, and 3 of influenza. The Government conferred upon Dr. Choksy the title of Khan Bahadur at the Diamond Jubilee of Queen Victoria in 1897 ; for his valuable researches into tropical diseases he received numerous foreign honours, including the M.D. (Honoris Causa) of the University of Freiburg, while his work became widely known throughout the world, many foreigners going to Bombay to study plague under his direction. After 1912 much of his spare time was devoted to the work of the King George V. Anti-Tuberculosis League ; during the war nearly 1600 military cases of infectious diseases passed through his hands. Dr. Choksy carries with him into retirement the good wishes of all who know him. Amongst his writings were contributions to THE LANCET during the years 1907, 1911, and 1912, in which he dealt with the treatment of cholera and erysipelas and the propagation of plague.

William Domett Stone, M.D., F.R.C.S., who died in London on Oct. 1st in his eighty-second year, was a great traveller and, in his time, a great sanitary authority. His first contribution to THE LANCET, in 1865, dealt with workhouse reform.

A COURSE IN HELIOTHERAPY.—The success which attended the summer course of lectures and demonstrations given at Leysin during August by Dr. A. Rollier and his assistants has decided Dr. Rollier to repeat the course from Jan. 10th–14th, 1922. An invitation to attend will be sent to any medical man or woman expecting to be in Switzerland, on application to the Secrétariat Médical du Dr. Rollier, Leysin, Switzerland. Applications will be received up to Dec. 15th. Board and lodging (Fr.10 per day) will be reserved for those attending the course.

A MEDICAL OFFICER OF HEALTH'S SALARY.—The Town Council of the Royal Burgh of Stirling invite through the *Stirling Observer* applications for the appointment of medical officer of health, tuberculosis, maternity and child welfare, and V.D. officer, police doctor, and medical attendant at Combination Infectious Diseases Hospital. The combined salary for the work is put by the Council at £500 per annum and no private practice is permitted. The approval of the Scottish Board of Health is said to have been obtained for these terms, which are not likely to recommend themselves to candidates.

GENERAL NURSING COUNCIL FOR ENGLAND AND WALES.—The report of the Registration Committee states that, up to Sept. 30th, 1816 applications for registration have been received, and £1912 3*s.* 11*d.* has been received in fees. Three hundred and sixty-six nurses were recommended to the council for approval for registration on the general part of the register, their qualifications and references conforming in every particular to the rules : 14 for registration on the supplementary part for fever nurses ; and one for registration on the supplementary part for mental nurses. These applicants were approved, and the council agreed to grant a certificate of registration to them. Applicants whose qualifications did not conform to the rules will receive a notification to this effect.

WELSH NATIONAL SCHOOL OF MEDICINE.—The reorganisation needed for carrying out the full curriculum of teaching which is now being embarked upon by the Welsh National School of Medicine is nearing completion. Both the new Board of Medicine and the new Faculty of Medicine have been called into existence. The most important post in this new school is that of dean, and the Faculty recently elected to this post Prof. David Hepburn. Prof. Hepburn has for over 17 years been professor of anatomy at Cardiff, and has acted as Dean of the Medical School, which has been incomplete until now. The experience he has gained in the past will thus be valuable to him in presiding over the full development of the school, to which he has for many years been looking forward. The honour given is great, but greater still is the responsibility, for the work of organising the new National School so as to ensure complete success will be no mean task.

INTERNATIONAL CONGRESS OF EUGENICS.—The second International Congress of Eugenics opened on Sept. 22nd at the American Museum of Natural History, New York. In his presidential address Prof. Henry Fairfield Osborn regretted the growth of an individualism which was threatening the existence of the family, and instanced New England, where large families had been replaced by one-child families ; he foresaw a stage of families with no children, followed by the extinction of the old Republican stock. The American theory that immigrants rapidly became Americanised was worthless ; the vices of commingled races were more surely perpetuated than their virtues. Major Leonard Darwin declared that the results for which eugenists were working might not become apparent for several hundred years, and emphasised the impossibility of attempting to regulate human mating by legislation. He deplored the popular misconception of eugenics which credited that science with the intention to abolish romance and introduce cattle-breeding principles into human domestic affairs. If young people were allowed to follow natural inclination, their mating would usually be wise from the standpoint of eugenics, which did not favour the abolition of love. Many marriages made for wealth or social position did not tend to better the human race. Dr. Charles Davenport, director of the department of genetics, New York, declared that the science of eugenics was sufficiently developed to permit of the determination of a child's parentage through its inherited physical traits. Attention was called to the fact that increasing numbers of persons contemplating marriage were availing themselves of expert advice.

(4) A reduction of the present capitation fee of panel medical practitioners is reported to be imminent. But any such reduction made *before full inquiry* has been held into past results and future requirements, would tend to prejudice future negotiations and alienate the goodwill of those practitioners whose coöperation is essential to the success of the service.

"Representing, as we do, many distinct branches of medical practice and of professions ancillary to medicine, we have considered this matter from widely different angles, ever keeping before us the needs of the community, to which our individual aspirations are willingly subordinated.

(Signed)

BERKELEY MOYNIHAN,
President.

MALCOLM MORRIS,
Vice-President and Rept. of the National Council for Combating Venereal Diseases.

THOMAS HORDER,
Hon. Treasurer.

J. F. GORDON DILL,
Hon. Treasurer.

CHARLES BUTTAR,
Hon. Secretary.

JANE WALKER,
Hon. Secretary.

JOHN ROSE BRADFORD,
London and Counties Med. Protection Society.

H. W. BRUCE,
Infirmary Medical Superintendents Society.

H. J. CARDALE,
Assoc. of Panel Committees.

F. HERNAMAN-JOHNSON,
British Assoc. of Radiology and Physiotherapy.

C. F. RILOT,
British Dental Assoc.

RONALD ROSS,
British Science Guild.

E. H. STANCOMB,
Southampton Medical Parliamentary Committee.

E. H. WORTH,
National Medical Union.

"*Postscript.*—The signatories of this memorandum represent organisations with a combined membership exceeding 16,000. In addition, a number of other medical societies represented in the Federation still have the matter under consideration and a majority of the professional bodies representative of pharmacy, nursing, midwifery, massage, radiography, &c., all of whom are members of the Federation and intimately concerned with the matter, have expressed a wish to subscribe to the memorandum, which, accordingly, has been submitted to their executives. These further names in support of those given will be forwarded at an early date as a supplementary list."

I am, Sir, yours faithfully,
N. HOWARD MUMMERY,
General Secretary.

The Federation of Medical and Allied Societies (Inc.),
12, Stratford-place, W. 1, Oct. 4th, 1921.

THE MARRIAGE BAR.

To the Editor of THE LANCET.

SIR,—In an interesting report in your issue of this week you draw attention to the action of the Borough Council of St. Pancras in requesting one of its medical officers to send in her resignation because she has recently married. Allow me to point out that the Sex Disqualification (Removal) Act, 1919, enacts that: "A person shall not be disqualified by sex or marriage from the exercise of any public function or from being appointed to or holding any civil or judicial office or post, or from entering or assuming or carrying on any civil profession or vocation, or for admission to any incorporated society . . . and a person shall not be exempted by sex or marriage from the liability to serve as a juror."

One or two qualifying provisions follow which have no bearing on the St. Pancras case.

I am, Sir, yours faithfully,
MARY D. STURGE,
President of the Medical Women's Federation.

Oct. 1st, 1921.

THE DANGERS OF THE PUBLIC SWIMMING BATH.

To the Editor of THE LANCET.

SIR,—In the last three years we have had several cases of otitis media in Camberwell Infirmary, following visits to public swimming baths. On August 2nd of the present year, M. S., aged 10, was admitted with a history of three visits to the baths in the previous week, and earache on July 30th, followed by vomiting on the two next days. There were well-marked signs of meningitis when admitted, confirmed by lumbar puncture, a strepto-bacillus being found in the spinal fluid. Death occurred early on August 5th. Post-mortem showed pus in the left middle ear with unruptured drum and an acute lepto-meningitis. The lad was not accustomed to go to the baths and, perhaps, lacked an immunity more frequent visitors might possess.

During a hot summer, like the past, the numbers of bathers are multiplied many times, and the urgency for frequent change of water and its purification is proportionally increased.

I am, Sir, yours faithfully,

Oct. 4th, 1921. G. W. LLOYD.

To the Editor of THE LANCET.

SIR,—Acting upon Dr. F. W. Alexander's suggestion, I have turned to the Report of the Royal Sanitary Institute for information regarding the system employed at the Poplar baths for making and keeping bath-water pure, and I find that the bacterial content of the water may be kept within what may be considered to be the limits of safety for as long a period as a week or ten days at a cost, in 1912, of, apparently, about one shilling and threepence! Dr. J. Graham Forbes in his interesting survey of the methods of disinfecting the water alludes to the plan as giving good results. Surely, then, if this claim can be substantiated the bathing public has the right to ask why this or similar methods are not everywhere in use.

In my former letter I drew attention to the danger of purulent otitis media as a result of bathing in contaminated water. But my indictment does not stop at the ear. Since writing that letter I have seen a case of suppuration of the maxillary antrum in a schoolboy, which the parents ascribed to the same cause, and this case reminds me that some years ago Mr. C. W. M. Hope[1] brought before the Laryngological Section of the Royal Society of Medicine several cases of nasal sinus suppuration which he attributed to infection received during bathing.

While, however, it is but common sense to insist that the water people bathe in should be made as clean as possible, the alternative hypothesis of self-infection must not be lost sight of. And in this connexion Dr. Arnold Renshaw, of Manchester, has pointed out to me that the chilling effect upon the bather of too prolonged a stay in the water must operate powerfully in favouring auto-infection—and extraneous infection also for that matter. Is it too much to ask that a rule should be laid down limiting the period of stay in a public bath? As most of the cases one sees of ear and nose troubles due to this cause occur in children, the rule might be confined to bathers below a certain age.

I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 3rd, 1921. DAN MCKENZIE.

THE NEGLECT OF SURGICAL ANATOMY.

To the Editor of THE LANCET.

SIR,—In his interesting and very important paper in your last issue on a form of injury in the region of the ankle-joint, Sir W. Arbuthnot Lane lets the fault—of improper comprehension and inefficient treatment—rest, "not with the surgeon, but with the teacher." The teacher to whom he refers in this disparagement is, of course, the teacher of surgical anatomy, and the context leaves the impression that his inefficiency is in some way the fault of the teachers of anatomy. This would not appear to be quite just, from the point of view of the anatomists, who might very well argue that it is their function to teach anatomy, while it is that of the surgeon to teach the surgical application of anatomy. So far as the mechanics of the skeleton are concerned, this comes in, naturally, in ordinary teaching in the

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[1] Hope, C. W. M., Journ. of Laryng., vol. xxix., 1914, p. 507.

Cancer Hospital, Fulham-road, S.W.—First Asst. to Research Dept. £750.

Canning Town Women's Settlement Hospital, Balaam-street, Plaistow.—Female Sen. Res. M.O. £150.

Cardiff, King Edward VII. Hospital and Medical School.—Med. Supt. H.S. £200.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Phys. to Out-patients.

Clifton, York, North Riding Mental Hospital.—Sen. Asst. M.O. £500.

Croydon Public Health Department.—Asst. Res. M.O. at Borough Hosp. for Infectious Diseases. £350. Res. Med. Supt. at Borough Hosp. for Infectious Diseases and Asst. M.O.H. £500.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. H.S. H.P. Each £125.

Exeter City Mental Hospital.—M.O. £350.

Frimley, Brompton Hospital Sanatorium.—Asst. Res. M.O. £250.

Glasgow, Hawkhead Asylum, Cardonald.—Asst. M.O. and Pathologist. £275.

Gloucester County and City Tuberculosis Institution, Standish, near Stonehouse.—Med. Supt. £500.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Res. M.O. £500. H.P. £50.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Asst. Cas. O. Res. H.P. Each £50.

Leeds General Infirmary.—Anæsth. £25.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

London Fever Hospital, Islington, N.—Hon. Asst. Phys. Hon. Aural Surg.

London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Anæsth. £50. Asst. Phys.

Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120. Sen. H.P. Sen. H.S. Asst. H.P. Asst. H.S. Each £100.

Miller General Hospital for South East London, Greenwich-road, S.E.—Res. Cas. O. £200. Hon. Asst. Ophth. Surg.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. H.P.'s and H.S.'s. £50. H.S. to Out-patient Dressing Department. £100.

Oldham County Borough Education Committee.—Asst. Sch. M.O. £500.

Oldham Royal Infirmary.—Sen. H.S. £200.

Perth, Murray Royal Mental Hospital.—Asst. M.O. £350.

Plaistow Fever Hospital.—Second Asst. M.O. £200.

Preston and County of Lancaster Royal Infirmary.—H.S. £200.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S. £50.

Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Asst. Cas. O. Each £150.

Singapore, Government Medical School.—Professors of Physiology, Anatomy, Medicine, Midwifery and Gynæcology. £1190. Lecturers in Chemistry and Physics, Biology. £840.

Stafford, Staffordshire General Infirmary.—H.P. £200.

Wakefield, Clayton Hospital.—H.S. £225.

Wolverhampton and Staffordshire General Hospital.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

JONES.—On Sept. 24th, at Ashley Gardens, Westminster, the wife of Albert Eastwood Jones, M.D., M.R.C.P., of a son.

LIGHTWOOD.—On Sept. 27th, at a nursing home, Colwyn Bay, the wife of Eric Lightwood, M.B., B.S., of a daughter.

MARRIAGES.

LLOYD—SWINNEY.—On Sept. 27th, at St. Martin-in-the-Fields, London, Edmund Eyre Lloyd, M.R.C.S., L.R.C.P., to Margaret Mary, widow of John Swinney.

DEATHS.

HOOPER.—On Sept. 29th, at the Red Lodge, Aldeburgh, Suffolk, Colonel Sir William Roe Hooper, K.C.S.I., I.M.S. (retired), F.R.C.S., Hon. Surgeon to the King, aged 84 years.

JONES.—On Sept. 29th, at Westcliff Parade, Southend-on-Sea, George Francis Jones, M.R.C.S.Eng., L.S.A. Lond., aged 76 years.

MAYNARD.—On Sept. 20th, of double pneumonia, at Audlem, Cheshire, Lieut.-Colonel F. P. Maynard, F.R.C.S., I.M.S. (retired).

MILLER.—On Oct. 2nd, of syncope, James Duff Miller, M.B., C.M., L.S.A., late of 62, Rotherfield-street, N.1. Sudden death a great shock to all his relatives and friends.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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MEDICAL MISSIONS IN CHINA.[1]

BY HAROLD BALME, F.R.C.S. ENG., D.P.H.

BEFORE I speak of medical mission work as I have seen it in China it is not out of place to recall the medical efforts of the early Church. It was a Christian woman, Fabiola, who founded the first hospital for institutional treatment of the sick in the Western World; Basil, Bishop of Cæsarea, organised the first leper asylum, and the monk Thasalius was responsible for the first asylum for the blind; a Christian merchant, Apollonius, opened a free dispensary; and the Christian Council of Nicæa ordered the foundation of a public institution for the care of the poor in every Christian city.

The practice of mercy has long overflowed the borders of the Christian Church, and in a country such as our own we think of care and responsibility for the sick as hardly touching the activities of the Church; but as was pointed out in last year's Lambeth Conference Report, this care and responsibility has never been removed from the Church.

Pioneers.

In Moslem countries, in China, in Africa, and other places superstition and cruelty are still connected with sickness; preventable suffering is always evident to every missionary doctor and nurse. Few of us in these days have any conception of the difficulties which the pioneers of medical mission work in China had to overcome a hundred years ago. It must be remembered that the reputation of the medical profession in China was then as low as it could possibly be. Abbé Huc, who travelled in China, Tartary, and Thibet, says in one of his writings that the profession of medicine in China was nothing but "a waste pipe, with which to clear off those who are fit for nothing else." This was literally true, with the result that China was swamped with doctors, thousands of whom had no education at all. And what he said has been echoed by every other visitor to China. Anyone was free to practise; anyone was free to call himself a doctor, without any diploma, or college training whatever. The pioneer medical missionaries had to redeem the reputation of medical science in the country before they could make any headway at all. They had to deal with a hostile and suspicious people; and they had to win their way by patience and by the success of their work. They had no equipment, no instruments, no staff; nothing but a strong sense of their double calling, but they went forward and carried on the work with the thought that one day China would produce her own doctors and nurses, and realise her responsibility to her people.

Kenneth Mackenzie, of the London Missionary Society, first started a medical college in China, in 1881. During the Boxer rising of 1900 the results of the work done seemed entirely swept away; but a renewed effort led to the establishment of the inter-denominational medical college in Peking, now financed entirely by the Rockefeller Foundation, although the missionary societies have a voice in its general direction, and in the selection and appointment of the medical staff.

From the small beginning made in Peking branches of the work have spread in other parts of China, and here and there small medical colleges were founded. They were very poorly equipped and manned, but without them even the present condition of medical education would have been impossible. As the Chinese themselves began to recognise the work, it became evident that efficient medical education was absolutely impossible to obtain without a great deal of coöperation, and a willingness to sacrifice local interests to a certain extent. Instead of having a great number of small, understaffed, and inadequately supported colleges, we realised that it is necessary to concentrate on a few, with a staff of well-trained men, and in that way to make a real contribution to the new life of China. It is sometimes urged that in face of the physical needs of the Chinese these institutions should be multiplied; but medical missions do not exist to meet a temporary need; their aim is to sketch an outline for the Chinese to fill in for themselves.

In the Shantung Christian University, with which I am connected, ten missionary societies are represented, and not only has there never been any theological difficulty in the college, but the institution has been able to make an impression on the medical work of China far greater than

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[1] An abstract of an address delivered at a meeting of the Medical Missions Department of the Society for the Propagation of the Gospel in Foreign Parts.

Medical News.

UNIVERSITY OF DURHAM.—At a special Third Examination for the Degrees of Bachelor of Medicine and Bachelor of Surgery the following candidates were successful:—

Materia Medica, Pharmacology and Pharmacy, Public Health, Medical Jurisprudence, Pathology and Elementary Bacteriology.—Elizabeth M. Anderson, Sydney Basham, Derek C. Bell, William A. Brown, Laurence S. Henry, Bernard R. Isaacs, Louis Minski, Ian M. McLachlan, William A. D. Oliver, Leslie F. Richmond, Henry C. Rollin, William O. Rubidge, and Henry F. Wattsford.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—The President and Fellows of the Royal College of Physicians have decided this year to revive the St. Luke's Day dinner of the College, which has not been held since 1913. The dinner will take place in the College Hall.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The arrangements for conferring honorary fellowships by the Royal College of Surgeons in Ireland on eight American surgeons are now complete, and the delegation of the College appointed to confer the fellowships has left Dublin for the United States. The President is prevented by illness from travelling, and the Vice-President is also unable to leave Ireland at present. The College will be represented, however, by two of its most distinguished ex-Presidents, Sir Robert Woods, M.P., and Sir William Taylor, who are to visit Canada as well as the States in their tour. The compliment paid by the Irish College to American surgery has sprung out of the visit paid to America last year by Sir Berkeley Moynihan and Sir William Taylor on the occasion of the presentation of a mace by British surgeons to the American College of Surgeons.

MEDICAL SOCIETY OF LONDON.—The syllabus of the first half of the 149th session has now been issued. The president for the session is Mr. James Berry, who will deliver his presidential address on Some Medical Experiences in South Eastern Europe (illustrated by lantern slides), at 8.30 P.M., on Monday, Oct. 10th, following an annual general meeting at 8 P.M. On Monday, Oct. 24th, at 8.30 P.M., a discussion on The Modern Treatment of Diabetes will be introduced by Sir Archibald Garrod, to be followed by Sir William Willcox, Dr. O. Leyton, Dr. W. Langdon Brown, Dr. Edmund Spriggs, Dr. E. P. Poulton, Dr. George Graham, and Dr. P. J. Cammidge. Monday, Nov. 14th will be a clinical evening. On Nov. 21st a discussion on the Arseno-Benzol Treatment of Syphilis will be introduced by Lieut.-Colonel L. W. Harrison, followed by Prof. H. Maclean, Dr. J. W. McNee, Dr. R. L. Mackenzie Wallis, Dr. Henry MacCormac, and Mr. C. H. Mills. On Dec. 12th a paper on Hæmorrhagic Bronchitis of Non-Tubercular Origin will be read by Dr. Aldo Castellani, C.M.G., and a demonstration on Dust in Expired Air, given by Dr. J. S. Owens. The Lettsomian Lectures on Amœbic Liver Abscess: its Pathology, Prevention and Cure, will be delivered in February and March, 1922, by Sir Leonard Rogers, F.R.S. The annual oration will be delivered in May, 1922, by Mr. H. J. Waring. Fellows desirous of reading papers should communicate before the middle of December with the Hon. Secretaries, Mr. H. W. Carson and Dr. C. E. Lakin, at the house of the Society, 11, Chandos-street, Cavendish-square, London, W. 1.

ST. MARY'S HOSPITAL MEDICAL SOCIETY.—The sessional programme is as follows, the meetings being held at 8 P.M. in the library of the Medical School:—On Oct. 12th Prof. B. J. Collingwood will speak on Fear; on Oct. 26th Dr. Charles Singer will give a paper on Leonardo Da Vinci as a Man of Science and Anatomist, illustrated by lantern-slides; Mr. C. A. B. Horsford will give a paper on Nov. 16th entitled "Practical Application of Physiological Principles to the Training of the Voice," which will be illustrated by practical demonstrations; on Nov. 30th Prof. Elliot Smith, F.R.S., will speak on Diversions of an Anatomist in Egypt; and on Dec. 14th Dr. C. M. Wilson will give an address entitled "Apologia pro Genere Suo by a Physician." Sir Almroth Wright, F.R.S., will address the Society on Jan. 13th, 1922, on Morals, and on Jan. 27th Dr. Bernard H. Spilsbury will speak on a subject to be announced later. The meeting on Feb. 10th will be devoted to a paper on Sublimation in Psychotherapy, by Dr. J. A. Hadfield. On Feb. 23rd Dr. W. E. Dixon will speak on Tobacco Smoking. On March 10th Prof. A. L. McIlroy will discuss the Value of a Poetical Outlook on Science, and on March 24th Dr. Joseph Barcroft will retail Recent Experiences in the Andes. The President for the session is Prof. F. S. Langmead.

HARVEIAN SOCIETY.—A clinical meeting of this Society will be held at Paddington Green Children's Hospital on Thursday, Oct. 13th, at 4.30 P.M.

ABERNETHIAN SOCIETY.—The sessional address of this Society will be given on Thursday, Oct. 13th, at 8.30 P.M., at St. Bartholomew's Hospital, by Dr. Christopher Addison, on Medical Men and Public Life.

SOUTH-WEST LONDON MEDICAL SOCIETY.—The syllabus of meetings for 1921–22 has just been issued, the president for the year being Dr. E. J. Pritchard. On Oct. 12th the annual dinner will be held at Gatti's Restaurant, Strand. At the first meeting on Nov. 9th, Dr. T. Strickland Goodall will give a demonstration on the Rôle of the Electro-Cardiograph in Practical Medicine. The meetings are held at 9 P.M., at the Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, London, S.W. Further information can be obtained from the hon. secretaries, Dr. H. B. A. Pearson, 29, Bolingbroke-grove, Wandsworth Common, S.W. 11, and Dr. C. Dudley Bishop, 60, North Side, Clapham Common, S.W. 4.

SOCIETE D'HYPNOLOGIE ET PSYCHOTHERAPIE.—The twenty-fourth annual meeting of the Society will take place on Tuesday, Oct. 18th, at 4 o'clock, and on Wednesday, the 19th, at 10 o'clock, at 19, rue St. André des Arts, Paris. The programme of the meeting will include an account of psychological work by Dr. Jules Voisin (perpetual president of the Society), and consideration of general questions of progress and present tendencies of psychotherapy, and of "race" in nervous and mental pathology, followed by individual communications. Medical men interested in psychotherapy are cordially invited to attend the meeting and to contribute papers. Communications should be addressed to Dr. Berillon, general secretary, 4, rue de Castellane, Paris 8e.

MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—The annual meeting of this Society was held at the Medical Institute, Edmund-street, Birmingham, on Thursday, Oct. 6th, at 4.30 P.M., the Presidential Address on the Position of Obstetrics and Gynæcology under the Scheme of the Welsh Consultative Council of the Ministry of Health was delivered by Dr. Ewan Maclean. The following scientific meetings will be held during the session: At Bristol (Dec. 6th), at Birmingham (Jan. 3rd, 1922), at Derby or Leicester (March 7th), and at Cardiff (April 4th). Papers, short communications, and pathological specimens are invited. Papers and communications, accepted will, at the discretion of the Editorial Committee, be published in the *Journal of Obstetrics and Gynæcology of the British Empire.* The subscription to the Society is 10s. per annum, and the hon. general secretary of the Society is Mr. Beckwith Whitehouse, 52, Newhall-street, Birmingham.

GUILD OF ST. LUKE: ANNUAL SERVICE.—This service, which will this year take the form of a special thanksgiving for peace, will be held on Oct. 18th, at 7 P.M., at St. Paul's Cathedral. The preacher will be the Rev. Father Waggett, and the offerings, after defraying the cost of the service, will be devoted to one of the hospitals in London. Doctors and students are requested to wear academic dress.

KING'S COLLEGE HOSPITAL ANNUAL DINNER.—This dinner was held at the Café Royal, Regent-street, on Sept. 30th. Mr. F. F. Burghard, senior surgeon to the hospital, presided, and proposed the toast of the hospital, to which Viscount Hambleden, chairman of the committee of management of the hospital, replied. Dr. Norman Dalton, senior physician, proposed the toast of the chairman, which was received with musical honours. The attendance numbered a hundred, and included amongst others Lord Gorell, M.C., who had delivered the oration at the opening of the winter session earlier in the afternoon.

LONDON HOSPITAL MEDICAL COLLEGE: *Post-graduate course.*—The "Price" Entrance Scholarship in Anatomy and Physiology, open to students of the Universities of Oxford and Cambridge, has been awarded to Mr. G. L. Thompson of Trinity College, Cambridge. A course of instruction on the Diseases of Children will commence on Wednesday, Oct. 12th, 1921. It will include a course of 10 lectures on General Diseases, to be delivered by Dr. R. Hutchison on Saturdays at 10.15 A.M. in the Anatomical Theatre of the Medical College; a course of eight lectures on Organic and Functional Nervous Diseases and Mental Deficiency, to be given by Dr. Theodore Thompson on Mondays at 9.15 A.M. at the same place; and a course of clinical demonstrations, to be held by Dr. C. H. Miller on Wednesdays, at 10.15 A.M., in the children's out-patient department of the London Hospital. The course will be open to post-graduates and to students of the hospital.

THE VARYING TOXICITY OF NEOARSPHENAMIN.

IN a recent issue of the *Journal of Biological Chemistry*, the chemistry of neoarsphenamin (neosalvarsan) and its relation to toxicity is discussed by G. W. Raiziss and M. Falkov, who have devised methods for the quantitative study of neosalvarsan with especial reference to the sulphur distribution. A low arsenic content may be due to the presence of uncombined sodium formaldehyde sulphoxylate, sulphate or chloride. In good samples the arsenic-nitrogen ratio may equal the theoretical value, and may be taken as an index of purity. The amount of iodine necessary for complete oxidation is in excess of that required for the arsenic group, the excess is attributed to uncombined sodium formaldehyde sulphoxylate, the latter, however, when combined with an amino-group is apparently not oxidised by iodine. The authors conclude that the variation in the substitution in the amino-groups may account for the irregularity of the toxicity and therapeutic effect of this drug.

THE SUPPLY OF ANATOMICAL MATERIAL.

AT a recent meeting of the Romford guardians discussion arose on the evergreen topic of sending bodies to the anatomical schools, the particular case of disposal of the body of an old Indian Mutiny veteran being mentioned. With reference to this last it would surely seem to be the privilege of the War Office to accord to an old veteran the honour of a military funeral, and it would seem equally surely to have been the duty of the guardians to see that the War Office was notified of his death, and not to hurry the corpse off to the "anatomical authorities." But, so far as concerns the general question of anatomical supply, there ought to be no option given to guardians or other vote-catching local celebrities, who know nothing and care less about the vitally important questions concerned. Some may have honest qualms about the matter, though they may be unreasonable, but spurious excitement should be rendered ineffective by leaving the decision in the hands of an educated authority acquainted with the urgent needs of anatomy and yet not devoid of ordinary feelings of humanity.

COLONIAL HEALTH REPORTS.

Barbados.—According to a report for 1919–20 prepared by Mr. Francis Jenkins, Colonial Secretary, the estimated population was 200,368. The birth-rate for the year was 27·5 and the death-rate 30·9 per 1000. No serious epidemic occurred, but typhoid fever was persistent in one district. An offer was made to the Government by the International Health Board (Rockefeller Institute) to initiate a campaign against ankylostomiasis provided that the sanitation of the country districts was improved beforehand by the general adoption of pit latrines for the disposal of excreta. This proviso was not favourably received by the responsible parochial authorities and the Government was in consequence compelled reluctantly to decline the generous offer. Under the head of "Climate" the report says: "Barbados is the healthiest of all the West Indian Islands, and is much patronised by the residents in neighbouring colonies as a health resort. The anopheles mosquito is not found in the Island. The temperature throughout the year varies, as a rule, from 74° to 84° F. The hot and rainy season lasts from the beginning of June to the beginning of November. The island gets the full benefit of the north-east trade-winds, and between November and May the night temperature sometimes falls as low as 64° F. The winter months are regarded as the tourist season. Barbados lies almost out of the track of hurricanes, though it is a matter of history that hurricanes have swept over the island at intervals, notably in 1780, 1831, and 1898, and have done great damage."

Leeward Islands.—The estimated population on Dec. 31st, 1919, was in Antigua 31,063; St. Kitts, 27,193; Nevis, 14,390; Anguilla, 4988; Dominica, 40,315; and Montserrat, 11,168. The birth-rate for the year 1919–20 was 34·1 per 1000 in Antigua, 30·6 in St. Kitts, 30·0 in Nevis, 36·5 in Anguilla, 37·9 in Dominica, and 34·3 in Montserrat, whilst the death-rate, taking the provinces in the same order, was 26·9 per 1000, 25·2, 20·4, 26·4, and 17·5. The general health of the Colony was satisfactory, but no great advance in health and sanitary conditions will be made until the people as a whole are brought to realise the importance of cleanliness in elementary habits and of ventilation and a well-regulated diet, especially for infants. During the year 3688 patients were admitted into the hospitals, and of these 335 died. The average number of inmates in the Central Lunatic Asylum at Skerretts, Antigua, was 158. There are two leper asylums, one at Rat Island, Antigua, and the other at Fort Charles, St. Kitts. The average daily number of inmates in the former was 30 and in the latter 73.

Bermuda.—In the report for 1920 it is stated that the civil population is estimated at 21,987—7500 white and 14,478 coloured. The birth-rate was 20·1 per 1000 among the whites and 29·35 among the coloured population, the death-rate being 12·24 for the former and 18·57 for the latter. In regard to public health the general conditions are very good, and with a little improvement in certain directions could be made almost beyond fault. There are no tropical diseases other than an occasional mild type of fever diagnosed as dengue. This, however, is neither frequent nor widespread. Malaria is unknown. A certain amount of tuberculosis (34 deaths in 1920) is found, which is often contracted by the coloured inhabitants who leave the islands to work in northern climates. Having contracted it they return to the colony, where it develops and sometimes is conveyed to other members of the family. During the summer months there is a good deal of enteritis among children, which can, however, be avoided by care in keeping food, milk, &c., free from flies and perfectly fresh. A mild type of typhoid also occurs spasmodically in the summer months, but is not common and seldom spreads. Each house has its own rain-water cisterns, the only water-supply, so that infection is rarely spread through infection of water. With ordinary care and cleanliness these infections can be and are avoided by the vast majority. Taken all round, the climate and conditions make Bermuda one of the healthiest spots in the Empire. The very agreeable character of the climate during the greater part of the year no doubt is of great value in the preservation of health. There are no extremes of heat or cold, and even during the summer months of July, August, and September the atmosphere, though at times enervating and excessively humid, is not really trying to those who get sufficient outdoor exercise. The social condition of the coloured population is greatly superior to the average in most colonies of similar character, as will be readily apparent to any observer who notes their neat, substantial dwellings and general orderly behaviour. There are very few paupers. About 12,000 tourists are estimated to have visited the colony during 1920. The "season" runs from November to the end of April or early May. The outlook for the tourist industry is excellent. The steamers provided by the New York–Bermuda service are fast and admirably equipped, and local attractions are being developed.

THE USES OF DOG.

THOSE who are interested in the promotion of Bills to prevent experimentation with dogs might feel tempted to extend their measures to include an interdiction of the therapeutic uses of the same animal, were they to study Dr. J. Roshem's witty essay in a recent number of the *Paris Médical*.[1] He has discovered in the pages of a French periodical, published on August 27th, 1759, a recipe for the preparation of *bouillie* to be applied to gouty joints, the virtue of which only appears when a puppy is introduced to the sick room. The smell of the preparation attracts his attention. He is encouraged to taste it and so lured to his misfortune, for the hapless dog speedily swallows not only the dish prepared for him, but if we must believe the journal, much more beside: "The friction of his tongue upon the patient's skin opens the pores, favours the introduction of the saliva, as well as perspiration, and the consequent escape of that part of the gout which lies nearest the epidermis and so on successively until all the morbid material is destroyed." Destroyed, that is to say, from the patient's point of view, for the pseudo-scientific explanation is merely the cloak of a superstition which is found at all times (even to-day) and amongst all peoples and which teaches that disease may be transmitted from the afflicted body to another which is young and vigorous.

The dog is also valuable after death. It is interesting to note that Dr. Lémery's only comment on the puppy ointment which appears in his pharmacopœia[2] is that the proportion of puppy derivatives—fat, spinal cord, and oil—is too low. There are to be found in the same work recipes for puppy oil and puppy liniment. The latter, a mixture of dog and mole, is a sovereign remedy for sciatica and rheumatism. It would be interesting to trace the origin of this form of treatment.

A. D.—A new edition of W. B. Cannon's "Bodily Changes in Pain, Hunger, Fear and Rage" appeared in 1920, and was reviewed in THE LANCET, 1920, ii., 75.

Corrigendum.—In the report of the Industrial Welfare Conference at Oxford appearing last week, the name of the representative of the Trade Union Congress should read Mr. F. Bramley.

THE Medical Branch of the Board of Education has been transferred from Bridgewater House, Cleveland-square, London, S.W. 1, to Nos. 5 and 6, Clement's Inn, Strand, W.C. 2. (Telegraphic Address, "Meducation Estrand, London.")

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[1] De Quelques Usages Médicaux et Paramédicaux de l'Ami de l'Homme. Paris Méd., Sept. 17th, 1921.

[2] Pharmacopée Universelle contenant toutes les Compositions de Pharmacie. Published by De Saint et Saillant. Fifth edition, 1763.

NORTH-EASTERN ASSOCIATION FOR THE CARE OF THE FEEBLE-MINDED.—The annual meeting of the association was held at Monkton Hall, Jarrow, on Sept. 24th, Sir Thomas Oliver being in the chair. The financial statement for the year ended on July 30th was described as very satisfactory; a deficit of nearly £300 had been turned into a surplus of £165. The institute had its full complement of boys, but a number of Newcastle Union cases would shortly be transferred to Prudhoe Colony. In moving the adoption of the report presented by Mr. J. Stewart, Sir Thomas Oliver said that at the present time a feeble-minded boy was rarely seen, for most of them had been gathered into homes where they were trained and to some extent educated. It was a mistake, and in a sense a crime, to allow feeble-minded girls to have liberty. The physical and mental activities of defective children could be largely restored if the children were placed under proper treatment at an early age. Although the boys were received at Monkton Hall too late in their lives, many of them had been sufficiently restored to leave the home and earn something for themselves.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Oct. 10th.

WAR SECTION: at 5.30 P.M.
Presidential Address:
Sir John Goodwin, Director-General, A.M.S.: The Aftermath of War, with Reference to the Medical Service of the Army.

Thursday, Oct. 13th.

SECTION OF NEUROLOGY: at 8.30 P.M.
Presidential Address:
Mr. Percy Sargent, C.M.G., D.S.O., F.R.C.S.: Some Observations on Epilepsy.

Friday, Oct. 14th.

CLINICAL SECTION: at 5.30 P.M. (*Cases at 5 P.M.*)
Exhibition of Cases.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M.
Demonstration (at 8 P.M.):
Miss Ida C. Mann: A Series of Models illustrating the Development of the Human Eye.
Papers:
Mr. J. Herbert Parsons: The Fourth Cranial Nerve.
Mr. Ernest Clarke: Milestones in Refraction Work.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Oct. 10th.—8 P.M., Annual General Meeting. 8.30 P.M., Presidential Address:—Mr. J. Berry: Some Medical Experiences in South-Eastern Europe (illustrated by lantern slides).

SOUTH-WEST LONDON MEDICAL SOCIETY.
WEDNESDAY, Oct. 12th.—Annual Dinner at Gatti's Restaurant.

HARVEIAN SOCIETY, Paddington Green Children's Hosp., W.
THURSDAY, Oct. 13th.—4.30 P.M., Clinical Meeting.

NORTH OF ENGLAND OPHTHALMOLOGICAL SOCIETY, at the Manchester Royal Infirmary.
FRIDAY, Oct. 14th.—2.30 P.M., Exhibition of (1) Anatomical Collection Illustrating the Eye and its Adnexa, prepared by Prof. Stopford; (2) Macroscopical and Microscopical Preparations of Pathological Conditions of the Eye by the Hon. Staff of the Royal Eye Hospital; (3) Collection of Drawings presented to the Royal Eye Hospital by Dr. Hill Griffith. Clinical Cases:—Mr. A. E. Burroughs: Conical Cornea successfully Treated with the Electric Cautery. Mr. J. Gray Clegg: Chronic Glaucoma in a Young Subject; Uveitis with Absolute Central Scotoma; Melanosis of the Eye, Temple, and Palate; Correctopia with Extreme Miosis. Mr. H. H. McNabb: Recurrent Neuro-fibroma of the Optic Nerve. Mr. W. Stirling: Recurrent Orbital Growth. 5 P.M., Election of New Members. Clinical Discussion. Papers:—Mr. Clegg: Abnormalities of the Visual Field—an Experience of 22 Years of Private Practice. A Preliminary Note on Uveitis with Absolute Central Scotoma. 7 P.M., Dinner at the Brazennose Club.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 10th.—10 A.M., Dr. G. Stewart: Neurological Department. 12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Simson: Diseases of Women. Dr. S. Pinchin: Medical Out-patients. 2.30 P.M., Mr. Addison: Demonstration of Cases (Surgical Wards). 5 P.M., *Lecture*:—*Dr. A. Saunders*: Digestive Troubles of Infancy.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burrell: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Medical Wards). 5 P.M., Lecture:—Dr. Pernet: Ringworm.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture I.:—Mr. T. Gray: Surgery of the Mesentery.
THURSDAY.—11 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. D. Armour: Operations. 2.30 P.M., Dr. Saunders: Demonstration of Cases (Medical Wards). 5 P.M., Lecture I.:—Mr. Simmonds: Surgical Emergencies.
FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burrell: Medical Out-patients. Mr. Sinclair: Surgical Out-patients. 2.30 P.M., Mr. Addison: Operations. 5 P.M., Lecture:—Dr. Burnford: Infective Endocarditis.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. Dr. Burnford: Visit to Medical Wards.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Oct. 10th.—11 A.M., Dr. Goodall: Out-patients, 2 P.M., In-patients. 5.30 P.M., Lecture:—Dr. J. Parkinson: Aortic Disease.
TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.
WEDNESDAY.—10 A.M., Dr. Parkinson: Out-patients. 2 P.M., Dr. Moon: In-patients.
THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.
FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Hamill: In-patients.
SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 13th.—4 P.M., Lecture:—Mr. O. L. Addison: Acute Infections of Bone.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 13th.—6 P.M., *Chesterfield Lecture*:—Dr. W. K. Sibley: General Principles of Treatment.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve *Lectures on the Management and* Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.
WEDNESDAY, Oct. 12th.—6 P.M., *Lecture III.*:—*Breast* Feeding.
FRIDAY.—6 P.M., Lecture IV.:—The Artificial Feeding of Infants (with Special Reference to Caloric Values, Balance Accessory Factors, &c.).

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct. 11th.—4.30 P.M., Dr. W. Dyson: Skin Diseases in Children.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Oct. 13th.—4.15 P.M., Mr. H. Buck: Minor Surgery.

Appointments.

DRAPER, MARION, M.B., Ch.B.Leeds, has been appointed Assistant Medical Officer of Health for Swindon.

KIEP, W. H., M.B., Ch.B. Glasg., D.O. Oxon., to the Chair of Ophthalmology at the Cairo Medical College.

SIMMONDS R. S., M.S.Lond., F.R.C.S.Eng., Assistant Surgeon to the West London Hospital.

WALKER, D. I., M.B., Ch.B.Aberd., Assistant School Medical Officer to the Dundee Education Authority.

Certifying Surgeons under the Factory and Workshop Acts: HOSEGOOD, S. P., L.R.C.P.Lond., M.R.C.S., (Llanwrtyd Wells); MATHERS, J. A., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Dunkeld).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Lect. in Bio-Chemistry. £550.
Aberystwyth Infirmary and Cardiganshire General Hospital.—Res. H.S. £250.
Bethlem Hospital.—Res. H.P. £25 per quarter.
Birkenhead Borough Hospital.—Sen. H.S. £250.
Birmingham, Queen's Hospital.—Cas. S. £100.
Bradford Children's Hospital.—H.S. £150.
Bradford Royal Infirmary.—Two H.S.'s. £200.
Bristol General Hospital.—Hon. Ophth. Surg. H.S. Cas. H.S. Each £175.
Cairo, Egyptian Government School of Medicine.—Prof. of Pathology. L.E.1200-1440.
Cambridge, Addenbrooke's Hospital.—H.S. £130.

maximum criminality is the period 16–21, the period of adolescence. The proportion of criminals to population of the same age is at its highest during that period, and falls steadily in each successive age-group.

TABLE I.—*Relation of Criminality to Age.*

Proportions at different age-periods—per 100,000 of population—of persons convicted of indictable offences in England and Wales in the years 1893 and 1905.

Age.	1893.	1905.	Age.	1893.	1905.
Under 12 ...	24	23	30 to 40 ...	204	210
12 to 16 ...	261	218	40 to 50 ...	143	158
16 to 21 ...	*321*	*275*	50 to 60 ...	92	91
21 to 30 ...	245	247	Above 60 ...	56	53

That is, of course, what we should expect to find if crime were due, in any important measure, to weakness of inhibitory control; in the years of adolescence, when the power of restraining and regulating impulse is still feeble and immature, the criminal tendency should be greatest; with the advance into manhood and the gradual establishment of self-control and the capacity of subjecting instinct to the governance of legal and moral standards, the frequency of crime should decrease. And it may be added that we should expect to find just the reverse condition if crime were, as it is sometimes asserted to be, the result of a specific anti-social disposition, the manifestation of a specific criminal diathesis. On that theory criminality, instead of decreasing, should tend to increase with age, by the addition from each successive age-group of new recruits to the army of constitutional and instinctive law-breakers.

Age, then, is a condition which appears to affect criminal tendency mainly through its relation to the power of self-control; it modifies the strength of impulses, too, no doubt, but its more important and effective action is clearly on the degree of capacity to restrain and govern impulsive activity.

Seasonal Fluctuations of Sexual Offences.

In the seasonal fluctuations of sexual offences, to which I have next to direct your attention, we have, on the other hand, an instance of the modification of criminal tendency through constitutional influences affecting mainly the strength of impulse. The increase of sexual activity in the spring and early summer is, of course, a well-recognised fact throughout the animal world, and appears clearly in Tables II. and III. The figures in the right-hand column show that the number of conceptions is higher in the months of May and June than in any other month of the year; and that rape and indecent assaults occur most frequently in June. It is reasonable to infer from the close correspondence of the statistical movement of these two sets of phenomena that the rise in the frequency of sexual offences depends on the same cause as the increase in the number of conceptions, and that this common underlying cause is a heightening of sexual activity, an increase in the strength of the sexual impulse.

TABLE II.—*Monthly Distribution of Sexual Crimes and of Conceptions in France.*

	Sexual assaults on adults.	Sexual assaults on children.	Conceptions.
January	7·09	5·57	7·84
February.. ..	6·84	5·24	8·02
March	7·82	6·88	7·85
April..	7·39	8·56	8·69
May	10·98	10·95	9·21
June..	12·67	13·03	9·08
July	10·45	12·42	8·76
August	9·64	11·13	8·25
September ..	7·93	8·93	8·46
October	*6·46*	7·29	7·91
November ..	6·24	4·95	7·89
December ..	6·49	5·05	8·02

TABLE III.—*Seasonal Incidence of Certain Crimes—Germany, 1883–1892.*

Daily number of offences in each month, if average daily number for whole year were 100.

	Rape.	Wounding.	Wilful damage.
January	64	75	88
February	66	78	92
March	78	78	98
April	103	95	108
May	128	108	*109*
June..	144	113	106
July	*149*	118	104
August	130	*133*	104
September ..	108	124	103
October	90	106	101
November ..	68	93	99
December ..	69	78	98

ABNORMALITY OF IMPULSE AND FAILURE OF INHIBITION.

These two points are of immediate interest and significance in relation to the matters which we have to discuss in this lecture; for they illustrate the operation of two factors which play a large part in the conduct disorders of the mentally defective. The inadequate capacity of control which is a temporary condition in adolescence, and is presumably the source of the special criminal proclivity characteristic of that time of life, is, in greater or less degree, a regular and permanent feature in many cases of mental deficiency. And though the impulses of the feeble-minded do not generally exhibit any constant difference, qualitative or quantitative, marking them off from the impulses of normally developed persons, it is not uncommon to observe instances where mental deficiency is associated with an excess or perversion of instinctive activities, leading to criminal acts which seem then to be related more to abnormality of impulse than to failure of inhibition.

Bearing these facts in mind, we shall naturally conclude that mental defect is likely to involve some degree of predisposition to crime, or at all events to some sorts of crime. And this conclusion is confirmed by the fact that the proportion of weak-minded persons is considerably higher amongst convicted criminals than it is in the general population; in this country, for example, it has been estimated that from 10 to 20 per cent. of the inmates of prisons are mentally defective, while in the general population the proportion is supposed to be 0·5 per cent. These estimates, of course, are arrived at by rather rough-and-ready methods, and we need not rate their accuracy very highly; moreover, the prison population is not representative of criminals as a class, but only of convicted criminals, and mental deficiency, if it predisposes to crime, predisposes even more certainly to detection. Still, when full allowance has been made for the conditions qualifying their value, we may take these figures as showing that the proportion of mental defectives is in fact considerably larger amongst people who break the laws than amongst people who obey the laws. *This conclusion does not, however,* tell us much until we carry our analysis a little further and ascertain with what forms of law-breaking mental deficiency is specially associated.

FORMS OF CRIMINALITY ASSOCIATED WITH MENTAL DEFICIENCY.

Table IV., taken from Dr. Charles Goring's work on the English Convict, gives some information on this point. It shows the percentage of mental defectives in a population of 948 convicts, classified according to the nature of their offences. As you will observe, the incidence of mental deficiency varies enormously from one group to another. Amongst criminals convicted of the more skilled offences, such as embezzlement and forgery, offences which for the most part imply intelligence and education—there are no defectives. At the other end of the scale are the

TABLE IV.—*Proportion of Mental Defectives amongst 948 Convicts Classified According to the Nature of their Crimes.*

Offence.	Percentage.	Offence.	Percentage.
Stack-firing	52·9	Burglary	10·0
Wilful damage ..	22·2	Murder and attempted murder	9·5
Arson	16·7	Rape (adult) ..	6·7
Rape (child)	15·8	Receiving	5·1
Robbery with violence	15·6	Manslaughter ..	5·0
Unnatural (sexual) offences	14·3	Coining	3·3
Blackmail	14·3	Wounding, &c. ..	2·9
Fraud	12·8	Embezzlement, forgery, &c. ..	0·0
Stealing	11·2		

the sum of its individual units, standing for economy of work and administration, and proving to the Chinese that the profession of different forms of Christianity does not hinder coöperation in medical matters.

Hospital Work and Nursing.

The students come from every part of China, mostly out of our missionary colleges—not because Government students are not willingly accepted, but because, in the present condition of State education, few Government students have been able to attain matriculation standard. That condition of things will soon pass; one progressive governor is already having our examination held in his own capital every year, and helping to prepare students for it; those who pass are coming to our Christian University, in order that they may eventually return and help to staff a medical college which he is building in his own capital—all this in spite of the fact that ours is a purely Christian institution. Our students come to us for seven years, and owing to this concentration which I have just mentioned, we now have a staff of over 20 whole-time teachers. We never regret it when we see our students going into private practice, or into the public service; but naturally we like best to see students voluntarily choose the service of the mission hospital, instead of the better-paid service of the Government institution. Of our 53 last year's graduates, 46 are in mission hospitals. Our total number of graduates up to the present time is 115; of these 110 have served for periods in mission hospitals, and over 80 are in that service to-day.

The development of the medical profession in China has been followed by that of the nursing profession. Ten years ago, except at the Treaty ports, it was impossible to get any educated girl to touch the work of nursing; to-day there are 52 training schools for nurses, all of them giving standardised training, in most cases a four years' course. All these training schools are connected with medical missions. Education and scholarship have always been considered highly in China, and to-day the Chinese are losing their superstitions and changing their ideals; it is in the power of the new nursing service to exercise a great influence in the country at the present time. It is a great privilege to take some part in the education of the men and women who will be the future doctors and nurses of China; we of the medical missions feel that in these days we have a splendid opportunity offered us at a time when the Chinese people are perhaps more impressionable than ever before in their history.

LOOSE NECKWEAR IN EPILEPSY.

To the Editor of THE LANCET.

SIR,—In view of the ridicule excited by my first pamphlet on "*Cerebral Congestion and Tight Neckwear*" published some years ago, ridicule especially directed to my observations concerning tight neckwear and epilepsy, I now relate the following case:—

On May 1st, 1921, I saw a woman, aged nearly 50, who had been subject to epilepsy since she was eight years old. She had sometimes had as many as five or six fits a day, and had rarely been many days free from them. She had been under many different doctors at different institutions. The only treatment I suggested was perfectly loose neckwear with no neck ribbon or neck chain. She at once took my advice, and up to Sept. 18th, nearly five months afterwards, she had only had about five fits—i.e., rather less than she had often had previously in a single day.

A few years ago I had treated in a similar way a somewhat similar case, a woman of 32 or 33, who had been epileptic for some 25 years. The seizures gradually died away and for some years she has been free from them and is in very much better general health.

I may add that I have retired from practice for many years.—*I am, Sir, yours faithfully,*

WALTER G. WALFORD, M.D.

Finchley-road, London, Sept. 19th, 1921.

"THE GATEWAY TO HEALTH."

IN May, 1920, a conference on the prevention of dental caries, held at Manchester under the auspices of the Food Education Society, was widely attended by medical men, dentists, and public officials, who discussed on basic principles the relations between good teeth and national health. The proceedings of this conference have now been edited by Mr. Chas. E. Hecht, M.A., and published in convenient book form with the above title at the St. Catherine Press (pp. 431, price 12*s.* 6*d.*). Prof. J. G. Adami's inaugural address to the conference may be studied with advantage now, when the new Dentists Act is on the point of coming into force. Mr. Hecht has incorporated a large number of striking facts and statements which will be useful to public speakers. A first-rate index renders reference easy.

AIR TRAVEL IN FRANCE.

COMMERCIAL aviation has only existed in France for two years, but during this time numerous air services have been established under the supervision of Mr. Laurent, Under-Secretary of State for Aeronautics, assisted by Colonel Saconney, Director of Air Services. The State grants bounties to the companies based on the number of kilometres traversed, and last June French air companies carried 1553 passengers, against 100 at most carried by British companies.

The *Economic Review* gives from French sources a schedule of the traffic carried in 1919 and 1920:—

	1919.	1920.
Paying passengers	729	5,561
Goods (kg.)	14,080	121,195
Mails (kg.)	466	5,967
Completed journeys ..	1,173	4,052
Kilometres traversed ..	354,115	1,503,071

The longest journey at present undertaken is that from Toulouse to Casablanca, Morocco, performed four times weekly in each direction.

Toulouse	dep.	10.30 A.M.	
Barcelona	arr. dep.	1.0 P.M. 2.30 P.M.	lunch.
Alicante	arr. dep.	6.0 P.M. 6.0 A.M.	spend the night.
Malaga	arr. dep.	11.30 A.M. 1.0 P.M.	lunch.
Rabat	arr.	4.0 P.M.	
Casablanca	arr.	5.30 P.M.	

Other foreign services are: Paris (le Bourget) to London (Croydon), four times daily in each direction in 2½ hours (two English companies perform the journey twice daily in each direction); Paris–Brussels (2 hours)–Amsterdam in 4 hours 45 minutes; Paris–Strasbourg–Prague (7 hours); Warsaw, daily (except Sunday) in 12½ hours, carrying the mails; Bayonne–Bilbao–Santander daily in 2½ hours. Services within France include: Bordeaux–Toulouse–Montpellier, in 3½ hours; Montpellier–Nimes–Avignon–Nice, twice weekly in each direction in 2½ hours.

THE PRESS CONGRESS AT HONOLULU.

FROM Oct. 11th to the 25th a Press Congress of the World will take place at Honolulu, on the island of Oahu, an eminently suitable theatre for the expression of international interest and goodwill. Situate in mid-Pacific, the Hawaiian (Sandwich) Islands are already occupied by a mixed population, the different elements of which have learnt to live together in amity; the climate is one of the best in the world, and the city of Honolulu, "the Paradise of the Pacific," will prove an ideal centre for the Congress. The business sessions will be held in the throne room of the royal palace of the Hawaiian monarchs. The programme of entertainments has been planned to display every phase of the life of the islands. Among the excursions of interest will be a visit to the great volcano of Kilauea on the island of Hawaii, and a distant glimpse will be obtained of the leper settlement at Kalaupapa on the northern coast of the island of Molokai. One day of the Congress will be set aside for the holding of a Pan-Pacific Press Conference under the auspices of the Pan-Pacific Union for frank discussion of problems of the Pacific.

PHYSIOLOGY AND HYGIENE FOR CHILDREN.

THE Modern Physiology, Hygiene and Health School Series, which is under the general editorship of Dr. William F. Russell, is designed to induce children to think about health. In two volumes[1] of this series, entitled "The Most Wonderful House in the World" and "The Play House," by Mary S. Haviland, Research Secretary of the National Child Welfare Association, the author has, in her own words, tried "not to convey the maximum number of facts, but to arouse the maximum degree of interest. Facts may be quickly forgotten, but interest, once fully aroused, never quite dies." "The Most Wonderful House in the World" is a primer dealing with the mechanism and hygiene of the body, and is suited for the use of quite young children. No attempt is made to cover the whole field of physiology, but such questions as water, food, indigestion, sleep, and clothes are discussed in a way calculated to appeal to the mind of a child. The volume entitled "The Play House," dealing with questions of home hygiene, is slightly more advanced. Both books are pleasant in design and execution and can scarcely fail to interest children in the workings of the human machine and in the laws of hygiene and health, though we opine that some of the more astute may be secretly scornful of the artificial family whose recited adventures veil so much useful information.

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[1] London, Philadelphia, Chicago: J. B. Lippincott Co. 1921. Pp. 204 and 196. 4s. 6d. each.

unprofitable perversity. It is quite true that in most instances of moral imbecility some such indications may be found, and that careful and methodical examination will show evidences of intellectual inferiority as well as of ethical debility; but there are many cases where this is not so, and where the proof of mental defect can only be gathered from the whole record and circumstances of the individual's anti-social conduct—from the lack of foresight and judgment which he reveals in his criminal acts, from his failure to appreciate their certain and disagreeable reaction on his own comfort and liberty, despite repeated experience of punishment.

If by "permanent mental defect" the definition means a defect of intelligence that can be made out without reference to the imbecile's aberrations of conduct, then there does not seem to be any good reason for taking him out of the category of feeble-minded persons, and the definition is superfluous. If, on the other hand, the character and incorrigibility of the vicious and criminal conduct can of themselves provide sufficient evidence of intellectual weakness, the separate reference to "mental defect" is misleading and likely to be a source of practical difficulty, and this all the more through the addition of the adjective "permanent" to qualify a condition which, for ought we know in any given case, may be, and, in point of fact, very often is, temporary.

CLINICAL CONSIDERATION OF MORAL IMBECILITY.

It will be more profitable for us, therefore, to put this definition quite out of our minds and, leaving aside all theoretical views, to go back to the consideration of the moral imbecile from the purely clinical standpoint.

What is usually found, then, is that the criminal conduct of these imbeciles is distinguished by the precocity of its appearance, by the variety of its direction, and by its occasionally gratuitous character. The ordinary criminal—I am speaking now of habitual offenders—may start pretty early on his anti-social career, but he does not commonly begin in early childhood, and, as a rule, he is more or less of a specialist in his criminal activities, which are almost always directed to acquisitive ends. The moral imbecile, on the contrary, is generally an incorrigible thief and liar from the time that his physical and mental development will allow of thieving and lying; he is often fiendishly cruel to younger children and to animals; he is precociously vicious in sexual matters; and his subsequent criminal record may include quite a number of different types of offence.

Of course, as the moral sense "is not a simple activity, but the sum of a set of tendencies" (Ribot), the character of the emotional deficiency may vary very widely in different cases, according as one or other of the constituent elements is lacking, or is imperfectly developed; and since, moreover, the form that the impulses eventually assume, and the ideas that become connected with them, are largely influenced by training and circumstance, it follows that the conduct in which moral imbecility expresses itself may exhibit much apparent diversity. In all cases, however, there is the common trait of insensibility in respect of the particular form of moral feeling involved, with an entire incapacity for experiencing shame or remorse. Individuals of this sort may be taught moral ideas, and in fact they are very ready with the names of the nobler emotions when it is to their interest to conceal their defect, but they are incapable of the feelings and impulses related to these ideas; their morality, as Schüle puts it, is purely theoretical.

EPILEPSY: HEAD INJURIES: RETARDED DEVELOPMENT.

Unfortunately, we still lack satisfactory means of detecting and measuring this moral insensibility; ethical discrimination tests, and the theoretical solution of difficult moral situations, are tests of intelligence, not of feeling, and moral imbeciles often respond most brilliantly to them. There are two points of special interest to be observed in connexion with this form of mental deficiency—first, its affinity to epilepsy, as shown by its frequent occurrence in the offspring of epileptic stock, and by the occasional supervention of epileptic fits later in the subject's life; and, second, its apparent relation in some instances to head injuries in childhood. Well-marked cases of true moral imbecility—that is to say, of moral insensibility and precocious vice, with relatively little evidence of intellectual defect—are by no means common amongst criminals; and their rarity is a further argument against the assumption of a specific criminal diathesis as the fundamental factor in anti-social conduct.

Rather more frequent in criminal practice are instances in which a condition somewhat resembling moral imbecility exists during childhood and adolescence, or perhaps about puberty, but is due merely to retarded development and not to permanent deficiency. Homicidal crimes, often with an obvious element of sadist perversion, are occasionally committed by youths in this stage of emotional and moral immaturity; just as in girls it is not uncommon to meet with arson, and, even, though more rarely, with murder, as criminal manifestations about the time of the establishment of the menstrual function.

THE PATHOLOGICAL SWINDLER.

Before leaving this subject, some reference may be made to one particular group of mentally abnormal criminals, who, though their ethical defect is of a less generalised character, may be counted in the category of moral imbeciles—namely, the pathological swindlers. These individuals differ from the ordinary sane impostor in the degree in which their swindling propensities dominate their character and colour all their activities—they are exercising a talent rather than practising a trade—and even under the hampering conditions of prison or asylum life, they will continue to lie and cheat, not merely for trivial advantages but quite gratuitously, when there is no prospect of gain and a practical certainty of detection with the attendant risk of loss of privileges. A similar mental abnormality may be found in certain women criminals addicted to blackmailing and slander.

In pathological swindlers the level of intelligence is generally pretty high, so that, for evidence of their mental debility, we have to rely mainly on the precocity and incorrigibility of their perverted conduct, and on their persistent display of the same tendencies in the absence of intelligible motive. In some instances, also, it is possible to bring out the constitutional character of their unveracity by testing their ability to give accurate evidence. Some of these subjects, for example, when tried with the ordinary method in which the details of a picture or a statement are to be recounted from memory, will distort and amplify the original facts with a most remarkable wealth of fantasy, and with every appearance of conviction as to the truth of their testimony. This test, however, is successful only in a minority of cases.

CRIMINAL RESPONSIBILITY OF MENTAL DEFECTIVES.

To conclude this lecture it remains to refer shortly to the question of the criminal responsibility of mental defectives. Prior to the passing of the Mental Deficiency Act of 1913, a mentally defective person charged with a criminal offence could not be dealt with otherwise than under the ordinary practice of the courts in respect to the plea of insanity—that is to say, if the offender's defect of mind were such as to render him insane so as not to be responsible, according to law, at the time he committed the act imputed to him, the jury could find him "Guilty, but insane," and he would then be detained as a criminal lunatic. If his mental deficiency fell short of that degree, he was held liable to ordinary punishment. And it was in fact laid down explicitly in several judicial decisions that mere mental deficiency does not entitle a jury to return the special verdict under the Trial of Lunatics Act.

The Mental Deficiency Act established a new mode of procedure; under Section 8 of that Act it is pro-

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A Lecture

ON

CRIME AND MENTAL DEFICIENCY

Delivered at the University of London, as Part of the Course of Post Graduate Lectures on Mental Deficiency,

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AN inquiry as to how and to what extent arrest or perversion of mental development may be concerned in bringing about anti-social conduct must begin with a critical examination of the ideas attached to the terms crime and criminal.

This examination is particularly important, because in discussing the connexion of criminal conduct with a biological condition such as mental deficiency there is a natural tendency to think and speak of crime and criminals as if the conceptions represented by these words were also of the biological order—as if crime were a simple and definite phenomenon with a distinctive organic basis, and as if criminals formed a homogeneous group with specific biological characters. Some such assumption is, in fact, very often made more or less consciously by people who theorise about the criminal temperament, the criminal diathesis, the heredity of crime, and so forth.

SOCIOLOGICAL CONNOTATION OF CRIME

In reality, however, the view of crime which these theories imply is quite false and misleading. Crime and criminal are terms that connote sociological and not biological conceptions. A crime is an act or omission forbidden by the law under pain of punishment. Crime, that is to say, is created by the law. Laws are the formal expression of the will of the community, and acts or omissions that conflict with that will, as formulated in the penal code, are criminal. The criteria of criminal conduct are thus furnished by the law, and by the law alone; the only common character which belongs to all the aberrations of social conduct that we call criminal is their illegality. Now it is obvious that the acts which are brought into a single category by reference to such a standard as this must be—as they notoriously are—very widely different in their nature and origin, and in the mode and degree of their dependence on the numerous and complex conditions which may determine or influence social conduct. The imbecile who fires a stack for the pleasure of seeing a blaze, the underpaid clerk who embezzles his employer's money under exceptional economic stress, the man who kills his wife's seducer, the skilled burglar, the expert coiner, the area sneak, the epileptic homicide—all these are criminals, but what characters have they in common to constitute a specific type, a biological group? And if we try to evade this difficulty by subdividing criminality into its several kinds according to what we may suppose to be the predominant impulse characterising each kind, we are still very far from anything approaching a biological classification—"thieves" or "homicides" are not biological categories any more than are "criminals." For the aptitudes, and in most cases the fundamental impulses concerned in criminal acts, or in any particular class of such acts, have nothing specifically criminal about them; they are essentially the same impulses and the same aptitudes that come into play in non-criminal conduct; the acquisitive impulse that informs the activities of the burglar does not differ in kind from that which directs the energy of the law-abiding artisan, and the aptitudes which burglar and artisan display in their respective callings may be practically identical—their essential character is not affected by the fact that the resultant conduct is illegal in one case and legal in the other.

NON-EXISTENCE OF SPECIFICALLY CRIMINAL APTITUDES

Conduct, then, may be criminal, but there are no criminal aptitudes, and it is only rarely, and in a more or less figurative sense, that we can speak of criminal impulses. Now while it may be possible to bring impulses and aptitudes into direct relation with biological conditions, it is clear that we cannot establish such an immediate relationship in the case of conduct; conduct, whether criminal or non-criminal, depends also, of course, on biological conditions, but it is not a direct and immediate result of such conditions alone; it is a product of their interaction with factors of the social environment, countless in number and infinitely complex in character. What we are to infer from this is, then, that the consideration of crime from the biological point of view must be directed, not to the vain quest of a specific criminal diathesis, but to the more modest aim of determining, so far as such determination is possible, the manner and degree in which modes of biological constitution, permanent or transitory, may assist or retard the environmental forces that tend to give to conduct a criminal or a non-criminal bias.

That is, in fact, the sort of inquiry which has to be made in individual cases for the practical purposes of the administration of the law, for the assessing of legal responsibility, and for the adjustment of penal treatment. And it is through the analysis of the accumulated data obtained from a multiplicity of individual inquiries on the same clinical lines that we are most likely to arrive at any just conceptions regarding the biological factors in crime.

TWO STATISTICAL FACTS OF CRIMINALITY

To a limited degree, however, this clinical method may be supplemented, and some of its results may be controlled, by another method—by the examination of certain broad statistical facts of criminality. The latter method will furnish material for some tentative conclusions of considerable value in relation to the special question with which we are here concerned—the question of the influence of mental defect on conduct. It has been shown that criminal conduct involves the same aptitudes and for the most part the same impulses as non-criminal conduct, and that it is, therefore, idle to look for a specific biological difference between these socially diverse modes of activity; but it is not inconsistent with this position to recognise that there are biological conditions which may in a certain sense predispose to crime, so that, other things being equal, these conditions will be, on the average, operative in greater degree in criminals than in non-criminals when these two social categories are considered in a general view. Thus most crime that is not professional is due to failure of inhibitory control, to inability to refrain from the immediate satisfaction of impulse, though such satisfaction conflicts with the legal standards of conduct. And this failure may obviously come about in two ways—the impulse may be unduly strong, or the power that should control and direct it may be unduly weak. These two factors—strength of impulse and power of inhibition—are constantly varying in each individual under the influence of the innumerable and complex conditions of social life, conditions so multiform and subject to such rapid change that the direct and indirect effects of their interaction defy analysis. But apart from the incalculable fluctuations arising in this way, there are other fluctuations in impulse and in inhibitory power which, as they depend on organic modifications of a more general and more stable character, can be traced in the wide movements of conduct statistics.

Age and Self-Control

One such organic condition—and a very important one—is age. And the influence of age on criminal proclivity is in fact very distinct and characteristic, whether we consider the statistics of crime in general or the statistics of particular forms of crime. As will be seen from the figures in Table I., the age of the hair. The condition may sometimes be due to a continuation of the common habit of childhood of putting anything in the mouth, as is also seen in the thumb-sucking habit in both sexes, which, if not repressed early, may persist for several years. The habit of biting the finger-nails is an expression of a similar condition, but these perversions are usually seen in families of unstable, nervous constitution, whilst no such co-relation appears to be the rule in the hair-eating habit.

Butterworth [3] states: "It is probable that the custom of young girls wearing their hair loose, flowing, and hanging over the shoulders, is an important factor in favouring the establishment of biting the hair, or passing strands through the mouth or between the teeth." An analysis of the cases shows that, as a rule, the hair-eating habit dates from the period when the hair is worn loose and long. It is well known that girls in adolescence exhibit various forms of dyscrasia, or perverted appetite, such as eating chalk, rice, indiarubber, or wood (as in a black lead pencil). A variety of reasons may be assigned for such perversions—e.g., anæmia—which condition, however, is not always present, or the more active metabolic processes of the early years of adolescence in females. Insufficient or improper food may sometimes be responsible for perversion of appetite; the eating of chalk or rice is sometimes intentional, with the object of inducing pallor, which to the mind of some young girls is attractive. In a perusal of the cases, various reasons are assigned by the patients in explanation of the depraved appetite, but the statements throw but little light upon the pathology of the condition. It is a common sight in the poorer districts of any large community to see unkempt women chewing the ends of loose strands of hair, but probably none is swallowed, or hair-ball would be of more frequent occurrence.

The hair is probably swallowed in small masses after being twisted round the tip of the tongue, or after being pulled out by the hand. A condition of anæmia would make the extraction of hair from the scalp more easy than otherwise. Deglutition would be impossible unless the hair was first of all twisted or chewed into a mass, which probably afterwards becomes undone, and the individual hairs are caught in the mucous folds of the stomach, for otherwise expulsion of the mass from the gastro-intestinal tract would be of more frequent occurrence. The hair is gradually worked up again by the gastric movements, until at length it entirely fills and forms a perfect cast of the stomach, with prolongations in some instances through the pylorus into the duodenum, or even into the jejunum, and much less frequently into the œsophagus. (Moore's[5] case, and Knowsley Thornton's[21] case.)

Prof. Arthur Keith at the Royal College of Surgeons of England commented on the special features of the specimens reported by the writer. He referred to Hunter's contribution to the subject as described in Palmer's edition of his works, vol. iv., p. 93. Hunter, by an investigation of the lie of the hair in specimens of hair-cast, made important inferences of the gastric movements, which he showed are "regular" or definite in direction in the various parts of the organ. Prof. Keith showed in the specimens of this report that at the cardiac end the texture showed evidence of a more or less vortical movement, whilst at the pyloric end the movement is more of an onward character. The pyloric extremity of the smaller specimen is almost an exact mould of the antrum pylori, indicating that even here circular, as well as longitudinal movements, occur. These facts suggest that the stomach movements are of a more complex character than is ordinarily supposed to take place in the process of digestion.

A single hair-mass is most commonly present, but the literature includes a few instances of two or three masses of hair accurately opposed to each other by faceted surfaces, or small masses may also be found in the ileum giving rise to intestinal obstruction in some of the reported cases.

Elongation of the stomach is produced more easily than dilatation, and so the hair-ball increases more readily in length than in breadth. Gastritis is sometimes present, and ulceration and perforation of the stomach in several instances. Papillomata of the mucous membrane were present in Best's case,[15] as also in the second case (Mr. A. W. Sheen's) described by the writer. These hair-masses are of variable size, and weigh from a few ounces only, to large casts of the stomach several pounds in weight. In the literature the largest specimen hitherto reported was that of Mermet-de-Hauteville,[13] which weighed about 6 lb. The first of the two specimens now reported weighs 6½ lb., and is thus the largest on record. It is remarkable that digestion is generally so good until the hair-mass completely fills the stomach. In the first of the two cases now reported, except for occasional attacks of dyspepsia, definite disturbance of digestion had only been present for six months prior to operation, when a huge mass of hair completely filled the stomach. It is probable that the mass being compact, and of close texture, absorbs but little of the ingested food which is pressed onwards by peristalsis over the surface of the tumour from the cardia to the pylorus. When a prolongation of hair-mass plugs the pylorus, it is probable that the obstruction is occasionally removed by the displacement of the hair-mass within the stomach, for otherwise urgent symptoms would appear much earlier than is apparent from an analysis of the cases. In the late stage, when the mass is moulded to the stomach walls, the food probably passes most easily along the lesser curvature, as is suggested by the radioscopic appearances of the passage of a contrast meal. Gastric digestion must be very imperfect in cases of hair-cast, and probably digestion is almost entirely performed beyond the stomach, or else nutrition would suffer earlier, and to a greater degree, than is the rule in the majority of cases.

Clinical Course.—It is remarkable, as Butterworth[3] points out, how little the general health suffers considering the duration of the habit. Ledra-Heazlit[4] states that the stomach is exceedingly tolerant of foreign bodies, but eventually rebels when the limit of tolerance is reached. Symptoms ultimately appear, pain, vomiting, alternating attacks of constipation and diarrhœa being the rule, the breath becomes foul, anæmia, exhaustion, wasting follow, and unless the mass is removed, death takes place from inanition, as in (Bollinger's[14] case), perforation of the stomach (Best's case,[15], Ritchie's case[16]), or from intestinal obstruction when the hair-mass is in the ileum (Brewster's case[17]).

Physical Signs.—The hair may be deficient, especially in the temporal regions. The slight disturbance of vigour and of nutrition is a striking feature of the reported cases. In most instances the only abnormal physical signs are those of an abdominal tumour, which is most commonly present in the epigastrium, or extends across the epigastrium from one hypochondrium to the other. The tumour may occupy a lower position owing to gastroptosis, and when this is marked the pylorus may be in the pelvis (Russel's[18] case).

Schreiber[19] remarked upon the spontaneous displacement of the tumour as a valuable point in diagnosis, but this also occurs in other movable tumours. In the second case now reported the tumour was in the right lumbar region, but at the time of operation occupied the left lumbar region. The outline of the tumour was evident in many of the cases, as was also free movement on respiration, and on palpation in most instances, a smooth, well defined, hard, freely movable mass was found. Tenderness as a rule is slight or absent. The shape is variable, being generally rounded or oval, elongated or crescentic, or J-shaped, as in both of the cases now reported. The remarkable range of mobility is probably the most important physical sign in differential diagnosis. An indistinct fine, crackling sensation was elicited in the palpation of Harvie's[12] case, and this was readily made out under anæsthesia.

persons convicted of stack firing—a characteristic exploit of the village idiot—and in criminals of this class the proportion of defectives is over 50 per cent

It should be remarked that these figures refer to the population of a prison where insane and weak minded convicts are segregated, so that the proportion of mental defectives recorded is excessive , further, the criterion of deficiency is of very questionable validity These considerations do not, however, affect the value of the table for the purpose we have in view—namely, to show the relative frequency of mental defect in the several classes of delinquents

NO PROOF OF INHERENT MENTAL DEFECT IN ALL CRIMINALS

So far, then, the facts have been gathered that mental deficiency is much more frequent amongst convicted criminals than in the general population that it is most frequent in criminals convicted of crude impulsive offences such as arson, and that it rarely or never occurs in association with the more skilled forms of delinquency

Before we pass from this aspect of the question it may be well to point out that in what precedes we have been dealing either with criminals in the mass or with particular groups of criminals, and that the conclusions arrived at tell us nothing whatever about the mental level of any individual criminal It may seem superfluous to insist on so obvious a truth , but it is evident from much that is said and written on this subject that the fact of mental defect being relatively frequent amongst criminals has given rise to a vague notion that the criminal is, as it were, a sort of alloy of normal humanity, and that, just as every specimen of an alloy contains some base metal, though the percentage of its admixture may vary from one specimen to another, so every criminal is mentally defective, though some may be grossly defective and others only slightly so

Such a conception of the constitutional factors in crime may be accepted by a priori theorists, or by statisticians with an exaggerated view of the range of action of their analytical methods , but it is quite inconsistent with the facts of ordinary clinical experience, and in these matters it is on the results of such experience—on the critical study of individual cases—that we have to place our chief reliance

CRIMES OBVIOUSLY DUE TO MENTAL DEFECT

Turning back, then, to the consideration of this question from the clinical point of view, we note in the first place that the mental defective may commit crime through mere incapacity to realise the consequences of his acts We have a classic example of this sort in the case of the imbecile who cut off the head of a man as he lay asleep, and explained his conduct by saying that he wanted to see what his victim would say when he woke and found his head missing Similarly it is not uncommon for weak minded persons to commit serious acts of arson, apparently from no other motive than the desire to see a blaze And in many cases where defectives make murderous assaults under trivial provocation, their excessive reaction is due not only to weakness of inhibition, but also to an inability to appreciate the nature and effect of what they are doing These two factors may also be involved in the crimes of acquisitiveness to which the weak minded are very prone In sexual offences—a form of delinquency often associated with mental defect—it is more usually a question of lack of control over the sexual impulse with possibly in some instances an excessive development of that impulse, the strength of which is notoriously variable within a pretty wide range from one individual to another.

MORAL DEBILITY

So far we have referred to two psychological elements affecting criminal proclivity in the feeble minded—namely, lack of intelligence, impairing the capacity to appreciate the nature and consequences of conduct, and lack of inhibitory control involving inability to restrain and direct impulse We have now to consider another element to which much importance has been attributed in connexion with crime—the element of moral debility, of weakness or absence of moral sense

It is unnecessary to enter here upon any discussion concerning the nature and origin of moral emotion , it is enough for our purpose to recognise that the capacity for such emotion, in however slight a degree, is in fact a normal aptitude of man It is revealed in the feeling of repugnance experienced in regard to conduct which, though safe and profitable is in conflict with such moral standards as we have adopted instinctively or under the influence of training this repugnance taking the form of moral indignation when other people s misconduct is in question, of moral suffering or remorse when it refers to our own misconduct Like other mental attributes this moral sensibility varies in degree from one individual to another, and in some persons may be conspicuously feeble or entirely absent When such deficiency of moral feeling occurs in a person of vicious and criminal life, and from its association with other evidences of abnormality may be presumed to be due to an original fault of mental development we have the condition which has been termed moral imbecility

In considering the nature and criteria of this condition it has to be observed in the first place that mere absence or deficiency of moral feeling in a criminal is not enough of itself to constitute the condition Probably no form of crime, for instance, demands a greater degree of moral insensibility than the crime of the treacherous poisoner, but we should not, I think, describe as a moral imbecile, in the ordinary sense of that term, a man who carried out such a crime with skill and deliberation and for purposes of personal advantage And amongst the law abiding population as well as amongst criminals it is by no means exceptional to find persons of normal or even acute intelligence who appear to have little or no moral feeling Probably most of us can count amoral persons of this sort amongst our acquaintance , and history abounds in great examples of the type A deficiency of moral feeling cannot in fact be considered as an abnormal manifestation in the same sense as we may consider a defect of intelligence In the present stage of human evolution we can hardly assume that a high development of ethical sensibility, any more than a high development of æsthetic sensibility, is an essential element in our conception of the average citizen Whatever be the origin of the moral sense, it is assuredly not a necessary factor in the adaptation of the individual to his environment in the same way and to the same degree as is the intelligence—even the moral enthusiast must admit that in the struggle for existence a lack of ethical feeling may often be an advantage, while a lack of brains is almost always a drawback

The moral imbecile, then, is not simply an amoral person , he is an amoral person who presents also some degree of intellectual deficiency , he is a defective whose congenital debility is more predominant, indeed in the sphere of the emotions and the will, but affects also, to however slight an extent, the sphere of intelligence

LEGAL INTERPRETATION OF MORAL IMBECILITY.

This, no doubt, is what is meant to be conveyed in the legal definition of moral imbecility—for we have a statutory definition and not a particularly felicitous one, of this condition laid down for us in the Mental Deficiency Act of 1913 According to the first section of that Act, moral imbeciles are “persons who from an early age display some permanent mental defect, coupled with strong vicious or criminal propensities on which punishment has had little or no deterrent effect ”

This definition is open to the obvious criticism that it seems to suggest, though it does not clearly assert, that the moral imbecile must show indications of permanent mental defect over and above what may be inferred from his incorrigible addiction to ways of and the particular features of the tumour are almost peculiar to hair-mass, and if suspected, and radiographic methods be used in a routine way, then no difficulty should be experienced in the diagnosis of hair-mass of the stomach.

The free mobility of the stomach with the enclosed mass, and of the latter within the stomach as made out by “ radioscopic palpation ” (Barclay and Ramsbottom[7]) during fluoroscopic examination are characteristic of hair-mass. These observers in their valuable report state †: “ By means of palpation, it was easy to demonstrate that it was freely movable within the stomach. The tumour could be displaced, the top of it rising above the level of the bismuth food, and showing as a rounded shadow in the clear air space in the fundus of the stomach. (The ‘ magenblase ’ of Clairmont and Handek.[8]) In order to demonstrate the nature of the tumour still more clearly, the fundus of the stomach was distended with CO_2, and into a larger gastric vesicle thus obtained the hair-ball was pushed up. It gave a heavy shadow because of the coating of bismuth it carried up with it.”

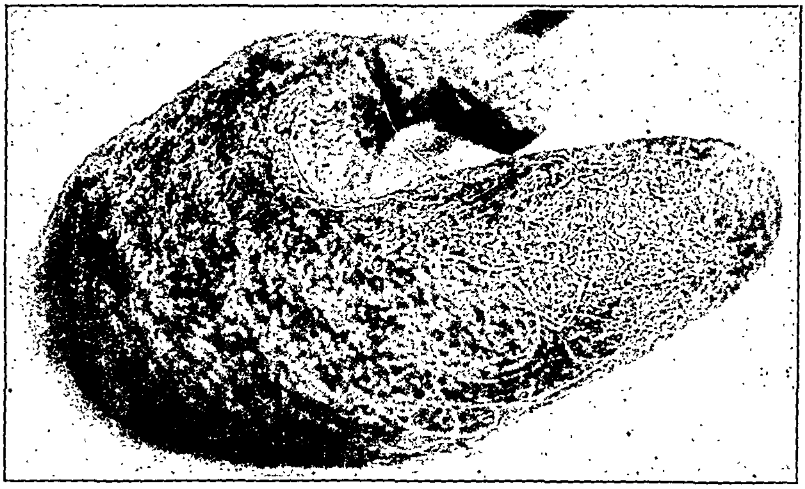

FIG. 3.—Hair-cast (Case 2). Weight 3½ lb., length along greater curvature 21½ inches, plus appendage of 7 inches. Greatest circumference 11 inches. Note the moulding at the pyloric end.

(2) A history of hair-eating is seldom obtained, even on inquiry in suspected cases. This is probably due to the fact that the habit is for the most part unconscious, for when shown the hair-mass afterwards admission of the habit is usually obtained.

(3) Small masses of hair may be passed per rectum. (Cases reported by Stover[20] and Thornton.[21])

(4) Lavage of the stomach may bring up a few strands of hair. In Paton’s case, the diagnosis was suggested whilst the patient was under observation by the doctor’s cat vomiting a small hair-ball.

(5) The presence of fatty, acid plates and needles in the contents of the fasting stomach. (Hausmann.[10])

CASE 1.—Mrs. E. P., aged 34. *History.*—She had always enjoyed good health until six months before admission to the hospital, when her lower limbs became swollen ; and soon afterwards she observed her abdomen to be swollen, and it continued to increase in size afterwards. She also suffered from breathlessness and palpitation on exertion. Indigestion had been present for some years, but lately this had taken the form of pain and vomiting after meals, with a streaky hæmatemesis on a few occasions. A few days before admission to the hospital the upper limbs had become swollen ; and of late headache and sleeplessness were troublesome features. Amenorrhœa had been present for eight months, and for some time previously menstruation had become irregular and scanty. The urine of late had diminished in amount and passed with a little difficulty. The bowels were freely opened with a tendency to diarrhœa. She had three healthy children, the youngest being 1 7/12 years.

Family History.—Unimportant, and the patient had never shown any sign of unsoundness of mind.

Condition on Admission.—The patient was first seen in the gynæcological out-patient department, King Edward Hospital, by Dr. E. Tenison Collins, as an unusual form of pregnancy was believed to be present by the practitioner in charge of the case. Dr. Collins passed the case on to the medical out-patient department, with the remark, “ the tumour is a peculiar one, but it does not belong to my department.” The woman was somewhat sallow, and showed a moderate degree of œdema of the limbs, and was fairly well nourished. The mental condition appeared to be normal. The tongue was slightly furred ; the teeth were deficient and carious. The breath was not fœtid. Heart and lungs—normal. The abdomen was distended, and on palpation was found to be occupied by a large mass extending downwards from the left hypochondrium, across and below the umbilical region and upwards to the right costal margin. The shape was crescentic with a sharp depression on its upper surface. The outline was definite ; the surface hard and smooth and free from tenderness. The mass was freely movable in all directions, and pain was entirely absent in manipulation. The normal splenic dullness was present, and merged at the costal margin into that of the mass. The urine was of specific gravity 1020, and except for being high coloured was otherwise normal.

Diagnosis.—This was indefinite, as one recognised that the features were unusual, and did not appear to belong to any known clinical entity. *A label had to be given to the* condition for the purpose of immediate admission to the hospital. A provisional diagnosis of splenic anæmia was made, but with much doubt, as the only point of resemblance to splenomegaly was the sharp depression on the mass superiorly, with a slight degree of anæmia. The patient was admitted to a medical ward, and afterwards transferred for operation under care of Mr. Cornelius Griffiths.

Progress. — In the ward the idea of pregnancy was revived by the house surgeon, who states : “ External ballottement is obtained, and hard parts can be felt per abdomen and are firm and rounded, and are all connected and can be freely moved, apparently in a fluid sac. No fœtal heart sounds can be heard, and no fœtal parts can be definitely made out.”

The case excited a great deal of interest, and almost everyone differed in opinion. Mr. Griffiths suggested that the condition was a tumour of the stomach. A moderate degree of secondary anæmia was present.

The radiographic report was as follows : Examination required— ? fœtus.

Report.—“ Shows no definite shadow. A fœtus does not show in utero.”

The radiographer—Dr. Owen Rhys—was not asked to make an examination of the stomach, or the true nature of the case may have been discovered. This case, as well as the second described in the present report, occurred in 1912, and so prior to the contributions of Thurstan Holland and others mentioned in preceding paragraphs. The general state was well maintained over a period of 14 days prior to operation, but vomiting, at first slight, became more marked, especially in the evenings. The bowels on an average were opened three times daily without an aperient, but on a few occasions a simple enema was necessary. The urine was at times scanty, and varied from 4 oz. to 32 oz. daily, and except for an excess of pigment and mucus was free from abnormality.

Operation.

The operation was performed by Mr. Griffiths.

Laparotomy.—4½ inch incision over the right rectus muscle. The stomach was found to be enormously dilated and filled by a compact mass of hair, which formed a perfect cast of the outline of the stomach and pylorus. All other organs were found to be normal.

Weight of the hair-ball on removal—6½ lb. Length along its greater curvature—24½ inches or 62 cm. ; and its greatest circumference was 12½ inches or 31·3 cm.

The superficial hairs varied from 6 to 12 inches in length, and were dark in colour and similar to those of the patient. The mass was thickly covered with a slimy, foul-smelling vided that on conviction by a court of competent jurisdiction of any person of any criminal offence punishable in the case of an adult by penal servitude or imprisonment, the court, if satisfied that such prisoner is a defective, may make any order that a judicial authority under the Act may make, or may remit the case to a judicial authority. And the section provides that the same procedure may be followed in the case of children who are liable, under the Children Act, 1908, to committal to a certified industrial school, and also in the case of persons found to be amenable to the Inebriates Acts.

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† A little manipulation and rotation of the patient quickly demonstrated that the mass displacing the bismuth (showing as lighter area in the middle of the dark shadow of the) was actually *within* the stomach.

The court may act either on the evidence given during the trial or other proceedings, or may call for further medical or other evidence. Clause 5 of the section lays down that when it appears to the police authority that any person charged with an offence is a defective, they shall communicate with the local authority, and it shall be the duty of the police authority to bring before the court such evidence as to his mental condition as may be available.

It will be observed that these provisions of the Mental Deficiency Act do not apply to persons charged with capital crimes—that is to say, with murder or treason. Defectives indicted for these crimes are dealt with under the ordinary law, and, if the offence is proved, are either found guilty and sentenced to death, or are found guilty but insane and ordered to be detained during His Majesty's pleasure. In practice, the final result is much the same, as adequate evidence of mental deficiency, even if it does not secure a verdict of guilty but insane, will lead to reprieve, and other provisions of the Mental Deficiency Act give power to the Secretary of State to transfer mental defectives from prisons and criminal lunatic asylums to institutions for defectives.

The courts have hardly as yet made sufficiently extensive use of their powers under Section 8 of the Act to establish any large body of precedents, but so far it does not appear that medical evidence regarding mental deficiency in criminal cases will be likely to present any special difficulties. Here, as in medico-legal practice generally, the guiding principle for the medical witness should be to confine himself to his technical rôle, to make sure by exhaustive examination of the case that he is acquainted with all the relevant data, and to advance no opinion that he cannot support by facts.

HAIR-BALLS OR HAIR-CASTS

OF THE STOMACH AND GASTRO-INTESTINAL TRACT.

A REPORT* OF TWO CASES OF HAIR-CAST OF THE STOMACH, WITH AN ABSTRACT OF 108 CASES.

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Synonyms.—Hair-ball, hair-cast, hair mass, trichobezoar or phytotrichobezoar, tumeur pileuse.

Historical.—The condition is a rarity, but is more frequent than is generally supposed; 108 cases have been reported since Baudamant[1] described the first specimen in the literature in the *Journal de Médecine* in 1779. It is probable that unreported cases occur not infrequently in the surgical practice of all large hospitals, which, as Matas[2] suggests, would, if described, swell the statistics very considerably. In recent years several cases have been reported, and much care has been taken in a research of the literature, with the result that a careful analysis of the cases has shown the condition to be almost an entity, for there is a close uniformity of feature in the reports.

We owe much to the excellent contributions of Butterworth,[3] Ledra Heazlit,[4] Matas,[2] Moore,[5] in America, and to Thurstan Holland,[6] Barclay and Ramsbottom[7] in England, Clairmont and Haudek,[8] Huttenbach,[9] Hausmann,[10] and others on the continent. Radiography has proved to be a most valuable aid in diagnosis, as in gastro-intestinal diseases generally.

The term "bezoar" is probably of Arabian origin, being derived from the word "badzehr"; bezoar stones in ancient times were regarded with veneration as remedies against snake poison, plague, leprosy, epilepsy, dysentery, and many other maladies. Dechambre in the "Dictionnaire Dechambre" gives an excellent historical summary, and more recently Burchard[11] presents their X ray relations in a most interesting and valuable contribution to the subject.

Sir Norman Moore, President of the Royal College of Physicians of London, was greatly interested on seeing the specimens, and very kindly gave me the following historical reference from Freind's "History of Physick" (Vol. II., pp. 106 to 108, Avenzoar's account).

> "In speaking of a Jaundice, which he supposes was occasion'd by Poison, he orders three barley corns weight (not three grains as some have told us) of Bezoar: the first time I find it used by way of medicine, or any history of it described. His description of it is this: 'That is the best, which is found in the East, near the eyes of Stags. Great Stags, in those countries, eat serpents to make them strong. And before they have received any hurt from them, run to the streams of water, and go into it so far, till it comes up to their heads; this custom they have from natural instinct; and there they continue without tasting the water, (for, if they should drink it, they would die immediately) 'till their eyes begin to trickle: this liquor, which there oozes out under the eyelids, thickens and coagulates, and continues running, 'till it increases to the bigness of a chestnut, or a nut. When these Stags find the force of the Poison spent, they come out of the water, and return to their usual haunts: and this substance, by degrees, growing as hard as a stone, at last, by their frequent rubbing it, falls off. This is the most useful Bezoar of all.' And this account here given by Avenzoar is confirmed by other Arabian writers, who have travelled into Persia and China, where it most abounds. The Author of the book concerning Simples, ascribed to Serapion, erroneously supposes that it grows in some Mines: and to shew the exorbitant value of it, he quotes Abdalanarack as a voucher, that the Palace of Corduba had been given for one of these Stones. Some of the moderns will not allow the Bezoar of Avenzoar to be the same, which has gone under that name in these latter Centuries; because this, according to the best account of the most knowing Naturalists, is always found in the Stomach, or rather Omasum, of the Animal they call Cervicapra. However, I cannot but think, that our Author must mean the same thing though he differs in the account of the place, where it is formed."

Incidence.—Moore[5] states "that the incidence of bezoars or hair-balls in the human stomach might well be used as an argument in favour of evolution, as they are frequently found in animals in the season when the hair is shed, and but rarely give rise to serious symptoms, as they are frequently expelled by vomiting, or passed in the fæces with a thick coating of food particles."

In human beings the hair-eating habit is generally confined to young females, and generally dates from childhood, and has been seen even in creeping children (Harvie[12]). Butterworth[3] remarks "that few cases of trichobezoar are found in German literature, and the habit of hair-eating appears to be more prevalent among the English-speaking people," which has led Bussell to remark that "the eating of hair seems to be a favourite pastime of English women."

Pathology.—The ætiology of the hair-eating habit is probably due to some factor which is peculiar to young females in the adolescent period of life. The causation is generally ascribed to a perverted appetite, but the exact nature of the underlying disturbance is obscure. In only a small number of the cases was insanity present; in these the foreign body usually consisted of a mixture of hair and other material, such as nails, tacks, pieces of wood, and various other substances. Occasionally cotton (with a pin and hook, as in the second of the cases in the present report) or bits of string or wood form a nucleus for

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* Read before the Clinical Section, Royal Society of Medicine, on April 8th, 1921.

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THE treatment of syphilis by intravenous injections of mercury was introduced in this country at the Male Lock Hospital in 1895, and in the following year I read a paper on the subject at the Third International Congress of Dermatology held in London, an abstract of which appeared in THE LANCET of Dec. 12th, 1896. The number of cases then brought forward was 76, all of them males, and the number of injections administered was over 1000. I then employed a 1 per cent. solution of cyanide of mercury, the dosage of which was ♏ xx., at first given on alternate days, but later more frequently; the number of injections varied from 46 downwards, but in at least 10 cases the treatment had to be discontinued owing to the difficulties of finding a suitable vein, or at the patient's own request.

In my experience, this treatment was more rapid in its effects than any other method of mercurial administration, painless in comparison with intramuscular injections, and perfectly safe; the only objection I then brought forward was the difficulty occasionally experienced in introducing the hypodermic needle into a vein. The treatment did not for the most part commend itself to the members of the Venereal Diseases Section of the Congress owing to its inherent difficulties, and although its critics were not hostile, they were by means enthusiastic in its favour.

Reintroduction of the Treatment, and its Application to Women.

I did not persevere much with this treatment after 1896 for various reasons, one being that I was shortly afterwards transferred to the charge of the patients in the Female Lock Hospital, and I did not think at that time that women would be suitable subjects for intravenous injections owing to difficulties with their veins; another reason was the introduction at about that time of arsenical compounds which were then coming into vogue. In 1917, finding that my patients at the Female Lock Hospital rather welcomed and looked forward to their injections of salvarsan substitutes, and that the difficulty of intravenous injections in women had been greatly over-estimated, I decided to give the treatment a further trial, the results of which have been perfectly satisfactory. The number of women I have now treated amounts to 166, of whom 40 were pregnant, mostly in the early stage; the routine adopted was one injection of one of the salvarsan substitutes and five injections of the cyanide solution per week: the doses of the latter varied with the tolerance of the patient, and it was found that many patients could stand a dosage of 40 to 50 minims, so that they received 200 to 250 minims in the course of a week. The maximum number of cyanide injections given was 110, in a case of very severe and distiguring frambœsiform syphilide of the nose and face; in 16 cases over 50 injections were given, and in 13 cases 40 or more, and the average number given came out a little under 40; the total number amounted to considerably over 5000. The strictest attention was paid to the hygiene of the mouth, and the occurrence of severe gingivitis or other manifestations of mercurialism was rare, so that under appropriate treatment the injections had seldom to be interrupted for more than a few days; in two cases phlebitis and occlusion of the veins occurred, and necessitated the recourse to other forms of mercurial treatment. Of the 126 non-pregnant women, 82 had a positive Wassermann reaction (W.R.) on admission, and a negative one on their discharge; 30 had a positive reaction on their admission, and also on their discharge, free from all symptoms; the remainder had a negative reaction both on admission and discharge, owing in some cases to the test having been performed before the evolution of the disease, and in others as the result of treatment before admission. Of the 40 pregnant cases, the W.R. was positive in 37 on admission, and negative in 3; of the babies born of these women 36 gave negative W.R.'s at birth, and remained negative until they and their mothers were discharged from hospital free from symptoms. In two cases the W.R. was positive at birth, but was rendered negative by treatment. Two cases of macerated fœtus occurred at about seven months; one infant died of cyanosis and vomiting in 24 hours, one of jaundice in a fortnight, and one at two months of diarrhœa and vomiting. The treatment of the expectant mothers was continued up to their confinement, and was resumed shortly after; they were enjoined to suckle their babies for as long as was deemed expedient, and to present themselves and their offspring for inspection at intervals of two to three months. The average stay in hospital of these patients was about 16 weeks, but many of them continued their treatment as out-patients, and the remainder resumed their ordinary avocations.

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Conclusion.

In conclusion, I am more than ever impressed with the value of intravenous injections of mercury, given concurrently with one of the salvarsan substitutes, and for the prophylaxis of syphilis I consider it to be infinitely superior to any other routine of treatment. I fully realise that it is not appropriate to the treatment of out-patients in the V.D. clinics, but I am convinced that it is the most reliable method for use in institutions where the patients can be induced to stay until the complete subsidence of all symptoms of syphilis.

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A sense of crackling or deep crepitation was also elicitated in Moore's[5] case

Radiography—The appearances are distinctive, and as this adjunct to diagnosis is now universally adopted in all obscure abdominal affections, the diagnosis of hair mass of the stomach should now become the rule and not the exception as formerly Thurstan Holland[6] has given us the first detailed description of the X ray appearances of hair mass, whilst Ramsbottom and Barclay[7] presented the first case which was absolutely and definitely diagnosed by radiography, and they emphasise the importance of "radioscopic palpation" in association with the *screen examination* The continental observers already named in the first section of this paper also made valuable contributions to the radiographic diagnosis of hair ball

Mr Thurstan Holland[6] has very kindly given me permission to reproduce particulars of the two cases which are of classical importance in the progress of our knowledge of the subject In the first case despite a suggestive picture, an exact diagnosis of the gastric tumour was not definitely made out, although Dr Barclay, of Manchester, suggested hair ball

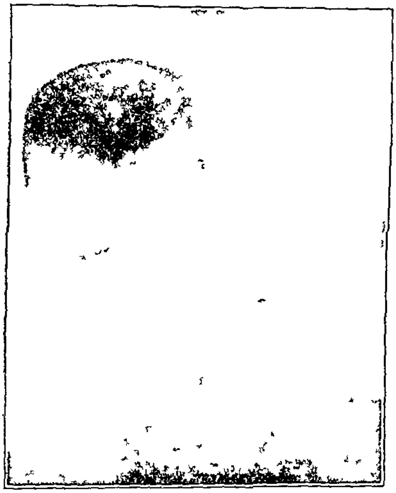

FIG 1 —Radiograph (Thurstan Holland[6]) The first mouthfuls of the opaque meals spread out to form a cap over the upper end of the tumour

An exact diagnosis was definitely made in the second case prior to operation The patient was a girl of 16 years, with a history of a large abdominal tumour for ten years which at various times had been diagnosed as a tumour of the spleen liver, or kidneys Operation was refused as no definite diagnosis was made For five or six years, "up to a year ago," there had been a constant vomiting of food This had stopped a year ago but lately had commenced again There was no pain but some tenderness in the upper right abdomen The tumour presented itself as a large hard mass curving down from below the left costal margin to a point below the umbilicus and then upwards to the right to disappear under the lower edge of the liver The tumour was freely movable and when grasped by its lower part could be swung from side to side of the abdomen as if suspended from a fixed point behind the upper left costal margin.

Mr Holland[6] states "with a vivid recollection of my first case the diagnosis appeared quite certain and I made a definite diagnosis of hair ball in the stomach before the X ray examination The history was then discussed more fully with the mother and the fact elicited that no one had ever suggested to her any other diagnosis except that of 'tumour of the liver spleen or kidneys'—these were the mother's own words I then asked a direct question *Are you sure that no one has ever suggested to you that the tumour consisted of hair?* The answer was significant 'No But now that you mention hair I remember that when she was 4 or 5 years of age she used *not only* to bite off her own hair, but also in her sleep to pick off and chew bits of blanket &c'

"The radiographic appearances were interesting and characteristic —

"(1) Before any food was given it was possible to make out the general shape of the tumour on the screen and to differentiate it from the liver as it was thrown into relief by the gas-distended transverse colon A plate was taken *which clearly showed this* The gas distended transverse colon partly encircled the dark shadow of the hair-mass which almost completely filled the stomach *This localises* the gastric area and excludes the spleen and omentum as these are outside the colonic loop The liver can usually be distinguished from *the stomach area* by a faint darker outline (Matas[3])

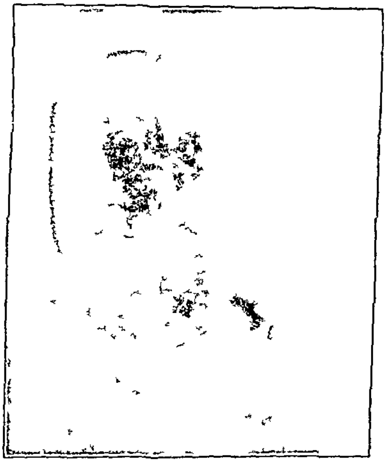

FIG 2 —Radiograph (Thurstan Holland) The appearance of the tumour when covered by the contrast meal Note the *gas-distended transverse colon* encircling the lower end of the tumour

"(2) The first few mouthfuls of a liquid barium meal remained held up in the *cardiac* end of the stomach and spread out as if forming a cap to something inside the organ (See radiograph, Fig 1)

"(3) Shortly *after* swallowing a breakfast cupful of the food the whole stomach was mapped out by what was obviously the barium lying between *the walls of the stomach and the mass filling it*

"*It was then obvious that an enormous mass—the hair-ball—filled the entire stomach right up to the pyloric end, the J shape* being most beautifully shown

Mr Newbolt removed a large hair-ball [illegible] lb 15 oz in weight two days later The patient made an excellent recovery The radiographs were taken in a standing position with a *16 inch coil* and a Sanax break The exposure in each case was approximately half a second an Ilford plate and an intensifying screen being used

Diagnosis—(1) This is now mainly one of differentiation of gastric tumour, and for all practical purposes lies between malignant disease and hair-mass The early age, sex, long history, good health

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mucus together with flakes of a sebaceous or adipocere material The stomach wall was hypertrophied and its mucous membrane showed a condition of gastritis in places and also areas denuded of epithelium having a glistening appearance similar to that of leukoplakia X ray examination disclosed no foreign bodies within the hair mass

The patient bore the anæsthetic and operation well but an hour later collapsed and despite energetic stimulation died

Remarks

On inquiry from the relatives no history of mental deficiency or of hair eating was obtained The hair on the scalp was scanty, but no importance was attached to this fact and afterwards the nurse in charge of the case stated that the patient on one occasion made the following remark ' I used to have a lot of hair and have lost it My hair used to be below my waist—now look how short it is She volunteered no further information but if the above remark had been reported by the nurse it is possible that a suspicion of the true condition may have occurred to one of us

The house surgeon in his note made an important observation which although wrongly interpreted was a correct impression of the free movement of the mass on palpation He remarked upon the free movement of the mass apparently in a fluid sac The most striking impression obtained from the published records of hair ball of the stomach is the free mobility of a hard smooth mass on manipulation If this fact is borne in mind then the possibility of hair ball will be remembered and a diagnosis can afterwards be definitely established by radiography

CASE 2—Mrs M E aged 33 Admitted to the King Edward Hospital Cardiff under care of Mr A W Sheen

History—The patient was quite well up to three years ago when she noticed a lump on the right side of the abdomen which gradually got larger A year later she suffered at intervals from morning vomiting but never after meals Occasional slight pain was felt in the swelling At times the lump appeared to get smaller with the passage of an increased amount of urine

Previous Health—Good except for a temporary mental disturbance of six months duration a twelvemonth prior to operation from which she appears to have made a complete recovery Four healthy children

Family History—Unimportant

Present Condition—A healthy looking well nourished woman Heart and lungs normal On abdominal examination a hard rounded smooth movable painless lump was found in the right lumbar region but which did not appear to fill the loin A dull note was obtained on percussion but non continuous with the liver dullness

Operation performed by Mr Sheen eight days later The abdomen was opened by a longitudinal incision on the right side but the mass was now situated in the left lumbar region and found to be a hard movable body within the stomach A 4 inch longitudinal incision was made in the most avascular part of the anterior surface of the stomach and a characteristic hair cast of the organ with a prolongation into the pylorus and duodenum was removed The stomach wall was hypertrophied The hair mass was 21¼ inches or 54 3 cm in length along its greater curvature and 11 inches or 27 cm in its greatest circumference the appendage withdrawn from the pylorus being 7 inches or 17 cm in length The weight was 3¼ lb A few adherent strands of cotton were seen on its surface also a hook similar to that shown in the interior on subsequent X ray examination (Fig 3) There was a large papilloma involving the lesser curvature which appeared to be of an innocent nature and also several similar smaller tumours over the antrum pylori These were removed and the raw areas sutured The usual surgical procedure was followed in the completion of the operation The patient made a full and speedy recovery, and was discharged 14 days later

A careful surgical technique is necessary during the removal of the hair mass, which is frequently in a foul septic condition Multiple hair masses in the stomach and intestines have also been reported in several instances as in the case of Ledra Heazlit [4] where two operations were performed the first for the removal of a gastric hair cast, and the second three days later for ileus owing to obstruction of the ileum by another hair mass Dr Heazlit[4] emphasises the importance of this fact being borne in mind at the time of operation In Bell s[22] case there were 11 operations in all for the removal of hair masses from the stomach and small intestine with recovery Butterworth[3] in his analysis of the subject in 1909, collected 42 cases, Moore[5] in 1914, 53 cases, Ledra Heazlit,[4] in 1914, 70 cases, and Matas,[2] in 1915, brought the number of cases to 77. These contributors in their valuable papers compiled a careful bibliography of the subject

The present paper brings the number of cases to 108, the additional references alone being recorded, except for the cases of special interest used for the purpose of illustration

My thanks are due to Dr Thurstan Holland and to my colleagues on the staff of the Cardiff Hospital

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LITERARY INTELLIGENCE —Messrs J F. Lehmanns of Munich publishers of the *Münchener Medizinische Wochenschrift* announce that they have taken over the publication of the *Archiv fur Rassen und Gesellschaftsbiologie* edited by Dr Alfr Ploetz. They have also taken over the *Archiv f Biologie* edited by L. Frank, M v Frey, and E Voit

Commentary.

The first of the above cases is an excellent example of what may be termed silent renal tuberculosis—one of the conditions which should always be borne in mind in any obscure abdominal affection associated with progressive loss of flesh and strength; owing to the absence of the cardinal symptoms of urinary disease it is frequently overlooked. Cystoscopy is quite as essential as an X ray examination. The favourable prognosis of nephrectomy in an early stage, when the disease is unilateral and before secondary infection has supervened, demonstrates the importance of excluding this condition.

According to Straus of Chicago there are six types of primary renal tuberculosis:—

(1) The cystitis type, where symptoms are referred to the bladder, and time is wasted in treating this locally. It is not sufficiently recognised that in men, apart from stone, stricture, and prostatic obstruction, cystitis is, to say the least, uncommon. This type furnishes 40 to 60 per cent.

(2) The renal type, where pain is referred to the kidney with attacks of renal colic, also furnishing from 40 to 60 per cent.

(3) A sudden, severe, and apparently causeless hæmaturia, furnishing 25 per cent.

(4) Stated by Straus to be very rare, a type running a course entirely symptomless, except for albuminuria.

(5) Cases running a symptomless course until a perinephric abscess supervenes.

(6) A type with fever, sweats, and rigors, due to a mixed infection.

As regards Case 2, appendicitis is not unfrequently diagnosed in cases of renal calculus and pyelitis, and these conditions should be excluded before the appendix is attacked. The last case shows the importance of remembering the possible presence of abnormal renal arteries. Eisendrath and Straus found in 200 kidneys examined 4 per cent. of true lower polar arteries, 3·5 arising from the aorta, 0·5 from the left common iliac, and altogether 14 per cent. of true accessory arteries, in addition to those pseudo-accessory arteries arising from a single renal. During any operation on the kidney requiring its delivery the unexpected presence of one of these may give the surgeon a disconcerting interlude in his manipulations, as occurred to me lately in an apparently straightforward nephrolithotomy, when in separating the upper pole of the kidney an accessory polar artery was torn across; the proximal end retracted out of sight, and the smart hæmorrhage resulting was only arrested by gauze pressure until the kidney was delivered, when the bleeding vessel could be found and ligated.

CULTIVATION OF SPIROCHÆTES

ON THE SURFACE OF SOLID MEDIA CONTAINING AN "ESSENTIAL SUBSTANCE."

BY F. W. TWORT, M.R.C.S., L.R.C.P. LOND.
(From the Laboratories of the Brown Institution, London.)

IN this investigation no attempt has been made to confirm the work of Noguchi, who has obtained what he considers to be a definite growth of spirochætes, including *Treponema pallida*, on his well-known medium under anaerobic conditions, but rather to obtain, if possible, a good surface growth on solid media in which the changes in form of the spirochætes could be better studied, and which could be used for complement-deviation tests, and for studying the problems of infection and immunity.

Working with the late Mr. G L. Y. Ingram in 1910, I succeeded in cultivating Johne's bacillus, an acid-fast bacillus allied to the lepra and tubercle bacilli, which infects the intestinal tract of cattle, sheep, goats, &c. This was done by adding to any good medium a small quantity of a certain essential food which we found to be necessary for its vitality and growth and which we found to be stored up in the bodies of allied bacteria such as the tubercle bacilli and *Bacillus phlei*. We found also that this food, which we called the "essential substance," could be extracted from *Bacillus phlei* and allied bacilli by ethyl alcohol, glycerine, &c. These results were first submitted to the Royal Society, before which body they were read in November, 1910, and given in more detail in February, 1912, being also published in the Proceedings of the Society. Further investigations on Johne's bacillus and the essential substance necessary for its growth were published later, but it will only be necessary to mention here the simplest form of the medium used. This was prepared as follows:—

Bacillus phlei was grown on 4 per cent. glycerine-peptone-beef broth. The growth was then collected, killed by steaming, and dried. One gramme of the dried bacillus was ground up with 12 c.cm. of glycerine and 22 c.cm. of normal saline. The emulsion so obtained was autoclaved, and when cool was added to 66 c.cm. of mixed yolk and white of new-laid eggs. The medium was then placed into tubes, sterilised at 61° C. on three successive days, and inspissated in slopes. In place of the saline we often used ordinary peptone-beef broth or a broth prepared with brain tissue instead of beef.

As has been pointed out, on this medium we obtained good growths of Johne's bacillus, and on one or two occasions we succeeded in getting a slight growth of the lepra bacillus of man. The medium also proved to be very good for the cultivation of the diphtheria group of bacilli. Before passing on to the consideration of spirochætes it may be noted that special nutrition substances which have since been found in various foods, and have been named vitamins—substances which are essential to the life and growth of animals and man are probably analogous substances to the essential substance in the bodies of acid-fast bacilli which we found to be necessary for the growth and multiplication of Johne's bacillus.

Results Already Obtained.

Our work has been continued with special reference to these essential substances which are not contained in ordinary laboratory media, but are essential to, or of assistance in, the growth of certain bacteria. Most of this work carried out with extracts of bacteria, seeds, fungi, and other vegetable substances has already been published in our papers on Johne's disease, and it will not be necessary to discuss these in detail here. However, the results with Johne's bacillus indicated the importance of this line of research, and attempts were made to cultivate other micro-organisms on media prepared along similar lines. The experiments with spirochætes had given one definitely positive result when the work was interrupted by the war, and I regret to say that during my absence in 1916 my culture died out; since my return I have been unable to continue the investigation owing to the difficulty of obtaining the necessary material. Under these circumstances it will not, I hope, be out of place to give the results so far obtained, incomplete though they may be. One of the media used in the primary cultures was prepared in the manner already described except that the killed growth of a diphtheroid bacillus was used in place of *Bacillus phlei*, and 3 per cent. of glycerine was used instead of 5 per cent.

The material used in the successful experiment consisted of lymphatic gland tissue obtained from a mouse that had died, a small piece being removed aseptically and placed on the surface of the medium just described. The tube was capped with gutta-percha tissue and incubated aerobically at 37° C. After nine days' incubation a delicate growth was observed round the tissue, and this proved to consist of a pure culture of a delicate spirochæte. Some difficulty was experienced in obtaining subcultures as no growth took place on fresh tubes of a somewhat similar medium in the absence of the gland tissue. Successful subcultures, however, were immediately obtained on the standard egg medium containing 1 per cent. of *B. phlei*. Further experiments showed that better growths were obtained when the egg medium was made with ordinary peptone-beef broth or peptone-brain broth in place of the saline; 1 per

FOUR GENITO-URINARY CASES

ILLUSTRATING SOME DIFFICULTIES IN DIAGNOSIS.

BY J. W. GEARY GRANT, F.R.C.S. ENG.,
HON. ASSISTANT SURGEON, KING EDWARD VII. HOSPITAL, CARDIFF.

THE following cases well illustrate the difficulties of diagnosis in certain genito-urinary conditions, and also the desirability in any obscure abdominal disease of a complete investigation of the genito-urinary system. X ray examinations, when negative, obviously only exclude such conditions as calculus, and when apparently positive still require verification of their findings by use of the cystoscope and ureteral catheter.

Tuberculous Kidney with Blocked Ureter.

CASE 1.—The patient was a police constable aged 30 of fine physique. He was admitted to King Edward VII. Hospital, Cardiff, under the care of Dr. Mitchell Stevens, complaining of progressive weakness and loss of flesh, feeling of nausea but no vomiting, and pain in epigastrium immediately after food. The doctor who sent him to hospital informed Dr. Stevens that in March of 1920 the patient came to him for an attack of pain and difficulty in micturition, and that on that occasion he passed a catheter and drew off about half a pint of muco-pus. Since that time there had been no symptoms referred to the urinary organs. In view of the history Dr. Stevens requested me to make a cystoscopic examination, and this was done on Jan. 1st, 1921. The bladder appeared perfectly normal, except that I was unable to make out any sign of a left ureteric orifice. Indigo carmine was injected; vigorous jets from the right ureter appeared in 20 minutes but none from the left. A week later cystoscopy gave the same result. Skiagraphy of the kidney region and of the stomach after an opaque meal gave a negative result. On palpation the left kidney appeared only moderately enlarged. Although the patient's symptoms at that time and for many months previously were referred solely to the stomach, a tentative diagnosis of tuberculous kidney was made; at Dr. Stevens's request, on Feb. 9th I cut down on the kidney, which was much enlarged, the fatty capsule having been converted into a fibro-lipomatous mass of the consistence of cartilage, adherent to the peritoneum and densely adherent to the diaphragm. In endeavouring to get inside Zuckerkandl's capsule, to avoid opening the peritoneum, a considerable perinephric abscess was opened into, discharging thick pus found afterwards by the pathologist to contain *Staphylococcus aureus* in pure culture. The difficulties of separating this kidney without damage to surrounding structure were enormous. The vascular pedicle, which was very short, was isolated, transfixed, tied with two mass ligatures of stout catgut and divided, the kidney delivered, and the ureter brought out at the lower angle of the wound. A tear was then found in the peritoneum, in which a small tube was inserted in case the serosa had been soiled, and the peritoneum was then sutured round this and the tube brought out through a separate stab incision. A large drainage-tube was inserted into the upper angle and the wound closed in layers. There was moderate shock, but the patient speedily rallied, and for two days appeared to be doing well. Then hiccough set in, his temperature rose to 100° and 101° F., and signs of broncho-pneumonia with increasing dullness at both bases supervened with distressing insomnia; he died on the tenth day after operation.

The kidney on its removal showed hardly a trace of normal renal tissue, the pyramids were a canary yellow with intervening green and pink patches, the pelvis a narrow slit, and the ureter obliterated. It appears to me that a year ago, when he presented urinary symptoms, there was fairly advanced tuberculous infection of the kidney; the ureter had then become suddenly blocked from tuberculous debris and the kidney ceased to secrete.

Stone in Ureter Simulating Acute Appendicitis.

CASE 2.—A housewife, aged 47, admitted at midnight to the above hospital as a case of acute appendicitis, with a history of three weeks' illness off and on and one week of acute symptoms, severe abdominal pain, vomiting, and constipation. On admission the pain was referred to the right loin passing to the groin. There was tenderness over the upper half of the right rectus and tenderness on deep pressure over the gall-bladder, but none over McBurney's point. I diagnosed acute cholecystitis and opened the abdomen by a right paramedian incision above the umbilicus. The gall-bladder and appendix were both normal. On passing the hand to the right kidney pouch the kidney was felt to be large and the pelvis distended and very tense. No stone could be felt in pelvis or ureter, and the rest of the abdomen was normal. Abdomen closed. The following day I cystoscoped the patient; urine issued normally from the left ureter, but none was seen to come from the right, and a ureteral catheter passed for 1½ inches when it was arrested. A skiagram showed two minute shadows in the situation of the lower end of the right ureter, which I believed corresponded to the point of arrest of the catheter. All symptoms then subsided. A week later I again cystoscoped her and passed a catheter to the pelvis of left kidney, and then one in the right for 1½ inches and injected sterile olive oil. I again cystoscoped her on March 1st, when a small stone of a brick-red colour, 1 cm. by 0.5 cm., was seen in the bladder, and a still smaller one in the mouth of the ureter, from which it was coaxed by the beak of the cystoscope; both were removed with a Bigelow's evacuator. The larger stone was very irregular, with numerous spicules. Had this case not come in the middle of the night as an acute abdomen it would probably have been further investigated before operation. The patient gave no history of any urinary symptoms, but as she was very deaf and not very intelligent a history was difficult to elicit.

Pain after Gastro-jejunostomy: Renal Stone.

CASE 3.—A dentist, aged about 40, operated on by me for gastric ulcer some two and a half years ago; a large horse-shoe ulcer of the lesser curvature was then found, and as the patient's condition was not very good I performed a posterior no-loop gastro-jejunostomy. He had a severe attack of ether pneumonia, but on recovery from this he left the hospital and had no further trouble, except attacks of bronchial asthma for two years; he then consulted me on account of a return of all his symptoms. I considered the possibility of the ulcer having become malignant, of a jejunal ulcer or perigastric adhesions, and I advised an exploratory laparotomy; the patient wished to try palliative treatment for a time, but found the pain intolerable, and he was taken into hospital. An X ray examination with the screen showed a "dumping stomach," the meal passing immediately through the anastomotic opening into the jejunum. At operation, except for a few adhesions, the gastro-jejunostomy appeared perfect, the jejunum passed with a gentle curve to the left with no sign of kinking, and there was no sign of jejunal ulcer; the original lesser curve ulcer appeared to have healed, with only some slight induration at its site, and a partial gastrectomy in a patient far from robust did not appear to be warranted. On examination of the rest of the abdomen on the right side a hard body the size of a walnut, evidently a stone, was felt in the lower part of the pelvis of the right kidney. It was impossible to remove it with any degree of safety from a median laparotomy wound, and this was closed. The patient again had a severe attack of ether pneumonia. On recovering from this a skiagram showed an opacity about the size of a shilling in the situation where the stone was felt at the laparotomy. He is waiting until he is in a better state of health to have the stone removed.

The case is remarkable in that he describes his pain as exactly the same as that which he had before the first operation, and refers it to the left side; nothing found at the second operation indicated that this was due to the gastric ulcer or his anastomosis. He has never complained of any urinary symptoms.

Accessory Renal Artery: ? Intermittent Hydronephrosis.

CASE 4.—A girl, aged 16, admitted to hospital March 30th, 1921, gave a history of a sudden attack of severe pain in the hypogastrium in February, with pain across the small of the back, coming on after micturition. Extreme nocturnal and diurnal frequency and hæmaturia for 14 days. Her own doctor diagnosed vesical calculus, and sent her to Dr. Mitchell Stevens, who diagnosed calculus in the left kidney or ureter. On admission no pain, frequency, or hæmaturia; a skiagram showed a shadow, the size of a shilling and very well defined, situated just to the outer side of and below the transverse process of the first lumbar vertebra (left). A second plate a week later showed the same, as also one taken after her operation. On cystoscopy the bladder and the ureteric orifices were normal, and urine came from each. I, however, failed to get a catheter to enter the left. On April 13th I exposed the left kidney and could find nothing resembling a stone in the kidney, pelvis, or ureter, or anything which corresponded to the shadow found in the plate. There was, however, an accessory renal artery to the lower pole passing behind the ureter at its junction with the pelvis of the kidney, and this I divided between ligatures. Possibly this abnormal polar artery caused an intermittent hydronephrosis with hæmaturia. Kidd and Ransohoff state that hæmaturia, often profuse, may follow temporary occlusion of the ureter in intermittent hydronephrosis.

was adopted. The diameter of the test tubes is of importance; half inch diameter tubes were employed. Readings were taken after 24 hours and results ranging from complete coagulation to slight increase in viscidity were recorded as positive. The test was carried out on 261 serums.

From the table it will be seen that only 43 per cent. of the serums giving a positive W.R. showed a positive formalin test, and that 9·5 per cent. of serums giving a negative W.R. gave a positive formalin test.

The Sachs-Georgi Reaction.

It was pointed out in 1910[2] that extracts of various organs gave a slight precipitate when added to syphilitic serum. The precipitate was, however, found to be inconstant, and was therefore considered of little diagnostic value. In 1918, Sachs and Georgi[3] called attention to the fact that the addition of a solution of cholesterol to alcoholic heart extract made a good antigen for a precipitation test. The precipitate was claimed to be definite and constant in cases of syphilis. The antigen employed in the following series was that recommended by Taniguchi,[4] which is practically identical with that of Sachs and Georgi, and consisted of 20 parts of 10 per cent. alcoholic heart extract, 10 parts of absolute alcohol, and 1 part of 1 per cent. alcoholic solution of cholesterol. This was rapidly mixed with an equal volume of saline and allowed to stand for 15 minutes. The mixture was then rapidly diluted with twice its volume of saline.

The method adopted for the test was that recently described by Taniguchi.[4] Four tubes were used for each serum, three containing respectively 0·025, 0·05, and 0·1 c.cm. of serum to be tested, each made up to 1 c.cm. with saline and 0·5 c.cm. of diluted antigen added. The fourth tube was a serum control and contained 0·05 of serum made up to 1·5 c.cm. with saline and sufficient alcohol to give the same alcohol dilution as obtained in the other tubes after adding the antigen—namely, 1 in 18. The addition of this small quantity of alcohol here serves a dual purpose: it inhibits the growth of organisms which might otherwise occur, and causes some precipitation of proteins from the diluted blood serum, which by comparison aids in distinguishing between a non-specific and a slightly positive result. With each batch of serums positive, negative and antigen controls were carried out. The tubes were incubated for 24 hours at 37° C. in accordance with Sachs and Georgi's later experience.[5] It is possible to read the results immediately, but if the tubes be allowed to stand for an hour at room temperature after being removed from the incubator the flocculation becomes better marked. The reaction was carried out on 252 serums.

The results were read (+ + + +), (+ + +), (+ +), (+) and (—) according to the amount of flocculation present in the tubes. As is the case of the W.R., some reactions occurred in which the tube containing 0·1 c.cm. of serum would be slightly positive and those containing 0·05 c.cm. and 0·025 c.cm. strongly positive. With the W.R. such results are a rarity, but with the S.G. test they are met with some frequency. The great difficulty encountered in reading the results was to distinguish between a weak positive (+) and the slight pseudo-flocculation given by some negative serums—a point which is well illustrated by Table I. When all the S.G. results read as positive—i.e., (+ + + +) to (+) inclusive—are included, the number of cases giving a positive W.R. which also gave a positive S.G. test is 95·5 per cent. of the total positive W.R.'s. The ratio of the negative results, however, is not so good. If (+ + + +), (+ + +), and (+ +) are considered as positive, and cases giving (+) only are included with the negative results, the number of cases giving a negative W.R. and a negative S.G. is 97 per cent. of the total negative W.R.'s, but the proportion of the positive results is poor.

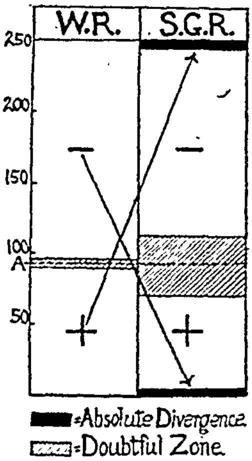
TABLE I.

Test.		Number of cases.						Percentages.		
Wassermann reaction		+	+	—	—	Partial positive.	Partial positive.	Wassermann and new test agree.	Ratio of pos. W.R. and pos. new test to pos. W.R.	Ratio of neg. W.R. and neg. new test to neg. W.R.
New tests		+	—	—	+	+	—			
Formalin test (261 cases) ..		42	56	142	15	2	4	72	43	90·5
Sachs-Georgi reaction[1] (252 cases)	Taking (+ + + +), (+ + +), (+ +), and (+) as positive	87	4	129	26	2	4	88	95·5	83·5
	Including (+) with the negative results	70	21	150	5	1	5	89·5	77	97

In calculating percentages the cases showing a doubtful Wassermann reaction have been omitted. The Wassermann reactions were carried out by the Fildes and McIntosh technique.

Table II. is a graphic representation of the results. The blocked areas indicate complete divergence of the test—i.e., positive W.R. with absolutely negative S.G. reactions, or vice versa. The shaded areas indicate a "positive incomplete" or "negative trace" result in the W.R. and a (+) only in the S.G. columns. It must be pointed out, however, that of the six serums represented by the shaded area in the W.R. column, one only falls within the adjacent shaded area in the S.G. column, the remainder gave negative (four cases) or strongly positive (one case) S.G. reactions.

TABLE II.—*Comparative Results of Wassermann and Sachs-Georgi Reactions.*



A = One case only was doubtful to both reactions. Of the remaining five doubtful W.R.'s, four were negative S.G. and one strongly positive S.G.

Conclusions.

The results obtained from the formalin test prove once again the futility of basing conclusions on figures derived from a small number of cases, as small series have recently been published showing complete concord between formalin and W.R. results. The technique of the test is simple, and were the results reliable it would be an excellent method whereby the practitioner could rapidly establish a diagnosis of syphilis. But less than half of the serums giving positive W.R.'s shows coagulation with formalin, and—a fact of yet greater importance—nearly 10 per cent. of non-syphilitic serums give a positive result. Any claim to the reliability of the test is therefore demolished.

As regards the S.G. test the results obtained are distinctly promising. The technique is much simpler than that of the W.R. on account of the omission of the complement and other constituents of the hæmolytic system. But this is rather more than balanced by the great difficulty of determining the

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20/9/21.—*The patient has now been free from his skin complaint for nine months.*

The chief points of interest in the case are these: (1) The early age of onset; (2) the intractable nature and increasing severity of the condition; (3) the absence of any nervous or other predisposing diathesis; (4) the precipitating action of sunlight and exercise; (5) the absence of eosinophilia; (6) the response to change of life from an outdoor to an indoor one, protection from the sun, and the administration of colloidal manganese; and (7) the mildness of the only attack which occurred during treatment.

It is hard to say how much of the improvement was due to the manganese, but this part of the treatment seems entitled to a considerable share of the credit. The change of living conditions interdicting severe exercise and exposure to the sun's rays is considered an important factor.

A NEW TREATMENT FOR

CHRONIC CERVICITIS AND ENDOMETRITIS.

By G. W. RUNDLE, L.R.C.P. & S. EDIN.,
HOUSE SURGEON, LONDON LOCK HOSPITAL FOR WOMEN.

WITH the exception of vesiculitis in the male there is no more difficult condition in medicine to treat than cervicitis and endometritis in the female. Though the lesions are primarily caused by the gonococcus, by the time the patients present themselves for treatment, in the great majority of cases, mixed organisms of a secondary nature only are found. In the cases subjected to treatment—they numbered 100—the gonococcus was found in 11 before treatment, and in none at its termination or later. These chronic vaginal discharges resist the orthodox treatments in a very persistent manner; consequently we experienced considerable satisfaction when we found that intramine pessaries stopped these discharges and at the same time healed erosions if present. The pessaries contain 1 per cent. of intramine (di-ortho-diamino-thio-benzene) in a stearine base. One is inserted per vaginam every night for about a month. In the test cases no other treatment was instituted, though we have found it advisable in a further series of cases—as it reduces the incidence of dermatitis—to prescribe a douche the following morning of a solution (1 in 1000) of either zinc sulphate or of zinc sulphanilate.

All the cases were treated as in-patients and kept under observation for some months afterwards as out-patients, being examined clinically and bacteriologically once a month. The oldest case is of 15 months' duration, and the youngest of four months' duration. An improvement in all cases was noticed at the end of the first week, when the patients invariably informed us that the discharge had stopped. Eight cases developed a local dermatitis, which immediately reappeared when the pessaries were prescribed again after an interval of a few months. Two cases relapsed clinically but not bacteriologically and cleared up again with another month's course. The dermatitis is due to the sulphur; it commences with itching of the vulva, and then the mucous membrane swells, a large quantity of lymph being exuded. The lesion may stop at this, or may spread to produce an erythema on the adductor region of the thighs. The inflammation rapidly subsides under calamine lotion. Intramine in the form of pessaries is quite painless, though in the form of suppositories it cannot be employed. That there is considerable absorption by the uterus of drugs inserted per vaginam is proved by the readiness with which the conjunctivæ become discoloured when picric-acid tampons are placed against the cervix for a few nights.

I wish to thank Mr. J. E. R. McDonagh for allowing me to publish these cases.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

WAR SECTION.

A MEETING of this section was held on Oct. 10th; Sir JOHN GOODWIN, Director-General A.M.S., was in the chair, and delivered his presidential address on

The Aftermath of War with Reference to the Medical Service of the Army,

in which he briefly reviewed some of the steps taken since the Armistice with regard to the Army Medical Service. On the cessation of active operations in 1918-19, he said, a necessary period of reconstruction in the army began. As regards the R.A.M.C., amongst the most pressing and self-evident desiderata were: the release of temporarily commissioned officers in order that the requirements of the civil population might be met; the closure of hospitals in order that expenditure might be reduced and that public buildings, &c., used as military hospitals might resume their normal functions; arrangements for the organisation of a satisfactory dental service for the army; a bringing up to date of all orders, regulations, war establishments, &c., so that these might be in accordance with modern requirements and with the lessons of the war; and the re-institution of classes of instruction for officers and men, schools of instruction having been closed at the outbreak of war, and the necessity of post-graduate and other education being now very evident.

Difficulties to be Overcome.

One of the difficulties in the way of attaining these ends was war weariness; after four and a half years of war everyone was tired, and many were almost worn out with incessant work, anxiety, and responsibility. Then, again, death and retirement had removed many able and distinguished officers. The urgent need for economy soon became evident; no measure which involved more than a minimal expenditure could be entertained. Moreover, an enormous expenditure of time and energy was required for the personal interviews, letters, &c., which had to be dealt with daily, the private and Parliamentary questions which had to be answered, and the criticisms—generally kindly, sometimes merely destructive and ill-informed—which had to be met.

Measures taken in Hand immediately after the Armistice.

At the time of the Armistice there were more than 364,000 military hospital beds in the United Kingdom alone; at present there were under 8000. An Army Dental Corps had been established and is doing excellent work. We had now more than 60 commissioned dental officers in the army, and a large number of other ranks employed as dental mechanics. Committees were formed to deal with the many questions relating to the amendment of existing regulations as to establishment, strengths of units, nature and scales of hospital equipment, stores, &c. The late Sir William Babtie, V.C., head of the chief committee, threw himself wholeheartedly into the work; on his death it was carried on by Major-General S. Guise Moores, and the labours of the committee were now completed.

The compilation of the official history of the war was begun under the editorship of Sir William Macpherson; the position as regards the Medical History of the War was as follows: The first volume of the General History, dealing with the medical services in the United Kingdom, garrisons overseas, and the Colonial expeditions, was now being bound for issue; the second volume, dealing with the medical services in France, would be complete early next year. The first volume of the "Diseases of the War" was almost ready for issue, cent. of glycerine was found to be the best quantity to add. On such media the spirochætes grew in small colonies, 1 to 2 mm. in diameter, with a dull rough surface and an irregular outline, and usually they were heaped up in the centre. The colour with young colonies was light fawn, but when older they became a rich brown. Secondary colonies usually appeared in old cultures. These were larger and smoother in appearance, but showed the same rich brown coloration.

The spirochæte stained with Giemsa's stain and by several of the silver methods, but showed no coloration with the ordinary aniline dyes. Growth took place under aerobic conditions, but none was observed in cultures placed anaerobically. Hanging-drop preparation when examined under the microscope revealed marked activity. The motion was swift and straight like a dart, a spirochæte often being scarcely visible until it commenced to slow down before reversing its corkscrew action and darting in the opposite direction. In stained film preparations the spirochætes were found to vary greatly in length, not only with the medium used, the degree of moisture, and the age of the culture, but also in the same film. The turns were fairly close, and varied from 1 to 30 or more in number. A flagellum was not observed, but no special attempts were made to demonstrate one. In older cultures, and particularly in the secondary colonies, the spirochæte forms gradually became much less numerous, and in their place was found a number of round bodies which varied in size from that of a large coccus to that of a small yeast cell. These forms contained a number of fine chromatin granules. Subcultures from these secondary colonies again grew typical spirochætes, but the growth at first was often small, indicating that many of the round forms were dead; it is possible that they represented degenerative changes. On the other hand, it is also possible that the round forms may need some further stimulus before they produce the original twisted forms.

Further cultivation experiments showed that no growth took place in ordinary peptone beef broth or on agar media. Negative results were also obtained in milk and on serum media. When inoculated into a flask of glycerine broth on which *B. phlei* was growing there was growth with turbidity. Growth also took place in glycerine beef broth on which an acclimatised Johne's bacillus was growing. In this case the masses of Johne's bacillus were broken up with the production of a marked alkaline reaction and a foul odour. After a short time, however, the spirochæte was acclimatised to grow—but with some difficulty—on an egg medium containing no *B. phlei*. No growth took place in broth media containing 10 per cent. of fresh sterile rabbit's blood, and after 24 hours' incubation at 37° C. the spirochæte was found to be dead. If, however, such media were previously incubated for 48 hours before inoculation, there was definite growth with hæmolysis. In such media the spirochæte grew exceedingly small, and was found to pass a Berkefeld filter, one drop of the filtrate giving a fair number of colonies on the surface of an egg medium containing *B. phlei*. Colonies, however, did not usually appear until after from three to five days' incubation.

Animal Experiments.

Small quantities of a culture were inoculated into the vein of a rabbit and pigeon and subcutaneously over the back of a mouse. The rabbit and pigeon gave negative results. The mouse at first showed no symptoms, but when observed seven weeks later it was found to be weak and to have developed several open sores on the back. The animal was killed. Films from the sores showed a large number of various micro-organisms, but no spirochætes could be found. In order to avoid the contaminations, cultures were taken from the deeper tissues beneath the sores. Contaminating bacteria, however, grew in large number, and the spirochæte was not recovered. No cultures were taken from the internal organs, as it was intended to inoculate other animals. Unfortunately, as I have pointed out, the work was interrupted by the war, and all my cultures died out. Since returning I have been unable to obtain any more infected mice, or any uncontaminated syphilitic material to test for the cultivation of *Treponema pallida*. Whether or no this micro-organism will grow on similar media or on similar media with slight modifications I am therefore unable to say. This, I suggest, should be tested, as should also the possibility of cultivating such organisms as that found by Noguchi in yellow fever. The possibility of using cultures like the one I have described for complement-deviation tests and immunity experiments should also be investigated.

In conclusion, I may mention that the spirochæte to be found in the stomach of normal cats and dogs failed to give the slightest evidence of growth on the special media, under either aerobic or under anaerobic conditions. Certain delicate vibrios and spirilla from soil and water, however, grew well on these media, and when dead *B. phlei* was added to a plain water-agar medium, it was easier to isolate some of these micro-organisms. The growth of certain amœbæ and flagellates was also good on such media.

I regret that circumstances should have made it impossible for me to complete this research, but I hope the results given here may prove of assistance to others workers in the same field.

THE ACCURACY OF THE FORMALIN AND SACHS-GEORGI TESTS FOR SYPHILIS

AS COMPARED WITH THE WASSERMANN REACTION

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(*From the Bland Sutton Institute of Pathology.*)

SINCE the discovery of the Wassermann reaction (W.R.), a number of tests have been put forward from time to time as substitutes, but few, if any, have withstood carefully controlled comparative tests against it. The following observations were undertaken in order to ascertain the diagnostic value of two of the more recent syphilis tests—namely, Gaté and Papacostas' formalin test and the Sachs-Georgi (S.G.) precipitation test. No attempt is made to discuss the theoretical aspects, the series having been carried out from the point of view of practical utility.

The Formalin Test.

The accidental discovery in 1920 by Gaté and Papacostas that the addition of a small quantity of formalin to pooled syphilitic serums produced coagulation and was without effect on normal serums forms the basis of this new test. In their original communication Gaté and Papacostas[1] state that two "drops" of formalin should be added to 1 c.cm. of syphilitic serum to produce coagulation. The indefinite volume of a "drop" necessitated a preliminary investigation to determine the optimum quantity of formalin to be employed. A pipette cut to No. 53 Stubbs wire gauge was used, and the addition of one drop of formalin, standardised to contain 30 per cent. of formaldehyde, to 0·25 c.cm. of serum, was found to give good results. A series of experiments was also carried out to confirm the optimum temperature for the reaction, room temperature being recommended by Gaté and Papacostas. Temperatures ranging from 0° C. to 56° C. were tried. It was found that if coagulation was complete at any one temperature, variation in temperature had little effect. If, however, the addition of formalin resulted in some slight increase in viscidity only, the change was perhaps slightly better marked at room temperature than at the extremes of the range. In view of these results room temperature

The **President** reported a similar case in whom the snap was produced by stimulating electrically during operation. He personally had not seen the monkey-like prolongation of the tendon of the gluteus maximus tendon described by Wood Jones.

Mr. **Elmslie** reported a case in which he had cured the hip-snapping as far as standing position was concerned, but the patient could now snap the hip when sitting.

Subluxation of the Hip.

Mr. **Fairbank** also showed a case of subluxation of the hip of doubtful origin. The case was first seen seven years ago, when she complained of a swelling of the hip and some pain, and limped on walking. There was slight limitation of abduction, but otherwise movements at the hip-joint were normal. A radiogram showed the head of the femur to be slightly flattened and displaced outwards on the neck of the femur. The upper part of the acetabulum was fluffy, with an ill-defined lip. The case was treated on a modified double Thomas hip-splint, with the legs in abduction. Owing to the war he lost sight of the case shortly after; but he saw her again in January of this year, when the swelling of the hip was more obvious and there was definite limitation of abduction. Trendelenburg's sign was now present, and there was ⅝ inch of shortening. A recent radiogram shows the neck of the femur shortened and definitely anteverted, and an enlarged and flattened head articulating with the upper lip of the acetabulum. The picture resembled that seen after reduction of a congenital dislocation, or more rarely that of a congenital subluxation, but he regarded the case as one of arthritis of unknown origin.

Sir **Henry Gauvain** said the case did not seem to him to suggest a tuberculous or inflammatory condition, and he was inclined to think the case was a congenital deformity.

Mr. T. H. **Openshaw** thought the condition was not congenital, as the head was too big. He considered it probable that it was a form of arthritis following an injury to the epiphysis, and thought no treatment would improve the condition.

The **President** agreed that the case was not congenital, and thought Mr. Openshaw's theory was probably correct.

Bilateral Absence of Radius.

Mr. G. R. **Girdlestone** showed a case of bilateral absence of the radius. When first seen both hands were in a position of right-angled radial deviation which he had treated by gradual extension of the contracted tissues by plaster. He discussed the question of a stabilising operation later on, and suggested splitting the lower end of the ulna and wedging the carpus into the gap or a lateral bone-graft to replace the absent lower end of the radius.

The **President** commented on the fact that absence of the radius was more common than absence of the ulna. He also inquired whether Mr. Girdlestone thought his lateral bone-graft would have any chance of surviving.

Mr. W. R. **Bristow** considered that periods of physical treatment by massage, &c., should be combined with periods of stretching by plaster, and thought that the question of operation depended on the amount of use which the child could make of the hands.

Mr. **Girdlestone**, in reply, agreed that alternate periods of fixation and massage were desirable. In reply to the President he said that he thought any graft operation would be successful where the graft had a definite function to perform.

Mr **Elmslie** showed a case of

Contracture due to a Burn,

causing great deformity and loss of function, cured by a plastic operation and illustrated the method which he had employed. The case was treated after operation by a cock-up splint and massage.

Paresis of Musculo-Spiral Nerve after Dislocation of Radius.

Mr. P. B. **Roth** showed a case of old dislocation of the head of the radius in a man of 38 years, causing paresis of the musculo-spiral nerve. When first seen the dislocation was of 20 years' standing, but the pain in the elbow of which he then complained was of only six months' duration. The pain was in the radial side of the hand, and getting worse. On examination the head of the radius was found dislocated forwards in such a manner as to lock against the lower end of the humerus and to prevent full flexion. A radiogram showed also curvature of the neck of the radius, making the head more prominent, and an old united fracture of the shaft of the ulna. A diagnosis of pressure on the radial nerve by the head of the radius was made, and for this condition he had removed the head of the radius. Nine and a half weeks after the operation the patient stated that all symptoms had disappeared and he has now resumed his work.

Mr. **Fairbank** thought that the head of the radius should not be removed from a young child. He had seen disastrous results follow such an operation.

Mr. **Elmslie** also reported a case in which the patient was extremely dissatisfied with the result of removing the head of the radius in an attempt to improve function.

Mr. **Roth** also showed a case of

Congenital Radio-ulnar Synostosis

after operation in a boy of 10 years. When first seen the left forearm was fixed in complete pronation so that the hand was practically useless. A radiogram showed a congenital synostosis of the upper ends of radius and ulna. An operation was performed during June of this year, and the bony union divided and the forearm put up in plaster in complete supination. After a few days the position had to be altered to one of mid-pronation on account of pain, and this position has been retained, although there was now very little movement of pronation or supination.

The **President** said he was unable to convince himself that any movement at the superior radio-ulnar joint was now possible.

Mr. **Fairbank** considered operation in these cases hopeless from the point of view of obtaining movement.

Mr. **Girdlestone** said that he had found it very difficult to retain movement in these cases, and he thought that if an arm which previously had been in a position of full pronation was put up in full supination after operation, a grave risk of ischæmia was incurred.

Mr. **Bristow** agreed with the President as regards the absence of movement, and suggested that any other cases operated on for this condition should be shown.

Mr. J. H. **Armistead** reported a case which had promised very well at first, but the bones had now fused together, and he could only regard the final result as a failure.

Mr. **Elmslie** suggested that the reason for failure in these cases was that the two most useful supinating muscles, the biceps and the supinator brevis, are both attached to the mass of bone which forms the synostosis.

Mr. **Girdlestone** had only seen one case where free excision of the upper part of the radius had resulted in a movable forearm, but in this case the forearm was flail, and the final result by no means an improvement on the original condition.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A **meeting** of this section of the Royal Society of Medicine was held on Oct. 6th, Prof. **Henry Briggs**, the President, being in the chair.

Exhibition of Specimens.

Dr. **Malcolm Donaldson** showed a specimen of Malignant Disease of the Cervix Uteri associated with a malignant omental cyst.

presence or absence of a precipitate in many instances A strongly positive S G reaction may be taken as evidence of syphilis, but a weak reaction must at present be looked upon with suspicion because of the difficulty in distinguishing between the weakest positive reaction and the slight precipitation given by some negative serums It appears possible, however, that the detection of the weakest positives may be made easier by modification of the antigen and by special methods of reading the results

The writer is indebted to Prof James McIntosh for many useful suggestions during these investigations

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

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A CASE OF
DERMATITIS HERPETIFORMIS

By A Keith Fraser, M D Aberd,

VISITING VENEREOLOGIST NEW SOMERSET HOSPITAL CAPE TOWN, LATE MEDICAL INSPECTOR OF VENEREAL DISEASES UNION GOVERNMENT OF SOUTH AFRICA

Dermatitis herpetiformis is a rare disease characterised by the chronic recurrence of papules, vesicles, or bullæ which may appear on any part of the skin, with a tendency to herpetic like grouping These are associated with intense itching and burning, which may be prodromal or concurrent This group of eruptions was originally described in England by Tilbury Fox under the name of hydroa, but it is generally known by the title which Duhring gave it in 1884 The cutaneous picture is very variable, and the multiformity of the eruptions considerable The blood picture shows a characteristic eosinophilia, and indicanuria is a frequent abnormality in the urine The course is intractable and treatment purely symptomatic, there is no specific remedy A case therefore, which responds to any line of treatment may be of assistance in determining the handling of these cases which are peculiarly persistent and recurrent

The patient was a South African male who had lived all his life in various parts of the Union His family history presented no points of interest He was not nervous as a child and he was healthy until the age of 11, suffering only from the usual zymotics At this age began the first of a long series of vesicular, papular, and bullous eruptions which continued for the next eight years without very much remission with increasing severity and at steadily decreasing intervals The earlier attacks were described as consisting of numerous clusters of small vesicles affecting chiefly the lower lip, the hands the inner aspects of the knees and the soles of the feet At first the interval between attacks varied from six weeks to three months, and the vesicles disappeared spontaneously in a few days As the boy grew older the interval between attacks steadily diminished, and the vesicle clusters persisted for longer periods There was also an appreciable prodromal period characterised by headache fever and general malaise The boy was something of an athlete playing games and running well in the short distances at school sports Such exercise invariably precipitated a severe attack which was worst on the soles of the feet When riding he always noticed that 'a crop of blisters appeared on the inner surfaces of both knees and thighs within a very short time

He led an open air life At the age of 17 he went to work on a farm and was out of doors all day in the heat of the African sun While he kept fairly fit in a general way these attacks steadily became more frequent, more severe, and of longer duration His general health and physical fitness were gradually undermined He had moved up country from the coast by stage and was now living at an altitude of some 1000 feet above the sea level He received all kinds of treatment during these years, but the effect on the incidence and severity of the attacks had been negative An autogenous vaccine had been made from the contents of the vesicles and he received many injections without effect. Meanwhile he had grown into a tall slimly built youth, naturally athletic, but severely handicapped by his condition As he grew older he noticed that the attacks caused him to feel miserable and off colour, and he indulged in sports with considerable trepidation The self consciousness caused by the unsightly appearance of the face went to increase a naturally retiring disposition, and the endless succession of eruptions became a real burden and obsession to the patient

At the age of 19 he came under my observation, and when I saw him first he had just had an attack in full swing He was ruddy in complexion and severely sun burnt, tall and lanky, of athletic build, and weighed 150 lb He was inclined to be constipated, and had a suspicion of pyorrhœa alveolaris He complained that all his endeavours to regulate his bowels were unavailing The following is his description of the onset of an attack When an attack is brewing I feel depressed, probably because I am aware of what is in store for me Small red spots appear which cause irritation Sometimes I think I feel feverish, but this may be imagination After a few days the red spots develop into blisters which grow larger and are fully developed about the third week While the blisters are growing they burn and itch with a throbbing sensation The places usually involved are exposed parts and the soles of the feet, on all scratches and cuts whether exposed or not, and on the lower lip and inside the mouth The upper lip is never attacked'

The lower lip was most seriously involved There were large vesicles about the size of a lentil interspersed with multiple smaller pea to pin head vesicles The lip itself was swollen and protruding and the surrounding inflammation intense There were numerous small vesicles on the buccal surface of the lip and cheek The vesicles remained discrete except at one point, where they had coalesced and formed a large multilocular bulla On the dorsal aspect of both hands and extending towards the wrists were several small clusters of small vesicles standing out on apparently healthy skin On the inner aspect of the left knee, however, the skin base was urticarial On the soles of the feet the skin seemed normal and the vesicles though clustered were discrete One or two large circinate bullæ of tough structure with considerable internal pressure were evident The contents of the vesicles were not autoinoculable Those on the soles of the feet were sterile but those elsewhere were contaminated by secondary organisms Considerable pustulation took place on the knee lesions and on the lip there was much eczematisation The urine was normal throughout, and the temperature did not rise at any time when under my observation The following is the differential blood count Polymorphonuclears 55 per cent, lymphocytes large 13 5 per cent, small 29 5 per cent = 43 per cent, mononuclears 0 5 per cent eosinophiles, 1 per cent, basophiles, 0 5 per cent The red cells were normal in colour, size and shape There was no eosinophilia

The attack subsided in three weeks time There was much scarring from previous eruptions on the thighs and knees The lower lip seemed indented and parchment like after the attack had passed off The patient was advised to give up his work on the farm for a time and if this had any influence on the frequency and severity of the attacks, to give it up entirely He was counselled to keep out of the sun as much as possible and wear a large brimmed sun helmet at all times Violent exercise was interdicted, but mild tennis was allowed in the cool evenings after a time These instructions were carried out most faithfully Diet was modified only to the extent of eliminating obviously indigestible foodstuffs

Further treatment consisted of weekly intramuscular doses of colloidal manganese The initial dose was 0 5 c cm and was very soon increased to 1 5 c cm There was no further attack for four months At this time on the occasion of a public holiday the patient sought permission to go riding on a picnic excursion This was given after warning him of the risks of precipitating an attack He was anxious however, to try how much risk he might run with impunity On this occasion he was out in the broiling sun for 12 hours Most of the time he was riding a restive horse After sundown he played tennis and subsequently went to a dance where he performed vigorously for many hours Within four days one or two tiny vesicles appeared on the lower lip, and also on the soles of both feet They did not develop, however and had disappeared completely in a few days The prodromal itching and burning were very slight

With this sole exception there has been no further attack within eight months of leaving the farm and taking weekly injections of manganese The patient s health has improved out of all recognition and he is no longer inclined to be constipated He has grown and put on weight in the most astonishing manner He now stands 5 ft 10 in chronically inflamed decidua often left behind by the placenta were favourable beds for the development of septic organisms. Polypoid decidual endometritis was neither a hypertrophic nor an adenomatous condition as was formerly taught, but was a combination of chronic endometritis and metritis exaggerated by pregnancy and usually showing the signs of acute inflammation grafted upon the old chronic condition as the result of sepsis in the puerperium. Syphilis was one cause of the condition and possibly chronic gonorrhœal infection might be another.

Dr. Nyulasy urged practitioners to submit for microscopic examination the material removed as retained products of conception after labour or miscarriage, as polypoid decidual endometritis would, in his opinion, be found to be of much more frequent occurrence than was suspected. As to symptoms, the patient might appear to be doing well for a day or so. but usually there was a slight rise of pulse, then of temperature, which might rise to 103° or 104° F. on the third day. There might be free bleeding after labour, but profuse secondary hæmorrhage was not common, though a sudden free flow after the passage of a normal amount for two or three days was suggestive. Diagnosis depended on the presence of subinvolution, a patulous os usually admitting two fingers, and in the uterus a mass of varying size usually covered with blood-clot, together with the symptoms described. Prognosis depended on the virulence and dosage of the infecting organisms and the tissue-resistance of the patient, but chiefly on the promptitude and efficiency of the removal of the polypoid masses after labour or miscarriage. Practically every case recovered if the operation was done early, but if this were delayed the danger was extreme. As to treatment, early and complete removal of the infected polypoid masses was essential, and from the third to the fifth day was the best time for interference. The major part should be removed by the fingers, but the remainder, which might extend right down to the external os, might be cleaned off with a large-looped sharp curette. Dr. Nyulasy said that the fingers alone might be used if the operation could be performed satisfactorily by this means.

Dr. AMAND ROUTH said he had been struck by a description of Virchow's specimen in a book which he reviewed 30 years ago. He was surprised that more had not been heard of this important condition, and he complimented Dr. Nyulasy on the care with which he had prepared his material for this paper.—Dr. A. E. GILES pointed out the importance of the condition from the medico-legal point of view. It had been a natural but in many cases evidently an unfounded assumption that portions of tissue of polypoid form removed after delivery were placental in character, and were, therefore, to be considered as having been overlooked. It would now appear that in justice to the attending practitioner such tissue must be microscoped before a dogmatic opinion was expressed.—Dr. J. S. FAIRBAIRN thought that many of the figures and sections demonstrated by Dr. Nyulasy showed merely necrotic decidua, and thought that more proof would have to be adduced before the condition could be labelled as syphilitic.—Dr. BARRIS said that he also had felt masses in the decidual site, but he could not feel satisfied that they were polypoid decidual masses. He wished to protest against the use of the curette so soon after labour.—The PRESIDENT inquired whether those septic cases which did well with intra-uterine douching were to be considered as polypoid decidual endometritis. He also felt that curettage was dangerous within 12-14 days after delivery.

Dr. NYULASY, in reply, said he thought that the condition began at or before conception. As regards removing the polypoid masses, he usually employed his fingers, but sometimes had been compelled to use a curette on account of the large area of endometrium involved. He then employed a sharp curette as he thought this caused less trauma. He thought that 3-5 per cent. of all pregnant uteri exhibited the condition, but he could not say what proportion of septic cases were due to polypoid decidual endometritis.

Reviews and Notices of Books.

SANITARY LAW AND PRACTICE.

A Handbook on Public Health. Fifth edition. By W. ROBERTSON, M.D., Deputy M.O.H., Edinburgh; and CHARLES PORTER, M.D., M.O.H., Metropolitan Borough of St. Marylebone. London: Sanitary Publishing Co., Ltd. 1921. Pp. 758. 18*s.* 6*d.*

A BOOK on the subject of sanitary law requires frequent revision to keep it abreast of the times, owing to the passing of new enactments and the issue of fresh regulations and circulars by the Central Health Authority. There is little change in the general plan of the fifth edition of Robertson and Porter's handbook, which first appeared in 1904. The various Acts and laws relating to public health in England and Wales, Scotland and Ireland, are condensed and conveniently arranged under different headings to facilitate study. But the book is more than a guide to the Public Health Acts, because not merely are the laws and regulations explained, but practical suggestions on the usual methods of administration appropriate to each branch of the subject are given. This is of great advantage to the student, as the working aspect of sanitary administration is rather neglected in most text-books on public health. In the present edition we cannot find any reference to the Port Sanitary Authorities (Infectious Diseases) Regulations, 1920, and are surprised that regulations of such importance to *port sanitary authorities and their officials* in connexion with the prevention of the introduction into this country of infectious diseases from abroad should have been omitted.

Certain of the statements made on the subject of vaccination call for comment. The authors express the view that, so far as their experience goes, vaccination is not being efficiently carried out, and add:—

> "It is only necessary to examine the arms of children to become convinced of this fact. It is rare to find more than *two marks in any case, and very commonly only one mark* can be found. Very commonly, also, instead of finding foveated marks nothing but cicatrices are to be seen. It is not common that any individual mark is of an area of half an inch square, as recommended by the Royal Commission on Vaccination."

Possibly the authors' experience of vaccination relates. for the most part, to conditions found in Scotland, where "one mark vaccination" is still commonly practised. Public vaccination in England and Wales is, of course, performed by public vaccinators appointed by the boards of guardians. Their work, which is carried on in accordance with instructions issued by the Ministry of Health and under the supervision of the Central Health Authority, generally attains to a high standard of efficiency. The public vaccinators are instructed to aim at producing four vesicles or groups of vesicles having a total area of half a square inch on the eighth day after the operation has been performed. We are not aware that the Royal Commission on Vaccination recommended that each individual mark should be of an area of half an inch square, though they did state on p. 99 of their final report that:—

> "We think it may fairly be concluded that where the vaccine matter is inserted in three or four places it is more effectual than when introduced into one or two places only; and that if the vaccination marks are of an area of half a square inch, they indicate a better state of protection than if their area be at all considerably below this."

It will be noted that the Royal Commission suggest that the three or four vaccination marks taken together should be of an area of half a square inch. It should also be noted that there is considerable difference in the *meaning of the terms* "half a square inch" (used by the Commission) and "half an inch square" (employed by the authors of this book).

and the first volume of the "Surgery of the War" was complete in galley proof, and the second volumes of both these works were only awaiting a few chapters; the "Surgery" was practically complete. The material for the volumes on the hygiene of the war would be prepared for press by Sir William Horrocks early next year. The volume on pathology was not, so far as the material in the office is concerned, very far advanced, but ten of the subjects had been written up, and the MS. was in the office. There was no indication as yet with regard to the volume on statistics, and it is doubtful whether complete statistics would eventually be obtained for all periods of the war and for each area of operations.

R.A.M.C. Training.

It was felt that officers stationed in the provinces had frequently not the facilities for obtaining clinical experience afforded to those who were near London; the large provincial hospitals and infirmaries were therefore approached in the matter with very satisfactory results. Over one hundred officers had since the war passed through the post-graduate classes at the R.A.M.C. College, Millbank; 59 officers passed as "distinguished" in various subjects. It was hoped that all these officers may in the future obtain appointments as specialists in the subjects in which they have specialised. In addition, several officers presented themselves for examination in higher degrees, with good results. An important recent concession had been the grant of an initial sum of £220, with a subsequent annual grant of £150, for the purpose of establishing professional libraries in all our larger hospitals in order that officers might have at hand the most recent works for reference. Helped by this grant every military hospital at home and abroad might have an adequate and up-to-date library. Directorates in Hygiene and Pathology were established in 1918 under Colonel W. W. O. Beveridge and Major-General Sir William Leishman. The work carried out by these directorates was of untold value to the army. The posts of consultant in medicine and consultant in surgery had now been established; these appointments would—as in the case of the directorates just mentioned—normally be held by officers of the rank of full colonel. Should a more junior officer be appointed he would hold the temporary rank of full colonel with the pay and allowances of that rank. With regard to all these appointments—viz., Directors of Hygiene and Pathology and Consultants in Medicine and Surgery—one very important point was that should any officer holding one of these appointments come up in due course for promotion to the rank of major-general, he might be so promoted as supernumerary to the establishment of major-generals and continue to hold his appointment. Consequently the rank of major-general was now open to officers who specialised in pathology, hygiene, medicine, or surgery.

R.A.M.C. War Museum.

The R.A.M.C. War Museum had been the subject of an immense amount of discussion and correspondence, which had at last resulted in a really satisfactory solution. The Treasury had given a sum of £7500 to the Royal College of Surgeons of England, and that body had generously agreed, for this sum, to house, maintain, care for, and complete the preparation of the entire pathological collection of war specimens, and also certain selected facial and orthopædic exhibits.

SECTION OF SURGERY: SUB-SECTION OF ORTHOPÆDICS.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 4th, Mr. E. LAMING EVANS, the President, being in the chair.

Fibrous Osteitis.

Mr. W. H. OGILVIE showed a case in which subperiosteal resection of the humerus had been performed for fibrous osteitis. The patient, a boy aged 3½ years, had been an in-patient in Guy's Hospital during March, 1921, on account of an increasing swelling of the right upper arm of six months' duration, causing no pain or disability beyond slight limitation of voluntary abduction at the shoulder. A skiagram showed a cystic expansion of the bone indicative of myeloma or simple cyst. At the first operation the swelling was exposed subperiosteally and a portion of the outer bony wall removed. The interior contained a reddish material and bled freely. It was thoroughly scraped out, and the cavity swabbed with perchloride of mercury solution. The pathologist's report was that the material formed part of a fibrous osteitis with numerous giant cells resembling those of a myeloma. After the operation the swelling of the arm continued, and three months afterwards an X ray report stated that the cystic expansion had increased both vertically and in circumference, although attempts to fill the cavity with new bone were observed. A second operation was performed on June 23rd, 1921. The whole length of the humerus was exposed and 6½ inches of the bone resected subperiosteally. This included the whole cystic area, and was found on examination to contain a small portion of the upper epiphyseal cartilage. It had been intended to replace this by a bone-graft from the tibia, but the patient's condition did not permit of this, and he was returned to the ward after the periosteum and skin had been sutured. The boy developed broncho-pneumonia, and no treatment of the arm was possible for ten days. On the sixteenth day, when the arm was examined, it was found to be firm on its whole length, and a skiagram taken two days later showed a definite shadow occupying the whole gap. The arm was then placed in a position of right-angled abduction and massage given. At the end of six weeks the bone had regenerated with half an inch of shortening and a full range of movement in both the shoulder and elbow, except for slight limitation of extension at the latter, due to scar, which is now keloid. Mr. Ogilvie, in demonstrating the case, discussed the pathology of the condition with regard to its intermediate position between a simple granuloma and a myeloma. He personally called the case one of fibrous osteitis.

Mr. R. C. ELMSLIE said he had seen three similar cases cured by curetting, and preferred the term fibro-cystic disease since it did not imply a new growth. He considered that bone-grafts in these cases merely acted mechanically as a means of keeping the bone straight whilst regeneration took place.

Mr. H. LAWSON described a similar case, which he had observed for some time. The condition was not causing any disability and was apparently not progressing. He asked the advice of members as to whether operative treatment should be advised.

Mr. W. T. G. PUGH advised radium treatment for the keloid, and stated he had found it successful in a similar case.

The PRESIDENT remarked that this case illustrated well why bone-grafts in children were so successful.

Bilateral "Snapping" Hip.

Mr. H. A. T. FAIRBANK showed a case of bilateral "snapping" hip in a child, being a further report in a case already shown. On the former occasion the President in commenting on the case said he had cured a similar case by rest in plaster. The worse hip, the right, was operated on in December last, when the tendinous formation described by Wood Jones was observed on the deep aspect of the gluteus maximus, although it was not well developed. A flap of periosteum was turned forward from the posterior aspect of the great trochanter and this tendon stitched beneath it. By this proceeding the femoral attachment of the muscle was prolonged upwards to the top of the trochanter; the other hip was put in plaster in slight abduction. When seen in July last the patient had had no recurrence of the snap in either hip.

operations there follows as a rule some wise advice as to choice of method. In this edition the many recent advances in thoracic, abdominal, and plastic surgery have been incorporated. In the section dealing with plastic operations on the nose the author has not sufficiently emphasised the importance of putting an epithelial lining to any flap used to remake the nose. Unless this is attended to a shrunken and unsightly nose results. It is surprising that the name of Lotheissen is not mentioned in connexion with inguinal operation for femoral hernia. In the section dealing with hepatic abscess the author does not seem to have adapted the technique in accordance with more modern views. Even in a book on operative surgery it would be wise to point out that most liver abscesses are due to the *Entamœba histolytica*, whose destruction is assured by treatment with emetine. Moreover, the pus in such an abscess is aseptic, and to pack the cavity with iodoform gauze is totally unnecessary. The less the cavity is meddled with the better, so long as room for the exit of the debris is assured. Aspiration of a liver abscess, when accompanied by the employment of emetine, is a successful method which should receive recognition. The section dealing with subphrenic abscess is inadequate for a book of this size. To give 20 pages to rhinoplasty and six lines to subphrenic abscess is surely to show a lack of proportion. The many types of subphrenic abscess are approached by different routes which should be specified. Room could easily be made for this by cutting out a few of the rarer operations.

However, in spite of minor deficiencies the Manual is indispensable to every practising surgeon.

EARLY DIAGNOSIS OF THE ACUTE ABDOMEN.

By Zachary Cope, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients, St. Mary's Hospital, Paddington. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 223. 12*s.* 6*d.*

All surgeons have realised the difficulty in diagnosis associated with acute emergencies within the abdomen. In this little book Mr. Cope deplores the growing tendency to shirk the issue after the preliminary recognition of an acute condition, and to leave the actual lesion to be discovered at operation. No apology is needed for the repetition and emphasis of the axiom that correct diagnosis is an essential preliminary to correct treatment, or that neglect to make a careful and exhaustive examination is the factor most likely to cause unnecessary delay in operative treatment. More things are missed by not looking than by not knowing, and the memory of this teaching has spurred many a weary practitioner to a fruitful search in apparently unlikely directions. Mr. Cope gives a good description of the methods of investigation that should be employed with every variety of acute abdominal condition and the help afforded by accurate differentiation of types of pain and vomiting is carefully explained. The section on the examination of the patient is none the worse for the fact that there are one or two points on which other surgeons may not agree with Mr. Cope. In testing hyperæsthesia of the skin most neurologists believe that pinching a fold of the skin elicits not true superficial tenderness but deep sensibility. This difference of method may account for the fact that the areas of superficial tenderness here suggested for certain diseases are not in accordance with those usually found. For instance, the area of superficial tenderness described by Mr. Cope as diagnostic of a distended appendix is placed just to the right of the umbilicus; whereas the researches of Head and Sherren have located it over the right Poupart's ligament: most surgeons would agree that true superficial tenderness as elicited by a dragged pin is so situated, the presence of this sign being strong evidence of a distended appendix, for it disappears as soon as the appendix perforates. Mr. Cope's own experience as a surgeon has led him into some unfrequented regions, and he draws the reader's attention to a number of diagnostic points apt to be missed by those who do not look for them, for example, the right shoulder pain suggestive of a diaphragmatic lesion, and the test, described as the obturator test, which is a useful sign in a pelvic infection. Although the tabular arrangement makes the book very convenient for purposes of revision, the volume should prove extremely useful to general practitioners and to those holding appointments which entail the treatment of abdominal emergencies.

PATHOLOGICAL HEREDITY.

Einführung in die Allgemeine Konstitutions- und Vererbungspathologie. By Dr. H. W. Siemens. Berlin: Julius Springer. 1921. Pp. 229.

The author begins by stating, truly enough, that the subject of pathological predisposition and heredity has a muddled terminology and no text-book. In fulfilment of a purpose thus indicated, he sets out to "assemble" the relevant information, and in so doing shows much knowledge and general culture. The chief stress is naturally laid upon Mendelism, since that is the most exact instrument the investigator in this field can wield. Whether it can be used with advantage, at any rate as yet, may be doubted. On low forms of life, and on rare, highly particularised human diseases, Mendelism may throw light. But, as the biometricians have not been slow, or loth, to demonstrate, in more complicated phenomena little in the way of unit behaviour is discernible. Dr. Siemens might have done better to have dwelt more on metamorphic pathological heredity—the *hérédité dissemblable* of the French—and better still to have accumulated figures (perhaps he is so doing), not necessarily for mathematical treatment, but so as to secure ordinary exactness. There are 80 illustrations in the book, and workers from all countries are mentioned.

TEXT-BOOK OF NURSING PROCEDURES.

First edition. By Anna C. Jamme, R.N., Director of Bureau of Registration of Nurses, California. New York: Macmillan Company. 1921. Pp. 140. 7*s.* 6*d.*

To those student-nurses who find help from illustrations, Miss Jamme's book on Nursing Procedures may serve to assist in the co-relation of the theory and practice of nursing. The book cannot be considered a substantial contribution to nursing literature, consisting as it does only of a collection of illustrations of nursing procedure which may be found in all good general text-books. As a supplement, however, to a text-book deficient in illustrations, the little volume may be of use.

THE MICROTOMIST'S VADE-MECUM.

A Handbook of the Methods of Microscopic Anatomy. Eighth edition. By Arthur Bolles Lee, Hon. F.R.M.S. Edited by J. Brontë Gatenby, B.A., D.Phil., D.Sc., F.R.M.S. London: J. and A. Churchill. 1921. Pp. 594. 28*s.*

It frequently happens that a scientific text-book, after a few years of deserved popularity, falls gradually into oblivion. It becomes out of date, and its author, dreading the drudgery of bringing out fresh editions, is content to see it die. True, the task of revision may be undertaken by another, but too often the result is mediocre; there is lacking the touch of the vanished hand. The eighth edition of Lee's Microtomists' Vade-mecum is a distinguished exception to this dreary rule. Under the capable editorship of Dr. J. Brontë Gatenby it is revitalised, and once again becomes the best text-book on this subject in the English language. While the general character of the book remains unaltered, it has been carefully revised, and the addition of fresh sections, all happily conceived in the spirit of the original, brings it thoroughly up to date.

Dr. Gatenby himself, in addition to undertaking the general revision, has written on many subjects including chromatin and chromosomes, mitochondria, The PRESIDENT showed a specimen of Green Intraperitoneal Exudate found covering the middle third of the back of the uterus during the operation of Cæsarean hysterectomy, performed for obstructed labour with signs of failure of the fœtal heart. The patient had a fibroid which had been symptomless and undiscovered until the fifth month of pregnancy when one day's acute abdominal pain occurred without fever or vomiting. The pain gradually subsided, and she was in bed for three weeks. Prof. Briggs thought it an open question whether this pain did or did not correspond to the early stages of the exudate. The exudate resisted complete detachment; its texture was organically cohesive; its organisation was feeble, and its thickness was a quarter of an inch. Prof. W. Ramsden of the biochemical department had reported the absence of bile pigment and the presence of hæmoglobin or hæmatin; he had since remarked that alkaline hæmatin when diluted acquires a green colour. Dr. R. A. Hendry had examined the specimen and described an organising blood clot with a shell of lutein tissue and granules of pigment, indicating a condition of some long standing, and Prof. Ernest Glynn agreed with Dr. Hendry. Prof. Briggs said that the child was asphyxiated and collapsed at birth but recovered, and the health of both mother and child is now good.

Large Hæmatoma of the Vulva following Labour.

Dr. H. J. MCCURRICH then read a paper by Dr. J. D. BARRIS and himself on a case of Hæmatoma of the Vulva following Labour. The case was reported on account of the unusual size of the hæmatoma.

The patient, a married woman, aged 35 years, had already borne three children without complications. Labour occurred before admission to hospital. The doctor who attended her stated that the fœtal head was on the perineum when he arrived; forceps were not used, the perineum was not torn, and the placenta came away shortly after without abnormal hæmorrhage. One and a half hours afterwards the patient experienced great pain between the thighs and bled slightly. Her doctor was summoned and found a large hæmatoma of the vulva. Later in the day the pain was so severe that he gave her an injection of morphia and sent her to St. Bartholomew's Hospital. On admission at 8 P.M. the patient was blanched, temperature 97·4° F., pulse 96. The left labia, majus and minus, and the left half of the perineum were markedly distended by a purple shiny oval swelling, the left labium minus being stretched over the centre of the swelling as an œdematous band. The swelling was 9 in. by 4½ in., tensely elastic, but not markedly tender. There was slight blood-stained oozing from the vagina, but the surface of the swelling appeared intact. Under gas and oxygen anæsthesia an incision 1½ in. long was made just internal to the labium minus, and 18 oz. of blood clot were evacuated. No bleeding-points were found. The cavity was irrigated with hot saline and lightly packed with gauze. Prophylactic doses of sensitised streptococcal vaccine were given, and the patient made an uninterrupted recovery, being able to nurse the child. Three months later the patient came up and reported that the scar had not caused dyspareunia or any other inconvenience.

Dr. CLIFFORD WHITE said he had seen a similar case, but in that instance the hæmorrhage began 30 hours after labour. This case was also treated successfully by incision, packing, and pressure.—Dr. A. LAPTHORN SMITH said that he had recently attended a case in which a varicose vein of the vulva ruptured giving rise to severe external hæmorrhage.

Dr. R. A. HENDRY read a paper on

A Case of Prolonged Gestation.

He said that the interest in cases of post maturity aroused by a recent law suit[1] was his reason for reporting the case. The patient had had four children, the last 18 years ago, and three abortions. Her husband went to Australia in 1913, and returned to Liverpool, his native city, four years later as a sergeant in the Australian Forces. He spent the night May 14th to 15th, 1917, at home and then returned to his unit. Six months later the patient came to the clinic and was found to be six months pregnant. She was again examined Dec. 18th, 1917, when the uterus was the size of a seven months pregnancy. She attended the clinic again on March 19th, 1918, a month overdue, and was not delivered until April 8th, 1918—328 days after coitus, and 361 after the last menstruation. The midwife informed Dr. Hendry that labour was normal; there was no excess of liquor amnii and the baby was of normal size—it weighed 7 lb. 14 oz. on seventeenth day when it first came to a welfare centre.

Criticism in Dr. Hendry's view might lie in various directions: (1) errors in observations; (2) causes of discrepancy between the size of uterus and the gestation history; (3) lack of corroboration of observation. On the first count a 280-day gestation terminating on April 8th, 1918, would have begun on July 2nd, 1917. Nov. 20th would be 20 weeks later and Dec. 18th 24 weeks; so that on this supposition a 20 weeks uterus must have been taken for a 27, and a month later a 24 weeks uterus for a 31. A double error of such magnitude was, he thought, unlikely. On the second count, hydramnios and twins might be excluded, and no suggestion of a fibroid was ever found. The third possible source of error, lack of corroboration, was practically inevitable in the circumstances.

The PRESIDENT thought that oversize would not account for most cases of prolonged gestation.—Dr. HENDRY said he had noticed in some cases a corelation between prolonged gestation and oversize.

Dr. FRANK NYULASY (Melbourne) read a paper on

Polypoid Decidual Endometritis,

illustrated by epidiascopic and microscopic illustrations and naked-eye specimens. Dr. Nyulasy said that it was a disheartening and almost humiliating discovery to find by the Registrar-General's report that puerperal mortality in England and Wales was greater in 1919 than in any year since 1908. One important cause of puerperal septic infection appeared to be quite generally overlooked—polypoid decidual endometritis. This disease was first mentioned by Virchow in 1861 under the name of "endometritis decidualis polyposa vel tuberosa." Since Virchow's time Gusseron, Strassman, and others had recorded odd cases associated with abortions, but the condition had been generally regarded as a pathological curiosity of extreme rarity. Dr. Nyulasy contended from his own observations that the disease was not uncommon though often unrecognised; that it was associated with full-time labours and not only with abortions, as hitherto recorded; and that it is a not uncommon cause of septic infection with its resulting consequences. In cases occurring in full-time pregnancy the placenta, or a portion thereof, might be found adherent to the diseased decidua; but on the other hand, it might come away apparently complete, leaving behind masses of polypoid decidua which might undergo septic infection, and if not promptly removed lead to the death of the patient. Polypoid decidual endometritis was a result of pre-existing chronic endometritis beginning prior to, or coincidently with, pregnancy, and continued into the puerperium, during which acute processes were grafted upon the old chronic condition in consequence of septic infection. Evidence of chronicity was shown by the fact that in many cases the condition was found to be syphilitic in nature, as evidenced by the history and the microscopic findings. An extreme degree of endarteritis obliterans, which was essentially a chronic process, was always found in such cases. With it there was often considerable organisation of the immense thrombosed capillaries and new formations of fibrous and muscular elements. The flattened, elongated, venous spaces were mostly empty except for a few blood corpuscles, and were lined with a single layer of endothelium in places undergoing active proliferation. Decidual cells, rounded, oval, polygonal or flattened, were found in some specimens over fairly large areas, often separated by bands of muscular and fibrous tissue or forming "decidual islands." Signs of recent inflammatory reaction were chiefly shown by small round-celled infiltration, small extravasations of blood, and active endothelial proliferation. In some sections a few villi were found attached to the polypoid tissues. The masses of

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[1] THE LANCET, August 13th, p. 357.

Stegomyia larvæ:—(1) a new ciliate: *Lambornella stegomyiæ* n.g., n.sp.: (2) a new type of a fungus: *Cœlomomyces stegomyiæ* n.g., n.sp. The host, *Stegomyia scutellaris*, is known as a carrier of malaria and filariasis.—The number concludes with a monograph, by Makoto Koidzumi, on the Intestinal Protozoa found in the Termites of Japan. This paper contains detailed cytological and systematic studies of the trichonymphides.—Portraits of Karl Asmund Rudolphi (1777–1832), Johannes Müller (1801–1858), and Joseph Leidy (1823–1891) are included with this number.

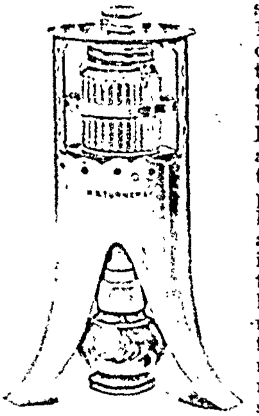
AMERICAN JOURNAL OF OPHTHALMOLOGY. August and September, 1921.—A case of typical siderosis of *crystalline lens, with no clinical evidence of a splinter* of iron, described by D. van Duyse (Ghent) and Mr. Danis (Brussels) in the August number, is of some interest from a medico-legal standpoint. Two years after the receipt of a wound in the eye from a casting thrown off in cutting a pipe, the crystalline lens was found to be so opaque that vision was reduced to counting fingers at 1·5 meters. In the substance of the lens were nine rust-coloured spots with diffused margins, but no foreign body could be discovered either by X rays or by the magnet. The authors believe that a small metallic particle is nevertheless present, probably fixed between the fibres of the lens. The appearance of the siderosis spots is illustrated by a coloured plate. Other articles in this number include one by E. Maddox, giving details of some new subjective tests for the detection of the true axis in astigmatism; one by H. K. Fleck on disciform keratitis secondary to smallpox; and two articles on ocular manifestations in encephalitis lethargica, by P. J. Waardenberg and G. I. Hogue.

To the September number Burton Chance contributes *an article on radium plugs for the dissolution* of orbital gliomatous masses developing after excision of the globe. In the case recorded the mass filled the orbit, pushing the lids forward. Nine plugs or "needles" containing radium were inserted deeply into the mass and allowed to remain for 20 hours. An erythema of the lids lasted a number of days, and the lids themselves were puffed with a more or less ichorous discharge. *Four months later the mass* appeared to have been completely dissolved. The success is attributed to the method of employing the radium. In the same number Walter R. Parker has tabulated the results of his cataract operations by different methods, and Dimitry in a paper on hereditary ptosis includes a family tree proving its persistence through five generations and showing the method of inheritance of a Mendelian dominant. Out of 38 individuals 21 showed the peculiarity. It was transmitted equally through males and females, but never by one who was normal. Strictly speaking, the condition was not a true ptosis but a blepharophimosis or small palpebral aperture stretched horizontally, a condition for which the ordinary operations for ptosis would be unavailing.

New Inventions.

A HOT-AIR STERILIZER FOR STEEL NEEDLES.

THE *sterilizer here illustrated constitutes an attempt* to solve the usual troubles experienced with steel needles and also to afford painless injections. The apparatus consists of a tripod, nickel-plated steel sterilizer 8·5 in. high with an upper chamber 3 in. by 2·75 in. In the upper chamber is a carrier supporting a bottle of 40 needles held up by their hilts in open glass tubes, the points being free. The bottle is one-third filled with fresh liquid paraffin. Heat is supplied by a spirit lamp below, and sterilization occurs in 12 to 15 minutes. This is indicated by a gentle tinkling of the boiling paraffin, which takes place at 118° C. The bottle is then removed by a lifter. An Arkansas stone and a neat leather case containing also a bottle of liquid paraffin and a spare needle bottle are supplied optionally. The apparatus is intended for the conservation of steel needles in hospitals, in the consulting-room, and also especially for V.D. clinics, where a number of fresh sterile needles are required in series. Re-sterilization of the bottle when once opened is not necessary if due asepsis in extracting needles is observed. Far greater comfort to the patient can be attained by sharp, unoccluded and properly lubricated needles which have not rusted than by the conventional needle preserved in spirit. The sterilizer prolongs the life of steel needles very materially.



The wholesale makers are Messrs. R. B. Turner and Son, 9-11, Eagle-street, Southampton Row, London, W.C., to whom I am indebted for assistance in working out the details.

Eastbourne. A. G. SHERA, M.D. Cantab.

AN ADJUSTABLE JOINT FOR GERM-PROOF FILTER CYLINDERS.

THE London Filter and Pump Company has introduced a new form of joint and nipple for filter candles. The object is to eliminate entirely the risk of fracture of the candle, an accident to which the fixed mounted cylinders are liable during sterilisation by heat. When this defect occurs, it does so at the junction of the metal cap and the cylinder, owing to the great difference between their coefficients of expansion. The construction of the nipple and joint is shown in the illustration.

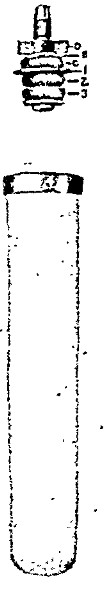


FIG. 1.—1, metal disc. 2 and 3, washers. 4, metal cap of cylinder. D, fly nut.

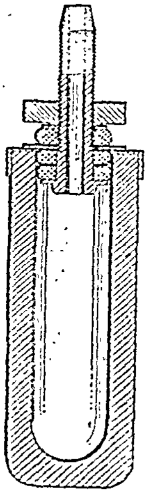


FIG. 2.—Section of nipple, joint, and cylinder.

The method of adjusting the joint is extremely simple. The nipple is pushed into the filter cylinder until the large metal disc rests on the cap of the cylinder. The fly nut is now screwed up tightly, thereby compressing the indiarubber washers and causing them to expand laterally on to the inner surface of the cylinder. By this action an *impervious joint is* formed. The metal cap, which is fixed round the top of the cylinder, effectually prevents fracture from the outward thrust of the indiarubber washers. A cylinder fitted with this form of nipple has given sterile filtrates over a considerable period. For the purpose of cleaning both surfaces of the cylinder and autoclaving at 120°C., the joint has to be disconnected. This has been done many times, over a period of three months with one specimen, without the joint losing its efficiency.

The advantages of such a filter cylinder will be appreciated by all bacteriological and public health authorities. E. T. THOMPSON.

Ministry of Pensions Hospital, Orpington, Kent.

PSYCHO ANALYSIS AND THE WAR NEUROSES

By DRS S FERENCZI, KARL ABRAHAM ERNST SIMMEL and ERNEST JONES London George Allen and Unwin, Ltd 1921 Pp 60 7s 6d

THE psychological study of the war neuroses in this country has established certain of the claims made by psycho analysts the unconscious motive and the processes of repression and of symbolisation by symptoms were found constantly to occur, and treatment by reviving the memory of forgotten incidents (the "cathartic method of Breuer and Freud) was found to remove the associated symptoms These successful results are, however, regarded some times as disproving the fuller Freudian theory, especially the principle that the primary repressed wish ultimately responsible for the neurosis is always of a sexual nature Writers on the war neuroses accept psycho analytical views in varying degree, but psycho analysts themselves have written very little on the war neuroses Dr Ernest Jones suggests the cause when he says that he has made an intensive study of only some half a dozen cases (this was in 1918), and does not know of any others that have been investigated by the psycho analytical method

"Psycho analysis and the War Neuroses" gives the views of leading psycho analysts as expressed at a congress at Budapest, and in a paper by Dr Ernest Jones which was read at the Royal Society of Medicine In a short introduction Freud admits the difficulty of bringing the traumatic neuroses into his ætiological conception but declares that if war neuroses have not shown the sex theory to be correct, yet that is quite another matter from showing that it is incorrect Dr Ferenczi traces the controversy concerning the mechanical theory of traumatic neuroses He gives himself the pleasure of repeating a suggestion that some of the high sounding names originated by Oppenheim should be rescued from oblivion by being used as test words in disturbances of speech, and sums up the result of the controversy in the sentence "By degrees a marked silence fell over the mechanistic school" He is satisfied that an advance has taken place in the attitude of leading neurologists towards the teachings of psycho analysis

Dr Abraham contrasts the man who is repeatedly wounded and yet retains his mental stability with another who suffers a mental breakdown after a trifling stimulus and seeks an explanation of the contrast in the regularity with which the war neurotics were already labile people, especially as regards their sexuality He states that the symptoms observed in anxiety cases are similar to those seen in the impotent man or the frigid woman, and expects a similarity also in internal processes A diminution of sexual potency in traumatic neurotics had been noted by all taking part in the discussions

The symptomatology of the war neuroses is explained on a non sexual basis by Dr Simmel who describes cases in which tics, paralyses, or contractures represented terrifying episodes, the memory of which he restored under hypnosis or by dream exploration his methods are the same as those described by English writers But in cases which he has investigated more deeply as to predisposition he finds quite frequently "threads that lead down to the primordial network of infantile sexuality An attitude of father defiance" is found in those soldiers who broke down solely under the pressure of discipline

Dr Ernest Jones s contribution is, like the others of the series polemic, he points out that the individual incidence of the war neuroses demands the assumption of other factors besides the strain of war conditions and that the denial of unconscious mental conflicts by those who have not used some method which gives access to the unconscious is like a denial of the details of histology by those who have never looked through a microscope Although some symptoms—e g, dread of shells—may be coloured by war experiences no symptom occurs that is not met with in the neuroses of peace a fact which suggests that similar agents must be at work in both cases He describes the main principles of the psycho analytical theory of the neuroses as (1) their volitional origin, (2) the unresolved intra psychical conflict; (3) the unconscious wish (4) the influence of older unresolved conflicts, and (5) the primary unresolved wish, which is always of a sexual nature In the primary unresolved wish he finds the source of morbid anxiety, which he distinguishes from real or objectively justified, fear, the man whose libido has been repressed, whether that libido is directed to an outward object or inwardly as self love, possesses, in the fear arising from that libido, the potentiality of an out break of anxiety in time of stress Dr Jones sees no need for psycho analysis in the majority of cases, but regards a training in it as of the very highest value in treatment, psycho analysis is necessary when the condition has passed over into a peace neurosis and become consolidated

The book may be accepted both by friends and opponents, as an authoritative presentation of Freudian doctrine

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OPERATIVE SURGERY

Second enlarged English edition By Prof VICTOR SCHMIEDEN and ARTHUR TURNBULL, M B, Ch B Glasg With Foreword by Prof BIER London Baillière, Tindall and Cox With 436 illustrations Pp xx-350 25s

BOOKS on operative surgery can be divided into two main classes those written for students and those prepared for the practising surgeon The former are supposed to give the student an insight into the principles of operative technique, whilst the latter furnish full details for the surgeon who may have to undertake any operation upon the living subject Prof Schmieden s book is a student s text book intended to serve as an accompaniment to a course on operative surgery It deserves the success which it has attained in that it is one of the few readable treatises on the subject describes a suitably representative series of operations, and is furnished with a useful collection of illustrations of clear but not too complicated a nature It is satisfactory to see that the customary over elaborate descriptions of the many types of amputation and of the ligature of arteries have given place to a more concise account of this section of the subject

British teachers may reasonably object to Prof Schmieden s disparaging remarks about Syme s amputation at the ankle, and to his advocacy of a method of intestinal anastomosis utilising but one row of sutures We find it difficult to understand why in a course intended for students the hand trephine should be referred to almost as a thing of the past A large number, if not the majority, of British surgeons still use the hand trephine It is astonishing to notice that a posterior incision in the middle of the popliteal space is preferred to a lateral incision for ligature of the popliteal artery The authors might with advantage have described more fully the operation of ligaturing piles and have made some reference to the inguinal operation for femoral hernia The book is well produced and easy to handle

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Manual of Operative Surgery Eighth edition By JOHN FAIRBAIRN BINNIE, A M C M Aberd, F A C S London H K Lewis and Co, Ltd 1921 With 1628 illustrations Pp 1311 £3 3s

THE editions of Binnie s Manual seem to follow one another very rapidly—a sure indication of its usefulness and popularity This is no book for the student—for we do not think that even a senior student should do more than refer occasionally to such an exhaustive treatise—but essentially one for the practising surgeon to keep by him for constant reference The author is eclectic yet catholic His breadth of view has its drawback in that the inquirer may sometimes feel at a loss as to which of the many suitable methods he should adopt, but whilst including nearly all possible became practically synonymous with being a dyer, with this difference, that the professional dyer knew what he was about, while the histologist with few exceptions did not know, nor does he to the present day." His hope that this could be corrected may have been as exaggerated as his faith in the basis of technological practice, but his beliefs all centred round his impregnable ideal that structure and function must explain each other.

The earlier histologists knew this quite well; to BOWMAN the structure and function of the kidney were one problem. As the microscope became a commonplace and its technique developed, physiologists found, however, that the instrument which they looked to for the solution of their difficulties was raising as many problems as it was answering. Those who believe that the lung is a secretory organ say as little about the structure of the epithelium as they can help, and inflammation and immunity are long since divorced. In despair, we must suppose, of ever making form and function fit, physiology is now in general ready to throw histology overboard, that it may brighten the routine of anatomy. For the moment histology is at a discount among us, but it is not the histology that MANN taught. Some day a bright spirit will reappear, and will carry on MANN's inspired work, when probably "Physiologcial Histology" will go through many editions or form the inspiration for future treatises. The book is, of course, now out of date in many parts; the physical chemistry of proteids has advanced a long way since 1902. But it still indicates the line along which histology could be pursued with profit; fixers and stainers have not yet absorbed its chief thesis, which is that they ought to know more of the why and wherefore of what they do.

Accessible Hospital Records.

ONE of the difficulties with which a large general hospital has to deal is the accumulation of patients' notes. After a few years the mass of material becomes enormous and, as the *Hospital Gazette* has pointed out, the setting aside of storage room for the purpose is no easy matter. The suggestion is there made that many of the actual notes might be destroyed and concise records of each patient kept in a book under separate headings. Although the drawbacks of present methods are very great from the medical aspect, it is doubtful whether the system advocated would meet all requirements. In most large hospitals there is a registration department in which all the in-patient notes are collected. After a period of a year or so they are bound together to form unwieldy volumes, and in a big institution the number of such books rapidly increases until it becomes almost impossible to find space for them where they can remain easily accessible. The notes are often required for reference when a patient is readmitted or when a member of the staff wishes to investigate a series of cases. It is especially in looking up a large number of cases of a given disease that the present system is found so inadequate, for the notes are bound according to dates, irrespective of the nature of the disease. The notes of every individual case are kept, and space may be taken up by a number of nearly blank sheets and charts of a patient detained for a single night with some trivial ailment. Hence a search may involve the withdrawal from storage of a large number of bulky volumes, each containing one of the required cases. The books are heavy to carry about when the past history of a case has to be reinvestigated in the wards. There is also the grave disability that in-patient are separated from out-patient notes, and in the out-patient department there is at best a brief abstract of the in-patient findings.

These difficulties are overcome to a large extent by the method used in some departments of the London Hospital. On admission the patient has his notes taken by the surgeon or an assistant acting immediately under his supervision. The headings on the first page include only the name, age, and address of the patient, the name of the doctor, the date of admission, and the complete diagnosis on leaving hospital. The notes are kept in boxes in the wards and are not attached to a bed-board where they are apt to become soiled and torn. On leaving hospital the patient is given a dated card for attendance at the "follow-up" department, where his notes are card-indexed under the diagnosis and kept in alphabetical order in a box file. When a patient returns, the secretary of the follow-up department produces the notes for the surgeon to make additions; there is no break between in-patient and out-patient record. Trivial cases admitted to hospital do not come under the system; a record of them is kept in a book in the steward's office, with headings similar to those advocated in the *Hospital Gazette*. By this means a mass of useless material is abolished, and it is found that a small cupboard in the follow-up department will accommodate the whole of the notes for one surgeon for 15 or 20 years.

Such a method of note-keeping combined with a follow-up department deserves more general adoption. It is of value to the surgeon, enabling him to determine with accuracy the after-results of his treatment. It is of value to the patient who is seen at regular intervals, when any complication is noted early and adequately treated. It is of value in the organisation of the hospital; wards and out-patient department are not crowded out with old cases. The scheme may appear at first sight to throw extra work upon the staff, as an extra half-day a week has to be given to the examination of these cases. In practice, so great is the relief from interruption by old cases during an afternoon devoted to teaching that time may actually be saved. One half-day a week alone being required by each physician or surgeon, a follow-up secretary is able to control 11 departments. It has been suggested that, since each member of the staff has control of the notes of his own cases, difficulties may arise if an independent investigator wishes to look up a series. The reverse is the fact; instead of having to consult 50 or more large volumes he sees as many bound notes, which can be consulted with corresponding leisure.

UNIVERSITY OF LEEDS: A CHAIR OF BACTERIOLOGY.—Sir Edward Allen Brotherton, M.P., has given £20,000 to this university for the development of bacteriological study and research, more particularly in the interests of public health. This is the largest individual gift ever received by the University of Leeds. Sir Edward Brotherton, an ex-Lord Mayor of Leeds, who takes an active interest in many branches of public life, has been profoundly impressed by the importance of the study of bacteriology. He is chairman of the University Advisory Committee on the Department of Pathology and Bacteriology. This body includes representatives of the weekly board of the General Infirmary, of the Leeds City Council, and of the County Councils of the North, East, and West Ridings. The Department of the University of Leeds with which this committee is concerned is engaged in research as well as with the instruction of students, and also performs the bacteriological tests required by the public health department of the city, by the General Infirmary at Leeds, and by other bodies outside the city.

the Golgi apparatus, and mammalian embryological methods. He has also secured the assistance of many collaborators, all acknowledged masters in their subjects. Thus, Prof. W. M. Bayliss writes on staining; Dr. C. Da Fano has had charge of the section on neurological technique; Dr. A. Drew has rewritten the section on protozoa; Dr. W. Cramer is responsible for most of the article on fatty substances; and Mr. Thornton Carter has revised that portion which deals with teeth and bone. Numerous other authorities have been pressed into service, and the general result is a complete and stimulating manual. The best in the older teaching is retained, and the addition of the most modern methods of cytological research makes the book essential to the serious student of microscopic anatomy.

DAIRY BACTERIOLOGY.

By Dr. ORLA-JENSEN, Professor of Technical Bio-Chemistry in the Polytechnic College, Copenhagen; formerly Director of the Swiss Experimental Dairy Station. Translated from the second Danish edition, with additions and revisions, by P. S. ARUP, B.Sc., F.I.C., Chief Chemist, English Margarine Works, Ltd. London: J. and A. Churchill. 1921. With 70 illustrations. Pp. 180. 18*s.*

THERE is much attractive matter in this work. "Lactic acid" fermentation, the ripening of dairy products, and the abnormalities which may occur therein are subjects upon which the author has spent many years of patient study, and of which he writes with great authority. But the book suffers from excessive specialism. The classification of bacteria which is given fails to recognise adequately the great body of work carried out by those who are not necessarily directly concerned with the study of milk and milk products. The inclusion of *B. typhosus* and dysentery bacilli in the coliform group suggests a failure to recognise the work of MacConkey and many others. A similar failing is found in the section which is devoted to the production of milk, and the hope, expressed by the translator, that this book should be of use to those who are engaged in the production and distribution of pure milk, is hardly justified by the text, which does not lay down clearly the essentials of clean milk production. It does not appear that the author has made a study of the keeping qualities of "clean milk"; otherwise it is difficult to understand the statement that milk cannot be kept for "longer than 24 hours, even if cooled to 0°C.; if it is to be kept longer it must be frozen." The expert will, however, find most of the matter in this book of interest, and the student may read it with advantage if he be working under adequate supervision.

The translation has been admirably carried out, though some minor errors might be corrected in future editions. Metchnikoff did not spell his name with an "s," and flagellæ is not the plural of flagellum.

PRICES AND PRICE CONTROL.

Prices and Price Control in Great Britain and the United States during the World War. By SAMUEL LITMAN, Professor of Economics, University of Illinois. New York: Oxford University Press, American Branch. Pp. 331.

Prof. Litman contributes a summary of the incidence and effect of prices and price control in the United Kingdom and in the United States to the series of Preliminary Economic Studies of the War, edited by Mr. David Kinley, Professor of Political Economy at the University of Illinois. The Carnegie Endowment for International Peace is responsible for the publication of this series, and in his preface Prof. Kinley endorses the conclusions of the author, which, on the whole, do not attribute success to the legal control of prices, undertaken with the object of checking "profiteering." "Here and there," he writes, "a government is able to catch and punish a profiteer. But legal action on the whole has had little effect at any time in preventing or removing the evil practices that have called forth so much popular denunciation."

Scientific examination of the effect of price control during the late war, carried out in the clearer atmosphere of peace conditions and at leisure, is no doubt one of the steps to be taken in order to avoid mistakes in future, should anything so disastrous as war on a large scale again take place. Prof. Litman's book contains ample material for the consideration of those interested in general economics as illustrated by the question of how far the so-called "profiteer" was in fact responsible for the rise in prices during the war, or for the condition of workmen during that period of unprecedented demand and lessened supply. With regard to the commodities specifically discussed, we note that the chemical substances referred to are confined to those used in the manufacture of munitions, and that drugs used for medicinal purposes do not come under discussion.

THE BOY IN INDUSTRY AND LEISURE.

By the Rev. ROBERT R. HYDE. London: G. Bell and Sons, Ltd. 1921. Pp. 281. 6*s.*

IN his novel "Sybil," the late Lord Beaconsfield dealt with a number of social questions with real sincerity, and one of the characters makes the remark: "The youth of a nation are the trustees of Posterity." The youth of the nation to-day are in many ways different from those of the early forties; those who are left have passed through an ordeal such as our fathers never knew, but none the less are they the "trustees of Posterity," and this in whatever class of life they may move. The problem of the adolescent boy is by no means the least important of the many problems which exercise the minds of men to-day, and anybody who wishes for light on the subject will do well to read Mr. Hyde's book, for it is written by one who has spent a lifetime in dealing with boys and in organising agencies for their welfare. From his experience he comes to the conclusion that "the boys' club is the soundest form of organisation in spite of the attractions of the more disciplined methods of brigades, cadets, or scouts, but in stating this I do not, of course, belittle such organisations. I can but write from my own experience, and it leads me to that conclusion." Whether we agree with Mr. Hyde in this opinion or not, everyone interested in boys should read this book, and if they should feel tempted to become workers in the sense of running a boys' club or aiding in other ways, they will learn what to do and, that which is more important, what *not* to do from Mr. Hyde's pages. One of the most interesting sections is the account given by Mr. Hyde of the working of the Industrial Welfare Society. Mr. Hyde regrets the passing of the old-time feeling of personal relation between employer and employed; it is all but impossible to retain this under the modern factory system, although various firms have done and are doing their best. Even where it cannot be revived, the system of Industrial Welfare supervision goes some way towards healing the breach which has in too many cases been made between master and man. Mr. Hyde writes wisely and sympathetically, showing the sense of humour without which his life's work could not have been done.

JOURNALS.

PARASITOLOGY. Edited by G. H. F. NUTTALL, F.R.S. Vol. XIII., No. 3. August, 1921. C. F. Clay, Cambridge University Press. 15*s.*; yearly subscription £2 5*s.*—The number opens with an article by F. J. Meggitt on a New Cestode from the Pouched Rat of East Africa.—The paper on the Excretory System in Digenea Trematodes, by E. C. Faust, contains a description of the structure and development of the excretory system in cystocercous larva of *Cercaria pekinensis*.—The note on a Protozoon Pathogenic to Mosquito Larvæ, by W. A. Lamborn, deals with an unidentified protozoal infection in the larvæ of *Stegomyia scutellaris* in Federated Malay States. Material from Lamborn's collection was studied by D. Keilin, who in the two following papers described the structure and life-history of two new parasites of of single muscles. Much light has been thrown upon this problem by the work of Agduhr, who suggests that where a striped muscle fibre has more than one motor end-plate these belong to different segmental nerves. The second condition is of an entirely different order. This double innervation is constituted by the presence in the various skeletal muscles so far examined of non-myelinated motor nerve fibres, which are alleged to be independent of the ordinary myelinated motor nerve fibres not only in structural connexion but in origin. These so-called accessory motor fibres sometimes terminate in the same motor end-plates in which the terminals of the ordinary motor nerve fibres end; but they frequently end in accessory, independent, motor end-organs of characteristically smaller size. The work of Boeke from 1909 onwards has led to a fairly general acceptance of the evidence for a double motor innervation of striped muscle in this sense. He recognised the occurrence in muscle of a system of fine non-myelinated fibres which appear to him to be quite independent of the ordinary myelinated fibres; they showed characteristic termination in the shape of fine end-rings, loops, or nets. He laid stress upon their hypolemmal position and their often intimate association with the ordinary motor end-plates as witnessing to their centrifugal and quasi-motor function. In 1916 Boeke examined the end-plates in ocular muscles after section of their nerves; in 1919 Boeke and de Barenne published the results of section in a cat of the anterior and posterior roots of the sixth to ninth thoracic nerves inclusive, and of extirpation of the corresponding spinal ganglia; the condition as regards innervation of the muscles of the seventh intercostal space was investigated after the lapse of a period of one month; in the same year Agduhr investigated the interossei muscles in the cat. Prof. Wilson concludes that it is difficult, if not impossible, to avoid the deduction, drawn by Boeke, Agduhr, and others from their crucial experiments, that the accessory fibres are sympathetic in origin and hypolemmal in their mode of termination. These relationships, if admitted, would indicate a centrifugal conduction of nerve impulses, presumably of motor and possibly of tonic contractile character.

PARA-MEDICAL RESEARCH.

THE report for 1920–21 of the Committee of the Privy Council for Scientific and Industrial Research[1] touches the fringe of several medical problems and describes work linked at several points with that being undertaken under the auspices of the Medical Research Council. For example, it is at the suggestion of this Council that a subcommittee of the British Scientific Instrument Research Association, in coöperation with the Electro-Therapeutic Section of the Royal Society of Medicine, is drawing up a specification of an X ray outfit complete with modern requirements. On the medical aspect of the work of the National Physical Laboratory, again, we have recently commented.[2] The Deep and Hot Mines Research Committee records progress in the control of atmospheric conditions in mines; experiments on the effects of high temperatures on the output of the mine-worker are said to have yielded results of considerable interest. The Food Investigation Board anticipates that the new low temperature station for research in biochemistry and bio-physics now being erected at Cambridge will be complete at the end of this year. Prof. W. Stiles has prepared a memoir, now in the press, on the general theory of the preservation of food by cold, from a physiological standpoint. In the course of a general study of the phenomena of putrefaction the conditions determining the production of lactic acid in muscle have been the subject of investigations by D. L. Foster and D. M. Moyle; G. S. Graham Smith has attempted to ascertain the factors which determine the rate of multiplication of bacteria, while W. G. Savage has published a study of the effect of a diet containing putrefying foods upon the health of animals. Other reports on the bacteriology and chemistry of canned foods are nearing completion. Experiments on cooking and heating stoves, on the transmission of heat and gases through wall materials, and the condensation of moisture on their surfaces are being made. In view of the importance of formaldehyde in the manufacture of disinfectants, and of the fact that supplies are at present almost entirely imported or made from imported materials, the Chemistry Coördinating Research Board proposes to investigate the possibilities of its production in this country. The Oxygen Research Committee announces that a handbook is in preparation embodying the more important results of its inquiries and experiments, and giving some account of the general methods of production and the application and uses of oxygen. The types of gas cylinders most suitable for use in hospitals and for mine rescue work are also being considered by experts.

These few examples of investigations undertaken under the auspices of a committee of the Privy Council with the primary object of advancing science and industry rather than medicine are sufficient to show the interdependence of all scientific research. The desirability of the direction of medical research towards industrial problems has been sufficiently emphasised of recent years; we hear less of the advantages to medicine of research in other fields. The results obtained from these investigations may suggest fruitful lines of inquiry on an entirely different aspect of a subject, and, as is argued in this report, even irregular or unexplained results may often form the starting point for important advances on a side issue. We therefore commend this important and suggestive report to the attention of our readers.

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[1] H.M. Stationery Office. Cmd. 1491. 1s.
[2] THE LANCET, July 16th, p. 145.

NUTRITIONAL KERATOMALACIA IN INFANTS.

KERATOMALACIA, of which Dr. S. G. Ross,[1] of Baltimore, records four illustrative cases, is an infantile ulceration of the cornea with xerosis of the conjunctiva, the rarity of which is shown by the fact that these were the only examples of the condition among more than 28,000 admissions to the children's department of the Johns Hopkins Hospital. The relationship between this type of corneal disease and malnutrition in infants was first noticed by W. Mackenzie in 1857, and was confirmed by subsequent writers, among whom we may mention Holmes Spicer,[2] who in 1892 observed the condition in England only among artificially reared infants, who had a diet lacking in nitrogenous elements. He also noted that it was not uncommon in countries where nursing mothers practised long fasts. In 1904 Mori described a disease prevalent in Japan among children aged from 2 to 5 years, and characterised by diarrhœa, excessive appetite, swelling of the abdomen, loss of weight, night-blindness, dryness of the skin and hair, and xerosis conjunctivæ. Breast-feeding in such cases was almost universal for a year, and subsequently the diet consisted almost entirely of cereals and some vegetables. In the course of four years Mori observed 1511 cases of this disease, of which 116 developed keratomalacia. In 1906 Czerny and Keller, in their description of "Mehlnährschaden," a nutritional disease in infants due to an almost exclusive diet of carbohydrates, drew attention to keratomalacia as one of the complications. In 1917 McCollum and Simmonds suggested that lack of the accessory substance, which McCollum in 1916 had named "fat-soluble A," was the cause of the deficiency disease both in young rats and infants. In Dr. Ross's cases the children had been fed almost exclusively on condensed milk, a food high in carbohydrate value, relatively low in fat and protein, and probably deficient in the fat-soluble A factor. The prognosis of keratomalacia is grave in infants, but improves

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[1] American Journal of Diseases of Children, September, 1921.
[2] THE LANCET, 1892, ii., 1387.

THE LANCET.

LONDON: SATURDAY, OCTOBER 15, 1921.

Health Insurance and the State.

WHEN considering the question of the remuneration to be paid to practitioners on the panel there is one point which, although of vital importance to the medical profession as well as to the State, is apt to be overlooked. Cost of living, inflation of the currency and the like are, of course, urgent matters for consideration, but all these deal with the present and are matters which may be met and remedied as time passes and opportunities occur. It is the doctor's future to which attention should be drawn, and for which provision should be made. The doctor, no less than other folk, looks forward to an old age which shall be, if not one of ease, at any rate one unhampered by anxieties as to the actual means of existence. He may be able by means of insurances of one kind and another to make the necessary provision; he may be able by lucky investments to place himself in a position which frees his future from care. There has, however, always been one source to which the general practitioner has looked for considerable assistance towards his retirement—that source has been the capital value of his practice. When the Insurance Act was introduced, the fears which beset so many practitioners were both falsified and fulfilled. Fulfilled in that where his practice lay in an industrial area the value of his private work declined by 50 or even much more per cent.; falsified in that he was able to replace the loss by a practice which had become more valuable owing to the ease of transfer of his list of insured persons. This value will largely be destroyed by the action of the new clause entitled "Change of Practitioner" inserted in the Medical Benefit Regulations for 1920, and once destroyed it will not be restored.

Whether the destruction of the capital value of insurance practices is a good or a bad thing is beside the question, which is: How is the doctor to make good the loss of an interest which the Insurance Act did not create although it may have appreciated its value? What is to replace this lost capital asset? Publicans receive compensation for the abolition of licences, civil and other public servants whose offices may be discontinued are recompensed. Nothing has been heard of any suggestion for the recompense of the practitioner, although there would appear to be no more valid reason why he should not benefit from the value of the goodwill of his practice than for a similar disability in the case of the grocer or draper. On the other hand, it is now proposed to reduce the remuneration of the panel doctor, thus further limiting his power to make a provision for old age. Those who may negotiate on behalf of the panel doctor should bear this point of view in mind, and it seems possible that those negotiating on behalf of the Ministry of Health might be able to see that to give the doctor the opportunity of providing for old age is one means of providing a contented and consequently efficient medical service. If economy is the reason for the suggested reduction of the capitation fee, that object would be attained if the Government were to credit panel practitioners each year with the amount, or part of the amount, of the proposed reduction, at the same time making the desired provision for old age. The sum so credited could form a sinking fund out of which practitioners of certain age and service, might receive annuities, the actual amount to be settled by actuarial calculation.

The advantages to the doctors of some such system are manifest, whilst the advantages to the State are equally clear. The capital sum could be used to meet some of the more pressing needs brought about by the financial conditions now prevailing. Such a fund would eventually be self-supporting. The suggestion is not a new one. As Dr. H. H. MILLS reminded our readers last week, it has been before both parties since 1913, and concrete proposals were laid before the Panel Conference of 1919. We are glad to note that the subject of provision for the superannuation of practitioners is to be brought by resolution before the conference which meets next week, when the Government proposals for reduction will be considered (see p. 829).

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Physiological Histology.

GUSTAV MANN, who died at Tampico in Mexico on July 18th, after an acute attack of dysentery, was a leader in his branch of medical work. He will be chiefly remembered by Oxford students of physiology under Prof. GOTCH, in whose department he was demonstrator, and in charge of the teaching of histology from 1894 to 1908. His vivid, freakish, sometimes impish, personality is not easily forgotten, and many pupils, grateful for a revelation of what histology might be, felt a real sense of loss on his translation to America, where he occupied the chair of physiology in the Tulane University in New Orleans, till his consummate skill in the gentle art of making enemies led to his drifting off into the less academic occupations of the last five or six years of his life. That MANN was easily the first histologist of his day in this country there can be no question; his technical skill was unsurpassed. But what he stood for in histology has found no representation with us since the sad death of his pupil and successor at Oxford, S. G. SCOTT. He saw quite clearly, and constantly emphasised in his teaching, that histology was not a department of knowledge but an item of the apparatus which should help to elucidate the general laws governing biological phenomena. It comprises, he said, "investigations into the structure, the chemical composition, and the functions of healthy and diseased animal and vegetable cells." Histology was to him a part of physiology, and he looked on micro-anatomy as its elementary introduction. The difference between this point of view and that more commonly held may be appreciated by comparing his "Physiological Histology" with, for instance, the "Microtomist's Vade-Mecum," a hardy perennial which has blossomed again this season.[1] This excellent manual sets out to tell us what has been done and how to do it, while the "Physiological Histology" in addition conjures up a vision of what might be done and how most likely we might do it. The main idea that ran through MANN'S own restless and vagarious work of brain and hand was that a fuller knowledge of the chemistry and physics of protoplasm and of dyes would lead to our recognition of the nature of cell constituents as certainly as we identify inorganic iron by the Prussian blue reaction. "The method of staining grew and grew," he said, "till to be a histologist between 5 and 15—and its prolonged prodromal stage. From the fourth disease pseudo-rubella is distinguished by its long prodromal period, slower progress of the eruption, character of the rash, lack of contagiousness, and absence of throat symptoms and desquamation. Dr. Westcott concludes that the condition described is a mild infection, non-contagious, or only feebly contagious, to which young infants are particularly susceptible and older children not all or only rarely liable.

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[1] See p. 808 of this issue.

NEW SPECIMENS AT THE ROYAL COLLEGE OF SURGEONS.

AMONG the recent acquisitions by the museum of the Royal College of Surgeons which are now on show at the annual exhibition are a series of specimens from the Onodi collection which was presented to the college early this year. This collection, as we have previously noted, illustrates the surgical and pathological anatomy of the nasal fossæ. Perhaps the most remarkable specimen of these yet mounted is one (No. 29) of a choanal polyp, which springs from the wall of the right maxillary sinus. It has widened the opening of this cavity into the nose and is seen passing forwards and backwards towards the anterior and posterior nares. From a crypt on the nasal surface of the polyp a barley-corn with husk was found. As it is a wet specimen and has been preserved in spirit it is pretty certain that this gained access to the nose during life. Until more specimens have been cleaned and mounted it has only been possible to allot temporary numbers and to make a provisional classification. This divides the specimens into those showing relations of the cavities as a group to surrounding structures, those showing the average normal anatomy of various sinuses, and those showing normal but unusual anatomy of the sinuses and pathological specimens. In the first three groups there is much overlapping, and it is not yet certain whether such a classification can be retained.

CRIME AND MENTAL DEFICIENCY.

THE relationship between crime and mental deficiency is a matter not only of considerable philosophical and scientific interest, but also of great practical importance. It is, moreover, one regarding which it is very desirable that the medical practitioner should be well informed, since he is not infrequently called upon to deal professionally with both crime and mental defect. Unfortunately the instruction he receives during the ordinary medical curriculum is far from adequate, and it was for the purpose of remedying this that the University of London has instituted a special course of post-graduate lectures and clinical instruction on the subject of Mental Deficiency. In this issue of THE LANCET we publish a lecture given at this course by Dr. W. C. Sullivan on Crime and Mental Deficiency, which should prove of considerable value in the elucidation of this problem. As Dr. Sullivan points out, although the statement is often made that crime is the result of a special criminal diathesis or temperament, this is a view which requires a good deal of qualification. Crime, in fact, is not a biological concept at all, but a legal one, and, moreover, a concept which not only differs very greatly with different races, but even with the same race at different periods. Man inherits certain deeply ingrained impulses to action from his remote past which are for the most part essentially egoistic; in the course of time it is found that the manifestation of these impulses conflicts with the well-being of the community as a whole: in consequence laws are made and standards set up for the regulation of his conduct, and the person who violates or fails to conform to these standards is a criminal.

It is probable that most normal persons are potential criminals, for they possess these primitive impulses to action: they are, however, not actual criminals, inasmuch as they have developed in addition certain inhibitory qualities which enable them to modify and restrain these impulses in accordance with the standards of their society. Upon what does this conformity or non-conformity depend—in other words, what is the psychological basis of misconduct? No doubt the mental factors concerned are highly complex, and our knowledge regarding them is admittedly still imperfect; we may, however, specify three which, undoubtedly, have considerable influence in the regulation of conduct—namely, knowledge of the requirements of the law, sense of social or moral obligation, ability to learn from experience and to appreciate the personal disadvantage resulting from certain acts. These inhibitory processes may, of course, be disordered, as in cases of insanity; they may, however, be primarily defective, and this is the case with many persons suffering from mental deficiency. It is therefore not surprising to find that crime is relatively far more frequent in aments than in those of normal mental development, and whilst statistics on this point are not free from certain fallacies it is significant that while the proportion of aments in the general population is about 0·5 per cent., the proportion of aments in the prison population is from 10 to 20 per cent. This point, which is really only one aspect of the problem of the mentally defective, raises the question as to whether the decision to postpone providing adequate provision for this class on the plea of economy is really an economical process for the nation. There is, however, another class of defectives who are even more closely related to crime—in fact, who are incorrigible criminals and whose lives are one long record of crime and social danger. This class has long been known to psychiatrists, but has only recently received legal recognition, and there is no doubt that much misapprehension still exists concerning it. We refer to the class of moral imbeciles.

As was pointed out in a recent address before the Royal Society of Medicine by Dr. A. F. Tredgold,[1] moral imbeciles differ from ordinary defectives in that they present no inability to learn in school and no defect of that lower level of intelligence which is concerned in the adaptation of conduct to the immediate requirements of the moment; on the contrary they are often well educated, plausible talkers, of prepossessing appearance, and decidedly cunning, so much so that persons with a limited knowledge of psychological medicine have the greatest difficulty in realising that they can be defectives. Nevertheless, they are defective in certain constituents of mind which are of vital importance in the regulation of conduct, and it is such defect which brings them within the definition given in the Act. Dr. Tredgold states that there are two psychological processes which are thus defective in the moral imbecile—namely, moral or social sense, and that higher form of intelligence which enables an individual to adapt his conduct, not merely to the requirements of the moment, but to those of the more remote future; this was designated "wisdom" by the late Dr. Mercier, and is popularly known as common sense. It is shown that defect of moral sense is not in itself sufficient to account for persistent crime, and as a matter of fact there are many persons amongst the ordinary population whose moral sense is decidedly weak, but who are not criminals for the reason that their wisdom tells them that should they be detected the disadvantages would be greater than the advantages; they may, however, commit occasional crimes if the circumstances are such as to lead them to think that they will not be found out. The moral imbecile, on the other hand, is lacking in both wisdom and moral sentiment; in consequence his primitive self-seeking impulses have full and unfettered play and he is a persistent and incorrigible criminal. There can be no doubt that this condition of moral imbecility is one of very great social importance,

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[1] Clinical Journal, Sept. 28th, 1921.

Annotations.

"Ne quid nimis."

NORMAL CONTROLS IN PATHOLOGICAL INVESTIGATIONS.

A PAPER such as the Gastro-enterological Number of the *New York Medical Journal*,[1] which has just reached us, intensifies the importance of securing adequate controls in all pathological investigations. On the one hand we read of laboratory investigations whose complexity and difficulty must place them beyond the purse of the average patient, and, on the other we learn of huge institutions, excelling in size and equipment anything known in Europe, where cases are dealt with in enormous numbers—followed, as the authors allow, by doubtful success—and are treated by methods which differ radically from one another in the various clinics. Economic considerations will prohibit a similar state of affairs in England for many years to come. But we are tempted to ask whether our patients, with the careful attention of our more individualistic clinicians, may not gain, at any rate in some directions, by our lack of organisation. We read of gastric analyses involving one or more test-meals and several gastric lavages, followed by estimations of acid, bile content, mucus, blood both free and occult, trypsin, pepsin, pepsinogen, rennin, renninzymoza, and half a dozen other chemical constituents, with cytological examination for six different types of epithelium and some dozen groups of bacteria, yet nowhere in this same article do we find evidence as to the frequency of occurrence of parallel findings in the normal healthy person. In another article in the same journal we read the latest investigations of Prof. Max Einhorn, who momentarily abandons the "gastric bucket," the "duodenal thread," and the "intestinal delineator," in order to describe the biliary secretion excited by a formidable variety of salts and other chemical substances; but here we note that Prof. Einhorn's conclusions are drawn from four patients only, and that all of them were suffering from grave organic disease. Nor is Prof. Einhorn alone, for in this same journal are two other articles, by well-known American physicians, describing elaborate diagnostic and therapeutic procedures in cases of disease of the biliary passages, all based upon the original observations of Lyon, that instillation of a strong solution of magnesium sulphate into the duodenum is followed by an outflow of bile. But is there existent any series of experiments on normal men which can allow comparison to be made with the findings in these pathological cases? If these refinements of laboratory technique are to have any permanent utility—and surely amongst these laborious American researches there must be much which is of value—it is clear that laboratory work on the healthy individual must be brought into a far more prominent position that it holds at the present day. Each year adds to the syllabus of the overworked medical student, but it should be possible, by judicious modification of the usual methods of teaching physiology, to send him to the wards already conversant with the technique of investigation which he there sees applied to patients; and the same method would supply to the clinician those normal standards of comparison whose absence at present may lead him into errors of the gravest kind. To those of us who have come to think of America as the land where the ideal medical clinic exists as a reality there is something of sacrilege in the article by Dr. Wendkos, of Philadelphia, in the journal under discussion, wherein he speaks of the serious percentage of gastric cases which leave even the Mayo clinic undiagnosed, some of them to return with inoperable carcinoma; or of the statistics of cure at the Sippy clinic, figures which, he implies, are altogether erroneous owing to the original diagnosis of gastric ulcer having been made on inadequate grounds. No less surprising is his description of a hospital where the gastro-intestinal patients are indiscriminately, for "experimental purposes," treated by psychotherapy. At a time when medical progress in England is severely handicapped by economic distress there is perhaps a grain of comfort in the reflexion that we are left in possession of our proverbial British phlegm.

THE LIFE OF METCHNIKOFF.

A BIOGRAPHY[1] of Elie Metchnikoff by his wife, now available to English readers in a very readable translation by Mrs. R. L. Devonshire, gives fully and with the intimate sympathy that would be expected an illuminating account of the man—his impressionable childhood, his wonderful growth as a university student, the emotional lapses that led him to two attempts on his own life, the calm of his later years with their passionate desire to find a philosophy of human existence which should make it better. And we can form a pretty clear picture from the personal details which help so much to explain what a man does and are so often missing from biographies. The narrative of Metchnikoff's scientific work is less satisfactory: it seems to lack sequence and fails to place in its proper perspective the discoveries for which he is and will be most famous. It was in 1882, at the age of 37, that he appears to have definitely conceived the idea that wandering cells might defend the body against foreign and injurious particles by taking them into their substance and digesting them, and till about the end of the century his energies were entirely devoted to the development and elaboration of this into a complete theory of immunity. Up to a point all went well, but when the newer knowledge of the production of antibodies and their humoral action came along he failed to convince his fellow workers that the phenomena were just an extension of his "doctrine" of phagocytosis, as Sir Ray Lankester calls it in a reminiscent preface to the translation. The account given in this biography would lead the general reader to suppose that Metchnikoff really succeeded in "proving" that antibodies arise from leucocytes either by their disintegration or by an exaggeration of their normal digestive processes. This is hardly a fair valuation of his attempts to decide a very difficult question which still evades complete solution. We have noticed evidence of defective technical editing in the footnote on p. 175, where "immunising body" is given as a synonym of his "fixator," and on the following page where "cytasis" twice can hardly be a misprint. The truth of the matter, as we pointed out[2] at the time of Metchnikoff's death, is that in the controversies in which Metchnikoff represented one side and Ehrlich the other extreme, both parties turned out to be partly right—and modern bacteriological research is blending the views of the German "humoral" and the French "cellular" school into a harmonious whole.

INNERVATION OF STRIPED MUSCLE.

MANY papers have recently been published under the title of the Double Innervation of Striated Muscle. In the current issue of *Brain* Dr. J. T. Wilson, F.R.S., Challis professor of anatomy in the University of Sydney, regards this title as unsatisfactory because it ignores the distinction between the sensory and motor innervation of the muscle tissue. Even if we substitute the expression "double motor innervation" there remains the objection that two very different conditions as regards the motor nerve supply of muscle have been recognised, either of which may well enough be brought into this category. The first of these is the plurisegmental innervation deduced probable conclusions from certain data. The cause of typhoid was, moreover, variously attributed in different places: in Belfast to cockles, in Germany to the healthy carrier, in certain Scotch and American cities to milk, in the South African and the Spanish-American war to flies. Few who studied Bulstrode's elucidation of the case of the Winchester and Southampton banquets could fail to suspect oysters, even though the drains of the houses of some of the sufferers failed to pass the water test, and though the housekeeper of one sufferer, or the aunt of another, had become a typhoid carrier 20 years previously. In the *light of recent knowledge some of the reports* of earlier epidemiologists make fascinating reading. When the facts of the prevalences of typhoid in the Tees Valley, Belfast, Newport, Worthing, Bangor, and King's Lynn, which had been attributed to water pollution, were reviewed in the light of shell-fish pollution, the verdict against the water seemed less clear. In connexion with supposed food infections, especially milk, Dr. Hamer referred to the complication of the healthy carrier. The case for estuarial pollution versus the oyster-barman-carrier has been fully argued elsewhere.

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[1] New York Medical Journal, cxiv., No. 5, Sept. 7th, 1921.

[1] Life of Elie Metchnikoff. By Olga Metchnikoff. London: Constable and Co. 1921. Pp. 297. 21s.

[2] THE LANCET, 1916, ii., 159.

The broad fact emerging from Dr. Hamer's review is *that London typhoid for the* past 25 years has been in the main of estuarial origin. He discussed certain supposed milk outbreaks, excluding those involving less than 20 cases, and those in which it was stated that less than 95 per cent. of the sufferers were consumers of the suspected milk. Of 110 outbreaks, collected mostly from records in the British Isles, only 22 passed these tests. It was apparent in these records that no study of other possible food infections had been made, and the milk theory could only be accepted *faute de mieux*. A percentage of even 100 consumers affected might well not justify this theory. An early outbreak attributed to milk was that reported by Dr. M. W. Taylor, in the *Edinburgh Medical Journal*, 1857–58, and Dr. Hamer concluded from a study of this report that the disease was probably typhus and not typhoid. Almost the first case published was that of the Islington outbreak of 1870, reported on by Dr. Ballard. Dr. Hamer concluded from his analysis of this report that the *distribution of infected fish or shell-fish was a possible* explanation of the outbreak. He also pointed out various difficulties connected with the attribution of the Marylebone outbreak of 1873 to milk, remarking that an investigation of the incidence of illness upon customers of a certain fish shop a few yards from the suspected dairy might have been of considerable interest. He referred to other outbreaks attributed to milk, maintaining that the relationship might have been explained as a coincidence. Again, in 1891 four groups of cases in Rotherhithe, Deptford, and Greenwich were reported on by Dr. George Turner, and a prima facie case was made out against certain ice-cream supplies. Dr. Hamer submitted reasons for regarding these and other outbreaks in London at about the same time as being possibly due to infected shell-fish or other fish. He had investigated a Finsbury outbreak in 1911 with Dr. A. E. Thomas, and was able to show that ice-cream was not at fault, as was at first suspected, but a fried-fish shop just opposite that of the ice-cream vendor. Finally, he referred to a Plumstead outbreak in 1895, which he investigated with Dr. Sidney Davies, and accepted at the time as a milk outbreak. Some years later he learnt that the suspected dairy was next door to a fish vendor, and from the incidence of the case the explanation was a matter of doubt. Dr. Hamer claimed *that this examination of reputed London* milk outbreaks confirmed the view held by Creighton that if milk must be deemed a cause of typhoid epidemics, it could only be held responsible for certain aberrant prevalences of a typhoid-like disease, and was not a significant factor in the spread of true typhoid fever. He said that high typhoid death-rates were to be found in coastal areas or in areas within easy road or rail communication with these, with centres of fish distribution. The areas with low typhoid rates were almost without exception remote from such districts, and this was all the more striking because these areas were just those where primitive methods of drainage and water-supply still prevailed. Dr. Hamer concluded "that a bird's-eye view yields unmistakable indication that, at any rate, during the last 25 years, the mischief responsible for London typhoid has been found in some remote estuary or on some far distant foreshore."

THE HOSPITAL FOR TROPICAL DISEASES.

Owing to the depression of trade the number of cases of tropical disease admitted to the London Hospital for Tropical Diseases from the docks and ships in port has become small. It is important to secure sufficient clinical material for study in London and for teaching purposes, and a leaflet has been issued by the hospital, in association with the London School of Tropical Medicine, explaining that patients suffering from any form of tropical disease may make application to the secretary for treatment, special arrangements being made for women and children. Those who can afford it are expected to pay towards the cost of their treatment, and suitable cases are accommodated in private wards. The hospital offers special facilities to those who are taken ill on board ship or who are invalided from the tropics with malaria, dysentery, sprue, or with any form of fever or tropical disease, and arrangements can be made to receive them straight from the ship. The honorary medical staff will be glad to hear from medical officers in the *services, or in private practice*, with *regard to* patients needing expert treatment.

The Hospital for Tropical Diseases is now situated in Endsleigh Gardens, Euston Square, N.W., within easy reach of several main London termini, while an ambulance service is maintained between the new hospital and the old one in the Albert Docks, where the school once stood. Cases are admitted there straight from the ships in the East London Docks.

The Federation of Medical and Allied Societies has now moved into new offices at 12, Stratford-place, Oxford-street, London, W. 1.

The news is announced of the death of Dr. Theodore Schott, well known for his treatment at Bad-Nauheim of cardiac disease.

The Guild of St. Luke Annual Service will this year take the form of a special thanksgiving for peace. The service will be held on Tuesday, Oct. 18th, at 7 P.M., the preacher being the Rev. Father Waggett. The offerings, after defraying the cost of the service, will be devoted to one of the hospitals in London. Doctors and students are requested to wear academic dress.

We publish this week (p. 833) a plea for the better use of vital statistics in public health by Sir Arthur Newsholme, formerly Principal Medical Officer to the Local Government Board. The address was delivered at a dinner held in Sir Arthur Newsholme's honour by the American Statistical Society on the eve of his departure for England.

Sir Marriott Cooke and Dr. Sidney Coupland, consulting physician to the Middlesex Hospital, have retired from their position as Commissioners of the Board of Control. Both of them were appointed Commissioners in Lunacy in 1898, and the former, who was previously medical superintendent of the Worcester County and City and the Wiltshire Asylums, acted during 1916–18 as chairman of the Board.

THE LANCET of January 1st, 1921.

The Manager will be obliged to readers who have not any further use for their copy of The Lancet of the above date if they will kindly return it to him at 1, Bedford-street, Strand, W.C. 2. The postage on the number is three halfpence. He will be pleased to pay for those returned.

greatly above the age of 1 year. Death results from nutritional disturbance, and the eye lesion is an indication that this is far advanced. Three of Dr. Ross's cases died, two from broncho-pneumonia. Treatment consists in supplying a sufficient quantity of animal fat which contains the fat-soluble A factor. If breast milk is not available, cow's milk should be employed. The use of cod-liver oil, which acted as a specific in the Japanese cases observed by Mori, should be begun immediately in doses of 5 minims, three times a day.

UNIVERSITIES' LIBRARY FOR CENTRAL EUROPE.

THE first year's report of the Universities' Library for Central Europe has now appeared. The name of the library has been changed from "The Anglo-American University Library for Central Europe," as a result of the decision of the United States workers to carry on with their separate organisation of supply. It is announced that the results of the appeal, whilst enabling a great deal to be done towards renewal of stocks of English literature in Central European universities and libraries, has not been sufficient to allow of large-scale "literary relief." So far, more than 2000 separate treatises have been despatched, in addition to a large number of scientific reviews and periodicals, and journals and transactions of learned societies. A special letter, sent to every periodical and journal which had been asked for, brought excellent results; in a number of cases five or six complete sets of various journals for the war period were despatched to the continental centres. The number of consignments of literature sent to the centres was as follows: Austria, 17; Czecho-Slovakia, 4; Esthonia, 1; Germany (4 centres), 21; Hungary, 5; Poland, 4. Many of the continental universities have again been put into touch with English scientific societies with a view to an exchange of publications; reduced subscription rates have been secured for a number of important scientific journals, and other facilities for transmission of gifts of literature have been arranged. An appeal was issued to all publishers asking for special credit and other terms to continental universities, but only the Oxford University Press sent a favourable reply. The Society of Friends undertook the transport of consignments at their special rates. Parcels for Czecho-Slovakia and Esthonia were collected and transmitted by the respective Legations, and it is hoped that it will be possible to extend this practice to other countries. Comparatively limited as has been the number of books sent, their distribution has been highly appreciated on the Continent. The library has undoubtedly justified its existence, and it is to be noted that generous support in the form of money and books is still urgently needed. The names of the donors of literature and the audited balance sheet are included in the report.

THE CONTROL OF SURGICAL MENOPAUSE.

EVERY operating gynæcologist has seen troublesome results follow a sudden cessation of the internal secretion of the ovaries. Dr. Albert Groves Hulett, of East Orange, New Jersey, having had some distressing experiences with patients after oöphorectomy or pan-hysterectomy, devised a routine administration of ovarian extract which has been successful in making the induction of the artificial menopause a gradual one, unaccompanied by any mental distress. His technique[1] is as follows: "Starting on the fifth day after operation the patient is given 5 gr. of ovarian substance in tablet form four times daily. This dosage is continued for one month. For the next two months three doses of 5 gr. each are administered daily. Throughout the succeeding three months the dose is 3 gr., three times daily; during the seventh and eighth months the patient takes 3 gr. twice daily; and during the ninth month 2 gr. twice daily. In the tenth month 2 gr. are taken each night upon retiring; in the eleventh month 2 gr. on retiring on alternate nights; and in the twelfth month 2 gr. upon retiring every fourth night." Dr. Hulett has the advantage of experience in this method, which he does not claim as original, and it would, therefore, seem unfair to criticise his technique. It would be interesting to know, however, whether any extensive trial had been made of an acclimatisation extending over say 3 months instead of 12. With his further advice that the patient should resume, as soon as possible after the operation, all her normal habits of living everyone will be in cordial agreement.

DEVELOPMENTAL ABNORMALITIES.

MEDIAN hare-lip is of very rare occurrence. In the current number of *Dental Cosmos*, Dr. S. L. Silverman reports an example of it, associated with completely closed palate, a simple median nostril, and complete absence of external nose. There was also an encephalocele. Median hare-lip is known, at any rate by report, to all students interested in facial deformities, and in this case is evidently due to the want of development of the fronto-nasal process. The perfect palate is enough to indicate that the maxillary processes possessed their growing power, but it is not impossible or unlikely that the portions of these processes which reach the middle line of the roof of the general mouth-cavity, and reach and aid the growth of the fronto-nasal process, were defective in association with the failure of this latter region. The short report throws no light on this point, but if the assumption is correct it follows that there can be little or no provision of a mesodermal bed in the depths of which the nasal fossæ could grow to their full height, whence the smallness of the fossæ. It would seem not improbable that the so-called median single nostril may be but an appearance on the surface, the overlapping maxillary growth hiding the small undeveloped nasal fossæ. But nothing short of careful serial sectioning would enable a thorough explanation of the specimen to be given.

PSEUDO-RUBELLA.

Dr. Thompson S. Westcott,[1] associate in diseases of children of the University of Pennsylvania, applies this term to an eruptive disease of which he has observed isolated examples during the last ten years in infants between the ages of 8 months and 2 years. The onset is abrupt, with a rise of temperature to 102° or 103° F. There is no cough, coryza, lacrymation, nor conjunctival irritation. The fauces are normal. The following day the temperature remains high, and nothing new is found except slight enlargement and tenderness of the posterior cervical glands. The posterior auricular and axillary glands are not affected, but in some instances the inguinal glands are involved. During the next two days the temperature remains raised, and on the evening of the fourth day a few discrete red macules appear on the neck, face, under the eyes, or above the clavicles. On the fifth day the temperature is lower, the rash is more marked, covering the face, neck, chest, and shoulders. It is more discrete than a rubella rash, and not raised above the surface, but in some areas, especially the loins and thighs, it shows a tendency to coalesce. On the sixth day the temperature and pulse are normal, and the rash begins to fade, disappearing in the next two days without any subsequent desquamation. In spite of its resemblance to rubella in the appearance of the rash, enlargement of the posterior cervical glands, and febrile course, pseudo-rubella differs from it in its non-contagious character, its age distribution—the disease being confined to children under 2, while rubella is most frequent being the cure of disease, pharmacy was no longer called upon to relieve its symptoms, but still had to provide the necessary materia. Sir David Prain pointed out that pharmacy concentrates upon the "qualities" of the materia, while medicine studies their "uses." Should the new policy of medicine succeed, these materia would be converted into historic lumber, and pharmacy must undergo a corresponding modification. In husbandry the desirability of a practical pupilage had not yet been questioned. Still, the question had resulted in two schools of thought: some regard practice alone as sufficient training, while others prefer practice with science, but maintain that practice should precede training in pure science. Among those who advocate training in pure science there was again a divergence of opinion. Some think that practice and scientific training should proceed concurrently, while others prefer that practical pupilage should precede the course in pure science. In schools of agriculture the result of experience had led, in some cases, to the abandonment of the concurrent system at one time adopted, and in future only such pupils would be admitted as had undergone a prescribed minimum of practical training. In horticulture, generally speaking, nothing was allowed to interfere with the practical pupilage which, on completion, was followed by the study of pure sciences.

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[1] The Induction of Gradual Normal Menopause after Ovariectomy, Medical Record, August 27th, p. 369.

[1] American Journal of the Medical Sciences, September, 1921.

Sir David Prain explained that in callings like pharmacy and garden-craft four distinct types of training were to be found: practical pupilage alone or a training in pure science (1) as a prelude, (2) as a complement, or (3) as a supplement to practical pupilage. Pupilage alone was both instructive and educatory, but education suffered because the primary aim of the teacher was instruction in the art of doing things, the pupil being largely left to his own devices to learn the underlying principles. Science before practice was good in theory, but might fail in practice because there was a tendency to put the apparently burdensome pure science entirely on one side when the examination had been passed and to forget the distasteful study as rapidly as possible. The objection to pursuing science concurrently with practice was that it is best to do one thing at a time. The interest of a good pupil in his calling was so intense that it absorbed his attention so fully as to render him incapable of giving proper attention to the underlying sciences. Science after practice seemed to be the ideal arrangement. The pupil had made his craft a part of his individuality, and immediately grasped the relevance of the scientific facts now placed before him. He would follow his studies with a keenness and interest that made them a pleasure alike to teacher and taught. Should pharmacy find herself eventually compelled to abandon pupilage as medicine had done, she might, as regards physics and chemistry, rely upon the aid of academic science, as did agriculture and medicine. But so far as biology was concerned she would do well to impart the scientific training on her own account, because the academic treatment did not fully meet the requirements of pharmacy. When the course of study was over training was not at an end. In a sense it was here that real training began. An attempt to prosecute "original research" would amply reward the worker in teaching him his own limitations and in leading him to know himself, while at the same time it might add something to our knowledge of natural things.

UNIVERSITY OF BIRMINGHAM.—The opening of this session marks the attainment of the majority of the University, which was founded in 1900 from the pre-existing Mason University College. On Oct. 7th a conversazione, held in the University buildings, was attended by a very large number of members of the University and its friends. All the departments were thrown open to inspection and many interesting exhibitions and experiments were shown. On Sunday, Oct. 9th, the annual service was held in the Great Hall at Edgbaston to mark the inauguration of the new session.

STATE CARE OF MENTAL DISORDER.

ANNUAL REPORT OF THE BOARD OF CONTROL (LUNACY AND MENTAL DEFICIENCY) FOR 1920.

THE Board of Control for England and Wales must be one of the most harassed of Government departments. On Jan. 1st, 1921, there were 120,344 notified insane under care; each member has about 10,000 mentally infirm patients to supervise (provided all the members take an equal share in the work). The nine visiting members must each see about 13,000 annually, whereas in Scotland the proportion of patients to each Commissioner appears from the Seventh Report of the Scottish Board of Control to be less than 3000.

The Commissioners and their Responsibilities.

The work of the Commissioners involves the examination of all certificates so as to be sure that the law is complied with in every case. Each of these patients has a right of appeal, and when claims for discharge cannot be entertained there is often aroused a feeling of resentment which later finds its expression in letters to the papers and occasionally in vindictive attacks. Although personal violence is rare, aggrieved ex-patients lose no opportunity of creating ill-feeling. The Board of Control is, therefore, always up against an accumulation of grievances and complaints which create prejudice and ill-will. This is not counteracted by a corresponding show of gratitude, as patients do not attribute their recovery to the Board. It might be said that in this respect the Commissioners are like magistrates and judges, but there is the difference that in one case there is a public inquiry and the accused has counsel to defend him, whereas no such opportunity is given to the patient complaining of his detention. We do not suggest that patients are wrongly detained or that proper care is not taken, but merely that the prejudice which exists might be mollified if some different procedure were adopted when complaints of detention were made. In Dr. Montague Lomax's book there is a significant passage which describes the visit of the Commissioners and the supercilious air of the medical superintendent who took them round. The window-dressing which preceded the visit is described at length, and so it would seem that in this asylum, at any rate, care was taken to make a good impression. If typical, this seems to indicate a wrong state of affairs. If the Commissioners are merely inspectors and the chief medical officer on the defensive the visit can do little good. The association of legal and medical commissioners may be unfortunate. It is difficult for a barrister to take the place of a consulting physician in involved medical cases. In 1848, when the Commissioners were first appointed, there were terrible abuses to be eradicated, and presumably it was necessary to make minute inspection of rooms to see whether patients were concealed, but surely all this is changed, and if there are any abuses those responsible for the management of the institution are just as anxious for their removal as the Government visitors. This year Part II. of the Blue-book, which contains extracts from the Visiting Commissioners reports, has not been published.

Provision for Incipient Mental Disease.

A report by a Government body is hardly the place to look for defects in the Act of Parliament which it is required to administer. The necessity for change is admitted, and the Board again expresses its approval of a change in the law, in order to give improved facilities for treatment of early and incipient cases of insanity. The hope is expressed that a comprehensive measure on the subject will again be submitted to Parliament at an early date. [The Ministry of Health (Miscellaneous Provisions Bill, Clause 10) was refused a second reading in the House of Lords on Dec. 14th.] One aspect of this difficult subject seems so clear and obvious that it is strange and the newspapers frequently contain accounts of serious, and in some cases horrible, crimes which have been committed by persons of this class. At the same time the medical man who is called upon to examine a person guilty of persistent misconduct or crime must bear in mind that it does not of necessity follow that he is a moral imbecile. As Dr. Tredgold points out, continuous misconduct may result from a disorder of these controlling functions of mind, a not infrequent event during the period of adolescence; it may also result from their delayed development, and this may be a consequence either of some individual peculiarity or of faulty training and surroundings. In the moral imbecile it is neither a question of disorder nor delay, but of a fundamental and innate defect of mind in consequence of which the individual remains permanently incapable of adapting his conduct to the requirements of the community.

POINTS IN SANATORIUM CONSTRUCTION.

A WELL-ATTENDED general meeting of the Society of Superintendents of Tuberculosis Institutions was held at 122, Harley-street, W., on Oct. 3rd. After the representatives of the society to the International Conference on Tuberculosis had made their reports, Mr. Edwin T. Hall, F.R.I.B.A., delivered an address on Some Points in Sanatorium Construction, illustrated with lantern slides, in which he emphasised the necessity of close coöperation between the medical officer and the architect, as the latter was apt to overlook points bearing on the administration of institutions for the tuberculous. Mr. Hall expressed his general agreement with Committee Report No. 7 of the Society, which dealt with the construction and equipment of tuberculosis institutions, and went on to state some personal opinions on the subject. He considered that every room should receive some sunlight during the course of the day, and therefore favoured south, south-west, or south-east aspects. No ward or pavilion should overlook another; rooms might contain one bed or more, up to the number of eight. Dining and recreation rooms were better kept separate; if either apartment had to serve as chapel it was advisable to have the altar well screened off. The nursing block should have heating apparatus ready for use, and a small isolation block was desirable; covered ways of communication were practically indispensable in this climate. The rooms of the nursing staff should face away from the rest of the sanatorium buildings.

THE INTERNATIONAL ASPECTS OF ALCOHOLISM.

THE ninth Norman Kerr memorial lecture was delivered on Tuesday last by Sir Arthur Newsholme, late Principal Medical Officer to the Local Government Board. This lecture, it will be remembered, was established in 1884 in honour of a great temperance worker and in connexion with the Society for the Study of Inebriety; and Sir Arthur Newsholme, who has only recently returned from his duties in the United States, directed especial attention, in discussing the international aspects of alcoholism, to the question of prohibition in America. The great social revolution in America he attributed partly to organised propaganda against the abuses in drinking saloons—these seriously reflected upon the conduct of municipal politics, partly to temperance teaching in the elementary schools, partly to a national desire to improve industrial efficiency, and partly to strongly expressed opinion on the part of the medical profession in America. He alluded also to one other factor—namely, the occurrence of bestial attacks upon women in certain districts by negroes inflamed by drink.

The results of the first year of national prohibition in America are admittedly only partial, smuggling and illicit stills having some small counter-effect, while we can easily learn from newspaper reports that large secret stores still exist. But, according to Sir Arthur Newsholme, the vast majority of the American population can no longer obtain alcohol; the law and the cost preclude the indulgence, with the result that large sums of money have been diverted to the purchase of better clothing, while preventive work can take the place of rescue work in populous centres, and admissions to hospitals for alcoholism show remarkable decline. Defending the action of the United States from the accusation of being arbitrary or undemocratic, the lecturer pointed out that in all civilised countries there are many examples of enactments which diminish freedom of action for the many, but which are devised for the protection of the few with the sanction of the community. In such instances, while he admitted that moral and voluntary procedure would always be preferable to compulsion, he urged that moral suasion acts slowly even on minorities, during which time the innocent suffer for the lapses of the weak. He found the suggestion that prohibition might exercise a sinister influence on the moral fibre of the American population by encouraging "prohibition cranks" fantastic. As in a democratically governed country the sale of an article for consumption can never be prohibited unless its consumption can be shown to the satisfaction of the majority to be mischievous the case in favour of enforcement of prohibition in America is rendered strong by popular acquiescence. After all, democratic government is a government by majorities, and where compulsion seems to be a necessary element for success, that success can only be permanent with the consent of the governed.

THE ÆTIOLOGY OF TYPHOID FEVER.

DR. W. H. Hamer in his presidential address to the metropolitan branch of the Society of Medical Officers of Health last week, raised some interesting points. Fifty years ago, he said, it was the fashion to ascribe typhoid fever to faulty drains; later river water-supplies and polluted milk were held responsible. It was recognised 70 years ago that typhoid excreta were the source of danger, but not fresh evacuations, direct case-to-case infection not being admitted. Murchison countenanced de novo origin, and Pettenkofer ascribed importance to earth temperature and ground water-levels. In the nineties were discovered (1) Eberth's bacillus, and (2) that typhoid could be communicated by shell-fish, with the result that epidemiology was divided into "contagionists" (following Koch) and "localists" (following Pettenkofer), the former quickly getting the upper hand. Bulstrode's great oyster report was published in 1896, and that on other shell-fish in 1911, but the shell-fish discovery had not the same wide reception as Eberth's discovery. In 1900 fish outbreaks occurred in London, and in the next ten years the importance of estuarial pollution was increasingly realised. Dr. Hamer attributed the disappearance in London of the autumnal rise of typhoid in 1907, and from 1912 onwards, partly to the abandonment by the East Coast fishing companies of certain nurseries of small flat fish. A similar change, observed in 1914 in Manchester, was attributed by Dr. J. Niven to improvement in the quality of mussels. Meanwhile, those advocating the contagion hypothesis were in difficulties. Sewer men did not contract typhoid fever; convincing examples of direct case-to-case infection were hard to find, and could be explained by persistence of the original cause. The supporters of the contagion theory had to back on unrecognised cases and healthy Dr. Hamer pointed out that the bacteriolo typhoid had, in recent years, become the present time, therefore, was appropriate review of the position. Human testimony often fallacious, and the credibility of a varied in an extremely complicated way acc- to the subject. Sensations relevant to the in- had necessarily been filtered, as it were, t the medium of the witness's interest. N was more obscure than the process by wh

In a speech delivered after the distribution of certificates of honour, prizes, and medals, the Minister said that he was glad to see a number of women graduates as there was a great demand for women doctors and health visitors throughout the Presidency; all women workers were needed to combat the appalling rate of infant mortality. The Government were considering the establishment of a new college in Madras or in the *mofussil.* Referring to the prospects in the medical services he said these had been recently improved. The pay of both assistant surgeons and sub-assistant surgeons had been increased, and this should be a real source of encouragement to them. The more students were passed out of the college the better assured would be improvement in public health. He asked them not to think of non-coöperation; if they coöperated they could extend medical relief to the remotest corners of the Presidency. Mr. Gandhi would advise them to boycott Government medical institutions on the ground that the medical relief given was different from what the people desired. If they adopted Mr. Gandhi's advice, the world, for them, would come to an end.

The Surgeon-General (Lieut.-Colonel T. H. Symons), referring in the course of his speech to recent criticisms in the newspapers—especially those relating to stipends—said that these criticisms expressed only half-truths. When a student received a stipend, the Government put the student through his medical course, and asked the student in return to sign a bond to serve for a term of years in the department. When he got a lucrative practice, he was at liberty to repay the stipend. There was no indenture in this. Nor did the students come under martial law, as had been announced. These mis-statements might create an impression in the minds of the readers that Government did not deal fairly with the students. On the contrary, but for Government help, there was no denying that many of them could not possibly enter the profession at all. Medical training in India was easily bought, easily paid for, and never appreciated. In England it was very different.

Madras, Sept. 14th.

LONDON MEDICAL EXHIBITION.

THE eleventh London Medical Exhibition held at the Central Hall, Westminster, from Oct. 3rd to the 7th provided an almost bewildering display of fine chemicals, foods, medical and surgical instruments, and apparatus. The general practitioner and the specialist alike could find exhibits of absorbing interest, and every stall was surrounded by eager medical men and women anxious to see and hear about all the newest and up-to-date in armamentarium. Nor were physical needs forgotten, for excellent teas and cigarettes were provided free in the tea-room set aside for members of the profession and their friends.

In only one respect we think could the Exhibition have been improved: there seemed to be no definite plan in the arrangement of the stalls. In these days it is rare to find any medical man who has not some pet specialty, and busy people who could only spare an hour or two necessarily missed much that would have interested them. On future occasions it would be an improvement to have exhibits of a like nature grouped together.

Surgical, Medical, and Publishers' Exhibits.

It would be impossible in a short space to describe even a small proportion of the exhibits in detail.

Meyer and Phelps showed a new gag for use during tonsil operations, the new Laforce hæmostatic guillotine, Dr. Irwin Moore's direct vision œsophagoscope with distal lighting, and Gillies's modification of Kilner's retractor for Thiersch skin-grafting amongst a profusion of surgical instruments of all descriptions.

H. E. Curtis and Son exhibited their well-known abdominal support; a new modification made of celluloid with washable [illegible] seems very practical.

E. A. Brook Williams stall was replete with the latest text-books and monographs on medical subjects.

Allen and Hanburys, Ltd., were showing, amongst other surgical instruments, Thomson Walker's bladder retractor with Clifford Merson's lighting attachment and Swift Joly's direct vision posterior urethroscope. London Hospital catgut and Soutar's needle also attracted much attention.

The Tintometer, Ltd., showed ingenious colour scale apparatus and Dr. George Oliver's hæmoglobinometer.

Hawksley and Sons showed scientific, physiological and acoustic instruments of every description.

Various types of medical atomisers and sprays manufactured by De Vilbiss Co., Ltd., were on exhibition on Stand 26.

Charles Hearson and Co., Ltd., showed, amongst other exhibits, apparatus for small laboratories suitable for medical men doing bacteriological and venereal work.

Baillière, Tindall and Cox displayed a selection of medical and surgical works including the English edition of Doyen's Surgical Therapeutics and Operative Technique.

The latest X ray apparatus both for radiography and therapeutics was to be found amongst the exhibits of X Rays, Ltd. Here we saw also a number of single flash bismuth meal radiograms by a London radiologist, printed on Wellington X ray paper. The clearness and brilliancy of these prints renders them particularly suitable for diagnostic purposes; and the Wellington X ray plate on account of its great speed is specially adapted for single flash radiography.

Jaeger underwear and outer wear was exhibited on Stand 51.

The Domen Belt Co. exhibited a variety of belts for pregnancy, umbilical hernia, floating kidney, and other purposes.

Stronglite arms made by Cory and Grundy proved very interesting and were demonstrated to great advantage by an armless man, who, we were informed, had only within the last day or two worn the arm.

The new Bard-Parker knife, a Record syringe for export with replaceable barrels, the obstetric helper, and Barton's sphygmomanometer were to be seen at the Surgical Manufacturing Co.'s stall. The same firm also showed their "Excel" portable operating table, which folds down into a small space and weighs about 27 pounds.

Various appliances for deformities of the feet were shown by the Scholl Manufacturing Company.

At the Gas Light and Coke Company's stall was demonstrated the new economy gas flue, which has the triple advantages of reducing building construction, improving ventilation, and removing unhygienic corners.

H. K. Lewis and Co. showed not only a number of recent standard works but also a special selection of medical stationery.

The Sanborn Company exhibited a number of pieces of apparatus, amongst which was Benedict's metabolism apparatus for determining basal metabolism.

The Oxford Medical Publications stall was crowded with their well-known publications in medical, surgical, and general science.

A number of electrical aids for the deaf of various pitches were exhibited by W. H. Pettifer, as well as trumpets, tubes, and sound collectors.

Leoline Edwards, of Twickenham, exhibited an electric lamp heater which could be used for various other purposes.

Stanley Phillips, booksellers, were selling a selection of the latest medical books for post-graduate students.

Some interesting examples of the Eastman Dupli-Tized X Ray Film were shown by Kodak, Ltd. Amongst these we noticed a negative showing visible gall-stones.

The products of Carl Zeiss, Jena, were demonstrated by J. W. Atha and Co., sole agents for the British Empire. Every form of optical instrument, from microscopes to glass artificial eyes, was on view here.

An excellent electrical steriliser provided with a safety fuse, known as the Wilmot-Castle, was shown by De Trey and Co., who also exhibited various dental apparatus.

The Aurorascope Co., Ltd., showed their pocket outfit, by means of which the ear, mouth, nose and throat can be examined without the use of a dark room.

The Sterling Corporation, Ltd., had on view portable high-frequency violet ray generators and other electrical specialties.

Non-inflammable celluloid known as pexuloid, suitable for orthopædic appliances, was exhibited by Beckett and Bird, Ltd., one of whose factories is at the Ministry of Pensions special hospital at Shepherd's Bush.

A. G. Sheldon and Co.'s exhibit consisted of sterilised surgical dressings, the supply of which at any hour of the night or day is this firm's specialty.

The Pringle and Kirk mechanical arm and safety leg, fitted with an automatic knee-lock, were exhibited by the "P. K. Arm, Ltd."

Arnold and Son's exhibit took the form of a complete operating theatre in which the Royal operating table was conspicuous.

OPENING OF THE SESSION AT THE MEDICAL SCHOOLS.

THE DRAMATIC SIDE OF SURGERY.

THE introductory address at the opening of the winter session of the Middlesex Hospital Medical School was delivered by Mr. **GORDON TAYLOR** at the Scala Theatre on Oct. 4th. He chose as his subject, "The Dramatic Side of Surgery." After referring to some of the spectacular episodes of civil surgical practice, Mr. Gordon Taylor went on to describe in detail the brilliant achievements of surgeons during the war. The aeroplane proved of great value as a means of rapid transit, and in this connexion Mr. Gordon Taylor said: "The French conceived the idea of having aerial ambulances in order to quickly convey the wounded—especially the gunshot wounds of abdomen and chest—from the 'aid-posts' just behind the firing line to hospitals well equipped for dealing with such cases. Nemirovsky and Tilmant organised an aeroplane which they named the 'aerochir,' on the analogy of the 'autochir,' to carry a pilot, a surgeon, and a radiographer who could act as a surgical assistant. This 'aerochir' carried X ray apparatus, steriliser, instruments, dressings, &c. By its means it was thought (1) that surgical aid could be brought to the patient quickly; (2) the surgeon could be brought to the patient, and not the patient to the surgeon, and the patient thereby saved a journey before receiving surgical aid; (3) it would not increase traffic on roads used for purely military purposes; (4) formations of aeroplanes could rapidly transfer surgeons from one part of the fighting line to another."

Similar methods were also in use, said the lecturer, in the British army. The surroundings in which surgical work was accomplished might lend the dramatic touch; thus, said Mr. Gordon Taylor: "It is difficult to imagine a more dramatic environment for surgery than the dug-out which Basil Hughes, of Bradford, built in a communication trench when he was a regimental medical officer; to this a wounded man could be brought in four or five minutes after being hit. Six abdominal cases associated with severe hæmorrhage were operated upon by Hughes here, and two recovered; these were men, who, in his opinion, would never have lived to see a casualty clearing station." Mr. Gordon Taylor recorded several instances of soldiers who received penetrating abdominal wounds on two occasions and recovered from each, and he also considered wounds involving two or more of the body cavities. With regard to abdominal wounds Mr. Gordon Taylor said: "The results of abdominal wounds operated upon by average surgeons in the war showed a recovery rate of about 50 per cent., if these cases were selected with some care; naturally the recovery rate was lower where the surgeon exercised less discretion in his choice of cases, or was willing to extend the benefits of surgery to patients however desperate their condition. Douglas Taylor and Geoffrey Marshall's 74 per cent. recovery rate in one series of 101 cases was the most striking ever obtained. The statistics of abdomino-thoracic wounds in the earlier years of the war were gloomy reading, but out of 207 cases of this type operated upon in the Fourth Army in 1918 which I collected and analysed, 66·6 per cent. got well." Blood transfusion was now becoming an everyday operation, and Mr. Gordon Taylor related cases that had occurred in his practice, in which transfusion had saved the patient's life, and also referred to the difficulty sometimes experienced in civil hospital practice in obtaining a suitable donor. Amongst other dramatic operations performed he mentioned the successful removal of a rifle bullet from the intrapericardial portion of the inferior vena cava by Pierre Duval, and the resection of large portions of the intestines in cases of abdominal wounds.

The Middlesex Hospital, said the lecturer, was intimately connected with the history of calculus surgery. In 1880 Sir Henry Morris was the first to perform nephrolithotomy, in 1891 Sir John Bland-Sutton carried out the second successful choledochotomy in this country, and in 1891 Sir Alfred Pearce Gould first removed a stone from the pancreas. The dramatic and spectacular operation of lithotomy was now replaced, wherever possible, by litholapaxy. In conclusion Mr. Gordon Taylor said: "Time fails me to speak of many other dramatic operations performed during the war, nor do I desire to harrow your feelings with Grand Guignol tales. I could speak of an air pilot with a severely damaged heart bringing his aeroplane safe to the ground, of soldiers walking back with protruding bowel to their own lines to recover with the aid of surgery, of occasional bayonet wounds involving even the bowel successfully treated, and we many of us have successfully extracted curious missiles from the wound of the injured soldier—pennies, francs, buttons, the finger of a comrade, and even fragments of the pages of the Continental *Daily Mail.*"

PROFESSIONAL TRAINING IN PHARMACY.

THE inaugural sessional address of the School of Pharmacy of the Pharmaceutical Society of Great Britain was delivered on Oct. 5th by Lieut.-Colonel Sir **DAVID PRAIN**, C.M.G., F.R.S., Director, Royal Botanic Gardens, Kew.

"On the occasion of the opening of a new session," said Sir David Prain, "one's thoughts naturally turn to the studies that lie before one. Between the preliminary assessment of knowledge gained at school and the qualifying examination on the completion of the professional studies three separate disciplines intervene as set out in the various suggested compulsory curricula: (1) A training in pure science; (2) a pupilage in pharmacy; and (3) a course of professional studies." Five years ago, the then president of the Pharmaceutical Society stated in an inaugural address that it had been the policy of the Society to reverse the order of the first two. Sir David Prain felt this to be an encouragement to himself, as during 16 years he had adopted a similar order in the training of student-gardeners. Proceeding to deal with professional training in general, he said that conflict between theory and practice was impossible. Even in cases where exponents of a craft seemed to accomplish their tasks without the conscious study of underlying principles, these principles still existed, and the most consummate master of practice could not fail to benefit by the study of principles.

In medicine practical pupilage was the method originally adopted. The necessity for a knowledge of underlying principles of chemistry, physics, and biology soon impressed itself upon the profession and a "course of professional studies" was instituted and expanded at the expense of pupilage until the latter disappeared. Medicine found that professional training gave better results than pupilage; but since such training did not afford the opportunity for education which pupilage gave, a preliminary training in pure science was prefixed to the professional studies when pupilage ceased. This policy interested the pharmacist because certain prominent men had advocated its adoption, in view of the fact that pupilage in pharmacy may ultimately disappear as it has done in medicine. While pupilage remained the present policy of the Society seemed preferable. When pharmacy had to devise a new policy she might study the example set by medicine with advantage.

Husbandry and pharmacy had their origin side by side. Husbandry aimed at the maintenance of health while the function of pharmacy was to relieve sickness. Neither of these crafts fulfilled its purpose completely, and medicine was invented as an art directed towards the prevention of disease and later to its cure. Finally medicine passed from the defensive to the offensive, and now attempts to abolish disease. The secondary object of medicine tions, this laxative must be in great favour at the present day, and it is of interest to notice the importance attached to the viscosity and specific gravity of the oil. The various makers of this preparation justly claim that their products are tasteless, but the objection of many patients is chiefly to the unpleasant oily sensation in the mouth caused by the pure oil and this physical characteristic is not likely to be overcome except by a judicious blending with other materials.

The results obtained in the many recent researches into vitamins are reflected in the exhibition by different firms of preparations which, it is claimed, contain the three essential food accessories.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Glasgow.

THE report of Dr. A. K. Chalmers for 1920 is full of interesting matter. The population of Glasgow is estimated at 1,115,230. The inhabited houses number 235,031. The unoccupied houses which in 1913 numbered 18,710 are now only 201, of which 120 are one-apartment and 72 two-apartment houses. The birth-rate has risen from 23·18 in 1919 to 29·26 in 1920. The death-rate in 1920 was 15·03; the infant mortality rate 106: the death-rate from phthisis 1·06; and from all forms of tuberculosis 1·46. A special feature of the report is the account by Dr. A. S. M. MacGregor of the small-pox outbreak which has been brought up to date, the outbreak having terminated in March, 1921. In all 578 cases were dealt with, of whom all, except three who died at home, were treated in hospital. Of the 578 cases, 429 had been vaccinated, 128 had not been vaccinated, and 21 were said to have been vaccinated but presented no evidence whatever of a scar and were classed as doubtful. The fatality rate per cent. among the "vaccinated" was 16·1, among the "unvaccinated" 36·7, and among the "doubtfuls" 42·9. Anti-vaccinators will no doubt comment on the facts that more vaccinated than unvaccinated were attacked and that the fatality rate was greater among the "said to have been vaccinated" than among the unvaccinated. Of the nine deaths among the "doubtfuls," or "said to have been vaccinated," one occurred at the age period 15–20, one at the age period 35–45, and the remaining seven at age periods over 45, so it may be said without fear of contradiction that the "doubtfuls" died at an age when the transient protection afforded by a vaccination so inefficient as to leave no scar must have long ago passed away. It is well recognised that the protection afforded by *infant vaccination is only temporary*, and its value in warding off both attack and death is well shown by the statistics for cases under 15 years of age. Thus 30 vaccinated children under 15 years of age were attacked and none of them died; while 112 unvaccinated children under 15 were attacked and 38 of them died. Since the Vaccination Act (Scotland), 1907, was passed the proportion of successfully vaccinated children has fallen from over 80 per cent. to about 50 per cent., and the percentage of conscientious objections has gradually risen to 27 per cent. At the beginning of 1920, Dr. MacGregor estimates, there were about 127,000 unvaccinated children under 15 in Glasgow. Dr. MacGregor further estimates that 449,000 persons are now adequately protected and that there is therefore plenty of material for a further severe outbreak among the remaining inadequately protected 60 per cent. of the population.

Dr. MacGregor considers it essential to have chicken-pox added to the list of notifiable diseases during a small-pox outbreak, such notification to be followed by verification of the diagnosis in certain cases. By this means 13 cases of small-pox notified as chicken-pox were discovered. Dr. MacGregor was much struck by the manner in which efforts to control the epidemic were defeated by the occurrence of "missed" cases, and gives ten examples of patients who moved about freely among the population and who were only diagnosed when they caused recognised cases among their immediate contacts. The percentage of vaccinated cases with a sparse eruption is given as 56·5 and of unvaccinated as 12·3. It would be interesting to hear what proportion of the missed cases were unvaccinated.

Dr. Chalmers draws attention to the utterly inadequate provision for surgical tuberculosis. As modern treatment gives such promising results, it is to be hoped that this omission on the part of Glasgow, may, before long, be made good.

The work of the venereal disease treatment centres continues to grow. The number of new cases who received indoor treatment was 826 and out-patient treatment 5739. The corresponding numbers in 1919 were 748 and 4976. The average attendances per new case was 13·8, compared with 9·5 in 1919. Dr. Chalmers says: "It is a common observation that comparatively few (patients) will attend clinics until they become non-infective, but cease whenever *pain or discomfort* is lessened." At the Broomielaw centre Dr. Chalmers estimates that roughly 61 per cent. of the patients are defaulters in this respect and the attendance at Broomielaw is declared to be as good as elsewhere. Nevertheless Dr. Chalmers does not think that the time is ripe for demanding legislative powers to compel patients to remain under treatment until medically discharged, as proposed by the Corporation of Liverpool. Dr. Chalmers refers to the disconcerting evidence supplied by the number of new cases.

No case of total blindness resulted from ophthalmia neonatorum during the year, although in ten children the sight of one eye was lost and in four impaired, as was also the sight of both eyes in two other children.

Northamptonshire.

The estimated population of the administrative county for 1920 was 215,968 for birth-rate and 215,777 for death-rate. The birth-rate was 22·74, as compared with 14·34 in 1918 and 14·52 in 1919. The death-rate was 11·09. The infant mortality rate was 59, the lowest ever recorded. In the urban districts of the county it was 63 and in the rural districts 56. The tuberculosis death-rate was 0·94. There was a marked increase in the tuberculosis death-rate in the county during the war years, but this has now disappeared.

Housing schemes have made considerable progress in spite of the "grossly high" rates prevailing in the building trade. Dr. C. E. Paget records with satisfaction that many of the districts have arranged for the regular veterinary inspection of dairy cattle. We note that very inadequate penalties have been inflicted for the watering of milk.

Dr. Olivier Muriset, the tuberculosis officer, reports that a new method of diagnosis by tuberculin is being tried at the dispensaries and also that an X-ray apparatus was purchased at the end of the year. *Twenty shelters are loaned out* by the county council. Much of the surgical tuberculosis work is done at the Northampton General Hospital. There is good coöperation between the tuberculosis officer, the district medical officers of health, and the school medical officers, and the medical practitioners use the dispensaries for consultant purposes.

Dr. Lila S. Greig submits a report on maternity and child welfare work. Collosol argentum is supplied to midwives deemed capable of using it. All the 27 notified cases of ophthalmia neonatorum made a good recovery. The number of still-births was only 1·5 per cent. of the live births in 1920 and 1·9 per cent. in 1919. Notification of artifical feeding is not yet properly observed by the midwives.

The percentage of infants breast-fed up to the end of the seventh month was 73·5 and has steadily increased from the year 1910, when the percentage was only 53·6. Dr. Greig attributes this satisfactory result in considerable measure to the distribution of free milk to nursing mothers. In order to diminish nothing has been done. There were in England on Jan. 1st, 1921, 94 county and borough asylums equipped and possessing a trained staff, and provided by the community for the express purpose of treating mental disease. Not one of these can receive a voluntary patient. If anyone feeling in danger of a breakdown applies for treatment, he can only be told to go away and get certified. Should he not be certifiable, he must keep away from the public mental hospital until he has got so bad that even a justice of the peace can see he is insane. Something is being done in this direction in the out-patient departments of one or two of the London hospitals and at Wakefield, and if the London County Council get the Maudsley Hospital into running order more might be done there, but these are mere drops in the ocean of what is required. The Commissioners in their report seem to confine themselves to things as they are. They would, we feel sure, disarm criticism and advance reforms by pointing out defects in the present system.

Training of Mental Nurses.—Inquiries into Alleged Abuse.

Nothing in the report is said of the training of the nurses or the labour it involves, nor is there any comment on the reduction of hours or the introduction and the working of the three-shift system in some asylums. The Board in this matter is in the position of trustee for the patients, and should express an opinion on agreements made between the asylums committee and the staff where they affect the welfare of the patient. They support and advise the nursing of male patients by female nurses in all suitable cases and when structural conditions permit of it.

An account of two inquiries into alleged abuses is given, the first into conditions at the Lancashire Asylum, Prestwich. The charges of ill-treatment and improper detention were made by a deputation headed by Mr. Ben Tillett, M.P. The charges were found to be without foundation. Only 11 patients made complaints which were not obviously due to their insanity, and even in these cases no substantial basis was found. The members of the deputation were invited to meet the Board and be present at the inquiry. Mr. Tillett pleaded urgent business elsewhere, and the others failed to turn up.

The second series of charges were made in "The Friend," and arose from statements made at a meeting of the Society of Friends by four conscientious objectors who served as attendants as alternative to war service. The Board admit that some of the charges were true, but point out that the complainants saw asylum life under abnormal conditions. Staffs were entirely inadequate and many members were totally unsuited for the work. Food was, of course, controlled. The Board deprecate any form of "correctional treatment" and urge its entire abolition.

The Effect of Economic Conditions on the Care of the Insane.

There is reason to fear that at the present time the insane are not as well looked after as they were before the war, but for this the Board cannot be held responsible. It is purely an economic question. The worker has asked for and obtained shorter hours and higher pay. The taxpayer grumbles, and the obvious ways of reducing expenses are smaller staffs and economies on food, and so the patients suffer. In referring to deficiency of diet it may be noted that the Board states: "Complaints of the quality, sameness, and cooking of the food and methods of serving it have been more frequent, and in some instances certainly justified. Whenever we have found this to be the case we have pressed for improvement; but it is a matter with regard to which we have found some of the visiting committees and their medical superintendents not as ready to adopt our suggestions as could be wished." The average weekly cost of maintenance for year ending March 31st, 1920, was in county asylums, £1 1s. 10¾*d.*; in borough, £1 3*s.* 9¾*d.*, excluding costs of repairs, additions, and alterations. This is an increase of 5*s.* 6¾*d.* in the previous year, and in six years of 100 per cent.

Prosecutions Undertaken by the Board.

Six prosecutions were undertaken by the Board. Five of these were against persons who had been employed in various asylums. In all cases convictions were obtained.

As is usual in law, offences against property were much more heavily punished than offences against the person. Two men were sentenced to six months' hard labour for stealing £8 8*s.* 6*d.* from an ex-Service patient. The magistrate characterised their conduct as outrageous. Four persons summoned for ill-treating patients got off with sentences of £3, £5 or six weeks, £5, and £5 or one month.

The statistics generally show a reversion to pre-war conditions. There is an increase in the number of certified cases, but this only occurs in county and borough asylums; in all others there is a decrease. The total number of deaths were 8504—3565 fewer than in 1919, and 11,011 fewer than in 1918. The average death-rate on daily average number of patients is 8·64 per cent. This is the lowest ever recorded; this, perhaps, is directly consequent upon the abnormally high death-rate in recent years.

Research Work.

Grants for research were made for the year ending March 31st, 1921, to the amount of £1700. This amount is divided among six workers in sums varying from £150 to £400 per annum. In a supplement to the report, a record is given of (*a*) Grant Aided Research Work. This contains an excellent account of an investigation in an outbreak of pellagra. (*b*) Scientific Research Work in Asylums in 1920. This includes an account of six investigations in various asylums. We know that this is not all the research work that has been done during 1920. Why, then, have these six only been selected? It is right that in all cases where a grant has been made an account should appear in the report, but it is disheartening to other workers that it should appear as if these accounts described all the scientific research at present proceeding. Much excellent and far-reaching work is being done elsewhere on such subjects as the endocrines, metabolism, and investigations in the ovaries and testes in dementia præcox.

The Report of the Board of Control may be had, price 1*s.* 6*d.*, from H.M. Stationery Office. Part II., which is not published for reasons of economy may be consulted at the Offices of the Board.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

Madras Medical College: Prize Distribution.

THE Hon. Dewan Bahadur P. Ramarayaningar, Minister in charge of the Medical Department, presided at the eighty-sixth annual prize distribution to the students of the Medical College, held on August 10th in the College Library Hall. Colonel F. F. Elwes, principal of the college, read the annual report for the year 1920–21, which was a record of good work. The total number of students was 579, against 523 the previous year, and he announced that to accommodate this number the college had strained its resources to the utmost. He added that further increase in the number of admissions was impossible, unless great extensions were made to the present buildings, or unless a new medical college was built. The present college was originally opened for the training of military (assistant) surgeons, but now accommodates not only them and university students, but also the lady apothecary, sanitary inspectors, and pharmacy classes. He pointed out that in a modern medical college there is no place for such addenda.

to that end he spared no labour or personal sacrifice. Though so much of his time and thought was given to laboratory work and technique, he was not one for whom these latter become per se the sole preoccupation. My recollection of him is of one for whom the interest of the laboratory was ancillary to and simply enhanced his interest in practical medicine. He was a man of high ideals, and to know him well was to realise the more his integrity of purpose, and his generous nature and the essential kindness of his heart.

To his widow, a medical woman who has worked closely with him and has published jointly with him articles in our columns, we extend our sympathy in her great loss.

WILLIAM DOMETT STONE, M.D. ST. AND., F.R.C.S. ENG.

Dr. W. D. Stone, whose death in London on Oct. 1st we recorded briefly last week, was at one time an acknowledged authority on questions of public health, and he did much to educate public opinion in matters of hygiene and sanitation. Born in 1840, he received his medical education at Middlesex Hospital Medical School and qualified M.R.C.S. Eng. and L.S.A. in 1861, becoming M.D. of St. Andrews University in the following year. In 1865 he took the F.R.C.S. Eng. His early medical appointments included those of resident medical superintendent at the Munster House Asylum, Fulham, and of *surgeon-superintendent for the* Government Emigration Service. He also held the appointments of hon. physician to the Westminster General Dispensary, the Western General Dispensary, and the Finsbury Dispensary; and of surgeon to the St. Marylebone Dispensary. A great traveller, he visited many different parts of the world, and for his services in instituting an inquiry into the hygienic condition of the Mercantile Marine of Great Britain, Sweden, Russia, the United States of America, and other countries, the Council of the College of Physicians of Sweden conferred upon him, in 1872, its Honorary Membership. When, in 1865, THE LANCET appointed a commission to inquire into the state of workhouse hospitals he championed the cause of reform in the *Times* and did good work in bringing about an amelioration of the undesirable conditions which existed at that time in poor-law institutions. He pointed out that the education and general status of the masters was often inadequate to their position, and he urged that an alteration of the standard of requirements for the posts of master and matron should be the first step in the reform of poor-law infirmaries. Dr. Stone edited with ability for many years the Half-Yearly Abstract of the Medical Sciences, and was the author of an "Epitome of Therapeutics." Of late years, owing to failing health, he has lived in retirement, although always retaining a keen interest in current events.

ROBERT HALE TROTTER, M.D. VICT., M.B., CH.B. LEEDS, M.R.C.S. ENG., L.R.C.P. LOND.

Dr. Trotter, a well-known practitioner in Holmfirth, Huddersfield, died on Sept. 10th, aged only 48. The second son of the late Dr. Charles John Trotter, he came of a family which has been closely associated since the beginning of the last century with the life of Holmfirth, where he lived. *He* was educated at Huddersfield College and the University of Leeds, winning the gold medal of his year. He graduated M.B., Ch.B. with honours in 1895, and in the same year became M.R.C.S. Eng., L.R.C.P. Lond. He took the degree of M.D. in the Victoria University in 1901. Identifying himself with many of the public institutions of the neighbourhood of Holmfirth, Dr. Trotter took a special interest in the Holme Valley Memorial Hospital, which owed its inception mainly to his personal efforts. His first appointment was that of house surgeon to the General Infirmary, Leeds, and from 1896 to 1911 he was medical officer of health for Holmfirth, Honley, and Holme combined districts. Later, while in charge of the medical ward at Royds Hall, he was appointed *temporary Major* in the R.A.M.C. He contributed to our columns in 1918 a paper on the Treatment of Neurasthenic and Hysterical Cases in General Military Hospitals and another entitled "Observations upon Condition known as D.A.H."

At a memorial service held at the Parish Church Dr. H. W. Williams paid tribute to the abilities of Dr. Trotter, and Lieut.-Colonel W. L. W. Marshall writes that on the staff at the Huddersfield War Hospital Dr. Trotter proved "a most efficient officer, a loyal comrade, a true friend, and an able physician beloved by the sick and wounded under his care."

DEATH OF DR. FREDERICK WILLIAM HENRY PENFOLD.—Dr. F. W. H. Penfold, who died at his residence at Rainham, Kent, on Sept. 30th, in his 62nd year, received his medical education at Guy's Hospital, qualifying M.R.C.S. Eng. in 1884 and L.R.C.P. Edin. in 1891. He was district medical officer to the Milton Union and hon. physician for in-patients at St. Bartholomew's Hospital, Chatham.

THE LATE DR. GEORGE ROLPH RAINE.—Dr. G. R. Raine, who died at his residence in Victoria-road, Darlington, on Oct. 3rd, was the eldest son of the late Dr. G. W Raine, of Billericay, Essex, and received his medical education at Guy's Hospital, qualifying M.R.C.S. Eng. in 1866. He held appointments at Guy's Hospital and at the Staffordshire General Infirmary, graduating M.B. Lond. in 1867, becoming L.S.A. in 1868 and M.D. Lond. in 1879. At the time of his death Dr. Raine was hon. physician to the Darlington Hospital.

THE LATE DR. JOHN WILLIAMS JONES.—The death of Dr. J. W. Jones, of Whalley Range, Manchester, who recently retired from practice owing to ill-health, is reported from Prestatyn. Educated at Glasgow University, Dr. Jones qualified L.R.C.P., L.M., and L.R.C.S. Edin. in 1884. He took up practice at Middleton, and married a sister of the late Alderman J. W. Lees. Dr. Jones was medical officer and public vaccinator to the Second District of the Manchester Union, and a member of the Manchester Pathological Society.

THE LATE DR. HERBERT BURLAND.—Dr. Herbert Burland, who died recently at his residence in Wellingborough-road, Finedon, in his 58th year, studied medicine at the Victoria University and at the Royal Infirmary, Manchester. He qualified M.R.C.S. Eng., L.R.C.P. Lond. in 1888, and practised at Finedon for 33 years. He held several local appointments, being medical officer to the Cottage Homes, Burton Latimer, to the post office, and to the Finedon District of the Wellingborough Union, and also a certifying factory surgeon and referee to several assurance companies.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cdr. P. B. Wallis withdraws with gratuity.

The following appointments have been notified:—Surg. Comdrs. J. L. Barford to *Pembroke*, addl. (temp.); S. Roach to *Orion*; and R. W. Stanistreet to H.M. Dockyard, Chatham.

ROYAL ARMY MEDICAL CORPS.

Capt. E. F. W. Mackenzie to be temp. Maj. whilst specially empld. as D.A.D. of P.

The undermentioned Capts. are secd.:—D. W. Pailthorpe for service with the *Egyptian Army*. H. G. Monteith for service under the Colonial Office.

The undermentioned Capts. retire receiving a gratuity: W. W. MacNaught (granted the rank of Maj.) and Kenneth A. Maclean.

Temp. Capt. F. K. Kerr relinquishes the *actg. rank* of Lt.-Col.

Officers relinquishing their commns:—Temp. Majs. A. T. Todd and S. G. Bell (retain the rank of Maj.). Temp. Capts. J. B. T. Keswick and F. J. Waldmeier (retain the rank of Capt.).

ARMY DENTAL CORPS.

To be Lts., with the temp. rank of Capt. (but without the pay or allces. of that rank): Temp. Capt. T. Edwards, Dental Surg., from Spec. List; Temp. Capt. S. H. Woods, Dental Surg., from Gen. List.

More medical books, including a number of new works on surgery, pathology, and venereal diseases, were exhibited by Wm. Heinemann, Ltd.

John Bell and Croyden, Ltd., displayed their sterilised dressings in hermetically sealed patent drums, ready for immediate use for accouchements and surgical operations, and various ligature and suture materials.

A comprehensive selection of the latest designs in electro-medical apparatus, including the "Pleurostat" universal apparatus providing currents for galvanism, ionic medication, electrolysis, cautery, lights, sinusoidal current, and faradisation, were on view at the stall of the Cox-Cavendish Electrical Company, Ltd. The same firm make a special X ray plate, the "Impex," by means of which instantaneous radiography may be undertaken with a gas-filled tube.

The Engineering and Survey Company exhibited X ray apparatus and special furnaces for the dental profession.

Epidiascopes, microscopes, and photo-micrographic apparatus were shown by Ogilvie and Co.

D. J. Taunton, Ltd., had no less than five stands filled with hospital furniture.

Radiant heat appliances for the treatment of rheumatism and allied disorders, as well as fractures and skin affections, were explained to those interested at the stand of the Dowsing Radiant Heat Co., Ltd.

The British Thomson-Houston Company's stand was devoted chiefly to the Coolidge portable X ray outfit and tubes.

The commendable work of the Food Education Society became evident from a study of their publications on dietetics at Stand 147.

Hoskins's hospital beds and equipment were exhibited by Hoskins and Sewell, Ltd.

Scientific Supplies, Ltd., showed a selection of glass-ware for medical and scientific purposes.

FOOD AND DRUG SECTIONS.

Foods.

At the exhibit of "Glaxo," Osnaburgh-street, London, N.W.1, useful information is provided regarding this dried milk, which can be obtained with full, three-quarter, or half normal cream content and is prepared in such a manner that the original vitamins present are not destroyed. Messrs. Horlick, Slough, Bucks, display their Malted Milk as a powder and in the more convenient form of tablets, whilst a somewhat similar product is exhibited by Messrs. Thew, Hooker, and Gilbey under the name of Hooker's Malted Milk. Genatosan, Ltd., of Derby-road, Loughborough, exhibit a readily assimilable tonic food "Sanatogen," prepared by a combination of casein and organically combined phosphorus, and the Sanagen Co., 8, Kennington Park-road, provide a closely related preparation known as "San-a-gen," containing the vitamins of the milk from which it is prepared. Other specialties of this firm include "Sanagen" Dietetic Biscuits and "Sanagen" Notan Tea Tablets.

Of the preparations exhibited containing the three vitamins A, B, and C, "Roboleine," supplied from the factory of Oppenheimer, Son and Co., Queen Victoria-street, E.C., and "Vitmar" manufactured by Callard and Co., 74, Regent-street, W.1, may be referred to. "Maltine," a product derived from malted wheat, barley and oats, and possessing a high diastatic power, together with its various combinations with tonic, laxative, and other drugs, is shown by the Maltine Manufacturing Company, of 9, Holborn Viaduct. The use of liquid paraffin in combination with other substances for the purpose of rendering the oil palatable is exemplified in the preparation known as "Virolax," supplied by Virol, Limited, Old-street, London. This combined food and drug contains 40 per cent. of virol with which is emulsified 60 per cent. of paraffin, and is agreeable to most patients. Messrs. J. and J. Colman, Ltd., 108, Cannon-street, show cereal preparations for the feeding of infants and invalids, and their exhibit includes Colman's mustard, employed as a counter-irritant in addition to its dietetic uses, and Robinson's "Patent" Barley, Groats, and Waverley Oats. The Apollinaris Co., Ltd., Stratford-place, London, W.1, show their two well-known mineral waters, "Apollinaris," a naturally carbonated table water, and "Apenta," a saline beverage used in the treatment of liver and bowel disorders. A large number of natural mineral waters are on view at the stand of Ingram and Royle, Ltd., Belvedere-road, S.E. 1, including Vichy-Celestins, Contrexeville, Carlsbad, Hunyadi-Janos, &c., and salts derived from some of these waters in the solid form for convenience in use.

Drugs.

A new anæsthetic exhibited by Savory and Moore, Ltd., under the name of "Ethanesal" (see THE LANCET, June 4th, p. 1173) prepared from highly purified ether is claimed to be superior to the usual anæsthetic ether or chloroform, being less toxic and irritating and causing less vomiting and other unpleasant after-effects. At the attractive stand of Allen and Hanburys, Ltd., attention was directed to their numerous organo-therapeutic products, the results of research work conducted by the firm. Of these products "Polyglandin," a compound granular preparation, has been found of service in nervous disorders such as arise at the menopause. The British Organotherapy Company, 22, Golden-square, W.1, also exhibit a wide range of similar products practically embracing the whole of such substances used in modern medical treatment. Notable among the many products supplied by Howards and Sons, Ilford, London, are "Agotan" (phenyl cinchoninic acid) the internal administration of which leads to an increased elimination of uric acid, cincaine (isopropylhydrocupreine) a local anæsthetic of low toxicity, and "Optochin" (thylhydrocupreine) a specific for several bacterial infections of the eye. Fine chemicals, principally derivatives of salicylic and benzoic acids, are displayed by Menley and James, Ltd., 64, Hatton-garden, E.C., and their specialty "Iodex," a preparation containing free iodine together with various medicaments derived from it, is given a prominent place.

An interesting exhibit is that arranged by British Colloids, Ltd., 22, Chenies-street, W.C. 1, where, by means of an ultramicroscope, the Brownian activity of their various colloidal products might be observed. The "Collosols" contain various metals, sulphur, and iodine, and possess the advantages over the same substances in the usual form, of higher therapeutic activity, and uniformity of action. The pharmaceutical products, vaccines, test cases, and other medical necessities furnished by W. Martindale, 10, New Cavendish-street, W.1, are in too great variety to be individually mentioned, although reference should be made to the salts of the chaulmoogric acids. Attention may also be drawn to the Extra Pharmacopœia of Martindale and Westcott now in the seventeenth edition, a mine of information in matters connected with the pharmaceutical and medical professions. Similar variety is shown in the many fine chemicals and other preparations exhibited by Burroughs, Wellcome and Co. in the form of "tabloids," "soloids," and other products. "Moogral" consists of a mixture of esters derived from acids of the chaulmoogric acid series and is the result of researches prosecuted by the company since 1904. Good results in the treatment of leprosy have been attained by the use of this preparation. Hedley and Co., Harrow-road, E. 11, show their chief product, ethyl chloride, and apparatus for producing general and local anæsthesia by its means. This substance is also used in their "Dridustol" spraying compositions, which are prepared by dissolving various drugs in this solvent. The solution when sprayed upon the skin rapidly evaporates, leaving a fine even deposit of the drug upon the surface.

Several vendors of liquid paraffin and its preparations are to be found amongst the exhibitors, but the firms principally restricting their exhibits to this medicament are the Anglo-American Oil Company, Bevis Marks, E.C. 3, who furnish a colourless and tasteless standardised product known as "Nujol"; the Angier Chemical Co., Ltd., 86, Clerkenwell-road, E.C. 1, proprietors of Angier's Emulsion containing 33 per cent. of paraffin emulsified with glycerine and hypophosphites of calcium and soda; and The W. Browning Co., Ltd., Albert-street, N.W. 1, whose "Semprolin" is obtainable as the refined oil or in the form of emulsions in combination with various drugs. The emulsions generally have an advantage over the plain oil in that they are miscible with aqueous liquids without separation.

The preparations exhibited by The Hoffmann-La Roche Chemical Works, Idol-lane, E.C. 3, include "Omnopon" a water-soluble powder containing the total opium alkaloids either alone or in combination with scopolamine for use in obstetric work, and "Sedobrol," which when dissolved in hot water forms a palatable broth, the seasoning being effected by sodium bromide (the active constituent) in place of common salt. This method of administration may be employed in all cases in which bromides are indicated. To the student of physiology or bio-chemistry the exhibit on this stand of various proteins, such as casein, hæmoglobin, &c., together with specimens of the compounds produced by their hydrolysis, will prove of interest. "Perkenol," shown by C. Zimmerman and Co., St. Mary-at-Hill, E.C. 3, is a convenient and useful product, which when dissolved in water yields a neutral solution of hydrogen peroxide of definite strength. Parke, Davis and Co., Beak-street, W. 1, Oppenheimer, Son and Co., and The Anglo-French Drug Co., Gray's Inn-road, exhibit a miscellaneous and interesting collection of general medicaments, colloidal preparations, disinfectants, organic therapy products, and vaccines which it is unnecessary to particularise.

A survey of the drug and food sections failed to show any new features of outstanding interest, but in spite of the present unrest and depression in various industries the production of numerous remedial and nutrient preparations appears to be in a thriving condition. Judging from the number of exhibitors displaying liquid paraffin B.P. and its many combina-

SULFARSENOL IN THE TREATMENT OF CONGENITAL SYPHILIS.

To the Editor of The Lancet.

Sir,—The article by Dr. E. Crawford and Dr. G. B. Fleming in The Lancet of Oct. 1st ends with the following statement, which appears to convey an erroneous impression :—

> "On the other hand, the work of Harrison, White, and Mills seems to show that intramuscular injection of neosalvarsan or its substitutes is more efficacious in producing a negative W.R. than intravenous injection of these drugs. In these cases, however, a very much larger dose was given intramuscularly than intravenously, and they did not attempt to determine the relative efficacy of the various arsenical preparations they used."

Reference to the paper by White, Mills, and myself will show that it is incorrect to say that a very much larger dose was given intramuscularly than intravenously. The drug given intravenously was "606" and the average amount was 2·8 g. That given intramuscularly or deep subcutaneously was "914" and the average amount was 3·97 g., which is equivalent to 2·64 g. "606." This investigation was based on the assumption, generally acknowledged now to be true, that, in equivalent doses, intravenous injections of "606" give better therapeutic results than injections of "914" by the same route. The results showed that the subcutaneous method gave 12 per cent. more negative reactions in primary and secondary cases respectively and led me to believe that the subcutaneous method gives better therapeutic results than the intravenous.

I find some difficulty in accepting Drs. Crawford and Fleming's conclusions as to the comparative value of sulfarsenol subcutaneously and "kharsivan" intravenously, as the number of their cases (23 under one year and 12 over) is too small to justify any serological comparison, particularly in groups of cases the members of which vary so much as do infants ranging in age from a day to twelve months. Another variant is in respect of the amount of treatment administered. I am the less inclined to accept the authors' conclusions, as my own experience of sulfarsenol in adults so far leads me to believe that, given *subcutaneously* it affords better therapeutic results than "914" given *intravenously*. But I have not yet sufficient figures to prove this point conclusively and prefer to suspend final judgment until figures are published which are free from objection. Meantime it may be justifiable to say that I have so far been very pleased with my results, both clinical and serological, which appear to bear out the good opinion formed of sulfarsenol by such French authorities as Emery and Lévy-Bing.

I am, Sir, yours faithfully,
L. W. Harrison.
Eccleston-square, S.W., Oct. 9th, 1921.

THE DANGERS OF THE PUBLIC SWIMMING BATH.

To the Editor of The Lancet.

Sir,—Aural surgeons for a long time have recognised the "bathing ear," and that the infection passes up the Eustachian tube to the middle ear from the nasopharynx in the great majority of cases. The septic water gets into the nose and nasopharynx owing to mismanagement of the breathing, or to stress caused by remaining under water for too long a period, especially at a depth. It may also enter the nasal accessory sinuses. I was once bathing with a friend at Madeira when he remained under water for a long time and at a good depth in order to pick up a pebble from the bottom. When he reached the surface he was rather exhausted, and complained of great heaviness of his face and head: on putting the head down water poured from both sides of his nose, obviously from the antra, with immediate relief and fortunately without septic infection. Middle-ear infection occasionally follows rupture of the membrane, if the ear "lands" flat on the water when entering from a height; only a few weeks ago a young man ruptured his left membrane, in the inferior segment, in this way when using the water chute in one of the best and most exclusive swimming baths; the middle ear became septic, and he died of meningitis. I may mention that he himself had a soft sore on his penis at the time!—I am, Sir, yours faithfully,

Savile-row, W., Oct. 7th, 1921. Arthur H. Cheatle.

POST-WAR PROBLEMS.

To the Editor of The Lancet.

Sir,—Two questions: first, are participators in "inter-allied" medical congresses going to boycott also German methods of treatment—e.g., the Erlangen X ray treatment of cancer now introduced at the West London Hospital? Secondly, when will British medical men treat the responsibility for the late war as a subject worth serious study, instead of taking their opinions thereon from interested politicians, and half-educated but wholly unscrupulous newspaper proprietors? I am, Sir, yours faithfully,

Barnsley, Oct. 7th, 1921. W. C. Rivers.

PATHOLOGY OF INSANITY.

To the Editor of The Lancet.

Sir,—A few days ago the Bishop of Kensington presided at a conference of a Spiritual Healing Fellowship at Church House, Westminster. For an account of the proceedings I am indebted to the London daily papers. I quote from one of them :—

> "Dr. Montagu Lomax, whose book describing his experiences as physician in a lunatic asylum has recently created so much stir, spoke about the wide scope available for spiritual healing. Psycho-analysis he sweeps aside. Of merely material medical treatments he knows the futility. In spiritual forces against mental weakness he has profound belief. And then Dr. Lomax expressed a rather startling belief in demoniacal possession and reincarnation. 'While I believe that the ills men suffer are the consequences of their own misdeeds,' he said, 'I do not necessarily mean in their present existing life, but in a previous incarnation.' The Bishop's fine head became a little more covered by his hand, and his manner a little anxious at this pronouncement by Dr. Lomax!"

A quotation from a second London daily paper is as follows :—

> "A paper on Spiritual Healing in Relation to Mental Disease was read by Dr. Montagu Lomax, who said he believed that insanity was sometimes much more than uncontrolled riot of the subconscious mind. He believed that in many cases, especially those of epilepsy, acute mania and melancholia, the subconscious mind of the moment was not uncontrolled, but that it was controlled by an evil and obsessing discarnate entity."

Has Dr. Lomax been correctly reported?

I am, Sir, yours faithfully,
Oct. 5th, 1921. M. H.

THE DISAPPEARANCE OF OSCAR GRAY.

To the Editor of The Lancet.

Sir,—At the time of writing nothing has been heard as to the fate of Oscar Gray, a Rugby boy, 17 years of age, who was last seen by anyone who knew him at Liverpool-street Station a few days before he was due to return to school. As it may not unreasonably be suggested in such a case that a schoolboy may leave his home prompted by a love of adventure or through some other motive, and as Gray's parents are suffering acute distress and anxiety, the following facts may be stated pointing to loss of memory or mental derangement brought on by the concussion of a fall as being the responsible cause of his absence. In view of these the case may usefully attract the attention of medical men attached to Poor-law institutions and police surgeons.

On the morning of the boy's disappearance he was to travel up to London from his home in Essex with a friend of his parents, who had been on a visit to the family. From Liverpool-street Station he was to go to Victoria, leave his luggage in the cloak-room overlapping the experiment is to be tried for two years of allowing the Northamptonshire District Nursing Association to carry out the health visiting in one of the districts, under the direction of the county medical officer of health and the lady medical officer. The V.D. clinic at the Northampton General Hospital has been now equipped for bacteriological and pathological work by a generous benefactor and the Buckinghamshire County Council have joined in the scheme.

Tunbridge Wells.

The estimated population for 1920 was 35,795, the birth-rate 18·3, the death-rate 12·5, the infant mortality rate 62·5, and the tuberculosis death-rate 0·97. 14·5 per cent. of the deaths were due to cancer. One does not expect to find the best mortality statistics in Tunbridge Wells, as its reputation as a health resort doubtless induces many invalids to take up their residence there.

Dr. F. C. Linton mentions that the maternity and child welfare work needs both proper premises and an increased staff, and draws attention to the fact that 21 of the 41 infant deaths occurred in the first week of life. Nine fresh cases of malaria were notified during the year; Dr. Linton repeats his warning of last year that *Anopheles maculipennis* is to be found in Tunbridge Wells, and asks that insects killed on suspicion of being anophelines be brought to the health office for identification, in order that the distribution of this insect in the borough may be ascertained.

Obituary.

SIR WILLIAM ROE HOOPER, K.C.S.I., F.R.C.S.ENG.,

COLONEL, I.M.S.; HONORARY SURGEON TO THE KING.

AN announcement was made in THE LANCET last week of the death at Aldeburgh, Suffolk, of Sir William Roe Hooper, a distinguished member of the Indian Medical Service. He was an officer who left his mark in India, where he spent the greater part of his professional life, before recall home to take up the important position of President of the Medical Board of the India Office.

Sir William Hooper had reached the ripe age of 84, for he was born in the year of Queen Victoria's accession to the throne. He received his medical education at St. Bartholomew's Hospital, qualifying as a Member of the Royal College of Surgeons of England in 1858. He entered the Indian Medical Service and for more than 30 years discharged important duties in the North-West Provinces. After 11 years' service in the Gaol Department, as Superintendent of the Central Prisons of Allahabad and Benares, he was in 1874 placed in medical charge of the latter important station and district. In August, 1891, as a reward for long and approved service, he was transferred to the civil surgeoncy of Lucknow, where he not only earned the approval of the Government but gained the confidence and affection of all classes of the European and native communities. In 1881 he received the special thanks of the Viceroy for the work which he had discharged, and between 1878 and 1893 on eight separate occasions he was thanked by the Government of the North-West Provinces of Bengal for his work at the hospitals and institutions under his charge. In a service which contains a long list of men who have given protracted years of incessant toil to the improvement of social hygiene and sanitary conditions in the Indian Empire, few names better deserve prominent recognition by his countrymen at home and in India than that of Hooper.

For a period of about 18 months during 1887–88, while on furlough, he had served as a member of the Medical Board at the India Office, and his appointment to the presidency of the Board in succession to Sir Joseph Fayrer was not unexpected. He retired in 1904 after an extension of his services for two years.

Among other offices which he held, all in direct connexion with his official work at the Board, he was an ex-officio member of the Senate of the Army Medical School, Netley, a representative of the India Office on the Committee to inquire into the organisation of the Army Medical Service appointed in 1901, a member of the Advisory Board for Army Medical Services, and of the Army Sanitary Committee. He also sat on the committee which prepared the new edition of the Nomenclature of Diseases, published under the ægis of the Royal College of Physicians of London. In 1897, while he was a member of the Council of the Lister Institute of Preventive Medicine, he received the C.S.I., and in 1903 was promoted to a Knight Commandership of this Order. In the following year he was gazetted honorary surgeon to the King.

Sir William Hooper married in 1859 Lucy, daughter of the late Mr. Henry Benson Cox, whom he survived. A son, Dr. John William Dunbar Hooper, is a gynæcologist practising in Melbourne.

ALBERT SIDNEY FRANKAU LEYTON, M.D., SC.D. CAMB., F.R.C.P. LOND., D.P.H.VICT.,

DIRECTOR OF THE CLINICAL LABORATORY, ADDENBROOKE'S HOSPITAL; LATE PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LEEDS.

Albert Sidney Frankau Leyton, who died at his residence, Great Shelford, Cambridge, on Sept. 21st, at the age of 52, was born in London, the son of Joseph Grünbaum. He was educated at the City of London School, at St. Thomas's Hospital, and at Gonville and Caius College, Cambridge, where he graduated M.A. in 1895, proceeding to the M.D. degree two years later, and to the Sc.D. in 1913. He completed an arduous and successful course of study by work on the Continent, notably in Vienna. A year after graduating at Cambridge he became a Member of the Royal College of Physicians of London, and later obtained the Diploma in Public Health at the Victoria University of Manchester. For a time he was assistant physician to the Liverpool Hospital for Consumption, and subsequently became lecturer on experimental medicine at the University of Liverpool. In 1903, having in the meantime been elected F.R.C.P., he was appointed director of the cancer research undertaken in that city. He delivered the Goulstonian lectures of the Royal College of Physicians of London in 1903, taking for his subject the Theories of Immunity and their Clinical Application. The lectures were published in THE LANCET at the time of their delivery, and were recognised as a clear and useful guide to a whole section of pathology that was quite new to many clinical workers. For a time he was professor of pathology in the University of Leeds.

Dr. Leyton was a man of versatile capacity and wide interest in research, and in Vienna in 1896 he did a remarkable piece of work, for he clearly forestalled Widal in devising the agglutination test in typhoid fever. Leyton, however, delayed publication until he had had an opportunity of confirming his results, and meanwhile Widal published an account of the test from independent investigations.

Prof. C. S. Sherrington, with whom Leyton had worked at St. Thomas's Hospital on cerebral physiology, writes as follows:—

> As one who knew Prof. Leyton well and was intimately associated with him in some of the work which he did, may I add a word of tribute to his memory? None who had close contact with him could fail to be impressed by features of his thought and character which make his relatively early death an untimely loss to scientific medicine. He combined in rare measure enthusiasm for research with a critical, and indeed, highly self-critical, attitude of mind. An earnest of his power of achievement was seen in his discovery of the agglutination reaction as a help to typhoid diagnosis, a discovery fraught with such high and still unexhausted consequences. Widely read and proficient, he was ever on the alert to take avail of means from the progress of collateral science for the immediate profit of medicine itself. He had imagination and at the same time no man endeavoured more sincerely than he to control theoretical suppositions by observational data. The advance of practical medicine was with him a passion; in his devotion

University of Sheffield Post-graduate Course.—A post-graduate course of lectures and demonstrations will be held in the Sheffield hospitals during the ensuing three months. Details will be found in our Medical Diary.

Royal Society of Tropical Medicine and Hygiene.—The opening meeting of the session will be held at 11, *Chandos-street, Cavendish-square, London, W.*, on Thursday, Oct. 20th, at 8.45 P.M. (demonstrations at 7.45 P.M.). The presidential address entitled "Life Insurance in the Tropics" will be delivered by Sir James Cantlie.

University of Manchester.—The congested conditions of laboratories and class-rooms seem likely to be maintained during the present term. Last year the total number of students was 3100, of whom 754 were in the Faculty of Medicine. In 1914 there were about 300 medical students, and in all probability this Faculty will have to supply teaching to about 700 students—men and women. A considerable number of ex-Service men are taking courses in pharmacy to fit themselves as dispensers. Mr. Arthur Burgess has succeeded Sir William Thorburn in the Chair of Clinical Surgery, and the Chair of Clinical Medicine, formerly held by Prof. Reynolds, is now held by Dr. Albert Ramsbottom. Prof. Donald has resigned the Chair of Obstetrics and Gynæcology, and is succeeded by Dr. W. E. Fothergill. The Council has created a new Chair of Clinical Obstetrics and Gynæcology, to which Prof. Donald has been appointed.—Entrance scholarships in Medicine have been awarded to Mr. William Brockbank, B.A., and Mr. C. N. H. Long, B.Sc. The Sir Clement Royds Memorial Scholarship in Chemistry has been awarded to J. F. Wilkinson, B.Sc., who will undertake research work in organic chemistry.

University of Oxford.—Mr. Edward George Tandy Liddell, M.A., B.M., of Trinity College, Oxford, has been elected to a non-official Fellowship for Research in Physiology. Mr. Liddell took a first class in physiology in 1918, and completed his medical course at St. Thomas's Hospital. Mr. Cyril Norman Hinshelwood, B.A., War Memorial Research Fellow (formerly scholar), of Balliol College, has been elected to an official Fellowship as Lecturer in Chemistry.

University of London.—A course of eight public lectures on Psychology and Psychotherapy will be delivered at King's College, Strand, on Tuesdays at 5.30 P.M., beginning Oct. 18th, by Dr. William Brown. Admission free, without ticket. The list of lectures appears in our advertisement columns.—Two courses of advanced Lectures in Physiology will be delivered during the first term of this session. Dr. C. Da Fano will give eight lectures on Histology of the Nervous System at King's College, Strand, London, W.C., at 4.30 P.M., on Wednesdays. The first lecture was delivered on Oct. 12th, and the next will be given on Oct. 19th. Dr. J. C. Drummond, D.Sc., will deliver eight lectures on Nutrition at University College, Gower-street, London, W.C., at 4.30 P.M., on Fridays, beginning to-day, Oct. 14th. Attendance at these courses is recognised in connexion with the B.Sc. (Honours) Degree in Physiology. The lectures are addressed to advanced students of the University and others interested in the subject. Admission free, without ticket.

Medico-Legal Society.—A meeting of this Society will be held at 11, Chandos-street, London, W., on Tuesday, Oct. 18th, at 8.30 P.M., when a paper will be read by Mr. W. Valentine Ball, barrister-at-law, on Incapacity for Work within the Meaning of the National Insurance Act, 1911.

Chadwick Public Lectures.—A lecture on "Plant Diseases and their Relation to Diseases in Man," will be delivered by Prof. V. H. Blackman, F.R.S., in the lecture room, Chelsea Physic Garden, Swan Walk, Royal Hospital-road, London, S.W., on Thursday, Oct. 20th, at 5.15 P.M., Sir William J. Collins presiding. The gardens will be on view before the lecture.

London Hospital Medical Society.—The programme for the ensuing session has now been issued. On Oct. 27th a Psycho-neurological evening will be held. On Nov. 10th Mr. T. P. Dunhill will read a paper, and on Nov. 24th Dr. J. H. Sequeira will speak. On Dec. 8th Dr. W. E. Dixon will read a paper on Physical Action of Drugs. In the second half of the session the meetings on Jan. 19th and March 2nd will be devoted to clinical subjects, and that on Feb. 16th to Gynæcology. On Feb. 2nd Dr. Henry Head will address the Society. The meetings are held on Wednesdays, and all old London Hospital students and their friends are invited to attend.

Medical Golfing Society.—A handicap singles competition on the knock-out system is shortly to be held. The entries close on Monday, Oct. 17th. Further particulars can be obtained from the Hon. Secretary, 36, Weymouth-street, London, W. (Telephone: Paddington 904.)

University of Aberdeen.—At a university court held on Sept. 27th it was announced that Miss Catherine Fyfe Grant, of Edinburgh, had bequeathed about £2250 to found a bursary in the Medical Faculty, to be known as the Grant Medical Bursary.

Old Students' Dinners.—*St. Bartholomew's Hospital.*—Old students met again for dinner in the Great Hall on Oct. 3rd after an interval of nine years. Mr. W. S. A. Griffith occupied the chair and took the opportunity to give a long overdue eulogy of Matthews Duncan and his work in raising obstetrics to its proper place in London. He proposed separately for the first time the toasts of "The Hospital" and "The Medical College" in view of the receipt of a Royal Charter by the latter. Sir William Lawrence, replying for the hospital, expressed his continued belief in the ability of spontaneous generosity to finance a great hospital. Mr. H. J. Waring, replying for the College, set out the constitution of the new Medical Council and its intentions in regard to further development of teaching units. Among many guests of distinction were the presidents of the Royal Colleges, both old Bartholomew's men, the vice-chancellors of Cambridge and London Universities, the secretary of the Medical Research Council, and the dean of Columbia University, New York. During the dinner it was announced that Lord Stanmore was succeeding Lord Sandhurst as treasurer of the hospital.

Charing Cross Hospital.—The annual dinner of the past and present students was held at Gatti's Restaurant on Oct. 5th. Sir James Galloway presided over a large gathering. After the loyal toasts had been duly honoured, "The Hospital and Medical School" was proposed by Mr. Norman Lake. A successful change was made from the usual custom of this toast being responded to by the Dean or other official: this year two students, Miss H. L. J. Wallace and Mr. W. H. Williams, replied. "The Guests" was proposed by Dr. J. M. H. MacLeod, the guest of the evening being Sir Frederick Mott, consulting physician to the hospital. In reply Principal Ernest Barker made a clever and humorous speech, while Sir Frederick Mott replied both in speech and song. Dr. W. C. Bosanquet proposed the health of the chairman, which was drunk with musical honours. During the evening, owing to the kindness of Sir Oswald Stoll, musical selections were given by artistes from the Coliseum.

St. Mary's Hospital Medical School.—The annual dinner was held at the Connaught Rooms on Oct. 3rd. The chair was taken by Dr. E. G. Graham Little, physician-dermatologist to the hospital, and 150 past and present students were present. In replying to the toast of "St. Mary's Hospital and the Medical School," Mr. A. R. Prideaux, the chairman of the board of management, alluded to the severe financial strain which was being felt by all the voluntary hospitals, but confessed himself an optimist who looked forward with confidence to the preservation of the voluntary system. Dr. C. M. Wilson, dean of the medical school, was in the pleasant position of being able to report most favourably on the events of the past year—the outstanding feature being the decision of the Board of Education to establish clinical units in medicine and surgery at St. Mary's. This he looked upon as a recognition by the educational authorities that St. Mary's was worthy of their support and assistance. The entry of new students had been well maintained, and the total number now studying at the school was larger than ever before. Among other interesting facts he pointed out that one-fourth of the total number of candidates for the Primary Fellowship examination from all the British schools were trained at St. Mary's. The chairman, in proposing the health of Sir William Willcox, on whom the honour of K.C.I.E. has been conferred during the past year, had as pleasant a task as could fall to the lot of any man, and on rising to reply Sir William Willcox received a remarkable ovation.

Middlesex Hospital Medical School.—Over 220 past and present students of the Middlesex Hospital assembled at the Trocadero Restaurant on Oct. 4th. Amongst those present were the Earl of Athlone, Sir John Bland-Sutton, Surgeon-Rear-Admiral Sir Percy Bassett-Smith, and Sir Edward Penton. Mr. Comyns Berkeley occupied the chair, and in proposing the toast of the Hospital and Medical School, gave an interesting account of their history since their foundation in two small houses in Windmill-street 146 years ago. The president also referred to the satisfactory condition of the medical school, in which over 600 students were working during the past year. Amongst the most important events of the year were mentioned the endowment of the Chair in Physiology, and the successful working of a scheme whereby the patients contributed

TERRITORIAL ARMY.

Capt. J. L. Hamilton to be Maj.

Capt. D. C. Maclachlan (late R.A.M.C.) to be Capt.

Capt. T. P. Cole resigns his commn. and is granted the rank of Maj.

Capts. J. M. Stalker and J. H. Chauncy resign their commns. and retain the rank of Capt.

Lt. R. Ward to be Capt.

Surg. Lt. W. J. C. Watt (late R.N.) to be Lt.

TERRITORIAL ARMY RESERVE.

Maj. C. N. Smith (T.A. Res.) to be Maj.

INDIAN MEDICAL SERVICE.

Capt. J. Findlay to be actg. Maj. while holding an appt. as Registrar of an Ind. Gen. Hosp.

Captains to be Majors: E. H. V. Hodge, A. MacD. Dick (Bt. Maj.), M. J. Holgate, T. L. Bomford, G. R. Lynn, L. H. L. Mackenzie (Bt. Maj.), W. A. M. Jack, Keshav Sadashiv Thakur, Mohamed Abdur Rahman (Bt. Maj.), H. R. B. Gibson (Bt. Maj.), M. A. Nicholson, R. F. D. MacGregor (Bt. Maj.), E. W. O'G. Kirwan, P. K. Gilroy.

DEATHS IN THE SERVICES.

On Oct. 9th, at Queen Alexandra's Military Hospital, Millbank, Lieut.-Col. Edmund Munkhouse Wilson, C.M.G., D.S.O., R.A.M.C., died in the 67th year of his age. He qualified L.R.C.P. Lond., M.R.C.S. Eng., in 1878 from St. George's Hospital, and as a civil surgeon saw active service in the Zulu war in the following year. For his services he received the medal with clasp. In 1881 he joined the Army Medical Department, serving in the Nile Expeditions of 1881–86, and was awarded the medal with clasp and the Khedive's Star. During the Gambia Expedition of 1891–92 he gained the medal and clasp, and in the Ashanti Expedition of 1895–96 was honourably mentioned, receiving the C.M.G. and star. As secretary to the Surgeon-General in the Sudan Expedition to Khartoum in 1898 he was mentioned in despatches, awarded the D.S.O., and English and Sudan medals. From 1899 for five years he was Deputy Assistant Director-General of the Army Medical Service at headquarters, and was afterwards employed at the R.A.M.C. Record Office, his services extending into the period of the late war. Lieut.-Col. Wilson, who was created a Knight of Grace of the Order of St. John in 1903, was president of the West London Medico-Chirurgical Society during 1918–19, and was at one time secretary of the R.A.M.C. Benevolent Society.

Major-General Peter Stephenson Turnbull, K.H.S., I.M.S. (retd.), died in Edinburgh on Oct. 7th, at the age of 85. He graduated M.D. at Glasgow in 1859, and joined the Indian Medical Service in the following year. He served in India under Lord Napier of Magdala in 1867–68. From 1882 to 1888 he was secretary to the P.M.O. of the Forces in Bombay, and from 1883 to 1885 also held the office of acting Inspector-General of Prisons in the Bombay Presidency. For five years he was Surgeon-General to the Governor of Bombay, and retired from the services in 1896, when he received the Good Service Pension. He was appointed hon. surgeon to the King in 1902.

Col. Sir William Roe Hooper, K.C.S.I., I.M.S. (retd.), Hon. Surgeon to the King, died on Sept. 29th, aged 84. He was president of the India Office Medical Board from 1895 to 1901, and had served in India from 1859 to 1895. He received the Companionship of the Star of India in 1897, and was promoted to Knight Commander of that Order in 1903.

Manchester Radium Institute: Opening Ceremony.—The Manchester and District Radium Institute, the first hospital of its kind in this country to be used exclusively for radium treatment, was opened by Lord Derby on Oct. 6th. The Institute, situated in Nelson-street, off Oxford-street, is in close proximity to the Royal Infirmary, the Royal Eye Hospital, and St. Mary's Hospital, and is the gift of Sir Edward and Lady Holt; in it will be concentrated most of the work formerly distributed amongst eight different institutions. During the first year of the Institute's existence, in 1915, there were over 2500 cases treated by radium; in 1920 the number rose to 8000; of these about two-thirds were treated for cancer in its various forms, but many of the cases had already reached an advanced stage before application was made for radium treatment. Sir Edward Holt remarked at the opening ceremony that, whatever doubts had been raised as to the curative value of radium in certain diseases, "the relief of suffering caused by its use is sufficient justification for our placing the Nelson House at the disposal of the Radium Committee." Experience at Manchester had shown that radium treatment might at least relieve the pain of cancer patients. A certain number of paying patients will be treated, and money received from this source will go to benefit the hospitals and poor people of Manchester and district.

Correspondence.

"Audi alteram partem."

INQUIRY INTO INSURANCE ACTS.

To the Editor of The Lancet.

Sir,—The Lancet of Oct. 8th contains a letter from the secretary of the Federation of Medical and Allied Societies, acting for his committee, in which a request is made to the Minister of Health "to consider the advisability of setting up an independent committee to take evidence in public, inquire into and report concerning the working of the National Health Insurance Acts." Among the signatories is the name of the secretary of the National Medical Union, acting for the council of that organisation. The Union consented to associate itself with the Federation *for this limited purpose only*. The wording of the preamble to this "request" is, however, capable of misconstruction as regards the National Medical Union, which, except in promoting this inquiry, is in no sense "coöperating in" the Federation in question. The Union is an independent body (in alliance with the Scottish Medical Guild), having its own policy, and founded in protest against the Medical Benefit Section of the National Insurance Acts.—I am, Sir, yours faithfully,

Alexander Blackhall-Morison,
Co-President (with Prof. Russell, of Edinburgh),
London, Oct. 8th. National Medical Union.

RESPIRATORY EFFICIENCY.

To the Editor of The Lancet.

Sir,—There is much to be said in favour of the doubt expressed in the leading article in your issue of Oct. 8th as to whether "respiratory movements as such"—i.e., mere pulmonary gymnastics—have any special virtue as regards the promotion of physical efficiency. It has to be remembered that the quite admirable sets of exercises devised respectively by Sir Herman Weber and Wing-Commander Martin Flack are not merely exercises in pulmonary gymnastics: they bring practically the entire muscular system into play, and it may well be questioned whether their undoubtedly good effect is not primarily and essentially due to this muscular factor, and whether an equally good result might not be achieved by a system of exercises in which the breathing was left to look after itself. As you point out in the article referred to, "athletes, horses, and dogs are trained by progressive muscular exercises, and the teaching of trainers has often been in advance of scientific knowledge, or more correctly stated, their knowledge based upon experience has not been regarded as scientific. We have a right to ask the physiologist what is the true basis for the so-called breathing exercises; there is no apparent reason for taking in more oxygen than the body needs, or for discharging an undue amount of carbon dioxide."

Naturally those recruits who were put through a course of Dr. Flack's exercises before entering upon the regulation course of physical training gave better ultimate results than those who did not enjoy this initial advantage; but it is at least questionable whether this second lot would not have done as well as the others if they had first been put through a carefully graduated course of muscular exercises having no special reference to the respiratory movements. Provided such exercises are suitably graded, the breathing and circulation tend to fall automatically into line. A question of interest in this connexion is the character of the breathing when the normal respiratory function of the lungs is interfered with—e.g., by disease of the heart or lungs. In my experience the breathing in such cases is instinctively modified in the way best suited to meet the difficulty. Curiously enough, the text-books have little or nothing to say on this point.—I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 8th, 1921. Harry Campbell.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Tuesday, Oct. 18th.

SECTION OF PATHOLOGY: at 8.30 P.M.
Dr. J. C. Mottram: Observations upon the Action of Radium and X rays upon the Mononuclear Leucocytes of the Blood.
Dr. W. Cramer and Dr. J. C. Mottram: Changes in Lymphoid Tissue after Exposure to X rays, and in Vitamin-Starved Animals.
Dr. J. A. Murray: Dissemination along Nerve-trunks in Tar-cancer.
Prof. S. G. Shattock: Dissemination along Nerve in Carcinoma of the Tongue.
Dr. A. Leitch: Casts of Tar-tumours in Rabbits.
Dr. C. C. Okell: The Sachs-Georgi Reaction in Syphilis (Dreyer's Technique and Bordet's Antigen).

Wednesday, Oct. 19th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Dr. Charles Singer (President): A Few Remarks on the Historical Work of the Past Year.
Dr. F. G. Chandler: The History of the Diagnosis and Treatment of Empyema Thoracis.

Thursday, Oct. 20th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. H. C. Semon: (1) Psoriasis, treated by Danysz's Method (2 cases); (2) Tuberculosis Cutis.
Dr. George Pernet: (1) Band Sclerodermia of Leg in a Woman, showing Result of Treatment; (2) Epithelioma on Lupus Vulgaris in a Woman.
Other Cases will be shown.

Friday, Oct. 21st.

SECTION OF OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Presidential Address:
Dr. Logan Turner: The Structural Type of the Mastoid Process, Based upon the Skiagraphic Examination of 1000 Crania of Various Races of Mankind. (With epidiascope.)
Communication:
Dr. P. Watson-Williams and Mr. E. Watson-Williams: A Method of Diagnostic Exploration of the Posterior Ethmoidal Cells. (With lantern slides.)
Cases will be shown by:
Mr. Sidney Scott: A Pigeon 16 Months after a Single Application of Alcohol to the Membranous Labyrinth.
Mr. Lawson Whale: Large Exostosis Removed from Ear of Adult Male.
Mr. T. H. Just: (1) Case of Ossification of the Membrane *around a Perforation*; *(2) Tumour of External* Auditory Meatus.
Other Cases will be shown.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Presidential Address:
Dr. E. P. Cumberbatch: Progress in Electrology and Radiology; the Importance of Physics, Physiology, and Anatomy.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 17th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. 2.30 P.M., Dr. A. Saunders: Demonstration of Cases (Medical Wards). Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. A. Saunders: Digestive Troubles of Childhood.
TUESDAY.—11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Morton: X Ray Department. 2.30 P.M., Mr. T. Gray: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Pernet: Some Secondary Syphilides.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. D. Armour: Demonstration of Cases (Surgical Wards). Dr. Owen: Medical Out-patients. Mr. Gibb: Eye Department. 5 P.M., Lecture II.:—Mr. T. Gray: Surgery of the Mesentery.
THURSDAY.—12 noon, Dr. Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Armour: Operations. 5 P.M., Lecture:—Dr. Snowden: The Psycho-Neuroses.
FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burrell: Medical Out-patients. Mr. Sinclair: Surgical Out-patients. Dr. Pernet: Skin Department. 2.15 P.M., Mr. Addison: Operations. 5 P.M., Lecture:—Dr. Pritchard: Pleural Effusions.
SATURDAY.—10 A.M., Dr. Burnford: Demonstration of Cases (Medical Wards). Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Mr. Simmonds: Surgical Out-patients.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Oct. 17th.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., In-patients. 5.30 P.M., Lecture:—Sir S. Russell-Wells: Mitral Disease.
TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.
WEDNESDAY.—10 A.M., Dr. Parkinson: Out-patients. 2 P.M., Dr. Moon: In-patients.
THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.
FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Hamill: In-patients.
SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 20th.—4 P.M., Lecture:—Mr. T. T. Higgins: Fractures.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 20th.—Chesterfield Lecture:—Dr. W. Griffith: The Diagnosis of Skin Diseases.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children, by Dr. E. Pritchard to Qualified Practitioners.
WEDNESDAY, Oct. 19th.—6 P.M., Lecture V.:—The Modification of Milk.
FRIDAY.—6 P.M., Lecture VI.:—The Uses of Dried Milk and Patent Foods.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct. 18th.—4.30 P.M., Dr. J. G. Clegg: Inflammations of the Cornea.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Oct. 20th.—4.15 P.M., Dr. N. C. Haring: Chest Troubles.

SALFORD ROYAL HOSPITAL.
THURSDAY, Oct. 20th.—4.30 P.M., Mr. Garnett Wright: Diagnosis and Treatment of Tumours of Breast.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE.
Post-Graduate Lectures and Demonstrations.
TUESDAY, Oct. 18th. (At the Royal Infirmary.)—3.30 P.M., Mr. G. H. Pooley: Common Diseases of the Eye. 4.15 P.M., Mr. E. F. Finch: Intestinal Obstruction.
FRIDAY. (At the Royal Hospital.)—3.30 P.M., Dr. A. E. Naish: Demonstration of Cardiac Cases. 4.15 P.M., Dr. P. J. Hay: Cases of Inflammation of the Cornea.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.
WEDNESDAY, Oct. 19th.—4 P.M., Lecture I.:—Sir Thomas Oliver: Problems of Industrial Hygiene in Relation to Public Health.

Appointments

KEEP, A. C., M.D., C.M. Edin., has been appointed Honorary Consulting Surgeon to the Samaritan Free Hospital for Women, Marylebone.

WARD, B. J., F.R.C.S. Eng., Honorary Surgeon, Queen's Hospital, Birmingham.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Lect. in Bio-Chemistry. £550.
Aberdeen University and North of Scotland College of Agriculture.—Physiologist. £600.
Albert Dock Hospital, Connaught-road, E.—Surg.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £225.
Bath, Royal Mineral Water Hospital.—Physician.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham, Dudley-road Hospital.—Sen. Res. Asst. M.O. £450.
Bristol General Hospital.—Hon. Ophth. Surg. H.S. Cas. H.S. Each £175.
Cairo, Egyptian Government School of Medicine.—Prof. of Pathology. L.E.1200–1440.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cancer Hospital, Fulham-road, S.W.—First Asst. to Research Dept. £750.
Capetown, Somerset Hospital.—Res. H.P. £30 per month.
Cardiff, King Edward VII. Hospital and Medical School.—Anæsth. £50.

there, and later to meet a school friend with whom he was to stay in Kent until his return to school. On the morning of departure Miss C., the friend of his parents, heard a crash outside her bedroom door, and found Oscar Gray lying at the foot of a steep staircase leading from his bedroom. He was not insensible, but appeared to her to be dazed, and later at breakfast, when he declared himself none the worse, he described his sensations by saying that he felt as if he had been "winded through the back." He was allowed to travel; and he seemed normal on the journey. At Liverpool-street Station he stooped down and drew Miss C.'s suit case from under the seat, placed it on the platform, and said good-bye to her. They had arranged to find their luggage independently. She looked round to obtain a porter, and did not notice then that he must have gone in the opposite direction from the van where his luggage was. His luggage was not claimed, and from that moment he has passed out of sight.

It may be pointed out that in a case of intentional absence a boy with not more than £2 or £3 in his pocket would not be likely to abandon his luggage, his only asset, or to leave it in the van where it might have called immediate attention to his conduct. Everything points to Gray having been a normal schoolboy, fond of his family, and giving no indication of any intention to do anything that must inevitably distress parents to whom he was especially attached. A reward for his discovery is now offered, the delay in doing this being no doubt due to the reluctance of the police to encourage those who might be tempted to extract profit for themselves from the kidnapping of helpless persons.

Gray is described as a dark-haired youth, about 5 ft. 11 in. in height, his most conspicuous mark being a scar in the neighbourhood of his hair, running downwards from near the right eyebrow.

I am, Sir, yours faithfully,

Oct. 10th, 1921. E. A. Armstrong.

REMUNERATION OF INSURANCE PRACTITIONERS.

As the sequel to correspondence between the Medical Secretary of the British Medical Association and the Ministry of Health, with regard to the proposed reduction in the capitation fee to insurance practitioners, a deputation from the Insurance Acts Committee of the Association was received by Sir Alfred Mond on Tuesday afternoon. This date was fixed in order that the result of the interview with the Minister of Health should be included in the agenda of the Panel Conference to be held in the Wesleyan Central Hall, Westminster, on Thursday next, Oct. 20th.

The deputation received from the Minister of Health the information that he considered a reduction of the capitation fee to 9*s.* 6*d.* to be necessary. The dangers of such a policy were placed before him, it being pointed out that if panel practice, owing to inadequate remuneration, should fall into disfavour with the medical profession, the serivces rendered might no longer be of the proper character and the general object of the Insurance Acts would thus be defeated. Sir Alfred Mond, however, signified no change of mind, but appealed to the patriotism of the medical profession to come to the national assistance.

A Sanatorium for Moray.—At a meeting of the Public Health Committee of the Moray County Council, held on Oct. 5th, the question was raised as to adapting the Combination Poorhouse, Bishopmill, for a sanatorium for the county (the inmates to be otherwise provided for), and a report was submitted by the clerk. The report stated that the building was in two sections, and at present there were 38 inmates, and that it might be made available for 40 patients. The institution lacks many requirements of an ideal sanatorium, and after some discussion it was agreed to take no steps for the present.

Medical News.

Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England.—At the Second Professional Examination in Anatomy and Physiology held on Sept. 29th and 30th, and Oct. 3rd, 4th, and 5th, 166 candidates presented themselves, of whom 92 were approved and 74 were rejected. The following are the names and schools of the successful candidates :—

S. Abadir, King's Coll. ; C. F. Ashby and F. Asker, St. Bart.'s ; E. A. Aslett, St. Mary's ; A. Basilios, Birmingham ; K. C. Beatty and J. Bee, London ; Susanna M. Bornman, Cape Town and London Sch. Med. ; H. B. Boucher, St. Thomas's ; S. Brest, St. Bart.'s ; S. G. Brown, London ; C. J. N. Cameron, Univ. Coll. ; R. E. D. Cargill, St. Bart.'s ; K. R. Chaudhri, Punjab and St. Mary's ; Marian B. Coleman, London Sch. Med. ; P. S. Court, Guy's ; B. Crosthwaite, Durham ; S. W. Cuff, St. Bart.'s ; S. H. Currie, London ; A. J. M. Davies, St. Mary's ; G. I. Davies, Univ. Coll. ; A. M. Deane, St. Thomas's ; G. W. R. W. Dreiheller, Middlesex ; C. L. Elgood, St. Bart.'s ; V. H. Ellis and P. F. Evans, London ; W. O. H. Evans, Bristol ; N. B. Farman, King's Coll. ; L. Freeman, St. Thomas's ; H. J. J. Garrod and A. Gelberg, Middlesex ; R. A. Grant, Guy's ; A. Harbour, King's Coll. ; C. G. Harper, Middlesex ; J. B. Hayes, King's Coll. ; F. Heckford and W. A. Hervey, St. Bart.'s ; E. W. Hicks, St. Thomas's ; A. Hooper, Leeds ; Barbara M. Hope, Cambridge ; D. V. Hubble, St. Bart.'s ; J. Hughes, Bristol ; O. R. Humphreys, Cardiff ; J. S. Jacobsz, Guy's ; D. T. Jenkins, Edinburgh ; Millicent Jervis, King's Coll. ; R. A. V. Jones, London ; J. Joseph, Middlesex ; A. Jowell, Guy's ; Abraham Jowell, Cape Town and Guy's ; Marjorie A. M. Lambert, London Sch. Med. ; J. J. Laws and H. E. Lewis, Guy's ; W. R. A. Line, Birmingham ; M. F. B. Lynch, London ; G. A. McKaig, St. Thomas's ; R. S. MacLatchy, London ; E. L. Martin, King's Coll. ; L. M. Maybury, Cambridge ; E. B. Messinier, Middlesex ; G. O. Morgan, Cardiff ; C. T. Norris, London ; K. E. Nosseir, Sheffield ; R. J. Oliver, London ; Dorothy Parsons, London Sch. Med. ; G. M. Pennant, Cardiff ; S. C. Prior, Birmingham ; C. B. Rich, King's Coll. ; E. J. H. Roth, St. Bart.'s ; B. Rubinstein and M. Rubinstein, Guy's ; E. J. Ryan-MacMahon, St. Thomas's ; J. Shutt, Leeds ; V. Sinnetamby, Ceylon and Middlesex ; C. R. Steel, St. Bart.'s ; E. G. Steeler, King's Coll. ; K. H. Tan, Middlesex ; Ada Taylor, Univ. Coll. ; M. Taylor, Guy's ; E. J. Thomas, Cardiff ; R. D. M. Tims, Cambridge and St. Thomas's ; R. W. H. Tincker, St. Bart.'s ; P. W. Tobin, St. Mary's ; V. C. Tughan, Univ. Coll. ; D. C. Vaughan, Manchester ; Kathleen M. Ward, Liverpool ; H. C. Warner, Guy's ; T. M. Wilks, King's Coll. ; J. H. Williams, London ; T. J. Wilson, St. Bart.'s ; J. Wolstencroft, Liverpool ; and G. C. Young, King's Coll.

Materia Medica and Pharmacology.—S. Abadir, King's Coll. ; G. N. Beeston, Charing Cross ; J. L. Brown, King's Coll. ; H. B. Boucher and A. J. S. L. Boyd, St. Thomas's ; G. H. Buncombe, St. Bart.'s ; A. R. Cox, Guy's ; A. Davies, Cardiff ; G. W. R. W. Dreiheller, Middlesex ; F. W. Dunn, Charing Cross ; R. A. Dyke, Guy's ; W. Egan, King's Coll. ; G. I. Evans, Manchester ; T. P. Evans, Charing Cross ; R. G. Flower, Leeds ; C. S. Forrest, Manchester ; A. R. Fox, Middlesex ; T. F. Fox, Guy's ; J. F. Hamber and A. Harbour, King's Coll. ; Katie E. Hudson, London Sch. Med. ; N. H. Ibrahim, Sheffield ; C. W. Jones, Cardiff ; R. D. Jones, Edinburgh and Middlesex ; G. B. Kirkland, Guy's ; Marjorie A. M. Lambert, London Sch. Med. ; M. M. Lewin and G. A. McKaig, St. Thomas's ; C. F. Morrison, Guy's ; W. R. Nash, Cardiff ; R. A. Newsom, King's Coll. ; R. E. Overton, Univ. Coll. ; Dorothy Parsons, London Sch. Med. ; G. M. Pennant, Cardiff ; P. J. J. Pienaar, St. Thomas's ; A. Pierce, Birmingham ; M. Rubinstein, Guy's ; A. Sherning, St. Thomas's ; J. Shutt, Leeds ; R. F. Smith, Guy's ; B. L. Steele, Univ. Coll. ; E. G. Steeler, King's Coll. ; M. Taylor, Guy's ; O. F. Thomas, Manchester ; V. C. Tughan, Univ. Coll. ; W. R. van Langenberg, Middlesex ; D. C. Vaughan, Manchester ; R. L. Washington, Birmingham ; M. Weisman, Manchester ; F. E. C. Williams, St. Bart.'s ; H. H. Williams, Liverpool and Middlesex ; and T. Yoxall, Birmingham.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates having passed the requisite examinations have been admitted Diplomates in Public Health :—

Alfred F. Adamson, Isabella M. M. Aitken, William R. Clayton-Heslop, Edward M. E. Cumming, William Cunningham, Andrew Davidson, Andrew M. Davidson, Jean D. Don, David Fyfe, Janet Grant, Donald C. Lamont, Isabel Macfie, William McKendrick, Jane S. McPhail, George Morris, Taylor D. Murison, Evan W. Richards, Helena J. Robertson, Richard Sandilands, John W. Simpson, Alexander D. Stewart, and Mary C. Walker.

Royal Faculty of Physicians and Surgeons of Glasgow.—At a meeting held on Oct. 3rd the following were admitted (after examination) as Fellows of Faculty :—

George Bell Brand, M.B., Ch. B. ; John Williamson Dalgleish, M.B., Ch.B.; John Rennie Carrie Gordon, L.R.C.P., L.R.C.S., L.R.F.P.S.G. ; Madari Audia Keshvalu, M.R.C.S.Eng. L.R.C.P.Lond. ; John Wilson Leitch, M.B., Ch.B.

for infants and for children in the first five years of life, historically has been and administratively now forms the chief means for reducing the mischief done by this great enemy of mankind.

A similar difficulty arises in measuring the value of the work of health centres and of public health nurses in reducing infant mortality. Did we possess quantitative knowledge of the value of each factor influencing infantile health and disease, *and were we able to measure the extent of action of each* factor, it would be possible to assess the relative importance of each factor concerned in producing or preventing infantile sickness and mortality. But we usually cannot do this. It is not difficult to show curves of infant mortality for different cities, almost exactly parallel in a long series of years, in some of which health centres and public health nurses have been actively at work, while in others their number has been few or there have been none. Furthermore, such curves are not unnaturally flourished before us by economists, as well as by biometricians, as prima facie evidence of the inutility of the educational and medical work of physicians and nurses in child welfare work. But these confident assertions leave us quite cold ! Were all the gross mass figures which could be marshalled to point to the conclusion that ignorance is no worse than knowledge, and that domestic cleanliness is not worth while, we should very properly doubt their accuracy or their teaching, not the merits of sanitary education and practice. In actual fact we can by comparison of carefully selected areas in different towns show the value of sanitation and instruction in reducing infant mortality, although —*inasmuch as with these two factors other factors are also* concerned for which accurate information cannot be tabulated—we are in most instances "up against" the impossibility of measuring the value of each single factor satisfactorily. In short, in a large part of public health work we must content ourselves with the fact that our work is on the lines which our knowledge of physiology, pathology, and medicine—the institutes of medicine—shows to be important, and reserve to the future the possibility of securing non-fallacious measurements of complex social influences.

Vital Statistics a Means to an End.

Although the examples just cited display my unwillingness to submit to the sole arbitrament of arithmetical standards in the measurement of results of public health work—when pathology and medicine give accurate guidance—I would not convey the impression that *vital statistics fail to give most* valuable guidance and leading in public health work; they are, indeed, indispensable for such work.

I have always regarded vital statistics as a means to an end, and not an end in itself, and my own first acquaintance with the subject arose out of the need to study these statistics, to which in the third quarter of the last century there was no English guide extant. The publication of my "Elements of Vital Statistics" led to personal contact and correspondence with medical statisticians in many countries; a relationship which became more extensive and more valuable as epidemiological investigations on successive subjects formed my fascinating task. I recall, for instance, investigations which I undertook into pandemics of rheumatic fever and of diphtheria, for the first of which scarcely any records from America were available; but in diphtheria there was *ample evidence from this country showing the* natural tendency of diphtheria to be more extensively continental than insular in its incidence, and for its endemic prevalence to be on such a scale as to disguise partially the epidemic characteristics of the disease. At a later period I recall an international inquiry in which Dr. T. H. C. Stevenson, now the distinguished medical statistician of the English Government, and I were engaged, in which it was desired to obtain corrected birth-rates for different cities, making arithmetical allowance for the proportion of married women in the population and for their age. And it will not be surprising to some of you to learn that the most valuable records available in America were those compiled by Dr. C. V. Chapin for the city of Providence (Rhode Island), records which, with similar records from Boston, showed that the American born in these cities had reached a position as regards fertility almost as low as that of Paris.

Birth and Death Registration.

During the last 10 years the value and scope of American vital statistics have greatly increased; and in addition to the important publications of the Federal and State governments, *your literature has been enriched*, and the borders of knowledge extended, by the publications of many workers, including Dr. Hoffman, of the Prudential Insurance Company, and Dr. Louis Dublin, of the Metropolitan Life Insurance Company. To both of these gentlemen I have been indebted for valuable references and information during the last two winters while lecturing in the Johns Hopkins University.

Your death registration area and your birth registration area have become extended, and the accuracy and completeness of registration have increased, though it is evident that much more needs to be done; and it remains an anomalous fact that in a community which prides itself, and rightly, on its business capacity, and which makes almost a religion of efficiency methods, there is a serious lack of driving power to secure from every community throughout the States the accurate data of births, sickness, and deaths without which periodic vital stock-taking is impracticable. In England Benjamin Ward Richardson could say many years ago, referring to Farr's epoch-making reports, that it is "no longer true that pestilence walketh in the dark. It is measured and registered, walketh at last in the open day." This is becoming more nearly true for the United States, though in many areas there is still inaccurate certification of deaths and unskilled classification of the returns in statistical offices; and the records of sickness are imperfect. A few years ago in many States the registration of births was so incomplete that it was impossible to determine whether any apparent decrease in the rate of infant mortality was real, or was due in part or entirely to "drives" which had been followed by improved registration of births. This, happily, is being improved, but the margin of error in many areas is still a serious handicap in statistical inquiries.

Special Difficulties in America.

Among the difficulties in the way *of an accurate national* system of registration of births and deaths may be named the following:—

1. America is the subject of the vastest experiment in the world's history in mixture of races. Not only has it a large negro population and a not inconsiderable population of the red and yellow races; but Anglo-Saxons, Germans, French, Slavs, Italians, Jews and other peoples are adding to its population year by year; and although the Anglo-Saxon element still predominates, this preponderance will cease ere long unless relative race birth-rates greatly change; and the largest element on this continent will be no longer Anglo-Saxon. Happily, the American population of the future will still possess the glorious heritage of law and language, of freedom and self-government, and of moral ideals, with which the name of Anglo-Saxon is rightly associated. With *such a conglomerate and mobile population*, with problems of digestion and assimilation of foreign elements on an enormous scale, it is not surprising that registration of births and deaths, with its possibilities of measuring the relative vitality and social progress of different social elements, has been neglected. It *is none the less a misfortune for humanity* that accurate and complete records have not been kept of the greatest social and sanitary experiment in the world's history.

2. The State sovereignty of each of the 48 States has been inimical to the compilation of accurate comparable national statistics. The Bureau of Vital Statistics in the Department of Commerce of the Federal Government publishes annual reports which year by year are increasing in value; but water cannot spontaneously rise above its own level, and these reports have no higher value than that of the records of each individual State. Although the international rules as to classification of deaths are well known, what certainty have we that in the majority of these States these rules are rightly followed in the allocation of deaths to their appropriate heading? It would probably be *impracticable for the Federal Government*, in view of the magnitude of the task and the separate sovereignty of each State to arrange for a Federal as well as a State analysis of every single death in the country, thus ensuring exactly comparable data. This has been done in England, thus giving an accurate check on the locally published vital statistics for every sanitary area throughout the country, and rendering these statistics of local mortality comparable with those for all other areas.

3. In the majority of States the lack of civil service conditions of appointment and tenure of office of the statistical superintendent, has, I gather, meant much inefficient work. This is pre-eminently an appointment in which evidence of competence for the post should be demanded. The majority of State statisticians in the past have been untrained physicians, with no special interest in the compilation of accurate statistics; many were not concerned with enforcing the law of registration, and were ignorant of the principles of death certification and classification. In the General Register Office in London there is a medical statistician, a worthy successor of Dr. Farr, who has associated with him a staff competent to undertake *all the needed* tabular work, and who can call in the services of actuarial consultants when required. This secures a due performance of the work of registration, tabulation of results, and commentary on the classified results. The knowledge of a fully trained scientific physician, an adequate training in the principles of death certification, and of the classification of diseases, are indispensable in collecting and in utilising vital statistics; and many well-intentioned investigations by biometricians, so-called, have shown what ridiculous results may be published in the absence of accurate pathological and medical knowledge. Complexes are treated as

towards their maintenance according to their means. In conclusion the president welcomed Sir John Bland-Sutton, whom he described as the John Hunter of the present day. The Earl of Athlone, in reply, signified his gratification that the hospital had been enabled to carry on its work under the voluntary system. The Dean, Mr. A. E. Webb-Johnson, emphasised the need for the endowment of further professorial chairs in the medical school. Sir John Bland-Sutton, in rising to reply to the toast of the Guests, was received with an ovation which indicated the affection and esteem in which he is held by all generations of Middlesex men. The evening closed with the proposal of the health of the President by Dr. Campbell Thomson, and this toast was very warmly received.

St. Thomas's Hospital Old Students' Dinner.—This dinner will be held on Friday, Oct. 28th, at 7 for 7.30 P.M., at the Wharncliffe Rooms, Hotel Great Central, London, N.W., Dr. H. W. G. Mackenzie in the chair.

Prince of Wales's General Hospital Reunion. The inaugural dinner will be held at the Trocadéro Restaurant, Piccadilly-circus, on Thursday, Oct. 27th, at 7.30 for 8 P.M. Past residents and students of the hospital who have not received a notice can obtain further particulars from Mr. H. W. Carson, 111, Harley-street, London, W. 1.

Post-graduate Lectures on Pediatrics.—Under the auspices of the Fellowship of Medicine and Post-Graduate Medical Association a course of 12 practical lectures on Gastro-intestinal Affections in Children will be given at "The Children's Clinic," Western General Dispensary, Marylebone-road, London, N.W. 1, on Mondays and Thursdays at 4.45 P.M. The first lecture will be given on Oct. 17th by Prof. W. Bayliss on the Physiology of Digestion. Subsequent lectures will be given by Dr. Bernard Myers, Dr. T. Joekes, Dr. H. E. Archer, Dr. G. Low, Dr. J. G. Thomson, Mr. Tyrrell Gray, and Dr. Martin Berry. The fee for the course to Fellowship members is 1½ guineas, and 2 guineas to non-members. A detailed syllabus and tickets can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

West Kent Medico-Chirurgical Society.—The first meeting of the session will be held at the Miller General Hospital, Greenwich, to-day (Friday), at 8.45 P.M. The President, Dr. A. M. Cato, will preside, and cases will be shown by Dr. E. P. Cumberbatch, Dr. Montague Hine, Mr. Willmott Evans, and Mr. O. A. Joll. The next meeting will be held on Nov. 11th, when Mr. P. B. Roth will read a paper on Treatment of Fractures. On Dec. 9th the Purvis Oration will be delivered by Sir James Purves Stewart on Respiratory Disorders of Nervous Origin. Jan. 13th will be devoted to a Clinical Evening. On Feb. 10th Dr. C. O. Hawthorne will read a paper on Some Pulse Tracings and their Meanings. On March 10th Mr. C. J. S. Thompson, Curator of the Wellcome Historical Museums, will speak on Parturition Chairs, their History and Use; and on April 14th Mr. Ernest B. Dowsett will discuss Pyorrhœa Alveolaris. On May 12th the presidential address will be delivered. The annual subscription to the Society is 10*s.* 6*d.*, and the Hon. Secretary is Dr. C. J. B. Buchan, 326, Brownhill-road, Catford, London, S.E.

Royal Free Hospital Medical Society.—A meeting was held on Oct. 6th, Dr. G. Scott Williamson in the chair. The meeting took the form of a debate in which Lady Barrett proposed the motion that Vaccination is a Prophylactic against Small-pox. She said that it had been established as a result of observation that those who had had cow-pox were not liable to small-pox; inoculation experiments had been done to prove this. The effect of extensive child vaccination in this country had been to change the age-incidence of small-pox from childhood to the adult life when effects of vaccination had passed off. Small-pox undoubtedly occurred in a modified form in those who had previously been vaccinated, whereas revaccination of adults had been successful in preventing small-pox. Lady Barrett quoted statistics in support of her statements. Dr. W. R. Hadwen, in opposing, said that it was a dairymaid's superstition that vaccination protected against small-pox. The change of age-incidence was not conclusive, since in the seventeenth century small-pox had been a disease of adults; also, influenza showed a similar periodic age-incidence. The mortality of small-pox had not been altered since the introduction of vaccination. He thought that the diminishing incidence and modified type of small-pox were purely due to improved sanitation with its beneficial effects on child life. The death-rate from small-pox in the unvaccinated children had fallen in the same proportion as in the vaccinated, and the effects of revaccination did not show any protective action. The President contended that science had neither proved nor disproved the value of vaccination as a prophylactic.

Society of Medical Officers of Health: Annual Dinner.—The annual dinner will be held at the Café Royal, Regent-street, London, W., on Friday, Oct. 21st. A few tickets are still obtainable (price 15*s.*) from the Executive Secretary, 1, Upper Montague-street, Russell-square, London, W.C. 1.

London Dermatological Society.—A meeting will be held at 4.30 P.M. on Tuesday, Oct. 18th, at St. John's Hospital, 49, Leicester-square, London, W.C., when clinical cases will be shown. At 5 P.M. the opening address will be delivered by Sir W. Arbuthnot Lane on the Changes of the Skin in Chronic Intestinal Stasis.

Royal College of Surgeons in Ireland.—At the last meeting of the Council of the College, Mr. G. J. Johnston was re-elected Professor of Surgery in the school of the College; Dr. R. J. Rowlette was elected Professor of Pharmacology; and Dr. J. W. Bigger was elected Professor of Preventive Medicine and Medical Jurisprudence. The two latter appointments were made on the nomination of the President and Fellows of the Royal College of Physicians of Ireland.

Société de Psychothérapie: Annual Meeting. The twenty-fourth annual meeting of this society will be held on Tuesday, Oct. 18th, at 4 P.M., and on Wednesday, the 19th, at 10 A.M., at 49, rue Saint-André-des-Arts, Paris. The annual banquet will take place on the 18th. The programme of the meeting will include an account of Mr. J. Voisin's works on psychotherapy, and discussions on psychotherapy, its progress and its actual orientation, and on the influence of race in nervous and mental diseases. Individual communications will be welcomed. Foreign physicians specialising in psychotherapy are invited to take part in the discussions and to make communications at this séance of the society, of which Mr. J. Voisin is president. Those desiring to be present are invited to write to the secretary, Monsieur Bérillon, 4, rue de Castellane, Paris, VIIIe.

Leicester Royal Infirmary.—A great effort is being made to raise the sum of £100,000 in recognition of the 150th anniversary of this infirmary. It is proposed to try to obtain the money by the "Unit" system, the sum of 12*s.* 6*d.* represents a "unit," being made up of 150 pennies—a penny for every year that the Infirmary has been opened. The city is being asked to raise 112,000 units and the county 48,000 units, these totals being based on the numbers of patients received in 1920 from the city and county. A table has been arranged showing the amount of units required from citizens of Leicester rated at various sums, and the country parishes will be asked to subscribe at the rate of approximately one unit for every four residents. A number of business houses and private residents have already indicated their willingness to adopt the system. Contributions should be sent to the house governor and secretary at the Leicester Royal Infirmary.

Royal Microscopical Society.—The annual conversazione of this society was held at the Mortimer Halls on Wednesday, Oct. 5th. The President, Prof. John Eyre, M.D., received the guests in the Upper Hall, in which the members of the society had arranged a large and interesting collection of pond-life exhibits. Among the most appreciated were beautiful preparations of diatoms, sun animalcule, water-fleas stained while alive with neutral red, and plumatella shown against brilliant coloured backgrounds obtained by means of Rheinberg's discs. In the Lower Hall most of the important microscope firms had stands exhibiting modern instruments of all kinds. During the evening Dr. J. A. Murray gave lantern demonstrations on the cellular structure of the body in an adjoining room, which was all too small to accommodate those who wished to see the slides.

Birmingham Women's Hospital.—This hospital celebrated its jubilee on Oct. 3rd. In 1871 the hospital began its existence in a building in the Crescent; seven years later an out-patient department was opened in the Upper Priory and in the same year the in-patient department was transferred to Sparkhill. In 1901 an entirely new and admirably designed hospital was built. In 1911 the hospital took over the management of the Maternity Hospital, which was founded in 1842. To-day there are 175 beds under the care of the committee. During the 50 years 35,000 in-patients have been treated. Last year there were 2760 in-patients, 20,000 attendances as out-patients, 600 cases in convalescent homes, and 85 pupils were trained for the C.M.B. certificate; 1500 district maternity cases were visited. The hospital was the first women's hospital to have a medical woman on the staff and to have an equal number of men and women on the committee. To-day there are nine medical women associated with the two hospitals.

assistance are provided for the expectant parturient and nursing mother. The statistical differences in neo-natal mortality, and it may be added in the number of still-births, in different areas amply confirm this conclusion.

The definition of still-births adopted in different states varies, and apart from this there are large differences in the extent to which such births are registered, and to propose, as has been done, to state puerperal mortality in terms of total including still-births, instead of in terms of live-births is to depart from the nearest approach to an accurate denominator for the rate hitherto available.

Natural Limitations of Biometrics.

In conclusion let me, while expressing my appreciation of the essential rôle of vital statistics as an instrument in extending our knowledge of the epidemiology and social history of each disease (its social history is really a part of its epidemiology) in estimating the relative position of different communities, and in assessing the value of sanitary and social work, deprecate the statistical use of groups of diseases, of *multiform and heterogeneous origin, for comparative purposes* as being just as unscientific as it would be for the biometrician or the chemist to insist or even to permit himself to study the properties of hydrogen in the contents of a jar containing a mixture of this gas with half a dozen other gaseous elements. I further press the point that vital statistics can have no higher value than that of the individual death certificates on which they are based; that no conjuring with classifications will render indefinite and dubious data other than they are; and that the only line of safety in most instances is to study each certified cause of death independently and separately.

I would, finally, emphasise the important consideration that when facts having only a qualitative and compound value are being studied, and when the factors concerned cannot—as is so often the case—be analysed quantitatively, we are justified in denying, indeed it is our duty to deny, the value of "biometrical" work based on such data, and *in resting our inferences and our administrative action,* as guardians of the public health, on a careful balance of all available evidence, giving chief place to exact physiological and pathological evidence bearing on our problem.

VACCINATION IN THE NORTH-WEST FRONTIER PROVINCE.

IN his report on vaccination in the North-West Frontier Province of India for the year 1920–21, Lieut.-Colonel W. M. Anderson, I.M.S., states that the total number of vaccinations performed during the year was 116,167 against 131,532 in the preceding year. 2073 deaths from small-pox were recorded. The attitude of the people towards vaccination is, on the whole, favourable. Revaccination, however, is considered unnecessary and troublesome, except when small-pox prevails in epidemic form. There is no religious prejudice against vaccination. Diminution in the number vaccinated is attributed to discontent among the vaccination staff caused by their inadequate pay.

ABERDEEN UNIVERSITY ROLL OF SERVICE.

THE Aberdeen University "Roll of Service in the Great War" (Aberdeen University Press. 21*s.*), edited by Miss Mabel Allardyce, with a Foreword by Principal Sir George Adam Smith, has recently been published. The Roll of Service includes biographies, and in nearly all instances portraits also, of the 341 members of the University who gave their lives, and gives the service records of the 2852 graduates, alumni, and students who served with the forces or did work of national importance. There are also two Appendices, one dealing with the service of University officials and the other giving a list of civilian prisoners of war.

MEDICINE AND WHITAKER'S ALMANACK.

THE board of directors of J. Whitaker and Sons, Ltd., proprietors and publishers of "Whitaker's Almanack," has been strengthened by the inclusion of Mr. Edgar Whitaker, who has relinquished his ophthalmological practice at Palmerston North, New Zealand, and returned to England for the purpose. The reconstructed board consists of three sons of the late Mr. J. Whitaker, F.S.A., who founded the annual bearing his name in 1868, and edited it until his death in 1895. Mr. G. H. Whitaker, M.R.C.S., F.R.S.A. (managing director), is this year Master of the Woolmen's Company. Mr. C. W. Whitaker, M.A., F.S.A. (editor), who is a member of the Common Council of London and chairman of the Central Markets Committee. Mr. E. Whitaker, M.R.C.S., L.R.C.P. (business manager), who served in the South African War and was gazetted to the Royal N.Z. Artillery at the outbreak of the Great War, was at the time of leaving New Zealand chief ophthalmic surgeon and treasurer of the Palmerston North Hospital Board, one of the largest and best-equipped hospital boards in the Dominion, which has recently been enlarged and equipped with the latest X ray and bacteriological departments to the total cost of £50,000. He was recently President of the Palmerston North B.M.A. (1919–20).

MOTHER'S AID CENTRES IN VIENNA.

ACCORDING to the Record of the Save the Children Fund of Oct. 1st there are now 56 Mothers' Aid Centres in Vienna. Infants and children up to 6 are examined under the double inspection of a doctor and a child-welfare visitor, who follows up the case, sees that the doctor's advice is carried out, and so constitutes an invaluable safeguard in the case of delicate children. It is announced by the Vienna Jugendamt that one of these visitors is now to be attached to every school. This effort of Vienna to help herself has been supported by the Friends' Relief Committee, and the American Relief Administration also takes a warm interest therein.

A bad omen for the winter now ahead is the renewed depreciation of the crown in Vienna (30 Austrian crowns are now equal to about 3*d.*), and the sudden leap in the prices of the necessities of life, such as flour, bread, and especially fat, which has almost disappeared from the market. Since the beginning of August flour has risen from 14 to 30 kronen, bread from 9 to 15 kronen, fat from 180 to 420 kronen. New and terrible privations, such as those experienced in 1918, are expected by old inhabitants of Vienna, who have experienced all the phases of the Austrian catastrophe.

HYGIENE AND MEDICINE IN SCOTLAND, 1745–1900.

AT the annual meeting of the Caledonian Medical Society, held recently at the Royal College of Physicians, Edinburgh, the presidential address delivered by Prof. William Russell took the form of a survey of the social and medical development of Scotland from 1745 to the beginning of the twentieth century. After a brief reference to the prehistoric and historic blending of races, and to the establishment after Bannockburn of a corporate and independent Scots kingdom, Prof. Russell proceeded to show how housing, sanitary, and labour conditions, natural enough in *rural communities, became monstrous* when massed in towns, where the iniquity of female and child labour eventually roused thinking people, so that it became possible to legislate for the protection of women and children. The outcome took the forms of sanitary legislation, housing schemes, maternity and child welfare schemes. With reference to the development of medicine during the period under review, Prof. Russell began with the name of William Cullen's "First Lines of the Practice of Physic, including the Definitions of the Nosology," in which were reviewed the systems of medical thought current in that period—the period of the search for an underlying principle that might explain health and disease—and also referred to William Pulteney Allison's "Outlines of Physiology and Pathology," showing how the schools of medical theorists were gradually displaced by the revelations and discoveries attained by accurate observation and laborious investigation. The beginnings of emancipation from the tyranny of metaphysics were greatly strengthened by the appearance of Laennec's "Mediate Auscultation" in 1819, and its translation by Forbes in 1838. Controversies over principles were replaced by observation; with Laennec modern medicine really began. Two other landmarks were Pavlov's "The Work of the Digestive Glands" and Metchnikoff's "Comparative Pathology of Inflammation." As an example of the necessity of physiological knowledge before a generalisation is possible, Prof. Russell pointed out how arteriosclerosis was still regarded as a natural and normal change characteristic of advancing years, whereas when full acceptance was reached of the physiological laws which acted upon the blood vascular system, the span of life would be lengthened to all who were not cut down by some acute or infective malady.

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THE Chief Inspector of Factories announces the following vacant appointments: Finedon (Northampton), Purfleet (Essex).

Births, Marriages, and Deaths.

BIRTHS.

CUTLER.—On Oct. 1st, at Kensington House, Dudley-road, Hastings, the wife of F. J. Cutler, M.R.C.S., L.R.C.P., of a daughter.

PARKINSON.—On Oct. 2nd, at 1, Devonshire-place, W. 1, the wife of John Parkinson, M.D., M.R.C.P., of a daughter.

THATCHER.—On Oct. 4th, at Walker-street, Edinburgh, the wife of Surgeon Lieut.-Commander Malcolm Thatcher, R.N., of a daughter.

MARRIAGES.

CLAPHAM—PAYNE.—On Oct. 4th, at St. Mark's Church, Peterborough, Harold Clapham, M.R.C.S., L.R.C.P., Park-road, Peterborough, to Gladys Mary, younger daughter of the late George Speke Payne, M.R.C.S., L.S.A., of Peterborough.

DEATHS.

MILLER.—On Oct. 2nd, James Duff Miller, M.B., C.M. Edin., L.S.A.

PENFOLD.—On Sept. 30th, at Mardale House, Rainham, Kent, Frederick William Henry Penfold, M.R.C.S. (Eng.), L.R.C.P. (Edin.), in his 62nd year.

RAINE.—On Oct. 3rd, at Orwell House, Darlington, George Rolph Raine, M.D.

STONE.—On Saturday, Oct. 1st, at 3E, Maida Vale Mansions, W. 9, William Domett Stone, M.D., F.R.C.S., &c., younger son of the late Thomas Madden and Honor Stone, aged 81 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GREAT NORTHERN CENTRAL HOSPITAL.—Lord Islington will preside at a meeting at the Mansion House in aid of the Great Northern Hospital, on St. Luke's Eve, Monday next, at 3 P.M.

AN address will be delivered to the members of the London Chamber of Commerce on the Petroleum Problem as Affecting British Industry, by Mr. A. Beeby Thompson, M.I.Mech.E., in the Council Room of the Chamber, on Monday next, Oct. 17th, at 2.30 P.M.

DONATIONS AND BEQUESTS.—By the will of the late Mr. John Charles Pipe, of Ipswich, the testator gives £1000 each to the East Suffolk and Ipswich Hospital; St. Bartholomew's Hospital, London; Dr. Barnardo's Homes; and the Home for Incurables, Streatham; and £250 to the Samaritan Society, Ipswich. The residue of the estate, after certain beneficiaries are provided for, will also accrue to these and other institutions.

Notes, Short Comments, and Answers to Correspondents.

VITAL STATISTICS:

THEIR BETTER USE IN PUBLIC HEALTH ADMINISTRATION.[1]

BY SIR ARTHUR NEWSHOLME, K.C.B., M.D. LOND

VITAL statistics or biometrics occupy in public health teaching and administration an essentially subsidiary position, being one of several tools which the public health worker employs in his pursuit of knowledge and measurement of results. To place them on an equal footing with the fundamental sciences of biology, chemistry and physics, and of pathology, preventive medicine, and epidemiology in public health administration, or in an organised programme *for the training of public health officers*, appears to me to imply confusion of thought and of plans.

In their present stage of development in most communities, vital statistics form an excellent servant but a very bad master for the health officer. They have been invaluable in *stimulating and in guiding past public health* effort, and especially in directing attention to the areas of excessive general mortality, and of excessive mortality in infancy and from special definite causes of mortality; but medical certification, especially with regard to the more general and so-called constitutional diseases, is still defective, and conclusions based on municipal or national statistics dealing with this certification must be held in suspicion. Even under more definite headings we need to bear in mind the necessary limitations of statistical inference. Mass statistics give information which is inferior in value to the information derived from the intensive investigation of individual cases—the dynamic method of study. As James Clerk Maxwell said, "however imperfect the dynamic study of man may be in practice, it evidently is the *only perfect method in* principle," its shortcomings arising not from a faulty method of procedure, but from the limitations of our powers. On the other hand, results obtained by the statistical method "belong to a different department from the domain of exact science."

Inductions which Cannot be Stated Quantitatively.

Many inductions in causation and in the preventive or clinical treatment of disease cannot, with our present knowledge, be expressed otherwise than qualitatively, and yet they are as well established as if they could be stated *quantitatively. This is especially true for inductions as to* the results of some forms of sanitary and social effort. Two instances may be adduced.

It is often difficult to show any quantitative relation between the amount of sanitary and social effort and the reduction in the death-rate from tuberculosis. This relation evidently must be one between the total prevalence of the disease and opportunities for its communication on the one hand, and the totality of measures taken or operating for its prevention on the other hand. Were it possible to measure and weigh exactly the value and the extent of action of each factor concerned, the relation could be shown; but we do *not possess adequate knowledge for this purpose.* We know, for instance, that the conditions of urban life conduce to increased tuberculosis. We know also that the death-rate from tuberculosis has declined to a greater extent in cities than in country districts. Were we able to state quantitatively the *influence and the extent of action of, say*, overcrowding, indoor and dusty occupations, dirty habits, &c., in increasing tuberculosis, and of improvements in domestic cleanliness in habits and homes, in greater segregation of the sick, in better factory hygiene, and in higher nutrition in diminishing tuberculosis, we could measure the relative share of each of these factors in the given result in any community. Failing this, as public administrators we possess the wider outlook of physicians and of students of social phenomena, and we are satisfied that the precise teaching of pathology, the exact scientific experience in Denmark and in this country in the elimination of tuberculosis from herds of cattle, the analogous experience with leprosy, and the facts which we possess confirming our pathological knowledge and showing historical relation between hospitalisation of tuberculous patients in different communities and reduction in the tuberculosis death-rate, *all point to the conclusion that to diminish infection from* open cases of tuberculosis, and especially to diminish this which operation he introduced into Italy. He relates that in his travels in France he had seen two women in Toulouse who had been delivered by Cæsarean section, one of whom had since been happily delivered nine times. To commend the operation to his countrymen he wrote that it was as well known in France as bleeding for headache in Italy.[3] This passage was erroneously rendered by Welsch, who published a German translation of "La Comare" in 1653, "so gewöhnlich in Frankreich als das Aderlassen in Italien"—"as *common* (or *usual*) in France as bloodletting in Italy"—whereas Scipione Mercurio only said it was *as well known*. This error has often been repeated by subsequent writers, and has been used to throw doubt on Mercurio's accuracy. In this work Mercurio is the first author to mention contraction of the pelvis as an indication for Cæsarean section. It contains a description and illustration of the "hanging-legs" position for delivery in cases of contracted pelvis, which Walcher published in 1889 as something new, and also a description of the operation of bimanual version, generally associated with the name of a distinguished Fellow of this College, the late Dr. Braxton Hicks. (Figs. 2 and 3.)

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[1] The substance of an address delivered before the American Statistical Association in New York City on April 15th, 1921.

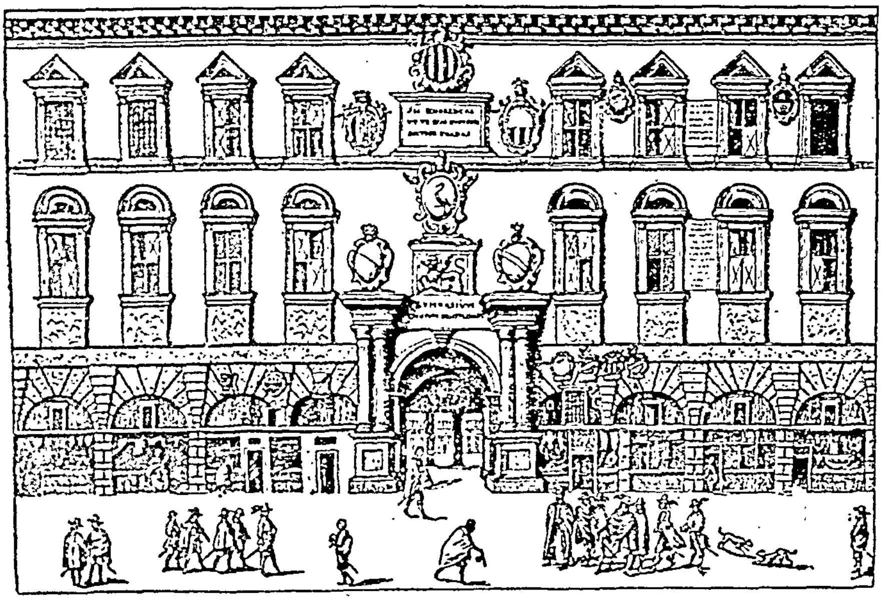

FIG. 1.—The façade of the University building at Padua at the beginning of the seventeenth century (from Guzzoni's "L'Italia Ostetrica," 1911).

It is interesting to find that the first Italian book on midwifery was a cinque cento production and was published by a Paduan obstetrician four years before Harvey went to that University. It can hardly have failed to arouse Harvey's interest, must have had an effect in popularising Cæsarean section on the living, and may have been the stimulus to Harvey to emulate the Paduan obstetrician by writing his "De partu," the first original English work on midwifery.

POSITION OF OBSTETRICS AT THE END OF THE SIXTEENTH CENTURY.

It was under the influence of such men as the above named that Harvey was led to write his great work on generation and labour. In order to appraise this work it is necessary to consider the position of obstetrics at the end of the sixteenth and the beginning of the seventeenth century. Italy was the first country in Europe to encourage anatomical research. At the School of Salerno in 1238 it was ordered that every five years a human corpse should be dissected before the students of medicine and surgery, and in 1442 two corpses were annually provided free of cost for dissection in the University. In Mundinus's work on Anatomy,[4] written in 1316, is the first description of the dissection of the human body since ancient times. The progress of anatomical study in Italy was favoured by the ancient Lex Regia, which enacted that no pregnant woman should be buried until the fœtus had been cut out of the womb, and by the ritual of the Roman Catholic Church which prescribed "if a pregnant woman die the fœtus shall be cautiously extracted as soon as possible and, if alive, shall be baptised"; which led to a great extension of the operation of Cæsarean section on the dead, especially during the frequent epidemics of plague,[5] and we have seen that the operation on the living woman had been introduced by Scipione Mercurio four years before Harvey began his studies.

France, in the person of Ambroise Paré, had begun to progress in midwifery even before Italy. But in England the art of obstetrics was neglected. There was no original work on midwifery in the English language, only translations of Rhodion, Guillemeau, and Paré were available. The ordinary practice of midwifery was in the hands of midwives who, although practising as specialists since the dawn of history, had failed to develop the science or advance the art or dignity of their calling. They were mostly recruited from an uneducated class and their characters were not beyond reproach. Some of them resembled Terence's midwife, Lesbia:—

> "Sane pol illa temulenta est mulier et temeraria
> Nec satis digna cui committas primo partu mulierem."

They were bitterly opposed to the doctors, who were only called in to difficult and operative cases, which were often rendered fatal by the ignorance and brutality of the midwives. The doctors, on the other hand, having little experience of normal cases, were apt to intervene too soon, especially when instruments, hooks and (later) forceps were employed. Only in France, where the modern development of midwifery began, had midwives attained any considerable position.

In 1598, the first of the great French midwives, Louise Bourgeois, obtained her diploma. Her examiners consisted of a physician, two surgeons, and two midwives. As the candidate was the wife of an army surgeon, one of the two examining midwives was of the opinion that Louise Bourgeois ought not to be admitted, her reason being that "she and the doctors would have a secret understanding like pickpockets at a fair." We see here the beginnings of the rivalry between midwives and doctors which was to lead up to that remarkable series of lampoons on the man-midwife in the eighteenth century and subsequently, echoes of which have been heard from time to time, even within the walls of this temple of good-fellowship, Harvey's College. Louise Bourgeois was the first to describe prolapse of the umbilical cord, face presentation and its treatment, and expression of the placenta. She attended in her confinements Marie de Medici, wife of Henry IV. and mother of Henrietta Maria, the wife of Charles I., to whom individual entities; "constitutional diseases" occupy the stage, although this term has ceased to have a definite and exact meaning in modern pathology. Similarly, "heart diseases" and "renal diseases" are used in comparisons, as though each of these complexes had a single and simple, instead of a multifarious, causation. The constitutional factor and the organic fitness of the population are the subject of pseudo-learned disquisition, in happy ignorance of the elementary facts that the majority of so-called constitutional diseases—possibly all—are due to poisoning or infections derived ab extra, and that cardiac and arterial diseases, for instance, owe their origin chiefly to infections, of which syphilis and rheumatic fever are far and away the most important. Incidentally, although we may properly attach importance to the hygiene of middle life, and to periodical medical examinations as means to aid in preventing or in securing the early treatment of illness, it is well to bear in mind that the prevention of breakdown in early and late middle life is much more wrapped up with the prevention of the infections of childhood, of adolescence, and of early adult life than with any other factor that can be named. In substantiation of this statement I need only mention tuberculosis and syphilis, which together probably are responsible for one out of every five deaths from all causes at all ages in the aggregate.

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[3] "Questa attione è così nota per quei paesi come in Italia il cavar sangue nelle doglie di testa."

[4] "De omnibus humani corporis interioribus membris anatomia," 1316. The first edition was published in 1596, and not 1601 as erroneously stated by Haller.

[5] Under Clement VI at Siena, during the plague in 1348, official necropsies were made to discover the cause of the disease. Curatulo, "L'arte di Juno Lucina in Roma," 1901.

4. It is unfortunate that in some states, including, I believe, Massachusetts, Ohio, and Michigan, the registration of births and deaths is not in charge of the Public Health Department of the State; and that ready access of each health officer to the vital statistics of his area may thus be a matter of grace, not of right, sometimes of belated grace.

5. As far as I can ascertain, it has not been found practicable to relegate institutional deaths to the vital statistics of the place of usual residence of the deceased. In England, Dr. Stevenson and I were able to organise a successful system by virtue of which the General Register Office in London has become a clearing house, and all deaths of non-residents, institutional as well as others, are referred to the area in which the deceased lived. Prior to this, curious errors occurred. An area in which a large maternity institution existed had a terrible infant mortality; and a city which prided itself on its low tuberculosis death-rate and ascribed this low mortality to its dispensary machinery, had its tuberculosis hospital for advanced cases outside the city boundary! To what extent such blunders occur in America, I cannot say. Its dimensions and population are probably too vast to admit of a federal system of relegation of deaths of outsiders; but it might be done for each state. In passing I would deprecate the imperfect correction for deaths of visitors which was commonly practised in England prior to the institution of the system I have indicated. Health officers very willingly excluded institutional deaths of visitors; but were less willing to add outside deaths belonging to their area!

6. In sickness registration I had the privilege of initiating one of the most valuable statistical reforms in England—viz., the weekly tabulation in the offices of the Local Government Board (now the Ministry of Health) of the number of cases of each of the notifiable infectious diseases in every one of the 1800 sanitary areas in England and Wales, and their publication and distribution within three or four days to every health officer. For some 14 years these have now been summarised in an annual return, thus presenting one of the most valuable epidemiological mines of information extant. The weekly returns of cases circulated from Washington by the Public Health Service are a step towards securing similar statistics in this country; and in this connexion should be mentioned the valuable relation established between the Federal and State Health Services by the appointment of officers of the latter as collaborating epidemiologists.

7. A striking lack in the vital statistics of the United States is with respect to housing accommodation. The decennial census returns in England enable the health officer to ascertain for all cities and larger areas the number of inhabited houses in each ward, the number of families living in one, two, three, four or more rooms, the number of rooms in each of these groups in which there are on an average more than two persons per room, and whether the overcrowding is of children or of adults. This information has important social significance.

8. I do not propose to discuss the difficulties which must obviously arise federally from having the responsibility for vital statistics divided between several Federal Departments; nor those which arise from the county control of collection of statistics in some states. I merely state the general proposition in which all familiar with the importance of the subject and the fundamental need for uniformity of method in securing data and in classifying the data when obtained will agree, that centralised administration on a large scale is essential if accurate and strictly comparable statistics are to be obtained. It is equally necessary that every health officer of every state, of every county, and of every city or smaller community should receive at least weekly full particulars of every birth and death occurring within his area, and should receive daily notifications of every case of infectious disease occurring within his area.

The preceding very imperfect review of the situation may be supplemented by some further suggestions—obvious, but none the less important—for making the statistics of each state and of every area within the state increasingly useful in the service of the community. Vital statistics are merely a means to an end. Their value consists in the light which they can throw on the prevalence of disease and on the means for diminishing its incidence.

Sanitary Indices of the Welfare of a Community.

I have not seen a State Public Health report in which the possibilities of utility of vital statistics have been fulfilled, although many such reports approach this goal, and still more contain much valuable material. It is necessary to bear in mind, however, that a heap of bricks does not constitute a house; and that undigested statistical matter should preferably be filed in the statistical bureau for further reference and treatment, and not presented in expensive and repellent tables to a public which is quite properly unsympathetic to such matter. There is need for detailed study of the vital statistics of every city and state, by men who have adequate medical knowledge, who can avoid the elementary pitfalls of statistics, and who above all are enthusiastically obsessed with the public health possibilities in the careful study of local statistics. In statistical work there has been, hitherto, too much shovelling into heaps, and too little building of the edifice of public health. No elaborate mathematical work is needed for the study which I am advocating, or for ordinary public health needs; but it is necessary that there be an observance of the well-known rules of statistical accuracy and of sound reasoning, based on scientifically established pathological and medical knowledge, and made with an enthusiastic desire to make statistics act as a pointer to the areas in which excessive mortality or sickness exists, in order that, an intensive study of its vital statistics having been secured, a corresponding social and sanitary investigation may follow and the appropriate remedy may be applied.

Such intensive studies are of special immediate importance in relation to the mortality of maternity, infant mortality, and mortality from tuberculosis. I am assuming that the sanitary index formed by typhoid fever and the important index of domestic cleanliness which the prevalence of infantile diarrhœa supplies, are kept constantly under supervision.

Together with these two, there are no more important indices of the welfare of a community than the three named above; and it ought to be practicable to state, year by year, for every area and every subdivision of an area—e.g., each ward of a city, the mortality associated with child-bearing, the total and the neo-natal infant mortality (i.e., under one year old and under one month old) in terms of births; and to take public health action in accordance with the findings. Hence the essential importance of complete birth registration. And it is not reassuring to find that in the year 1916 in the New England states there were no birth certificates in the case of 15 per cent. in Connecticut and 18 per cent. in Rhode Island, and of 5·7 per cent. in Vermont of the infants who died under the age of one year. Allowing for migration of infants from without each state, which must be small in amount, these figures cannot be regarded as satisfactory.

Selection of Health Work based on Statistical Study.

How much more effective would be the work of our public health nurses and at our health centres if the work were concentrated particularly on the infants in areas in which intensive statistical studies show that infant mortality is heaviest; and how much better directed and therefore more successful would be that work in the diminution of neo-natal mortality if every health officer had it forced on his attention that in some parts of his area the loss of life in the first month of extra-uterine life may be twice as heavy as in other parts; and if instead of futile observations as to the relative importance of "congenital debility," "prematurity," "marasmus," or the like in the death returns—which are mere labels of inexactitude of knowledge—and instead of theoretical and generally unfounded assumptions that deaths occurring at this tender age are unavoidable, assistance were given which would secure adequate care of the mother in pregnancy, in parturition, and during the critical first month after birth. It may of course be argued that unless we know the causes of this early infant mortality we cannot act intelligently against it. Such a statement illustrates well the difference between the armchair statistician and the competent physician engaged in public health work. The latter knows, for instance, that syphilis is responsible for a large share of this early infantile mortality, although it but seldom emerges in death certificates, and that its maleficent action on fœtal tissues can be prevented: He knows again that many of the fatal conditions, which cannot as yet be expressed in exact pathological terms, do not arise when appropriate medical, nursing, and domestic from Aubrey's statement that Harvey said, " he wrote philosophy like a Lord Chancellor, speaking in derision." Harvey gives another instance of his respect in the second part of his treatise when, after describing in great detail the development of the chicken (" all which hath perhaps been sufficiently prolix ") he writes: " hereupon (to use the expression of our most learned Verulamius) we shall proceed to our *second vintage*." He had a great admiration for the ancient writers, but said that only the ignorant will grant that they had " engrossed the whole truth." The neoteriques he called by an opprobrious name which even Aubrey was ashamed to print. He had little faith in " bookwrights, who conceive it plentifull satisfaction of minde to them that they finde it in Books and have their memories well loaded with sage sentences; for they that are thus philosophers ex traduce, by descent and derivation, are just as wise as their libraries." He appealed to observation of nature and experiment. His statement, " Nature herself must be our adviser; the path she chalks must be our walk," is an indication of the course he followed in his chapter on labour.

EMBRYOLOGICAL, GYNÆCOLOGICAL, AND OBSTETRICAL WORK OF HARVEY.

It is known to you all that Harvey was engaged during many years in almost daily observation and dissection of eggs and the uterus and embryo of animals and man. The results of his patient researches added greatly to our knowledge, and justify the remark of Frederick Ruysch that Harvey, " who is to be considered amongst the greatest of true philosophers," advanced the history of generation by his personal observations more than his predecessors by their united labours.[7] One pregnant generalisation, " ex ovo omnia " or " omnia animalia ex ovo," resulting from his researches is placed in the forefront of his " De Generatione Animalium," and it is, to use a favourite expression of Harvey, " strange " that a distinguished writer[8] should have failed to find the aphorism in the work, since " ex ovo omnia " appears on the remarkable frontispiece of the Latin edition published in London (with illustrations of the " animalia "), and on the second page appears the statement " omnia animalia ex . . . ovo." The mistake was probably due to the writer's having read one of the Amsterdam editions in which the plate does not bear the legend.

Harvey was a supporter of the doctrine of epigenesis as opposed to preformation of the embryo, and although he failed to discover the true nature of the ovum and regarded the uterus itself as an " exposed ovum," yet he is to be numbered amongst the " ovists " as opposed to the " animalculists " who were misled by incorrect observation with the compound microscope while Harvey formed a correct judgment based on accurate observations with the naked eye. Harvey had only the aid of a simple lens (" perspective ") to aid him in observing the minute changes occurring in the early stages of development; but the care he took is remarkable. He would place his specimens in water in a silver basin (no doubt to get reflected light) and took care to arrange for brilliant illumination of the object, as, for example, in his observation of the punctum saliens.

> " If you are desirous to make discovery of this observation towards the declining of the third day, you may, if you be extreamly intent, by the assistance of a clear and *great light*, or by the *Sun beams*, or a *Perspective*, make a shift to discerne it. For else this purple streak is so exceedingly nice and fine, and the motion of the *Punctum saliens* is so imperceptible, that you will only loose your labour."

As an admirer of careful observation in others, and as showing how remarkably the faculty of observation can be improved by practice, he gives instances of " a silly ignorant shepherd," who knew every sheep of his flock and the lambs belonging to each sheep; of hunters who can tell the state of the deer hunt in a wood from the various cries of their dogs; of others who can discover which eggs belonged to which hen. " I would," says Harvey, " we could as easily judge which son belongeth to which father."

HARVEY'S DESCRIPTIONS OF THE FŒTUS.

Harvey was the first to locate the origin of the embryo in the " cicatricula," and refuted Fabricius's opinion as to its origin in the chalazæ, the function of which as ligaments for the yolk Harvey was the first to discern. He showed by many direct observations and convincing arguments that the chalazæ had nothing to do with the embryo and casts a little ridicule on his master Fabricius's view in the words, " how improbable a thing is it that every egg should have two seeds or rudiments for the constitution of only one chicken." The bulk of Harvey's " Generation " consists in his careful observations and descriptions of the development of the ovum and fœtus in all stages in birds,[9] animals, and man. His remarkably accurate descriptions of the human fœtus make us regret that he did not employ the skill of his fellow traveller Hollar to illustrate them. He made many dissections of human embryos of almost all sizes " from the big-ness of a tadpole and so upwards to the birth." He calls attention to the great changes which take place in the second, third, and fourth months, and had often dissected the human ovum in the second month. It was of the size of a pheasant's egg; sometimes he found a fœtus, in others none. The fœtus was of the length of the nail of the little finger, but the shape was like a little frog save only that the head was great and the legs extremely short; just like the tadpoles in June. " The face was like that of other animals as of a dog or cat without lips and a wide mouth from one ear to the other." His description of the fœtus and its viscera at various ages commands our warmest admiration, both for its accuracy and happy illustration; thus of the fœtus at the third month " the substance of the heart was most white, having two ventricles of equal magnitude and thickness and a double *cone* like two twin-kernels of a nut; the liver was wondrous little and also white. All this time, namely for three months, scarce anything of the after-burden is to be seen." He points out how the head at first out-strips the body in bulk, but afterwards is very much short of it, that the like disparity is between the body and the limbs, so that at the second month his arms are so short that if you stretch out his fingers to their furthest extent they will not be able to touch one another, and his thighs are so short that being inflected upon his abdomen they will hardly reach to his navel. In new-born children the bulk of the body is a pretty deal larger than that of the limbs until they are able to stand and go. " But go upright they cannot till the prolixity of their legs and thighs exceeds the longitude of the rest of the body. And hence is it, that their first venture to foot it represents them a prone kind of cattell which can scarce exalt themselves to the erection of a cock."

Harvey made a discovery of the highest medico-legal importance when he observed that the lungs of fœtuses which had breathed " stretched and dilated by the air put on a whiter colour, and by this observation of the different complexion you may discover whether a mother brought her child alive or dead into the world; for instantly after inspiration the lungs change colour, which colour remains, though the fœtus die immediately after." The great and original merit of Harvey's work on generation lies in the careful and methodical observation and record of the embryo and fœtus at all stages. Harvey did for development what the illustrious Paduan professor, Malpighi, subsequently did for disease in his " De Sedibus et Causis Morborum " (1761).

HIS CONSIDERATION OF GENERATION.

When Harvey came to consider the causa causans of generation he confessed he was " at a stand." It

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[7] " Adversaria Anatomica," Amsterdam, 1729.

[8] Dr. Arthur Farre (Harveian Oration, 1872) He gives the dictum as " omne animal ex ovo," and in a note (though not in the text) gives " omnia animalia . . . . ex ovo " as the nearest approach to the aphorism.

[9] In dissecting birds Harvey discovered the " perforation of the lungs " and the communication of the bronchi with the abdominal air-sacs.

LIBRARY

Harveian Oration

WILLIAM HARVEY OBSTETRIC PHYSICIAN AND GYNÆCOLOGIST

Delivered before the Royal College of Physicians on Oct 18th,

By HERBERT R SPENCER, M D, B S Lond,
F R C P Lond,
OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL

The Harveian orator is enjoined to commemorate past benefactors by name Linacre, Caius, Hamey, Lord Lumley, the Marquis of Dorchester de Mayerne, Croone, Goulston, Selden, and not least Harvey himself have by their gifts conferred enduring benefits on the College This year it is the duty of the orator to enrol amongst the list of benefactors an obstetric physician, the late Dr Lloyd Roberts of Manchester, who bequeathed a sum of £3,500 to the College and 1,800 medical books, including 50 "incunabula" and an almost complete set of the editions of "The Byrth of Mankynde," the first book on midwifery to be translated into English, which makes our College collection of this rare work the finest known In bequeathing these gifts Dr Lloyd Roberts has set an excellent example to other obstetric physicians, and I am but carrying out the injunction of Harvey in exhorting them to follow that example so that our College, whose immortal Fellow wrote the first original English work on midwifery, shall have in its library the best collection of books dealing with the functions and diseases of women Our distinguished Fellow Sir Thomas Browne alluded to the value of the College Library, but warned his correspondent against relying too much upon books—'ridiculous are they who think out of books to become physicians" He however, specially recommends the works of the Paduan teachers—Vesalius, Spigelius, Bartholinus, Fallopius, and Fabricius 'and be sure you make yourself master of Dr Harvey's piece, 'De Circul Sang.,' which discovery I prefer to that of Columbus' The other great work of Harvey was the 'De Generatione Animalium,' containing the chapter De Partu" It was the activity of anatomists in research on the female generative organs which aroused Harvey's interest in obstetrics and gynæcology, and in the year 1600 he went to study at the school of Padua, the city which had at that time the most distinguished University in Europe Thither flocked eager students, especially of medicine, to learn from the most celebrated teachers in the world

Padua had enjoyed profound peace since the siege of Maximilian in 1509, it was a healthy town, indeed a health resort, as it had been in the days of the Romans, when the aquæ Patavinæ were celebrated, it was also a very cheap place to live in, as testified by Montaigne in 1580 and Evelyn in 1646

From contemporary prints we can see what the University building—the 'Gymnasium omnium Disciplinarum"—was like The handsome façade of this Renaissance building was repaired during Harvey's student days, as we learn from a memorial tablet dated 1601 Over the gateway was the stemma of a Doge of Venice, and beneath it the Lion of St Mark Both these have since been taken down and replaced, to the detriment of the appearance of the building, by the Royal Arms of Italy There still remains, however, the legend 'Sic ingredere ut te ipso quotidie doctior evadas,' an injunction which Harvey faithfully obeyed (Fig 1) Passing through the gateway we come to the courtyard with its celebrated cloisters, in those cloisters were painted the "stemmata' of distinguished students, amongst them that of Gulielmus Harveius, a copy of which hangs in the College Library

Aubrey has given us the following portrait of Harvey in his younger days He was 'of the lowest stature, round faced, olivaster (like wainscott) complexion, little eie, round, very black, full of spirit his hair was black as a raven, but quite white 20 years before he dyed" "He was always very contemplative," writes Aubrey, 'and said he did delight to be in the dark as he could then best contemplate" He was indeed one of those of whom Cicero speaks quibus vivere est cogitare, and one can picture him deep in study in the cool and shadowy cloisters of the University, even as later he had caves made in the earth near his house at Combe in Surrey in which in summer time he delighted to meditate

The Paduan teachers Vesalius, Realdus Columbus, Hercules Saxonia, Casserius, Spigelius, and Falloppius all wrote works on obstetrics and gynæcology

Fabricius ab Acquapendente (1537–1619), who succeeded Falloppius at Padua, was Harvey's special teacher and "guide' He made many researches in comparative embryology He was of the opinion that the maternal vessels communicated with the fœtal, and that the fœtal heart had no influence on the circulation of the fœtus, no 'munus publicum," but beat only to preserve its own life He wrote 'Opera Anatomica quae Continent de Formato Fœtu, de Formatione ovi et Pulli, de Brutorum Loquela' which appeared at Padua in 1604 [1] He figured the decidua and the cord around the neck of the fœtus and studied the placenta in various animals Eloy says of him, "The degree of doctor of medicine with which he was honoured did not prevent him from publicly performing surgical operations" He taught for about 50 years at the school of Padua and died there universally regretted at the age of 82 He refused fees and put the presents his patients sent him into a cabinet labelled 'lucri neglecti lucrum" He built an anatomical theatre at Padua at his own expense, which generous act prompted the signory of Venice to build a much more spacious amphitheatre in his honour

Amongst other distinguished men of the Paduan school must be mentioned Mercurialis and Mercurius Mercurialis (1530–1606) was born at Forli in the Romagna in 1530, about ten years before Mercurius (Scipione Mercurio) with whom he is sometimes confounded He taught at Padua for 18 years, was created a Knight of St Mark, and amassed a fortune of 120,000 golden crowns His most celebrated work is "De Arte Gymnastica' (1569), but many works, including De Hominis Generatione" (1597) and "Monstrorum Historia Posthuma" (1642), were published by his pupils He wrote an important work "De Morbis Muliebribus," which was published in the collection of all the ancient and modern works on obstetrics and gynæcology entitled 'Gynæcia," the third and most complete edition of which was published by Israel Spachius in 1597, three years before Harvey went to Padua It is interesting to note that "La Comare' by Scipione Mercurio, which was published in the preceding year, is omitted from this collection

Mercurius ('Scipione Mercurio' [2] ? 1540–1616) was born in Rome and studied medicine at Bologna and Padua, but soon devoted himself to theological studies, and entered the Dominican monastery at Milan, where he took the name of Hieronymus He still continued to occupy himself with the study of medicine and, finding his monastic life did not afford him sufficient opportunities for the practice of medicine, he quitted the monastery and travelled in France and Spain in the years 1571 and 1572, as physician to a German officer, Hieronymus de Ladrone On completing this journey he returned to Italy, practised with great success in Padua, and settled in 1601 in Venice, where he lived for 15 years He wrote La Comare o Ricoglitrice," the first Italian work on midwifery It contains chapters and illustrations of Cæsarean section on the living patient, the uterus is palpable in the abdomen after delivery than that given by most modern text-books.

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[1] Haller says it appeared in 1600

[2] *This is the usual form of the name, but in the first edition* it is printed Scipione Mercuri on the title-page of the first book Scipione Mercurio on the title pages of the second and third books

He shows his extensive experience by mentioning rare cases in his own practice, such as ectopic gestation, the passage of by-waters (hydrorrhœa) without premature labour ensuing, which "he had often seen," the survival of the infant which had been delivered by Cæsarean section several hours after the death of the mother, the child sucking the finger while still in the passage (? face presentation), the successful delivery of an unconscious woman (? eclampsia) by irritation of the nares; the removal of a putrid "false conception" (? sloughing fibroid) after delivery; the vagitus uterinus, &c.

Harvey has a special chapter on the membranes and humours of the uterus. With regard to the chorion, he points out the error of Fabricius in stating that the urine of the fœtus was passed through the allantois into the chorion and that the amnion contained the sweat of the fœtus, and asks if his master had ever seen such a creature as a sweating chicken. His own opinion was that the liquor amnii served as food for the fœtus. He based it upon the opening of the mouth of the fœtus seen through the membranes, the fact that the child will suck the finger while still stuck fast in the birth, and the way in which a new-born child sucks "as if he would devour the nipple; he still draws it into his mouth and by the aid of his tongue and palate he sucks the milk as if he chewed it; with farre more earnestness and delight than a grown body. Wherefore he seems to be good at it of old and to have practised it in the womb." Harvey also showed, as Arantius had done, that there was no communication between the vessels of the fœtus and the mother; the placenta "served to concoct or digest the alible nutriment which proceedeth from the parent to support the fœtus"; perhaps Harvey here anticipated the discovery of the function of the syncytium.

In considering the practical side of Harvey's work in obstetrics we are handicapped by the unfortunate loss of his "Medicinal Observations." In the management of ordinary labour he advocates patience and gentleness in imitation of Nature, which "is a perfect operatrix"; "if you carefully ponder Nature's works you shall find none of them made in vain; but all directed to some end and some good." He especially rebukes the "younger more giddy and officious midwives who, lest they should seem unskilful at their trade, do mightily bestirre themselves and provoke the expulsive faculty by medicinal potions whereby they rather retard and pervert it and make it an unnatural and difficult delivery and vainly persuading the women to their three-legged stoole weary them out and bring them in danger of their lives. It is much happier with poor women, and those that dare not own their great bellies where the midwives help is never required, for the longer they retain and retard the Birth, the easier and more successful proves the delivery." The birth in breech presentation is slow and painful, "and yet notwithstanding in abortment, and where the fœtus is dead or that there would be a hard delivery any other way, so that there is necessity of handiwork in the business, the more convenient way of comming forth is with the feet forward; for by that means the straights of the uterus are opened as it were by a wedge."

An excellent description is given of the contraction and involution of the uterus after labour, of the lochial discharge, of the after-pains, of the condition of the os as indicative of the state of the contents, of the powerful contraction of the uterus resulting from stimulant injections and the state of the lochia as a guide to treatment. He points out that if any clotted blood or any other preternatural matter remains in the cavity of the womb after delivery, the womb will neither retire upwards nor close its orifice, but its neck will continue soft and open, and mentions a case where, guided by this experience, he successfully removed an "almost gristly substance" (apparently a sloughing fibroid) as big as a goose's egg from a puerperal patient suffering from fever, a disordered pulse and a cold sweat "as if she were a-dying."

Harvey and Percivall Willughby.

Fortunately we are able to judge of the high esteem in which Harvey was held as an obstetric physician by the writing of his contemporary Percivall Willughby (1596–1685), who was the son of Sir Percival Willughby of Wollaton Hall, Nottinghamshire, and uncle of Francis Willughby the naturalist. He was educated at Tunbridge, Rugby, Eton, and Oxford, graduated B.A. on July 6th, 1621, and was admitted an extra Licentiate of the College of Physicians on February 20th, 1640. He practised in Derby from 1631 to 1655, when he removed to London for the better education of his children, returning in 1660 to Derby where (except for a short interval at Stafford) he practised up till his death at the advanced age of 89. He acquired a great reputation in midwifery throughout Derby and the neighbourhood, and wrote "Observations in Midwifery," and "The Country Midwife's Opusculum,"[10] which were first published in one volume in 1863, by H. Blenkinsop at Warwick, from a manuscript then in his possession, and now in the Library of the Royal Society of Medicine. Another manuscript was in the possession of Dr. Aveling. In this work, which gives the best contemporary account of midwifery in England, Willughby quotes his honoured friend Dr. Harvey on no less than 16 occasions, attributes all his knowledge to him and recommends his work in the following words, with which I will conclude: "I know none but Dr. Harvey's directions and method, the which I wish all midwives to observe and follow, and oft to read over and over again; and, in so doing, they will better observe, understand and remember the sayings and doings of that most worthy, good and learned Dr., whose memory ought to bee had for ever in great esteem with midwives and child-bearing women."

HUNGER-OSTEOMALACIA IN VIENNA, 1920.

I.—ITS RELATION TO DIET.*

By ELSIE J. DALYELL, M.B., CH.M. SYDNEY,
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AND
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A Report to the Accessory Food Factors Committee appointed jointly by the Lister Institute and the Medical Research Council.

Introductory.

TOWARDS the end of 1918 a condition with symptoms comparable to those of the earlier stages of osteomalacia was prevalent in Vienna. X ray photographs of some of the cases showed osteoporosis, and in a few instances spontaneous fracture occurred. The disease was described by Edelmann (1919), Schlesinger (1919, I. and II.), and Schiff (1919). Schlesinger pointed out that this disease to which he gave the name "hunger-osteomalacia" differed from osteomalacia associated with pregnancy in its slower development and more chronic character. Further, the pelvis was seldom affected, marked deformity was uncommon, and the majority of patients were elderly individuals of either sex. The disease occurred chiefly among the poorest section of the population, but many cases were noted also among middle-class people in reduced circumstances. All observers expressed the opinion that it was in some way connected with the food deprivation then existing in Vienna. In the late summer of 1919 there was a marked remission in the number of cases (Schiff, loc. cit.). Our investigations began in the autumn of the year 1919, and inquiries were first made in

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[10] A Dutch translation of the "Opusculum" was published in 1642 at Leyden.

* The clinical observations contained in this paper were made by Dr. Dalyell.

Harvey makes many references in his work "De *Generatione Animalium.*"

The grievous practices of many of the midwives in England are given in great detail by Harvey's friend, Percivall Willughby. He writes: "When the meanest of the people were made priests in Jeroboam's days then Israel began to be afflicted; afterwards followed the destruction with the captivity of the people. When the meanest of the women not knowing how otherwise to live for the getting of a shilling or two to sustain their necessities become ignorant midwives, then travailing women suffer tortures by their halings and stretchings of their bodies, after which followeth the ruinating of their health and sometimes death." He goes on to give a testimonial in favour of the practice in London, where "the young midwives be trained seven years first under the old midwives before they be allowed to practice for themselves." In 1616, Peter Chamberlen II. made a petition to King James that some order might be settled by the State for the instruction and civil government of midwives; but nearly 300 years were to elapse before the desirable result was obtained through the persistent efforts of the Obstetrical Society of London (Midwives Act, 1902). In England the position of midwifery was degraded and the study of anatomy was in an inactive state when Harvey[6] went to Padua, where both subjects were being assiduously studied. The obstetrical and gynæcological writings of ancient and modern authors had just been published in the "Gynæcia"; the circulation of the blood, "the greatest physiological discovery of all times," was as yet unknown; the compound microscope had not been invented, and thus neither the ovum nor the spermatozoon could be seen. The ovary was still called the testis muliebris, but the ovarian follicles, although observed by Spigelius, were not well known till De Graaf published his observations in 1672; the spermatozoon was discovered by a medical student, Hamen, in 1675, as announced by Leeuwenhoek in the Philosophical Transactions in 1677. Thus when Harvey wrote the "Generation of Animals" he was dependent on naked-eye observation and experiment, and in reading this remarkable work one cannot help having a feeling of profound sympathy with the author and regret that the causa causans of generation should have escaped him solely because the compound microscope had not yet been invented, notwithstanding an amount of original research, faithful record, and close reasoning which has perhaps never been surpassed by a medical author.

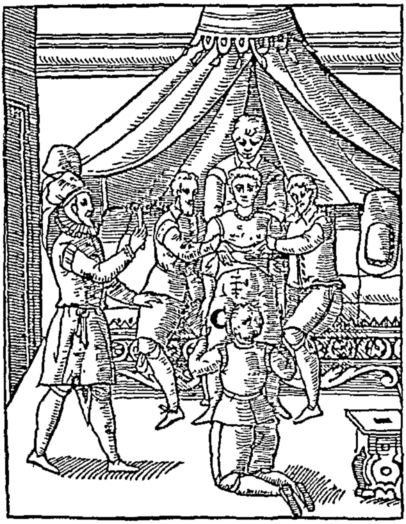

FIG. 2.—From the first edition (1596) of Scipione Mercurio's "La Comare"; Cæsarean section; the incision is to be made to the right of the middle line so as to avoid the spleen.

HARVEY'S BELIEF IN PERSONAL EXPERIMENT.

In the preface to the "Generatio Animalium" Harvey approves the opinion of Aristotle as to the necessity for observation and personal experience, and states that—

"No man can be truly called *prudent or knowing* who doth not by his own experience followed by manifold remembrance, frequent sensation and diligent observation know these things to be so. For without that we think only, or believe, and such knowledge as that is to be reputed other men's rather than our own. Wherefore fond and erroneous is that method of seeking truth in use in our times; while most men diligently enquire not what the truth is, but what other men say it is; and inferring universal conclusions from particular premisses and thence shaping to themselves irrational deductions they transmit to us things like truth for truth itself. Hence it is that sophisters and half-knowing men, polling other men's inventions, saucily impose them upon us for their own (shifting only the phrase and order and adding some impertinences of their own) and render Philosophy (which ought to be clear and perspicuous) obscure, intricate and confused. *For whoever they be that* read authors and do not by the aid of their own Senses abstract true representation of *the things themselves* (comprehended in the author's expressions) they do not resent true *Ideas*, but *deceitful Idols and Phantasms by which means* they frame to themselves certain *shadows* and *Chimaeras*, *and all their theory and contemplation* (which they count *Science*) represent nothing but *waking men's dreams* and *sick men's phrensies*."

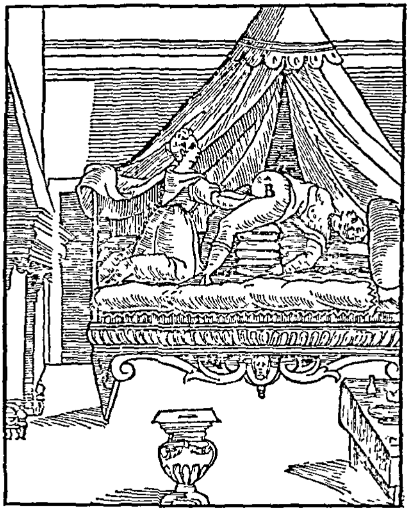

FIG. 3.—From the first edition (1596) of Scipione Mercurio's "La Comare," showing the "hanging-legs" position for delivery in cases of contracted pelvis.

In this and other passages defining his method of inquiry into the generation of animals, Harvey uses language very similar to that employed by Bacon, showing that he approved and adopted Bacon's method and did not assume a contemptuous attitude towards that great philosopher, as one might infer muscle groups—e.g., lumbar muscles, adductor muscles of the thigh, and the ilio-psoas. There was no opportunity for examining any histological specimens which might throw light on the process which took place at the painful sites, as we have no record of a fatal termination of any case of the disease that came under our observation. As far as we are aware the disease progressed until the patient was completely immobilised in bed, and succumbed ultimately to intercurrent disease (usually pulmonary) or to starvation, which unhappily was not an impossibility in Vienna in 1918–20.

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[6] "Ex ea ipsa Anglia in qua hactenus anatome fere nulla fuerat exstitit novum artis lumen, cujus nomen ab ipso retro Hippocrate in medicina secundum est." Haller quoted by von Siebold, "Gesch. der Geb.," 1845, Vol. II., p. 246.

Occurrence of Tetany.

Occurrence of tetany with osteomalacia has frequently been noticed and is of much interest. In 22 cases of hunger-osteomalacia Schlesinger (1919, II.) observed marked tetany in two cases (elderly women of 62 and 55 years respectively), and extra excitability of the muscles in 15 cases. He calls attention to the facts (1) that tetany is otherwise a rare condition in elderly people, and (2) that in cases of "hunger-osteomalacia" accompanied by tetany, symptoms of the latter disappeared simultaneously with those of osteomalacia. In two instances a subsequent relapse was again accompanied by tetany. Schlesinger (1920) distinguishes this condition as "hunger-tetanie," and points out that the symptoms are often asymmetrical in their distribution. Sauer (1920) described the case of a woman, aged 29 years, suffering from marked tetany and simultaneously from severe hunger-osteomalacia.

Definite tetany was observed by us four times in a total of 39 cases, but many patients complained of some degree of cramp in the feet, legs, or forearms. The most marked case that came under our notice occurred in a woman of 52, suffering from severe hunger-osteomalacia (see Case 5 in Appendix), who showed altered electrical response of the muscles, Erb's sign, Trousseau's sign, and Schlesinger's sign (tonic spasm of the foot when the leg is flexed at the hip to a right angle). In every case seen by us the symptoms of tetany subsided gradually after the patient was admitted to hospital. Contrary to Schlesinger's observation that tetany and osteomalacia symptoms were relieved simultaneously, in the case mentioned above (Appendix, Case 5), the tetany manifestations were greatly relieved before the treatment had shown much effect upon the osteomalacia symptoms.

Age- and Sex-Incidence.

Hunger-osteomalacia may be regarded as a disease which affects specially the portion of the population above middle age. Hume and Nirenstein's (1921) analysis of 131 cases treated as out-patients at the Zentral Verband der Krankenkassen shows that 115 (or 88 per cent.) were between the ages of 40 and 75 and 16 (or 12 per cent.) were under 40 years of age. Our notes of 43 cases show 36 (or 84 per cent.) between 40 and 70 years of age, and 7 (or 16 per cent.) between 20 and 40. Of 19 cases of hunger-osteomalacia studied by Edelmann (loc. cit.) in 1918 to 1919, 15 were women and 4 were men. In the cases observed by us in 1920 there was also a much higher proportion of women than men, but these included cases in convents. In the general population in 1920 the numbers of men and women affected were more nearly equal. Of 177 cases in which sex was noted by Hume and Nirenstein 99 (or 56 per cent.) were women and 78 (or 44 per cent.) were men. In this outbreak of hunger-osteomalacia, as compared with the better known osteomalacia of pregnancy, the most striking features were the incidence among elderly and old people, and the extent to which men were affected.

Influence of Occupation.

Evidence was not obtained to show that hard manual labour was a special contributory cause of hunger-osteomalacia. If the condition results from food deprivation, analogy with other deficiency diseases suggests that a relation would exist between the incidence of the disease and increased physical strain. Age, however, had more influence than occupation in determining the incidence of hunger-osteomalacia, and the hardest manual work was performed by individuals of an age (20–40) when some degree of protection from the condition seems to be afforded naturally. Moreover, in the existing economic crisis artisans and manual labourers were better paid and could secure a more abundant supply of food than other sections of the population, so that this additional advantage helped to protect such workers. Poverty and old age predisposed to the disease, and in many cases the food deprivation was specially severe and prolonged. In the convents the dietary was rigidly reduced, due partly to poverty and partly to the isolation in which these communities were placed. The lack of food was so extreme that younger occupants of the convents suffered as severely from the disease as the older nuns, and sisters appointed for light teaching duty were as much affected as those responsible for gardening and heavy household tasks.

Seasonal Incidence.

The seasonal incidence of hunger-osteomalacia was interesting. Many recurrent cases gave a history of first appearance of symptoms in winter 1918 or early spring 1919, with remissions in summer 1919 and relapse in the winter of 1919–20. The fresh cases seen by us had begun to suffer in the cold weather of the late autumn of 1919. The relief experienced in summer weather was probably due to higher temperature, but it is also possible that the disease was alleviated as a result of the improved diet associated with the summer season.

Ætiology.

The literature is full of observations, connecting osteomalacia and other disorders affecting the calcification of the bones with the activities of the ductless glands. A comprehensive abstract of the papers upon this subject is given by Zuntz (1912). Important observations in this field are those of Erdheim (1906) who, after extirpation by cautery of the parathyroids, produced a condition of tetany in rats, as well as abnormal dentine formation. Later (1914) the same observer found abnormal histological conditions in the parathyroids in a series of rats which developed rickets spontaneously. In addition (1907) he found at autopsy pathological changes in the parathyroids of human subjects who had suffered from osteomalacia of pregnancy. The theory advanced by Erdheim is that the normal secretion from the healthy parathyroid may have neutralising effect upon that of other glands, such as the ovary, which may, in certain conditions, affect the normal course of bone formation. Some support for this view is found in the association of osteomalacia with multiple pregnancy (Sonntag) and in the beneficial effect of castration upon such cases as described by Fehling (1891; 1895). Other observers have recorded the good effect of treating osteomalacia with adrenalin (Bossi (1907), Edelmann, loc. cit.); and extract of the hypophysis was employed with good effect in osteomalacia by Bab (1911), Neu (1911), Pal (1912), and in rickets by Klotz (1912). Biedl (1916) reached the opinion that the cause of osteomalacia is to be found in the disordered action of more than one gland.

It has been well recognised also that external conditions have an influence upon the incidence of osteomalacia. Sonntag (1905) states that although everywhere a rare disease it is unusually frequent in certain places, such as the valley of the Rhine and its tributaries, Lombardy, the Danube Island Schütt in Hungary, and the Harz Mountains. The disease is comparatively rare in North Germany, in the United States, and in England, where it is described only in association with pregnancy. Sonntag also connects the occurrence of the disease in pregnancy with damp dwellings, poor diet, insufficient clothing, hard work, and excessive care and worry, in a word with poverty, and he calls was a "dark, obscure business" about which "authors do nowhere more cavil and contend" Having failed, owing to the non-existence of the compound microscope, to discover the ovum or the spermatozoon, and having convinced himself by many observations and experiments that no part of the male seed entered the uterus, "and yet there is a necessity that something should be there which may render the female fruitful," he had no refuge left but to apprehend that the woman was impregnated by the conception of a general immaterial idea, "that the same thing is effected in the womb as in the braine, unless," he adds, "some cunning Philosopher whom the gods have better provided for can finde out some efficient cause which is not included in our recapitulation" Atoms, contagion, effluvia, odours, incorporeal spirits had all been cited as the efficient cause · Harvey pleads for a place for his conjecture which he offers "in a problematical way" until there be some certainty established in the business "Let the learned and ingenious stock of men consider it; let the supercilious reject it; and for the scoffing ticklish generation, let them laugh their swinge" The whole of the work on the development of the fœtus is a testimony to his great powers of observation and reasoning, and justifies Sir Thomas Browne's description of Harvey as an "ocular philosopher and singular discloser of truth," and his work as that excellent discourse of generation so strongly erected upon the two great pillars of truth, experience and solid reason"

GYNÆCOLOGY

Gynæcology in Harvey's time was in an *embryonic* state of development Since Moschion wrote his Περι των γυναικειων Παθων it has taken its place in practice by the side of midwifery, an association which it should always retain. Harvey made several notable contributions to this branch of medicine He gives a good description of the broad ligament of the uterus—"*the pendulous band or tie*" *he calls it*, *mentions* the Hottentot apron of which he received information from a surgical friend, "an honest man": this he likens to the "vail" in animals He describes the green sickness in virgins "whose womb is slender and their terms are at a stay"; had seen ectopic gestation; alludes to the displacement of the womb, is doubtful as to the agitation of the womb in hysteria, the discovery of the truth of which "as it is very difficult so it is worthy the attempt" He gives a good account of spurious pregnancy and mentions an instance in a noble matron whom, in spite of all the arguments he could suggest, he was unable to persuade that she was mistaken; this shows a considerable experience and confidence in diagnosis

Harvey applied his knowledge of the circulation of the blood to surgery, pointed out how by tying the artery going to a tumour the tumour could be removed with safety, *and thus laid the scientific foundation for* the extensive operations, such as hysterectomy, now performed by the same method (isolated ligation of vessels instead of ligation en masse) a lesson not yet learned by all gynæcologists at the present day. In the treatment of intra uterine diseases Harvey invented a dilator, after which he used injections and by this means cured patients suffering from offensive discharges and from sterility. Harvey discovered a peculiar bleeding tumour of the uterus which he called the "honey-comb"; for the mention of which we are indebted to the "Observations in Midwifery" of his friend, Dr Percivall Willughby. When we recall that we owe to Ent the publication of the "De Generatione Animalium" we can only surmise how many other observations of Harvey's were contained in his lost "Medicinal Observations" to which Harvey often refers. Willughby writes —

> "*There came into my house at Darby, my honoured good friend Dr Harvey 1642 Wee were talking of severall infirmities, incident to the womb After that I had related the aforegoing story de cauda mulieris, and how shee flouded, and was cured, hee added to my knowledge an infirmity, which hee had seen in women, and hee gave it the name of a honey comb, which also, hee said, would cause flouding in women*"

No further details are given; but the appellation "honey comb" suggests that the growth had holes in it discharging thick fluid *so far as I know* the only condition of the cervix corresponding with this description is a very rare form of cancer of the cervix, an instance of which has been published, with illustration, in the Lettsomian Lectures for 1920 Percivall Willughby was at the time of Harvey's visit 60 years of age and was well acquainted with the ordinary forms of cancer, of which he records many observations It is interesting therefore to find that Harvey should be able to add to the knowledge of this experienced gynæcologist an undescribed disease, the "honey-comb."

MIDWIFERY.

Harvey's Chapter on Labour ("De partu"), the first original English work on midwifery, justifies Aveling's designation of Harvey as the father of British midwifery The scientific part of the work consists in criticism of previous opinions on the anatomy and physiology of the fœtus and of parturition based on his own observations, the practical part gives evidence of extensive personal experience in midwifery and is in the main devoted to the recommendation of patient watchfulness and gentleness, imitating nature, in ordinary cases, and podalic version in difficult ones

Harvey was the *first to describe accurately* the fœtal circulation and the great development of vessels in the pregnant uterus He also had observed, as *Ambroise Paré had done before him*, the *softening* and loosening of the sacro iliac and pubic articulations before labour. He gives a careful description of the lie *and posture of the fœtus in utero, states that* it executes the somersault ("dives down") a little before labour and that it sometimes changes its *presentation from time to time* "*For he swimmeth* in a water and moveth himself to and fro, he stretcheth himself now this way, and now that, and so is variously *inflected and tumbled up and down, in so much that* sometimes, being entangled in his own navel string, he is strangely ensnared"; "and the Great-bellied women know full well that he doth *sometimes acquire* a different scituation when they find the Child kick sometimes above, sometimes below, and now on this side and at other times on that" With regard to the duration of pregnancy, he gives the usual ten lunar months He quotes Franciscus Valesius's case *of the survival of a five months' girl and another case* of a woman who bore a living child after a gestation lasting 16 months "But I confess," says Harvey, "*these are rare accidents*" "It must not be denied that there are many crafty and fraudulent women which for lucre sake, or for fear of punishment or infamy will feign and swear they are with child. And likewise it is well known that others are easily deceived and do conceive themselves to be with child when it is no such thing" And *a* superfœtation may cause the duration of pregnancy to be apparently longer than it is in fact He alludes to cases in which the fœtus is born completely enclosed in the unruptured membranes, and cases of adherent placenta "oftentimes hardly divided from the uterus which doth induce evil symptoms, noisome smells, and sometimes gangreen whereby the mother is brought into imminent danger"

Harvey shared the opinion of Hippocrates that the birth of the child was due in the main to its own efforts, and here is at variance with Fabricius, who ascribed the work to the uterus, the muscles of the abdomen, and the diaphragm. Harvey admits, however, that the uterus has its share in the business, and gives details of a case of labour in a procident uterus as a proof, and states that an unnatural birth sometimes results from failure of the mother in her expulsive office (uterine inertia) Harvey gives a careful description of the involution of the uterus after delivery and of the lochial discharge "It is indeed a wonderful thing that the so vast bulk of the uterus should so much lessen in so short a space, namely, in the space of 15 or 20 days" This is a more accurate statement of the period during which use of phosphorus in the form of pills without oil (Schlesinger, 1919, I.); this treatment, however, was not tried with out-patients, but coincided with admission to hospital and a generally improved dietary. A similar criticism applies to the good results from the use of extract of thyroid gland reported by Edelmann (loc. cit.).

In view of the possible connexion between the known high content of cod-liver oil in fat-soluble A accessory factor, and the efficacy of the oil in the treatment of osteomalacia, it was desirable to try to determine the therapeutic value, in this disease, of various fats known to contain the fat-soluble A accessory factor in different degree. The results obtained are set out in detail below. They show that the symptoms could be relieved, in absence of any other treatment, by one each of the series of fats employed, but that cod-liver oil was the most potent. Zilva and Miura (1921) have succeeded in making quantitative estimations of the relative content of A vitamin in different fats, and in experiments with rats have found some samples of cod-liver oil to be 250 times as potent as butter.

TABLE I.—*21 Cases of Osteomalacia in Convents.*

The additions to the diet were arranged to be approximately equal in calorie value.

Group.	Addition to diet.	Approx. amount daily, g.	Calories.	Fat per day, g.	No. of cases.	Result.
(*a*)	Sugar or syrup. Cereal. Olive oil.	15 40 15	330	15	10	Good progress in 5 slight cases; no progress in 5‡.
(*b*)	Margarine.* Olive oil.	25 20	380	43	5	Good progress slightly inferior to (*c*).
(*c*)	Butter. Cod-liver oil. Egg (dried).	25 10 =1 egg	360	40	11†	Good progress.

* This sample of margarine was believed to be manufactured from vegetable fats, it has since been ascertained that it contained 80 per cent. animal fats.

† Later including 5 from group (*a*).

‡ Three of the 5 cases in which no progress was made were severe, and showed good improvement when treatment (*c*) was substituted.

TABLE II.—*18 Severe Cases of Osteomalacia.*

Observations taken in the III. Medizinische Abteilung at the Allgemeines Krankenhaus (Prof. Dr. H. Schlesinger), February–April, 1920. The effect of various additions to the ordinary hospital diet.

(*a*)	Sugar or syrup. Rice or other cereal.	60 100	550	0	5	See below (1).
(*b*)	Margarine.* Olive oil.	50 (25 at first.) 15	540	60	13	Steady progress in 8 cases; very slow progress in 5.
(*c*)	Butter. Egg (dried).	50 (25 at first.) =1 egg	400	52		
(*d*)	Cod-liver oil.	60	540	60	4	See below (2).

(1) Very slow improvement in 20–30 days; marked progress when changed to (*b*), (*c*), (*d*).

(2) Marked improvement in 4 severe cases, making slow progress on (*a*), (*b*), and (*c*).

The food supplies of Vienna in general were most irregular, and it was not possible to arrange special diets which could be controlled in every particular. Except for a few important cases we had to be content with watching the effects of various additions to the ordinary diet, whether in hospital, convent, or home. Without exception such ordinary diets were always deficient in fat and always scanty. The following foods were, therefore, chosen for the different groups into which the patients were divided, and in comparative observations the additions made were roughly equivalent in calorie value. (*a*) Sugar and cereals; (*b*) vegetable oils (margarine, olive oil, &c.); (*c*) butter and eggs; (*d*) cod-liver oil; (*e*) vegetable oil containing phosphorus; (*f*) green vegetables. After admission to hospital some improvement usually followed from rest in bed, and relief from the misery caused by moving about, but such effects were only temporary, and relapse occurred if no increase were made in the fat-content of the dietary. (Tables I. and II.)

(*a*) *Influence of Sugar and Cereals—i.e., extra calories without extra fat.*—These additions were made to the ordinary hospital diet of five severe cases in the Allgemeines Krankenhaus (see Table II.). Slow improvement was noted in three to four weeks, but only one case progressed sufficiently to leave hospital; the other four cases required a further period with treatment by addition of (*b*), (*c*), or (*d*) before they could be discharged (e.g., Case 2 in the Appendix). Ten cases in a convent (see Table I.) also had their diets enriched with extra cereals and sugar, but here a small amount of olive oil (15 c.cm. daily) was also added. Progress was noted in five of the lighter cases only, and not in the remaining patients. (Table I., group (*a*).)

(*b*) *Influence of Vegetable Fats and* (*c*) *Butter and Eggs.*—The treatment of a series of cases with these additions was arranged (see Tables I. and II.) in the belief that the ordinary vegetable oils of commerce might be regarded as free of the fat-soluble accessory factor, a view in accord with results obtained by McCollum and by Osborne and Mendel and their co-workers (loc. cit.). Such additions would therefore have demonstrated the effect of adding fat to the diet uncomplicated by the presence of the vitamin. We found, however, that the effect of vegetable fats differed only in degree from that of butter and cod-liver oil, since cures followed the use of each of the fats administered, but when vegetable oils were used, the good effect appeared more slowly and in severe cases was less complete. (See Case 1 in Appendix.) The margarine employed was selected in the belief that it contained only vegetable oil, but on subsequent inquiry from the manufacturers it proved to contain 80 per cent. of animal fats. No marked difference was observed in the response to treatment of 24 cases divided into two groups, one of which received margarine and olive oil, and the other butter and egg as dietetic additions. (See Tables I. and II., groups (*b*) and (*c*).)

(*d*) *Cod-liver Oil.*—This was the most effective fat tried, and no case failed to recover when this oil was added to the dietary in sufficient amount. Doses of cod-liver oil equal to 60 g. daily effected speedy cure in severe refractory cases after other forms of treatment had failed. Cases 5, 6, 7 in the Appendix are instructive instances.

Case 6, George R., aged 60, was specially severe, suffering acute pain with the least movement. As additions to the hospital diet, he received margarine and olive oil in amounts equal to 65 g. of fat daily for 40 days, but no definite change took place in his condition. 30 g. of cod-liver oil daily were then given for seven days, and were not effective; but on increasing the daily dose to 60 g. cod-liver oil there was a dramatic improvement in his symptoms within a week, and in three weeks his gait was easy and painless. This case illustrates well the necessity for giving the requisite amount of the right sort of fat.

Case 7, Christina B., was the most severe case encountered. She had been unable to walk for three months before entering hospital, could not stand without support, and was helpless except for slight movements in bed made with the help of her hands. In addition to the ordinary hospital diet she received at first 25 g. and later 50 g. of butter and one egg each day for 31 days, and for part of this time phosphorus pills were also given. At the end of this period scarcely any improvement was noticeable. After changing her extra allowance to 60 g. of cod-liver oil daily, marked progress was evident after five days and the patient was discharged after 14 days of this treatment.

One very refractory case was that of Mater U. (Case 4, Appendix), a delicate woman, aged 52, who could not tolerate cod-liver oil. Treatment for 17 days with 20 g. butter daily, plus extra milk and eggs, was very disappointing, but after increasing the butter ration to 50 g. daily and the milk to ½ litre, there was slow steady improvement and the patient was able to walk without her stick after 10 days. Another severe case in the same convent (Mater P., aged 57, Appendix, Case 3) treated at the same period with 20 g. butter daily and with 15 g. cod-liver oil instead of milk or eggs, made rapid progress and admitted immediate relief from pain.

(*e*) *Influence of Vegetable Oil to which Phosphorus was added.*—Miss Hume and Dr. Nirenstein made a special series of investigations to determine the comparative value of cod-liver oil and of vegetable oil containing phosphorus with 131 out-patient cases selected from about 500 at the central station of the Verband der Krankenkassen. A detailed analysis of these observations is published by the

October and November, regarding the occurrence of the disease, but no cases were found In December, however, fresh and recurrent cases were seen in two convents in which the nuns had suffered severely during the previous winter, and simultaneously there appeared in the hospitals, both as out patients and in patients, persons suffering from the disease in various degrees of severity From this date until the late spring of 1920 there was no lack of material for study

By arrangement with Prof Dr Arthur Schiff, investigations were undertaken in his out patient department at the Central Verband der Krankassen, one of the principal medical centres of the Health Insurance Organisation in Vienna At this centre medical examination took place of all persons applying for sick pay through inability to work Between January, 1920, and May, 1920, over 600 patients diagnosed as cases of hunger osteomalacia attended for medical advice, of these 204 were selected for special study. These patients attended regularly for examination and special treatment, and observations were made of their progress by Miss M Hume in collaboration with Dr E Nirenstein A detailed account of this investigation is published in a separate paper

In addition to the ambulatory cases in convents and at the Krankenkassa, special observations were made on 18 cases admitted to the III Medizinisches Klinik of the Allgemeines Krankenhaus by permission of Prof Dr H Schlesinger, and upon eight cases in the I Med. Klinik of the University (Prof K F. Wenckebach), in collaboration with Dozent Dr Porges

Onset, Symptoms, and Course of the Disease

The short description of hunger osteomalacia symptoms given by Schlesinger and Edelmann has reference to severe cases admitted to hospital as in patients In these the painful areas were commonly the chest and the sacral region the ribs were invariably sensitive to pressure, and less often pain was felt in the extremities Bones of the face were affected in about one third of the cases, the pelvis was rarely painful, and pelvic deformity was not observed There was great pain on movement, and in cases not completely bedridden there was a characteristic stiff and waddling gait, and the climbing of stairs was specially difficult Frequently the patients declared that they had decreased in height Edelmann described the condition of his *patients as prematurely aged*

The variety of material that was available allowed *our observations on the disease to be made at all* stages of its course.

The initial symptom was difficulty in walking owing to pain in the tarsal and metatarsal bones, generally accompanied by œdema of the feet and ankles The œdema when present subsided after some weeks, but without diminution of pain on walking The lumbar and sacral regions were next affected and stooping or walking was accompanied by severe pain in these areas, of an intense and persistent nature Thoracic symptoms developed later with pain on compression of the ribs, progressing from lower to upper ribs, pain was often felt also on coughing or deep breathing Arms, shoulders, and hands were not so often affected, and face symptoms were present only in the most severe cases

The disease was afebrile, and progressed from the early condition with mere discomfort in walking to a bedridden state in which any movement of the body caused agonising pain The following description applies to the ambulatory cases of moderate severity which came most commonly under observation The patient had a characteristic expression the face sallow, the eyes sunken and with an expression of suffering The skin was dry, harsh, and loose, the body anæmic, flabby, and ill nourished, but not usually emaciated Movement was painful, and in walking the body was bent forward and, as a rule, support of a stick in one or both hands was necessary The waddling gait and the difficulty in mounting steps were so characteristic that it was easy to detect sufferers from the disease among the people in the street, especially when endeavouring to enter trams or vehicles The legs were widely spaced, the feet hardly lifted from the ground in short shuffling steps, and the body moved stiffly from side to side in the endeavour to limit as much as possible swinging movement at the hips *Attempts to step upwards, as in* mounting stairs, failed unless a support could be grasped with the hands and the body pulled up by the shoulder muscles The pains were always associated with movement As long as the patient could remain motionless whether lying, sitting or standing there was little discomfort, but movements in which the trunk muscles were involved, as in bending, turning, sitting up or walking, caused acute pain which was always worse with the preliminary muscular effort

The hands arms and shoulders, being seldom affected, were much used in carrying out movements Thus the patient would change from lying to sitting, or from sitting to standing, with the help of arms and hands, and in a severe case would get in or out of bed only after flexing the legs by lifting the thighs with the hands over the edge of the bed The defective action of the body muscles was not due *to loss of power, but to voluntary limitation of movement* owing to apprehension of pain Many movements only *became painful when pressure or weight was exerted on the* parts concerned For example if the patient could support the body by grasping a fixed object with the hands, the foot could be lifted from the floor and the leg flexed at the hip *and knee without obvious discomfort, but a similar move*ment to carry the body up a step was often impossible, *from the severe pain produced by throwing the weight of* the body on one side of the pelvis

Systematic examination of patients showed certain areas where manual pressure was almost invariably painful Such *pressure points were always over bones* The joints were rarely involved and muscular masses were never sensitive *The tarsal bones, especially the head of the astragalus and* the proximal ends of the metatarsals, were usually sensitive, *also the lower ends of the tibia and fibula, and the anterior* and inner borders of the tibia in its lower half, the lower *two thirds of the shaft of the femur was occasionally sensi*tive The knee joint was rarely involved and the hip joint was always free *from pain* The *most sensitive pressure area* was the sacral and lumbar region—e g, over the sacro iliac joints and transverse *processes of* the lumbar vertebræ Severe pain was always felt in this area during stooping *or bending movements, and this symptom was always* marked and persistent The iliac crests, pubic rami, and *pubic symphysis were seldom affected, and deep pressure* through the abdominal wall on the inner surface of the *ilium was never painful Bony deformity of the pelvis did* not occur in any case seen by us

Sudden abduction of the flexed thighs usually *caused* severe pain over the lesser trochanter and at the site of the *insertion of the adductor muscles, a symptom attributed to* sudden tension of the ilio psoas and adductor muscles This formed one of the chief diagnostic features of the disease and was an important indication of its progress or remission.

In almost every case, sudden *compression of the ribs* caused acute pain, felt most severely in the axillary line The lower four ribs were commonly affected, in severer cases the fourth–eighth ribs also, and the upper ribs were rarely involved Here also the pain was evidently associated with tension of the intercostal muscles The thoracic vertebræ *and posterior rib junctions were not sensitive nor were the* costochrondal junctions and costal cartilages Pressure on the sternum sometimes caused pain but it was not often severe The bones of the face were sensitive only in certain advanced cases and this symptom yielded readily to treatment When present the painful pressure points were over the supra orbital ridges, malar bones, nasal bones, and along the mandible

The muscles were not painful when handled, showed neither wasting nor other deformity, and their contractile force was not diminished It was therefore unlikely that the whole muscle was involved in the existing lesion The nerve reflexes were normal, and there was no evidence of peripheral neuritis nor of damage to nerve trunks so that it was improbable that the symptoms of the disease could be due to nerve involvement only The association of tetany with the disease was not infrequent This is a point of special interest and is dealt with in a later section

The degree to which bones were involved in the lesion was difficult to determine The sensitive areas were limited Bony deformity was not seen by us but has been described by Eisler (1919), Eisler and Hass (1921), and Schlesinger In their observations the affected areas included ribs, pelvis, spinal column and femur Evidence of a pathological change in the substance of the bones was obtained by us from a few patients who gave definite history of decrease in the height of the body (cf Schlesinger, 1919, I, and Case 1 in Appendix) In one instance also spontaneous fracture of the femur occurred in a woman aged 32 *Spontaneous fractures were observed by Edelmann also* (loc cit)

Although it was not possible to say with certainty how much of the bone substance was *affected*, it was evident that the areas of acute pain on pressure corresponded to the points of attachment of certain ribs, lumbar vertebræ, and sacro-iliac joints; has pre-tibial œdema and when trying to walk has cramps in both feet.

Treatment.—(*a*) Extra calories, consisting of cereals and carbohydrates with 15 g. daily of olive oil. After 16 days' treatment, no improvement. (*b*) Butter 25 g., cod-liver oil 15 g., and one egg given as additions to the daily diet. After eight days' treatment, improvement in pressure pains and in body movements; walking somewhat less painful. Twenty-three days: can walk rapidly without use of stick; movements of body free and painless; no pains on pressure over ribs or sacrum; some pain and œdema persist in feet. General condition greatly improved; prophylactic doses of cod-liver oil continued.

CASE 4.—Mater U., aged 52; treated from Jan. 10th, 1920, in convent. Symptoms have been present for two years and are specially severe. Patient emaciated, and gives definite history of decrease in height and shortening of arms. Walking and all body movements cause intense suffering, and pressure pains are acute over ribs, sacro-iliac joints, lumbar vertebræ, hip-joints, dorsum of foot, and calf muscles. Has tendency to spasm of foot.

Treatment.—(*a*) Extra calories as for Case 3. After 14 days' treatment, no improvement. (*b*) Butter 25 g. and one egg daily, in addition to ordinary diet; cod-liver oil 15 g. daily was also ordered, but could not be tolerated by this patient and was not taken. After 17 days' treatment, no improvement. (*c*) Butter 50 g., one egg, and 250 c.cm. milk daily in addition to the ordinary diet; total extra fat 60 g. After 14 days' treatment: marked improvement; slight pressure pains persist over sacrum and lower ribs, but not elsewhere; gait still stiff, but walking is no longer painful and for four days patient has not used her stick; body movements in bending, sitting, or standing still limited but greatly improved. Prophylactic treatment continued with smaller doses of butter and milk daily.

CASE 5.—Maria B., aged 62; admitted Jan. 13th, 1920. A severe and refractory case, complicated by tetany. Symptoms have been present for past year in ribs and sacral region. For some months patient has been unable to walk owing to pain caused by body movement and has remained in bed; she can turn in bed and raise herself only with great difficulty and with use of hands. Tetany well marked; Trousseau's sign and Erb's sign positive.

Treatment.—(*a*) Extra calories in form of cereals and carbohydrates; anti-neuritic vitamin also given as marmite, 10 g. daily. After 10 days' treatment: no change in general condition; all symptoms still present, and tetany well marked. (*b*) Butter 25 g., one egg and marmite 10 g. daily in addition to ordinary hospital diet. After 10 days' treatment: no improvement; patient is unable to walk, and pressure pains are unchanged; tetany symptoms are less marked but still present. Since admission increase in body-weight of 2·4 kg. (*c*) Cod-liver oil 60 g. daily. After 10 days' treatment: marked progress; can walk a little and gets in and out of bed without difficulty; great diminution in pain on compression of ribs and on abduction of thighs; knees still painful and slight ankle-clonus present; tetany symptoms much less marked. Twenty-one days: pressure pains persist though slighter in degree; abduction test negative; gait still stiff. Thirty-five days: pressure pains have disappeared; no abnormality of gait, and patient walks slowly without pain; complains only of pain in ankle-joint and along shaft of femur on right side. Discharged March 15th, 1920.

CASE 6.—George R., aged 60; admitted Jan. 14th, 1920. Body-weight 58·5 kg., height 171 cm. Very severe case, with history of onset of symptoms nine months previously. First noticed œdema of legs and pains in ankles; thighs and ribs were later affected. All movements are so painful that patient is now practically helpless; cannot stand without support, and in bed can change position only by use of hands and arms. Has acute pain on compression of ribs and sternum, and on abduction of flexed thighs.

Treatment.—(*a*) Extra margarine 25–50 g., olive oil 15 g. daily, in addition to hospital diet. After 25 days' treatment: margarine 25 g. daily, no improvement. Margarine then increased to 50 g. daily for a period of 10 days; slight improvement, but still unable to walk. (*b*) Cod-liver oil 30 g. daily, later 60 g. After two days' treatment: immediate diminution in pressure pains; rib symptoms less marked; walking no easier. Seven days: rib symptoms almost disappeared; still cannot stand without support; cod-liver oil then increased to 60 g. daily. Fourteen days: pressure pains and abduction pain very slight: can walk slowly without support and with little pain. Twenty-one days: condition very satisfactory; walks well and makes free movements of bending, sitting, and standing. Twenty-eight days: traces only of pressure pains elicited; gait normal and patient walks without pain or fatigue. The general condition is very good and weight has increased 9 kg. since admission to hospital. Discharged March 22nd, 1920.

CASE 7.—Christina B., aged 50; admitted Feb. 5th, 1920. The most severe case that came under our notice. Symptoms have been present without remission since previous spring, and for four months before admission patient has been helpless in bed. Pressure pains over ribs, sternum, pelvis, and lumbo-sacral region are intense, and acute pain follows abduction of flexed thighs. Patient stands feebly when supported, but cannot take a step nor carry out any body movement owing to the agonising pain that accompanies muscular effort.

Treatment.—(*a*) Butter 50 g. and one egg daily, in addition to ordinary hospital diet. After 14 days' treatment: patient is freer from pain, can sit up in bed slowly and get in and out of bed with difficulty; cannot walk. From this date phosphorus pills given, equivalent to 0·0005 g. phosphorus daily. Twenty-five days: no progress in movements and condition still very helpless; pressure pains still acute, especially in ribs; no result observed from treatment with phosphorus. (*b*) Cod-liver oil 60 g. daily to replace former additions to diet; phosphorus pills omitted. After five days' treatment: pressure pains much less; abduction test causes slight pain. Patient shows great improvement and has lost expression of suffering; can sit up in bed without using hands, but still has great difficulty in getting in and out of bed and has to flex thighs with hands; can stand alone with feet far apart, and can take a few steps with support. Fourteen days: trace of pain on compression of ribs but not elsewhere; can move from bed slowly without pain, stands without support, walks with help of stick; has shuffling gait. Discharged March 17th, 1920.

CASE 8.—Rosa T., aged 30; bookbinder; admitted May 20th, 1920. The unusual feature of this case was the occurrence of the disease in a severe form in so young a woman; symptoms had been present and progressing for more than a year, but patient had only given up work two weeks before entering hospital. On admission gait was stiff and steps were short and shuffling; all body movements, such as bending or getting into or out of bed, were difficult and painful and were only possible when aided by hands; pain was caused by pressure over frontal, malar, and nasal bones, ribs, lumbar vertebræ, sacro-iliac joints, shaft of femur, and borders of tibiæ; pain on abduction of flexed thighs very acute.

Treatment.—(*a*) Fat-free diet, with addition of green vegetables. Daily food-supply was equivalent to 2000 calories, and consisted of bread, rice, oatmeal, peas, beans, lentils, cocoa, sugar, and chocolate. In addition a large amount of green vegetables was consumed, the daily allowance being at first 400–500 g., and later 700 g. Vegetables used were spinach, lettuce, cabbage, cress, asparagus, and cucumber. For cooking purposes 5 g. of olive oil daily was allotted; this diet was continued for 18 days. Progress: After 18 days' treatment patient had gained 1 kg. in weight. Distribution and degree of pains on pressure were unaltered; gait was still stiff and body movements difficult though less so than before. Progress of case was not satisfactory and patient was disinclined to take larger amounts of green vegetables, so it was decided to discontinue treatment on these lines. (*b*) 60 g. of animal fat added to the diet daily, and no green vegetables given; cod-liver oil 30 g., butter 20 g., and one egg were given daily and 50 g. of dried full milk were substituted for the fat-free milk. Total calories 2500; protein 60 g. After 12 days' treatment: gait much more free, and body movements made with ease and without use of hands; abduction of thighs causes very slight pain, and all pressure pains have disappeared or are diminishing; increase in weight since admission of 3 kg. In general a marked improvement in patient's condition.

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attention to the good effect which improved conditions of life exert upon the disorder It is the opinion of Schlesinger that more careful observation and accurate diagnosis will discover the disease to be more widely distributed than has been hitherto supposed

The causation of osteomalacia has hitherto been generally ascribed to disordered calcium metabolism, attributable to abnormal action of endocrine glands and associated with poverty and destitution This conception of its ætiology is also adopted by Edelmann and Schlesinger, who consider that hunger osteomalacia is brought about by the effect of undernourishment upon the activities of one or more of the ductless glands The fact must be emphasised, however, that the connexion between " hunger-osteomalacia " and osteomalacia that occurs in pregnancy is far from clear Despite the widespread distribution of " hunger osteomalacia " among the older section of the population of Vienna, no increased incidence of the typical osteomalacia of pregnancy was reported among child bearing women, and the conditions favourable to the occurrence of " hunger-osteomalacia " must, in general, be regarded as different from those that determine the onset of the disease in pregnancy

Specific Deficiencies in Diet as a Possible Cause of Hunger Osteomalacia

The consideration of diet as a factor of specific importance in producing osteomalacia of pregnancy does not seem to have been undertaken Fehling, however, refers to the possibility of averting the disease by improved diet In the outbreak here recorded the question of diet was of primary importance, and prophylaxis and cure were effected by diet alone

In considering external conditions in Vienna during the past five years, the most striking unusual circumstance has been the food deprivation suffered by the population There is no doubt in the minds of those who studied the outbreak of hunger osteomalacia in Vienna in 1918–19 that the condition was, indirectly at least, dietetic in origin This is made clear by the resolution introduced by Prof Dr Schiff, and adopted unanimously by the Gesellschaft der Aerzte at their session on March 14th, 1919, calling the attention of the Inter Allied Food Mission to this famine disease, and begging for quick and generous supplies of food as the best means of dealing with it

The food supplies of the city of Vienna diminished progressively from 1917 onwards, and during the winter of 1918–19, and of 1919–20, were reduced to a minimum The diets of the patients examined by us had consisted mainly of bread and vegetables, with small amounts of flour and sugar Milk, butter, and eggs were unknown, meat was not consumed, the price being prohibitive, and the only fat in the diet was a small and irregular supply of lard It was the opinion of some that the disease, although confined at that time to the poorest class in the city, was not strictly a starvation disease, but was rather the result of a qualitative deficiency in the diet caused by lack of certain definite foods The patients were always thin, but not emaciated, and while the process of cure in hospital was invariably accompanied by increase in body weight, the successful treatment of out-patients was accomplished without any such gain in weight Lack of fat was the most striking deficiency in the patients' diets prior to the development of osteomalacia

The value of certain fats in diet has been much emphasised recently by the results of experimental work upon growth in young animals

The work of Falta and Nogerrath (1905), Stepp (1911, 1912) of McCollum and his co workers (1913–1916), and of Osborne and Mendel (1913, 1915), has shown that in young rats growth may be entirely inhibited by a diet adequate in calories and in protein supply if certain fats are absent and will be restored if a small amount of these fats be again included in the diet This result was attributed by McCollum not to the fat in itself but to the presence of a certain vitamin or accessory factor dissolved in the fat, this vitamin be called the " fat soluble A factor " It is present to some extent in most fats, but those of animal origin, such as fish liver oils, beef fat, mutton fat and butter, contain it in greater concentration cod liver oil being particularly rich in this vitamin The existence of this factor in green leaves has also been established

It is to be remembered that one view of the ætiology of the analogous disease rickets is that the disease may be attributed to a lack of fat in the diet of infants (Cheadle (1906), Still (1907), Holt (1907)) In Austria cod liver oil containing an addition of phosphorus is a classic remedy for rickets and has been widely used for osteomalacia, but the view commonly held is that the beneficial result that follows is to be ascribed to the phosphorus rather than to the oil, although the investigations of Schabad (1909, 1910) upon calcium metabolism in rickets before and during treatment, have shown that the cod liver oil rather than the phosphorus is to be regarded as the active constituent in increasing the retention of calcium Schabad also investigated the effect upon calcium metabolism of sesame oil and, in conjunction with Sorochowitz, of olive oil These oils were found to influence calcium retention in a degree which was insignificant by comparison with that of cod liver oil

These results of Schabad have received interesting confirmation from the recent work of Mellanby (1918, 1919) upon experimental rickets in young dogs Rickets occurred in puppies fed upon diets poor in fat soluble vitamin—i e, containing fat in the form of olive oil or lard, but not when cod liver oil or butter was substituted for these fats Mellanby has advanced the view that rickets is a dietetic disease caused by a deficiency in the diet, not of fat per se, but of some factor contained in certain fats Three studies on experimental rickets in rats have appeared recently by McCollum, Simmons, Parsons Shipley and Park (1921) In their experiments rachitis and similar disturbances of osteogenesis were produced by deficient diets and they have demonstrated that some substance in cod liver oil causes calcium to be deposited in the same fashion in which deposition occurs in spontaneous healing of rachitis Their observations lend support to the view that an anti rachitic factor present in animal fats plays some rôle in the normal process of ossification Hess (1917, 1920, I and II), while admitting the prophylactic or curative action of cod liver oil upon rickets in children, considers that lack of the fat soluble A vitamin is only one among several factors concerned in causation of the disease

Concurrently with the outbreak of " hunger osteomalacia " in Vienna, during 1919 and 1920, there has been an unusual prevalence of rickets among infants and young children, and of late rickets among young adults This suggests that all these disorders may have a common origin, and may represent a reaction to some unusual circumstance interfering with normal metabolism and the proper nutrition of the bony tissues

The identity of rickets and real osteomalacia from the anatomical standpoint has been strongly supported by the histological work of Pommer (1885), Looser (1908, 1920), and others The different theories which have been advanced regarding the ætiology of osteomalacia and of rickets form two parallel series For each disease there are theories involving (1) disordered action of the ductless glands, (2) defective hygiene, (3) defective diet, and (4) bacterial infection (Morpurgo 1900, 1902, 1907) The occurrence of tetany with osteomalacia, and the association of this condition in childhood with rickets, form another important parallel between the two diseases With such indications of correspondence between rickets and osteomalacia, it was of the greatest interest to ascertain whether evidence in support of a similar dietetic theory for both diseases could be obtained during the outbreak of hunger osteomalacia in Vienna

Result of Dietetic Treatment upon " Hunger-Osteomalacia "

From earlier observations it was known that simple rest in bed with good diet was a successful form of treatment for the lighter cases of hunger-osteomalacia Cod liver oil containing phosphorus was highly esteemed as a curative substance, the phosphorus being regarded as the active agent When cod liver oil could no longer be obtained in Austria, different vegetable oils, with additions of phosphorus, were employed for treatment In certain cases good results were reported from the was provided by the kindness of Prof. Schiff, and shows the numbers of new cases reporting themselves each month for treatment during 1919 and 1920. The number of new *cases reporting sick may be taken as a measure of the prevalence of the disease.* Although no patient, as a rule, reported for treatment until he had been ill a month or more, yet patients would not be likely to report for treatment unless they felt themselves getting steadily worse. In each year the apex of the curve comes in the same month—April—but in 1919 fresh cases appeared in considerable numbers through May, June, July till August, when there was a sudden rapid drop. At the time when this drop occurred in 1919 Prof. Schiff reports that he attributed it to the arrival of a large consignment of American bacon in the city. In 1920, however, the great drop in the number of fresh cases came in May, and in June they had fallen to a very low figure indeed, so that this period in 1920 corresponds with August in 1919. In June, 1920, there was no special large influx of American bacon or of any other foodstuff into Vienna, and it seems probable that the much more *rapid diminution in the number of fresh cases in 1920 as* the year advanced must be attributed to the exceptionally early spring following on a winter of no severity. The early spring produced salads, green vegetables, and a little meat at a price which the poor could pay six weeks or two months earlier than would normally be the case.

The actual possible bearing of the supply of green vegetables on the ætiology of the disease is discussed elsewhere, but it is as well to make it clear that it is not believed that scurvy played any part. No symptoms of scurvy were ever seen or reported among the patients and the great predominance of white cabbage and roots, even though well cooked, in the diet producing hunger-osteomalacia, makes any incrimination of scurvy almost unthinkable.

Special Investigation of 177 Cases: Methods Employed.

Since one of the writers (E. N.) was a regular member of the Krankenkasse medical staff, it was possible to see the patients in the ordinary course of Krankenkasse business and to distribute treatment through the channels already organised. The treatment given in this investigation was therefore, in many ways, a continuation of the previous treatment and may very fairly be compared with it. It was proposed to treat roughly one-third of the cases with 200 g. weekly of cod-liver oil,‡ one-third with 100 g. weekly, and one-third with 200 g. weekly of the vegetable oil containing phosphorus, "phosphor oel," which had previously been used in Krankenkasse treatment, and to observe the result. The cod-liver oil used for treatment was obtained through the kindness of several of the relief missions, the Friends' Emergency and War-Victims' Relief Committee, the Vienna Emergency Relief Fund, and the International Spitalshilfsaktion, and was the ordinary refined cod-liver oil of commerce. The vegetable oil came from the Vienna municipality central fat control and was unfortunately of unknown origin: a sample has, however, been brought to England, and it is hoped to identify it and test its growth-promoting powers on rats. (See Appendix.)

The method adopted in dealing with the patients was to see them in turn and question them as to the duration of their illness and the mode of onset of symptoms, and any previous treatment which they might have received. The disease was often reported as of long standing (1–36 months). In cases which had been ill for more than a year, a remission was generally admitted in summer, followed by a relapse in winter. Many patients were entirely untreated, others had had treatment with phosphor oil or had been taken into hospital. A few cases treated in hospital had enjoyed remarkable improvement, but just as often this was not the case and none spoke enthusiastically of cure in the past. Almost all cases said that pains had appeared first in the feet and legs, later in the sacrum, and later still in the ribs, but this order of development was not universal.

Three special symptoms were selected as a standard of severity, the gait, the degree of difficulty manifested in trying to go upstairs, and the tenderness of the ribs to pressure; for this last symptom it was usually enough to watch the patient's face while exerting pressure on the ribs. According to the severity of each, half, one, two or three crosses were given to each symptom. It is obvious that such a method of standardisation can only give a very rough measure of the severity and progress of the disease, but in a disease which has no more marked objective symptoms than these, it is only possible to adopt some such procedure. Further it was necessary to see a large number of patients in a morning, and no more detailed examination was possible.

To each patient was given a card, with the method of treatment written on it, and he was instructed to obtain weekly a fresh bottle of oil, which would be inscribed on the card by the dispenser. He was further to present himself to the doctor again in about a fortnight. At the next visit, the number of bottles of oil consumed by the patient were noted down by the doctor, but it was never found possible to compel the patients to fetch or send for their bottles at perfectly regular intervals. At each fresh visit to the doctor the patient was put through his paces, and the gait, stair-climbing capacity, and rib pressure pains were charted again with crosses. Most patients showed some improvement after a fortnight, and very marked progress in a month; if they failed to do so, the treatment was usually changed about the fourth or fifth week to cod-liver oil if they were receiving phosphor oil, or to larger doses of cod-liver oil if they were already receiving it. When patients began to improve, the improvement was almost always first manifest in the ribs, and often the ribs were no longer sensitive to pressure at a time when the gait had as yet scarcely shown any improvement. The sacral region and gait then gradually improved, until the walk and stair-climbing appeared normal; but long after all objective symptoms had vanished, the patient still complained of pains about the thighs and feet, particularly in the insteps. In comparing the time required to effect a cure with the three different treatments, it was decided to disregard such purely subjective symptoms; there was no means of standardising them, and although there is no doubt that they were often genuine, sometimes they may not have been, and the desire to continue to obtain a weekly bottle of oil and sick-pay benefit cannot be excluded. All oil, and particularly cod-liver oil, fetched a very high price in Vienna, and a patient almost cured might well wish to sell his weekly bottle. It is not thought that there was danger of such fraud earlier in the disease, for the patients were in great pain and misery; many of them would weep, and their eagerness for the oil was in some cases almost wolfish. In view of the considerations just stated, it was decided that in studying the rate of cure, the course of the disease after disappearance of objective symptoms should be neglected; the term "cure" is therefore used in this study to indicate the time at which all objective symptoms had vanished. It is not to be supposed that treatment ceased at this point.

An attempt was made to weigh patients every time they came up for examination, but it had to be abandoned. Time did not permit of each patient being stripped, and the change from winter to summer made it impossible for them to come always in the same clothes. The patients were all thin, as is, indeed, the entire poor population, but they were not especially emaciated. Enough information was obtained to show that no very considerable increase of weight accompanied the cure; patients showed perhaps 1 kilo, 1½ or 2 kilos gain over the whole period of two or three months. Of 21 cases who were weighed at the beginning of treatment, and again one to three months later, after a marked improvement in their symptoms had taken place, an average gain of 3·5 kilos is recorded, if a difference of about 3 kilos between the winter and summer clothing is allowed for. Thus it is clear that there was no tremendous regaining of weight, corresponding with the enormous losses some of the patients claimed to have suffered; one case, for example, Juliana B., claimed to have lost 30 kilos, another, Leopoldine G., 17 kilos, and a third, Rudolf N., 20 kilos. Neither did the patients appear much fatter after the cure had set in, although their appearance was much changed; the colour was much better, and the whole mien of the people altered; from being a waiting queue of the most pitiful human wreckage, scarcely able to creep along, ready to burst into tears at a word of questioning, they became a row of brisk individuals, cheerful and extremely grateful.

Analysis of the Results.

In analysing the figures, dealing with the rate of cure in the different treatment groups, a number of factors come into play which tend to destroy the greater accuracy which it was hoped to attain by authors in a separate communication, but they have permitted their general conclusions to be stated here Cod liver oil was found to be definitely superior to rape oil containing phosphorus (0 01 per cent), and large doses of the plant oil (200 g weekly) gave a rate of improvement about equal to that obtained with smaller doses of cod-liver oil (100 to 150 g weekly)

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‡ In the whole series of cases only one was found, Marie P., who was unable to tolerate the large amount of oil; on small quantities she made only very slow progress; on large quantities she lost appetite, her digestion became disordered, and the pains due to osteomalacia became more severe.

(*f*) *Influence of Green Vegetables* —In order to throw light on the question whether fat or the fat soluble accessory factor was to be regarded as the effective agent in treatment, it was important to ascertain whether green vegetables (another source of the fat soluble A vitamin) had any curative effect on this disease The history of relief in summer and return of symptoms in winter given repeatedly by recurrent cases suggested that this might be the case It was difficult to put the theory to a practical test, for most of the patients were old or elderly and feeble, and a diet devoid of fat and containing large amounts of cabbage, salads, and spinach would not have been tolerated Also it was impossible to arrange such a diet in the period January–April, 1920, when most of our observations were made. An attempt was made, however, in the case of a woman, aged 30, who entered hospital at the beginning of May, suffering severely from hunger osteomalacia Her diet was strictly controlled and contained as much green vegetables as could be tolerated and 5 g only of fat in the form of olive oil The patient consumed an average of 700 g of green vegetables daily, but made no appreciable progress in 18 days Her diet was then changed and the green vegetables replaced by 30 to 40 g of cod liver oil and 20 g butter daily, and improvement took place rapidly after the change The case is described in detail in the Appendix, Case 8

General Character of the Recovery.

The general character of the recovery was always the same, but occurred more rapidly in hospital patients than in those treated as out-patients and carrying on their ordinary occupations at home After a few days on effective treatment body movements became less painful and the patient could stoop or turn more readily. The gait often improved within a week, and although it retained a waddling character it was less stiff and showed a more natural movement at hips and ankles. Within the second week there was often great remission in the pressure pains, and the abduction pain was usually less. As a rule the pains caused by compression of the ribs continued longer, and the upper ribs were free from pain earlier than the lower ribs The most obstinate symptoms were always the pains on movement in the lumbo sacral region and in the tarsal bones, but these disappeared within 4–6 weeks, and did not tend to recur if suitable amounts of fat were taken regularly as a prophylactic.

The eight cases described in detail in the Appendix were selected to illustrate various types of symptoms and different methods of treatment. In many the comparative value of the respective additions to the diet is well seen from the alteration in the rate of recovery when one treatment was substituted for another.

Summary and Conclusion.

1. The occurrence of "hunger-osteomalacia" in Vienna during the period of greatest food deprivation, its incidence among the poorest inhabitants and the beneficial effect of improved diet without any other form of treatment, suggested that the disease was of dietetic origin

2. The disorder affected chiefly middle-aged and old people of both sexes The characteristic symptoms of the condition are pain on body movement, a waddling gait, difficulty in mounting stairs, severe pain in sacral region on pressure or movement, and pain in the ribs on compression of the thorax. Tetany may occur in association with the disease

3 Forty eight cases were treated by making additions to patients' diets in the form of carbohydrates, cereals, and fats of various kinds

4 Little improvement could be demonstrated after addition to the diet of sugar or cereals (i e, extra calories without fat), although in many instances the previous diet had been very scanty.

5 Recovery followed the addition of either cod-liver oil, butter, oleo-margarine containing 80 per cent of animal fat, or olive oil The beneficial influence was in the order named above, cod-liver oil being far the most effective. Some of the severer cases did not improve until cod-liver oil was given.

6 That the relative therapeutic value of the fats used corresponds roughly with their content in the fat soluble A vitamin is regarded as significant

7. It is also possible to interpret the remission of symptoms of "hunger osteomalacia" in summer and their relapse in winter as due to varying supplies of vitamin A in the diets, for, during summer, inclusion of green vegetables in the diet provides a valuable source of this vitamin. One attempt, however, to cure a severe case with a fat-free diet, rich in green vegetables, was not successful. More observations are needed on this point.

8. The increase in Vienna of rickets in children and late rickets in young adults, simultaneously with the occurrence of "hunger osteomalacia," suggests that the three disorders may be due to the same cause.

In conclusion we wish to express our thanks to those members of the medical profession in Vienna who have afforded us the opportunity of carrying out this investigation. We are specially indebted to Prof. H. Schlesinger, of the III Medizinische Abteilung of the Allgemeines Krankenhaus, who permitted us to make special study of cases in his wards, and gave us the benefit of his previous extensive experience. Our thanks are also due to Prof. K F. Wenckebach and Dozent Dr. Porges of the I. Medizinische Klinik of the University, and to Prof. Dr. Schiff of the Zentral Verband der Krankenkassen; also to those members of the nursing staff who cheerfully undertook all the extra work involved in the preparation of special diets.

For the supply and transport of special foodstuffs we have to thank the British Section of the Inter-Allied Food Mission then stationed in Vienna; and we desire also to record our thanks to the Mission of the Society of Friends working in Vienna for much help and cooperation, especially in supplying from their stores particular articles of diet essential for our investigation.

APPENDIX.

Following are the notes on eight cases.—

CASE 1 —Antonia B, aged 48, admitted March 20th, 1920 Severe recurrent case, symptoms first noted in July, 1919, improved in August and September, 1919, and reappeared in January, 1920 On admission patient had shuffling gait and complained of great pain on walking and on all movements involving the trunk muscles She had acute pain on compression of ribs and on sudden abduction of flexed thighs Pain was elicited on pressure over inner border of tibia, shaft and condyles of femur, and over iliac crests; also along shaft of each humerus, especially at insertion of deltoid muscle

Treatment —60 g of olive oil daily with carefully controlled diet of fat free milk, cereals, pulses, and fruits Calorie value of diet 2500 daily Protein content 60–65 g.; fat content 60 g. This diet was begun on third day after admission and continued unchanged for 32 days, and the patient's weight increased by 3 3 kg Progress—Gait improved within six days of admission. After nine days' treatment: distinct general improvement; gait still stiff but no longer waddling and patient can take longer steps, can get in and out of bed more easily, less pain on compression of ribs Eighteen days great progress; gait normal, can spring from bed without use of hands, no pain on abduction of thighs, pressure pain persist over lower ribs and sacrum, and over ankle-joints and tibiæ Twenty five days. pains in ankles still present, no other symptoms, discharged cured April 21th, 1920, but symptoms recurred.

CASE 2 —Anna H, aged 65, admitted Jan 15th, 1920 Symptoms stiff waddling painful movements on walking, acute pain on compression of ribs and abduction of thighs; some pain on pressure over pubic symphysis and rami

Treatment —(*a*) Diet enriched by abundant extra cereals and carbohydrates without addition of fat on eighth day after admission After 15 days' treatment, all symptoms unchanged (*b*) 50 g margarine (containing 80 per cent. of animal fats) and 15 g olive oil added to daily diet After 10 days' treatment gait much improved; pressure pains in ribs persisting Seventeen days: normal gait; slight pain on compression of ribs; no other symptoms, patient discharged Feb 26th, 1920.

CASE 3 —Mater P., aged 57. Treatment begun Jan 10th, 1920, in convent Symptoms present for past two years, with remissions during summer months Severe case, and walks only with great difficulty. Marked pressure pain over each treatment group a certain number of cures were unfinished—that is to say, that although good progress was being made, all objective symptoms had not disappeared on the last occasion on which the patient was seen. These unfinished cures are represented in the table because they cannot fairly be entirely neglected, but they are left out of consideration because they are inconclusive. The table shows that in the five treatment groups represented the dates of "cure" ("cure" being used in the special sense already described p. 5) distribute themselves pretty equally from the second to the tenth week, with a few as late as the fourteenth week. There is certainly no great superiority in rate of cure in any one group over any other group. Such a table suggests that as soon as sufficient of the curative substance is supplied rate of cure is not appreciably hastened by more intensive treatment; probably the maximum rate of repair has been attained, but it is also possible that repair at an even more rapid rate may be only prevented by an insufficient supply of something else, the lack of which acts as a limiting factor.

The Possible Value of Phosphorus.

The work of Schabad (1909, 1910) on calcium retention in the cure of rickets by treatment with oils suggests that an insufficient supply of phosphorus may have been such a limiting factor. He found that cod-liver oil had great power in increasing calcium retention in rickets and that this power is further heightened on addition of phosphorus to the cod-liver oil. If, then, there is a parallel between hunger-osteomalacia and rickets, it is possible that addition of phosphorus to cod-liver oil might also hasten the cure of osteomalacia. It is unfortunate that in our experiments the vegetable oil had an addition of phosphorus while the cod-liver oil had not; had the cod-liver oil also contained phosphorus it is possible that its superiority over the vegetable oil might have been even more marked. Schabad also found that certain vegetable oils had power to increase calcium retention in rickets, but in the case of sesamum oil this was not so, and addition of phosphorus to the inactive oil failed to awake any activity in it. His work, therefore, makes it clear that the coöperation of another factor in the oil is required and that the absence of such a factor may entirely limit any curative power of the phosphorus.

From the present experiments it would therefore seem that in the treatment of hunger-osteomalacia a dose of about 100 g. weekly of cod-liver oil is the most economical form of therapy to commence with in all cases, increasing the amount later only in those refractory cases which make little or no progress upon this dose. From the present experiments no conclusion can be drawn as to the possible coöperative value of phosphorus. Reference to one particular case is made in more detail; it is a particularly striking one but is also characteristic of a large number in which the result of treatment with cod-liver oil stands out in contrast with that of the former routine Krankenkasse treatment with phosphor oil.

The patient, Wilhelmine O., gave a history of having been ill for 30 months; for nine months, March, 1919, to January, 1920, she had been receiving the routine Krankenkasse treatment with phosphor oil, which left her condition unchanged. When first seen at the beginning of March, 1920, she was unable to dress or undress herself, and could not even turn her head without pain. She showed a rapid improvement on cod-liver oil, 125 g. weekly, and by the first week in June—i.e., after three months of treatment—described herself as "Vollständig gut," save for a slight pain in the lumbar region. Thus all objective symptoms and almost all subjective ones also, of an illness lasting 30 months, were dissipated in three months by rather more than one tablespoonful of cod-liver oil daily. This patient had been known to one of the writers (E. N.) for the whole 12 months during which she had attended at the Krankenkasse, and the unaltered condition during the nine months of phosphor oil treatment, followed by the cure on three months cod-liver oil, was most impressive.

When patients were considered to be cured the treatment was discontinued, and as far as it was possible to judge in the time, relapse did not tend to take place. Treatment was in no case stopped till May or June and the experiment was terminated at end of June. Patients when sent away were instructed to come back at once if they felt worse, and of over 70 patients so discharged only three or four had returned announcing a relapse; in these cases the relapse only consisted in a reported return of subjective symptoms which may or may not have been truly stated. It seemed most probable that the patients would remain in health through the summer but would relapse again towards the end of the year unless treatment were resumed or the food obtainable in the winter became better.

Effect of Treatment on Cases of Rachitis Tarda.

Of the 10 cases of rachitis tarda encountered, 4 cases (2 boys and 2 girls) were chosen out for in-patient treatment and will be described in a later communication. The other 6 were all boys, one 16, one 17, one 18, two 19, and one 20 years of age. Three dosed with 200 g. of cod-liver oil weekly, and one dosed with 100 g., made excellent steady though slow progress; two dosed with 200 g. weekly of phosphor oil, but very irregularly taken, made little or no progress.

Bearing of the Results on the Ætiology of the Disease.

As far as the present mass experiment throws light on the ætiology of hunger-osteomalacia, it seems to support the hypothesis that the disease is due to a deficiency of the fat-soluble accessory factor. The disease was cured, and dramatically cured, by an addition of fat only to the diet. It is true that the plant oil contained phosphorus, but the cod-liver oil had no such addition, though it may itself have contained phosphorus to some extent. It has already been suggested that the absence of phosphorus in the cod-liver oil may have acted to some extent as a limiting factor, but there is no evidence that the rate of cure bore any relation to the amount of phosphorus administered. There is evidence, on the other hand, that the cod-liver oil cured in quantities in which the plant oil did not, and that bad or obstinate cases yielded to cod-liver oil when they would not do so to plant oil. This evidence seems good enough to exclude fat as fat and to point to some other property, possessed in greater measure by cod-liver oil, as the curative agent. One such property cod-liver oil is known to possess in its rich content of the fat-soluble A accessory factor.

The difference between the winter and summer diet of the population and the corresponding seasonal alteration in the severity and prevalence of the disease yields another interesting piece of evidence, connecting the disease with a deficiency of the fat-soluble A factor. The winter diet of the poorest of the Vienna population is chiefly bread, "Kraut," and root vegetables, while the summer diet is principally enriched by the addition of green vegetables and salads. The kraut used in winter is the white hearts of cabbages, which are stripped of their green leaves in the autumn and are then stored in the same way as root vegetables. Unpublished experiments at the Lister Institute, on guinea-pigs, have shown that while green cabbage is growth-promoting even in small amounts, white cabbage in much larger amounts is not so; for instance, 5 g. of raw green cabbage, when added to a diet deficient in the fat-soluble A factor produces good, though not fully normal, growth in guinea-pigs, while 15 g. of white cabbage added to the same diet produces no growth at all. A similar observation for other etiolated shoots has been made by Drummond and Coward (verbal communication), using young rats. The white leaves are, however, not deficient in the anti-scorbutic factor (Delf, unpublished experiments). The bread and root vegetables which make up the remainder of the diet of the poor have been shown again and again, with the exception of carrots, by McCollum and his co-workers to be deficient in the fat-soluble accessory factor.

More evidence is needed in order to clear up completely the question of the ætiology of this disease, and it is possible that in the deplorable event of the

ibid, Bd xx, 379 Pal (1912) Berlin Klin Woch, 49 Jrg, No 33 1589 Pommer (1885) Untersuchungen über Osteomalacie und Rachitis Leipsig Sauer (1920) Deutsch med Wochenschr, Jrg 46 No 2 45 Schabad (1909) Zeitschr f Klin Med Bd lxvii 454 (1910) ibid Bd lxix 435 Schabad and Sorochowitz (1910) Monatschr f Kinderheilk Bd ix 659 Schiff (1919) Bericht des Verbandes der Krankenkassen Wiens für 1918, 154 Schlesinger (1912) Centralbl f d Grenzgeb d Med u Chir Bd xviii 188 (1919 I) Wien klin Woch, No 10 245 (1919, II) ibid No 13 336 (1920) Zeitschr f d gesamte Neurologie und Psychiatrie Bd lix Sonntag (1905) Osteomalazie Winckel s Handb d Geburtschilfe Bd ii 1975 Still (1907) System of Medicine by Osler and McCrae vol i p 864 Stepp (1911) Biochem Zeitschr, Bd lvii 135 (1912) ibid Bd lxii 405 (1917) Ergebnis e d Inn Med, Bd xv, 257 Zuntz (1912) Berlin klin Wochenschr 2364

II —COMPARATIVE TREATMENT OF CASES OF HUNGER OSTEOMALACIA IN VIENNA, 1920, AS OUT PATIENTS WITH COD LIVER OIL AND PLANT OIL

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Report to the Accessory Food Factors Committee appointed jointly by the Lister Institute and the Medical Research Council

AN *investigation on 177 out patient cases of hunger*-osteomalacia was made at the central office of the Verband der Krankenkassen Wiens und Niederosterreichs, VI Konigseggasse 10, Vienna The chief medical officer, Prof A Schiff, very kindly offered every possible facility for the research The investigation took place between February and June, 1920 The central office of the Verband der Krankenkassen is the chief office of a large sick benefit organisation which has a number of branch offices distributed throughout Vienna The subscribers, when ill, notify the fact to their local branch office and are usually treated there, but in the case of hunger osteomalacia the method was adopted of sending all patients to be treated at the head office Presumably this line was taken because the disease was previously unknown and the best method of treatment was not established

During the year 1919, when the disease was first recognised, 924 new cases presented themselves for treatment between March and December In the first six months of 1920, 620 new cases came up for treatment, and in addition many old cases were *attending regularly From this mass of material* about 200 suitable patients, in whose case the diagnosis was clear and unobscured, were selected for special study in the month of February

Previous Treatment and Special Features of the Krankenkasse Cases

The previous treatment at the Krankenkasse had consisted in dosing the patients with a plant oil containing phosphorus (0 01 g P per 100 g oil), a treatment based on the belief that phosphorus has a curative value * Bottles containing 100–150 c cm of the oil were dealt out and patients were supposed to come up weekly for a new bottle, but in practice, living as they did at great distances from the central Krankenkasse, and being severely handicapped in moving about by their painful disease, they did not come so often All that can be said as to the dose taken, therefore, is that it was never more than about 20 g of the oil a day and seldom as much Many patients stated that they had felt no improvement while taking the oil and many were certainly in a deplorable condition when first seen, although they had had treatment for many months

Before dealing with the special study there are some points of general interest in connexion with this large group of cases which deserve mention

Age and Sex of Patients —The patients were of both sexes with some preponderance of the female sex, out of 177 cases 44 per cent were male and 56 per cent female It is possible that the female sex is actually more liable to the disease, but it is probable, on the other hand, that the preponderance was due to economic causes—namely, to the greater poverty and consequently worse food of old and single women dependent on their own earnings, for such the cases chiefly were The patients were all very poor, *the largest numbers of cases came from the 10th, 12th, and* 16th Bezirks, which are the poorest districts in the city Many of the cases were very old, and although it is probable that old age does increase the liability to the disease, here also the economic factor cannot be neglected Of 131 cases whose ages were noted all except 16 were over 40, and more than one-third were between 60 and 70 (see Fig 1) On the other hand, some persons of all ages from 19 to 77 were seen who were suffering from the disease At the younger age limit, under *25*, the disease merges into the syndrome of rachitis tarda, of which 10 cases were seen among the 177 selected patients, one or two cases were seen which appeared to be transition cases, and showed the symptoms characteristic of osteomalacia and rachitis tarda *at the same time* † *Many patients were too old to be in* work, and the rest were drawn from a number of different trades, but by far the larger number were unskilled workers

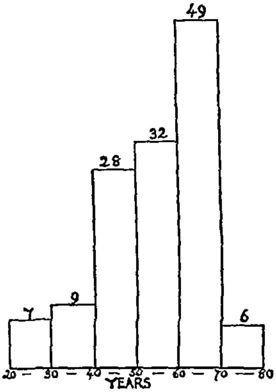

FIG 1 —Distribution of ages among 131 cases of hunger osteomalacia.

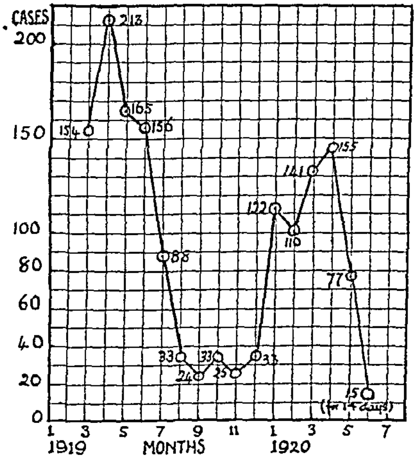

FIG 2 —Monthly record of new cases reporting sick with hunger-osteomalacia at the Krankenkasse, March, 1919–June 1920

Diet —The diet, particularly in the winter, *had consisted* principally of bread and kraut, the white heart of the autumn cabbage as opposed to the green kohl, together with root vegetables Hunger osteomalacia shows a marked seasonal incidence in winter and spring, corresponding with, it is believed, the season of worse diet The curve (Fig 2)

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* See Schlesinger 1919, Clairmont and Schlesinger, 1914

† For a full account of these symptoms see Edelmann, 1919, Schlesinger, 1919, Chick and Dalyell, 1921.

Statistics.

As said above, the last epidemic started in Siberia, but later on, when the cases at Manchouli were many, especially among the Russians, certain towns in Siberia were reinfected by escaping refugees. In Manchuria proper the following table shows the places infected from west to east, together with the first cases reported, and total number of deaths.

Places Infected with Plague from West to East.

Town.	First cases recorded.	Total deaths.
Manchouli	Sept. 7	1141 (R. 334 : Jan. 1)
Dalainor	Jan. 13	1017 (R. 4)
Hailar	Oct. 22	98 (R. 27)
Mentuho	Jan. 30	4
Buketu	Feb. 3	25
Ananchi	Feb. 3	84
Tsitsikar Station	Jan. 27	88
Tsitsikar City	Jan. 18	1734
Fulardi	Feb. 10	48 (R. 3)
Anta	Mar. 19	25
Tuichingsan	Mar. 5	28
Harbin District	Jan. 22	3125 (R. 8 : Jan. 3)
Hulan	Feb. 7	322
Ashoho	Feb. 12	123
Imiampo	Mar. 15	35 (R. 1)
Hantaoho Tzu	Mar. 27	16
Hailin	Mar. 8	7
Shihtaoho Tzu	Mar. 25	19
Suifenho	Mar. 14	12 (R. 2)
Shwangchengpu	Mar. 14	134
Yaomen	Feb. 3	21 (R. 1)
Changchun District	Jan. 31	77
Yu Shu	Mar. 8	153
Mukden	Mar. 29	4
Koupangtzu District	Mar. 27	18
Other cities	—	150
Total for Manchuria		8508

These figures include 380 Russians and 4 Japanese. Other places infected besides Manchuria were:—

Vladivostock and Ussuri	April 9	520 (R. 40)
Sangyuan dist. (Chihli Province)	Feb. 24	200
Chefoo and Shantung	May 3*	80
Total		800

* By steamer.

Seven infected rats were discovered at Vladivostock as well as human bubonic cases.

We made and distributed 60,000 anti-plague gauze masks and 8000 doses of anti-plague vaccine from our laboratory. In addition to our routine work, our staff took advantage of the occurrence of this rare epidemic to perform a series of important bacteriological investigations.

The following are some of the findings obtained as a result of investigations made during the epidemic.

1. *How did the pneumonic plague originate?*—It may be remembered that early in September, 1920, some cases of bubonic plague were reported at Abagatui and other Siberian towns close to the Manchurian border. One patient reached Manchouli Hospital and was cured. In October a few more cases were reported from Hailar. I reached that city on the last day of October and saw the gradual merging of the bubonic into the septicæmic and later into the pneumonic form. As it was difficult to catch fleas in dark dirty rooms through dull paper-covered windows, we utilised guinea-pigs by allowing them to roam about the rooms, hoping that the fleas would attack them and thus get caught. But in this we were unsuccessful. Fly-papers were also used with no avail. Once the plague became pneumonic its spread was rapid, as being a direct infection from man to man, it followed the lines of human travel. Even the cancellation of passenger traffic on the railways only limited the number of infections, not the extent.

2. *Wherein does the real danger of the plague lie?*—This danger lies, in my opinion, in the neighbourhood of a patient in whom cough and the accompanying bacilli are already present. Infection is carried in droplet form—that is, when the moist sputum is thrown out during talking or spitting. Experiments performed in Mukden ten years ago and repeated this time at Harbin show that, under ordinary circumstances, these droplets seldom travel more than three feet. In crowded inns, with closed windows and no ventilation, infection naturally spreads rapidly, particularly at night-time when the coolies are huddled together. If a way can be found to allow persons to sleep as well as work out in the open air, however cold, infection will not take place and pneumonic plague will lose its dreadful character.

3. *Is the cotton and gauze mask efficacious against plague?*—If properly worn it is certainly efficacious. No antiseptics or strong-smelling chemicals are necessary. Masks act as filters, and the plague germ cannot pass though dry cotton-wool. When our Dr. Yuan Teh Mao died on Feb. 20th we were afraid that if the mask became moist as a result of continued breathing the germs might get attached to the wool and inhaled. We experimented with several masks from doctors and attendants which had been worn for half to four hours at a time. Cultivations were taken from the outer, middle, and inner layers of the cotton-wool. Out of 15 cultivations so made, only one—the outer covering of a mask worn for three hours—showed the plague bacilli. Nevertheless, we considered it best for those in immediate contact with patients to wear, in addition to the mask, a head-covering made of cloth with an extra piece of silk in front of the nose and mouth.

4. *Is the air of the sick room infectious?*—To prove this we allowed a series of guinea-pigs and rabbits kept in tin buckets to stay in the rooms occupied by the sick and the dead for periods varying from half an hour to three days. Up to date seven such experiments have been performed, including one at Dalainor, and 52 animals have been used. Only four animals died, and these mostly young ones, thus showing that the air of sick rooms by itself is not so dangerous as might have been expected.

5. *Why did so many burial coolies die in this and the previous epidemic?*—Usually these men were not in contact with sick persons. We suspected from the number of corpses, from whom the clothes had been removed, that perhaps these clothes might be a factor in the dissemination of the disease. We therefore cut out pieces of the clothes from in front and behind and made the necessary cultivations. Out of 22 pieces thus examined 16 were found to be infectious, thus proving that the clothes from plague victims were highly dangerous and should be burnt with the dead bodies.

6. *What action does the best known antiseptics have on plague sputum?*—We used carbolic acid, lysol, sublimate, permanganate of potash, hydrogen peroxide, alcohol, methylated spirit, and cresol, and similar milky disinfectants. Over 400 experiments were performed in this connexion. Dealers in these commodities will be surprised to learn that plague sputum is extremely resistant to their action, and more concentrated solutions for longer periods than usually recommended are necessary to destroy the bacilli.

7. *What is the best way of disinfecting plague houses?*—Our routine method of disinfection during this epidemic has been to fumigate the houses with moist sulphur gas by burning the crude sulphur in an earthen pot after the walls and floor have been sprayed with water. The floor containing the sputum is covered with slaked lime. Our doctors' clothes and overalls are fumigated with formalin gas made from 100 g. of permanganate of potash, 100 g. of hot water, and 200 g. of formalin warmed in a pot.

Fuller details of the epidemic will be furnished at the opening of the Rockefeller College, Peking, and at the Conference of Japanese Doctors at Port Arthur, while a full scientific report will appear next spring.

DONATIONS AND BEQUESTS.—The board of management of the Royal Infirmary, Manchester, have received legacies of £3000 from the late Dr. Lloyd Roberts, also £500 for a lectureship; £1000 from the late Mr. W. Sutcliffe; also £550 from the Queen Alexandra Flower Carnival, and £315 from other sources. Henshaw's Blind Asylum, Manchester, has received £1000 under the will of the late Mr. James Booth, of Didsbury; £200 from the late Mr. Joseph Core; also completion of transfer of £5340 war stock from the executors of the late Mr. Jesse Howarth. St. Mary's Hospital, Manchester, has received from the executors of the late Dr. Lloyd Roberts £5000 and £500 for a "Lloyd Roberts Lecture." £1000 from the late Margaret Ambler, £1000 from the late Mr. W. Sutcliffe, and £177 from the Queen Alexandra Flower Carnival.—The Maharajah Holkar of Indore has sent a donation of £500 to the Mental After-Care Association, Church House, Westminster, towards the expenses of dealing with patients who have suffered from nervous or mental trouble caused directly by war service.—The late Charlotte Susan Chalmers, of Aberdeen, left the following legacies: Morningfield Hospital for Incurables, Aberdeen, and Aberdeen Royal Infirmary, each £250; Royal Aberdeen Hospital for Sick Children, £100; Royal Hospital for Incurables, Putney, £10.

investigating a large number of cases In the first place, a certain number of cases have to be rejected altogether, owing to complications with other diseases, irregularity of attendance and similar factors Among those left, 130 in number, the effect of the interfering factors is to break up the three large groups planned for into a much larger number of smaller groups, groups so small that in many cases they cannot contain sufficient numbers to be representative

One such factor is the initial severity of the cases, obviously in comparing the length of time necessary for all objective symptoms to vanish, very severe cases and very slight ones could not be taken as comparable Cases were therefore broken up into four degrees of severity, according to the number of crosses given to the three objective symptoms, as already described, here was wide scope for human error On working out from the patients' cards the average weekly dose of oil taken, it was found that the oil had been drawn so irregularly that patients fell into six groups, instead of the three planned—i e , over 150, from 100 to 150, and under 100 g weekly of cod liver oil, and the same of phosphor oil Since each treatment group contained four different degrees of severity of the cases, 24 groups were revealed instead of the three sanguinely hoped for When 130 patients have to be divided among 24 groups instead of three the result loses very much of the reliability that was hoped for from the use of large numbers

Further possible sources of error were alterations in the patients diet, either through the change of the season or through free gifts from relief organisations The latter certainly took place to some extent, but was spasmodic, and did not appear sufficiently important to merit attention The seasonal alteration in diet might have been a serious source of error, since the investigation was carried on from the end of February to the end of June About mid April patients began to report eating spinach twice a week, and by the end of May occasional eggs and a little meat were not infrequent It is not, however, thought that this factor is an important one in influencing the cures in the present experiment although it has been suggested as an important factor in determining the number of new cases reporting sick Patients seldom report sick with osteomalacia until they have had it for several months and are getting steadily worse, to be no longer getting worse though scarcely perceptibly better, would be enough to deter patients from reporting who had not reported already, The cures with cod liver oil and large amounts of phosphor oil were, on the other hand, so comparatively rapid that the small added improvement which might be brought about by the consumption of spinach twice a week would be unimportant Also in many cases cures were well on foot, and great progress had been made before any seasonal alteration in the available food could be detected It is therefore believed that this factor can be neglected in the analysis of the figures

The results show clearly that hunger osteomalacia can be cured by administration of cod liver oil, even in amounts of only 100 g weekly, or of phosphor oil in larger quantities, about 200 g weekly Clearly the amounts of oil previously administered from the Krankenkasse had not been large enough nor regular enough, though they were probably as large as the smaller amounts of cod liver oil administered in the experiment All patients with one possible exception, a very old and refractory case, Max L , improved when treated with 200 g of cod liver oil weekly All patients treated with phosphor oil did not improve in the same way, particularly those who by infrequent visits reduced their weekly average to less than 150 g When patients after several weeks of treatment showed no or very little improvement, or actually got worse, as was occasionally the case with phosphor oil, the treatment was usually changed from phosphor oil to cod liver oil or from smaller to larger amounts of cod liver oil In every case save one (Max L , phosphor oil 200 changed to cod liver oil 200), where such a change was made, much better progress took place after the change

Table I has been constructed to show (1) the number and percentage of patients who improved on the various treatments , (2) the number who showed no improvement , (3) the number who had changed treatment, as just described and (4) the result of the changed treatment In analysing the figures in this way, where some degree of improvement is the criterion taken cases of all degrees of severity are dealt with together, for although the severity influences the length of time needed to accomplish a cure yet it does not appear to influence the length of time in which a material degree of improvement sets in In Table I the figures dealing with 130 patients are thus analysed, and it is seen that (A) In Group I , containing two patients who received less than 100 g phosphor oil weekly, neither (i e , 0 per cent) showed improvement, while in Group IV 34 received the same amount of cod liver oil, and 31 (i e 91 per cent) showed good improvement , (B) in Group II 10 received 100–150 g of phosphor oil weekly, and 6 (i e , 60 per cent) showed progress, while in Group V, 34 received the same amount of cod liver oil, and 32 (i e , 94 per cent) showed good progress , (C) in Group III 29 patients received 150–200 g of phosphor oil weekly, and 21 (i e , 72 per cent) showed good progress, while in Group VI 21 patients received 150–200 g weekly of cod liver oil, and 21 (i e , 100 per cent) showed progress The patients whose treatments were changed are not represented again in the groups for their second course of treatment For instance, the one patient, Max L , who made no progress after being changed from 200 g weekly of phosphor oil to 200 g weekly of cod liver oil, is mentioned only in the first named group and not again in the second The figures show that even 150–200 g weekly of phosphor oil gives a percentage progress rate (72 per cent) which falls below the rate (91 per cent) for quantities of only 50–100 g weekly of cod liver oil pretty clearly indicating that the healing effect must be due to something other than mere fat as fat or phosphorus The percentage progress rates for the three cod liver oil groups lie very close together—i e , 91 per cent , 94 per cent , and 100 per cent —showing that in most cases even 50–100 g weekly of cod liver oil is sufficient for cure

TABLE I —*Comparative Progress of Patients with Hunger Osteomalacia Treated with Phosphor (Plant) Oil and Cod Liver Oil*

(A) Number of patients showing progress

(B) Number of patients showing no progress Treatment unchanged

(C) Number of patients worse or showing no or very little progress Treatment changed

(D) Number of patients showing greater progress after change

(E) Number of patients showing no progress after change

Group	Treatment	Oil g weekly	Total patients	(A)		(B)	(C)	(D)	(E)
				Total	%				
I	Phosphor oil	60–100	2	0	0	1	1	1	0
II	,	100 150	10	6	60	2	2	2	0
III	,,	150–200	29	21	72	1	7	6	1
IV	Cod liver oil	50–100	34	31	91	0	3	3	0
V	,	100–150	34	32	94	0	2	2	0
VI	,	150 200	21	21	100	0	0	–	–

An attempt has been made in Table II to compare the rate of cure on different treatments of patients whose treatment remained the same throughout For this the patients needed to be as comparable as possible, and the group of patients of moderate severity (+) has therefore been chosen, because it contains the largest numbers In

TABLE II —*Comparative Rates of Cure of Cases of Moderate Severity (+), whose Treatment Remained Unchanged Throughout*

Treatment	Total No of patients			No of weeks in which cure was completed (A) or after which treatment ceased though cure still incomplete (B)												
				2	3	4	5	6	7	8	9	10	11	12	13	14
Phosphor oil 100 150	2	(A)	0	–	–	–	–	–	–	–	–	–	–	–	–	–
		(B)	2	–	–	1	–	–	1	–	–	–	–	–	–	–
Phosphor oil 150 200	12	(A)	9	1	–	2	1	3	1	–	–	1	–	–	–	–
		(B)	3	1	2	–	–	–	–	–	–	–	–	–	–	–
Cod liver oil 50–100	22	(A)	18	1	–	–	3	5	1	2	–	2	–	2	1	1
		(B)	4	1	–	–	–	2	–	1	–	–	–	–	–	–
Cod liver oil 100–150	17	(A)	17	–	1	2	3	2	3	7	–	2	–	–	1	–
		(B)	0	–	–	–	–	–	–	–	–	–	–	–	–	–
Cod liver oil 150–200	8	(A)	6	–	1	1	–	–	–	–	–	–	1	1	–	–
		(B)	2	–	1	–	–	–	–	–	–	–	1	–	–	–

the excreta were disposed of immediately after defæcation in an incinerator placed in or near the latrine. The danger of fly infection and the labour required for removal of the necessary buckets and their cleansing were disadvantages of the first method. A point in its favour was that "fæcal urine" was not so excessive as to prevent the whole bucket contents being disposed of in incinerators of good construction, provided these were kept supplied with sufficient fuel. In dealing with the second method, he gave details of an experiment made by the Germans at Potsdam in 1902, where the latrine seats were placed over hoppers which led direct on to iron plates and pans inside a furnace, the furnace being only lighted twice a week. The abandonment of this system was attributed to the smell, but a trial with only a bi-weekly incineration could not be considered a fair one. The McCall system, started by the Americans during the Cuban war, had been abandoned owing to expense of iron plates and fuel. Sir W. Macpherson said he had had personal experience of the method of direct incineration before the war, both in India, and Aldershot, and here the simple device of placing a layer of bhoosa or other dry material on the ground, making the men defæcate on this and then set fire to it, proved extraordinarily satisfactory. More recently, in 1915, in France and also later in Salonika, he had started a method of immediate incineration, described in the *R.A.M.C. Journal* in 1915. The essential principles were, firstly, the disposal of the urine by the men themselves, either by emptying the receptacle into absorption pits, or by passing urine into a channel leading to the pit. Secondly, the deposition of excreta into the incinerator immediately after the act of defæcation, also by the men themselves. The incinerator could be of the open or closed variety, and was frequently made out of a cresol drum, placed in or quite near the latrine. This method proved entirely successful; there was an abundance of paper on to which the men could defæcate, and the fire in the incinerator when once started by some wood or hot ashes from the cook-house was kept at a red heat by the paper and fæcal matter deposited therein. A sergeant-major of a medical unit which adopted this system in France from 1915 to the end of the war maintained that it had the following advantages: (*a*) Cleanliness, freedom from flies, and comparatively little odour; (*b*) definite area only involved and practically no soiling of the ground; (*c*) only one sanitary attendant required; (*d*) it could be placed at a convenient distance from the men's living quarters without fear of offence; (*e*) it could be constructed with materials usually available in any camp by any intelligent N.C.O. within three or four days of arrival at the permanent camping site. In conclusion Sir W. Macpherson referred to the disposal of urine by means of absorption pits. The system was in use in India before the war, and was suitable for practically any form of soil, and he gave an instance of a field ambulance in Salonika where such a pit had been made in rock so dense that "blasting" had to be resorted to for its construction, and even this had worked satisfactorily. He therefore considered that the disposal of urine was a simple matter, and there was no difficulty in arranging, where necessary, latrine receptacles by which urine was separated from the fæcal matter so as to allow of immediate incineration being carried out.

Discussion and Reply.

Lieut.-General Sir JOHN GOODWIN said that any method of disposal should be as, far as possible, fool-proof. The method of immediate incineration was ideal, and should be taught and tried in Church Lads Brigade and other camps. The difficulties in future wars would be overcome if the civilian population were instructed in its use in peace-time.—Surg. Rear-Admiral Sir PERCY BASSETT-SMITH also considered the system advocated excellent, his only doubt being whether the disposal of the urine was entirely free from risk.—Lieut.-Colonel TILBURY BROWN gave his experiences in West Africa, where the natives would incinerate their own excreta but not that of anyone else. He thought the suggested method most valuable.—Lieut.-Colonel W. BUTLER considered incineration the most sanitary and satisfactory method, and emphasised the danger of fly breeding in deep latrines. His only objections to incineration were (1) loss of manurial value, (2) occasional incomplete combustion.—Lieut.-Colonel JOHN ROBERTSON said that he approved of the dry-earth system best where water-carriage was not available, but if the system described could be adopted in territorial or civilian camps it might prove satisfactory. He suggested that wet weather might hinder incineration, and that the smell might be a nuisance.—Lieut.-Colonel E. P. SEWELL regretted that the system of immediate incineration was not known in Palestine during the war. He instanced the equipment of latrine buckets and portable incinerator carried by camel during the Palestine campaign. Frequently the equipment had to be left on the wayside for lack of transport. Lines were soon fouled by trenches, but properly constructed cesspits were sometimes of value.—Group Captain DAVID MUNRO spoke of his experiences at Basra, where the method suggested might have succeeded admirably. Deep pits outside Basra City had been of use in disposing of latrine contents.—Surg. Commander R. J. MACKEOWN spoke of the difficulty of instructing the men. He asked what method the Japanese adopted in their war in Manchuria.—Lieut.-Colonel H. R. KENWOOD thought that water-carriage was always the best and cheapest method in the long run. The dry-earth system he considered next best; it caused no odour and no flies. Incineration was valuable and useful, but he knew that in some instances this method had had to be abandoned on account of the smell; probably the system of individual incineration would cause little or no nuisance in this respect. The disposal of urine was a difficulty, and a soakaway was not always suitable.

Sir W. MACPHERSON, in reply, said that he considered the method of immediate incineration to be fool-proof; in the emptying of urine receptacles into the absorption pit the men ran no more risk than any housemaid. As to the loss of manurial value, the ash from the incinerators was of considerable use as a fertiliser. Rain had no effect on the incinerator, but, of course, the latter could be covered if desired. There was little smell in the individual method, and two small cresol drums made into incinerators had in a C.C.S. in France dealt daily with the excreta from 2000 men. There was no difficulty in instructing the men; written instructions were posted up in the latrines. In Manchuria the Japanese used deep trench latrines. He agreed that the dry earth method was good, but it was inapplicable "in the field"; obviously no single method would be suitable for general adoption.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

THE first meeting of the session was held on Oct. 7th, when Dr. G. B. FLEMING read a paper on

The Post-natal Treatment of Congenital Syphilis.

After briefly outlining the methods and results of treatment by mercury and arsenic in various forms, he explained the methods adopted at the Royal Hospital for Sick Children, Glasgow, for injecting the salvarsan substances. The criterion of cure adopted was a negative W.R. which remained negative. Seventy-four cases treated between 1917 and 1920 had been analysed and 35 cases had been followed up for longer or shorter times after treatment. Of 47 children under 1 year, 44 had negative W.R. at the end of treatment and 15 out of 21 were still negative after six months. Of 27 children over a year old, 20 were negative at the end of treatment and eight out of 14 tested were still negative after six months same conditions prevailing in Vienna during another winter such evidence may be obtained. The ætiology of hunger-osteomalacia has not only the interest that it is the ætiology of a new disease, but it has also great importance from its relation to rickets through rachitis tarda and from the light which a knowledge of its ætiology may throw upon the ætiology of rickets. Whether it is the same disease as the already well-known osteomalacia of pregnancy appears very uncertain. Among the Krankenkasse cases only one, Marie L., was encountered that had any claim to be *diagnosed as osteomalacia of pregnancy.* This case was that of a woman beyond the child-bearing age, who, however, gave a history of osteomalacia during pregnancy going back to 14 years before; several of her children had suffered from severe rickets. If pregnancy-osteomalacia and hunger-osteomalacia are the same disease it is hard to understand why the former has not greatly increased in Vienna, but it has not done so. It cannot be that such cases were wholly overlooked; it may be that economic conditions do not on the whole press so severely on young women of the child-bearing age, who would in most cases have a husband to support them, but unless some such factor is operative it can scarcely be that hunger- and pregnancy-osteomalacia have the same ætiology.

Summary.

1. 177 cases of hunger-osteomalacia were treated as out-patients in Vienna. Of these, only 130 *entered into the final analysis of the experiment.*

2. About one-third of the number was treated with a plant oil (subsequently identified as belonging to the rape oil group) containing phosphorus, the other two-thirds with cod-liver oil.

3. Most of the patients made progress, but some of the patients on plant oil had to be transferred to *cod-liver oil, and some of those on cod-liver oil had to* have the dose increased before good progress could be made.

4. The results fall into a series; doses of about 100 c.cm., 150 c.cm., and 200 c.cm. of each of the two kinds of oil were given. The smallest doses of plant oil gave the worst result and the largest doses of cod-liver oil the best; the smallest dose of cod-liver oil was better than the largest dose of plant oil.

5. Once a good improvement was set on foot it could not be detected that the rate of progress on the different doses varied much.

6. It is provisionally concluded that cure of the disease was due to addition of vitamin A rather than of fat as fat to the diet.

7. The relation of hunger-osteomalacia to the osteomalacia of pregnancy is regarded as quite uncertain.

The expenses of this research were defrayed by the Medical Research Council.

Appendix.

A sample of the phosphor oil used in the above test was submitted to Dr. J. C. Drummond at University College, London, who reported that he had little hesitation in placing it in the rape oil group; in fact, he adds: "It is probably true rape oil itself. It appears to be fairly crude, since there is a considerable deposit of recognisable plant debris." The oil was also tested by Dr. Drummond on rats for its value in vitamin A. It appeared to be almost, if not wholly, incapable of restoring growth in rats which had declined on a diet deficient in vitamin A, in the quantities of it able to be consumed by rats; such quantities are, however, necessarily small. The authors are much indebted to Dr. Drummond for *undertaking this examination for them.*

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PRACTICAL POINTS IN THE TREATMENT OF PLAGUE.[1]

BY DR. WU LIEN TEH (G. L. TUCK),
DIRECTOR AND CHIEF MEDICAL OFFICER, PLAGUE PREVENTION SERVICE.

THE beginning of pneumonic plague of 1920–21 was quite insidious. As in the outbreak of ten years ago, it began in the Transbaikal district of Siberia towards the end of summer, when a Russian *family, consisting of one woman, her son, and two* daughters, were reported to have been attacked by the disease in its bubonic form. With the exception of the man, treated at Manchouli Hospital, all died. Then two Cossack soldiers living in the same compound took the infection and died, the last on Sept. 20th. After this no more was heard until October, when the wife of a Russian guardsman, in charge of the railway bridge at Hailar, died of bubonic plague. She infected three out of five sons, who all died; also her husband, who recovered. These cases were seen by me at the Railway Hospital and were purely bubonic. Three Chinese soldiers living in the same compound also died of the disease. Owing to the free intercourse between the sick and some outside workmen, the infection was distributed in the city, and our efforts at segregation *met with only partial success. During our stay at* Hailar we could trace the gradual evolution of the plague from bubonic, through the septicæmic into the pneumonic form, after which it became most infectious and dangerous. One day the local chief of police *was attacked by the soldiers, and nine men under* observation were set free by the soldiers. Some later deaths at Hailar were traced to those who escaped, but two reached the coal-mines of Dalainor (100 miles away) and spread the infection broadcast among the coolies living in the semi-underground huts of that place. Manchouli was reinfected from Dalainor, and in its turn sent infected persons by rail to Tsitsikar, and later on to Harbin. In this way the whole line, from Manchouli to Vladivostock (1072 miles) and from Harbin to Changchun (150 miles), received the infection in a greater or less degree. Fortunately, however, owing to the early preparations made by the Manchurian Plague Prevention Service and to the splendid coöperation displayed by the authorities of the Chinese Eastern, South Manchurian and Chinese Government Railways, *as well as by most classes of people from Governor-*General Chang Tso Lin downwards, the epidemic did not reach the colossal dimensions of that of 1910–11. Possible cases were rigidly controlled, and the passenger traffic between Manchouli and *Harbin was stopped from Feb. 1st. Third-class* traffic from Harbin to Changchun was limited to only 150 persons, who, after inspection at Harbin, had to undergo quarantine for a further period of five days at Changchun. In this way, although the number of deaths at Harbin was considerable, comparatively few cases occurred south of this city. For instance, the whole of Changchun district only claimed 77 deaths from plague, and Mukden only 4 deaths, as compared with 5000 deaths in each city during the epidemic of ten years ago. The population of Manchuria had increased from 12 millions to 22 millions, while that of Harbin had jumped from 70,000 to 300,000 during the intervening ten years. Whereas at least 50,000 plague deaths were recorded in 1910–11, only 8500 persons died in the epidemic of 1920–21. These are satisfactory figures and show what modern prevention may accomplish against dangerous disease. It is hoped that our people may take this lesson to heart, and in future have more faith in their scientific men, for in the fight against such insidious and unseen foes as plague germs, only those experts who are specially trained can keep their presence of mind and at the same time perform their duties effectively and economically.

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[1] A preliminary report on the second Manchurian plague epidemic, 1920–21.

Reviews and Notices of Books.

INDUSTRIAL FATIGUE AND EFFICIENCY.

By H. M. Vernon, M.A., M.D. London: George Routledge and Sons, Ltd. 1921. Pp. 264. 12*s.* 6*d.*

The study of the human machine in this country was given a remarkable impetus by the Health of Munition Workers Committee and the work started by them has since been carried on by the Industrial Fatigue Research Board. Reports have been issued from time to time upon work completed, but the time is quite ripe for a comprehensive review of the various investigations. This task has been undertaken by Dr. H. M. Vernon, who has been responsible for much of the work done and has brought to bear upon the practice of industry a training acquired in the laboratory.

Few can be aware of the amount that has been done on the subject, more in this country than in any other. The work summarised by Dr. Vernon deals with human activity and efficiency, the attributes of sound health. It suggests that in order to maintain his health, the industrial worker must do a good day's work, expending a reasonable amount of energy over his labour; but, on the other hand, by the avoidance of fatigue his efficiency is increased. Dr. Vernon supports his statements by carefully collected facts, whether he is dealing with hours of work and their distribution within the day, or within the week, with the length of spells of work or the interpolation of rest-pauses, with limitation of output, with sickness or accidents, or with the influence upon workers of such environmental conditions as lighting, temperature, and ventilation. He claims that "experienced industrial workers unconsciously adopt habits of work which tend to the production of a maximum output with a minimum of effort." Clearly anything which will lessen the effort will increase the output. Reduction of hours may increase total output, especially when the work is chiefly dependent upon the human as opposed to the mechanical element. The energy wasted in standing about for long hours can be made productive in a day of shorter hours; the slow rate of activity adopted when hours are over-long is uneconomical, just as is too rapid a pace resulting from "drive." Dr. Vernon considers, analyses, and finally condemns overtime as uneconomical, because it slows down work on other days; thus two hours of overtime added to an eight-hour day on two days a week tends to result in the pace for every day of the week being that of a ten-hour day. He arrives at the conclusion that for manual work, such as coal-mining, a seven-hour day is reasonable; for work partly manual and partly mechanical, such as engineering, an eight-hour day; and for mainly mechanical work, such as textile manufacture, a nine or ten-hour day. The six-hour day with multiple shifts is discussed with favour as regards internal administrative economy and the outside life of the worker.

Dr. Vernon is opposed to the Saturday whole holiday, at any rate for men; two days of rest are not needed to recuperate from five days of work. The extra day has to be paid for by longer hours on the other days, and Dr. Vernon reiterates that the pace worked depends on the longest day worked. The long week-end, moreover, permits lack of practice to become so pronounced as to increase the already low output of Monday. The ideal distribution of a nine-hour day is given as three spells beginning with one of 4 hours, a second of 2¾ hours, and a third of 2¾ hours, the last two being separated by 15 minutes for tea. In a chapter dealing with limitation of output and how to detect it, Dr. Vernon has included much previously unpublished information. The effect of fatigue upon diminishing personal respect and increasing drunkenness is discussed; employers are urged to keep and pool records for a more general investigation of this important subject, and of the effects of over-fatigue and occupational environment in impairing digestion and in lowering vitality. We read with some astonishment the conclusion that fatigue has comparatively little direct effect in increasing either sickness or mortality; it is the environment of labour rather than its severity which matters. In the discussion of industrial accidents and their prevention (incidentally, this section of the book is excellent) fatigue is regarded as less likely to be a cause of accidents than speed of production, inexperience, alcohol consumption, temperature, lighting, and the psychical state of workers.

A habit of mind as a means of prevention is placed far before mechanical contrivances; attention to environment and education of workers through safety committees are strongly advocated. The question of environment—that is, factory conditions—is regarded by Dr. Vernon as more important than any other in its effect on the consideration of output, and on this point he would have us concentrate. He has put his case well and we can only regret that his conclusions are not collected in a convenient summary at the end of the book; such a summary might attract even the busiest industrial magnate to the study of a book which, if it were widely read, might bring about a second and more desirable industrial revolution.

MEDICAL EXAMINATION FOR LIFE INSURANCE.

By Thomas D. Lister, C.B.E., M.D., F.R.C.S., M.R.C.P., President of the Assurance Medical Society; Physician to Mount Vernon and Royal Waterloo Hospitals. London: Edward Arnold and Co. 1921. Pp. 168. 10*s.* 6*d.*

In view of the fact that most medical men in active practice are more or less frequently consulted in regard to life insurance, either in the capacity of medical examiner or medical referee, it is somewhat regrettable that, in this country at any rate, little if any attention is paid to the subject of insurance medicine in the medical curriculum. The problems which confront the practitioner in this connexion are entirely different from those of the diagnosis and treatment of disease with which he is more commonly concerned. In the examination for life insurance he has not only to appraise the present condition of the proposer's health, but also to consider his family and personal history critically and to make some attempt to assess expectation of life—that is, to determine whether the proposer is likely to live as long as the average of healthy persons of the same age. As referee the doctor is asked to give confidential information as to the proposer's previous health and habits, and also to express an opinion as to his prospect of surviving to the normal expectation. Life insurance medicine requires careful study, and for its application in practice a due appreciation of the responsible and confidential character of the reports required is necessary. We are not suggesting the addition to the student's statutory course of a new and compulsory subject, but only that the way to apply medical knowledge to insurance questions should be explained by teachers of experience.

There has long been a need for an up-to-date and authoritative manual on this subject, giving instruction and advice in regard to the various problems concerned, in such a way as to be helpful to the occasional examiner and to the medical practitioner asked to act as referee—that is, to report upon the health of his own patient. Dr. Lister's admirable book supplies this need exactly, and it would be difficult to commend it too highly. It deals with the theoretical considerations underlying insurance medicine only in so far as they are necessary to explain the procedures recommended, and detailed reference to statistical or actuarial considerations is wisely avoided. The information given is essentially practical, and every page reveals the author's wide experience. Dr. Lister writes so clearly and so well that what might have been a dry and technical book is most readable and interesting. Though primarily

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 14th with Sir W. HALE-WHITE, the President, in the chair.

Dr. H. L. TIDY showed a case of

Diabetes Insipidus

following a bayonet wound under the left eye. The patient stated that on recovering consciousness after his wound his first sensation was thirst, and he had noticed constant thirst and polyuria ever since. It was supposed that the wound had involved the pituitary gland, but it had healed without any other complication than that for which the patient was exhibited. The patient's sugar tolerance was well up to normal, and the Wassermann reaction was negative. Various forms of treatment, including pituitary extract, had been tried without any success. Temporary improvement had followed restriction of fluids, but the patient could not tolerate this treatment.

Dr. A. FEILING inquired whether valerian had been exhibited, and Dr. TIDY replied in the negative.

Dr. FEILING and Mr. W. L. HOLYOAK showed a case of

Renal Dwarfism

in a boy, aged 12½ years, who came under observation for defective vision in the left eye. His height was 43½ in., weight 3 st. 13½ lb.; and his mental state appeared normal. The legs exhibited marked genu valgum, and both this and the defective vision were said to have come on after an attack of whooping cough at the age of 4. In the left eye vision was reduced to large moving objects only, and there was primary optic atrophy. Vision in the right eye and the visual field were normal. There has been constant albuminuria amounting to 0·25 per cent. with a few hyaline and granular casts. The cardio-vascular system was normal, and the blood pressure not raised. The Wassermann reaction was negative in both blood and cerebro-spinal fluid. An X ray of the skull showed an undeveloped sella turcica. Dr. Feiling asked for advice as to treatment of the genu valgum.

Dr. TIDY inquired whether there was a history of similar conditions in other members of the family. The answer was in the negative.—Mr. R. P. ROWLANDS said he would be adverse to any operation for the genu valgum.—Dr. F. PARKES WEBER saw no reason to connect the optic atrophy with renal disease in this case.

Dr. G. A. BACK showed a case of

Doubtful Cyst of the Left Lung for Diagnosis.

The patient, a railwayman, aged 39 years, was attacked with a sharp pain in the left side of the chest on August 15th, 1921. He continued at work for three days, and then saw a doctor as the pain persisted and he had some cough with colourless expectoration. He came to St. Thomas's Hospital on Sept. 7th, when he presented the following physical signs: dullness, much diminished breath sounds, and absence of vocal resonance and fremitus from first to fifth intercostal spaces on the left side. An X ray showed an opacity of the upper third of the left lung suggesting thickened pleura, and slight deficiency in expansion. The heart was not displaced, and there was no alteration in the voice or pupillary reactions. A blood count revealed a leucocytosis of 22,000 with 85 per cent. of polymorphs and no eosinophilia. Exploratory puncture had been performed without obtaining any fluid. He now had no expectoration and was not losing weight. Dr. Back discussed the differential diagnosis, which rested between encysted fluid or pus, hydatid cyst, or a growth.

Dr. MAURICE A. CASSIDY thought that aspiration with an ordinary serum needle was always unsatisfactory, and advised a further attempt with the largest needle obtainable, or an exploratory thoracotomy.—Dr. E. STOLKIND suggested an artificial pneumothorax and pleuroscopy as a means of establishing a diagnosis.—The PRESIDENT thought that all the signs pointed to a localised empyema probably following ambulatory pneumonia. The nature of the patient's pain suggested this.—Dr. BACK, in reply, said that in his opinion the sudden onset of the pain did not preclude a tumour, since the pain might coincide with the invasion of the pleura by a growth previously confined to the lung.

Dr. BACK also showed a case of

Chronic Pleural Effusion.

The patient, a commercial traveller, aged 41, began to suffer from a dull aching pain in the left hypochondrium and lumbar region in August, 1920. In December, 1920, he was admitted to the London Hospital, where he was X rayed for a renal calculus with a negative result. Shortly after 4 oz. of fluid were aspirated from the left pleural cavity. No tubercle bacilli were found in the fluid. He was sent to Felixstowe to convalesce, but the pain continued. In March, 1921, he was admitted to the Homœopathic Hospital, where he remained for nine weeks and the left chest was aspirated on two occasions. On the first occasion 30 oz. of clear fluid were withdrawn, and on the second occasion a similar quantity of blood-stained fluid. He said the pain was no better on discharge, and that he had some difficulty in breathing. In July, 1921, he had once a slight hæmoptysis and on July 30th he was admitted to St. Thomas's Hospital with a temperature of 102° F., when he presented all the signs of a left-sided pleural effusion up to the third rib. During three months in hospital the pain had not improved, but the temperature had only been above normal on three or four occasions. He was aspirated on two occasions, and the fluid obtained was deeply blood-stained. Some of the fluid had been injected into a guinea-pig, in which no tubercles were found after death. His weight had remained unaltered at 8 st. 2 lb. Dr. Back asked for opinions as to diagnosis.

The PRESIDENT thought that the presence of blood on no less than three occasions in the fluid was strongly suggestive of a new growth.—Dr. STOLKIND thought that in this case also artificial pneumothorax, followed by pleuroscopy, would assist in diagnosis.

SOCIETY OF MEDICAL OFFICERS OF HEALTH:

NAVY, ARMY, AND R.A.F. HYGIENE GROUP.

THE annual general meeting of this group of the Society was held at 1, Upper Montague-street, Russell-square, London, on Sept. 30th, when Surg. Rear-Admiral Sir PERCY BASSETT-SMITH was unanimously elected President of the Group for the ensuing year.

Major-General Sir W. G. MACPHERSON read a paper on

Disposal of Latrine Contents with Special Reference to Immediate Incineration.

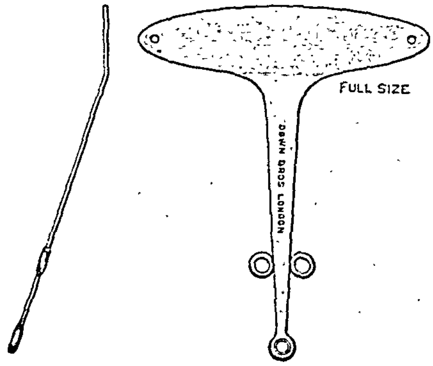
He said that the subject was of interest in civil life in connexion with holiday and other camps. The prejudice against the system of immediate or individual incineration was due to ignorance of its advantages. He did not propose to discuss recognised water-carriage systems, nor to detail the different kinds of camp latrines and incinerators, but only to review these briefly in discussing the special differences between immediate incineration and indirect methods of disposal. Sir W. Macpherson described the appalling conditions produced by prolonged use of the shallow and deep trench systems, unless under constant and careful supervision. War experience had shown that wherever possible the most satisfactory method of disposal was by incineration. There were two recognised methods of disposal by incineration: in one the latrine contents were carried in buckets or filth carts to incinerators at some distance from the latrines, and in the other threads through the mass, to get evidence of what happens as the bullet passes through. He found that the explosive effect radiated from the track to a distance varying inversely as the square of the density of the gelatin, four times as far in 5 per cent. gelatin as in 10 per cent., sixteen times as far in 5 per cent. as in 20 per cent., and so on. Similar principles seem to hold for the tissues of the body. The influence on treatment is clear. The track of a pistol bullet may only need superficial cleaning, but the track of a high-velocity bullet needs wide opening up. Tough tendons and aponeuroses are likely to be torn out of the tissues by the bullet which pierces them. In soft tissues, liver, kidney, &c., the damage is very extensive. Owing to the low viscosity and density of the blood, damage spreads far along the vessels, and there is special risk of thrombosis, secondary hæmorrhage and aneurysm, so that if a bullet passes near a large vessel the latter may require to be tied well away from the track. This paper merits the attention *of all military surgeons*.—Lieut.-Commander C. S. Stephenson, U.S.N., contributes a thoughtful paper on "Syphilis and Venereal Disease, a Service Liability." He notes that stopping men's pay for venereal disease leads to concealment of disease and at times to injustice, and concludes that laws and penalties against venereal disease are unwise and ineffective. The only practical law will insist on prophylaxis, punishment following disobedience; in other respects venereal patients are to be treated exactly as others, but means of infection are to be kept away from the men, as was done during the war.—Lieut. D. F. Elmendorf, U.S.M.C., examined 40 men of the American force in Germany for Vincent's angina and found 35 of them were carriers; examination was made by dark-ground illumination.

JOURNAL OF LARYNGOLOGY AND OTOLOGY. July and August, 1921. Vol. XXXVI., Nos. 7 and 8.—The July number contains a study by S. Mygind of Copenhagen of the reflex movements of the facial muscles elicited by rotation and apparently due to vestibular stimulation; as they are not obtained after the age of six weeks, they do not appear to possess a direct clinical value. This is followed by a series of statistical tables from the ear and throat department of the Edinburgh Royal Infirmary for the years 1919 and 1920; it gives the number of cases of the different diseases treated in each year, occupies ten pages, and would have been more interesting if it had been accompanied by a commentary.—Mr. E. B. Waggett describes an interesting case of a large *chondroma growing from the cricoid cartilage* successfully removed through a lateral external incision.—Dr. James Don relates a case of encephalitis lethargica in which the diagnosis was obscured by chronic bilateral aural suppuration; a radical mastoid operation was performed on the right side, without affecting the general condition, and the patient eventually recovered. ——To the August issue, Sir William Milligan contributes a short note on diathermy in inoperable cancers of the throat; Dr. Logan Turner gives an account of six cases of vocal cord paralysis secondary to malignant tumour of the mamma, with a careful description of the anatomy of the lymphatics concerned.—Dr. F. G. Wrigley describes a case in which the cavernous sinus probably became thrombosed secondarily to an otitis media, and in which the clot was expelled on opening the healthy lateral sinus with eventual recovery.—Dr. Albert Gray gives a summary of various theories of hearing: he disagrees with Wrightson's theory, as it involves the final analysis of tones in the brain, and favours Helmholtz's theory, which embodies the principle of "sympathetic resonance" and analysis in the cochlea, with a modification of his own; agreeing that the basilar membrane vibrates over a large area in response to a given note, he argues that it is the point of maximum vibration which determines the sensation of pitch.—The reports of societies' proceedings have been greatly abridged in order to make up the arrears into which they had fallen; they are still six months behind.

New Inventions.

HARE-LIP SURGERY: A SUGGESTION.

CASES of hare-lip and of the more common congenital abnormalities are seen in considerable numbers among our out-patients to-day. The after-results of operation are often deformity or disfigurement, common troubles being a plain notch at the lower end of the operation scar, and a certain amount of keloid thickening of the scar. This is no doubt caused by upward contraction of the scar tissue, occurring in this region because of the large amount of fibrous tissue entering into the construction of the upper lip. A post-operative straight lip is a rare occurrence. The mechanical means described below are devised to overcome this contracture, and, as it were, to "hyperextend" the seat of operation. The angle of incision and the point of juncture of the two halves of the lip are best left to the individual surgeon. It is the practice at present to bring the lip together by means of skin sutures. This I feel sure plays a great part in causing the prominent after scar. Approximation of the parts can be brought about as well by Czerny sutures from the mucous side of the lip, causing little or no tension on the scar. I venture to suggest these sutures for general use in hare-lip surgery. As a mechanical means of overcoming the contraction, I use the splint illustrated immediately after operation. Made of silver, the instrument is small and easily handled. It has a main shield-shaped body, carrying two small needle-holes at the extremities, and a projecting arm with three small rings attached as suture anchors. This arm is bent away from the main body at an angle of 15°, thus precluding any interference with the feeding of the patient. The splint is applied immediately after operation. Thin silkworm gut is used as suture material. The splint is sutured to the upper lip through the two holes in the body of the instrument. A circular suture is passed through the lip at the point of juncture, and two sutures at each side at a distance of a quarter of an inch. These are fastened to the rings on the projecting arm, and a slight amount of tension applied, thus pulling forward and downward the lip at the site of operation. The splint is kept applied for eight to ten days after the operation. The continued tension on the lip causes a curve downwards, which, allowing for subsequent contracture, leaves a presentable lip and no unsightly notches.



The instrument has been made for me by Messrs. Down Bros.

Harley-street, W. L. SAMUELS, M.D. Sheff.

THE LATE DR. REGINALD LAWSON MOSLEY.—Dr. R. L. Mosley, who died on Oct. 6th at Shaldon, South Devon, in his sixty-fifth year, was a graduate of Dublin University, where he graduated B.A. (first-class honours) in 1879 and M.B. two years later. In 1880 he became L.R.C.S.I. and L.M. of the Rotunda Hospital, Dublin.

The facts seemed to show that intravenous injection of salvarsan reinforced by mercury was the best post-natal way of treating congenital syphilis; that the younger the patient the greater the probability of cure; and that a case should only be pronounced cured when the Wassermann reaction has been proved to remain negative.

Dr. ETHEL CRAWFORD read a paper on Sulfarsenol in Congenital Syphilis.[1]

Prof. C. H. BROWNING made a communication on

The Anti-Syphilitic Action of Arsenical Compounds in relation to their Constitution.

He said that although there were many substitutes they were similar in chemical constitution to salvarsan, although there was an unfortunate diversity of names. Though atoxyl, which is a stage in the synthesis of salvarsan, has a serious effect on the optic nerve, there was no ground for the belief held by some ophthalmologists and others that salvarsan has a harmful action on the nervous system. Atoxyl bore a relation to salvarsan that might be compared to the relationship of alcohol to sugar. There was, however, danger in allowing solutions to remain exposed to air for long, as the solutions underwent decomposition; and there was also some danger from using large quantities of fluid at one time. Nowadays improved methods of administration and improvements in the drug itself had eliminated these risks. Salvarsan substances were not clearly defined chemical entities. They were colloidal substances, incapable of absolute purification, and consequently impurities appeared in the various preparations. These modified solubility, reaction after administration, &c., and might possibly modify the toxicity of the drug in the body. Thus it was impossible to test the activity of any of the salvarsan substances in vitro. The tests should be conducted in vivo by a disinterested party. The relative efficiency of the members of the group was important. The new substances were more easily given than the old, but, on the whole, less efficacious. In order to avoid danger the least toxic substance was usually employed, even though by reducing toxicity the therapeutic efficiency was also reduced. Old salvarsan produced a febrile reaction. When years ago an inquiry was made into the history of syphilitics in the Austrian army it was found that those who had developed a febrile reaction after infection did not develop general paralysis. To check the efficiency of treatment by the disappearance of clinical symptoms was not sufficient; biological tests such as the W.R. and the precipitation tests should be used.

Dr. J. R. C. GREENLEES read a paper on

The Ante-natal Treatment of Congenital Syphilis.

He said that post-natal treatment of congenital syphilis attacked the disease too late. The focus of the infecting spirochætes was probably the placental tissue and therefore treatment should aim at prevention of their development there and their spread to the fœtus. Dr. Greenlees quoted statistics to show that ante-natal treatment with mercury and iodide of potassium had not been very successful. On the other hand, 15 cases treated in the Royal Hospital for Sick Children, Glasgow, where ante-natal treatment was carried out with arsenical compounds and mercury, all showed successful results, some of these cases being followed up for as long as seven years.

Dr. LEONARD FINDLAY made a communication on

The Ravages of Congenital Syphilis: How to Combat them: A Plea for Notification.

He said that the foregoing communications showed that ante-natal treatment was *the* treatment par excellence. Prophylactic was beyond question better than curative treatment. The ease of the ante-natal method of treatment and the avoidance of the pain and misery many young syphilitics underwent in the course of the curative treatment were striking recommendations in its favour. Dr. Findlay criticised statements recently made to the effect that congenital syphilis was becoming less severe in its manifestations. He strongly advocated the application of the ante-natal method of treatment by the general practitioner, and gave his opinion that with the Wassermann test available and easy administration of the new salvarsan preparations there was no necessity for the special venereal clinic nor for the so-called venereal specialist in the case of syphilis. In conclusion he dwelt at length on the desirability of making syphilis a notifiable disease with particular regard to its influence on infantile mortality.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

THE opening meeting of the fortieth session of this Society was held at the West London Hospital on Oct. 7th, when Sir GEORGE LENTHAL CHEATLE delivered as his presidential address—

A Study of Breast Cancer in Relation to the Cancer Problem.

He said he had always been deeply impressed with the fact that any sufficient stimulus—mechanical or chemical—will cause the egg to awake and divide. If the stimulus was a living one it was probably of a physico-chemical nature. There were many factors influencing cell division—e.g., age, sex, heredity, &c. He particularly emphasised the importance of life-wear and nerve influence on the epithelial cells in this connexion. He did not consider that corset-pressure was an important factor in breast cancer. The traumatic mastitis that might result rapidly disappeared on removing the cause. But he showed how a diffuse, benign, desquamative hyperplasia of epithelium induced cyst formation in ducts and acini, or in ducts alone and acini alone. He believed the cause of the hyperplasia to be due to an irritant within the ducts or acini respectively. The irritant might enter the breast by the open orifices of the ducts on the surface of the nipple. He did not believe that the inflammation sometimes seen outside the ducts was the cause of the hyperplasia within. This was, in many cases, secondary and due to the irritant leaking out here and there, and causing isolated collections of lymphocytes.

The formation of cysts meant stagnation of contents, and as they caused irritation their action may remain undisturbed over long periods. Hence, two possible events might occur: (1) The formation of uni- and multi-radicular papillomata (simple); (2) the development of definite cancer (papillomatous or "laciform"). All of these he described as beginning in duct cysts, and in more than one part in the same breast. The multi-radicular papillomata were often malignant, and for this reason were the more important. The ampullæ of the ducts were a favourite site for their growth. The "laciform" type of duct cancer was very malignant and might be pure, or mixed with the papillomatous type. Cysts containing papillomata or cancer were first small cysts. The epithelium of the large cysts is so atrophied and degenerated that it is no longer capable of responding to the stimulus of further irritation. Many surgeons were saying that because they had never seen cancer in breasts from which they had removed cysts, therefore cancer in cysts must be rare. There was nothing in that statement. He had had a breast sent him for examination which had been removed for cysts only. In it was a multi-radicular papilloma, and near it a focus of cancer invading the fat around it. Again, if surgeons removed cystic conditions they had removed possible sites of cancer. The small cysts were the most dangerous as in them the epithelium was active.

SOUTH-WESTERN OPHTHALMOLOGICAL SOCIETY.—The next meeting of this society will be held on Monday, Oct. 24th, at Bristol Eye Hospital. At 2 P.M. cases will be shown, and Mr. Ransom Pickard will read a paper on the Development of Normal and Abnormal Disc Cups. At 7 P.M. there will be a dinner at the Grand Hotel, Bristol.

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[1] See THE LANCET, Oct. 1st, p. 700.

villages where this abortive outbreak occurred, as soon as the climatic conditions became favourable cases at once reappeared and a more or less violent attack followed. Hence, these late infected centres acted as reservoirs of infection during the "off season" and when conditions for the spread of the disease recurred they formed centres from which dissemination of the disease into the neighbouring villages would take place. These facts have, of course, been well known to epidemiologists for a considerable time, but Major **KUNHARDT** and his assistant went further; they argued that if something could be done for these late infected villages during the off season, recrudescence might be prevented; and conversely that it was useless to attempt any measures in the villages that had passed through the ordeal of an ordinary violent epidemic. A large tract of country in the Deccan comprising parts of the districts of Poona, Ahmednagar, Satara, and Sholapur were selected for experiment, a careful study of the plague figures village by village being carried out. During two years 458 villages were infected. Of these 218 were thrown out at once as quite unlikely to "carry over." At a more detailed examination another 189 were also discarded. It was thus decided to concentrate operations on 50 places—that is, about 10·9 per cent. of the total number infected. The work on these 50 places consisted mainly of a very determined attempt to rid the places of rats. Subsequent events showed that of these 50 places, 20 carried plague over to the following season in spite of these measures. Out of the 407 places excluded as being unlikely to carry over the disease, only three (all in the second year) continued to harbour the disease. In all three of these special circumstances existed explaining this. From this work the following conclusions are legitimate. First the method of recognising centres of infection that are likely to carry over the off season is useful, though admittedly crude. Second, that the failure to eradicate plague was due to the non-success of the rat campaign, and thirdly that the off season centres of infection are more important than importation from without.

A second important paper by the same authors is published in the *Journal* giving in detail the results of their experiences on rat extermination. The actual conclusions of this paper have been previously published. Two outstanding points may be referred to—namely, that hydrocyanic acid gas as a means of exterminating rats in the ordinary native house was a failure, and second the best rat poison used was found to be barium carbonate. Thus it will be seen that the campaign to rid the area of infection, so admirably conceived and thoroughly carried out, broke down for the simple reason that we cannot free the Indian village of rats successfully by any means at our disposal at present. Work is still going on which will sooner or later bear fruit. Had it not been for the upset of the services in India during the war, probably success in this direction would have crowned the efforts of the workers by this time. The problem of ridding large countries of plague infection is an extremely complicated one. The difficulties, as we have already shown, of rat extermination in a tiny little area like one Indian village are enormous. Armchair critics of the Government of India in this country sometimes talk in a light way about keeping rats out of human habitations by constructing rat-proof buildings. These individuals do not appear to recognise the fact that practically every home is a grain store as well, and that it is impossible, at present, to keep grain in bulk outside of villages and out of human habitations. Something may be done to educate the people to see the disadvantages of harbouring the rats in their houses, but the East moves very slowly, and the mud house common in many parts of the country is the only one that the inhabitants can afford, and it possesses certain advantages over any other type in a climate such as India. Even when the immediate difficulties of rat campaigns have been overcome there are still other problems in connexion with plague that have to be investigated, such as the way in which the traffic influences the spread of the disease by importation. We publish this week (see p. 853) a preliminary report upon the Manchurian plague epidemic of 1920–1921 by Dr. **WU LIEN TEH**, the chief executive officer of the Chinese Plague Prevention Service. The full report will not appear until next spring, but the findings published are interesting, and have a close bearing on many of the problems present in India.

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Preventive Surgery.

THERE are certain periods of revision through which every art, nation, business, or individual must pass at times; periods in which the results of previous work are surveyed in a critical spirit, and plans for the future are considered. Through such a period of reconstruction surgery may now be passing. The last 40 years have been marked by progress on a truly extensive scale, till to-day there is no part of the human frame safe from surgical enterprise, and few diseases for which surgical remedies have not been attempted, or at least suggested. Yet, apart from the notable advances made during the war in thoracic surgery and the plastic surgery of the face, the closing years of this period have seen few really new realms explored and few startling innovations brought to light, while many of those of a former generation have been abandoned. The surgical advance inspired by **LISTER** has reached a position in which its leaders consider it wise to consolidate; and if in the process some of the furthest salients have proved to be untenable, there is about the whole position a security which is reassuring to the spirit of the mass of workers. Surgical procedure has become standardised and simplified, and the tendency of the more important writings that have appeared of late has been critical rather than intrepid. There is a general tendency among writers to admit that nothing startlingly new is likely to appear, and to look for improvements in surgery rather to new methods than to new principles.

An article by Mr. **PHILIP TURNER** on the Principles of Preventive Surgery, published in a recent number of the *Guy's Hospital Gazette*, furnishes an example of a desire on the part of surgeons to look at their profession from a broadly different standpoint from that taken up even 20 years ago. Mr. **TURNER** discusses the great part which preventive medicine has come to play in our national life, and seeks to apply the preventive principle to matters surgical. This is not an easy task. Surgery deals essentially with abnormalities already established, steps in where prevention has failed; and, unless we are to advocate the routine performance not only of circumcision, but of tonsillectomy, cholecystectomy, gastro-enterostomy and appendicectomy, and to forestall the ills which these operations now cure, it is hard to conceive a place in our text-books for preventive surgery as a special branch, or to contemplate the addition of a "D.P.S." to the diplomas of an already over-examined profession. If the considerations put forward by Mr. **TURNER** are studied—and they well repay study—his views on intended for the occasional examiner and the medical referee, to whom it should be invaluable, there can be few connected with life insurance work who would not derive useful information and counsel from its perusal.

NEUROLOGY.

Clinical Examination of the Nervous System. By G. H. MONRAD-KROHN, M.D. Christiania, M.R.C.P. Lond., M.R.C.S., Lecturer in Neurology at the Royal Frederick University, Christiania. With a Foreword by T. GRAINGER STEWART, M.D., F.R.C.P., Physician to Out-patients, National Hospital, Queen-square. London: H. K. Lewis and Co. 1921. Pp. 135. 6s.

Dr. Monrad-Krohn's guide to the routine examination of the nervous system represents, we suppose, about the minimum requisite to cover the ground in a satisfactory manner, and yet it runs to over a hundred pages. We have gone over this little unpretentious précis of routine examination paragraph by paragraph and have no hesitation in warmly commending it to the student and the practitioner. It is really surprisingly comprehensive in view of its small compass. The inclusion of the Binet-Simon tests and of other psychological and psychiatric investigations adds to the all-round usefulness of the book, which should be in the pocket of every neurological student, at the bedside, or in the out-patient room, until such time as the routine examination of a nervous case has become second nature to him.

Diseases of the Nervous System. Third edition, revised. By H. CAMPBELL THOMSON, M.D. Lond., F.R.C.P., Physician to the Department for Diseases of the Nervous System, and Lecturer on Neurology, Middlesex Hospital. London: Cassell and Co. 1921. With 11 colour and 12 black-and-white plates, and 120 figures in the text. Pp. 566. 15s.

THE third edition of Dr. Campbell Thomson's textbook of nervous diseases appears after an interval of some six years. Incorporated in the book will be found paragraphs dealing with certain recent acquisitions in neurology, the result to a large extent of war experiences. Some modification has also been introduced into the chapters dealing with the neuroses and psychoneuroses, whereby they are brought more into line with the most modern teaching, though compulsion and anxiety neuroses receive a disproportionately small consideration as compared with hysteria and neurasthenia. Dr. Campbell Thomson's text-book maintains its position as embodying a sound, practical, and thoroughly up-to-date presentment of neurology for student and practitioner.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXIV., No. 4. Pp. 369–479. October, 1921.—Studies on the Pathology of Pneumococcal Infections of the Human Lung, by R. R. Armstrong and J. F. Gaskell. The authors have reinvestigated some points in the pathology of pneumonia, using a gelatin-embedding method for histology which preserves the natural relations of the parts more perfectly than the usual paraffin process. They believe that the pneumococcus invades the lung (*a*) by the air-passages, causing lobar or broncho-pneumonia according to the virulence of the organism and the resistance of the host, the essential histological lesions being the same in both cases; (*b*) by the blood stream, giving scattered miliary lesions without any exudate of polynuclear leucocytes; (*c*) by the lymphatics, giving rise to an uncommon type of relapsing pneumonia in children.—Digestion of the Œsophagus as a Cause of Post-operative and other Forms of Hæmatemesis, by J. H. Pringle, L. T. Stewart, and J. H. Teacher.—The Viscosity of Syphilitic Serum, by J. Holker. The viscosity of sera giving a positive Wassermann reaction does not differ very definitely from that of normal sera, but it increases a good deal more on keeping and on dilution with salt solution.—The Standardisation of Vaccines, by J. Holker. The author's opacimeter method gives accurate results with little labour.—Group Agglutination of the Gonococcus, by S. H. Warren. No evidence of groups was found.—Absorption from the Peritoneal Cavity, by C. Bolton. The peritoneal cavity is drained chiefly by the diaphragmatic lymphatics into the mediastinal lymphatics to the right lymphatic duct, and by intrathoracic anastomoses to the thoracic duct. Particles up to the size of red blood corpuscles pass easily between the endothelial cells into the lymph, and the chief force is supplied by the respiratory movements. An important paper which should be consulted for the full results.—The Blood and Blood-vessels in Guinea-pig Scurvy, by G. M. Findlay. In experimental scurvy there is swelling and degeneration of the capillary endothelium which retards the blood flow and leads to local congestion; red cell counts of peripheral and heart blood are widely different.—Experimental Scurvy in the Rabbit and its Effect on Antenatal Nutrition, by G. M. Findlay. As is well known, rabbits deprived of antiscorbutic vitamin do not show any very marked signs of scurvy; the offspring, however, have hæmorrhages at the joints and in the internal organs.—Studies in Heterophile Antigen and Antibody, by T. Taniguchi. Further researches into this highly complex technical subject which must be studied in the original.—Blood-platelet Antiserum, by S. P. Bedson. The author prepared antisera by inoculating rabbits with the blood platelets, leucocytes, red corpuscles, and serum respectively of guinea-pigs, and examined their relative agglutinating action on the three particulate antigens with a view of elucidating the genetic relationships of the formed elements of the blood. On this basis platelets are certainly distinct from leucocytes, but the distinction between platelets and red cells is not so clear nor is that between red cells and leucocytes.—A Case of Erythema Nodosum from which an Organism Resembling *B. influenzæ* was Obtained from the Blood, by E. Emrys Roberts.—Two Cases of Typhus Fever in which *B. proteus* was found in the Cerebro-spinal Fluid, by J. M. Anderson.

IN THE MILITARY SURGEON for September, Colonel L. B. Wilson, U.S.M.C., discusses the Dispersion of Bullet Energy in Relation to Wound Effects—in other words, the explosive action of high-velocity bullets. The wounding effect of a projectile depends on its mass and on the square of its velocity, and the smooth-bore bullet, though heavy, was slow. Rifling was invented long ago, but at first it only made shooting more accurate; not until about 1725, when the greased patch or wad was introduced, which conquered windage and prevented the leading of the grooves, were firearms revolutionised. Then bullets gained velocity sufficient to give large animals fatal wounds. The rifleman could now use larger powder charges, and muzzle velocity increased from 500 to 1500 or 2000 foot-seconds. This high-velocity missile, says Colonel Wilson, was a very potent factor in the winning of the colonists' war for independence. In the Civil War of 1862, speed of fire seemed so very important that the question of high velocity rather dropped into the background. Kocher of Berne was the first to publish (1875) an account of experimental investigation of the wounds produced by high-velocity projectiles. Bullets with muzzle velocity of 2000 f.s. produce at short ranges explosive effects, which were occasionally seen in the Spanish-American War (18[illegible] bullets of 3000 f.s. produce them at longer [illegible] True explosive bullets, often heard of, are rare [illegible] of the author has examined thousands [illegible] ved cartridges, but only found one explosive [illegible] the was taken from a German ammunition [illegible] iero Argonne. The explosive effects so often [illegible] occur due to the high velocity of the bullet [illegible] Wilson has made a great many [illegible] effects of high-velocity bullets [illegible] standard range of 50 feet [illegible] with gelatin of varying [illegible] have been varied by [illegible] the face of the block [illegible] reconstructions to scale (magnification of 100) of the eye and adjacent parts of the brain in human embryos up to the third month. The processes of outgrowth of the optic vesicle and its subsequent invagination to form the optic cup were clearly seen, while the formation of the choroidal fissure, always a stumbling block to students and difficult to show in a drawing, was made plain at a glance. The separation of the lens vesicle from the ectoderm was well shown in the model of the 7·5 mm. embryo, in which also could be seen the earliest stage of development of pigment in the outer layer of the optic cup. Given a series of models such as these, the path of the lecturer would be considerably smoothed, and the student, whether of ophthalmology or anatomy, would acquire a greater interest in a subject at present often obscure and depressing.

DIGESTION OF THE ŒSOPHAGUS.

POST-OPERATIVE vomiting of black material or actual hæmatemesis is a well-known symptom, and one of grave import. Mr. J. H. Pringle, Mr. L. T. Stewart, and Prof. J. H. Teacher, of the Royal Infirmary, Glasgow, have recently shown[1] that in some of these cases the blood comes not from the stomach but from the œsophagus, which is ulcerated and digested by the regurgitation of stomach contents or by a failure to clear the œsophagus of digestive liquids after actual vomiting. The lesions vary in severity from superficial erosions to the destruction of the wall of the œsophagus and even of the surrounding tissues, and evidence has been found of spontaneous healing. The practical indication is obvious—that the œsophagus should always be washed out after vomiting—and we find here the explanation of why our mothers always gave us a drink of water after we had been sick.

PREGNANCY FOLLOWING IMPLANTATION OF OUTER END OF ONLY REMAINING TUBE.

IN the *Johns Hopkins Hospital Bulletin* for September Dr. H. N. Shaw has reported a remarkable case in which pregnancy followed implantation of the outer end of the only remaining Fallopian tube after resection of a cornual pregnancy. A woman, aged 36 years, was admitted on Oct. 3rd, 1919, complaining of irregular menstrual periods. She had been married six years, and had had one child and two miscarriages—one nine months after marriage at three months, and the other in March, 1919, at two and a half months. A regular period apparently occurred four weeks before admission. A few days before admission irregular bleeding began. This increased in amount, but no large clots were passed. On examination a median abdominal scar was found. The uterus was apparently normal in size and position, but at the left cornu was a rounded mass several centimetres in diameter, not tender, and rather soft and fairly movable. Left tubal pregnancy was suspected. Laparotomy was performed by Dr. Cullen. The old abdominal scar was excised. On opening the peritoneal cavity an adhesion between the uterus and scar was found. It was clamped, cut, and tied. (In 1918 at another hospital the uterus had been suspended and the right tube and ovary removed.) In the left uterine cornu was a tumour 5 by 4 cm., on the median side blending with the surface of the uterus and on the outer side continuous with the tube—undoubtedly a cornual or interstitial pregnancy. The tube was temporarily clamped at its cornual attachment, and the cornu resected, leaving a raw area 4 by 2 cm. at the uterine attachment. The Fallopian tube was drawn into the cornu so that its inner end lay in the uterine cavity. The wound was then approximated. The excess of bladder peritoneum was drawn over the raw area to prevent adhesions. After the operation the fimbriated end of the tube which lay free was about 1 cm. long. A cigarette drain was placed in the lower end of the abdominal incision, which was closed. Recovery followed. Sections through the cornual pregnancy showed in the centre of clot an early placenta and typical chorionic villi. In March, 1921, the patient was confined at seven months. There was marginal placenta prævia with a breech presentation. The child was born dead. Although from time to time the inner end of the resected Fallopian tube has been inserted into the uterus, Dr. Shaw has been able to find recorded only one similar case. For years Dr. Cullen has been teaching at the Johns Hopkins Hospital the utmost conservatism in dealing with pelvic conditions during the child-bearing period. Wherever possible he has preserved the menstrual function, believing that the unsexing of a woman in early life is more deleterious than the possibility of a second abdominal operation. In this case the logical procedure seemed to be removal of the tube, but the saving of the outer portion and its insertion into the uterus proved to be worth while. As the patient is still under 40, the possibility of other pregnancies remains.

DUODENAL FISTULÆ AFTER RIGHT-SIDED NEPHRECTOMY.

IN a recent number (Oct. 1st) of the *Wiener medizinische Wochenschrift* devoted to urology, in which sympathetic reference is made to the late Prof. Zuckerkandl, Dr. E. Felber gives an interesting account of the occurrence of duodenal fistulæ following right-sided nephrectomy. He discusses the anatomical relations of the right kidney and duodenum, and says that the normal variation in the actual position of the duodenum does not affect the intimate relationship of the second or descending part of the duodenum with the renal pedicle. Inasmuch as the peritoneum does not envelop the duodenum but only covers its anterior aspect, injuries to the intestine may occur without coincident injury to the peritoneum. The literature contains several references to duodenal injury in right nephrectomies, and nearly all these cases have resulted in the death of the patient from inanition.

Felber quotes a recent case of his own in which tuberculous disease of the right kidney called for a nephrectomy, which was performed by the late Prof. Zuckerkandl. The subcapsular operation was decided upon owing to widespread perinephric thickening. Two clamps were placed on the renal pedicle; the distal of these slipped, and owing to the trauma inflicted by it upon the structures of the pedicle, there was a severe hæmorrhage. The kidney was removed, and the bleeding pedicle secured and ligatured. On the tenth day the dressings were found saturated with contents of the upper portion of the small intestine; the jejunostomy performed four days later with a view to controlling the patient's inanition availed little, and death occurred ten days afterwards. The course of this case is explained by the assumption that the ligature on the renal pedicle included an area of the duodenal wall, the fistula developing owing to necrosis of this portion of the intestine.

W. J. Mayo reports three similar cases, in which the pedicle was infiltrated either by inflammatory or neoplastic processes. Hæmorrhage was encountered in each, and clamps had to be left on the pedicle at the close of the operation. All three developed duodenal fistulæ, with rapidly fatal results. Legueu and Pousson quote similar cases with the same unfortunate ending.

Payr reports one case of unusual interest. A woman, aged 31, had a right nephrectomy for a pyonephrosis. A small fistula remained after healing of the wound, and proved to be most intractable, defying all efforts to close it. Eventually the track was injected with bismuth paste with a view to X ray photography. A surprisingly large amount of bismuth was injected with but little pressure. The plate revealed the presence of the bismuth in the small intestine. Payr extirpated the fistula and repaired the duodenum with a three-tier suture. Recovery ensued, which the patient owed to the fact that intestinal contents did not pass out through the fistula.

It is evident that injuries to the duodenum usually occur in those cases in which difficulty is experienced in ligating the renal pedicle, and the surgeon is confronted with a serious hæmorrhage in a confined space. But there are other cases in which such pathological

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[1] Journal of Pathology and Bacteriology, vol. xxiv., p. 396.

THE LANCET.

LONDON: SATURDAY, OCTOBER 22, 1921.

The National Insurance Act.

THE Minister of Health met the deputation from the Insurance Acts Committee of the British Medical Association last week, and informed them of his intention to act on a decision of the Government and to reduce the present capitation fee paid to insurance practitioners from 11*s.* to 9*s.* 6*d.*, the alteration to take effect in the new year. Sir ALFRED MOND, in pointing out the necessity under which the Government lay to make a severe revision of all possible expenditure, admitted that he found the position of his Ministry an unenviable one, considering the beneficent health operations lying immediately ahead, but he relied on the patriotism of medical men to acquiesce in the lessened payment. He certainly made it clear that the reduction proposed has no other object than economy, for at the time of announcing the reduction he spoke in high terms of the services rendered by practitioners on the panel, whom he defended, after personal investigation of the facts, from the widespread and sometimes bitter attacks on their work which had appeared in the lay press. In spite of which Sir ALFRED MOND felt himself compelled to propose a reduction in the scale of remuneration, and to do so in face of the fact that an independent body of arbitrators had arrived in March of last year at the present figure as a fair one.

It having been explained that the deputation of the Insurance Acts Committee was in fact an Executive Committee of a Representative Conference shortly to take place, before which body Sir ALFRED MOND'S proposition would be placed, the meeting was adjourned to give the deputation the opportunity of considering the situation privately. After the adjournment Dr. H. B. BRACKENBURY, as spokesman for the deputation, put forward the views which it would be necessary to lay before the Conference. He pointed out that to call on the medical profession to surrender on patriotic grounds a large annual sum of money which had recently been found to represent fair remuneration was illogical if the reply to such a patriotic call resulted in rendering the national medical service not so good or so effective as at present; and he added that no exact data are available as to the amount of labour involved in panel work, though at the present figure of 11*s.* there was, he thought, risk lest the service should not be stable, and keep intact its large membership of able practitioners. From the moment when it became clear that the remuneration of panel practitioners would probably be made the subject of early reduction, we have pointed out in these columns the existence of this danger; we are sure that it is real, and that if a too thorough or too hasty policy of economy be pursued the loss of practitioners from the panel may include some very valuable persons. Until the data are available, whose absence Dr. BRACKENBURY alluded to, it will be difficult to persuade practitioners that the reduction is fair. The Federation of Medical and Allied Societies is in cordial agreement with Dr. BRACKENBURY in asking for information, and has for some time placed in the forefront of its programme the securing of an inquiry into the working of the Acts as being a condition necessarily precedent to arriving at full comprehension of what is being done, how well or ill it is being done, and how far the payments made are in fair correspondence with the services rendered.

In reply to Dr. BRACKENBURY'S representation Sir ALFRED MOND hoped that the proposal of the Government when placed before the Conference would be accepted, as he was not in a position to haggle, but he stated that an inquiry into panel work was about to be made, which would cover all the ground and be made without prejudice. Does this mean that the new figure is temporary? The Conference will be well advised to think of this point, for it is a most important one. A very real source of trouble to practitioners, arising out of the proposed reduction of panel remuneration, is the upset that may be caused in arrangements already entered upon. Practitioners, reckoning reasonably upon a certain income, have made plans for the taking of premises, for the education of children, and so on, any of which may have to be modified sensibly under a heavy reduction in the scale of remuneration. So vexatious an element of uncertainty ought to be eliminated, at any rate for a substantial period, in any new arrangements. Referendum papers have now been issued by the British Medical Association, asking for the views of practitioners as to the acceptance of a capitation fee of 10*s.* and the advisability of refusal to serve at the reduced fee of 9*s.* 6*d.* The conclusions of the Conference will not be available for publication in this issue of THE LANCET.

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The Spread of Plague.

THE news that two or three violent recrudescences of plague have occurred in some parts of India, and that some of the Australian ports appear to have been recently re-infected from outside, naturally suggests the question as to whether we are really any nearer coping with epidemic bubonic plague than we were 20 years ago. The main facts concerning the spread of plague are, of course, well known to everybody; there is no necessity to repeat them here. Quite recently a very important report has been published which may be described as the first real attempt on a large scale to eliminate plague infection from a given district. This is contained in a paper by Major KUNHARDT and Asst.-Surg. CHITRE in the *Indian Journal of Medical Research.* It should, however, be mentioned that a reference to this work has appeared in THE LANCET before, but owing to the war the full and detailed report has been considerably delayed. The work was carried out in 1914, 1915, and subsequent years.

The general plan of campaign to be adopted was something as follows: From a careful study of recrudescences of the disease in villages it was observed that when a particular village was infected in the "plague season" a violent epidemic resulted, but there appeared to be no tendency for the disease to recur in future years unless re-importation of the virus occurred. Should a village be infected at the very end of the "plague season" an abortive epidemic only is the result; this occasions a certain amount of rat mortality and a few human cases, but such a mild attack in no way resembles the classical picture of a plague outburst. It was also observed that in those within eight days from the date of the appearance of the initial case of the outbreak. In addition there were 11 secondary cases. Inquiry showed that of these 33 primary cases 28 had definitely eaten suspected food, certain "head-cheese," a form of brawn, and the other five had eaten beef bought and served at the time when the suspected brawn was purchased. Circumstantial information from certain individual cases shows clearly that the source of infection was the substance called in the report "head-cheese." No samples were available for bacteriological examination, but the food was prepared and sold by the proprietor of the meat market and his wife. It was ascertained that the wife had been ill, for a period of approximately four days, about three weeks before the outbreak. She assisted in preparing the suspected food two days before it was placed on sale. It was not found possible to examine her blood serologically, so the presumptive evidence that she was the cause of the outbreak could not be tested.

The little outbreak is of interest from two points of view. One is that recorded outbreaks of paratyphoid fever from contaminated food are still comparatively rare. The chief point of interest is the light it throws upon food-poisoning outbreaks. The prevailing German view, one also largely followed in America, is that the food-poisoning bacilli of the *B. aertrycke* or *B. suipestifer* types are identical with *B. paratyphosus B*—i.e., in other words, that the same bacillus may at one time cause paratyphoid fever, at another an attack of food poisoning. In the present outbreak, although an article of food was infected, apparently of similar nature to the foods which do convey food-poisoning bacilli, the resulting outbreak was paratyphoid fever, and did not show the clinical features of food poisoning. There was some, but not conclusive, evidence that infection originated from an unrecognised human case of paratyphoid fever and the infection bred true. The cases were all of one type, supporting the conception that *B. paratyphosus B* is a different strain not only serologically but in its ætiological functions from *B. aertrycke* and other bacteria associated with food poisoning, the one type causing paratyphoid fever only, the latter food-poisoning infections only.

POROKERATOSIS.

ACCORDING to Dr. Carroll S. Wright,[1] instructor in dermatology and syphilology at the University of Michigan Medical School, who reports an illustrative case in a man aged 40, porokeratosis was first described simultaneously by Mibelli and Resphighi in 1893. Since then not more than 60 cases have been recorded, the condition being particularly rare in the United States. In spite of the numerous theories that have been advanced the ætiology of the condition is still entirely unknown. Heredity undoubtedly plays a part, as was shown by two of Mibelli's cases, in which a brother and sister were affected, and has since been illustrated by many other cases, including Dr. Wright's, in which the grandfather, father, and a daughter of the patient were affected. The dermatosis may begin at any age, but, as a rule, it first appears in the earlier years of life. Dr. Wright's patient had had his lesions since infancy, the father's lesions had been present throughout life, and the daughter, who was 9 years of age, had had a typical lesion on her leg since infancy. Clinically porokeratosis is characterised by the occurrence of elevated wart-like lesions which, as they enlarge, form an irregular peripheral wall surrounding an atrophic depressed centre. The lesions show a distinct predilection for the hands and feet, genitals, buttocks, and scalp, although they may appear on any site. In a high percentage the mucous membranes are involved. The palms and soles almost invariably escape. Histologically the condition consists first in acanthosis and inflammatory changes in the corium, which are rapidly followed by hyperkeratosis with plugging of the sweat ducts and follicles. Except in the cases of individual lesions, which can be removed by excision or carbon dioxide, treatment is ineffectual. According to Dr. Wright porokeratosis is to be classified under the group of verrucose nævi, because of the wart-like condition of the lesions clinically, the epidermal hypertrophy as observed histologically, the familial tendency, the non-contagiousness, the persistence throughout life, the absence of inflammatory changes, the occasional systematic arrangement, and the failure to undergo involution as the result of X ray treatment.

YAWNING: ITS PHYSIOLOGY AND PSYCHOLOGY.

YAWNING is one of those curiously modified respiratory acts which has important physiological and psychological relations, not the least remarkable of the latter being what might almost be called its "infectious" nature, associated with imitation on the part of the beholder, and which in some people may be excited by thinking intensely of the act itself. C. Mayer in *Zeitschrift f. Biologie* (vol. lv., 1921) gives the results of his investigations in man by inspection, laryngoscopy, and X rays. The act itself he divides into three phases: 1. The initial phase, beginning with inspiration, widening of the chest, descent of the diaphragm and larynx until a certain depth of descent of both is reached, elevation of the wings of the nostrils, of the soft palate, drawing of the tongue upwards and backwards, dilatation of the rima glottidis. 2. The acme stage, full dilatation of the thorax to its greatest extent by means of the intercostal and accessory muscles, and descent of the diaphragm and larynx to their lowest position, accompanied by maximum depression of the lower jaw, further retraction of the tongue, and elevation of the soft palate. Tonic contraction of a varying number of individual muscles of the neck, shoulder, and region of the trunk. Wide lateral expansion of the mouth, closing of the eyelids, noise in the ears due to contraction of the tensor tympani, and a subjective feeling of pleasure and satisfaction. 3. Final phase, a short expiration, relaxation of the contracted muscles, ascent of the diaphragm and larynx, and elevation of the lower jaw, secretion of tears, and deglutition. The duration of the tonic contraction of the individual muscles is about 2·46 seconds, that of the whole inspiratory phase (phases 1 and 2) about 5·5 seconds. The biological significance of the acts seems to lie in the energetic ventilation of the lungs. The tonic phenomena accompanying the act can only in part be explained by the irradiation of the inspiratory impulses. This circumstance, along with the accompanying stretching of the arms and extension of the trunk, seem to indicate that the act of yawning and the participation therein of the pronounced contraction of certain muscles is of importance for aiding both the circulation and metabolism. The act itself would seem to be sub-cortical in origin, though it may be excited or discharged by psychical impulses. Spontaneous yawning is an expression of cerebral fatigue and the processes leading up to it stands in intimate relation to the function of sleep. If the optic thalamus is the part of the brain intimately concerned with sleep, then at a certain stage of fatigue the motor impulses for the act of yawning may proceed from it. In certain cases of encephalitis lethargica the execution of the act of yawning may be disturbed and modified.

A CLINIC FOR FUNCTIONAL NERVE CASES.

IT is generally recognised that progress in analytical psychology and experience gained during the war have together brought about notable advances in our methods of treatment. The Tavistock Clinic for Functional Nerve Cases was opened in September, 1920, in order to bring modern treatment for such conditions within reach of those who cannot afford specialists' fees, and to act as a centre for the study preventive surgery are found to be a plea for (1) measures that come under the heading of preventive medicine and education; (2) earlier diagnosis, and therefore earlier and more hopeful surgical treatment; (3) better surgery. The first is the ideal of the work before the Ministry of Health. Early diagnosis is a question already receiving earnest attention, and it is one of the main lines along which surgical advance is to be looked for in the future. With earlier diagnosis will come better operative results, as has already happened in cancer of the stomach, and often the avoidance of an operation. On the third count Mr. TURNER points the way to improvement. He speaks of the prevention of deformities which occur after fractures; but surely the treatment of a fracture so that deformity does not result is not preventive surgery but good surgery. So, to quote another instance, is the splinting of an ankylosing joint so that the resulting position of fixation shall be that most useful to the patient. That faulty ankyloses and malunited fractures are of lamentably frequent occurrence is a criticism which surgery has deserved. There are too many surgeons whose interest in the patient begins with the first incision and ends with the last safety-pin.

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[1] Archives of Dermatology and Syphilology, October, 1921.

It is, however, becoming more and more evident that the operation is, in most cases, but one step in the treatment, and not a magic intervention, a wave of the wand which shall make the patient live happily ever after. This sounder, if less dramatic, outlook on surgery finds its expression nowhere better than in the repair of the injuries and deformities left by the war. It has been proved in many a military orthopædic hospital that the surgeon who gets the best results is not the brilliant operator, but the patient worker. A nerve suture is not merely a piece of deft needlework; its success depends upon a study of the man as well as of the lesion, a planning of the details long before the date of operation is fixed, a patient careful re-education of muscles and morale carried on for months afterwards. Still more does this apply to bone-grafting, where the most skilful carpentry will end in failure unless preceded by the correction of deformities and ankyloses, the excision of devitalised tissues, and the establishment of nutrition in the limb, to be followed by a carefully graduated resumption of function, which is the only call to consolidation to which the new bone will respond. These things are tedious, but they are as important as the operation, and they cannot be left to subordinates. The call for preventive surgery will result largely in the application of more of the surgeon's time to the essential if less dramatic details of his work.

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L.C.C. AND CARE OF THE BLIND.

THE Ministry of Health has approved the essentials of the scheme prepared by the London County Council for the welfare of blind persons in the County of London, particulars of which appeared in THE LANCET of August 6th. The Minister has expressed special satisfaction that a Central Council is to be established, and suggests that in carrying out the scheme every effort should be made to encourage the voluntary side of the work. The London County Council has appointed a Special Committee to administer the scheme, which will operate from Nov. 1st. Since the Central Council will consist principally of representatives of societies and associations dealing with the blind and persons with special knowledge of the needs of the blind, it has been decided not to appoint coöpted members on the County Council Special Committee.

Annotations.

"Ne quid nimis."

VENEREAL DISEASES IN U.S.A.

THE weekly report of the United States Public Health Service, dated Sept. 2nd, contains a summary of the work carried out in coöperation with the various State boards of health in combating venereal diseases during the past two years. The summary is divided into sections dealing with medical, educational, and legal measures, and with comparative activities in various States. Amongst the medical measures recorded are the following: establishment of 427 venereal disease clinics; the giving of 2,103,000 treatments to 185,200 clinic patients (at a cost of less than $1 per person in the most efficient clinics); discharge of 41,100 patients as non-infectious; following up by social workers of patients who cease attendance before cure, and of patients' families; the obtaining of the coöperation of 28,000 druggists in checking sale of patent remedies, and of a pledge of coöperation from 60,700 physicians. It is also noted that 15,000 placards have been posted; that of 20,000 newspapers and magazines all but 200 have agreed to remove or refuse advertisements of quack doctors; and that in 16 States it is unlawful to sell patent remedies. The same mass action is apparent on the educational side; 740,000 young men and boys have seen the "Keeping Fit Exhibit," 13,000 lantern lectures have been delivered, 3600 kinema shows have reached audiences totalling near 1½ millions of people; and so on. Conferences of teachers, distribution of literature, special lectures to coloured people have all been directed to the one end; moreover, legislation has been kept abreast of the spread of public enlightenment. Many houses of prostitution have been closed, and men found in such houses are now prosecuted equally with women. Three hundred and fifty ordinances dealing with the control of venereal diseases have been passed, and several States now have quarantine houses in which to harbour persons whose disease constitutes a danger to the public health. Institutions for the care of the feeble-minded are receiving particular attention, and much money is being spent to enable them to take care of persons who, if not under proper control, would be the means of spreading infection. The number of social workers employed is growing, and an increasing intelligence and efficiency is demonstrated in the handling of women suffering from venereal disease. Such well-directed and widespread effort cannot fail to have a very marked effect upon conditions of public health in the United States.

STUDY OF EMBRYOLOGY BY MODELS.

To the student the study of embryology is too often a matter for despair, since the only satisfactory way of getting a grasp of it is by practical work with embryological material. This entails not only a larger supply of embryos than it is possible under present conditions to obtain, but also a considerable amount of technical knowledge and skill, and more of the teacher's time than can usually be spared. The difficulty has even led to the pessimistic suggestion that this subject be excluded from the syllabus of medical examinations. There is, however, a possible solution—the use of accurate reconstruction models of whole embryos and their constituent organs. These, though occasionally seen on shelves in museums, are seldom used, and far too much reliance is placed on pictures, which however realistic, can never give as good an idea of structure as a model. An interesting series of models shown by Miss I. C. Mann at the meeting of the Section of Ophthalmology of the Royal Society of Medicine on Oct. 14th represented stages in the development of the human eye; they were pH nomenclature is almost universally employed at the present time for designating hydrogen-ion concentrations: it must, however, be constantly borne in mind that when the hydrogen-ion concentration of a solution—that is to say, its acidity—is increased its pH number is diminished, and vice versa; all solutions on the acid side of neutrality have a pH smaller than 7 and all alkaline solutions have a pH greater than 7. It must also be remembered that pH numbers are in reality logarithms, so that a given difference in the pH of two solutions does not represent any actual difference but only a proportional difference between their hydrogen-ion concentrations; thus the difference in hydrogen-ion concentration between pH 6·0 and 6·3 is 100 times greater than the difference between 8·0 and 8·3, though in both cases the second value is half the first (1/1,000,000; 1/2,000,000 and 1/100,000,000; 1/200,000,000 g. per litre respectively). Provided these peculiarities are borne in mind, the pH nomenclature can easily be employed by anyone without any knowledge of logarithms, and the determination of pH can be readily made by methods which are soundly based on theory, are of easy application, and require no special calculation.

Methods of Determination of pH.

The simplest of these methods is the indicator method; according to recent work it is more accurate where body fluids are concerned than more elaborate methods. It depends on the principle that certain indicators, such as neutral red or phenolsulphonephthalein, show a progressive change in colour as the pH of a solution containing them is altered, each tint being associated with a particular reaction. As it is quite easy to prepare standard solutions of known pH, all that is necessary is to find which of these standards gives the same tint as the unknown solution, when equal amounts of the indicator are added to each—in practice this is a very simple matter which need not be described in detail here. When, as with blood, the original solution is coloured, the method is slightly modified by dialysing the blood and finding the reaction of the colourless dialysate: provided that precautions are taken to prevent loss of carbon dioxide in the course of the dialysis, the dialysate has the same reaction as the blood from which it is derived, because it merely represents a diluted protein-free plasma, and it can be shown that neither moderate dilution nor removal of proteins alters the reaction of blood plasma. The exclusion of the corpuscles also has no influence, because by the reaction of blood we mean the reaction of the plasma alone: if no carbon dioxide is removed the reactions of whole blood and of the "true plasma" drawn from that blood are the same.

It would perhaps seem at first sight to be much simpler to titrate the plasma or its dialysate to a definite end-point with some chosen indicator and a standard acid and have done with the matter: to determine its alkalinity in other words. Such a procedure gives valuable information, it is true, but it tells nothing at all about the reaction of the blood; the same is true of determinations of the "alkali reserve." Both of these determinations give the bicarbonate content of the plasma, but the reaction of the plasma depends not on this alone, but also on the carbon dioxide pressure of the blood; it is, in fact, determined by the ratio between the two, the hydrogen-ion concentration varying directly as the ratio $\frac{CO_2}{NaHCO_3}$ and the pH varying as the logarithm of the ratio $\frac{NaHCO_3}{CO_2}$. The bicarbonate content of plasma may be reduced to half the normal amount, but if the carbon dioxide pressure is also half the normal, the reaction of the blood will be normal. Determination of the CO_2 of the alveolar air gives (in normal individuals at all events) some measure of the CO_2 pressure of the blood, and this, together with a knowledge of the alkali reserve, does enable us to arrive at some idea of the reaction of the blood: direct determination of the pH must, however, be regarded as far more satisfactory, and now that the technique of arterial puncture has been worked out there is no reason why it should not be made.

Buffer Substances.

The reaction of normal arterial blood is about pH 7·6, and this reaction is pretty steadily maintained under very varying conditions, owing to the presence of buffers in the blood. Buffers are substances which absorb acids without much alteration of reaction; this influence of buffers in "mopping up" acids is well seen in the case of blood plasma. Suppose one takes 10 c.cm. of blood plasma, and a similar amount of very dilute caustic soda solution of the same pH as the plasma, and adds to each solution 1 c.cm. of 1/100th normal hydrochloric acid, and, after well shaking, compares their reaction by means of indicators. It will be found that while the blood plasma has altered very little in reaction, the reaction of the soda solution has been changed to about pH 3. The principal or primary buffer of the blood plasma is its sodium bicarbonate, but whole blood is much more highly buffered even than separated plasma because, under all circumstances which tend to render the blood more acid, the corpuscles effect a counteracting change in the plasma by causing its bicarbonate content to be raised (secondary buffering); conversely, any change tending towards a more alkaline plasma leads to a reduction of its bicarbonate content by the agency of the corpuscles. We can conveniently regard the corpuscles as adding or abstracting bicarbonate to and from the plasma, though what actually happens is more complicated than that. The consequence of this action of the corpuscles is that whole blood has a most remarkable buffering power, towards both acids and alkalies; this secondary buffering of the plasma brought about by the agency of the corpuscles can best be judged from some actual figures, obtained from blood *in vitro*; when blood was exposed to air containing 0·13 per cent. of CO_2, the plasma contained 0·151 per cent. of $NaHCO_3$, and when saturated with air containing 12·5 per cent. CO_2 the bicarbonate of the plasma rose to 0·32 per cent.

The lower the corpuscular content of blood the smaller is the influence of this secondary buffering; anæmic blood, then, has a much smaller range of secondary buffering than normal blood; as a partial compensation for this the primary buffering of the plasma is not infrequently raised in secondary anæmias. It is more probable that the breathlessness of anæmic subjects is due to the less perfect buffering of their blood than to deficient oxygen supply, and, except in extreme cases, this applies to other states in which "air-hunger" occurs. But if in addition the oxygen supply is deficient, the condition becomes very much worse, because large amounts of fixed acids will then be thrown into the blood by the partially asphyxiated tissues, the plasma bicarbonate will be partially neutralised, and any compensation by increase of the primary buffering will thus be lost.

"Acidosis."

A little reflection on the mode of regulation of the reaction of the blood suffices to reveal a difficulty which is becoming daily more apparent; lowered bicarbonate content of the plasma by itself, or lowered alveolar carbon dioxide by itself, gives no information at all regarding the reaction of the blood; yet these are often accepted as evidence for the existence of a state called "acidosis." Nor does the plea that the term "acidosis" is justified in these cases on the ground that there is evidence that fixed acids have been formed and that these have neutralised part of the bicarbonate, carry any weight, because an increased excretion of alkali by the kidneys would also lead to a reduction in the plasma bicarbonate. A more acid state of the blood can only be inferred from such observations when we know both the carbon dioxide pressure and the bicarbonate content of the arterial blood, and the former can only be obtained from alveolar air analyses when it is changes have taken place in the pedicle that only special precautions will enable the surgeon to avoid the danger. Such changes are prolonged suppuration in or around the kidney, and carcinomatous infiltration of the pedicle, with subsequent matting of all the structures in the neighbourhood. Such cases may be dealt with in one of three ways, viz. :—

1. Ligature of each vessel individually.
2. Subcapsular nephrectomy with control of the renal vessels by the fingers until complete removal of the kidney, when the vessels can be readily caught and tied.
3. Transperitoneal nephrectomy, especially when dealing with malignant tumours.

The question arises of the treatment of those cases of duodenal injury in which the resulting duodenal fistula will inevitably cause the death of the patient if not treated. Jejunostomy is of no value, because the loss of bile and pancreatic secretion still continues and the inanition progresses. The fistula must be exposed and closed. Payr successfully dealt with his case by a three-tier suture, but McGuire Stuart maintains that a direct suture is rarely successful, and advocates Mayo's method. The duodenum is mobilised by incising the peritoneum along its right border, and then rotated forwards and inwards to give a full exposure of the wound in its posterior surface. The defect is closed by several layers of sutures, and afterwards covered by peritoneum. At the same time a temporary jejunostomy is performed for feeding.

CORRECTION OF ASTIGMATISM.

A CORRESPONDENT suffering from headaches which get worse on using his eyes writes to THE LANCET to complain that although he has consulted several oculists, and they have all given him nearly identical prescriptions to correct his astigmatism, his headaches remain unrelieved. The causes for this unfortunate result may be various. In the first place, his headaches may not be truly ocular at all, but dependent on the vascular system, and made worse by the stooping of the head usual in reading. In the second place, the astigmatism may be irregular, the result of a corneal scar, and therefore incapable of being wholly corrected by glasses. Thirdly, a fully correcting spectacle-lens accurately centred neutralises an error of refraction only when the line of vision passes through its optical centre. When, however, the line of vision is excentric (as, for instance, in reading a line of print without moving the whole head) the error will be over-corrected, and in the case of a strong lens considerably over-corrected, a fresh element of astigmatism being introduced. Hence patients whose error of refraction is high, whether astigmatic or not, usually find a full correction less satisfactory than a partial one. It must be noted, however, that this difficulty can be got over to a great extent by the device of periscopic lenses—i.e., concavo-convex—with the concave surface next the eye. In the fourth place full correction of refractive errors may throw extra work on the extra-ocular muscles in the effort to maintain binocular vision. Cases of high oblique astigmatism sometimes illustrate this. The oblique muscles, one of whose functions it is to maintain parallelism of the visual axes during vertical movements, resent having to do their work under totally new conditions, so that in prescribing glasses it may be necessary to compromise in the matter of the obliquity of the axes of the cylinders prescribed. Far more commonly the difficulty experienced by the extra-ocular muscles is due to an inequality in the refraction of the two eyes. When this is present an unequal prismatic effect is produced by directing the line of vision in any direction except through the optical centre of the two lenses, the inequality of the prisms being greater in proportion to the inequality of the lenses. This throws unequal work on the muscles, and in the case of the vertically moving muscles, work which they are very likely incapable of performing except at the cost of a great nervous strain. Hence the glasses which might cure a headache due to astigmatism might cause another headache due to hyperphoria. The remedy, of course, is to be found in compromise—a partial instead of a complete optical correction, but in extreme cases it may be necessary to abandon any attempt to secure binocular vision.

TIMES AND SEASONS.

THE third verse of the nineteenth Psalm, in the Prayer Book version, runs as follows: "There is neither speech nor language, but their voices are heard among them," and the Septuagint version says: "There are no speeches or words in which their voices are not heard." And the meaning of the passage is that although there be no audible speech among the stars, yet their language is intelligible to all nations. "In the stars," says a noted sixteenth-century preacher, "the countryman finds instruction for the times of his labour, the seaman for his navigation, the mathematician for his observation. So that the husbandman and the sailor who cannot read can yet understand the stars, and the philosopher who has read every book that was ever written cannot fathom their meaning." In a review of the volume of Annals of Medical History, which appeared in THE LANCET for Oct. 8th, it was noted that the diagram in the Handbook of Byrhtferd contained two circles showing the relations of the month to the movements of the moon. This calendar, as Dr. C. Singer points out, was evolved about A.D. 525, and is the Dionysian cycle in which the months consisted of 29 and 30 days alternately, an intercalary month of 30 days being inserted seven times in 19 years. Although, as Dr. Singer says, this calendar "has no practical value except for the calculation of Easter," he is not quite correct, except as regards Westerns, for the same, or essentially the same, calendar is used to-day by Mohammedan nations as a religious calendar. The month begins at sunset of the day when the new moon is first seen after sunset. Every odd month has 30 days, every even one 29, except in leap years, when the last month also has 30. It is not a convenient calendar, for every month retrogrades through all the different seasons of the solar year in a period of about 33½ years owing to the difference between the lunar and the solar year of about 11 days. Thus in the year 1880 the month Moharrem began on Dec. 4th; in 1890 it began on August 17th, and by 1912 it had got back again to Dec. 11th; but it is a matter of interest to all subjects of the British Empire that a sixth-century calendar should still be in use among the people of a large part of that Empire.

PARATYPHOID FEVER CAUSED BY "HEAD-CHEESE."

THIS outbreak of paratyphoid fever[1] in November, 1920, in a small American town is of considerable interest from a number of points of view. The cases were at first thought to be influenza with sudden onset, headache, chills, pains in joints, and rapid rise of temperature from 102° to 104° F. There were no pulmonary symptoms, and later clinical and bacteriological evidence showed that the condition was paratyphoid fever. Prolonged high temperature, papular eruption, and other symptoms of paratyphoid fever were present. Bacteriologically the diagnosis was confirmed by the isolation of *B. paratyphosus B* from the blood of two of the cases, from the stools of three cases, and by a well-marked positive agglutination reaction exhibited by the serum of 19 out of 20 cases examined. The incubation period was from 2 to 13 days, with an average of approximately seven days. The epidemiological investigation elicited the fact that the persons attacked were from homes widely distributed throughout the town, and were of various ages, from 5 months to over 50 years. Thirty-three of the 44 cases developed the country is compelled to work until his sixty-fifth year has given a great deal of trouble to medical men, who find themselves expected to estimate the working capacity of thousands of would-be idlers. Moreover, the stringent sumptuary laws include such provisions as the following: payment of a tax of 200 leva by anyone, irrespective of age or sex, who wears gloves between April 15th and Sept. 16th without a medical certificate to prove that the gloves are *indispensable for purposes of health*; payment of a tax of 100 leva by anyone of less than 50 years of age who carries a walking-stick without a medical certificate entitling him to do so. Bulgarian doctors now make out more certificates in a week than they have hitherto been used to making out in two or three years, and are apparently well paid for so doing.

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[1] Paratyphoid Fever. Report of an Outbreak in Cascade, Mont., caused by Head-Cheese. *Public Health Reports.* Washington: Treasury Department. 1921. xxxvi., No. 35.

A "Dental" Swindle.

An original form of swindle was recently perpetrated by a youth who opened a "dental surgery" at Temesvar, and by advertising a scale of charges half that of any other dentist in the town, drew large crowds to his waiting room. He examined each patient, and if the person had gold crowns or stoppings he removed the latter, describing them as badly-fitting and in need of replacement. He then took a wax model and ordered the patient to return in a fortnight's time. In a fortnight he collected about half a kilogramme of gold with which he attempted to leave the country. He was arrested in the train, however, and brought back to Temesvar. Here it was ascertained that he was in reality a grocer's clerk, who had learned sufficient dentistry from a friend, a dentist's assistant, to enable him to put his fraud into operation.

Village Riot on a Doctor's Behalf.

In a Hungarian village the head of the registry office complained to a detective that in six months only one birth occurred in the village, where in former years the birth-rate varied between 65 and 80 yearly. The detective set to work, with the result that the village doctor, Dr. N. Somogyi, was taken in custody on the charge of having induced abortion in several hundreds of cases. Thereupon the village people, with whom the doctor was very popular, rioted and demanded his immediate release. However, on searching his house, the police found a long list containing the names of hundreds of women, and the fees they paid. The list contained among many modest sums some very considerable amounts—items of from 3000 to 10,000 crowns. An investigation was then opened amongst the women too, and it was found that some of them had burned fœtuses in a bread-baking oven. The investigation also made it plain that many husbands knew of the abortions. Dr. Somogyi defended himself by saying that he did not induce abortion, but only helped to finish the abortions already commenced. He wanted to pay into court 100,000 crowns security to be set free until his trial, but the jury refused to comply with his request.

Prosecution of a Charlatan.

An interesting judgment was recently delivered against a quack in a Hungarian court of law. A patient, advised by his medical man to have an operation performed for extensive hæmorrhoids, thought fit to consult a well-known unqualified "doctor," who gave an opinion contrary to that of the surgeon, and supplied some ointment and lotion, with the result that gangrene and proctitis set in; the patient returned to the surgeon, who performed the operation. The after-treatment lasted over three months, during which time the patient's life was endangered by the threat of sepsis. The patient sued the charlatan for damages and also tried to recover the fees he had paid. He did not get his money, and the judge, in sentencing the defendant to six weeks' imprisonment, made it plain that the punishment was not for quackery, but for preventing the complainant from following sound

CANADA.

(FROM OUR OWN CORRESPONDENT.)

University of Toronto.

THE Medical School has limited registration this fall to 110 persons, one-half the total number of applications, on account of lack of facilities for handling them. These, with the students who are repeating the first year on probation, comprise the first year in medicine. Selection of the successful candidates was made on the basis that first preference should be given to returned soldiers with the necessary qualifications; students who had obtained standing of a higher grade than junior matriculation were in the next group, and the third group consisted of students with junior matriculation over 19 years of age. Applications were restricted to the province. This decision to restrict registration was forced upon the authorities by reason of the increase of medical students. The present register contains 1106 names, while in 1918 it contained only 656. This university's registration in this department is the largest on the continent.

Ontario Medical Association.

A district meeting of the Ontario Medical Association was recently held at Peterboro', Ont., at which Dr. T. C. Routley, the secretary, gave an address on "Organisation Progress in Ontario and Other Provinces." He recapitulated the work of the Association and laid particular emphasis upon the need for proper standardisation of drugs and the necessity of informing the public as to what constituted competency on the part of all who undertook to treat the sick. The meeting was attended by many practitioners of Peterboro', Victoria, Durham, Northumberland, Hastings, Prince Edward and Haliburton counties. Interesting papers were presented during the afternoon session and prompted fruitful discussions. At the evening session Dr. F. W. Marlow, of Toronto, gave an address on "Symptomatology and Treatment of Some Gynæcological Conditions."

Drugless Healing and Chiropractic Bills in British Columbia.

A legislative committee was recently appointed to collect evidence for and against the Drugless Healing and Chiropractic Bills and has recently issued a report. The committee states that the question it had to decide was whether the chiropractors and the drugless healers had made out a case for an alteration of the present law, so that they might be permitted to practise the art of healing without hindrance. After receiving evidence from many prominent chiropractors, the committee recommended these should be allowed to continue their practice, but that suitable examinations should be set by the Medical Council, in order to secure competency on the part of chiropractors, &c., before they were allowed to establish a practice. The committee also suggested that the Medical Act be amended to include these provisions.

A New Tuberculosis Examiner.

Dr. T. M. Sieniewicz, of Halifax, Nova Scotia, for three and a half years associated with Dr. A. F. Miller in the Tuberculosis Sanatorium in Kentville, N.S., has been appointed to the position of Tuberculosis Examiner in the Massachusetts-Halifax Health Commission. Dr. Sieniewicz succeeds Dr. D. A. Craig, the first to hold this position. All of his time will be given to the Public Health work of the Commission, and to consultation work with physicians of Halifax and Dartmouth.

Hospital News.

A by-law is to be submitted to the electors of St. Thomas, Ont., authorising an issue of $100,000 in debentures for the erection of the proposed memorial hospital in connexion with the Amasa Wood Hospital. An expenditure of $160,000 is estimated for, $60,000 of which is to be raised by private subscription. It is proposed to erect a

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and practice of psychotherapy. The methods employed include persuasion, suggestion, re-education, and various forms of analysis; no attempt is made to secure uniformity of method, since members of the staff may belong to different schools of thought, and, moreover, no rules can be made in the treatment of nerve cases. The aim in all cases is to restore the patient to social efficiency as quickly and as permanently as possible. Patients bringing a letter from their own doctor require no other recommendation, and pay if they can afford to do so. 219 patients have been treated during the year, involving 1784 interviews, lasting an average time of 50 minutes. Most of the cases treated in the children's department have been delinquents, chiefly thieving, and the results are said to have been uniformly good. Treatment has also been given for nocturnal enuresis and other disorders. Lectures and demonstrations are held for practitioners and medical students. A course on elementary psychotherapy is now being given by Dr. H. Crichton Miller, and during the coming year courses will be given by Dr. C. P. Symonds, Dr. J. A. Hadfield, Dr. E. W. N. Hobhouse, and Dr. W. A. Potts, who is the director of the children's department. Particulars of these courses may be obtained from the Hon. Lecture Secretary at the Clinic, 51, Tavistock-square, London, W.C. 1. While patients' fees and lecture fees go some way towards meeting the current expenses of the clinic, they are not sufficient to make it self-supporting, and help is urgently needed to enable the work to be carried on and extended.

CHEMICAL DISINFECTION AND STERILISATION.

IN a recent publication [1] Dr. S. Rideal and his son consider not only the various chemicals used as disinfectants and sterilisers, but also the details of their practical use, with some account of the experiments performed in connexion with their testing. A clear summary of the theory and technique of disinfection and sterilisation by chemical means will be welcomed by members of the medical profession as well as by numerous scientific workers.

Chemicals such as sulphur, copper, nitre, and numerous aromatic substances have been used from early times, but the number of suitable substances is now so large that a choice between them must sometimes be difficult. Moreover, the quantities of the steriliser to be employed, their times of action, as well as the best forms of apparatus for their production are of the utmost importance. Selection must depend largely on the nature of the object to be treated. Air may be sterilised by formaldehyde, sulphur dioxide, chlorine, and ozone. Chlorine is seldom used; formaldehyde and sulphur dioxide are mainly used for rooms, whilst ozone is suitable for large spaces. Chemicals used for food preservation must be chosen so as not to be injurious to health on consumption. There is thus only a limited choice, which is confined to those required for salting and smoking. Food in general is most commonly preserved by cold storage, milk by condensation and heat sterilisation. Water sterilisation is effected by filtration and sedimentation; ozone is sometimes used, but most frequently lime. Halogens as such or in the form of hypochlorites are also largely used. The destruction of non-bacterial parasites, such as insects, is another special problem; it is only successful when we know the life-history of the insect and is generally prophylactic in nature. The mode of action of the chemicals necessarily varies, being dependent not only on their own nature but on that of the object to be disinfected; physical processes such as ionisation, osmosis, surface tension play a large rôle. No specific action can be ascribed to chemical groupings in the molecule.

THE REACTION OF THE BLOOD:

THE MECHANISM OF ITS REGULATION.

BY C. A. LOVATT EVANS, D.SC.LOND., M.R.C.S.ENG.

THE questions of the reaction of the blood and the mechanism of its regulation have attracted the attention of laboratory investigators for several years past. Numerous definite results, some of which may prove to have a practical application to clinical problems, have accrued from this originally purely academic line of investigation. Their application is, however, largely a matter for future clinical investigation to reveal. It has long been known that blood, like most other tissues, normally has a slightly alkaline reaction, which it owes to the presence in it of sodium bicarbonate. Despite the fact that the circulating blood is the receptacle of very variable amounts both of acids and bases—waste products thrown into it by the active tissues of the body—its reaction is subject to surprisingly little variation in health or even in many pathological conditions. The liver and kidneys contribute a great deal to the regulation of the reaction of the blood, and the lungs, by removing carbon dioxide, constitute a valuable fine adjustment mechanism, but a still finer means of regulation than any of these resides in the blood itself. Blood is much more than a mere carrier of oxygen, food materials, and waste products; it is a valuable means of governing the reaction of all the other tissues in the body, the relation being mutual.

The Modern Meaning of "Reaction."

Let us first consider the modern meaning of reaction without looking too deeply into the physical chemistry of the matter. The theory of electrolytic dissociation teaches that water is to a very small extent decomposed into two ions, the hydrogen-ion (H) and the hydroxyl-ion (OH), the former bearing a positive and the latter an equal negative electric charge. Further, acids when dissolved in water add hydrogen-ions thereto, whereas bases by producing hydroxyl-ions lower the hydrogen-ion content. By the reaction of a fluid is meant the concentration of hydrogen-ions in it, and this can be expressed in terms of grammes of hydrogen present in the ionic state per litre of the fluid. Water itself, the standard of neutrality, contains 1 g. equivalent (i.e., 1 g.) of hydrogen-ion in 10 million litres; it is exactly neutral because it also contains in the same volume 1 g. equivalent of hydroxyl-ion. Water, then, may be regarded as either a 10-millionth normal acid or a 10-millionth normal alkali. All acid solutions contain more and all alkaline solutions contain less than 1 g. of hydrogen-ion in 10 million litres. The concentration of hydroxyl-ion is usually disregarded, because it always varies in the opposite way to the hydrogen-ion in such a manner that the product of the two concentrations is constant for all aqueous solutions whatsoever, neither ion ever quite vanishing. A simpler way of expressing hydrogen-ion concentration is to say that pure water has a H-ion concentration of 1/10,000,000 g., or more simply 10^{-7} g. per litre. Similarly a 1/1000 normal acid has a H-ion concentration of 1/1000 g. or 10^{-3} g. per litre; while a 1/1000 normal alkali has a hydrogen-ion concentration of 1/100,000,000,000 or 10^{-11} g. per litre. Since the expression 10^{-7} means 1 divided by 10^7 or 10,000,000 and 10^{-3} means 1 divided by 10^3 or 1000, this way of expressing fractions is very convenient; still more convenient for the expression of hydrogen-ion concentrations is the convention of omitting the 10 and the minus sign and prefixing the letters pH, writing pH 7·0, pH 3·0, and so on. The symbol "p" means "that power to which 10 must be raised to give the concentration in grammes of hydrogen-ion per litre" of the fluid in question. Since it is always negative for solutions weaker than N/1 acid, the negative sign is omitted by a convention. By a further convention, H in pH stands for the hydrogen-ion, and not the element, though usually the ion is designated by H^+, or more simply $H^\bullet$. This so-called the rate from other forms of tuberculosis 0·22. The increase in the tuberculosis death-rate during the war years was less marked than in many towns, but the decline in the rate since the war ended has been marked. A Bill is being promoted in Parliament for the purchase of the North Warwickshire Water Co. The sewage is dealth with partly on a sewage farm and partly by means of filter-beds, which are being extended. The treatment by activated sludge, which is proving so successful elsewhere, is not apparently being adopted for the extensions. The council have declared fried-fish shops an offensive trade, and have adopted the novel principle of hearing the opinion of the tenants within a radius of 100 feet before sanctioning the establishment of a fish shop. The principle seems a good one, but the distance of 100 feet does not err on the generous side. Dr. Snell gives figures showing that the community is becoming largely an unvaccinated one. A case of malignant pustule, traced to a shaving brush infected with anthrax, recovered. Of 160 deaths from tuberculosis, no less than 28 died unnotified. For the purpose of institutional and dispensary treatment the city is united with Warwickshire by a Local Government Board Order. An X ray apparatus has been installed at the dispensary since January, 1920, and has been used extensively for diagnostic purposes. Considerable attention is being given to the dental treatment of tuberculous patients. There were 280 new cases of venereal disease treated at the clinic; 49 cases ceased attendance before completing a course of treatment. One hundred and nine cases of suspected ophthalmia neonatorum were notified, the midwives being encouraged to notify the slightest discharge. Of these 105 are said to have made a total recovery; two died before recovery was complete, one infant is said to have had one eye permanently injured, and one to be totally blind in one eye. None of these cases were nursed in hospital. Dr. Snell submits a complete report as school medical officer. There are now two assistant school medical officers, two dentists, and five nurses. An interesting account is given of the work of Corley Camp residential open-air school, which has accommodation for 16 children. An open-air day school for physically defective children is held on the flat roof of Centaur-road School, which is visited by the organiser of physical training to advise the teachers with regard to special exercises. Of 1935 children referred for dental treatment, 1129 accepted treatment.

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[1] Chemical Disinfection and Sterilisation. By Samuel Rideal, D.Sc. Lond., F.I.C., Fellow of University College, London; Public Analyst for the Metropolitan Borough of Chelsea; and Eric K. Rideal, D.Sc. Lond., M.A. Cantab., F.I.C., Fellow of Trinity Hall, Cambridge; Owen Jones Lecturer in Physical Chemistry in the University of Cambridge. London: Edward Arnold and Co. 1921. Pp. 313. 21s.

SCHOOL MEDICAL SERVICE.

MANCHESTER.

Dr. A. Brown Ritchie, school medical officer of the city, has just issued the twelfth annual report, dealing with the year 1920. Besides the chief assistant medical officer, there is a staff of 15 medical officers, three specialist officers (anæsthetist, surgeon, and consulting oculist), all on part-time duty, five school dentists (two on part-time duty), and 48 school nurses. In addition there are two masseuses and two nurse-attendants, and one remedial gymnast for the Lancastrian Day School for Crippled Children. Even with this not inadequate staff it cannot be maintained that each child requiring special treatment could receive it. There are only four dental clinics, which deal with 20,000 children out of the school population of 123,000, and another school clinic is urgently needed. There are no open-air day schools, nor can the present arrangement for educating and treating mentally defectives, crippled children, and partially blind children be in any way considered adequate. But the benefits accruing from school medical work become more marked year by year. There were 128,180 examinations by medical men, including 40,997 during medical inspections of schools, 81,195 at school clinics, and 2088 examinations of mentally defectives and epileptics. The school dentists examined 19,669 children at school and treated 17,758 at school clinics. Nurses paid 15,647 visits to homes and schools, and there were 202,774 special inspections for verminous conditions. The Danish treatment of scabies and the preparation and composition of the ointment (Marcussen) used are fully described. There are four special schools for mentally defective children; 305 children certified as feeble-minded attended ordinary schools, and 154 more were not attending any school. Five courses were held during 1920 for stammerers. Each course was restricted to a class of 10, and the total number who attended courses during the year was 46. For the majority of the cases one complete course of six to seven weeks was found sufficient for a satisfactory result, but the children are encouraged to attend on Saturday mornings for some time after the course is finished. In 15 of the stammering children (13 boys and two girls) there was evidence of other members of the family having stammered, and in one of the three cases with defective articulation a similar condition was reported in a parent. In 15 cases the condition was reported to have existed from the commencement of speech, and in 23 it was of later development. Body spasms of greater or less degree accompanied the stammer in 17 boys and three girls. The association of the stammering with general nervousness or a marked neurotic condition was frequently noticed. The results may be classified as 19 very good, 18 satisfactory, 7 fair, and 1 poor. In the tonsil and adenoid clinic—which is provided with an anæsthetic room, an operating theatre, and a ward of six beds—there were 1157 examinations and 925 operations. On operating days the patients are brought to the clinic and put to bed for an hour or more beforehand, during which time an injection of atropine gr. 1/100 is given to eliminate salivation as far as possible. Dr. H. Herd adds to Dr. Ritchie's report some interesting observations on "intelligence tests" based on the Stanford revision of the Binet tests. The Stanford revision seems to be more applicable to English children than either the Binet or Goddard revision. It was noted from the use of such tests as "repetition of digits," the æsthetic test (comparison of ugly and pretty faces), drawing square and diamond from copy, "fingers on hand test," &c., that the growth of mental faculty is not steady from year to year. It has rapid and slow periods, just as physical growth has, and in addition to that different capacities do not grow together in anything like equal amounts in any given period. This irregularity is more noticeable among the defective than among the normal.

CARDIGANSHIRE.

In 1919 Dr. Meredith Davies outlined a scheme for the prevention and amelioration of disease in the children of Cardiganshire. It is unfortunate and disappointing that nothing further seems to have been done in this direction; indeed, the report for 1920 is depressing reading. Out of 2181 children submitted to routine inspection, 345 were found suffering from malnutrition, 320 from defective vision, 540 from nose and throat disease, 1831 from dental disease, 162 from suspected and eight from definite pulmonary tuberculosis, and 203 from deformities. No cases of ringworm of the head were found, and only three of body ringworm. Only 350 children were free from dental disease; of the remainder 31 were found on re-examination to have been treated. One hundred and fifty-three cases of visual defect, and 32 cases of nose and throat troubles were treated. In spite of the large amount of malnutrition, there is no provision for feeding children, although a complete scheme was drawn up by Dr. Davies. Examination of secondary school children is impossible owing to the shortage of staff. The report consists of a series of negations; the school medical officer gets no help from any voluntary agency; there are no minor ailment centres; no provision for dental treatment, or for tuberculosis, or for eye and ear disease has been made, but an arrangement has been come to with the infirmary at Aberystwyth for the treatment of enlarged tonsils and certain that there is complete equilibrium between the alveolar air and the arterial blood; this certainty is lacking in many pathological conditions. The deductions from this line of argument are important and inevitable. Firstly, that the nomenclature of the whole subject of acidosis presses for revision[1]; secondly, that alveolar air examinations are not above suspicion; and lastly, that direct determination is the only satisfactory way of finding the reaction of the blood. It may be that blood reaction will, after all, be shown to be of secondary importance—that the body can tolerate a greater variation of hydrogen-ion concentration than has been previously supposed; it may be found that the all-important factor is the bicarbonate content of the plasma, or it may be that the carbon dioxide pressure is of most consequence. But these questions can only be settled by clinical research in which all three factors—namely, the reaction, bicarbonate content, and carbon dioxide pressure of the blood are measured.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Revision of the Children Act, 1874.

THE provisions of the French Children Act, 1874, are specially designed to promote physical health of children and to reduce infantile mortality. Mr. P. Strauss, member of the French Senate, now proposes to amend and consolidate it. In Part III. of his Bill it is suggested that at the time of the notification of birth a special nursing and maintenance booklet should be provided for all children without exception. The following notes would be compulsory: (1) birth registration particulars; (2) feeding, in the case of breast-feeding not being possible, the mode of artificial feeding should be indicated; (3) periodical weight records, the periodicity being determined by a Public Health Act; (4) minutes of periodical medical examinations by family doctor, or by medical officers who act as medical inspectors under the present Children Act, who would visit free of charge the children of poor people; the results of examinations could also be recorded by the medical officers of various charitable medical institutions; (5) vaccination. At the end of the month following birth, the book would be handed over to the local authorities, and again every three months during the first year and twice a year during the second year. Each time the book would be produced a visa would be apposed. If at any time the reading of the book shows that the child has not been under the regular medical attendance of a family doctor or under the supervision of a public or private institution, the local authorities will report the fact to the county medical inspector whose duty it will be to have the child medically examined. In the case of a second offence, the county medical inspector, after referring the fact to a special local commission, will have the privilege to have the child admitted to any special institution for the protection of infants. In the event of the parents protesting against such a decision, the county council authorities will enact without appeal, acording to the results of the inquest of the justice of peace. This proposed amendment to the Children Act has aroused great interest in medical and political circles over here.

Mental Diseases and Syphilis.

The Comité de la Propagande d'Hygiène et d'Education Prophylactique, with a view to publishing statistics of the connexion between syphilis and various psychoses as well as neuroses decidedly allied to general paralysis of the insane, proposes to open an investigation especially amongst medical officers in charge of asylums and physicians who are specialised is the study of mental diseases. The investigation is made from both a prophylactic and therapeutic point of view. Physicians will be asked to detail their observations as follows:—(1) Mental diseases caused by acquired syphilis: (*a*) mental conditions caused by syphilis alone and occurring together with other syphilitic stigmata; (*b*) mental diseases caused by syphilis and associated with psychopathic inheritance; (*c*) pathological findings in repeated lumbar punctures in cases of syphilis, and more especially in those complicated with tabes and encephalitis. 2. Mental disorders in cases of inherited syphilis, abnormal infancy, idiocy, epilepsy. 3. Frequency of mental disorders of syphilitic origin: (*a*) any personal statistics recording the frequency of mental disorders amongst syphilitics, as well as statistics giving the number of cases of mental disorders due to syphilis amongst any group of patients treated for all kinds of psychoses; (*b*) statistics showing the importance of the factor syphilis proportionally to the other causes of insanity (alcoholism, over-work, &c.); (*c*) the results of the routine use of the Wassermann reaction and of the cytological examination of the cerebro-spinal fluid of patients interned in various asylums. 4. Therapeutic results: statistics of results obtained by routine prolonged treatment with mercurial compounds and novarsenobenzol and similar drugs in various cases of mental disorders in which syphilis has been or has not been detected.

Paris Physicians and Surgeons at Strasbourg.

The fifteenth French Congress of Medicine, the thirtieth French Congress of Surgery, the twenty-first French Congress of Urology, and the third annual meeting of the Société Française d'Orthopédie were held at Strasbourg from Oct. 3rd to 8th. Amongst the congressists were some of the leading Paris physicians and surgeons. Prof. F. Widal, Mr. P. Abrami, and Mr. Pasteur Valery-Radot gave their views on anti-anaphylaxis; MM. L. Ambard and H. Chabanier reported on glycæmia; Mr. C. Lenormant, with Mr. H. Billet, described the results of the treatment of epilepsy consecutive to cranial traumatisms; MM. M. Chevassu and F. Rattery reported their views on anæsthesia in urinary surgery; Mr. L. Ombredanne reviewed various arthrodeses performed on the lower extremity.

Oct. 9th.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Reform of Nutrition and Alcohol Consumption.

IN a recent lecture Dr. Dóczy, President of the Hungarian Order of Good Templars, said that according to his own experience and that of other investigators, the largely vegetable type of diet now customary in Hungary has lessened the desire for alcoholic drinks. The principles of modern nutrition, application of which resulted from the war scarcity of food, have great economic advantages; many people are both spending less on food and becoming capable of better work. The supplying of food to the army has also become much cheaper.

Infant Welfare in Budapest.

The Society for the Promotion of Infant Welfare has under consideration the adoption of the welfare scheme in force at Lübeck (Germany), the main provisions of which are as follows: *Care of children is a duty of the State; all illegitimate children must be brought up under medical supervision; infants' homes are placed in charge of Roman Catholic sisters; notification of births of illegitimate children is a duty of midwives, and the sisters thereupon call at the mother's dwelling.* When a birth is reported, pamphlets are issued to the mother, which contain information concerning the care of infants, together with a list of the infants' homes. The medical staffs of infants' homes are paid by the State.

Duties of Medical Men in Bulgaria.

For two years Bulgaria has been ruled by a peasant Government, and the new law by which everyone in

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[1] The need for a revision was definitely expressed in the course of a discussion on Acidosis at the 1920 meeting of the B.M.A.

Hospitals, which had been 1896, 1969, and 1709 at the end of the three preceding months, rose to 2031 at the end of September; the weekly admissions averaged 322, against 235, 250, and 209 at the end of the three preceding months. Erysipelas was proportionally most prevalent in Paddington, Islington, Finsbury, Shoreditch, Bethnal Green, Stepney, and Poplar. Of the 10 cases of poliomyelitis or polioencephalitis 2 belonged to Fulham. Five cases of encephalitis lethargica were notified during the month, against 10, 9, and 5 in the three preceding months. The notified cases of cerebro-spinal fever numbered 5, against 5, 7, and 0 in the three preceding months. The 23 cases of puerperal fever included 4 in Battersea, 3 in Fulham, and 2 each in Islington, Poplar, Southwark, and Lambeth. The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended Oct. 1st, the deaths of 3788 London residents were registered, equal to an annual rate of 10·9 per 1000; in the three preceding months the rates had been 9·4, 9·8, and 10·6 per 1000. The death-rates ranged from 7·3 in Hampstead and in Wandsworth, 8·9 in Greenwich, 9·7 in St. Pancras, 9·8 in Lewisham, and 9·9 in Woolwich, to 11·9 in Hackney, 12·0 in Stepney, 12·2 in Bethnal Green, 13·5 in Shoreditch, 13·7 in Finsbury, and 14·1 in Southwark. The 3788 deaths from all causes included 629 which were referred to the principal infectious diseases; of these, 7 deaths resulted from enteric fever, 3 from measles, 17 from scarlet fever, 50 from whooping-cough, 73 from diphtheria, and 479 from diarrhœa and enteritis among children under 2 years of age. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in St. Marylebone, Hampstead, Holborn, Wandsworth, Greenwich, and Lewisham; and the highest in Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Bermondsey. The 7 fatal cases of enteric fever exceeded the average in the corresponding period of the five preceding years by 2. The 3 deaths from measles were 19 below the average; 2 of these deaths belonged to Poplar, and the remaining 1 to Bethnal Green. The 17 fatal cases of scarlet fever were 7 in excess of the average; of these, 2 belonged to Hackney. The 50 deaths from whooping-cough were 27 above the average; the greatest proportional mortality from this disease occurred in Paddington, Fulham, Stepney, Poplar, Southwark, and Deptford. The 73 fatal cases of diphtheria exceeded the average by 33; this disease was proportionally most fatal in St. Marylebone, Hampstead, Finsbury, the City of London, Poplar, Bermondsey, and Battersea. The deaths from infantile diarrhœa numbered 479, and exceeded the average by 171. This is the largest number of deaths from infantile diarrhœa recorded in London in September since the corresponding period of 1915, when they numbered 739; the greatest proportional mortality from this disease occurered in Kensington, Shoreditch, Bethnal Green, Stepney, and Southwark. The aggregate mortality in London during September from these principal infectious diseases was 51 per cent. above the average.

The deaths from influenza registered in London during the month numbered 21, against 30, 15, and 9 in the three preceding months, and an average of 23 in the corresponding period of the five preceding years.

Birmingham Cripples' Union New Convalescent School.—On Oct. 5th The Forelands, Bromsgrove, was formally opened by the Lord Mayor as a convalescent school for crippled children. A spacious mansion, beautifully situated, has been well adapted for accommodating 80 children. There are two open-air dormitories, with large schoolroom and dining-room, and every provision for open-air treatment. Education up to ordinary standards will be combined with gardening, manual instruction, poultry keeping, &c. This enterprise, made possible by an appeal through the *Birmingham Mail* which raised £15,000, marked the consummation of 25 years' work in *Birmingham on behalf of crippled children.* The Cripples' Union was founded to link up existing organisations, but it was soon found that these were inadequate and the Union itself undertook to make the necessary provision. There is now an admirable system of home visiting with an out-patient clinic, an organisation for "after-care" work, the Woodlands Surgical and Nursing Home, and finally the new convalescent school, a pioneer institution. In addition to the £15,000 a grant has been obtained from the Ministry of Health and the school was opened free from debt. Its maintenance will cost from £5000 to £7000 a year. Mr. Naughton Dunn and Mr. Wilson Stuart are to act as surgeons to the Union, and Dr. Rowlands, of Bromsgrove, will be visiting medical officer.

Correspondence.

"Audi alteram partem."

THE REDUCTION OF THE CAPITATION FEE.

To the Editor of The Lancet.

Sir,—It is not without some feeling of shame that members of the medical profession will note on reading the report of the Minister of Health's reply to a deputation of the British Medical Association concerning the reduction of the panel capitation fee that he had occasion to remark, "I told you I was not going to haggle about this thing, and I am not." Well one may ask what provoked this retort, so little befitting negotiations between a Minister and a deputation of medical men, and the answer appears to be that the latter attempted by argument to save a few pence of the impending reduction.

Great publicity has been given to what is represented as the fighting attitude of the profession regarding this matter, and perhaps it is well that the view held by no inconsiderable section of the profession of medicine should be stated also. In his reply to the memorandum forwarded by the Federation of Medical and Allied Societies on Oct. 4th (published in your issue of Oct. 8th), the Minister states his appreciation of the grounds on which the Federation supports an inquiry into the National Health Insurance system and that he has under careful consideration the question of setting such an inquiry on foot. He states also that the financial condition of the country necessitates such reduction of the insurance practitioner's fee as is fair to both the country and the medical profession. He has announced now that the inquiry, originally asked for by the Federation in January, 1920, is going to be held, that it must cover all the ground and must be without prejudice.

Practitioners on the panel are informed that they are expected to share in the reduction of income that their non-panel colleagues and practically all other sections of the community have experienced already. Therefore it is interesting to estimate exactly what that reduction will be. Three examples will suffice:—

1. The doctor with 3000 panel patients accepting the reduction of 1s. 6*d*. per capita will lose £225 of the £1050 per annum he receives now. The B.M.A. attempts to save him £75 of this sum. 2. Recently a practice of £2400 including a panel of 1300 was advertised. Under the proposed reduction the value of this practice is reduced by £97 10s. The B.M.A. attempts to save the vendor £32 10s. of this. 3. The practitioner with a panel of 500 stands to lose £38 10s., of which sum the B.M.A. proposal would save him £12 10s.

All will sympathise with the men, and many there be, who have given of their best to the service regardless of remuneration and are likely to continued so to do. Others will find consolation in the fact that the present reduction is equivalent to less than half the increase awarded in March, 1920. But we believe that a majority in the profession are too proud of their calling and too jealous in their service to the community to condescend to "haggle over sixpence," and we believe these will agree that the only proper and dignified course to take lies in acceptance of the Minister's proposal as part of a necessary national economy shared by all.

At the same time it appears necessary to press for an early and independent inquiry into the working of the Acts to ascertain *not* what the profession is willing to give the people for 9s. 6*d*., but how far the system has tended to improve the nation's health and how a more fully efficient service can be provided, linked up with general practice and with specialised branches. No fee that the people of this country can afford would be too high for such a service and certainly they would not begrudge it.

We are, Sir, yours faithfully.

Malcolm Morris, Vice-President.
Chas. Buttar, Hon. Secretary.
N. Howard Mummery, General Secretary.

Federation of Medical and Allied Societies, 12, Stratford-place, W. 1, Oct. 17th, 1921.

new sanatorium on the site of the old Delmonte Hotel buildings on the top of the hill at Preston, Ont. When the new sanatorium is completed it is expected to eclipse any other in this country and to rival institutions at Clifton Springs and other famous United States health resorts. The new sanatorium will command a magnificent view of the town of Preston and the surrounding country. Recently at Oshawa, Ont., a campaign was launched to raise money for the National Sanatorium Million Dollar Fund. Many prominent representative men from this locality were present at the meeting, amongst whom were Dr. T. W. G. MacKay, of Oshawa, and Dr. Kendall, superintendent of the Muskoka Free Hospital.

Oct. 4th.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

EDINBURGH.

THE estimated population for 1920 was 336,923; the birth-rate (corrected for country births), 23·1; the death-rate, 13·2; the infant mortality rate, 80; the phthisis death-rate, 0·84; and the total tuberculosis death-rate, 1·21. Dr. A. M. Williamson draws attention to unsatisfactory housing conditions, and to the facts that for some years only the "very minimum" of repairs has been done to the property occupied by the poorest section of the population, and that 37 per cent. of the population live in houses consisting of one or two rooms. Cancer caused more deaths than all forms of tuberculosis. The tuberculosis death-rate, 1·2, though not a low one, is the lowest on record for Edinburgh. The chart showing the decline in the phthisis death-rate since 1873 in Scotland and Edinburgh respectively is an interesting one. The decline in Edinburgh has not been retarded by the war, and has, in fact, been more rapid since the outbreak of war than previously, while the Scottish curve shows the effect of the war. Edinburgh certainly, and perhaps Scotland as a whole, fared better than most parts of England in the matter of food during the war years. Probably, too, there was less strenuous factory work in Edinburgh than in the south. The Glasgow small-pox outbreak gave a stimulus to vaccination in Edinburgh, and Dr. Williamson estimates that over 80,000 persons were successfully vaccinated or revaccinated. The occurrence of two cases of small-pox in Craiglockhart Poor House was alarming. About 900 inmates were vaccinated, and the outbreak was limited to six modified cases among the contacts. The maternity and child welfare scheme is a very comprehensive one, and includes ante-natal clinics, preventive and curative clinics, mostly held at the dispensaries, day nurseries, child gardens, and convalescent homes. Dr. Williamson considers that the lack of medical attendance at their homes for children who cannot be brought up to the centre is a weak point in the scheme. Sixty-six cases of ophthalmia neonatorum were notified. We learn that one case died in hospital, but that six others were discharged with the eyes in a satisfactory condition. (Information as to the extent of eye damage among the home-treated cases would have been of interest.) The venereal diseases scheme is far-reaching and satisfactory, and good work in the treatment of infected expectant mothers is being carried out at the Royal Maternity Hospital. Dr. Williamson is alive to the weak points in the scheme. The lowest class of sufferers, "who are utterly careless of themselves and of others," need not and do not attend the clinics. Again, in a very considerable number of cases the first visit to the clinic proves to be the last. Dr. D. Lees, the clinical V.D. medical officer, is emphatic that something must be done with regard to the 30 to 40 per cent. who fail to continue attendance for a sufficiently long period. The report of the veterinary inspector, Mr. Gofton, shows that there are about 1605 cows stalled in the city. Twenty-seven were removed from dairy byres during the year on account of tuberculosis. Of these 18 were affected with tuberculosis of the udder, 8 were the subjects of advanced clinical tuberculosis with emaciation, and the remaining one was eliminating tubercle bacilli in the milk. Mr. Gofton points out that since the local authority has no power to require slaughter in these cases, there is no guarantee that the milk of these cows is not used after they are turned out of the city byres. In nine cases the cow is known to have been slaughtered. Two large dairy herds are now free from tuberculosis, and others are in course of being cleared.

STOCKPORT.

The estimated population for 1920 was 130,635. The birth-rate, which was 13·84 in 1918 and 15·05 in 1919, rose in 1920 to 22·2. The death-rate was 12·87, the lowest ever recorded. The infant mortality rate was 97, and the death-rates from phthisis and other forms of tuberculosis were 0·94 and 0·24 respectively. Dr. H. E. Corbin tells us that both scarlet fever and diphtheria were epidemic in the town during the year, both in mild form. At the last census there were 5436 female cotton operatives, of whom 2236 were married, and 1584 females employed in the hat and cap trades, of whom 277 were married. The number of still-births known was 154—i.e., 5·3 per cent. of the live births. The infant mortality rate for legitimate children was 93, and for illegitimate children 188. There are still 1188 privy ashpits, with 2074 privies to be converted. The work of converting them has been resumed, 32 having been dealt with in 1919 and 328 in 1920. High prices have retarded progress. Under the heading "milk-supply," Dr. Corbin says: "A sterilised milk depôt was established in the town as a private undertaking during the year. This depôt has already a very large daily delivery of sterilised milk, either directly to the consumer or through the milk vendors. It is under the supervision of the local authority, and the samples which have been analysed, both chemically and bacteriologically, were found to be satisfactory." This development will be watched with interest. Dr. Corbin points out that only about half the children born are successfully vaccinated. Stockport showed no increase of tuberculosis during the war, perhaps because the women were already largely employed in the mills. At the beginning of the year a centre was opened at the borough dispensary for the free treatment of venereal diseases. Stockport patients also used the Manchester centres. The first municipal maternity and child welfare centre was opened in August, and a rota of voluntary workers, largely members of 60th Cheshire V.A.D., has been formed to assist in the work. Of 65 cases of ophthalmia neonatorum notified, 51 were treated successfully by the health visitors acting under the instructions of the medical attendant. Six cases had eventually to be sent to the Manchester Royal Eye Hospital. In how many cases ultimate damage to eyesight ensued is not recorded. By agreement with Hyde Corporation four beds are retained at the Hyde Small-pox Hospital for Stockport patients, so that in the event of an outbreak the first few cases could be treated without disturbance of the tuberculosis patients accommodated at the Stockport Small-pox Hospital.

COVENTRY.

The population of Coventry has increased very rapidly. In 1901 it was 70,300, and for 1920 the estimated population is 140,000. According to Dr. E. H. Snell, with the exception of sandblasting, none of the occupations followed can be described as specially injurious. The birth-rate for 1920 was 23·2, compared with 18·2 for 1919. The death-rate, 9·0, was the lowest on record. The infant mortality rate was 76. The phthisis death-rate was 0·91, and of school work for children. The present writer has always advocated the minimum of interference with the education of the child with cardiac disability[1]; in the recently published Encyclopædia of Education he has also indicated the rôles of education and games[2]; every effort should be made to keep the child from dwelling on his physical condition; such expressions as "weak heart," "heart disease," &c., should be avoided in his presence.

In the course of an extensive experience with heart cases in hospital and private practice the writer, in common with other physicians, has been able sufficiently to improve the condition of patients to allow them to return to their former employment; treatment and rest have not only restored a more normal function, but have also built up a certain amount of cardiac reserve. With the majority of these patients, however, this cardiac reserve is sooner or later exhausted, and the patient returns to hospital in a more advanced stage of disease. This sequence of events is repeated until the end is reached; it is in these cases that occupational therapy might at least have postponed the catastrophe. Temperament and adaptability must be made important factors in the selection of appropriate work. Two cases recently under the writer's care may be given in illustration.

A schoolboy, aged 15 years, was first seen in 1915 on his approaching entry into a public school. The question was the extent to which he should be allowed to play games. The boy was in good health, but examination revealed mitral stenosis; directions were sent to the house master, and the school doctor observed the effects of the games prescribed. Later I had a satisfactory report from school and parents. Four years later, without reference to my opinion, the lad was articled to a firm of engineers. All went on well until he passed into "the shops": after a while he had sudden severe cardiac pain followed by a fainting attack, which was the occasion for a further consultation. On examination the presystolic murmur was well in evidence, the cardiac dullness was markedly extended to the right, and the apex beat outside the nipple line; there was also epigastric pulsation. A period of complete rest followed by graduated exercises restored the heart to a fairly normal state. It was decided he should have a lighter job, and he obtained a post in which clerical work was associated with engineering experience. The result has so far been satisfactory.

A man, 56 years of age, had symptoms of angina pectoris. The history showed that as a boy his health was not good: as his intelligence was not of a high order his parents had failed to educate him. He had a marked talent for music, but this had not been cultivated.

With Dr. Brush's record of success in heart cases by means of occupational therapy before us, alongside our own experience in cases lacking that valuable adjunct to treatment, one cannot but hope that once the need for an institution such as the Burke Foundation is made known means will be provided for its establishment in this country.

I am, Sir, yours faithfully,
CHARLES W. CHAPMAN.
Harley-street, W., Oct. 14th, 1921.

DIAGNOSIS AND TREATMENT OF DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—Some years ago I pointed out in your columns that cases of scarlet fever recovered more slowly and less perfectly in the fever hospitals of London than similar cases treated at home. I could only ascribe this difference to the aggregation of cases in the hospitals, with consequent abundance or concentration of the poison. Probably the same is applicable to diphtheria even in a greater degree; this, being a zymotic disease with serious implication of the throat and air passages, requires dispersion of cases and abundance of fresh air and sunlight. I do not, however, think that any hospital conditions justify what seem to me the erroneous views of and dangerous advice given by Dr. F. H. Thomson in his article on this subject published in your issue of July 9th, p. 68. With his strong approval of antitoxin I am in accord, though I am inclined to think that many medical men find somewhat smaller doses, provided these are given early, to be sufficient. I am not aware, though, that larger doses are harmful. The fault that I find with Dr. Thomson is his advocacy of complete and prolonged recumbency in all cases—even if only mild or moderate in degree—as most of them are. In mild cases without much pyrexia, I do not see that absolute recumbency is necessary; and when pyrexia has subsided, it is not merely unnecessary but prejudicial. There seems to be prevalent an idea of "heart weakness," which in ordinary mild cases (and the exceptions I believe to be very few) I look on as purely imaginary. The special focus of trouble in all, and especially the laryngeal and tracheotomised cases, is the lungs, which are more or less filled with noxious mucus and secretions inhaled from the throat, and are apt to become collapsed and even *pneumonic. This is the chief cause of remaining* debility, including any disturbance of the heart. The lungs naturally get poisoned by the inspired air passing through the foul throat. The main object of treatment in hastening convalescence is to promote active respiration and get the lungs expanded in the purest air that can be got. This cannot be effected while the patient is lying passively in bed in a sick room; suitable activity—as much as can be borne—is required. I do not deny that there may be cases where the heart is peculiarly attacked, but these are very unusual and I have no experience of them. Those cases which are complicated by affection of the vagus nerve, when a serious condition sets in almost suddenly with vomiting and great and progressive slowing of the pulse, are, I believe, always fatal, whatever treatment is employed. I think that since the introduction of antitoxin they have become much less common. I do not remember having seen one since.

I will not prolong this letter by discussing the advisability of local treatment. The various methods are set out in the text-books, with various opinions as to their merits or the reverse. For my own part I am at one with Dr. Thomson in disapproving of all strong and irritating applications, whether used as "antiseptics" or not, though I think that it is always beneficial to keep the throat as clean and sweet as possible by the use of permanganate solution, as gargle or swab, which is quite harmless and painless.

I am, Sir, yours faithfully,
F. LUCAS BENHAM, M.D., M.R.C.P.
Exeter, South Australia, Sept. 3rd, 1921.

POLYPOID DECIDUAL ENDOMETRITIS.

To the Editor of THE LANCET.

SIR,—In your otherwise excellent report of the paper read before the Section of Obstetrics of the Royal Society of Medicine on the above subject, there is one obvious error, which, however, I point out to correct. The report says that the disease "might extend down to the external os." It should, of course, be *internal* os.

The only point that needs correction in the necessarily condensed summary of the discussion, is that I am credited with the statement that "I could not say what proportion of septic cases were *due to polypoid* decidual endometritis." I do not remember that this specific question was asked, but I do say that probably 50 per cent. of all septic cases will be found to be due to this condition, especially if the microscope be more generally employed in midwifery work.

Permit me to add that in some cases of polypoid decidual endometritis death is known to have occurred on the tenth day following delivery, so that the postponement of any operative measures till after that date cannot be recommended.

I am, Sir, yours faithfully,
FRANK A. NYULASY, M.D., B.S.
New Metropole Hotel, Northumberland-avenue,
Oct. 17th, 1921.

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[1] Heart Disease in Childhood and Youth. Medical Publishing Company. 1900.

[2] "Heart Strain in Children from the School Clinic and Educational Point of View," an article in the Encyclopædia of Education. Sir Isaac Pitman and Co. 1920.

adenoids. One hundred and thirty children were found to be dull and backward, and for these also no provision has been made. An open-air school is greatly needed in the county. Dr. Davies finds that although school closure is of very little use in the prevention of infectious disease, the fact that teachers are paid according to the average attendance is an inducement to them to desire school closure. It is unfortunate that so much lethargy in regard to health matters prevails in the county, and that the school medical service is subjected to such severe restrictions.

Hyde.

Out of 2056 children examined, 1747 suffered from dental defects, 267 from non-tuberculous lung trouble, three from definite pulmonary tuberculosis, 348 from nose and throat diseases, including 87 cases of enlarged tonsils and adenoids. Dental treatment was received by 116 children, while 16 cases of nose and throat troubles were treated under the authority's new scheme. Of 1363 cases of minor ailments, which received treatment, the majority consisted of impetiginous and other skin affections. The clinic is open for two hours daily, excluding Saturdays, and Dr. C. S. Thomson has arranged for all children suffering from bronchial catarrh to be seen weekly. Where medicine is required the child is sent to the family doctor. Twenty per cent. of the children had dirty heads; this appears a high percentage, but it must be remembered that the same standard of cleanliness is not accepted by all authorities. If school nursing was thoroughly carried out the numbers could be reduced considerably. The report shows at least 50 children with crippling defects, and Dr. Thomson suggests the formation of a guild of help to deal with these cases. An earnest endeavour is being made to raise the hygienic standard in this borough.

VITAL STATISTICS OF LONDON

DURING SEPTEMBER, 1921.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 14·0 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 9·4, 10·3, and 8·5 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Chelsea, St. Marylebone, Lambeth, Wandsworth, Deptford, and Lewisham; and the highest in Hackney, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The prevalence of enteric fever was nearly a third greater than in the preceding month; of the 45 cases notified during the four weeks ended Oct. 1st, 8 cases belonged to Wandsworth, 6 to Poplar, 5 to St. Marylebone, 4 to Kensington, and 3 to Camberwell. There were 37 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 23, 27, and 32 at the end of the three preceding months; the weekly admissions averaged 7, against 4, 5, and 5 in the three preceding months. The prevalence of scarlet fever showed a marked increase over the previous month—76 per cent.—and was considerably higher than in any preceding month since November, 1920; this disease was proportionally most prevalent in Hackney, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The Metropolitan Asylums Hospitals contained 4847 scarlet fever patients at the end of the month, against 3621, 3722, and 3408 at the end of the three preceding months; the weekly admissions averaged 840, against 506, 567, and 467 in the three preceding months. Diphtheria also was considerably more prevalent—53 per cent.—than in August, and was about equal to the average of the first three months of the year; the greatest proportional prevalence of this disease occurred in Hampstead, Hackney, Holborn, Shoreditch, Stepney, Bermondsey, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1921.

(*Specially compiled for* The Lancet.)

Cities and Boroughs.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	45	—	—	3314	1284	170	10	5	5	23	4856	14·0	7	—	3	17	50	73	479	629	1·8	3788	10·9
West:																								
Paddington ...	149,673	1	—	—	97	26	11	—	—	—	—	135	11·8	—	—	—	—	3	1	16	20	1·7	118	10·3
Kensington... ...	164,177	4	—	—	108	27	4	—	—	—	—	143	11·4	—	—	—	—	1	1	25	27	2·1	137	10·9
Hammersmith ...	136,200	1	—	—	128	24	6	—	—	—	—	159	15·2	—	—	—	1	1	—	15	17	1·6	113	10·8
Fulham	158,621	—	—	—	82	38	7	2	—	—	3	132	10·8	—	—	—	1	4	2	17	24	2·0	141	11·6
Chelsea	62,987	—	—	—	16	22	—	1	—	—	—	39	8·1	—	—	—	1	1	1	4	7	1·4	50	10·3
City of Westmin'r	132,615	2	—	—	104	25	3	—	—	—	—	134	13·2	1	—	—	—	1	3	11	16	1·6	115	11·3
North:																								
St. Marylebone...	101,856	5	—	—	56	13	5	—	—	1	1	81	10·4	1	—	—	1	—	3	4	9	1·2	82	10·5
Hampstead ...	91,519	1	—	—	39	44	2	—	—	—	—	86	12·2	—	—	—	1	—	5	2	8	1·1	51	7·3
St. Pancras... ...	228,178	—	—	—	181	78	3	1	1	—	1	265	15·1	1	—	—	—	1	4	28	34	1·9	169	9·7
Islington	335,907	1	—	—	316	98	18	—	1	—	2	436	16·9	—	—	—	—	3	4	43	50	1·9	294	11·4
Stoke Newington	52,984	—	—	—	43	8	1	1	—	—	—	53	13·0	1	—	—	—	—	1	4	6	1·5	41	10·1
Hackney	225,372	—	—	—	220	97	8	—	—	—	—	325	18·8	1	—	—	2	4	—	22	29	1·7	206	11·9
Central:																								
Holborn	39,676	1	—	—	24	21	2	1	—	—	—	49	16·1	—	—	—	1	—	—	1	2	0·7	32	10·5
Finsbury	78,291	—	—	—	78	30	5	—	—	1	—	114	18·9	—	—	—	1	—	3	8	12	2·0	82	13·7
City of London...	14,447	1	—	—	8	5	—	—	—	—	—	14	12·6	—	—	—	—	—	1	1	2	1·8	12	10·8
East:																								
Shoreditch... ...	102,044	—	—	—	98	46	8	—	—	—	—	152	19·4	—	—	—	—	1	2	29	32	4·1	106	13·5
Bethnal Green...	114,471	—	—	—	137	36	11	—	1	—	1	186	21·2	—	—	1	—	1	2	21	25	2·8	107	12·2
Stepney	241,770	2	—	—	243	110	13	—	—	—	1	369	19·9	—	—	—	1	6	5	38	50	2·7	223	12·0
Poplar	159,766	6	—	—	153	62	9	—	—	—	2	232	18·9	—	—	2	1	5	4	15	27	2·2	145	11·8
South:																								
Southwark... ...	187,142	—	—	—	107	48	9	1	—	1	2	168	11·7	—	—	—	—	4	1	36	41	2·9	202	14·1
Bermondsey ...	129,189	2	—	—	132	66	2	—	—	—	—	202	20·4	—	—	—	1	1	6	16	24	2·4	116	11·7
Lambeth	293,572	2	—	—	139	50	4	—	1	1	2	199	8·8	—	—	—	1	3	4	30	38	1·7	249	11·1
Battersea	165,664	1	—	—	136	62	3	—	1	1	4	208	16·4	—	—	—	1	2	8	13	24	1·9	147	11·6
Wandsworth ...	346,990	8	—	—	168	54	11	—	—	—	1	242	9·1	1	—	—	—	1	2	20	24	0·9	195	7·3
Camberwell ...	284,712	3	—	—	188	60	12	—	—	—	1	264	12·1	1	—	—	—	2	4	27	34	1·6	252	11·5
Deptford	115,636	—	—	—	67	14	3	1	—	—	1	86	9·7	—	—	—	1	5	—	9	15	1·7	94	10·6
Greenwich	102,408	1	—	—	83	44	5	1	—	—	—	134	17·1	—	—	—	1	—	2	4	7	0·9	70	8·9
Lewisham	174,438	1	—	—	71	39	3	1	—	—	1	116	8·7	—	—	—	—	—	1	9	10	0·7	131	9·8
Woolwich	141,666	2	—	—	92	37	2	—	—	—	—	133	12·2	—	—	—	1	—	3	11	15	1·4	108	9·9

* Including membranous croup.

Medical News.

University of Cambridge.—At the Second Examination for Medical and Surgical Degrees held recently the following candidates were successful :—

Part II., Pharmacology and General Pathology.—F. N. Adams, C. Adamson, G. L. Alexander, R. D. Alexander, H. S. Allen, W. B. Arnold, H. F. Brewer, G. C. W. Brown, N. F. C. Burgess, B. H. Burns, J. T. Burrell, G. A. H. Buttle, R. T. Chadwick, H. D. Chalke, P. F. Chandler, B. H. Cole, H. V. Coverdale, D. Cuffey, W. I. Daggett, C. H. C. Dalton, W. Daniel, J. H. T. Davies, P. O. Davies, F. M. Deighton, G. W. S. de Jersey, W. F. Eberlie, A. B. Eddowes, A. Elliot-Smith, J. B. Ellison, R. B. Fawkes, C. W. S. Fernando, K. Fletcher-Barrett, J. H. Francis, J. H. Gaddum, J. A. Galletly, W. H. Gervis, N. T. Glynn, T. S. Goodwin, H. W. Gordon, F. E. Graham-Bonnalie, J. Gray, O. Gray, S. J. P. Gray, F. N. Green, H. L. H. H. Green, J. V. Griffiths, C. J. P. Grosvenor, C. C. Halliwell, A. C. Hampson, H. E. Harris, P. M. D'A. Hart, B. D. Hendy, R. A. Hickling, C. H. Hilliard, E. G. Holmes, J. Holmes, W. S. Hunt, W. E. Hunter, J. P. W. Jamie, J. W. W. Jepps, F. H. King, M. C. H. Kingdon, R. L. Lancaster, A. L. Lankester, F. W. Law, G. A. Q. Lennane, S. Levy-Simpson, W. A. Lister, R. J. Lythgoe, A. F. McGlashan, W. W. McLean, D. P. Marks, L. P. Marshall, G. A. Metcalfe, H. D. N. Miller, K. F. T. Mills, E. F. Molony, W. B. R. Monteith, A. C. Mowle, E. B. Murrell, *J. Ness-Walker, T. M. Preece,* L. W. Proger, R. J. V. Pulvertaft, W. Richards, J. A. W. Roberton, R. E. Robinson, R. A. M. Scott, J. W. Shackle, C. J. L. Sharp, F. A. H. Simmonds, A. J. Smyth, J. H. Smyth, H. L. Sparrow, J. D. M. Stewart, G. B. Tait, J. H. G. Thompson, K. H. Uttley, F. C. O. Valentine, W. J. Walters, Y.-S. Wan, E. R. Weaver-Adams, V. B. Wigglesworth, C. E. Woodrow, and H. Yates.

University of St. Andrews.—At the Third M.B., Ch.B. degree examination held recently the following passed in Pathology: Thomas Christie, Lewis Farrell, Lutfur Rehman Khan, Ena McAlistair Liddell, John Russell Murray, Noel Nelson, John Petrie, James Alexander Robb, and Donald Bruce Smith.

St. George's Hospital Medical School (University of London).—The following Entrance Scholarships and Exhibitions have been awarded :—

90 guinea scholarship: G. K. Thornton, Corpus Christi College, Cambridge; £70 scholarship: R. W. Smith, Downing College, Cambridge.

Exhibitions of the value of 40 guineas each: E. F. Johnson, King's College, London; A. J. Smyth, Emmanuel College, Cambridge; and H. R. Mathews, Corpus Christi College, Cambridge.

St. Thomas's Hospital Medical School.—The following entrance scholarships have been awarded for the sessions 1921–22 :—

Entrance Scholarship in Arts, £25: R. A. Hill, Merchant Taylors' School.

Entrance Scholarship in Natural Science, £150: J. M. Ashton, Intermediate School, Towyn and St. Thomas's.

Entrance University Scholarship, £100: divided between R. J. V. Pulvertaft, Trinity College, Cambridge, and C. A. Lupton, Trinity College, Cambridge, equal.

National Baby Week Council.—The annual general meeting of the Council will be held on Oct. 25th, in Armitage Hall, 224, Great Portland-street, W. (by permission of the National Institute for the Blind), at 3 p.m., under the presidency of Viscount Astor, chairman of the Council. The principal speaker will be Dr. W. Allen Daley, M.O.H. for Blackburn, whose subject will be the Economic Value of Maternity and Child Welfare Work. The address will be followed by a discussion. Tickets for the meeting may be obtained from the Secretary to the Council, at 5, Tavistock-square, London, W.C. 1.

Royal College of Surgeons of England.—A quarterly Council meeting was held on Oct. 13th, with Sir Anthony Bowlby in the chair.—The secretary reported the death of Mr. John Ward Cousins, past member of the Council, and deep regret and sincere sympathy with his widow and family was expressed by the Council.—It was announced that an agreement had been reached between the Council and the Secretary to the War Office with reference to the care of the Army Medical War Collection of Pathological Specimens by the College.—Mr. F. F. Burghard submitted a draft copy of the annual report of the Council which will be presented to the Fellows and Members at the annual meeting on Nov. 17th next. The report was approved and adopted.—A report was read from the committee of management recommending the recognition of the High School for Girls, Wimbledon, for instruction in chemistry, physics, and biology, and reporting that Sir William Hale-White and Mr. W. F. Haslam retire by rotation from the committee.—Mr. W. G. Spencer was elected a member of the committee of management.—The President reported that the portrait of the late Mr. Hugh Owen Thomas, of Liverpool, presented by Sir Robert Jones, had been received and had been hung in the inner entrance hall. The thanks of the Council were given to Sir Robert Jones for his gift.—A letter was read from the College of Preceptors stating that they are endeavouring to arrange for the formation of a joint committee representing the medical and teaching professions to inquire into the present practices in the physical training of girls and their effects, and asking the College to appoint two representatives to serve on the proposed committee. The Council nominated Sir Charles Ryall and Mr. W. G. Spencer to represent them on this committee.

Museum Demonstrations.—The following demonstrations of specimens in the Museum will be given in the Theatre of the College in Lincoln's Inn Fields during October and November at 5 p.m. The demonstrations are open to advanced students and medical practitioners. On Monday, Oct. 24th, Prof. S. G. Shattock will demonstrate on Papilloma and Adenoma, on Oct. 31st on Degenerations and Necrosis, and on Nov. 7th on Cysts. On Friday, Oct. 28th, Sir Arthur Keith will give a demonstration on Effects following Disordered Action of Thyroid, illustrated by lantern slides. On Nov. 4th he will show specimens and slides illustrating various kinds of disordered growth at the epiphyseal line, and on Nov. 11th he will demonstrate on recently added specimens of clinical and anatomical interest.

Chelsea Clinical Society: Annual Dinner.—This dinner will be held on Tuesday, Oct. 25th at the Café Royal, Regent-street, London, W., at 7.30 o'clock.

Old Students' Dinners.—*St. George's Hospital.*—The opening of the winter session at St. George's Hospital Medical School did not include the customary introductory address. More than 80 past and present pupils of the school were present at the annual dinner at the Imperial Restaurant, Regent-street, on Oct. 1st, under the chairmanship of Dr. H. A. Des Vœux. The Chairman, in proposing the toast of the evening, "The Corner," recalled his own experiences as a student some 40 years ago and contrasted the position of the school at that time with that of to-day. He made a sympathetic allusion to the death of Mr. Warrington Haward. This speech was responded to by Mr. E. B. Turner on behalf of the past students, who recalled the wonderful athletic prowess of the school in his day and urged St. George's to get back to this ideal as quickly as possible. The Dean spoke on behalf of the present students and intimated in his remarks that the entry this year was the best that has occurred for some years. Dr. T. Vincent Dickinson gave the health of the chairman and spoke of his great services to the community in his professional and public capacities as chairman of the Coal Smoke Abatement Society and as organiser of measures for the relief of our Belgian professional confrères and their dependents during the great war. This was received with muscial honours, and Dr. Des Vœux replied. Finally, Sir George Turner gave the health of the dinner secretaries, Mr. Claude Frankau and Dr. J. A. Torrens.

University College Hospital Medical School.—The annual dinner of past and present students was held at Oddenino's Imperial Restaurant on Oct. 6th. The chair was taken by Dr. Henry D. Waugh, and over a hundred old students attended. The toast of "The Hospital and Medical School" was proposed by the chairman and was responded to by the Dean, Dr. G. F. Blacker. A pleasant musical programme was supplied by Drs. Poynton, Leslie Williams, Somervell, and Claremont, and the evening concluded with the toast of "The Chairman," proposed by Sir Rickman Godlee.

Westminster Hospital.—The annual dinner of past and present students was held at the Great Central Hotel on Oct. 7th, Sir Charles Ryall, presiding. The attendance numbered 101, including seven ladies. Sir Charles Ryall proposed the toast of "The Hospital and Medical School," to which Dr. A. S. Woodwark, the Dean, replied, pointing out the successful development of the medical school on its return to pre-war conditions, the present number of students being the largest for the past 15 years. Mr. Arthur Evans proposed "The Past and Present Students," to which Surgeon Rear-Admiral W. E. Axford, Lieut.-Colonel A. de C. Scanlan, and Dr. Walter Barron replied, the latter expressing his pleasure as a general practitioner that the hospital was to remain in its present situation. Mr. Souttar also spoke on behalf of the present students and referred to the exceptional teaching facilities provided. Mr. Rock Carling proposed "The Visitors," for whom Sir Murdoch Macdonald, and Dr. Edwin Smith responded. Mr. W. G. Spencer proposed "The Chairman," who, in his reply, read out some of the testimonials he had received as a student, including those of Dr. F. de Havilland Hall, consulting physician to the hospital, and Mr. Spencer, both happily present on this occasion.

ANKLE-JOINT FRACTURES.

To the Editor of THE LANCET.

SIR,—Sir W. Arbuthnot Lane, in his instructive paper on Abduction Fractures of the Ankle-Joint in THE LANCET of Oct. 1st, has done well to draw the attention of surgeons both to the mechanics of the injury, as well as to the permanent lameness which only too frequently is left behind. These unfortunate results are, in his opinion, largely due to the tendency of lumping together under the generic name of "Pott's" all fractures round the ankle-joint, without sufficient consideration of the lines of force which caused them. Cases of lameness and disability caused by these fractures come frequently to my notice, and I have been struck by the apparent difficulty surgeons have in obtaining perfect soundness.

Take, for instance, the first degree of this condition: many a time does it come under observation as being a sprained ankle which is proving slow in recovery. This diagnosis is often due to the presence of adhesions, more likely to occur when there has been a fracture than when a simple sprain has been sustained. In dealing with cases of sprained ankle where no obvious bone lesion is present, the question as to whether the ankle turned outwards or inwards at the time of accident is of importance, since the first degree of fracture only occurs where there has been an abduction of the foot. A radiograph is advisable, more as a guide to prognosis than diagnosis, since treatment where displacement is negligible is practically the same as in a sprain, but the period of disability is prolonged.

In the second degree of fracture, though accurate splinting can bring about good results, yet it must be acknowledged that permanent lameness is far from uncommon; so much so that at one time in our police force the fact that a man had sustained a "Pott's" fracture was considered a bar to his further employment.

The third degree of this fracture would appear to offer enormous difficulty to a satisfactory result under manipulation, and quite recently, I have seen a case of this kind, where the resultant distortion and lameness was pitiable. The accident occurred early in February of this year, whilst the patient—a man of about 40—was walking through a Borneo jungle. The medical man tried to get reduction under anæsthesia, eventually putting the limb up in plaster-of-Paris. Three weeks later the patient was able to be removed to Jesselton, where a radiograph showed the position of the bones to be precisely as in Fig. 3 of Sir Arbuthnot Lane's paper. Another attempt was made at reduction without result. The patient became dangerously ill from shock; and after some weeks was sent to England with a note stating that he had sustained a fracture-dislocation of the right ankle. On examination the leg was found to be thin and emaciated, with limited flexion of the foot, intense muscular wastage of the thigh with contraction of the knee; the upper end of the tibia formed a projection over the instep, whilst the os calcis formed a corresponding curve behind. A further radiograph showed the position of the bones as before, but the formation of callus and the general condition of the joint made operative interference inadvisable. Treatment by massage and graduated exercises is now making the best of a bad job. The patient was inclined to find fault with the attention he had received in Borneo, but the result, although undoubtedly disastrous, was no worse than is seen in cases where greater facilities for treatment have been available.

Considering the doubtful results so often obtained by the present method of setting and splinting these ankle-joint fractures, I am convinced that reduction by the operation procedure described by Sir Arbuthnot Lane holds out an almost certain prospect of soundness, since an almost perfect apposition can be obtained by a knowledge of the mechanics involved in the causation of the fracture.

I am, Sir, yours faithfully,
Seymour-street, W., Oct. 15th, 1921. FRANK ROMER.

TEACHING "DEAF-MUTES" TO HEAR.

To the Editor of THE LANCET.

SIR,—In the annotation in your issue of Oct. 8th on the late Prof. Urbantschitsch's paper on the use of acoustic exercises in the education of deaf-mutes, you do not refer to the work on similar lines which has been independently carried out in England, and to which reference was made in my Croonian Lectures published in your columns about a year ago. At the Birmingham meeting of the Association of British Physicians in April of this year I showed seven "deaf-mutes," ranging in age from 5 to 32, who were being taught to hear. All of them had been regarded as absolutely deaf both by their parents and by well-known aural surgeons who had seen them with me, but as they all showed normal vestibular reactions, I thought their deafness was probably functional. After periods varying from a year and a half in one case to between two and six months in most of the others considerable improvement had occurred. Each of the patients was now able to hear a large variety of sounds; one of them could hear the clicking of coins at a distance of 30 feet. Each could recognise and understand a considerable number of words, and four of them were able to carry on a conversation, when sentences were spoken slowly and in a loud voice close to their ears. Two of the children are having all their ordinary lessons by ear instead of by lip-reading.

Improvement has so far been continuous, though slow, and I think that there is a good prospect that the more intelligent among them will eventually learn to hear sufficiently well to enable them to carry on ordinary conversations.

I am, Sir, yours faithfully,
ARTHUR F. HURST.
New Lodge Clinic, Windsor Forest, Oct. 11th, 1921.

OCCUPATIONAL THERAPY IN HEART DISEASE.

To the Editor of THE LANCET.

SIR,—When a diagnosis of heart disease has been made in a child the questions arise of the scope and direction of the child's education, and of the extent to which games may safely be indulged in. For the adult with permanent cardiac disability advice is needed with regard to suitable occupation; the value to the individual of every year of even a restricted working capacity is apparent, not only in the light of the achievements of the phthisical Keats and R. L. Stevenson, the blind Milton and the epileptic Napoleon, but also with regard to recent post-war experience of occupational therapy, which enables blind and otherwise crippled men to find a place in industry, and thereby enjoy a measure of contentment. That a great deal can be done in this direction is shown in a recent contribution to the *Modern Hospital*, January, 1921, by Dr. F. L. Brush, medical director of the Burke Foundation, White Plains, N.Y., in a paper mainly based upon experience of over 2500 cases of heart-disease, of which more than 2000 had valvular deficiencies.

The plan followed by Dr. Brush may be briefly outlined. The first thing is to undo the effect of wrong advice "of physicians, relatives, employers, teachers," replacing "don'ts and can'ts by do's and can's." The patient recovering from acute disablement is given light hand-work in bed or chair and exercised up to fitness for transfer to a convalescent home, where he goes through four to nine weeks of gymnastic exercises, increasingly active physical play and grade walking, diversional occupation, and short hours of actual work about the institution, often on a handicapped wage. Gradual advance to full-time employment in the institution with medical oversight leads later on to the former job or to another expertly chosen by the "follow-up" agency. The author indicates the various occupations for which his patients have become fitted, such as gardening and carpentry for men and needlework for women. Dr. Brush advises the continuance

Dr. William F. R. Burgess, O.B.E., has been elected Master of the Society of Apothecaries.

Pharmaceutical Society of Ireland.—At the annual election of officers held on Oct. 11th a medical man, Mr. Alfred Barnes, L.A.H., of Dublin, was chosen as the new President.

Literary Intelligence.—The Dictionary of Practical Medicine, edited by Sir Malcolm Morris, Prof. Frederick Langmead, and Dr. Gordon Holmes, is announced for publication on Oct. 27th by Messrs. Cassell and Co.

Manchester Cathedral: Annual Medical Service.—At the annual service for the medical and nursing professions, held at Manchester Cathedral on Sunday last, there was a large attendance of doctors and nurses. The Archbishop of Armagh preached a stimulating sermon.

National Hospital for the Paralysed and Epileptic.—A bazaar will be held in the out-patient hall of the hospital on Founders' Day, Nov. 2nd, and will be opened by Lady Beauchamp at 3 p.m. The hospital will be open to inspection.

Hunterian Society.—The new session of the Hunterian Society will open on Wednesday, Oct. 26th, at 9 p.m., when Prof. E. H. Starling, F.R.S., will deliver the first Hunterian Society Lecture on "Some Heart Problems." The lecture will be delivered at the Sion College, Embankment, London, E.C. All members of the medical profession are cordially invited to be present.

Selborne Society.—A dinner will be held on Oct. 25th at the Hotel Cecil. Viscount Grey, of Fallodon, Vice-president of the society, will take the chair and will speak about the scope of the Gilbert White Memorial scheme. Tickets (at 15s.) may be obtained from the Hon. Secretary and Treasurer, at The Hermitage, Hanwell, London, W. 7.

Federation of Medical and Allied Societies. The regular meeting of the Medical Council will be held at 12, Stratford-place, Oxford-street, London, W., on Tuesday, Oct. 25th, at 5 p.m. The agenda includes the preparation of evidence to be submitted at the panel inquiry; the consideration of the subject of control of conception in wedlock, whether knowledge on the matter should be promulgated, and, if so, what knowledge and by whom; any other business.

Bristol Medico-Chirurgical Society. — The forty-ninth session of this society was opened on Oct. 12th, the new President, Mr. Cyril H. Walker, delivering an inaugural address on Quackery in the Treatment of Ophthalmic Disease. He traced the course of irregular practice in this field of medicine from the earliest times until now, concluding with a plea for greater attention to eye diseases, and better facilities for their treatment by the family practitioner. The secretary, Mr. Stuart V. Stock, was able to forecast an interesting programme for the coming session.

King's College Hospital Listerian Society.—The inaugural address was delivered on Oct. 19th by Dr. Arthur Whitfield on the Gentle Art of Making Mistakes. On Nov. 2nd Mr. P. B. Atkinson will speak on Graves's Disease. The meeting on Nov. 16th will be devoted to a debate. On Nov. 30th Miss C. P. Francis will speak on English Medicine in the Middle Ages, and Dec. 14th will be a clinical evening. On Jan. 18th Dr. J. E. Hadfield will lecture on Psychotherapy in General Practice, and on Feb. 1st Mr. C. P. G. Wakeley on Defects in the Mandibular Arch. Dr. C. F. T. East will give an address entitled, "Maladies, Ancient and Modern" on Feb. 15th, and Mr. B. J. B. Devine will speak on the subject of Carcinoma on March 1st. March 15th will be a clinical evening. The president for the session is Dr. F. W. Tunnicliffe. The meetings are held at 8.15 p.m. on Wednesdays at King's College Hospital.

The Services.

NAVAL MEDICAL SERVICE.

Surg. Comdr. W. Bradbury to Durban (on comnug.).

ROYAL ARMY MEDICAL CORPS.

Maj. G. H. Stevenson retires, receiving a gratuity, and is granted the rank of Lt.-Col. Maj. T. Walcot, late temp. Capt., to be temp. Maj., and to relinquish the rank of Maj.

Temp. Lts. to be temp. Capts.: R. M. Walker, C. W. Bennett, and W. H. Steil.

Officers relinquishing their commns.:—Temp. Capts. T. Walcot (granted the rank of Maj.), H. N. K. Kevin, and E. L. Davey (retain the rank of Capt.), and Temp. Lt. G. L. Lyon-Smith.

TERRITORIAL ARMY.

Col. H. Burrows, T.A. Res., to be Col.

Lt.-Col. J. G. Martin, from R.A.M.C., T.A., to be Col. and A.D.M.S., West Lancs. Divn.

Lt.-Col. (Bt. Col.) C. T. Green, having attained the age limit, is retired, and is granted the rank of Col., with permission to wear the prescribed uniform.

Maj. S. F. St. J. Steadman, from Genl. List, to be Maj.

Majs. J. W. Slaughter and M. A. Archdale, having attained the age limit, are retired and retain the rank of Maj.

Maj. J. Orton, having attained the age limit, is retired, and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. G. E. Lloyd (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

Capt. H. W. Read to be Maj.

Capts. A. E. Delgado and W. H. Kiep resign their commns. and retain the rank of Capt.

2nd W. Gen. Hosp.—Capt. P. R. Wrigley, having attained the age limit, is retired, and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Lt.-Cols. E. H. Cox (from 3rd E. Lancs. Fd. Amb.) and C. W. Eames (T.A. Res.) to be Lt.-Cols.

Maj. H. W. Pritchard, having attained the age limit, is retired, and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. G. G. Johnstone, from 2nd Lond. San. Co., to be Capt.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned Officers:—

Army Medical Service.—Col. J. Clay, C.B.E. (Hon. Lt. in Army).

Royal Army Medical Corps.—Lt.-Col. C. O. Parsons, 2nd Welsh Fd. Amb., and Majs. J. H. Hobling, 2nd S. Mid. Fd. Amb., and G. B. Robinson, D.A.D.M.S., H. Counties Div.

ROYAL AIR FORCE.

Dental Branch.—Flight Lt. L. S. Kettlewell relinquishes his temporary commission on ceasing to be employed, and is permitted to retain the rank of Capt.

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One-half Column ...	3	0	0	One-half Page	6	0	0
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SULFARSENOL IN THE TREATMENT OF CONGENITAL SYPHILIS.

To the Editor of The Lancet.

Sir,—With reference to your annotation in The Lancet of Oct. 8th on our short paper on Sulfarsenol in the Treatment of Congenital Syphilis, the object of this paper was to compare the result of intramuscular injection of sulfarsenol with the intravenous injection of some of the older remedies. We stated in our paper that the clinical manifestations quickly disappear under treatment with sulfarsenol. The Wassermann reaction was used as the gauge of the efficacy of treatment rather than the disappearance of clinical manifestations, because it is considered by most authorities to be a very much more sensitive test. Indeed, clinical manifestations frequently clear up after a short course of mercury, but who would claim to have eradicated the disease by such treatment?

The results obtained at the Royal Hospital for Sick Children, Glasgow, with ante-natal treatment are not in accord with those referred to by Mr. McDonagh—we have not, however, been able to find any definite figures published by him. Of 15 mothers treated in this hospital, all the offspring born subsequent to treatment gave a negative Wassermann reaction with one exception, which gave, at the age of 7 years, a weakly positive reaction. Neither this case nor any of the others have as yet shown any clinical signs of syphilis. Six families have been followed for seven years and, with the exception noted, have all given a negative Wassermann reaction, and none of them show clinical manifestations.

Lastly, the results of our treatment of children under 1 year of age shows a marked declension from those obtained by intravenous treatment and the failure in these cases cannot be explained by a hypothesis based on Mr. McDonagh's findings. Why, therefore, should such an explanation be applied to our cases over 1 year of age?

We are, Sir, yours faithfully,
E. Crawford.
Geoffrey B. Fleming.

Royal Hospital for Sick Children, Yorkhill,
Glasgow, Oct. 12th, 1921.

REACTIONS AFTER SALVARSAN.

To the Editor of The Lancet.

Sir,—In an article in the *Arch. Int. Med.* on 9000 cases of syphilis treated at the Johns Hopkins Hospital, Baltimore, Dr. T. E. Moore and Dr. A. Keidel give some particulars of skin reactions following the treatment by salvarsan.[1] I imagine the case I report here is probably unique.

Mr. O. B. S., aged 22, came to me on June 28th, 1921, with a quite typical hard chancre. I gave him a series of injections of N.A.B., dose 0·75, and on Sept. 29th I administered his ninth injection. He was taking hyd. c. cret., gr. 2, three times daily without intermission for the whole time. On the morning of Oct. 7th he came in to see me with an erythematous rash all over him, including his face, wrists, and hands; it was accompanied by intense itching. I diagnosed urticaria and ordered him sodium salicylate, sodium bicarb., and ammonium carbonate. The same afternoon I had an appointment to give him his tenth injection of N.A.B. At 5 P.M., when I saw him again, he had not taken any of my mixture. In five minutes from the moment of the injection he remarked that the itching was less and on examination the "wheals" of the urticaria were noticeably less. In 15 minutes my patient said there was no itching, and on further inspection only pale pink patches remained in the place of the raised areas. Dr. Moore and Dr. Keidel speak of urticaria as a possible result of salvarsan injections. Here is a case of "nettle-rash" being dispersed by the same agent. I was unable to discover any cause for the skin condition.

I am, Sir, yours faithfully,
Leonard Myer, F.R.C.S.E.,
Hon. Surgeon to Out-patients, St. Paul's Hospital
Oct. 17th, 1921. for Skin and Genito-Urinary Diseases.

PRESENTATION TO SIR J. HALLIDAY CROOM.

To the Editor of The Lancet.

Sir,—May I, through the medium of The Lancet, bring to the notice of Sir Halliday Croom's old residents and clinical assistants that it has been decided, through a presentation, to show our gratitude to him. Unfortunately the earlier records are incomplete, and as secretary of the committee which has been appointed, I should be glad if those who were with him prior to 1890 and are willing to contribute would kindly send their names and addresses to me.

I am, Sir, yours faithfully,
Douglas Miller.

50, Northumberland-street, Edinburgh, Oct. 17th, 1921.

Obituary.

GEORGE WILSON, M.D., C.M., LL.D. Edin., M.A. Aberd., D.P.H. Camb.

On Sept. 11th, at his home in Colwyn Bay, the death occurred of Dr. George Wilson, who was a pioneer in the teaching of hygiene. The Public Health Act of 1872 raised much discussion on sanitary questions throughout the country, and the publication in 1873 of Dr. Wilson's "Handbook of Hygiene" received an immediate and cordial welcome. This was practically the first text-book on hygiene available for medical students and was, moreover, for many years the standard manual for candidates for the D.P.H. In the eighth edition, however, issued in 1898, Dr. Wilson introduced his somewhat heterodox views on bacteriology and the causation of disease, when the book lost much value as a text-book and no further editions were called for. Dr. Wilson had become a Master of Arts at Aberdeen in 1860 and proceeded for his medical education to Edinburgh, where he graduated M.B., C.M. in 1863, M.D. in 1872. He received the honorary degree of LL.D. of Edinburgh in 1894 and was a Fellow of the Royal Society of Edinburgh. He took the D.P.H. at Cambridge in 1891. When surgeon to the convict prison at Portsmouth in the early seventies Dr. Wilson made observations on the criminals under his charge and formed the conclusion "that four-fifths are directly or indirectly the victims of intemperance." His comment on the scale of diet then given for full labour in prisons was that the prisoners lost weight on it to an extent of about 13 lb. in two months and had to be continuously transferred to lighter work and re-transferred if a complete breakdown was to be avoided.

Dr. Wilson was medical officer of health for the Mid-Warwickshire Combined District for over 30 years, retiring in 1909. In 1906 he was appointed a Member of the Royal Commission on Vivisection. He was proud of this distinction and gave much time and labour to the work of the Commission. He appended to the Final Report issued in 1912 a lengthy Reservation Memorandum, but he signed the main report and declined to be regarded as a representative of the anti-vivisectionists. After his retirement Dr. Wilson travelled abroad for some years and then settled in Colwyn Bay. The eye troubles, caused by cataract, from which he suffered in his later years were only partially relieved by operation and his vision remained dim.

Dr. Wilson married twice but had no children. To his widow we offer sincere sympathy in her great loss.

The late Dr. William Edward Dixon.—Dr. W. E. Dixon, who died at his residence "Kirkee," West Worthing, on Oct. 10th at the age of 75, received his medical education at the Middlesex Hospital, where he afterwards became house surgeon and resident obstetrical assistant. He qualified M.R.C.S. Eng., L.S.A., L.R.C.P. Edin., and L.M., in 1878, and held the post of clinical assistant at the Royal London Ophthalmic Hospital, becoming F.R.C.S. in 1881.

The King and Queen have sent a present of fruit to the Chelsea Hospital for Women.

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[1] Brit. Med. Jour., Oct. 15th, p. 606.

Bristol Royal Hospital for Sick Children and Women.—Out-patient Physician.
Bristol Royal Infirmary.—H.S. £120.
Bury Infirmary.—Junior H.S. £150.
Cairo, Egyptian Government School of Medicine.—Prof. of Pathology. L.E.1200-1440.
Cardiff, King Edward VII. Hospital.—Hon. Asst. S.
Chester Royal Infirmary.—Asst. H.S. £150.
City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £125.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—S. Asst. S. Asst. P.
Elizabeth Garrett Anderson Hospital, Euston-road.—Female Anæsth.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.
Great Northern Central Hospital, Holloway-road, N.—Two S.'s.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S.'s. £50.
Huddersfield Royal Infirmary.—Jun. H.S. £200.
Hull Royal Infirmary.—Hon. Pathologist.
Kensington, Marloes-road Infirmary.—Fourth Asst. M.O. £200. Visiting Phys. £100.
Leeds Public Dispensary.—Res. M.O. £200.
Lincoln County Hospital.—Sen. H.S. £250.
London County Council.—M.O. at Pentonville-road Place of Detention. £120.
London Fever Hospital, Islington, N.—Hon. Asst. Phys. Hon. Aural Surg. Res. M.O. £500.
London Temperance Hospital, Hampstead-road, N.W.—Med. Registrar. 40 gs.
Manchester Royal Infirmary.—Asst. M.O. £35.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. £150. Out-patient M.O. £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Portsmouth County Borough.—Tuberc. O. and Deputy M.O.H. 12 gs. per week.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.
Rochdale Infirmary and Dispensary.—Sen. H.S. £300.
Royal Chest Hospital, City-road, E.C.—Clin. Assts.
Royal Dental Hospital of London, School of Dental Surgery, Leicester Square, W.C.—Prosthetic Registrar. £800.
Royal Free Hospital, Gray's Inn-road, W.C.—Res. Asst. Cas. O. £50. Female Obst. H.S. £50.
Royal National Orthopædic Hospital, Great Portland-street, W.—Hon Ophth. S. Pathologist. Hon. S. for Ear, Nose and Throat.
Royal Naval Medical Service.—Surg. Lieuts.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Anæsth.
St. Bartholomew's Hospital.—M.O. in charge of Psychological Medicine. Aural Surg.
Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.
Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Asst. Cas. O. Each £150.
Swansea County Borough.—Asst. M.O. £500.
Tunbridge Wells General Hospital.—H.S. £160.
University College Hospital, Gower-street, W.C.—Tuberc. O. £250.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. Sorting O. and Anæsth. £150.
Warrington, Lancashire County Asylum, Winwick.—Asst. M O. £300.

Births, Marriages, and Deaths.

BIRTHS.

BARKLEY.—On Oct. 10th, at Woodcroft, Weybridge, the wife of Dr. T. Yuille Barkley, O.B.E., of a son.

BULSTRODE.—On Oct. 9th, the wife of C. V. Bulstrode, D.S.O., M.D., of a daughter (stillborn).

CLARKE.—On Oct. 14th, at Victoria Square, Clifton, Bristol, the wife of Dr. Richard Clarke, O.B.E., of a son.

EGAN.—On Oct. 4th, at Quetta, the wife of Major W. Egan, D.S.O., R.A.M.C., of a son.

EVANS.—On Sept. 7th, at Ranikhet, United Provinces, India, the wife of Captain R. R. Evans, R.A.M.C., of a daughter.

MURDOCH.—On Oct. 12th, at West Hyde, Rickmansworth, the wife of J. Murdoch, F.R.C.S.E., of a son.

STANLEY.—On Oct. 11th, at Rue des Belles Feuilles, Paris, the wife of E. Gerald Stanley, M.S., F.R.C.S., M.D. (Paris), of a daughter (Jane Elliot).

DEATHS.

BETTERIDGE.—On Oct. 14th, 1921, at "Marystowe," 3, Priory-road, Kew, the residence of his son, Alfred Betteridge, late Secretary, West London Hospital, after a short illness.

DIXON.—On Oct. 10th, at Kirkee, Mill-road, West Worthing, William Edward Dixon, F.R.C.S. Edin., aged 75 years.

MOSLEY.—On Oct. 6th, at Shaldon, South Devon, Reginald Lawson Mosley, M.B., L.R.C.S.I., aged 64 years.

NORRIS.—On Oct. 10th, at Langley Lodge, Surbiton, Frank Baker Norris, M.A., M.D., B.C.Cantab., M.R.C.S.Eng., L.R.C.P.Lond., aged 55 years.

WROUGHTON.—On Oct. 7th, John Henry Wroughton, M.R.C.S., L.R.C.P.Lond., Basutoland Medical Service.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SANITARY AND MEDICAL ADMINISTRATION IN BURMA.

THE report on sanitary administration[1] in Burma during 1919 commences by stating that "the total area and population in Burma proper under registration remained the same as in 1918," except for a slight adjustment in the boundaries of two districts. The birth-rate was 29·89 and the death-rate 31·09 per 1000, calculated on the census population of 1911, which was 9,824,390. For 1918 these ratios had been 33·01 and 39·59; and for the preceding quinquennium, 34·70 and 28·19. The birth-rate was lower than in any of the preceding ten years, and the death-rate higher than in any of these years, except 1918, when it had been 39·59 per 1000. The bulk of the population (8,713,297) are Buddhists, among whom the mortality ratio was 30·79. For Christians it was 22·59, and for Hindus 36·08. Cholera prevailed throughout the province, causing 13,260 deaths, which gives a mortality ratio of 1·35, contrasted with 0·56 for the preceding quinquennium. Pakokku, in Upper Burma, with 1296 deaths (8·16 per 1000), and Akyab, in Lower Burma, with 2270 deaths (4·30 per 1000), suffered most, but not a single district was free from this disease. Very hot weather, a late monsoon, and consequent scanty water-supply, played an important part in the spread of infection. Lieut.-Col. C. E. Williams, I.M.S., Sanitary Commissioner, who presents this report, alludes to the relative isolation of Tavoy and Mergui districts (with the comparatively low death-rates of 0·55 and 0·30 per 1000 for this disease), and of Sandoway (0·10), all in Lower Burma, as emphasising the fallacy of the theory formerly prevailing of the local origin of cholera infection, mainly depending upon soil and atmospheric conditions. These are obviously only secondary factors, though local conditions have a determining influence upon the spread of introduced infection. The outbreak of 1919 was more serious than in the years immediately preceding, and it is not reassuring to learn that "little headway has been made in most places in organising effective preventive measures. The provision of a protected water-supply has had a most beneficial effect in several towns. . . . The greater number of towns still await the provision of this important preventive work. . . . The organisation of effective preventive measures in rural areas is at present almost a hopeless task, in the face of the general ignorance and insanitary habits of the mass of the people, and of the absence of a rural medical and sanitary staff." Proposals have, however, been put forward on an unambitious scale for the organisation of preventive measures. Small-pox caused 3917 deaths (0·40 per 1000, compared with 0·05 in the preceding quinquennium); it was more prevalent in Upper than in Lower Burma, the respective mortality ratios being 0·67 and 0·20 per 1000. This was contrary to the usual course of events, the infection being almost always introduced through Rangoon. It is disquieting to learn that the case-mortality amongst vaccinated children was 78·12 per cent. at ages 1 to 5, and 55·14 per cent. at ages 5 to 10. Some doubt is thrown on the correctness of the returns. Compulsory re-vaccination at 14 years, if not earlier, and compulsory vaccination and re-vaccination of all immigrants to Rangoon by sea, is recommended. Plague caused 4397 deaths (0·45 per 1000, compared with 0·72 in the quinquennium). Rangoon, with 782 deaths (2·67 per 1000), and Mandalay, with 571 deaths (4·12 per 1000), suffered heavily, but the highest relative mortality (19·45) occurred at Minbu (in Upper Burma), closely followed by Thonzè (in Lower Burma), with 18·95 per 1000. Anti-plague inoculation and rat destruction are carried out. The increase in death-rate from fevers (12·22 compared with 10·31 per 1000 in preceding quinquennium) is explained by the presence of influenza rather than malaria. An interesting account is given of the suppression of an influenza outbreak in the Turkish prisoners' camp in November and December, 1919, at Meiktila (Upper Burma), by Col. A. H. Safford and Major T. G. Cheyne, R.A.M.C.

"The fall in daily admissions had commenced after four days of nasal and pharyngeal irrigation, and six days before inoculation was commenced—thus rendering the influence of the latter prophylactic measure uncertain; an outstanding feature of the case is the nearly absolute restriction of the field of infection to the occupants of the east section of the camp, although separated from the adjoining section only by a single line of open barbed wire fencing. This . . . points to the smallness of the radius through which air-borne infection of the disease can be carried."

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[1] Rangoon: Superintendent of Government Printing, 1921.

Groupe Inter-Universitaire Franco-Britannique.—A dinner in honour of Mr. Raymond Poincaré, past President of the French Republic and former Rector of the University of Glasgow, will be held on Nov. 1st, at 7.15 P.M., at the Connaught Rooms, Great Queen-street, Kingsway, W.C. Applications for tickets, £1 5*s.* per head, should be made immediately to the Joint Hon. Secretaries, at 51, Anson-road, London, N.W. 2.

Midland Tuberculosis Meeting.—The first general meeting of the Midland Tuberculosis Sub-Group of the Society of Medical Officers of Health will be held at the Anti-Tuberculosis Centre, 44a, Broad-street, Birmingham, to-day, Oct. 22nd, at 3 P.M. It is hoped that all members of the Society of Medical Officers of Health actively engaged in connexion with tuberculosis work will attend this meeting. The business to be transacted includes the confirmation of the proposed rules, and the election of officers and committee for the ensuing year.

Eastbourne Ear, Nose, and Throat Hospital. The annual meeting was held on Oct. 7th. The existing premises were opened on March 2nd last, and in-patients were first received on April 6th. Up till July 31st—the end of the hospital year—the in-patients numbered 55. The out-patients for the full 12 months numbered 2415. The financial statement showed that the hospital was in a better position than last year by £700. The first year's working of the institution as a fully equipped hospital shows that the step taken by the governors was a wise one.

Tuberculosis in Gloucestershire.—At the weekly luncheon of the Gloucester Rotary Club held on Sept. 30th, Dr. Arnott Dickson, county and city tuberculosis medical officer, gave an account of the campaign of public health authorities against tuberculosis, in the course of which he said that although the mortality from that cause was diminishing, there was still some justification for John Bunyan's description of consumption as "Captain of the Men of Death." Eighty per cent. of children were infected at the age of 14, and it was of extreme importance to ensure that the immunity which the child struggled to acquire should be strengthened into a bulwark for the rest of life. It was unfortunate that the Tuberculosis Order of 1912–13, suspended on the outbreak of war, had not been revived, and that the distribution of milk from cows with advanced tuberculous disease was still permitted. The question of housing, again, was of the very greatest importance; a large number of families simply did not get a chance of living healthy lives. While the outlook in tuberculosis work was encouraging, there was in the present state of knowledge no justification for expecting any immediate or sensational defeat of a disease which was almost an inherent defect of civilisation.

Royal Victoria Hospital, Belfast: Opening of the Session.—The present session was opened on Oct. 13th, when Colonel A. B. Mitchell occupied the chair and the opening address was delivered by Dr. H. L. McKisack. After welcoming the students and alluding to the changes in the staff during the past year, the speaker referred to the retirement of the late superintendent, Colonel A. Deane, and spoke appreciatively of his long services to the hospital. He extended a cordial welcome to his successor, Colonel J. V. Forrest, C.B., C.M.G. He referred to the foundation of the new dental department in the hospital, and alluded to the grave results which were now known to accrue from oral sepsis. A knowledge of dentistry was important not only for practising dentists, but also for the general practitioner. He wished to emphasise the fact that clinical instruction is the heart and kernel of the Ars Medica, while welcoming all the recent developments of laboratory methods. It was a liberal education in itself, developing the powers of observation and induction, and cultivating the judgment. The student must first study the normal individual and the condition of the healthy organs. Next he must learn the main facts of disease from his teachers and his text-books, and thirdly, he must exercise his own powers of observation and inquiry. He urged the importance of students becoming residents in hospital, and being in constant contact with the phenomena of disease. The student should acquire the habit of tabulating his own experience, and correlating it with the information afforded by his teachers. Experience to be of permanent value must be organised and sifted, otherwise it was a case of heaping ignorance upon ignorance. The student must cultivate the spirit of curiosity and inquiry and never hesitate to ply his teachers with questions. The young must carry forward the torch of research and education, and cherish the hope that they may be privileged to add something to the weapons for the endless war to be waged against disease. A vote of thanks to the speaker was passed on the motion of the chairman.

Dr. Lloyd Roberts's Art Bequest to Manchester.—The bequest of paintings, mezzotints, drawings, glass, china, and silverware of the late Dr. Lloyd Roberts has been formally handed over to the Manchester Corporation. The collection, which occupies four rooms in the Art Gallery, is of great value and distinction, and was opened to the public on Oct. 12th.

Treatment of Early Tuberculosis in Bristol.—On Oct. 5th Sir William Treloar formally opened the Frenchay Park estate, purchased by the Bristol city council to provide for the open-air treatment of early tuberculous children. The buildings already standing will, it is hoped, provide accommodation for as many as 35 children, and will be used until it has been found possible to build wards to take 100 beds. In the meantime Bristol is still without suitable premises for the treatment of "surgical" tuberculosis, and has to be content with sending a few patients to Alton.

St. Thomas's Hospital Medical and Physical Society.—Meetings of this society are held in the Club Reading Room at 8.30 P.M., under the presidency of Mr. J. E. Adams. The programme for the session is as follows. On Oct. 27th Dr. R. C. Jewesbury will speak on Child Welfare. On Nov. 10th a clinical and pathological evening will be held, and on Nov. 24th a mock trial on "A Case of Malpraxis." On Dec. 8th a clinical and pathological joint meeting will be held jointly with Guy's Hospital Physical Society at St. Thomas's Hospital. On Jan. 12th a discussion, "That Agitation is Essential to Progress," will take place, and on Jan. 26th a clinical and pathological joint meeting with Guy's Hospital Physical Society will be held at Guy's Hospital. On Feb. 9th Dr. Charles Singer will lecture on Medicine among the Ancient Greeks. Feb. 23rd and March 23rd will be devoted to clinical and pathological evenings, and on March 9th Sir A. Conan Doyle will address the society on Science and Psychology.

Leeds and West Riding Medico-Chirurgical Society.—The first meeting of the session was held at the Leeds General Infirmary on Oct. 14th, when Sir Berkeley Moynihan, the new President, occupied the chair. There was a very large attendance of members. Amongst a number of interesting cases and specimens on view Mr. Carlton Oldfield showed a specimen of ovarian gestation. At the conclusion of the discussion on cases, the President delivered an opening address on Medicine in Art. A large number of lantern slides, illustrating the portrayal of diseases and deformities in the works of the great masters, were shown by the speaker, who gave a most lurid and eloquent exposition of his subject. The address was listened to by an interested and enthusiastic audience.

Clinical Society of Manchester.—The Committee of the Clinical Society of Manchester have determined to devote the future meetings of the society to the demonstration and discussion of the latest methods of scientific investigation and their practical bearing on clinical medicine; this new departure is the result of a feeling that the usefulness and scope of a society hitherto devoted to discussion of unusual and difficult cases has been diminished by the post-graduate courses, &c., now held in several Manchester hospitals. The proposed syllabus for the coming session is as follows: (1) Physiology (November)—respiratory problems more especially associated with the composition and chemistry of alveolar air; (2) Pathology (January)—the Wassermann reaction and other blood tests; (3) Physiology (March)—special meeting at which an eminent physiologist will be invited to read a paper on the bearings of modern physiology on clinical medicine; (4) Pharmacology (May)—the digitalis group; (5) Anatomy (July)—nerve injuries.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize (value about $300) will be made on July 14th, 1922, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays may be upon any subject in medicine, but must not have been previously published. MSS. must be typewritten, and if written in a language other than English should be accompanied by an English translation; they must be received by the Secretary of the College on or before May 1st, 1922. Each essay must be sent without signature, but plainly marked with a motto, and accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award. The Alvarenga prize for 1921 has been awarded to Dr. John W. Churchman, N.Y. City, for his essay entitled Selective Bacteriostasis of Gentian Violet.

Racial Difficulties.

With the arrival of the Indian Expeditionary Force difficulties arose, for the Medical G.H.Q. of the I.E.F., which assumed control of the East African Force, based its attitude towards the African native on a knowledge of East African stretcher-bearers, recruited from the porter class and very inferior to the personnel of the Uganda unit. After representations had been made by the Governor of the Uganda Protectorate the status of "troops" as opposed to that of "followers" was conferred upon what now became the Uganda Native Medical Corps. When this status was authorised it was by no means easy to secure its recognition by Europeans; many whites who had come to the country for the first time were disposed to regard all natives as of one class; complaints were made, and the final result was the establishment of a much larger corps energetically recruited from the missionary societies' secondary school pupils. Prince Joseph Musanje, a cousin of the Kabaka (King) of Buganda, was gazetted to the corps and the latter was drafted to Dar es Salaam in July, 1917. The distribution of the corps throughout the East African Force had a considerable effect on the hospital services. The expanded organisation contained representatives of nearly all tribes of British and of the then German East Africa; the total number of natives dealt with was about 1700, and the total deaths numbered 113, of whom one was killed in action and one died in the enemy's hands.

Characteristics of the Muganda.[1]

Sir Robert Coryndon, Governor of the Uganda Protectorate, has contributed to Major Keane's account a foreword testifying to the excellent work performed by the corps. A note on the form of training adopted is added by Major H. B. Owen, and extracts from Captain Tomblings' Diary of the Corps, with two appendices, complete the record. Major Keane himself refers in this way to the individual tribesman of his command: "The Muganda has a curious notion of what is manly, especially in regard to menial work, all forms of which he instinctively looks down on as degrading; hence considerable difficulty was experienced in inculcating the fact that all service to the sick, no matter how menial, was of a high order. His intense and fanatical pride of race renders him acutely sensitive to scorn, and apt to imagine insult where none is intended. With tactful and sympathetic handling there are few ordinary services which a Muganda will not perform in a manner that compels admiration. Of precocious intelligence, he can be a willing, cheerful, trustworthy, and industrious assistant. Unsympathetically handled he may be slothful, obstinate, sulky, or even mutinous, and utterly regardless of personal consequences."

"African Medical Education."

Relevant to this subject is an article entitled "African Medical Education," contributed to the October issue of *Mercy and Truth* (the record of the medical missions of the Church Missionary Society), by Dr. R. Y. Stones, who, during the last months of the war, served with the African Native Medical Corps, to which he brought experience in training West African Ibos in Nigeria, and Swahili and Wagongo in the Tanganyika Territory. Dr. Stones is convinced "that the average African makes a good dresser and war attendant, that he is able to learn simple dispensing, can give anæsthetics skilfully, and do routine microscopical work." By the title of his article, however, Dr. Stones does not refer to the training of Africans as medical men, but to the ability of the natives to acquire a certain amount of medical knowledge and thereby overcome the superstition and error in treatment of disease which at present exists among them.

MILK—AND WATER.

SOME 10 or 12 years ago the West Sussex County Council threatened to institute no further proceedings under the provisions of the Food and Drugs Act for the reason that the justices, even in glaring cases of violation of the Act, imposed only small penalties. Nowadays this offence is taken more seriously. On Oct. 10th a Steyning farmer was summoned for selling milk which was not of the nature and quality demanded by the purchaser. An inspector, on August 30th, stopped at the farm gate a lorry laden with milk for Southwick. Samples were taken, and that sent to the analyst showed there was only 3·63 per cent. of fat, 5·12 per cent. of non-fatty solids, and 36·2 per cent. of added water. Two days later the inspector paid a surprise visit to the farm and took samples of the milk actually drawn from the cows. One of these samples showed 5·85 per cent. of fat, 8·93 of non-fatty solids, and no added water. The farmer could offer no satisfactory explanation and was fined £20.

A DISAPPOINTED HOSPITAL.

AN announcement has appeared in the press which gives the impression that the bulk of the estate of the late Miss Annette Beaumont, of gross value £7626, is under the will of the deceased to accrue to the Chelsea Hospital for Women. This, unfortunately, is not the case. The amount is absorbed by debts, funeral, and other expenses, and not one penny will reach the hospital. It was hoped that the bequest might be available towards reducing the debt at present owed to the bankers.

THE USES OF DOG.

To the Editor of THE LANCET.

SIR,—With reference to your note in THE LANCET of Oct. 8th, in which it is suggested that it would be interesting to trace the origin of the therapeutic uses of dog, may I point out that the uses of dog were not unknown in ancient Arabian medicine? In the FitzPatrick lecture last year Prof. E. G. Browne mentioned a work by the Qádí Abu 'Alí at-Tanúkhí, who died A.D. 994, in which the following case is reported: An unnamed physician treated a boy, who was in great pain, with broth made from the flesh of a fat puppy. This was followed by melon, and later beer and hot water. On informing the patient as to the nature of the broth he was violently sick, with the result that he brought up a cattle-tick, which had evidently been swallowed with fruit! The tick, no doubt, having attached itself to the stomach, was the cause of the pain.

I am, Sir, yours faithfully,

Basle, Switzerland, Oct. 13th, 1921. T. F. M. SMART.

CHILD WELFARE IN FINLAND.

IN October, 1920, a league for the welfare of the children of Finland was founded on the initiative of General Mannerheim, having for its expressed aim the promotion and encouragement of voluntary effort in the sphere of child welfare, and the healthy development of the coming race. The constitution of the league admits of private and collective membership, the latter consisting of already existing local or national societies working in some special line of child welfare, or of local sections of the league, of which there are already 30. Private members are either active workers or contributors; the roll of membership already includes over 12,000 names. It is proposed in time to include in the activities of the league all the various branches of child welfare, but the Executive Council has decided, at the outset, to restrict its work to rigorously defined lines of action, and calls for immediate development on hygienic, moral, and educational lines, of infant welfare, and of the training of older children from the ages of 11 to 18. A substantial grant has been received from the National Exchequer for the organisation of courses for qualified nurses and midwives and others interested in maternity and child welfare; the continuance of the grant is dependent upon the success and continuance of this work. The league already has in operation a travelling bureau of information, and it is intended to establish a central consultative library in Helsingfors.

BRITISH SPAS AND FOREIGN COMPETITION.

AT the recent half-yearly meeting of the British Spa Federation held at Droitwich a leading topic of discussion was the Sunday closing of the baths now customary at Droitwich and other resorts, and its bearing on the whole question of foreign competition. In Droitwich spa authorities had been attacked on the score that the numbers of week-end visitors had diminished owing to the Sunday closing, and their action in that respect was defended by several speakers. It was contended that no hardship had been entailed on any one, that serious spa treatment demanded at least a two or three weeks' stay, that the rest-days frequently prescribed during treatment might well be arranged to fall on Sunday, that a whole day's rest was desirable for the staff of the establishment, and that in any case the expense of Sunday opening was prohibitive. At the same time it was acknowledged that English spas had much to do to compete with the foreign resorts, many of which were subsidised by their respective States, particularly—according to some speakers—in the matter of coöperation between spa managers, hotel proprietors, and members of the medical profession. From various speeches it was to be gathered that the meeting was generally in favour of Sunday closing of baths, and representatives of those resorts where they remain open had no encouragement to offer on that head. But it seems very doubtful if such an attitude will serve the British spas at a time when the Continental watering-places are striving their hardest to recapture their pre-war English visitors.

Erratum.—THE LANCET, Oct. 15th, 1921, p. 799. The Accuracy of the Formalin and Sachs-Georgi Tests for Syphilis. For W. Neave Kingsbury read A. Neave Kingsbury.

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[1] A note on the words Muganda, Buganda, &c., appeared in THE LANCET of Sept. 3rd, 1921, p. 516.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Oct. 24th.

SECTION OF ODONTOLOGY: at 8 P.M.
Presidential Address by Mr. Montagu Hopson.
Mr. J. B. Parfitt: The Treatment of Pulpless Teeth.

Tuesday, Oct. 25th.

SECTION OF MEDICINE: at 5.30 P.M.
Dr. W. W. Payne and Dr. E. P. Poulton: Epigastric Pain.

Thursday, Oct. 27th.

SECTION OF UROLOGY: at 2.30 P.M., at St. Bartholomew's Hospital:
Operations by Mr. Girling Ball.
At 5 P.M.:
Demonstration of Cases by Sir Thomas Horder in the wards.
At 8.30 P.M., at No. 1, Wimpole-street: *Presidential Address* by Sir Thomas Horder: The Medical Aspects of Some Urinary Diseases.

Friday, Oct. 28th.

SECTION OF STUDY OF DISEASE IN CHILDREN: at 5 P.M. *(Cases at 4.30 P.M.)*
Cases will be shown by:
Dr. J. Porter Parkinson: A Case for Diagnosis. Dr. E. Bellingham Smith: (1) Spleno-medullary Leukæmia; (2) Stricture of Œsophagus; (3) Syphilitic Infantilism with *Splenomegaly*.
Dr. Eric Pritchard and Dr. B. Whitchurch Howell: Case of Recurrent Purpura with Joint Lesions and Fractures.
Other cases will be shown.
Dr. Donald Paterson: Duodenal Ulcer in Infancy.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Presentation of Jenner Medal to Sir Shirley Murphy by the President of the Section.
Dr. L. G. Haydon: Plague in Wild Rodents in South Africa.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Oct. 24th.—8.30 P.M., *Discussion on* The Modern Treatment of Diabetes (introduced by Sir Archibald Garrod), followed by Sir William Willcox, Dr. O. Leyton, Dr. W. Langdon Brown, Dr. Edmund Spriggs, Dr. E. P. Poulton, Dr. George Graham, and Dr. P. J. Cammidge.

HUNTERIAN SOCIETY, at Sion College, Embankment, E.C.
WEDNESDAY, Oct. 26th.—9 P.M., First Hunterian Lecture:—Prof. E. H. Starling, F.R.S.: Some Heart Problems.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
MONDAY, Oct. 24th.—5 P.M., Prof. S. G. Shattock: Papilloma and Adenoma.
FRIDAY.—5 P.M., Sir Arthur Keith: Effects following Disordered Action of Thyroid (illustrated by lantern slides).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 24th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Dr. A. Saunders: Lecture:—Gastric and Duodenal Ulcer.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. Sinclair: Surgical Treatment of Gastric and Duodenal Ulcer. 2 P.M., Mr. Tyrrell Gray: Demonstration of Cases in Surgical Wards. Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 5 P.M., Dr. Cole: Lecture:—The Treatment of Early Mental Disorder.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Dr. Burnford: Demonstration of Cases in Medical Wards. Mr. D. Armour: Visit to Surgical Wards. Mr. Tyrrell Gray: Operations. Mr. Gibb: Eye Department. 5 P.M., Dr. Burnford: Lecture:—B. Coli Infections.
THURSDAY.—11 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. D. Armour: Operations. Mr. Simmonds: Orthopædic Department. 5 P.M., Dr. Snowden: Lecture:—Simple Methods of Psychological Treatment.
FRIDAY.—2 P.M., Dr. Burrell: Medical Out-patients. Mr. Sinclair: Surgical Out-patients. Dr. Pernet: Skin Department. 2.15 P.M., Mr. Addison: Operations. 2.30 P.M., Dr. Pritchard: Demonstration of Cases in Medical Wards. 5 P.M., Dr. Cole: Insanity and Heredity.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. Dr. Burnford: Visit to Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Simmonds: Surgical Out-patients.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Oct. 24th.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., Dr. Moon: In-patients. 5.30 P.M., Lecture:—Dr. P. Hamill: Diseases of the Myocardium.
TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.
WEDNESDAY.—10 A.M., Dr. Parkinson, 2 P.M., Dr. Moon Out-patients.
THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.
FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Goodall: In-patients.
SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 27th.—4 P.M., Lecture:—Dr. Theodore Thompson: Some Functional Disorders of Childhood.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children, by Dr. E. Pritchard, to Qualified Practitioners.
WEDNESDAY, Oct. 26th.—6 P.M., Lecture VII.:—The Management of Difficult Cases.
FRIDAY.—6 P.M., Lecture VIII.:—Treatment of Minor Ailments.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 27th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: Electrical Treatments, X Rays.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct 25th.—4.30 P.M., Dr. D. E. Core: Differential Diagnosis of Disseminated Sclerosis.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURES, Whitworth-street, West Branch, Manchester.
FRIDAY, Oct. 28th.—4.30 P.M., Dr. Donald: *Lacerations of* the Genital Tract.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Oct. 27th.—4.15 P.M., Dr. A. C. Magian: Dysmenorrhœa.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE.
Post-Graduate Lectures and Demonstrations.
TUESDAY, Oct. 25th. (At the Royal Infirmary.)—3.30 P.M., Mr. A. Cuff: *Acute Abdomen.* 4.15 P.M., Dr. A. G. Yates: Demonstration of Cases of Intracranial Syphilis.
FRIDAY. (At the Royal Hospital.)—3.30 P.M., Dr. E. F. Skinner: Dermatological Cases. 4.15 P.M., Mr. G. S. Simpson: *Demonstration of Cases.*

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial *Hygiene* at the Lecture Theatre of the Institute.
WEDNESDAY, Oct. 26th.—4 P.M., Lecture II.:—Dr. R. M. Wilson: The Political Significance of Industrial Hygiene.

Appointments.

EASTWOOD, E. H., M.B., Ch.B.Liverp., has been appointed Demonstrator in Pathology and Bacteriology in the University of Sheffield.

PATRICK, J., M.B.Glasg., F.R.C.S.Edin., F.R.F.P.S.Glasg., a Lecturer in Clinical Surgery at the Royal Infirmary, Glasgow.

WARD, J. O., M.R.C.S., L.S.A., Certifying Surgeon under the Factory and Workshop Acts for Knottingley.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University and North of Scotland College of Agriculture.—Physiologist. £600.
Aberystwyth Infirmary and Cardiganshire General Hospital.—Res. H.S. £250.
Albert Dock Hospital, Connaught-road, E.—Surg.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £225.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham General Hospital.—Two H.S.'s. £100.
Brighton, Royal Sussex County Hospital.—H.S. Cas. H.S. and Anæsth. Each £140.

may be present without hæmatemesis or gastric disturbance over long periods in the evolution of the disease. A few cases are recorded with an anæmia of the pernicious type under circumstances in which there is no question of a diagnosis of the so-called idiopathic pernicious anæmia. It occurs in those cases in which the tendency to anæmia has been at work the longest time or in those whose anæmia has developed during the period of growth, especially congenital cases of acholuric jaundice.

5. Polycythæmia is a rare complication of chronic inflammation of the spleen. It is current opinion that chronic tuberculosis of the spleen is one of the infections of the spleen that produces it. Having carefully re-examined the evidence which we shall discuss later I cannot admit that there is in tuberculosis of the spleen any more, if as much, tendency to polycythæmia as in other conditions. Leaving aside the question whether there is a primary blood disease resulting in an enormous over-production of red cells and consequent passive dilatation of the spleen, there is no doubt that a secondary polycythæmia occurs caused by a chronic non-suppurative thrombo-phlebitis of the splenic and portal veins with obstruction, and that the spleen in these cases shows the general features of other inflammations.

6. The relation between splenic inflammations and leucocytosis and the more intense myelocytic reactions of the blood-forming tissues is very close, but cannot yet be fully explained. Cases are on record, *and most clinicians of experience are* aware, of the picture of splenic anæmia ultimately becoming leukæmia, especially in children. These may be said to have shown at first the aleukæmic stage of leukæmia or be in an intermission. On the other hand, many infections produce a temporary leukæmic reaction in the blood, *and* the possibility suggested by G. R. Ward cannot be disregarded—viz., that leukæmia is the reaction of the tissues to a specific organism exactly corresponding to the infectious leukæmia of fowls.[2] Apart from the special cellular reactions of the spleen in leukæmia the organ shows many of the features that are associated with splenic inflammations of known ætiology, such as fibrosis, atrophy of the normal tissue elements, hæmorrhage, thrombo-phlebitis, and infarction.

7. Relation to hepatic conditions. In explaining the mechanism of the production of hepatic inflammation, jaundice, and cirrhosis it is only necessary to state certain facts in order to be assured of their nature: (i.) the liver by its position in the circulation filters off from the splenic blood both particulate and soluble matter that may be discharged into it; (ii.) *the presence of chronic progressive* inflammatory disease in the spleen ultimately leads to chronic inflammatory disease (portal cirrhosis) in the liver, as Banti amply demonstrated many years ago; (iii.) the presence of a thrombo-angeitis in these spleens or in the veins draining them points out the mechanism whereby the materies morbi is transferred to the radicles of the portal vein in the liver; (iv.) in Gaucher's type of splenomegalia emboli of the characteristic spleen cells can be identified in the radicles of the portal vein. In tuberculosis also the transference of infective material from spleen to liver can be inferred; (v.) the removal of the spleen cures many cases in which the hepatic condition is not too advanced.

These facts amply explain the intimate connexion between splenic and hepatic inflammation. The fact that the liver lesion is a cirrhosis and not a specific granuloma that can be recognised as anatomically distinct rests on two facts: first, the emboli transferred from spleen to liver being produced in the radicles of the splenic vein are small; the lesion in the liver will therefore be small and may occur in all parts of the liver. Secondly, the liver is an organ whose power of destroying infective matter is very great—witness the fate of previous gummata in the common form of the botryoid liver, and the rarity of any but scattered miliary tubercles in post mortems from cases of generalised tuberculosis.

8. Hæmatemesis. Closely connected with this factor of embolism is the symptom of hæmatemesis, so common in some forms of splenomegaly. The origin of this sign is probably not always the same in every case; in the first place it may arise from stasis in the portal system and hæmorrhage from the œsophageal or other neighbouring veins, as in portal thrombosis [3] and in Laennec's cirrhosis; secondly, in spleno-portal embolism and thrombosis it is easy to imagine an embolus issuing from the spleen and becoming shunted along the vasa brevia or left gastro-epiploic vein to the stomach wall, where in one of their tributaries it might settle down to produce an inflammatory lesion and hæmorrhage. Moreover, it has been estimated (Mayo) that 40 per cent. of the blood in the splenic artery goes to the stomach. In confirmation of this I might mention that I have been able to produce *gastric ulcers and hæmorrhage* in a monkey by infecting it via the peritoneum with an organism isolated from a case of acholuric jaundice. In some cases it is possible that the anæmia is entirely due to the periodic loss of blood, as in the case recorded by Bland-Sutton,[4] where the return of the blood count to normal was a sure sign of impending hæmorrhage, the causation in this case being an organised thrombosis in the portal vein.

From an inflammation in the spleen there may therefore occur, from time to time, a transference of the organic cause, sometimes as bacteria only, sometimes with the tissue and inflammatory elements of the lesion, leucocytes, fibrin, catarrhal endothelial cells, in the form of minute emboli. This transference implies an inflammatory lesion in the liver which we *know appears ultimately as portal cirrhosis*; but in the more active stage it is conceivable that a local or general catarrhal hepatitis occurs leading to jaundice. As we shall see later certain forms of splenic inflammation are more frequently associated with jaundice than others. The other hepatic symptom, ascites, is rare in primary splenic disease, only occurring when the liver is grossly cirrhotic or when the portal vein is markedly obstructed.

CRITERIA OF CAUSATION.

Splenic inflammation and its consequent action on bodily tissues may conceivably be caused by a toxin originating in and dependent on the elements of splenic tissue only—as may be true of the thyroid in exophthalmic goitre and of the kidney in uræmia. On the other hand, it may come from the action of an organism on splenic time and the efforts of the spleen in repair. There is no evidence at present available that the spleen of itself produces an internal secretion which is deleterious under any circumstances. The body compensates at once for loss of the spleen, and splenic enlargements and inflammations occur without any effect on the body. I am frankly sceptical about any ætiology which implies some undemonstrated non-bacterial toxin secreted by an abnormal metabolism of some splenic tissue. It were better to proceed, even at the risk of ignoring such possibilities, from the known effect of invasion of the spleen by a pathogenic organism to those groups of cases whose causation is uncertain. Therefore, my working rule, which bids fair to be more fruitful of practical results than any other, is to suspect all splenic enlargements of an inflammatory type as being caused by extraneous organisms until proved otherwise.

For instance, we have now very adequate and complete knowledge that primary splenomegaly with inflammation in malaria, kala-azar, tuberculosis, and syphilis, are all due to the specific organisms of those diseases. There is little doubt, moreover, that the splenic form of Hodgkin's disease is of bacterial origin, though the organism itself is not certain. Therefore, in attempting to explain splenic inflammations in the same manner as those of known ætiology, we are making no assumption for which there is no analogy.

What criteria must be fulfilled in order to accept that a given organism is the cause of the splenic condition? In the first place it is necessary, *especially in new work, if possible, to fulfil Koch's* postulates that the organism must be isolated in pure culture from the individual affected, that it shall be cultivated outside the body, and that on injection into animals it shall produce and be contained in the lesions following introduction into an animal. These are very rigorous tests, and in some human disease whose causation is generally agreed upon they have not been fulfilled. The reason for raising this point here is to draw attention to the very loose way in which many reports of cases are presented. In reporting a case as syphilis of the spleen, for instance, we must carefully distinguish between the lack of certainty of the clinical diagnosis—even aided by morbid anatomy—and the scientific diagnosis that fulfils all logical desiderata. This has been most evident to me in going over again the evidence for the causation of the reported cases of splenomegaly due to tuberculosis *and syphilis*; *some authors rely* on a mere naked-eye diagnosis of tuberculosis at the post mortem, others give microscopic results but make no mention of the presence or not of bacteria. In syphilis the reports are even more uncertain.

The total number of prisoners of war (average strength for two months, November and December) was 6300. Of these 2300 were in the East Camp, among whom there were 501 cases and 32 deaths. Only four or five cases occurred among the remainder (4000) in the adjacent camp to the West. The treatment consisted in gargling, nasal douching, and inoculation. Progress is being made as regards sanitation in various directions, and it is stated that the aerobic filter latrine continues to increase in official and public estimation. It has been shown to be well adapted for places with a heavy rainfall (over 200 inches), such as Moulmein and Akyab, and is considered to require the minimum of labour on the part of the conservancy staff to maintain it in a wholesome condition.

From the report on *Vaccination* for the triennial period, 1917–18 to 1919–20, it appears that the number of persons vaccinated increased from 491,274 in the first year to 838,237 in the third, and that the ratio of successful operations rose from 34·56 to 51·85 per 1000 of the population. The deaths from small-pox decreased from 0·24 to 0·05. The percentages of success in primary operations were 95·88, 97·83, and 97·53 in the three years respectively. Lieut.-Col. J. Entrican, I.M.S., officiating superintendent-general of vaccination, considers this to be on the whole a very fair result. Experiments were made to test the duration of vitality in the lymph under the ordinary conditions to which it is subjected. This was found to be three weeks, except in March, April, and May, when a fortnight, or even less, was the limit. No vaccination should be done during the hot weather months, unless the lymph can be used within 10 or 12 days of its issue (except in presence of a small-pox epidemic). The lymph used is always glycerinated. After many experiments a good method of closing the tubes without heat was evolved. The ends are plugged with a mixture of plaster-of-Paris, and a very concentrated solution of gum acacia, and afterwards dipped in a resinous mixture, impervious to air and moisture. After experimenting on various preservatives it was found that "glycerine still holds the field against all comers."

During the triennium 1917–19 the post of Inspector-General of Hospitals was held by Col. P. C. H. Strickland, I.M.S., who was succeeded by Lieut.-Col. Entrican in December, 1919, this latter officer presenting the report on *Hospitals and Dispensaries*. This refers to the three-year period, but contains the statistics of 1919 only, those for 1917 and 1918 having been already published. At the beginning of 1917 there were 282 hospitals and dispensaries of all kinds working in the province, and at the end of 1919 there were 269; 34 institutions had been closed and 21 opened during the triennium. Progress in hospital construction has been interfered with owing to war conditions, but there has been improvement in various ways, brick and tiled buildings taking the place of wood and matting, &c. A cheap and simple form, used in Ceylon, is recommended. It consists of a framework of iron on a concrete plinth, with single brick walls of four or five feet height, and a tiled or shingled roof. This does not meet the side walls, but is low enough to prevent rain beating in. The floor is cemented and cambered or curved, with openings in the side walls, so that it can be rapidly flushed and cleaned. The type seems to be well adapted for a climate such as that of Burma, where there is no cold weather. Instruments and appliances are somewhat out of date in many hospitals, and Col. Entrican suggests that it would be an excellent thing if some of the medical and surgical equipment available in England, after demobilisation of war hospitals, could be procured to improve the equipment of Indian hospitals. He mentions good modern splints, and a Harcourt chloroform inhaler as especial desiderata.

The total number of patients treated in the three years under consideration at the public hospitals and dispensaries amounted to 6,256,943, being an increase of 197,519 over the preceding triennium. Of this total 285,363 were indoor patients, the beds available at the end of 1919 being 6152, compared with 6321 at the end of 1916. The percentage of the total population of Burma treated was 17·37 in 1917, and 16·89 in 1919. Unfortunately all travelling dispensaries had to be closed down except one. Col. Entrican considers that a well-staffed and equipped central hospital at headquarters, with a travelling dispensary and motor ambulance transport for each township, would be a sounder method than the multiplication of small hospitals and dispensaries. There is need for segregation hospitals for infectious disease throughout the whole province, but it is considered that all infectious diseases, except small-pox, could be safely treated in segregation wards in the compound of a general hospital, provided plenty of room were available.

There are indications that leprosy is much more widespread than is generally believed, especially in Rangoon, among the Chinese community. It is stated "that the Lepers Act is a dead-letter in most municipalities. . . . A large number of pauper lepers wander about the country from one small bazar to another, and at present it is impossible to stop them." There was considerable overcrowding at the Rangoon General Hospital, the in-patients admitted having numbered 8786 in 1919, and the daily average in hospital, 472; while the number of beds was nominally only 443. This has been due partly to admission of chronic and incurable cases, which should be treated elsewhere. The largest number of admissions to hospital throughout the province, in 1919, was for injuries (15,313), and after this for malaria (12,026), not, however, of a severe type, as the percentage of mortality was only 2·95, and for the three years averaged 2·68. It is stated also that a large number of cases at present called malaria are wrongly so diagnosed. Cholera caused 1275 admissions, with a death-rate of 51·29 per cent. during the triennium. It is thought that this heavy death-rate may be considerably reduced by the adoption of Sir Leonard Rogers's method of treatment. At Myaungmya nine recoveries were reported out of ten cases so treated. There were 1553 admissions for small-pox, with 380 deaths in 1919, a large increase over the two preceding years; 1122 of the cases (with 289 deaths) occurred at Rangoon; as to this it is stated that the majority were either imported or arose from contact with imported cases. Among the unvaccinated the death-rate was 36 per cent., among the vaccinated (including all doubtful cases, when the patient was said to have been vaccinated, even if no marks were found) it was 15 per cent. The Pasteur Institute shows a steady increase of patients; of 1154 persons treated in the three years, only four (0·35 per cent.) died.

The report on *Lunatic Asylums* (1921) refers to the triennial period 1918–20. The Rangoon asylum accommodates 632 patients, and that at Minbu, in Upper Burma, 136. The latter is a converted jail, and the floor space per head is only 36 square feet. Another asylum, at Kokine, is expected to be ready for occupation during the present year. The average number of inmates in the two institutions rose from 816 in 1918 to 856 in 1920. The death-rates in the Rangoon asylum, calculated on the daily average strength, were 8·81, 10·77, and 7·57, in the three years, 1918–19–20, respectively, the chief causes being tuberculosis, pneumonia, and dysentery.

The daily average number of prisoners in the various *Jails* in Burma was 13,388 in 1919, and 14,607 in 1920, these figures being lower than in any previous year since 1910, except 1918, when the average number was 14,068. The admissions to hospital, the daily sick, and the deaths were 314·41, 19·64, and 28·53 per 1000 in 1919; and in 1920, 437·12, 21·50, and 19·92. The increase in admissions for 1920 was chiefly due to influenza. Cholera was present in Burma during 1919, but only three jails were affected, that at Myingyan having 53 cases and 31 deaths. Dysentery was unduly prevalent, with 31·49 per 1000 admissions and 3·89 deaths in 1919, and corresponding ratios of 35·03 and 3·24 in 1920. "Bowel disease" was prevalent throughout Burma in 1919, and Major H. H. G. Knapp, I.M.S., the Inspector-General of Prisons, notes that in many places there was a great plague of flies, which he considers to have had a causal connexion. Special pains were taken to tackle these vectors; and at Mandalay, from June to December, well over a million were killed by prisoners. They could not have been better employed. There was some increase of enteric fever in 1920 (30 cases and 15 deaths). Fifteen cases occurred at Insein, but the source of infection could not be traced. Ankylostomiasis was considerably more prevalent in 1920 than in the previous year, 896 cases and 9 deaths, as compared with 741 cases and 12 deaths. Search for ova and worms, and treatment of the infected were carried out more rigorously. At Akyab the infection rate was found to be 46·65 per cent., and at Prome 30 per cent.

THE AFRICAN NATIVE AND MEDICAL SERVICE.

UNDER the title "The African Native Medical Corps in the East African Campaign"[1] Major G. J. Keane, of the Uganda Medical Service, and Captain D. G. Tomblings have compiled an interesting account of the work performed by a corps recruited from one of the most intelligent and highly developed of African peoples. On the outbreak of hostilities sanction was obtained for the engagement of 40 natives as the Uganda Stretcher Bearer Company—the germ of the corps which later numbered 10 British R.A.M.C. officers and other ranks, and 1500 natives. At first the Uganda administration furnished men largely of the peasant class, who proved unsatisfactory; they were replaced by a number of volunteers—boys from the Mengo High School (Church Missionary Society), and from the Government centre at Kampala, where, prior to the war, general medical training was carried on, with particular regard to anti-venereal measures. These men soon became efficient in elementary first-aid, nursing, and stretcher drill.

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[1] London: Printed by Richard Clay and Sons.

æstivo-autumnal fever, and showed a negative W.R., it is likely that malaria played a part in causation.

10. Bernard.[14]—Quotes a case of mild splenomegaly and jaundice, appearing several years after a syphilitic chancre, and rapidly cured by mercury.

The next series are taken in their chronological order:

11. Coupland.[15]—Female with splenomegaly and anæmia had splenectomy and improved markedly. Two years after the operation the patient died from hæmatemesis and ascites. The liver at the post-mortem was much scarred and typically syphilitic. The spleen showed fibrous atrophy of the corpuscles and numerous hæmorrhages.

12. Fuhs.[16]—*Female, aged 17, having had five years'* history of a painful abdominal swelling; progressive weakness and loss of energy with occasional epistaxis. The blood, showing a chlorotic anæmia with 5500 whites, was restored to normal after operation for splenectomy, the W.B.C. being 11,000. W.R. was *positive*; *spleen showed caseous areas.*

13. Queyrat.[17]—Male aged 24, syphilis five years before; enlarged liver and spleen, ascites present. W.R. blood and ascitic fluid was positive. No blood counts are given.

14. French.[18]—Male, aged 54, whose blood had been positive on several occasions with the clinical picture of pernicious anæmia; R.B.C. 1,900,000, W.B.C. 21,000, Hb 20 per cent., C.I. 0·5. No benefit from salvarsan and other syphilitic remedies. Excision of spleen caused rapid amelioration of anæmia to 86 per cent. Hb. A sister of the patient had a very similar condition.

15. Hartwell.[19]—Male with severe secondary anæmia and hæmatemesis; W.R. strongly positive; antisyphilitic remedies produced no improvement, but excision of the spleen caused immediate betterment and the Hb rose from 25 per cent. to 80 per cent. The trabeculæ were much thickened and there were large and numerous follicles with fibrosed centres.

16. Osler.[20]—Female, aged 22, had had obscure abdominal illness at 15 years; blood picture of leukæmia. Post-mortem, liver of hepar lobatum type with fibrous gummata projecting into the capsule. The spleen, 23 × 16 cm., had slight adhesions, was dark red on section, with no trabeculæ or Malpighian bodies to be seen.

17. Osler.[20]—Male, aged 34, with a history of syphilis, having had jaundice and dropsy three years previously; R.B.C. 1,400,000; W.B.C. 7500.

18. Osler.[20] Male, aged 11, history of nodes on skin and arthritis of left knee three years before. Several children in family were dead, but there was no clear syphilitic history. Liver enlarged and irregular, spleen very large, blood count practically normal three months before; later count showed R.B.C. 5,770,000, W.B.C. 4000, Hb 65 per cent.; W.R. negative; increasing ascites; after a hæmatemesis followed by melæna R.B.C. 2,000,000; much blood in stools. Post mortem, anæmic organs, œsophageal varices, one of which had caused the bleeding. Enlarged spleen with dense capsule and much internal fibrosis. The liver was grossly cirrhotic and deformed with large islands of newly-formed liver substance.

19. Stevenson.[21]—Female, aged 22, who from 9 years had had attacks of epistaxis and gastro-enteritis. The mother had syphilis and had had two abortions previous to the patient's birth. For one year she had been very anæmic with an enlarged liver and spleen. R.B.C. 1,500,000, W.B.C. 4568, Hb 83 per cent. W.R. not recorded. Twelve days after excision of the spleen the blood showed R.B.C. 4,400,000, W.B.C. 11,200 and Hb 83 per cent. The microscopic section of the spleen showed lacunæ full of pale cells with and without nuclei.

20. Hey Groves.[22]—Female, aged 40, who since infancy had had ill-health with attacks of vomiting and abdominal pain. There was free fluid in the abdomen, the urine was normal, but no mention is made of the W.R. R.B.C. 6,000,000, W.B.C. 16,000, Hb over 100 per cent. Splenectomy did not give relief; there was recurrent ascites after the operation. The liver was found to be grossly deformed.

21. Giffen.[7] Case 2.—Female, aged 32, with moderate splenomegaly and anæmia of the secondary type without leucocytosis. The liver at the operation contained palpable gummata and was cirrhotic. There was no hæmatemesis, no history of syphilis, but the W.R. was strongly positive. No improvement followed antisyphilitic treatment, but splenectomy effected a cure. There was moderate diffuse fibrosis of the spleen.

22. Caussade and Levi Franckel.[23]—Male, aged 26, suffering from gastro-intestinal symptoms with jaundice and a positive W.R. The spleen was enlarged and mercury treatment failed. The spleen showed fibrosis of arterial origin with peri- and end-arteritis. The liver showed cicatricial sclerosis. The blood count varied from 2,000,000 to 3,500,000 red cells and from 1000 to 4500 white cells.

23-8. Symmers, Gettler, and Johnson.[24]—Six cases, of which three had strongly positive Wassermann reactions: (*a*) female, aged 29, suffering from punched-out ulcers of both ankles from the age of 15, a large spleen, anæmia, of R.B.C. 3,500,000, W.B.C. 8200, Hb 69 per cent. The spleen, removed by operation, had a finely granular substance, dark red, an old healed infarct and several mineralised arteries which the authors believe to be characteristic of syphilis. The patient was cured by splenectomy, having previously been successfully treated for the leg ulcers by antisyphilitic remedies. (*b*) Male, aged 32, had a large spleen and ascites. R.B.C. 4,100,000, W.B.C. 3500, Hb 65 per cent. The spleen, removed by operation, weighed 1040 g., was "meat red" on section, finely granular, and cut with difficulty. The liver at the operation appeared finely granular. (*c*) Male, aged 45, with an enlarged spleen and ascites. R.B.C. 4,160,000, W.B.C. 5200. At the autopsy the liver was "gnarled" and a solitary gumma was present in the right lobe.

Characteristics of Syphilitic Splenomegaly.

Assuming a syphilitic origin in all these cases we may now sum up the characteristics of syphilitic splenomegaly. The anæmia tends to be of the chlorotic type, as in the typical splenic anæmia, and the red cell count drops to just over one million. French reports his case as having the clinical picture of pernicious anæmia, so severe was the anæmia, though chlorotic in type. Schulmann and Weissmann case had policythæmia. The white cell count varies. One of Osler's cases had the blood picture of leukæmia; in the other cases where counts are given the figures vary from 4560 per c.mm. in Stevenson's case to 16,000 in Hey Groves's case and 21,000 in French's. The leucocytosis recalls that after splenectomy for trauma we must have in mind the possibility that a spleen may be so damaged by disease that the same effect at compensation is demanded from other white cells in the body which we see after splenectomy. Further, such compensation having been established before operation, we should not expect such a marked leucocytosis afterwards.

As regards jaundice both Giffen's cases had suffered from it but it was not permanent. Attacks of jaundice are reported in Pollitzer's and Osler's second case. Four cases (Giffen (Case 3), Coupland, Hartwell, and Osler (Case 3)) are reported with hæmatemesis, and in two epistaxis is mentioned. Four cases are reported as having had ascites (Osler (Case 3), Coupland, Queyrat, and Hey Groves). The reaction to antisyphilitic remedies, including salvarsan, is startling in its unevenness. In Schulmann and Weissmann's, Perussia's, Pollitzer's, and Clark's cases, above described, the results were extremely satisfactory, while in others (Giffen, Cases 1 and 3, Hartwell, French) it produced no amelioration. Other cases described, with enlarged spleen, positive W.R., and chlorotic anæmia, have been uninfluenced by salvarsan and other remedies, and we must search for some factor which enables us to explain why one can be cured and the other not. Some enlarged syphilitic testicles can only be cured by excision and the cerebral gumma is not always amenable to specific treatment.

TUBERCULOSIS.

Morbid anatomy teaches us that tuberculosis of the spleen is extremely common as a secondary feature. An enlarged spleen is frequently met with in general glandular tuberculosis, but for the most part it causes no symptoms of splenic disease. Primary tuberculosis of the spleen is rare, but from the reported cases not quite so rare as the syphilitic. Let us examine the evidence for the tuberculous origin of these spleens. Tuberculosis is such a widespread disease that the mere presence of what look like tubercles of any size whatever is not evidence of the causation by tuberculosis of a disorder of this organ. During life the symptoms should point to the spleen being the cause; we should attempt, having proved the spleen to be tuberculous at the operation or post mortem, to fulfil Koch's postulates by ascertaining if the disease from which the patient suffered agreed with what we know in general about primary tuberculosis of the spleen.

I regret to say that, as with syphilis, many authors show some failure to recognise what should and what should not constitute an anatomical diagnosis of

LLEGE
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LIBRA

Schorstein Lecture

THE

CHRONIC INFLAMMATORY DISEASES OF THE SPLEEN.

Delivered at the London Hospital Medical College

BY ALEXANDER GEORGE GIBSON,
M.D., F.R.C.P. LOND.,
HONORARY PHYSICIAN TO THE RADCLIFFE INFIRMARY AND COUNTY HOSPITAL, OXFORD; LECTURER IN MORBID ANATOMY IN THE UNIVERSITY.

THE chronic inflammatory diseases of the spleen have engaged my attention for several years; our knowledge of the subject is still small and the greater part has still to be discovered or confirmed. I shall limit this review to those affections that are caused by invasion of the spleen by an organism, whether such invasion is indicated by the discovery of the actual organism, by the clinical aspect, or by the fact that the lesion in the spleen, being inflammatory, admits of this view as the most likely ætiology. It is necessary first to allude to certain functions of the spleen in so far as they may be altered by splenic disease, and secondly to mention certain general changes consequent upon splenic inflammation.

The spleen is, first, the main lymph gland of the abdomen, and the lymphatics of the capsule communicate directly with the peritoneal cavity. Secondly, by virtue of its muscular fibres it is the sole remaining lymph heart of the mammalian body. Thirdly, it is one of the organs where effete red cells are destroyed. These functions, as we well know, may be taken over by other organs on extirpation of the spleen, a procedure that produces no serious ill-effect and merely causes the white cells, in particular the mononuclear count, to be in excess for a variable time. Being a lymph gland it naturally supplies certain cells to the blood, chiefly the mononuclear. In embryonic life it produces nucleated red cells and probably acts like the normal red marrow; in various conditions we see a tendency for this reversion to an embryonic function. The spleen becomes infected in three ways: first, as the result of a general blood infection which subsequently may become restricted to the spleen, as in syphilis and tuberculosis; secondly, because the spleen in destroying blood cells comes into fuller contact with the organism, as in malaria and kala-azar; and thirdly, being the largest lymphatic gland in the abdomen, it may be the point of attack in any gastro-intestinal infection.

LOCAL EFFECTS OF INFLAMMATION ON THE SPLEEN.

Apart from abscess and local conditions such as caseation and gummata, splenic inflammations may conveniently be divided into the acute and chronic forms. In the acute form the spleen is enlarged, its capsule stretched, and it is a flabby organ at the post mortem, though in the living body by reason of the tension of the blood it is probably firm to the touch. The Malpighian bodies are seen with difficulty and the whole of the pulp can be expressed as a reddish opaque fluid which contains red and white cells intimately mixed; this picture is what we term the septic spleen. In the chronic form of inflammation the general effect is to cause a hyperplasia and subsequently a reduction in the lymphoid elements, leading to an obscuration of the normal distinction between Malpighian body and pulp. One form, the hyperplasic, shows intense catarrh and filling up of the sinuses of the spleen with cellular elements. In the atrophic form the Malpighian bodies atrophy, sometimes showing mere shrinkage, sometimes being replaced by endothelial cells, beginning in the centre. In addition there is much deposition of fibrous tissue rendering the splenic reticulum much coarser than normal, increasing considerably the thickness of the trabeculæ and sometimes the capsule. Along with these changes, which are constant, others occur in variable amount:—

1. Congestion or stasis in the pulp; the lacunæ in these parts are overfilled with blood as compared with other parts or with the normal spleen.
2. True hæmorrhage occurs in the trabeculæ, if they are thick, in the circumferential parts, giving rise later to the pinhead areas of absorbing hæmorrhage or pigmented scars that may be detected in many chronically inflamed organs.
3. Endothelial proliferation in the sinuses, which may show various types of cells.
4. Sclerotic lesions of the vessels—this is especially true of the central artery to the Malpighian body, where the thickening affects the whole substance of the walls and is mostly of the hyaline type, similar to that seen in other organs such as the kidney.
5. Endophlebitis of the veins communicating directly with the splenic pulp, with the formation of thrombi, which may become detached.
6. Infarcts, as to the mechanism of whose formation there is still some doubt. The fact that they are frequently seen in those spleens in which the trabeculæ show most hæmorrhages might associate this process with it. It is certain that it is a local splenic affection and not produced by emboli formed elsewhere.
7. Amyloid change occurs frequently and is confirmatory of the infective origin of such inflammatory affections as cannot be referred to a known specific cause.
8. Embolism of the splenic vein with or without the circulation of non-particulate toxin sooner or later produces gross changes in the portal area of the liver leading to destruction of liver tissue and fibrosis. Infarction from this cause has not to my knowledge been described, but I hope soon to publish experimental proof of its origin in this way.

All these changes in varying amounts are common to chronic splenitis of whatever causation. If the disease be more active we see hyperplasia and enlargement; if it be late and quiescent we find fibrosis and atrophy. Post mortem many fibrotic spleens are met with which have had active chronic disease at same time.

BODILY EFFECTS OF CHRONIC INFLAMMATORY LESIONS OF THE SPLEEN.

It is extraordinary to what extent the spleen may be enlarged and inflamed without producing serious constitutional effects, especially in some of the familial types such as splenomegaly with acholuric jaundice. It can only be explained by supposing that the subject of such splenomegaly having grown up with his lesion, does not consider the sense of ill-health or local discomfort abnormal.

1. The first general effect is a sense of fullness; weight, oppression, or pain in the side from the presence of a tumour.
2. Anorexia, the effects of toxæmia with or without fever, seldom of a high grade.
3. If a chronic inflammation of the spleen begin early enough or is sufficiently intense it will have a marked effect in retarding growth and development. Such effects have been described by Gilbert and Fournier and by Frederick Taylor.[1] Children show stunted growth, osseous changes, clubbed fingers, pigmentation of the skin, fissuring of the tongue, and other evidences of malnutrition. Several cases are described with epileptic attacks. In adults there may be considerable atrophy in various organs with marked pigmentary changes in the skin, general or patchy. It is no doubt possible that these changes may occasionally be the result of congenital syphilis with splenomegaly, but cases are now sufficiently numerous in the absence of signs of syphilis to establish their origin from causes associated with the splenomegaly.
4. Anæmia. All forms of splenic inflammation tend to the destruction of blood elements, but in varying degrees, so that the term splenic anæmia for what is probably a specific infection of the spleen is a poor name. Splenic inflammation produces most frequently an anæmia of the chlorotic type. In a proportion of cases there is a marked diminution of white cells without any serious alteration in their relative proportions. Some cases show even an increase in white cells. That changes in the number of white cells are not indicative of any specific infection it is only necessary to mention that the most marked examples of diminution are seen in kala-azar. I have myself watched the gradual onset and disappearance of a chlorotic anæmia with leucopenia and enlargement of the spleen in a lady who had previously been operated upon for tuberculous glands of the neck. It has been suggested that the anæmia may be due to the hæmatemesis that occurs in the so-called splenic anæmia; but this cannot be the full ætiology, as the anæmia

with many specific causes. This would certainly be true of syphilis, in which, apart from the effect of a splenic inflammation, a coexistent hepatitis might cause the jaundice. As regards the subdivision of this group of cases into the acquired (Hayem, Widal) and the congenital (Chauffard, Minkowski) there is no difficulty in presupposing an infective element if the analogy of syphilis be taken into account, and the extremely variable onset of the symptoms. Touching the congenital cases we may recall Beneck and Sabrazés'[32] observation of a suckling who acquired the disease from a wet nurse, who with two children was suffering from it. Considering also the numerous observations of its familial incidence the possibility of an infective cause becomes much stronger. The symptoms of this disease are a long-continued jaundice, sometimes with intervals and often with bouts of pain simulating cholelithiasis. The urine contains no bile. The degree of ill-health is often so little that patients continue to work as normal persons. The splenomegaly is often moderate, but large spleens are more usually met with, especially in the congenital variety. The anæmia is not often or markedly severe; it is of the chlorotic type, with an average red cell count of just over 3 millions. In some of the cases an anæmia of the pernicious type has been recorded (Gilbert,[33] Umber,[34] Burghard and Sutherland,[35] Giffen,[36] and Mosse[37]). The white cells vary, sometimes being increased, sometimes reduced, but they do not invariably show that reduction which is more characteristic of splenic anæmia. An increase of fragility of the red cells described first by Chauffard is seen in a large proportion of cases.

Morbid Anatomy.—The spleen tends to adhere to a definite type which is an argument in the uniformity of causation. The organ is firm and dark red to plum-coloured with little or no perisplenitis and few adhesions to other organs. On section the surface is very dark red and both Malphigian bodies and trabeculæ can be made out. Along the course of the trabeculæ, which show but little thickening, there may be seen hæmorrhages and brown or buff-coloured points the site of previous hæmorrhages. I have seen small infarcts in some; microscopically there is a moderate degree of fibrosis, engorgement of the sinuses with red cells, thickening of and hæmorrhage into the trabeculæ.

Ætiology.—With regard to the causation of this type of splenomegaly the only evidence I have leads me to think that it is due to a streptothrix organism.[38] In one case recently published I was able from the spleen pulp to isolate a streptothrix of the actinomyces type which is mildly pathogenetic to monkeys.[39] Further experiments with monkeys now in progress lead me to a greater assurance on this point. Intraperitoneal injection of a culture produces a prolonged period of general seediness with or without an enlarged spleen from which the animals may or may not recover. The human spleen from which this culture was originally obtained showed pigmented points in the trabeculæ in which were threads morphologically similar to those of a streptothrix. Here I may say that in previous writings where I have given the impression that Wheal and Chown's stain is specific for these threads, I have been wrong. This stain shows up iron pigment well and therefore all fibres thus impregnated, tissue threads included, are stained black; a diligent search, however, in the pigmented points reveals septate threads with segmenting ends and such can be seen in sections stained by hæmatoxylin alone. My view is that the reason for the hæmorrhage in the first instance is the presence of the organism and therefore in many healed lesions the organism must necessarily be equally impregnated with the tissue. It also bears on the point to say that the culture obtained from my case came from one of the pigmented points, and that all those from the pulp were sterile, as also were many from the former. It will be necessary to obtain positive cultural results in more cases before any more certainty can be expressed. The therapeutic effects of splenectomy in these cases are very satisfactory, and the operation should be undertaken in all cases where the disease produces a serious interference with ordinary life. Many cases, however, are not seriously ill, and to urge the necessity for operation is not desirable.

Splenic Anæmia.

The conditions included under this term may naturally comprise cases of a varied causation. As a definition of a disease it is bad and must ultimately disappear as our ætiological groups become manifest. But in shaping our knowledge it has served a very useful purpose in concentrating thought on this type; for though it is undoubted that many cases of known ætiology—e.g., from syphilis, tuberculosis, or malaria—might present the symptoms and signs of splenic anæmia, yet there is a unanimity of clinical opinion that there are a large number of cases with these symptoms of anæmia and splenomegaly that do not fall into any of the groups with a known cause. If I have been right in the manner of presenting the general symptoms of splenic inflammatory disease then we must assume that many infections located in the spleen may be severe enough to produce anæmia. It is only necessary to mention that kala-azar, malaria, and Egyptian splenomegaly,[40] the two former being specific in their ætiology, all produce marked anæmia and an enlarged spleen. The chronic septic splenomegaly, a febrile illness of many weeks with enlarged spleen, anæmia, and leucopenia, recently described by Sir John Rose Bradford,[41] is another instance. But when all these varieties depending on a cause specific to each have been eliminated there remains a group of cases that are neither syphilis nor tuberculosis and do not belong to any other known specific group. Such cases are very chronic, unless in children, and, as Banti long ago pointed out, they ultimately lead to cirrhosis of the liver and ascites.

Morbid Anatomy.—The size of the organ may be moderate or large. There is not much perisplenitis and that in patches only. The cut surface shows a marked fibrosis affecting both pulp and trabeculæ which may be very thick. The Malphigian bodies are reduced. The most constant feature, however, is the large number of pigmented points along the trabeculæ which, if seen in the early stage, are hæmorrhages. The whole surface may show a reticular arrangement of these pigmented fibres, so extensive has been this hæmorrhage. This appearance, as has been mentioned before, is not confined to one or two groups of splenic inflammation; but my experience teaches me that it is more marked in this than in other types if we except certain of the leukæmias.

Ætiology.—In three cases I have been able to examine by the kindness of my London colleagues I have obtained positive bacteriological results from the spleen in two. The cases were as follows:—

1. Male, aged 30, under the care of Dr. Batty Shaw in University College Hospital, with a history of repeated hæmatemesis, from the last of which he did not recover. The W.R. was negative. Cultures were made from the spleen and I only found out later that it had not been removed surgically as had been intended; it showed, however, no sepsis. The organisms from post-mortem spleens are usually very abundant and of the *B. coli* type; in this spleen, however, two-thirds of the culture-tubes were sterile, the others showed a Gram-negative cladothrix type of organism with punctate thickening, growing very delicately on agar. One of these cultures was kept going for several months, but ultimately died out. On agar slope it showed five separate dew-drop colonies which, by transmitted light, were slightly opaque. It was non-pathogenetic to guinea-pigs and mice. The length of time that elapsed before a bacteriological examination largely invalidates the findings as evidence of the causation in this case, but the fact of finding a cladothrix of such cultural character is unusual if it were a post-mortem contamination from the bowel.

2. A male, aged 34, admitted to this hospital under Dr. Robert Hutchison for indigestion, repeated hæmatemesis, and an enlarged spleen. Mr. A. J. Walton removed the spleen and had it sent to me direct for culture. There was a history of enteric during the South African War. The anæmia was of a pronounced secondary type, and the W.R. negative. The spleen showed slight thickenings of the capsule where there had been adhesions. The cross section was a dull red with a firm pulp. Malphigian bodies and trabeculæ could be seen, and the latter appeared not to be thickened. In all sections could be seen pin-head areas of hæmorrhage in connexion with trabeculæ. Microscopically there was general cellular hyperplasia and increase of fibrous tissue. The trabeculæ showed hæmorrhages and the Malphigian bodies were diffuse. No portions infiltrated with iron pigment were seen. Culture of the hæmorrhagic areas proved to be positive in 10 out of 15, the remaining 5 being sterile. All the cultures tested after several sub-cultures were the same, a Gram-negative non-sporing bacillus very variable in length up to four times the diameter of a red cell and uniformly thick. The longer forms were bent or curved and some showed septa and dot-like refractive granules. The ends were rounded. Some of the smaller bacilli were actively motile. They tended to adhere in clumps from the edges of which long forms are seen projecting. True branching was not observed. On agar it grew as a thin whitish opales-

When an infection of the spleen is capable of proof by demonstration of the bacterial cause let us admit for purposes of science only those cases thus proven, allowing the other cases as doubtful.

I propose, therefore, in dealing with the specific infections of the spleen to be severely critical as to what shall and what shall not be included in the respective groups.

SYPHILITIC SPLENITIS.

Syphilis as an acute disease causes an enlargement of the spleen in the secondary stage, especially in congenital cases, and there is a consensus of clinical opinion, which I do not dispute, that splenomegaly may be present as a principal feature in the tertiary stage. When we come to examine the evidence for this in the recorded cases, numbers must be rejected as being uncertain, because the proof of their syphilitic origin rests on too slender evidence. Upon what evidence may the nature of the infecting spirochæte be reliably determined? The conditions are as follows:—

1. The presence of an inflammatory lesion in the spleen with the features of syphilitic inflammation in which the *Spirochæta pallida* has been found or transmitted to animals. This is I believe fundamental if we are even to acquire any accurate knowledge of the clinical effects of the syphilitic spleen. Such splenomegaly being tertiary, it will be all the more difficult to stain spirochætes, and Prof. H. M. Turnbull assures me it requires very prolonged search by our present methods. Nevertheless the spirochæte has been reported in such spleens, and it may be hoped that improved methods will allow of their more frequent discovery.

2. Secondary criteria not in themselves proof, but giving a strong probability of syphilitic origin. These are (*a*) a family or previous history of syphilis; (*b*) external or internal evidence of syphilis in the body, including a positive reaction to Wassermann's test. In the absence of other evidence a positive Wassermann test is no proof that an enlarged spleen is the result of syphilis. Such a conjunction may be excellent clinical ground for applying full anti-syphilitic treatment, but while syphilis is so prevalent it is no sure argument for a syphilitic origin; (*c*) the reaction to treatment. Other diseases react well to all the remedies employed in syphilis; therefore the evidence derived from this source cannot but be doubtful.

Morbid Anatomy.—Variable estimates have been reported of the number of syphilitics affected with enlargement of the spleen. It is more frequent in congenital cases in which the proportion showing splenic enlargement has been reported by Hasland[5] as 36·4 per cent. and by Costens[6] as 48·55 per cent. In acquired syphilis it has been variously estimated from 2 to 36 per cent., but the lower figure is probably truer than the higher. Apart from the acute infectious type of spleen that has been described in the secondary stage, two forms may be described, according to the presence or absence of stasis in the portal vein resulting from thrombosis or obstruction in the portal vein or its branches. This form gives rise to enlargement mainly from dilatation of the splenic venules, catarrh of the sinuses and deposition of fibrous tissue. The second form is a true splenitis of the chronic type, with marked increase of fibrous tissue especially of the capsule which may be raised into small buttons or knobs. The Malpighian bodies are atrophied and the sinuses replaced by thick-walled lacunæ, showing catarrhal changes. End-arteritis is so constantly present in all forms of splenitis that it forms no distinctive feature of this type. There is little to distinguish the syphilitic fibrosis from other types, unless it be perisplenitis. Miliary gummata have been described as in syphilitic hepatitis. True gummata have also been described, but Prof. Turnbull assures me that he has never yet seen a gumma of the spleen in the London Hospital. A similar reference to its rarity is made by Coutts in his Hunterian Lectures, 1896. Hasland made 151 autopsies in syphilis in which the spleen was affected, but found no gumma. In the absence of bacilli some tuberculomas might easily be mistaken for gummata. In considering the reported cases of primary splenomegaly from syphilis the majority of these are not indubitably syphilis, so that the clinical picture must be held in some uncertainty. I have felt it my duty to review all the cases available to me, and have found altogether 25 cases reported as primary syphilitic splenomegaly, but of these only two are of first importance in having adequate proof of syphilitic origin. These two cases have been reported by Giffen[7] from the Mayo Clinic, and both were found to have *Spirochæta pallida* in the walls of the arterioles.

1. Giffen. Case 1.—Female, aged 40, with a history of an enlarged spleen since an attack of typhoid fever 12 years previously. One year before she had an abscess of the chest wall which had discharged dead bone and had not properly healed. Four weeks previously she had had abdominal pains followed by slight jaundice. The W.R. was four plus. There had been no hæmorrhage. The spleen was very much enlarged and no effect was produced with antisyphilitic remedies. The blood count showed a moderately severe chlorotic anæmia, R.B.C. 2,950,000, W.B.C. 6650, Hb 48 per cent., colour index 0·6, and a differential count that was not abnormal. The spleen, 12 in. long by 7 in. broad, adherent to the neighbouring organs, was removed by operation. The patient made a good recovery and one year after her blood count was: R.B.C. 3,552,000, W.B.C. 11,000, Hb 80 per cent., colour index 1·02, differential count normal. The spleen weighed 900 g.; it was normal in contour, the external surface being slightly nodular and showing considerable perisplenitis; on section it was firm, tough, and very dark-coloured; microscopically there was diffuse fibrosis with marked arterio-sclerosis, the adventitia of some of the arteries being thickened and amounting to typical gummata. In the vessel walls *Spirochæta pallida* was found.

2. Giffen. Case 3.—Male, aged 35, with a history of syphilis at 21. He had had three positive W.R. tests during the previous two years, but at the time of examination it was negative. There were moderate splenomegaly, slight anæmia, and recurrent hæmatemesis. He had had long antisyphilitic treatment with partial relief only. In his previous history he had had jaundice for two months, six years previously, and about that time he had an ulcer of the right shin. The liver and spleen had been enlarged for two years previously. There had been recurrent hæmatemesis. He complained of headache and had had nodules over the frontal region. The spleen, removed by operation, was five times the normal size, showing intense general fibrosis, some pigment, arterio-sclerosis, and a typical small gumma near a vessel. A few spirochætes were found. The liver was deeply fissured and small. The blood count nine days before operation showed R.B.C. 4,240,000, W.B.C. 4900, Hb 85 per cent. The recovery was uneventful.

Coming now to those reported cases whose syphilitic causation is probable only: one group of these showed a marked improvement under salvarsan or neosalvarsan.

3. Schulmann and Weissmann.—Male, aged 40, with congenital syphilis and erythema—R.B.C. 12,000,000. Under a course of neosalvarsan the R.B.C. became 6,000,000. The white cells were 8000, and remained unchanged.

4. W. Schmidt.[8]—Female, aged 14, whose mother had tabes, had two abortions immediately before the patient's birth, and suffered from an enlarged spleen, anæmia, enlarged liver and glands of the neck; R.B.C. 4,800,000, W.B.C. 3200, Hb 84 per cent. The Wassermann reaction (W.R.) was positive. There was considerable lessening in the tumour and betterment of the general conditions by a subcutaneous injection of salvarsan.

5. Perussia.[9]—Female, aged 30, with a history of two miscarriages, repeated metrorrhagia leading to very bad anæmia, Hb 22 per cent., R.B.C. 1,090,000, W.B.C. 4800, C.I. 0·6. There was enlarged liver, vomiting, diarrhœa, and mild fever; W.R. negative. After a course of salvarsan there was marked diminution of the spleen, complete restoration to normal health, and no objective anæmia.

6. Pollitzer.[10]—Female, aged 13, having had splenomegaly since the age of 2, and recurrent jaundice. The fragility of the corpuscles was increased (0·54 per cent.). The W.R. at the age of 11 was positive. After an injection of salvarsan the jaundice disappeared for three months.

7. Clark.[11]—*A patient with the picture of splenic anæmia* and Banti's disease and negative W.R., cured by antisyphilitic treatment.

8. Anderson.[12]—A man, aged 33, with attacks of diarrhœa for six years and persistent jaundice the previous year. There were old healed ulcers on the right leg below the knee; W.R. positive. There was jaundice, enlarged spleen, œdema, and anæmia (R.B.C. 4,800,000, W.B.C. 4000, Hb 70 per cent.). Cure was effected by hydrargyrum c̄. creta, and later by repeated salvarsan injections.

9. Vaillardi.[13]—A case reported as syphilis improved markedly under salvarsan, but as the patient had had severe

their preference for a particular soil, but the reaction of the local tissues and the general protective mechanism of the body do not alter, whatever may be the type of infecting agent.

The two great principles, therefore, that underlie the treatment of all acute inflammatory conditions are: (1) the relief of tension and its maintenance; and (2) absolute rest.

A third principle of scarcely less importance is the avoidance as far as possible of super-infection, meaning by this that during any necessary operation or post-operative dressings the strictest asepsis must be maintained. Further, in the treatment of the wound itself, much assistance can be derived from the use of chemical agents to promote the separation of dead tissue or to stimulate the natural reaction of the healthy tissue, while the bacteriologist has supplied powerful means to increase the resistance of the blood. It is not my intention here to deal with the treatment of sepsis resulting from a wound of the soft tissues or bones. The main effort in any injury is to avoid sepsis by an early excision of the damaged tissues, followed by closure of the wound and efficient splinting; but should infection occur there is no difference between its treatment and that of other acute inflammations.

Acute Suppuration of the Soft Tissues of the Limbs.

In every case, when first seen, the affected limb should be immobilised at once, and immobilisation can only be secured by an appropriate splint. While for the fingers a straight forearm or internal angular splint may suffice in any spreading infection, a Thomas's arm or leg splint is the most satisfactory. From the patient's view-point the application of a large splint for what appears perhaps a trivial lesion may seem unnecessary; but the apparently trivial lesion has immense possibilities for danger; fingers, limbs, lives have been lost through neglect of this precaution in the early stages. In the majority of cases it will be found that the spread of infection can be controlled by this means. The question of when and where to make an incision in an inflamed area for the relief of tension is sometimes difficult. If by splinting the spread is controlled and becoming localised, my impression is that it is better to wait for the formation of pus before incising. If the inflammation is localising itself the main danger has passed, and with the limb at rest further spread is unlikely. The formation of pus is a healthy sign that the tissues are reacting strongly. When it has formed an incision of the same length as the abscess cavity is made, care being taken that the whole cavity is exposed, but no fresh tissue planes are opened up. The size of the cavity may demand more than one incision. The splint should not be discarded until all signs of sepsis have disappeared and the wound has commenced to heal.

In those cases of acute septic inflammation of a limb, when in spite of immobilisation there is no effort to arrest the spread and no indication of suppuration, one or more incisions over the areas of greatest tension are of the utmost value. Such incisions should open the skin, subcutaneous tissue and deep fascia, and should correspond closely with the areas of maximum tension, thus avoiding laying open fresh tissues to infection. Provided the selection of the site has been carefully made, the value of an opening to relieve the tension and to give the tissues a greater chance of reacting is very great, and may be extended in certain cases to the true forms of non-suppurative inflammation. All such incisions almost invariably become septic and are dealt with in the usual way. There is the occasional case when, in spite of every precaution, the infection passes beyond the limb into the general circulation, owing apparently to an entire failure of tissue reaction. It is here that the bacteriologist may save life and limb, though this remark by no means suggests that his services should be neglected in the less severe cases.

Acute Suppurative Osteomyelitis.

The primary object in all cases of acute bone inflammation must be to lay open at once the whole of the infected area in order to relieve tension. In every case the bone cavity must be opened. Often it is difficult to judge to what extent this should be done. If there is subperiosteal pus the extent of the opening into the medullary cavity should correspond with that of the stripping up of the periosteum. In those cases when the pus is confined to the medullary cavity—the most acute and fortunately more uncommon type of case—a wide opening should be made in the bone. My impression is that drastic treatment is safer in all cases, since even if healthy medulla is opened and becomes infected, this involves less risk than does an inadequate opening, while a line of least resistance is provided. Afterwards the limb must be completely immobilised by means of a Thomas's splint and cross-strapping, the strapping being arranged so that the dressings may be carried out with the minimum disturbance and pain, and the whole limb being suspended from an overhead frame. In these cases intermittent or continuous irrigation is valuable, chiefly because thereby painful dressings can be avoided. A fairly wide experience of these cases has led me to take a somewhat pessimistic view of them. If the immediate dangers are successfully overcome the subsequent prolonged and unavoidable sepsis is a big strain on the patient. To avoid this strain some have advocated an immediate subperiosteal resection of the infected area of diaphysis with almost complete closure of the wound, followed by the application of extension to the limb in order to maintain its length until the new bone has formed. My experience of this method is too limited to allow me to express an opinion on it, either for or against, but I believe it to be based on sound surgical principles. Sometimes, when faced with a severe case, I have been in doubt whether to perform an immediate amputation. After much hesitation, and finally deciding against it, I have in the end sincerely regretted my decision. The idea of amputation is repellent and not likely to appeal to anyone as a primary measure; on the other hand, amputation in such cases can be considered unjustifiable only on the guarantee of thorough relief of tension and true immobilisation. There is yet one more variety of diaphysitis in which, owing to the position of the epiphysis, a joint is directly involved. Here the conditions are the same as in an acute suppurative arthritis, and are to be treated as such (vide infra). The issue of such a case is, however, complicated by the inability to remove the focus of infection. Suppuration continues and a sinus is inevitable until the necrosed tissue has separated. Although the ultimate outlook for the joint is doubtful, as soon as the acute stage has passed our chief object must be to encourage movement.

Acute Suppurative Arthritis.

While it is not possible to correlate in one short paragraph the pros and cons of treatment in joint suppuration, a short reference is necessary because, at first sight, it appears as if the principle of immobilisation requires modification. The essential function of a joint is to move, and this fact must never be lost sight of. Hence treatment must satisfy two apparently opposed demands, immobilisation of the joint and preservation of this essential function of movement. A joint is immobilised not so much by keeping the limb at rest as by a separation of its articular surfaces; if it is possible to maintain this there is no reason why early active movements of the infected joint may not be carried out with a view to hindering the formation of adhesions in and around the joint. Extension, then, is our main method of immobilising a joint, and this should be powerful and continuous until the active suppuration has passed. When considering the means of relieving tension in a joint, we must bear in mind the possibility of an attempt on the part of the synovial membrane tuberculosis of the spleen. Some cases are reported as such merely on the naked-eye diagnosis, whether the lesions be of the miliary or caseous type. I admit a high degree of probability and accuracy in such opinions, but they cannot be deemed to approach the accuracy demanded from a scientific test. Some authors fail to give a report of the histology and a large number omit any mention of a search for tubercle bacilli. As in other situations—tuberculosis of the skin for instance—it may require a prolonged search to find tubercle bacilli or they may never be found in what is a clear case. For the tuberculous origin to be adequately proved we should demand in an enlarged spleen the presence of tubercle bacilli in lesions which should suggest this origin, and no serious or general tuberculosis in other organs. Moreover, it is necessary to stipulate that there should be no serious disease in other organs masking the splenic symptoms. One case, for instance, reported as tuberculosis of the spleen, had infective endocarditis and infarcts in the spleen. I have also other evidence that need not now be detailed, that some splenic infections show a lessened resistance to tuberculosis, and a tendency to stir into activity some old lesion. As regards the recorded cases of primary tuberculosis of the spleen we have the very complete account of those recorded up to 1912, by Winternitz.[25] Some of these 51 cases are not sufficiently proved to be included in this summary. There remain, however, 17 clear cases of primary tuberculosis of the spleen, in which tubercle bacilli had been found. In subsequent years I have been able to discover four others reported by Bianchi,[26] Schubert and Geigel,[27] de Montmollin,[28] and P. Albrecht.[29] It will not be necessary to record the individual cases (see References). A summary will serve to make clear their anatomical and clinical characteristics.

Morbid anatomy.—The tubercle bacillus may cause in the spleen both acute and chronic inflammations. (1) In the acute variety the spleen is described as simulating the typhoid spleen with or without the presence of naked-eye tubercles. (2) Disseminated miliary, caseous, or endothelioid tubercles with varying fibrosis of the pulp and some slight fibrosis of the capsule, upon which may be seen minute scars of old healed miliary or even caseous tubercles. In the early stages of this type hæmorrhages are present. (3) A third type must be added to these—namely, chronic generalised fibrosis with red or pale pulp and a few scattered points, the remains of minute caseating areas, suggesting a tuberculous origin. This is the condition in a spleen removed in the London Hospital from one of Lord Dawson's cases in 1912. No tubercle bacilli could be seen in stained sections, but portions of the pulp were infective to a guinea-pig. A similar spleen again positive only to a guinea-pig experiment is recorded by Auché.[30] The congestion in all these forms may be very severe, the sinuses being distended with blood. True hæmorrhages may occur, especially in the trabeculæ. The Malpighian bodies, which are the site of the majority of tubercles, may either show little change or the centre may gradually be replaced by epithelioid cells included in which may be a giant cell. Some may show caseation and in the more chronic cases the Malpighian bodies are completely replaced by tuberculous structures. The other forms of splenomegaly in tuberculous disease—e.g., amyloid—are secondary to other lesions and therefore do not concern us.

The symptoms of tuberculous splenomegaly may be general and local. In about 25 per cent. of cases there is fever, sometimes in attacks and sometimes as a marked feature. Sweating and collapse is mentioned, and very constantly loss of weight, weakness, and great lassitude. As regards local symptoms there is pain and a sensation of tumour and weight in the left side. The pain may vary in its incidence with positions and movements of the body, or may come on only during digestion. The proximity to the diaphragm may cause pain in respiration. The majority of cases are very chronic, but short illnesses terminated by death have been recorded. There are 15 clear cases in the literature that have been operated upon, with nine cures. The disease is not strictly primary in the spleen; other organs show signs of tuberculosis. Thus of Winternitz's cases nearly half showed pulmonary changes, and five had enlargement of other glands. Other clinical features have been an enlarged liver with cirrhosis (Sotti[31]), ascites, caries of the spine, meningitis, and intestinal ulceration. The features in the blood are either absent altogether or very moderate. In nine cases in which tubercle bacilli have been found in the spleen, the condition of whose blood is mentioned, six were normal and five have counts with a moderate degree of anæmia of the chlorotic type. The lowest red count is 3,200,000 and the lowest white count is 2500, the average white count being 5000. The lowest hæmoglobin figure is 50 per cent. The degree of anæmia is therefore slight and has not been a marked feature of any case.

It is current opinion following on Winternitz's critical review that polycythæmia is one of the characteristics of a tuberculous splenomegaly. But in eliminating from our list of cases those whose tuberculous origin is not adequately proved no case shows an abnormally high blood count. Of the doubtful cases, that of Moutard-Martin and Lefas, whose blood showed 8,200,000 R.B.C. and 31,428 W.B.C., there was naked-eye evidence of tuberculosis in many other organs than the spleen, and even admitting the tuberculous origin the relation between tuberculosis of the spleen and the polycythæmia is not clear. In Carminotti's case there was a much scarred spleen, but no other evidence of tuberculosis, and caries of the spine. Here the counts were R.B.C. 7,000,000, W.B.C. 6000. The other four cases recorded by Winternitz have a R.B.C. of 6,000,000. On these grounds we cannot yet admit that polycythæmia is proven as an association with a tuberculous splenomegaly. On general grounds that have previously been discussed a polycythæmia may be expected if there be obstruction in the portal vein; such, however, cannot be used in any case as an argument for a tuberculous origin of a chronic splenitis. When tuberculosis affects the thorax as well as the spleen there are other possibilities for a mild polycythæmia.

Implication of the liver is not uncommon. Of Winternitz's 17 positive cases tubercles were present in 10 and there was atrophic cirrhosis in one. Sotti describes the liver changes in these cases as frequent. The common anatomical changes are fatty degeneration, necrosis, swelling and thickening of the collagen substance, and sometimes small lymphatic accumulations, and he looks upon interstitial hepatitis as dependent upon changes in the splenic vein. Jaundice as a symptom of tuberculous hepatitis in these cases is rare and I have only found one mention of it, in Winternitz's own case. Hæmatemesis is not recorded in any case, unless we admit that of Paulicek, in which tubercle bacilli were not found. This case had a hæmatemesis at six years when the illness commenced. Glands are mentioned as enlarged in four cases and the lungs were affected in six cases.

Splenitis from Malaria and Kala-Azar.

It would not be in keeping with my purpose to discuss in similar detail other types of specific inflammations of the spleen whose ætiology is uncertain. The two best-known types are those due to malaria and kala-azar. In the former, symptoms specially related to the spleen are not frequent, but when they exist splenectomy is a possible and very successful remedy. In kala-azar with a moderate degree of anæmia of the chlorotic type there is an unusual diminution in the number of leucocytes of the blood, sometimes to below 1000 per c.mm.

OTHER CHRONIC INFLAMMATIONS OF THE SPLEEN.

We have hitherto followed an ætiological classification, and there still remain those types for which we have no certain cause. From what has been said on the general symptoms associated with chronic splenitis it will be apparent that if we attempt a too rigid subdivision from the symptoms and signs alone we shall be hindering a proper knowledge of ætiology. Nevertheless, a provisional clinical classification is necessary for practical purposes, and if we are aware of its limitations no error will ensue. Moreover, even on our purely clinical classifications we may be able to separate the cases into their ætiological types. When classification is not based on ætiology we run the risk of undue complication. In those types we further consider I propose to adhere to clinical views. Such groups of cases are: (1) Acholuric Jaundice, including the congenital and acquired types; (2) Splenic Anæmia (so called); (3) Gaucher's splenomegaly; (4) Egyptian splenomegaly; (5) Hodgkin's disease (splenic type). It will be sufficient, however, to notice the first two.

Acholuric Jaundice.

There would be a consensus of opinion amongst clinicians that a majority of the cases described under this heading probably owe their origin to a single cause or a group of nearly allied causes. From the general account of splenic inflammation it will be obvious that such a group of symptoms is possible necessary, and these should be done as soon as the signs point to a further collection of pus. For routine treatment this method is necessarily somewhat difficult besides being rather uncertain, but in bilateral empyemata it is of great value. The method of opening and completely emptying the abscess cavity is not only quicker and more certain but also safer, provided that in a case presenting grave constitutional symptoms a preliminary relief of tension by aspiration renders the condition suitable for an operative procedure. After emptying the cavity of pus the question of completely closing the chest wall again must be decided on the merits of each individual case. If, however, signs supervene of further suppuration and rise of tension aspiration is performed or the incision re-opened.

The generally accepted method, therefore, of opening an empyema by resection of a portion of a rib and maintaining the opening by the insertion of a tube is probably the simplest, provided that in all cases the opening is made at the lowest limit of the abscess cavity. The tube, however, here as elsewhere, provides a very sure path for the entrance of fresh organisms. Consequently if this method is employed every precaution must be taken to prevent super-infection. This purpose is best attained first by using a long tube, whose free end is carried into a vessel containing some antiseptic; secondly, by fixing a Carrel tube around the tube entering the chest wall (Dean). With this arrangement the long tube may be removed after 48 hours, intermittent irrigation of the wound being continued till healing has commenced.

In the early stages of suppuration in the chest, by arrest of the movements of the diaphragm and chest wall and diminished expansion of the lung, a condition of immobility is brought about. Unless the tension is relieved a paralysis ensues, and if the abscess cavity is then opened and emptied the lung fails to re-expand. It gradually becomes anchored by the formation of dense adhesions which at a later stage, in spite perhaps of recovery of the lung itself, will prevent its expansion. What, therefore, as in the abdomen is primarily a physiological action becomes a pathological danger through delay. As soon as tension has been relieved in the chest by liberation of the pus the lung requires some assistance to resume its normal function, which can be best rendered by routine breathing exercises under open-air conditions.

These remarks may invite criticism on the score of lack of originality, and may appear very elementary; my object has not, however, been to put forth any new ideas, but rather to recall to mind and strongly emphasise a few fundamental principles that must be applied to the early treatment of all such conditions of suppuration as may constitute emergencies of daily practice. Whatever the type and situation of a suppurative process, and whatever additional means of treatment may be indicated, a successful issue must depend directly and primarily upon the application of these principles.

Foreign Decorations for War Services.—The King has granted permission to the undermentioned to wear the following decorations, which have been conferred in recognition of valuable services rendered during the war: Legion of Honour—Cross of the Chevalier: Sir W. Arbuthnot Lane, Colonel Sir A. W. Mayo-Robson, Sir StClair Thomson, Sir Sydney Beauchamp, Dr. E. W. Ginner, Dr. H. J. Moore Playfair, Dr. G. C. L. Vintras, and Mr. D. d'Auvergne Wright. Crown of Italy—Cross of Commander: Sir Ernest Hodder-Williams.

Newcastle-on-Tyne and Northern Counties Medical Society.—The first meeting of the session was held in the Royal Victoria Infirmary on Oct. 13th, Mr. S. S. Whillis, the President, being in the chair. The following cases were shown and discussed:—Dr. T. Beattie: Polycythæmia, Myelogenous Leukæmia, Pernicious Anæmia. Dr. Hesley Drummond: Myelitis, Aortic Aneurysm, Disseminated Sclerosis. Dr. D. W. Patterson: Infective Endocarditis, Erythromelalgia, Banti's Disease. Mr. J. W. Leech Mr H. M. Johnston: Cases Illustrating Sarcoma.

ARREST OF AURICULAR FIBRILLATION
BY THE USE OF QUINIDINE.

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(*From the Medical Unit, London Hospital.*)

Introduction.

In the Oliver-Sharpey Lectures for 1921 Sir Thomas Lewis, describing his researches which have done so much to elucidate the mechanism of the production of auricular fibrillation and flutter, pointed out the relatively simple task involved in the treatment of these conditions and foreshadowed its solution. He showed that they depended on circus movement, and that to arrest the process all that was required was to bridge the gap between the head and tail of the circulating wave, a gap which was in point of time only 1/50th of a second and in point of distance only 10 mm. of muscle. While Lewis[1] had been pursuing these researches which led so logically to a method of attack, Frey, working in Kiel, had been investigating empirically the problem of the treatment of auricular fibrillation. In 1914 Wenckebach[2] reported the arrest of auricular fibrillation in a single patient by the use of quinine, g. i. per diem. The effect was only temporary. Stimulated by this observation Frey investigated the effect of quinidine, another alkaloid of cinchona, and in 1918[3] reported his results in the treatment of 22 cases. In 50 per cent. of these satisfactory results were obtained, and a normal cardiac rhythm restored. In a later communication Frey[4] reported his results in 50 cases; in 42 per cent. fibrillation was arrested. He recommended the use of 0·4 g. quinidine by mouth, three times a day, for from six to eight days, beginning with half this dose and increasing gradually to 1·2 g. daily. If cardiac failure is present, compensation should first be restored by the use of digitalis. Then, after suspension of digitalis for one week, quinidine may be given. He states that patients in whom the fibrillation is of recent origin respond best, that a much dilated heart cannot—or can only temporarily—be brought back to its normal rhythm, and that those not responding to digitalis are refractory to quinidine. In several cases the fibrillation was changed by the use of quinidine into auricular flutter.

In two patients under treatment with quinidine Frey noted what he calls temporary cerebral paralysis with sudden cessation of respiration; both cases recovered in the course of a few hours. He considers the effect to be due to a toxic action of the drug in a patient with a drug idiosyncrasy, and advises a preliminary test with small doses in all cases to determine the occurrence of such idiosyncrasies. Schott[5] has shown in experiments on animals that intoxication with quinidine leads to sudden cessation of the respiration. Bergmann[6] has reported the results of treatment in 9 cases of auricular fibrillation; in 6 a normal rhythm was secured, in 2 the fibrillation changed to flutter. Klowitz[7] treated 15 patients, and in only *one* did he succeed in obtaining an arrest of fibrillation. Benjamin and v. Kapff[8] have treated 27 patients. In 18 fibrillation was arrested. In 5 of the 18 successful cases there was a relapse, with return of fibrillation, which again disappeared with further treatment; in 13 of the 18 a temporary tachycardia occurred before the normal rhythm was restored. In one patient the effect appeared unfavourable, and there was increasing failure and death. These authors call attention to the possibility of embolus resulting from the restored auricular contraction, and report one instance of lung embolism and one case of sudden death which they think was probably also due to embolism. They suggest that cent fibre recalling that of paratyphoid B; in broth there was a general turbidity with some deposit later. Gelatin was not liquefied; milk was slowly coagulated; lactose and glucose were fermented with the production of acid and gas. Neutral red lactose broth was changed to fluorescent yellow in 48 hours and became carmine red in ten days. It was aerobic and non-sporing. The organism was pathogenic to rabbits but not to guinea-pigs by intraperitoneal injection. Rabbits by this method of inoculation died in 24 hours to three weeks and there is a well-marked slight peritonitis from which the organism can readily be recovered. Cultures of this organism were kept alive for two years; it then died out despite repeated efforts to revive it. Though this organism has motile elements and has no capsule its nearest kinsfolk appear to be the Friedländer group of organisms.

CONCLUSION.

It is not my purpose to explore the ætiology of the other clinical groups of splenic inflammation, for as you will recognise from what has been said, in most groups our knowledge is still incomplete. I hope it will be clear, however, that it may be possible in any case to get evidence pointing to one or other ætiological group. I have tried to show that splenic disease as such may cause many symptoms and that the ultimate ætiological subdivisions will not necessarily harmonise with the temporary subdivisions based on clinical observation alone. It is only in hospitals like this that opportunities present themselves for the real solution of these problems, and even in this hospital I imagine the removal of a spleen by the surgeon is not an everyday occurrence. Yet if all such spleens could be examined by a bacteriologist of some years' experience and the reports collated, what an array of evidence would be put out for gaining adequate proof of the ætiological causes.

My thanks are due to those gentlemen in this and other hospitals who have given me opportunities that I did not otherwise possess, and who have allowed me to use the clinical notes of their cases.

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SOME ASPECTS OF THE TREATMENT OF ACUTE SUPPURATION.

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ALTHOUGH enormous experience was gained in the war as a result of the views put forward by different schools of thought, mainly concerning the details of chemistry and bacteriology of septic wounds, yet I venture to suggest that the fundamental principles of treatment were somewhat obscured, and that the lessons learned then are not now sufficiently applied in dealing with acute septic conditions of civil life. The prominence given to several very attractive but accessory lines of treatment, such as antiseptics, tissue-solvents, serums, artificial hyperæmia, has tended to divert us from consideration of certain of the main principles. In no way is it my purpose to depreciate these adjuncts to treatment, whose great value and importance are generally recognised. But it should be realised that they are only additional means of attack after the main defences have been perfected as far as possible.

"Relief of Tension."

In a different manner the constant use of the word "drainage" has given rise to the idea that drainage is the chief and most important factor in the treatment of suppuration. Further, in the endeavour to secure "drainage" the drainage-tube per se has become an idée fixe. If by a different phrase it is possible to alter the conception of a treatment, I would suggest that the word drainage be eliminated and replaced by "relief of tension." The latter phrase does not suggest to the mind a means of drainage, but rather implies an opening, a line of least resistance in the direction of safety, along which the products of inflammation may escape.

The inflammatory process will take the line of least resistance, whether along lymphatics, blood-vessels, fascial planes, or towards the exterior of the body, and our main object is to make it follow the latter line. In "relief of tension" and in the creation of a "line of least resistance" we thus fulfil a fundamental principle in the treatment of acute septic conditions. The relief must be complete and the line must be maintained, and it is in the maintaining this line that the chief difficulties of technique arise, which will be referred to in their proper sections. Nature, assisted in this way, will create her own drainage, and will gradually cast out the debris of dead tissue which is in itself harmless, except as a suitable soil for the growth of organisms.

Immobilisation.

The second great principle of treatment was enunciated by John Hilton in the following sentence: "Every deviation from the necessary state of rest brings with it, through pain, the admonition that the patient is straying from the condition essential to his restoration." This stands as a profound truth, and in applying it to the treatment of suppuration it is merely necessary to emphasise the word rest or replace it by immobilisation. Only by completely immobilising an inflamed part are the natural agents given a chance to form their barriers against spread of inflammation and to deal locally with its cause. The word immobilisation implies, at any rate, in the case of the limbs, the necessity for an efficient splint. When there is suppuration in the chest or abdomen we can endeavour to assist, or at least refrain, from interference with the natural efforts to maintain the condition of rest. There has been always a tendency to regard the treatment of acute suppuration in different parts of the body from separate view-points. The physiology and pathology are essentially the same whatever tissue is involved, and the principles of treatment do not differ except in the minutiæ of detail. Apparently various pyogenic organisms have

Charts showing Fibrillation Before Quinidine.

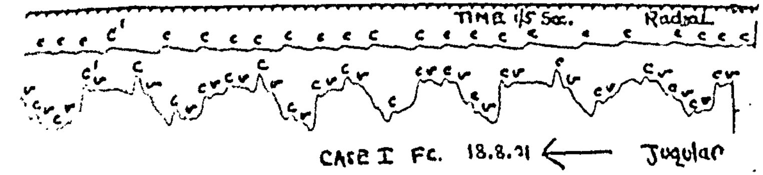

Fig. 1 (Case 1).

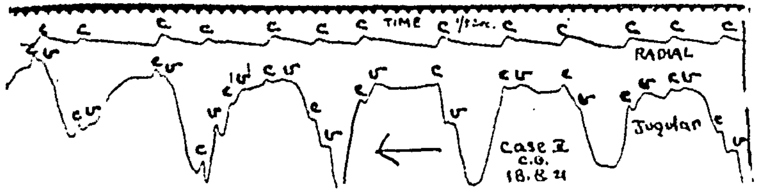

Fig. 3 (Case 2).

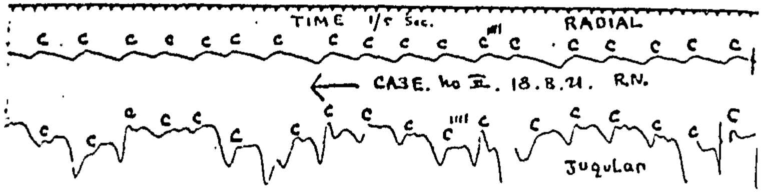

Fig. 5 (Case 3).

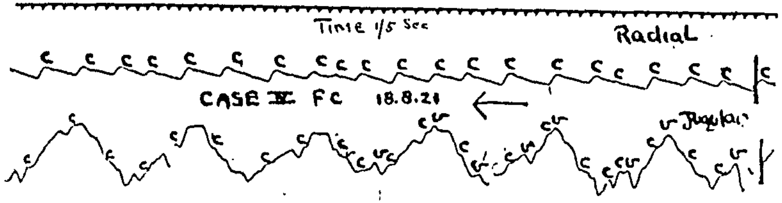

Fig. 7 (Case 4).

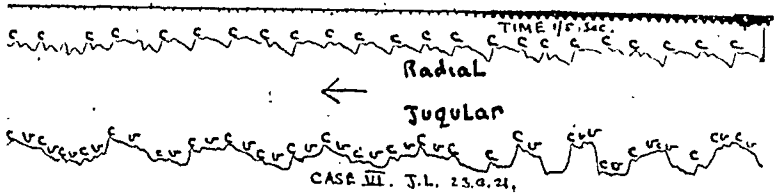

Fig. 9 (Case 6).

Charts showing Normal Rhythm After Quinidine.

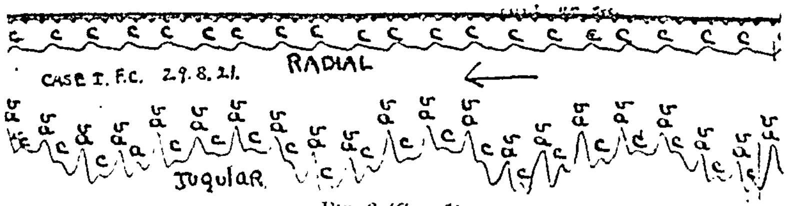

Fig. 2 (Case 1).

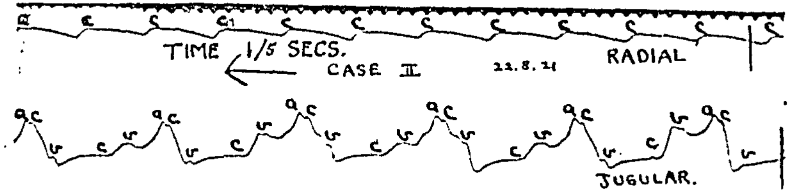

Fig. 4 (Case 2).

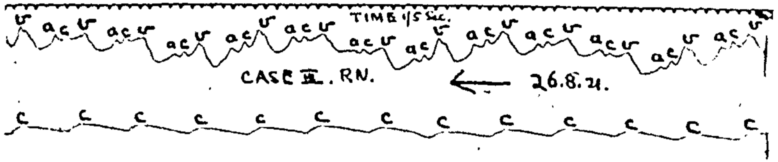

Fig. 6 (Case 3).

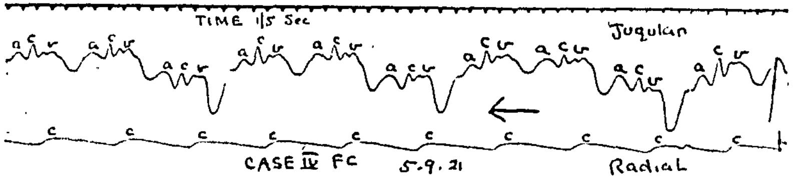

Fig. 8 (Case 4).

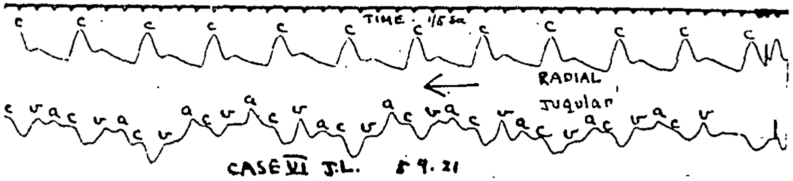

Fig. 10 (Case 6).

to localise the infection. If any such attempt has taken place its object is defeated by extensive opening of the joint cavity. Therefore, provided true immobilisation of the joint be maintained, it is better to rely on aspiration, or if there is no immediate urgency to deal with fluid or collections of pus by aspiration or incision as occasion arises. In those cases of generalised suppuration of a joint an incision should be made of sufficient extent to allow free evacuation of the pus, and the wound should be closed at once. Further accumulations should, as far as possible, be dealt with by aspiration.

Acute Suppurative Peritonitis.

There is no essential difference between the treatment of acute suppuration in the peritoneal cavity and elsewhere in the body. The same principles hold good, but perhaps are more difficult in their application. While it is a comparatively easy matter to relieve tension in the abdomen, it is a more difficult thing to maintain the relief. At the same time the defensive mechanism of the abdomen against inflammation and its power of localising it is more highly developed than anywhere else in the body. The omentum and peritoneum are wonderfully efficient in the way they attempt to shut off an inflammatory process, and one of our main objects must be to interfere with their work as little as possible. In children this resistance is markedly less than in the adult. The main treatment in any case of abdominal suppuration consists in opening the abdominal cavity. If the diagnosis is uncertain a median or para-median incision is to be made, but if there is reasonable certainty in the diagnosis the incision should be placed directly over the primary source of infection. If an acutely inflamed appendix is palpable, the incision should be immediately over it, otherwise over its usual site in the right iliac fossa, but not towards the mid-line, where the barrier immediately surrounding the inflamed area must necessarily be interfered with. In the case of an abscess in the leg no one would make an incision well to one side of it, thus opening up resisting planes of tissue in order to reach the abscess. The same consideration applies when dealing with the abdomen; we must achieve our purpose at the cost of a minimum disturbance of surrounding healthy and protective tissue. By opening the abdomen, removing the source of inflammation, if possible, and gently removing the pus the immediate tension is relieved. Then it is largely a matter of judgment as to whether the abdomen should be closed and the patient asked to deal with the remainder of the inflammatory process.[1] In all cases where closure is decided upon I would employ interrupted sutures in the peritoneum, aponeurosis, and skin respectively, with a fair interval between them. This allows certain lines of least resistance from the peritoneal cavity; also, should sepsis occur in the wound, individual sutures can be removed.

In cases of spreading or generalised peritonitis the relief of tension must be maintained. The simplest way to accomplish this is to leave the abdominal wall widely open. In children this can be done, but in adults the inevitable protrusion of the gut constitutes a danger and necessitates partial closure. If tubes are inserted it must be on the understanding that their purpose is not "drainage," but an attempt to create at least a temporary track or line of least resistance. Tubes should be left out after 48 hours at most; after this they serve no useful purpose, and are apt to irritate the inflamed intestine and to act as a path for fresh infection from the outside. It is my impression that one incision only should be made in the abdominal wall, and if well placed it will suffice. I believe that stab-punctures elsewhere on the abdomen are not only useless but harmful. They are not of sufficient size to assist in the relief of tension, while they open up new tissue to infection either at once or by the presence of the tube which is inserted. It is better always to make all the paths of least resistance lead to one opening. In cases of pneumococcal peritonitis, if it is possible to diagnose them as such at the time, the abdomen should be closed by interrupted sutures after removal of the free fluid. One is dealing here with a local manifestation of a general infection, and it is of the greatest importance to avoid super-infection. As a rule the involvement of the lungs (perhaps the meninges or joints) becomes manifest after a varying interval of time, and careful watch must be kept for a collection of pus either above or below the diaphragm.

Immobilisation of the abdomen in the strict sense of the word is not possible. Nevertheless, a very great natural effort in this direction is brought into play as soon as any inflammatory process commences in the peritoneum by the arrest of the movements of the abdominal wall and the intestines. This arrest gives the omentum and peritoneum their chance of localising the inflammation and of building their barriers against its spread. The staying of the intestinal movements, although at first physiological and helpful, gradually becomes in the generalised peritonitis the fatal factor by reason of an increasing paralysis and consequent obstruction. In the later stages, also, the muscles of the abdominal wall become paralysed and flaccid. If this stage has been reached before operation the outlook is almost hopeless. The toxæmia has been too prolonged or too powerful. In the earlier stages, however, until tension is relieved the abdominal muscles are kept still and in spasm, and in this condition an incision will more or less maintain the immobility, while the spasm will cease with the relief of tension. Abdominal rigidity implies tension.

As little as possible should the condition of rest of the intestines be disturbed. Drastic purgation, if successful, produces violent movement, while it may induce a paralytic condition through too heavy demands on an already tired mechanism. With tension relieved the intestines will try to carry on their normal functions again, but, as a general rule, they require some assistance in this. Whether pituitary extract has a direct "tonic" action on the intestinal muscle I am unprepared to say, but its value in the acute abdominal conditions alone, or with the aid of enemata is very great. In the case of peritoneal suppuration, with much distension of the intestines, I have found injections of pituitary extract given two hourly from the time the patient is returned to bed, followed by an enema after three or four injections, a most valuable line of treatment. If the first enema produces no result the injections are continued and enemata repeated. This method does not produce violent peristalsis or purgation and it saves the patient much discomfort. Further, it seems to diminish the flatulent distension very markedly, and it is uncommon for patients to complain seriously when thus treated. Flatulence, besides causing much distress and pain, is a danger, as the distension and turmoil of the intestine disturbs the condition of rest; its presence indicates probably some degree of paresis of the gut, and its persistence is liable to increase this.

Acute Suppurative Pleurisy: Empyema.

The same principles of treatment already laid down apply in cases of suppuration in the chest, and their application requires modification only to meet the particular circumstances. In no situation, perhaps, is it so simple to produce and maintain a relief of tension, but in its maintenance the very definite and serious complication of super-infection has to be met. It has been the aim of treatment of recent years to avoid this. If it is possible to give unremitting attention an empyema can be treated by aspiration alone. After the initial aspiration the local and general conditions will immediately improve, and in the exceptional case this improvement will continue without further aspiration being required. As a rule, however, two or more aspirations are that, under quinidine, alteration in both shape and size of the auricular and ventricular waves occur and are accompanied by a prolongation of the P.R. interval.[5] Hoffman [12] has shown that the excitability of the auricle of the excited heart to electrical stimulus is diminished by quinidine, and that stimuli which would normally produce fibrillation of the auricle fail to do so after quinidine has been added to the perfusate. These results indicate an effect on the excitability and conductivity of heart muscle. Lewis has pointed out that the existence of the circulating wave depends on three factors—the length of the path, the refractory period of the heart muscle, and the conductivity. It seems reasonable to suppose that quinidine abolishes fibrillation either by increasing the conductivity or by prolonging the refractory period of heart muscle, with the result that the gap is bridged and circus movement ceases.

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[1] See H. Wade, Opening Address, Section of Surgery, B.M.A., THE LANCET, August 6th, p. 282.

The restoration of a normal rhythm in five out of seven cases of auricular fibrillation by the use of quinidine is of considerable physiological interest. Its practical value in therapeutics remains to be determined. We would point out from the first that the use of quinidine is not without danger, the risk of embolism being a real one. In our cases the improvement in the general condition was not striking, and much less marked than might have been anticipated, and perhaps little more than might be attributed to the prolonged rest in bed. Certainly no dramatic change in the patient's general condition occurred when normal cardiac rhythm was restored. If the drug is stopped, tendency to relapse seems to be the rule. That quinidine will take a place in the treatment of cardiac disease seems probable, but the nature of its action and the limitations of its therapeutic value remain to be determined.

In conclusion we would express our thanks to Miss Rutherford and Miss Harvey, sisters of the Medical Unit Wards, for the extra trouble they have taken in the supervision of the nursing of these patients.

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ACIDOSIS AND TOXIC SYMPTOMS OF SEVERE DIARRHŒA IN INFANCY.

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THE toxic symptoms of severe diarrhœa in infancy, especially when associated with an increased pulmonary ventilation without cyanosis, have been shown by Howland and Marriott [1] and by Schloss and Stetson [2] to be accompanied by a state of acidosis.[*] This so-called intoxication was found to be coincident with (1) a decreased tension of the carbon dioxide of the alveolar air; (2) an altered hæmoglobin dissociation curve; (3) an increased tolerance to sodium bicarbonate; and (4) a decreased reserve of available base in the blood plasma.

The administration of alkali has been suggested and used in treatment. In Great Britain but little attention has been paid to this group of cases. Accordingly, at the suggestion of Dr. Leonard Findlay, the present investigation into the alkali reserve of the plasma in cases of diarrhœa in infancy was undertaken.

Methods.

The estimations were made according to the "micro-method" of Van Slyke.[3] [†] The blood was taken by the investigator from the superior longitudinal sinus directly into a glass syringe containing a few grains of potassium oxalate (approximately 0·5 per cent. of the weight of the blood drawn). By the use of the longitudinal sinus changes in the blood due to stasis, crying, and struggling were obviated. Admission of air to the syringe was avoided. Sufficient admixture of blood and oxalate was obtained during transference from syringe to centrifuge tube, and this did not expose the blood to loss of carbon dioxide or absorption of oxygen to any greater extent than occurs with the use of the M'Rae needle as described by Van Slyke.[3] Analyses were made at once. Duplicate determinations were carried out whenever there was sufficient plasma.

The alkali reserve is expressed as the volume per cent. of carbon dioxide which the plasma binds as bicarbonate at body temperature and the normal carbon dioxide tension of the alveolar air. Corrections are made for the temperature and barometric pressure at the time of analysis and the whole reduced to standard conditions of 0° C. and 760 mm. Hg pressure.

In the present paper the term "alkali reserve" will be used in relation to the numbers expressing the cubic centimetres of carbon dioxide bound as bicarbonate in 100 c.cm. of plasma. This seems permissible as an abbreviation, for the percentage of carbon dioxide is used as a measure of the available base. Since corrections are made for the free carbonic acid in the plasma, it seems also less confusing and more exact than the use of the phrase so frequently employed, "percentage of carbon dioxide." The sugar estimations were made according to the Lewis-Benedict [4] colorimetric technique. Routine urine analyses as made by the resident physician showed neither increased glycuresis nor ketosuria.

1. *Normal Infants.*

The blood was taken, as described, from healthy breast-fed infants gaining in weight, brought to the dispensary for circumcision. As a delay of one-half to one hour between the withdrawal of the blood and the separation of the plasma and corpuscles was unavoidable, the alkali reserve is probably slightly lower than it would have been had the determination been carried out at once.[‡] The number of hours after the last feed is obviously approximate. The value ranged from 43·3 to 63·3 (Table I.). This wide

TABLE I.—*Alkali Reserve of Plasma (Van Slyke) in Normal Infants.*

No.	Age.	Carbon dioxide vol. %.	Hours after feeding.	No.	Age.	Carbon dioxide vol. %.	Hours after feeding.
1	6 wk.	51·6	3	16	4 mth.	51·6	+
2	1 mth.	56·5	3	17	11 wk.	52·4	1½
3	2 mth.	53·6	3	18	9 ,,	55·0	2½
4	5 ,,	50·0	3	19	3 mth.	54·6	+
5	5 wk.	56·5	3	20	9 wk.	56·5	2½
6	2 mth.	49·7	2½	21	11 ,,	56·2	3
7	4 ,,	49·7	2	22	1 mth.	63·3	2½
8	6 ,,	49·0	?	23	4 ,,	62·2	2
9	6 ,,	43·3	8	24	7 wk.	54·8	+
10	6 wk.	54·2	1	25	5 ,,	56·4	+
11	6 mth.	53·8	1	26	1 yr.	46·8	5
12	3 ,,	51·0	2	27	1 ,,	55·5	1½
13	5 ,,	50·0	2	28	1 ,,	58·6	2
13	9 wk.	52·6	12	29	8 mth.	60·4	2½
14	3 mth.	50·7	3	30	8 wk.	53·0	2½
15	7 wk.	51·6	3				

+ = At once.

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[*] The term "acidosis" is used in the sense suggested by F. G. Hopkins at the recent meeting of the Section of Physiology and Pharmacology of the British Medical Association, as a diminution in the potential neutralising power of the blood.

[†] It is realised that a certain error occurs in the separation of plasma and corpuscles, and the subsequent subjection of the plasma to alveolar carbon dioxide tension, but the smallness of the error, and the greater facility of this technique for clinical purposes, determined its adoption.

[‡] Christiansen, Douglas, and Haldane [4] state that when serum and corpuscles remain in contact even for an hour there is a lowered alkali reserve of the plasma, due to ionic interchanges between cells and plasma.

the two cases of sudden respiratory failure described by Frey may have had a similar causation. Faber[9] has reported two cases with favourable results, and Levy[10] two successful results out of four cases treated, of which one relapsed.

The most recent communication is that of Jenny[11] who was able to stop fibrillation in 17 out of 18 cases. He states that in most instances the pulse has remained regular, but as the longest period of observation was only five months, obviously no statement as to the permanency of the cure could be made. He used from 0·5 g. to 15·5 g. in different cases, and says that it may be necessary to give the drug continuously or to repeat the courses; doses of 0·5 g. quinidine were given three times a day and found to be safe up to 2 g. to 3 g. The drug should be stopped at the least sign of disturbance in sight or hearing.

The purpose of this communication is to call attention to these observations, and to make a preliminary report of our results in the treatment of seven cases of auricular fibrillation.

CASE 1.—F. M., female, No. 43343/1921, aged 58, housewife. Mitral stenosis, auricular fibrillation. Three attacks of acute rheumatism in childhood. Then quite well until eight years ago; then a sudden attack associated with dyspnœa, palpitation, and partial loss of consciousness; since then has always suffered from shortness of breath and palpitation. A similar attack seven years ago. Subsequently admitted to an infirmary with swelling of legs and abdomen, and paracentesis abdominis was performed. Sudden attack two and a half years ago, with complete loss of consciousness, following which she came to the London Hospital as an out-patient. Since then auricular fibrillation has been constantly present, and courses of digitalis have been prescribed. Patient was admitted to the London Hospital August 2nd, 1921.

Condition on Admission.—Poorly nourished, rather wasted woman; no cyanosis, œdema, or dyspnœa; pulse absolutely irregular in volume and frequency, rate very variable at wrist, 62–112. Blood pressure: systolic 160, diastolic 96. Heart moderately enlarged to left; apex beat diffuse and wavy; systolic murmur at apex conducted outwards; pulmonary second sound accentuated. A polygraph tracing taken on August 4th, 1921, showed complete irregularity of both radial and jugular pulses, and absence of *a* waves.

Treatment and Progress.—On August 6th, quinidine gr. v. t.d.s. started. On the 11th, pulses perfectly regular, rate 50–60; no pulse deficit; a loud rumbling diastolic murmur not previously heard was present at the apex. Little change in the patient's objective condition, but she stated that the fluttering sensation in her chest constantly present for the last two and a half years had completely disappeared. On the 12th, quinidine discontinued; on the 13th, sudden onset of pain in left loin followed by four stools and hæmaturia. A little later pain in right upper abdomen; on examination tender palpable left kidney; diminished breath sounds and crepitations at right base; pulse still regular. On the 17th, condition improved; pain had gone, hæmaturia had ceased; occasional irregularity of pulse suggesting extra systoles. On the 18th, pulse completely irregular in volume and frequency; polygraph tracing showed complete irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 1). On the 19th quinidine, gr. v. t.d.s., was started at 7.45 A.M.; at 9 P.M. patient suddenly complained of numbness and inability to move left leg. On examination, leg was cold; pulsation absent in dorsalis pedis but present in femoral artery; tendon reflexes were normally active; no disturbance of sensation; pulse completely irregular; diastolic murmur at apex had disappeared. On the 20th, leg warmer; good pulse in dorsalis pedis. On the 21st, tachycardia 130–140; pulse more regular. On the 22nd, tachycardia still present; polygraph tracings showed irregularity of radial and jugular pulses with absence of *a* waves. On the 23rd, pulse absolutely regular; tracings showed regular radial and jugular rhythms, and presence of *a* waves superimposed on *v* waves in the jugular pulse tracing. On the 24th, pulse-rate very variable, 76–112; polygraph tracings again taken; normal rhythm with presence of *a* waves. On the 29th, intermittent tachycardia continued. Tracings showed regular radial and jugular rhythms, *a* waves present and superimposed on *v* waves (see Fig. 2). Considerable improvement in patient's general condition. Complete absence of palpitation. A loud crescendo presystolic murmur was now heard at the mitral area. The pulse continued regular and on the 31st quinidine was reduced to gr. v. one dose a day. On the same night between 10 P.M. and 12 midnight the pulse became absolutely irregular. At 2 A.M. on Sept. 1st the pulse was regular and remained so until 10 A.M. on the 2nd, when it again became absolutely irregular. At the same time the presystolic murmur disappeared from the mitral area.

Summary.—A case of auricular fibrillation of about two years' duration. Reacted well to digitalis when under out-patient treatment and admitted fully compensated. Quinidine by the mouth was started and fibrillation ceased with return to normal rhythm on the fifth day after a total amount of gr. xcv. had been administered. The quinidine was discontinued and embolic infarction of left kidney and right lung occurred while the pulse remained regular. Six days after the quinidine was stopped fibrillation set in again; quinidine was at once re-administered and embolism of the left popliteal artery occurred before the heart returned to its normal rhythm. After four days of quinidine administration and when a total amount of gr. lx. had been given auricular fibrillation gave place for a second time to normal rhythm. Quinidine was then reduced and fibrillation recurred, but reverted to a normal rhythm in two hours, fibrillation again recurring eight hours later. Return to normal rhythm after fibrillation was proved by polygraph tracings and the appearance of a presystolic murmur.

CASE 2.—C. G., female, No. 43343/21, aged 32, housewife. Mitral stenosis, auricular fibrillation, myocardial failure. The patient was quite well until 21 months ago, when she had a "stroke" in the night, and on the following morning was found unconscious in bed with paralysis of the right side and later aphasia. She was admitted to Tottenham Hospital; ever since the attack patient had complained of shortness of breath, cough, and palpitation. Two weeks ago shortness of breath, cough, and palpitation became worse, with swelling of abdomen and legs. No history of rheumatic fever, chorea, or rheumatism.

On Admission.—August 4th, 1921, extreme dyspnœa, orthopnœa, and cyanosis; pulsation of congested veins of neck. Almost pulseless; pulse-rate almost uncountable at apex beat, but absolutely irregular in force and rhythm; apex beat 6¼″ from mid line; systolic murmur at apex beat conducted outwards. Accentuated pulmonary second sound; liver and spleen palpable; ascites and œdema of legs; old right hemiplegia. Immediate treatment: oxygen, intravenous strophanthin, venesection, and digitalis. Rapid improvement.

Treatment and Progress.—On the 8th, pulse 80; absolute irregularity in volume and frequency. Apex beat 4 inches from mid-line; no ascites; no œdema. On the same day, fully compensated when at rest in bed. Polygraph tracing shows complete irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 3). On the 19th quinidine, gr. vii. t.d.s., started. On the 20th, after four doses of quinidine (i.e., gr. xxx.), pulse perfectly regular, rate 70–80; loud crescendo presystolic murmur now heard at apex beat. On the 22nd, pulse regular, polygraph tracing showed absolute regularity of radial and jugular pulses and the presence of *a* waves on the jugular pulse-tracings (see Fig. 4). On the 28th, pulse slow and regular; loud crescendo presystolic murmur at apex beat. Occasional extra-systoles not transmitted to radial pulse; polygraph tracing shows normal rhythm with no extra-systoles and presence of *a* waves; considerable improvement in general condition; complete relief from palpitation. Quinidine reduced to gr. vii. once a day. On Sept. 5th, pulse still regular; polygraph tracing showed presence of *a* waves.

Summary.—Admitted with failing compensation; reacted well to digitalis. Return to normal rhythm 36 hours after commencement of quinidine administration, and after a total dose of gr. xxx. had been given. Quinidine reduced to gr. vii.ss. once a day. Rhythm remained normal. Return to normal rhythm proved by polygraph tracings and the appearance of a presystolic murmur.

CASE 3.—R. N., male, No. 33074/21, aged 36, carman. Aortic and mitral incompetence, auricular fibrillation, myocardial failure. Acute rheumatism seven years ago; second attack six years ago; then well until two years ago, when he was admitted to London Hospital with complete iregularity of pulse, mitral systolic and aortic systolic and diastolic murmurs, enlargement of liver, ascites and œdema of legs. Since then always suffered from shortness of breath, palpitation, and swelling of legs.

On Admission.—August 18th, 1921, cyanosis, dyspnœa, and palpitation; no ascites or œdema of legs; apex beat 1 inch outside nipple-line; systolic murmur at mitral area; systolic and diastolic murmurs at aortic area. Pulse irregular in volume and frequency. Polygraph tracing showed complete absence of *a* waves and absolute irregularity of radial and jugular pulses (see Fig. 5). On the 20th, patient much better; pulse still irregular; compensated at rest in bed. Quinidine gr. vii.ss. started t.d.s. On the 24th, pulse still irregular; quinidine gr. x. t.d.s. At midnight 25th–26th, pulse regular; bradycardia; tracings taken showed normal rhythm of radial and jugular pulses with *a* waves present (see Fig. 6). G[illegible] improvement in patient's general condition[illegible] tation. Murmurs unchanged. Quinidine [illegible]

4. *Various Conditions.*

Table IV. contains a few analyses of the plasma of infants suffering from various disorders, not accompanied by hyperpnœa. All of them show normal reserves of alkali. Especially noteworthy are the cases of pylorospasm with vomiting on the day of the determinations and low percentages of sugar in the blood. Evidently sufficient sugar was being absorbed and burned to prevent an acidosis due to aceto-acetic acid. The cases of colitis, although severely ill with diarrhœa and fever, were not hyperpnœic and suffered no diminution in the plasma alkali.

Several cases of pneumonia are included here although they were inadequately investigated. In four (Cases 56, 58, 59 and 60) the reserves of alkali were below normal. The others had an apparently adequate supply of available base. Further study of the state of the blood in pneumonia is desirable. If the pulmonary epithelium does not permit the normal free diffusion of oxygen and carbon dioxide, it is possible that free carbonic acid increases in the blood, while oxyhæmoglobin decreases, leaving reduced hæmoglobin in excess. The hyperpnœa with cyanosis may be accounted for in this way. Such reactions as $Na_2HPO_4 + H_2CO_3 \rightleftharpoons NaHPO_4 + NaH_2CO_3$ with the excretion of the acid phosphate by the kidney, or the release of sodium from combination with hæmoglobin, may occur. *In any case, if the formation of* $NaHCO_3$ cannot keep pace with the accumulation of H_2CO_3 then the hydrogen-ion concentration is actually increased. Obviously this is possible with an amount of available base which is normal at the usual tension of carbon dioxide. *In this instance the tension of* carbon dioxide in the alveolar air cannot be taken as a measure of its tension in the blood, and the determination of the numerator of the fraction $\frac{H_2CO_3}{NaHCO_3}$ is *essential in estimating the true state as regards* acidosis. Although there may be a supply of available base adequate to deal with an increased production of stronger acids, the difficulty of excretion of the acids of lower ionisation would create a danger *analogous to a depletion of alkali reserve.*

The amount of available base appears to be uninfluenced by the height of the temperature.

Conclusions.

In certain of the diarrhœas of infancy, symptoms of intoxication, the chief of which is increased pulmonary ventilation, are accompanied by a reduction in the reserve of bicarbonate in the blood plasma. The hyperpnœa and the alkali reserve vary inversely. *The reserve can be increased to normal by the* administration of sodium bicarbonate. Hyperpnœa is thus controlled and the general toxic symptoms are alleviated, but the ultimate outcome, in the diarrhœal cases at any rate, is little influenced. It would seem that *either the pathological acid* possesses toxic properties even when neutralised (as is probably the case with aceto-acetic acid [7, 8]) and is not excreted as rapidly as it is formed, or the damage is so extensive before detection of the ensuing symptoms that *recovery is improbable.* Necropsy throws no light on the questions of the site or extent of the damage done. The usual lesions of gastroenteritis are the only ones found. Depletion of the alkali reserve is not a cause of the diseased condition, but is caused by it and is essentially, like an elevation of temperature or an acceleration of the heart rate, a varintion in a physiological constant, an indication of deranged function. And just as fever and tachycardia demand certain therapeutic measures for their own sake, so acidosis indicates the administration of alkali and fluid and the stimulation of excretion. When the acid produced and the cause of its production are known more specific therapy may be available. In conclusion, no more can be said than that these observations *confirm the work of* previous investigators.

Thanks are extended to Prof. Noël Paton, University of Glasgow, and to Dr. Leonard Findlay, Royal Hospital for Sick Children, Glasgow, for many valuable suggestions, for the selection of cases and opportunities for clinical observation. The investigation was done under the auspices of the Medical Research Council, by whom the expenses were defrayed.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

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A CASE OF

PYONEPHROSIS AND URETERAL CALCULUS.

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THE following case is of interest by reason of the large size of the calculus extracted from the ureter.

Mrs. D., aged 59, obese, gave a history of acute pain in right side of abdomen and right flank, of 11 days' duration. She stated that she had had previous attacks of pain during the past few years, and that her urine had contained blood. The physical signs were: tenderness, rigidity on right side of abdomen and in right flank; a mass was palpated in the right ileo-costal space, also a separate smaller tender mass in the right iliac fossa. The abdomen moved well on respiration. X ray examination showed a shadow over the right iliac fossa.

Operation (April 5th, '21). An oblique incision was made over the right ileo-costal space. The right kidney was found to be very much enlarged, the pelvis being distended. The whole mass was freed and the pedicle clamped; during this process the pelvis *ruptured, liberating* a large quantity of foul-smelling purulent fluid and urine. The right kidney was removed and the stump of the proximal end of the ureter followed down; a large lipoma was found surrounding a normal-sized ureter at about the level of the crest of the ilium. Lower a stone was discovered in a dilated ureter. The lipoma, ureter, and stone were removed, the ureter stump ligated, and the wound drained and closed in layers. The patient made an uninterrupted recovery, and was discharged from hospital on May 13th. On Oct. 19th patient reported, being then quite well. Examination of abdomen revealed nothing abnormal. Scar healed. No bulging or hernia. Urine normal.

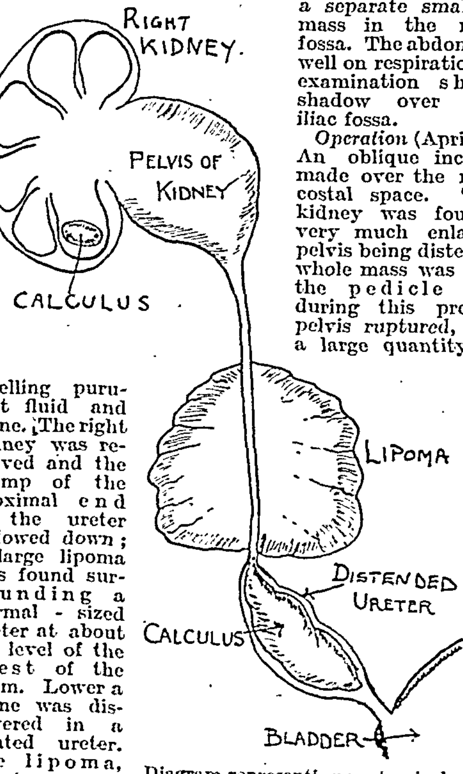

Diagram representing anatomical sequence of structures encountered during operation.

a day. On the 27th, sudden onset of pain in left side; no physical signs in lungs; spleen not palpable, but tenderness on palpation under left costal margin; probably splenic infarction. On the 29th patient felt very well; pain completely gone; no palpitation. Polygraph tracings showed complete normal rhythm.

Summary.—Auricular fibrillation of two years' duration, admitted with failing compensation; reacted well to digitalis; return to normal rhythm five days after commencement of quinidine administration and after a total amount of 157 gr. Embolic infarction of spleen 24 hours after return to normal rhythm; quinidine reduced to gr. x. once a day; remained regular.

CASE 4.—F. O., No. 4335/21, aged 45, housewife. Auricular fibrillation, mitral incompetence, myocardial failure. Had chorea 35 years ago; three attacks of acute rheumatism 24–19 years ago, since when she has always suffered from shortness of breath, palpitation, and præcordial pain. Admitted to the London Hospital 15 months ago, eight and a half months pregnant, with auricular fibrillation, severe dyspnœa, ascites, and œdema of legs. Reacted well to digitalis and passed successfully through a normal labour, giving birth to a live child; since then has been attending as an out-patient; auricular fibrillation constantly present.

On Admission.—August 2nd, 1921, poorly nourished woman; congested facies, dyspnœa, orthopnœa, and cyanosis. Pulse absolutely irregular in volume and frequency; heart moderately enlarged to left; mitral systolic murmur and accentuated pulmonary second sound. Congestion and œdema of lungs; palpable liver; ascites and œdema of legs.

Treatment and Progress.—Immediate treatment, digitalis, to which the patient responded well; this was stopped after nine days on account of nausea. On the 18th the patient was much better; œdema and ascites were absent; pulse-rate was much less and pulse deficit reduced. Polygraph tracings revealed absolute irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 7). On the 19th quinidine, gr. v. t.d.s., was started; on the 24th digitalis was re-started on account of tachycardia; on the 31st quinidine was increased to gr. x. t.d.s. Frequent polygraph tracings revealed the persistence of fibrillation and the absence of normal rhythm, and this condition continued up to Sept. 2nd, when, however, the patient's general condition was much improved, and a completely irregular rhythm seemed to have given place to one in which phases of comparative regularity alternated with phases of tachycardia, but polygraph tracings failed to reveal presence of *a* waves. On the 3rd digitalis was stopped. On the 5th at 6 A.M. the pulse was absolutely regular and continued so all day. Polygraph tracings showed a completely regular cardiac rhythm with presence of *a* waves (see Fig. 8).

Summary.—A case of auricular fibrillation of about 15 months' standing which reacted well to digitalis. Normal rhythm was restored after quinidine had been administered for 18 days and a total quantity of 315 gr. had been given.

CASE 5.—S. E., No. 43563/21, aged 35, housewife. Myocardial failure, auricular fibrillation, mitral stenosis, and incompetence. Shortness of breath on exertion dating from an attack of influenza three years ago. A year and a half ago an attack of bronchitis. On first getting up after three weeks in bed, sudden loss of consciousness, followed by exhaustion, breathlessness, palpitation, and pain in the chest, which have persisted ever since. Hæmoptysis, followed by œdema of legs, nine weeks ago. No history of chorea, rheumatism, or rheumatic fever.

On Admission.—August 20th, 1921, poorly nourished, sallow woman; heart enlarged outwards and downwards; dyspnœa; systolic and diastolic murmurs at mitral area; absolute irregularity of pulse; tachycardia; a few crepitations at both bases; palpable liver; no ascites or œdema of legs.

Treatment and Progress.—Tinct. digitalis ℥xxx., four doses. After three days much better; no dyspnœa while at rest in bed. On the 22nd polygraph tracings revealed complete irregularity of radial and jugular pulses with absence of *a* waves. Quinidine, gr. vii.ss, t.d.s., was then started; but on the 27th it had to be suspended on account of diarrhœa and abdominal pain. On the 28th there was no diarrhœa or pain; quinidine was re-started. On Sept. 1st patient developed a scarlatiniform rash. On the 5th pulse was still irregular. Repeated polygraph tracings showed the continuation of auricular fibrillation up to this date.

Summary.—A case of auricular fibrillation of unknown duration which failed to be arrested by 300 gr. quinidine administered over a period of 15 days. Ill-effects observed attributable to the drug were abdominal pain, diarrhœa, and a scarlatiniform eruption.

CASE 6.—J. L., No. 33010/21, aged 37, carman. Auricular fibrillation, myocardial failure. Six months ago short of breath; five months ago his right foot suddenly went numb, cold, and white. Admitted to the London Hospital with auricular fibrillation, palpable liver, mitral systolic murmur and œdema of lungs; reacted well to digitalis and was discharged. Return of exhaustion and shortness of breath one month ago.

On Admission.—August 2nd, 1921. Well-nourished man; dyspnœa, orthopnœa, and cyanosis. Pulse absolutely irregular in volume and frequency; heart enlarged to left; mitral systolic murmur and accentuated pulmonary second sound; crepitations at both bases. Palpable liver; no ascites or œdema.

Treatment and Progress.—Reacted well to digitalis, which was stopped on August 18th. On August 23rd, 1921, polygraph tracings were taken which revealed absolute irregularity of radial and jugular pulses with absence of *a* waves (see Fig. 9). Quinidine, gr. vii.ss. t.d.s., was then started. On the 27th, quinidine was increased to gr. vii.ss. six-hourly. On Sept. 1st quinidine was increased to gr. x. six-hourly. At 4 A.M. on the 5th one dose of tinct. digitalis, ℥ xxx., was given. The pulse remained completely irregular until 6 A.M. on the same day, when irregularity gave place to a normal rhythm. Polygraph tracings (see Fig. 10) demonstrated complete regularity of radial and jugular pulses with presence of *a* waves.

Summary.—A case of auricular fibrillation of about 15 months' duration which reacted well to digitalis. Normal rhythm was restored after quinidine had been administered for 18 days, when a total quantity of gr. 375 had been given. Ill-effects observed attributable to the drug were abdominal pain, diarrhœa, and profuse sweating.

CASE 7.—R. P., No. 3564/21, aged 42, housewife. Auricular fibrillation, mitral incompetence. Rheumatic fever ten years ago. Since then quite well until 18 months ago, when she started to have shortness of breath, pain in the chest, and palpitation. One year ago admitted to the London Hospital with auricular fibrillation, dyspnœa, and œdema. Did not react well to digitalis, but improved with prolonged rest in bed. Since then shortness of breath on exertion, palpitation, and præcordial pain.

On Admission.—August 20th, 1921, very obese Jewess. Short of breath; absolute irregularity of pulse; heart enlarged to left; mitral systolic murmur and accentuated pulmonary second sound. No œdema. Fairly well compensated.

Treatment and Progress.—On the 22nd tracings showed absolute irregularity of radial and jugular pulses with absence of *a* waves. The same day quinidine, gr. vii.ss. t.d.s., was started. On the 24th tinc. digitalis, ℥ xxx., four-hourly, was started and continued for six doses. On Sept. 1st patient developed a scarlatiniform rash. On the 2nd, quinidine was still being administered. Polygraph tracings revealed the persistence of auricular fibrillation, and there was no alteration in the nature of the cardiac rhythm.

Summary.—A case of auricular fibrillation of about one year's standing which reacted poorly to digitalis. Quinidine (262 gr. administered over a period of 12 days) failed to produce a return to normal rhythm. Ill-effects observed, attributable to drug, were abdominal pain, pain in the back, sweating, and scarlatiniform rash.

Discussion of Results.

From the foregoing case reports it will be seen that out of 7 cases of well-established auricular fibrillation in 5 the administration of quinidine by the mouth has been associated with return to the normal cardiac rhythm. In all these five cases the change has been demonstrated by polygraph tracings, and in two of them by the appearance of a crescendo presystolic murmur at the apex. In one of these five relapse occurred soon after the drug was stopped, and again a second time when the dosage was reduced. In two the dosage was only decreased and there was no relapse into auricular fibrillation. In two of the five cases, shortly after the onset of normal cardiac rhythm, embolic infarction of internal organs occurred. The formation of clots in the appendix of a fibrillating auricle is not uncommon, and the loosening of these by restored auricular contraction and their projection into the general circulation is easily understood. The only reference we have been able to find in the literature to a similar occurrence is in a paper by Benjamin and v. Kapff, who report one instance of lung embolism and one of sudden death possibly due to the same cause. In one, tachycardia was associated with the administration of the drug. In one case an alteration of cardiac rhythm, characterised by an alternation of phases of comparative regularity with bouts of irregular tachycardia, preceded return to normal rhythm.

The pharmacological action of quinidine is still undetermined. Electro-cardiographic study has shown

Date.	Tr.	Ty. mins.	Mc. mins.	Inh. mins.
Dec. 1st	1	2	1½	1
" 7th	2	2½	1½	1½
" 13th	3	2½	1½	3
" 17th	4	2½	1½	1¼
Jan. 18th	5	2	1½	—
" 21st	6	2	1	1
Feb. 1st	7	—	—	1
" 8th	8	2½	1½	—
" 15th	9	2½	1½	—
" 22nd	10	2½	1½	2
Mar. 1st	11	2½	1½	2
" 7th	12	2½	1½ 2	—
" 11th	13	2½	1½	2
" 18th	14	2½	1½	2
Apr. 5th	15	2½	1½	2

Remarks.—Dec. 13th: Hearing improved; Feb. 1st: Severe cold; 8th: Hearing improved; 22nd: Still improving. April 5th: Great improvement. Discharged.

CASE 2.—Miss B., aged 40. Double otitis media; very deaf in both ears. Tr. began Jan. 18th, ended March, 15th, 1921.

Date.	Tr.	Ear.	Ty. mins.	Mc. mins.
Jan. 18th ..	1	Both	1½	2½
" 21st ..	2	Left	2½	1½
		Right	1½	1½
" 25th ..	3	Both	2	1½
" 28th ..	4	Both	2½	1½
Feb. 1st ..	5	Both	2½	1½

Remarks.—Jan. 28th: Decided improvement. Feb. 1st: Still improving.

A further six treatments of an exactly similar nature were given on Feb. 8th, 15th, 22nd, March 1st, 7th, 15th, when the patient was discharged with normal hearing.

CASE 3.—Mrs. D., aged 35. Chronic otitis media, left ear. Had scarlet fever at 6 years, leaving a discharge from the left ear which eventually disappeared only to return, accompanied by severe pain, each time the patient has a cold. She had an abscess behind the left ear when 21 years of age and had all her teeth out. She is quite deaf on the left side and has a damaged membrana tympani. The tympanum is adherent in parts. Tr. began Jan. 19th, ended Feb. 28th, 1921.

Date.	Tr. (left ear.)	Ty. mins.	Mc. mins.
Jan. 19th	1	1½	1½
" 25th	2	2½	2
" 28th	3	2½	1½
Feb. 2nd	4	2½	1½
" 8th	5	2	1½
" 28th	6	2	1½

Remarks.—Feb. 28th: Returned for examination; later discharged; otitis cured and hearing excellent.

It is rather surprising to find, on adding up the sum total of the actual time occupied by the treatments, that even in a case extending over so long a period as the first treatment occupies little more than an hour in all, and in such a case as the last just over 20 minutes.

It is quite impossible to lay down hard-and-fast lines as to methods of treatment, length of exposure, &c., which can only be acquired by experience of cases differing widely according to constitutional and disease conditions.

NEWCASTLE-ON-TYNE POST-GRADUATE COURSE.—The course of lectures and demonstrations for the Michaelmas term began on Oct. 13th. The classes which have been arranged are as follows: Clinical Medicine, Dr. W. E. Hume and Dr. A. Parkin; Diseases of the Throat, Nose and Ear, Mr. S. S. Whillis and Mr. W. F. Wilson; Clinical Pathology, Prof. Stuart McDonald and Dr. A. F. Bernard Shaw; X Ray and Electrical Treatment, Dr. W. D. Arnison; Midwifery and Gynæcology, Prof. R. P. Ranken Lyle; Neurology, Dr. Geo. Hall. Thirty-six practitioners have entered for the various classes, which will meet in the Royal Victoria Infirmary every Thursday up to and including Dec. 15th.

Medical Societies.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

A MEETING of this Association was held on Oct. 21st, with Mr. R. C. ELMSLIE in the chair, when Dr. A. E. SANDERSON CLOW opened a discussion on

GAMES FOR GIRLS.

She said that she would confine her remarks entirely to her own experiences when a girl, and to her observations on the school girls and patients with whom she had come into personal contact. She thought the time long past when there would be any occasion to deal with arguments attempting to prove that field games like cricket and hockey were bad for girls. However, from letters that had appeared in the press during the last few months, it seemed that the matter was still in dispute even among educational authorities. Probably everyone nowadays was agreed that girls must have *some* outdoor recreation, though a girl was often expected to bear the strain of school life and develop her maximum physical strength on a much smaller ration of fresh air and exercise than was deemed necessary for her brother. The varieties of outdoor recreation within the reach of school girls were: walking, cycling, swimming, drilling, and gymnastics; and games—including cricket, tennis, and rounders in the summer; hockey, lacrosse, and net-ball in the winter. As to walking and cycling, the latter was good enough exercise for the legs and thighs, but gave no exercise to the abdominal muscles, nor to the arms and shoulders. Walking was doubtless a very good exercise, but should not be the only one taken throughout the week because the muscles of the back, abdomen, shoulders, arms, and neck were only very partially brought into play. Also it did not afford the same mental diversion or lessons in esprit de corps. Dr. Clow praised swimming as one of the most popular and exhilarating of sports. Drilling and gymnastics, she thought, were excellent in moderation, especially if conducted in the open air, but they did not take the place of games. Drilling was valuable not only as a corrective to stooping and bad habits in standing; it taught concentration and quickness in understanding and obeying orders, and discouraged the desire to show off. Dr. Clow had never seen any ill-effects on girls from gymnastics, and saw no reason why they should not be as beneficial to girls as to boys, while elaborate apparatus was not needed. With regard to outdoor games, the best games for school girls were team games—for example, cricket, hockey, and lacrosse. Criticisms of these games came mostly, she said, from elderly men, or from women who had not had the advantage of playing these games themselves. The important part played by games in the character building of boys had been recognised for generations; girls stood in need of these lessons just as much as did boys, and had the same need of games as an aid to health. Games could be considered in the light of their effect on character, their effect on the mind, and their effect on the physical health during school and adult life. As to the first point there was, in Dr. Clow's opinion, no part of the school curriculum which had more effect on the formation of character than had field games. Besides learning lessons of discipline, endurance, and fair play, the girls learned as children that a certain part of the day should be set apart for outdoor exercise, and, on the other hand, that however engrossing a game might be, the time allotted to it should be subject to definite limits. They learned, moreover, lessons of hygiene and of good citizenship. Dr. Clow, in speaking of matches, remarked that children should not be allowed to play in a match without having the opportunity of micturition immediately beforehand. Many children suffered from rapid urinary excretion under excitement, and the harm that a girl might suffer in playing a vigorous game variation in infancy, with a tendency to be low, has been noted before, although not explained, except perhaps by the suggestion of Marriott that the more active metabolism of infants, with its greater production of acids, may lead to a decrease in alkali reserve.

2. *Cases of Dyspepsia.*

In this group were cases with gastro-intestinal *disorders of an afebrile, non-toxic variety, with more* or less diarrhœa and occasional vomiting (Table II.). The alkali reserve ranged between 45·5 and 70. Cases 13 and 14 are of interest. They both received alkaline therapy before the analyses were made, and in both there was a reserve of alkali greater than is usually found in infants. This reserve gradually decreased, and the last analyses made showed a diminution below the level of safety, although there were then no symptoms of intoxication. Subsequently intoxication developed and both patients died. Three patients (Cases 12, 19 and 26) showed neither diminution in alkali reserve nor symptoms of intoxication, but died of marasmus.

There does not seem to be any relationship between the age or weight of the child, the caloric intake or the blood sugar, and the alkali reserve.

3. *Cases with Intoxication.*

There were 14 cases showing the clinical symptoms of intoxication with the typical increased pulmonary ventilation or hyperpnœa without cyanosis (Table III). Of these, one (Case 10) had a carbon dioxide combining power of 30·9 and recovered without any specific therapy. Whether this was an acidosis due to starvation or to administration of drugs before admission is not known. Improvement occurred within a few hours. Case 49, admitted with convulsions, had been starved for three days. He then developed typical symptoms of acidosis with air hunger and abundant diacetic acid and acetone in the urine. The alkali reserve of the plasma was 38. With bicarbonate of soda, 1·3 g. four-hourly, an intraperitoneal hypertonic saline injection, and an adequate caloric intake, all symptoms disappeared and the alkali of the plasma returned to normal. This was in all probability a case of acidosis due to ketones—that is, the beta-oxybutyric and aceto-acetic acids depleted the alkali reserve. Were these, however, caused by the starvation alone? Veeder and Johnstone[6] find that the "acetone bodies" produced in children by 48 hours of starvation cause no symptoms and are not dependent on the previous condition of the child. However, no cases with severe convulsions were included in their investigation. Some other acid related to the original morbid condition may have increased the acidosis in this case. All the other patients died. One case (39) was considered to be an example of diarrhœa with intoxication, but he had slight cyanosis and a positive von Pirquet reaction with a normal alkali reserve. Doubtless, this case should not be included in this group, but owing to the first clinical impression it has not been omitted. All those cases which received alkaline therapy maintained a normal alkaline reserve so far as it was observed. Estimations were not made immediately before death. The fatal outcome, however, was not averted. Also, in the two cases (13 and 14, Table II.) which received bicarbonate of soda before the appearance of toxic symptoms, intoxication and death were not avoided. The alkali was always given by mouth in doses sufficient to keep the urine alkaline. More vigorous intravenous administration was never tried.

TABLE II.—*Alkali Reserve of Plasma (Van Slyke) in Infants with Simple Dyspepsia.*

No.	Age in months.	Weight kilo.	Calories per kilo.	Blood sugar grammes per cent.	Carbon dioxide volume per cent.	Hours after feeding.	Remarks.
1	3	2·6	136	0·068	61·4	3	
	4	2·7	140	0·062	67·0	2	
	5	2·8	153	0·071	57·4	3	*D.**
2	5	3·1	151	—	62·4	3	
	6	3·0	104	0·060	64·3	3	*R.*
4	4	3·8	78	0·067	55·3	3	
	5	3·8	126	0·065	48·7	3	*R.*
5	3	2·3	135	0·066	48·6	3	
	4	2·7	184	0·064	47·3	3	
	5	2·9	171	0·090	48·3	1	*R.*
11	4	4·5	92	0·070	54·8	3	*R.*
12	3	2·6	97	0·079	57·6	2	
	3	2·7	97	0·066	56·4	3	
	5	2·8	142	0·075	57·1	3	*D.*†
13	6	3·9	19	0·060	70·0	3	S.B.
	6½	3·9	40	0·062	44·9	3	I.—*D.*
14	5	4·1	31	0·089	69·0	½	S.B.
	6	4·2	60	0·055	58·4	1	
	6	3·9	117	0·083	45·3	2	I.—*D.*
16	5	3·1	34	0·08	56·5	1	*R.*
18	7	3·6	108	0·071	51·6	1	
	8	4·5	118	0·045	52·0	8	*R.*
19	5	3·9	60	0·083	62·8	1	
	5	3·7	118	0·100	61·4	½	*D.*††
21	7	4·0	63	0·077	66·2	1	
	8	4·3	110	0·060	56·0	8	*R.*
23	6	5·7	69	0·100	54·8	3	*R.*
26	2½	2·9	14	0·050	62·4	2	*D.*††
27	5	4·0	73	0·05	60·4	1	*R.*
29	6	2·7	145	0·09	57·6	1	*R.*
30	4	4·8	112	0·080	58·0	3	*R.*
34	9	5·4	109	0·041	53·8	8	*R.*
37	8	6·8	97	0·100	62·4	4	*R.*
38	3	4·5	95	0·072	55·0	4	*R.*
40	3	2·5	132	0·073	60·4	2	*R.*
45	5	4·2	32	0·066	58·2	1	*R.*
47	9	5·8	114	0·087	61·4	½	*R.*

TABLE III.—*Alkali Reserve of Plasma (Van Slyke) in Infants with Intoxication.*

No.	Age in months.	Weight kilo.	Calories per kilo.	Blood sugar grammes per cent.	Carbon dioxide volume per cent.	Hours after feeding.	Remarks.
3	6	3·8	33	0·078	51·8	2	P. and F.
	6	3·9	65	0·069	56·0	3	
	7	4·6	107	0·074	65·8	3	S.B.¹—*D.*
7	3	2·8	126	0·087	38·0	3	*D.*
9	2	2·5	159	0·059	34·2	3	
	2	2·3	96	0·051	37·2	3	*D.*
10	2	3·7	83	0·072	30·9	2	S.I.
		4·0	112	0·062	58·2	3	*R.*
15	11	2·7	63	0·064	61·2	3	S.B.²—*D.*
17	7	6·1	112	0·066	57·4	2	S.B.³—*D.*
20	2	3·2	38	0·142	38·1	1	*D*
24	10	5·4	6	0·065	43·0	½	*D.*
25	4	4·6	7	0·100	37·5	½	*D.*
28	4	6·5	0	0·090	33·8	16	H.S.—*D.*
35	5	3·1	33	0·100	42·9	2	*D.*
39	11	4·4	32	0·100	57·6	2	C.P.—*D.*
48	7	5·8	32	—	36·1	—	P.G.-E.
48	7	5·8	—	—	57·6	—	S.B.—*D.*
49	15	7·8	0	0·063	38·5	—	A.D.A.
49	15	7·9	66	0·080	60·3	2	N.D.—*R.*

TABLE IV.—*Alkali Reserve of the Plasma (Van Slyke) in Infants with Various Disorders.*

No.	Age in months.	Weight kilo.	Calories per kilo.	Blood sugar grammes per cent.	Carbon dioxide volume per cent.	Hours after feeding.	Remarks.
6	5	3·8	93	0·064	49·7	3	C.
	5	3·9	153	0·090	48·3	1	C.
	6	4·1	119	0·064	49·7	3	*R.*
8	4	2·7	148	0·043	50·7	3	P.V.
	4	2·8	125	0·041	52·4	3	P.V
22	72	15·7	—	0·090	57·6	2	N.R.
31	17	6·0	94	0·072	65·0	3	Cr.
32	9	6·9	84	0·082	53·0	8	S.
36	3	4·2	118	0·050	50·7	4	P.V.
41	3	4·2	60	0·098	51·0	1	P.V.
42	8	4·6	0	0·100	58·0	24	C.
43	9	5·3	62	0·083	65·0	3	T.
50	3	3·6	129	0·1	50·0	2	C.O.B.—*D.*
51	84	11·0	28	—	62·4	3	I.S.B.—*R.*
52	10	5·5	96	0·08	59·5	3	B.-p.—*D.*
53	7	7·0	65	0·08	51·6	3	B.-p.—*R.*
54	16	8·8	66	—	54·5	3	B.-p.—*D.*
55	12	6·9	69	—	45·8	3	B.-p.—*D.*
56	8	6·3	71	0·11	51·6	3	B.-p.—*D.*
58	7	5·4	90	—	42·0	3	B.-p.—*R.*
59	10	—	—	—	42·0	3	B.-p.—*D.*
60	6	7·0	70	—	48·1	—	B.-p.—*D.*

Explanation of "Remarks" Column. (Tables II., III., IV.)

TABLE II.—*D.*, died. *R.*, recovered. I., developed intoxication. S.B., receiving soda bicarbonate gr. x. 4 hourly. P.P., von Pirquet positive. * Died of traumatic peritonitis. † Died three weeks later of gastro-enteritis. †† Died two weeks later of gastro-enteritis.

TABLE III.—P. and F., pyelitis and furunculosis. S.B., soda bicarbonate. S.B.¹, receiving soda bicarbonate 0·656 g. hourly. S.I., symptoms of intoxication. S.B.², receiving soda bicarbonate 0·312 g. hourly. S.B.³, receiving soda bicarbonate 1·3 g. hourly. H.S., 280 c.cm. hypertonic saline intraperitoneally. C.P., cyanosis; von Pirquet; no necropsy. P.G.-E., pyelitis and gastro-enteritis. A.D.A., water only for three days; acetone and diacetic acid in urine. N.D., three days of normal diet.

TABLE IV.—C., colitis. P.V., pylorospasm; vomiting on day of analysis. N., nephritis. Cr., cretin. S., scurvy. T., tetany. C.O.B., congenital obliteration of the bile-ducts. I.S.B., influenza; soda bicarbonate g. 1·3 × 8; acetone and diacetic acid in urine. B.-p., broncho-pneumonia.

Dr. Clow and Miss Stansfeld were very welcome. He trusted that in the future no attention would be paid to remarks made without facts to support them. On the question of cycling for small children he suggested that more attention should be paid to fitting the cycle to the size of the child, so that the child should use the calf muscles instead of shifting the weight from side to side. He regarded mixed hockey as unsatisfactory, as women were apt to be overstrained in order to keep up with men. The weapon or ball should always be proportionate to the size of the child.

Miss P. Laurence (Roedean School) agreed with all the views expressed by the openers of the discussion except with regard to games during menstruation. At Roedean the girls did not play games during the first three days. Her experience extended over 36 years and 3000 girls had passed through Roedean, of whom many had married and sent their girls back to be educated. The medical officer who had been attached to the school for many years having resigned, Dr. Louisa Martindale, the new medical officer, had sent in a report as a result of her medical examination. She found that those girls who had been four years in the school were in very good physical condition and compared favourably with new girls. This she attributed to physical training in the open air. Miss Laurence praised games for their mental, moral, and pleasurable effect. If games were abolished the tone of the school would be ruined. It was possible to overdo anything, for example to over-eat, but games in moderation did the normal girl nothing but good.

Dr. M. Dobbie suggested that schools where games were played for much shorter times were in a different category from training colleges as regards continuous exercise during menstruation.

Dr. L. Fairfield said that not only in the lay press but in many gynæcological text-books were to be found remarks derived from intuition rather than fact on this subject. The lack of coördination during menstruation experienced by students was interesting, inasmuch as the superintendent of a resident institution for the blind informed her that the girls' aptitude for learning Braille was markedly affected during menstruation. She had had difficulty in getting any accounts of dysmenorrhœa from large training colleges under her medical supervision. She asked for opinions on sport such as football and boxing for girls. She disapproved of the former because of the strain on the pelvic region and of both because there was risk of injury by direct force, for example, on the breast. She asked for the expression of a medical opinion on this subject because the motives of those encouraging girls to play football were not always unexceptionable. From her experience of girls in the Air Force Dr. Fairfield concluded also that motor-cycling sometimes increased dysmenorrhœa—possibly because of the vibration and the effort of starting—and had tried to secure rest for the girls during the first day of menstruation. As to games after meals, games on an empty stomach were unsatisfactory. Some children were never able to enjoy their sport because it was timed after a long spell of work when they were tired and hungry. She was glad to hear Dr. Clow's remarks on bathing during menstruation; she hoped that the ridiculous superstition against baths during menstruation would be abolished. Dr. Fairfield spoke from experience of 22,000 girls in the Air Force. Clerks and domestic workers were those who suffered most from dysmenorrhœa. Varicose veins was notoriously a disease of the classes who did not play games much.

Mrs. M. Scharlieb pointed out that figures might be difficult to collect in England but that nature had provided results of a gigantic experiment in India. The well-born Brahmin girl suffered from want of development of her moral nature and of her abdominal muscles, and suffered proportionately when in labour. On the other hand, among the low caste road-makers, the women did hard work in the open air, and were able to return to work immediately after bearing a child.

Miss C. Cowdroy (Crouch End High School) voiced her objections to games for girls on the lines of her letter published in The Lancet of May 14th, 1921.

Miss N. Nicholls (Lady Holles School) suggested that the same number of The Lancet which contained Miss Cowdroy's letter happened to contain an account of Prof. Arthur Robinson's views that a certain amount of pre-natal death is normal and not due to disease of either parent. These figures were based on mares and ferrets and showed at least how cautious we should be in attributing sterility to any definite cause such as games. In the same issue of The Lancet was a report of a discussion on Sterility at the Royal Society of Medicine, where it was suggested that statistics to be of any value should be based on not less than 1000 marriages, each of which had lasted not less than 15 years, the wife being under 35 and the husband under 40 at the time of marriage. As the Education Act had only existed since 1902 it was evident that many schools had not existed long enough to collect statistics of any value, but that the medical officers of this Association would be in the position to supply valuable information in the future if they kept records. Miss Nicholls expressed anxiety lest criticism directed against games should be thought to be based on ascertained facts, because games cost money for ground and apparatus. If the present wave of economy should take the form of depriving of games those who could not afford them without help, in her opinion economy on games would mean economy on health.

Dr. Stansfeld, in reply to a question whether those who go to physical training colleges were not of exceptionally good physique, pointed out that her argument was not that these girls were typical but that they suggested that an athletic life had at least no detrimental effect. In answer to another question about sculling she said that no bad effects had been noticed from this exercise. Racing was always an exceptionally strenuous form of sport.

The President said that it was bad for anyone to enter into competitive games unless properly trained. It was essential that exercise should be kept within limits and standardised in accordance with the age and strength of the child.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Exhibition of Cases and Specimens.

The session's meetings of this Section opened on Oct. 14th, with Dr. James Taylor, the President, in the chair.

Miss Ida C. Mann showed a series of models illustrating the development of the human eye.

Probable Implantation Cyst.

Mr. L. Fleming showed a case of probable implantation cyst in a girl who received an injury to the eye 18 months ago. When seen six months after she had a perforating lesion at the limbus with adherent iris, and active iritis was present. Six months later a small nodule appeared in the "nine o'clock" position, but it had not since appreciably increased in size.—Mr. Treacher Collins was doubtful as to its nature, but suggested contact illumination to help in its diagnosis.

Grey Mass in Vitreous.

Mr. J. S. Bookless showed a child with a grey mass in the vitreous, with arborising vessels visible at the back of the lens. A week after being seen a small nodule appeared on the back of the iris. This had progressively increased, and vision was reduced from 6/36 to perception of fingers at a distance of a few inches. The diagnosis seemed to rest between a congenital abnormality and malignant disease.—Sir William Lister regarded it as a cyst of the iris, with a membrane which had formed after the occurrence of hæmorrhage in the vitreous. He did not think it was malignant.—Mr. M. S. Mayou referred to a case of similar appearance which he had shown, but without the membrane. He agreed that it was a cyst of the iris.

Specimen.—Kidney enlarged, cortex thin, calices dilated; small stone at lower pole of kidney; pelvis of kidney enlarged, tapering off into normal-sized ureter surrounded by lipoma the size of a closed fist; immediately below this lipoma a large calculus[1] 8·4 cm. in length, 8·8 cm. at widest circumference, and weighing 48·5 g.

The writer would be glad to hear of any explanation of the presence of the lipoma in the above-mentioned position.

BELLADONNA POISONING FROM EATING RABBIT.

BY DOUGLAS FIRTH, M.D. CAMB., F.R.C.P. LOND.,
JUNIOR PHYSICIAN, KING'S COLLEGE HOSPITAL;
AND
J. R. BENTLEY, M.D. CAMB.

THERE appears to be some uncertainty of opinion as to whether belladonna poisoning can follow eating the flesh of a rabbit which has been feeding on *Atropa belladonna*; the majority of text-books on toxicology make no reference to the possibility. "Blyth" says[2]: "It is the general opinion that rabbits may eat sufficient of the belladonna plant to render the flesh poisonous and yet the animals themselves may show no disturbance in health. But this must not be considered adequately established." Another authority, Glaister,[3] states that "rabbits may be fed exclusively on the leaves [of *Atropa belladonna*] for days without inconvenience, though it produces a dilatation of their pupils as in man," but no reference is made to poisoning in man by this agency. The incident here related seems to prove that the general opinion referred to by Blyth is correct.

A greengrocer, while buying vegetables for his shop, was given a rabbit which had been snared that morning in a district where *Atropa belladonna* is known to grow. Having previously been a fishmonger and poultry-dealer, he prepared the rabbit himself for consumption, noting that it appeared to be in every way in excellent condition. The rabbit was stewed by his wife, and at 1 P.M. these two and their assistant, a girl aged 20, partook of the dish. After the meal, the girl, while washing up the plates, noticed her mouth was dry and procured a drink of water, being shortly joined by the elder woman in the same plight. Soon afterwards they were greatly alarmed by "failing vision," and on calling to the man for assistance, found him in a similar condition. One of us (J. R. B.) was then summoned and saw the patients about 3 P.M.; all presented the typical picture of mild belladonna poisoning—pupils dilated, dry mouth, giddiness, and rapid pulse. After the usual procedure in cases of poisoning, inquiries were made for the source of the poison, but the only thing taken in common was the rabbit for dinner. At 9.30 the same evening we saw the cases together. The man and his wife were better, though the pupils were still widely dilated, and a marked scarlatiniform rash had appeared on the girl. We elicited the information that a dog and a cat in the house had been given some of the rabbit, and an examination of the pupils of both showed them to be dilated and immobile to light. A portion of the rabbit, including the liver, was taken and submitted to analysis. The report on the analysis states that chemical examination of the portion of cooked rabbit showed that a small quantity of alkaloid was present, giving a definite reaction by the Vitali method for belladonna alkaloids.

Remarks.

The rabbit was fresh and, to an expert eye, in good condition. No green vegetables had been cooked with it. Symptoms of belladonna poisoning followed the eating of the flesh in three human beings and two animals, and belladonna alkaloids were found in the flesh. In spite of the enormous number of rabbits consumed yearly, belladonna poisoning through their agency is far from common; this may be due to the universal prejudice against eating rabbits in the spring, summer, and early autumn, the time when the belladonna plant flourishes and affords the rabbit an article of diet.

What amount of atropine was ingested by our patients it is impossible to say. Blyth[4] gives ⅛ gr. as the dose which may be expected to give rise to toxic symptoms, and seeing that barely half the rabbit was eaten, the whole body must have contained at least 1 gr. of alkaloids, affording a hearty eater the opportunity of taking a fatal dose.

A NOTE ON THE TUNGSTEN RAYS.

BY W. J. BURROUGHS, M.R.C.S. ENG.

THE tungsten rays as a method of treatment is comparatively recent, and any additional facts as to their utility as a curative factor in medicine may therefore be of interest. The tungsten arc produces, besides light and heat rays, ultra-violet rays; these ultra-violet rays are beyond the limit of the visible spectrum, which ends at Δ = 3800, and it has been found by experiment that when directly applied are strongly bactericidal between Δ = 3100 and Δ = 2230. I have been working for the past six months with an apparatus consisting of two electrodes of pure tungsten actuated by a current of 100 volts and 5 amperes and the results have, on the whole, been most promising.

In all cases of superficial suppuration in which I have tried it, a complete cure has resulted in about 8 to 12 treatments. Among these cases were the following. A poisoned and suppurating index finger of two months' duration, entirely healed with 6 applications; an old varicose ulcer, healed in 8 applications; a case of suppurating cervical glands of six months' standing, with a large swollen inflammatory area extending from the horizontal ramus of the jaw to the clavicle, entirely cleared up with 14 applications; and a case of impetigo contagiosa on face and scalp of a child, aged 2, cleared up in 6 applications. The same curative effects may be noticed in pustular discharges from the ear. Indeed, the tungsten ray has not only proved of great value in suppurative conditions but also in cases of middle-ear deafness generally.

Ear Treatment.—The ear treatment, which is applied by means of a specially made parabolic quartz-fluorite reflector, absorbing a portion of the ray, is of short duration, the earlier treatments lasting only 2¼ minutes for each ear, if both are affected. That is to say, 1¼ minutes' application is given through a suitable speculum to the tympanum, and 1 minute's application over the mastoid cells. The beam is made to focus on to the surface under treatment at a distance of 18 in. from the reflector. The patient's eyes must be protected with a shade of some kind and the operator uses special leaded blue glasses. In cases of otosclerosis a treatment as described above may be given every two or three days, the length of the exposure being increased to 2½ minutes for the internal application and 1½ minutes for the external. The improvement in the hearing is, as a rule, noticeable after the fifth treatment, but may appear earlier. In cases complicated by Eustachian catarrh or catarrh of the respiratory passages the fumes given off by the ray, inhaled through a suitable inhaler, are found to have a beneficial effect. A course of about 8 to 12 treatments is given, and the patient is asked to return in a fortnight in case any further treatment is required.

Typical Cases.

In recording the treatments of three typical cases, Tr. = treatment. Ty. mins. = time of application to tympanum in minutes. Mc. mins. = time of application to mastoid cells in minutes. Inh. mins. = time of exposure to inhalation in minutes.

CASE 1.—Mrs. A., aged 55. Chronic otitis media of the right ear of old standing; patient unable to give exact duration. Deafness in affected ear very pronounced. First tr. given on Dec. 1st, 1920, last tr. on April 5th, 1921.

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[1] Other large ureteral calculi have been reported in the following numbers of THE LANCET: 1913, ii., 1456; 1920, i., 150, 767.—ED. L.

[2] Blyth, A. W. and M. W.: Poisons, their Effects and Detection, 1920, p. 394.

[3] Glaister, J.: Medical Jurisprudence and Toxicology, 1915, p. 746.

[4] Blyth: Loc. cit., p. 393.

held that the man should have a reasonable period within which to make an effort to do some work. At the end of such period benefit might be suspended if no genuine effort had been made.

"Incapable of Work": Its Meaning.

The question whether the words "incapable of work" should be read as meaning "incapable of remunerative work" has never been expressly decided although it has been raised. In the opinion of Mr. Ball, it was not possible to cite cases decided under the Workmen's Compensation Act as parallels, since the provisions of the Workmen's Compensation Act are expressly designed to compensate for loss of earning capacity. In one case an appellant who had been ruptured in the course of his employment made a successful claim against his employers and was awarded 7s. a week on the ground that, while not wholly capacitated, he was only capable of doing light work. His claim upon the funds of his society, however, failed, because the county court judge had, in effect, decided that he was capable of work.

A difficult question arises when an insured person has been rendered incapable, and undergoes a course of training to fit himself for other work. Is he entitled to sickness benefit during the period of training? It would seem from the following case that he is not. A draper's assistant who had lost an eye in the army worked as a milk porter for six months after his discharge, and then had to return to hospital on account of his injury. He was discharged from hospital with a reduced pension. During the next five months he worked for three separate firms of linen-drapers, but was discharged from each owing to the state of his health. In April, 1920, his doctor certified that he was unable to follow his previous occupation; his full pension was restored, and he was sent for training as a bricklayer. His claim for sickness benefit, however, was refused on the ground that he was still capable of doing light work. The court's expression of opinion with regard to "training" was important: "There may be cases in which a man undertaking a course of training is not capable of any form of work, and is accordingly entitled to sickness benefit until his training is partially or wholly completed . . . but where the appellant is capable of light work, however prudent a training may be. . . . the Act does not allow sickness benefit to be paid." If an insured person is compelled to make use of a surgical instrument in order to be capable of work, he becomes eligible for sickness benefit, should he, by accident, be deprived of his instrument. This was decided in a remarkable case in which the appellant had lost both his legs in an accident, but was able to work with artificial limbs. Having broken one of these legs he claimed sickness benefit from his society. The society refused to pay on the ground that the incapacity ceased when it was established that he could work continuously with artificial legs, but the court upheld the man's claim.

Duties and Powers of the Insurance Doctor.

Referring to the duties and powers of the insurance doctor Mr. Ball said that the proper working of the Act depended very much on the judicious signing of certificates. The doctor's certificate was not final, but was most important. The certificate should be reasonably explicit, and, if necessary, the doctor should insert qualifying words on the printed form before signing it. Mr. Ball said he believed it was on record that a doctor had given a certificate to the effect that a man was "still incapable of work." It was true enough, but he might have amplified it a little. He might have said, "still is, and in all probability will remain, incapable of work." The man was dead. When a case is referred to a medical referee, it is advisable that the insurance doctor who has signed a certificate should see his patient gain if he is going to appear as a witness to contradict e referee. In a recent case, a woman had received kness and disablement benefit continuously from January, 1918, to February, 1920, upon the certificates of her panel doctor that she was suffering from bronchitis. After examination by the referee, whose opinion that she was fit for work, was confirmed by an umpire, payment was stopped. Her panel doctor, who appeared as a witness on her behalf, admitted not having examined her about the time of the medical referee's examination. In these circumstances the court disallowed her claim. It was advisable that the panel doctor and referee should collaborate, and, if possible, the former should be present at the time of the latter's examination and lay all relevant facts before him.

Discussion and Reply.

Dr. **HENSLOWE WELLINGTON** said he had acted as medical referee to an Approved Society since 1914, and had inquired into nearly 7000 cases in four years. His experience convinced him that there was very little true malingering, but there was a tendency on the part of some of the insured persons to prolong their convalescence unduly.

Dr. **M. I. FINUCANE** believed that insurance medical officers had been somewhat careless in signing certificates and had thus lost the confidence of the Approved Societies, who otherwise might now have been more ready to support the panel doctor in his effort to retain the present capitation fee.

Surg.-Captain **M. H. KNAPP**, R.N., asked whether a man "in quarantine" on account of an infectious fever was entitled to sickness benefit.

Dr. **J. HALLIDAY SUTHERLAND** agreed that there had been very little malingering before and during the war when wages were high, but considered that it was now increasing. There should be heavy penalties for incorrect certification of unfitness.

The **PRESIDENT** said that there had been some condemnation of the panel doctor, but very little appreciation of much of his good work. He thought it was quite natural for the doctor to give his patient the benefit of any doubt that might exist when signing certificates. He was surprised there were so few appeals against decisions of Approved Societies, since the cost to the applicant of an appeal was only a guinea. In his opinion "incapacity for work" meant "incapacity to earn wages," and the interpretation of the Workmen's Compensation Act would be useful as a standard in settling questions under the National Health Insurance Act.

Mr. **VALENTINE BALL**, in reply, said that his paper had emphasised the importance of correct certification, as certificates affected also unemployment pay, which could only be drawn by a man who was "capable of work." In reply to Surg.-Captain Knapp he said that the onus of deciding whether a man "in quaratine" was capable of work would fall on the doctor. His paper had borne fruit already in the expression of opinion on the interpretation of the Act it had won from the learned President.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

AT the first meeting of the session of this society, held at 11, Chandos-street, London, W., on Oct. 20th, Sir **JAMES CANTLIE**, the President, occupied the chair and delivered an inaugural address on

Life Insurance in the Tropics.

He drew attention to the frequency with which insurance premiums were allowed to lapse by young men in the early stages of their careers in the tropics, owing to financial stress and the extra premium usually charged to cover the supposed additional risk of living in a tropical climate. He estimated that in two out of every three cases the payment of premiums was dropped, necessarily to the great advantage of the insurance companies, which might therefore be encouraged to maintain the extra charge. The first five years of a young man's life in the tropics afforded the most critical period, and in some measure justified the higher premium, with an overdistended bladder was obvious. On many playing fields there was still no lavatory accommodation provided, and this matter should be remedied.

Effects on the Reproductive Organs.

The beneficial effect on the physical health of running and bending and stretching exercise in the open air was generally acknowledged, the only questions in dispute being whether certain games were too strenuous for girls, and whether they had any detrimental effect, either immediate or remote, on the organs of reproduction. Players should be of about the same size and strength, but it was difficult to conceive why girls, who had passed a medical test, and who are equal in strength, playing hockey together for an hour should suffer from the effect of too strenuous exercise any more than boys. It must be remembered that an hour or an hour and a half was usually the maximum time that could be spent on the field. The real test as to the over-strenuousness of the game was the condition of the player afterwards, and at Cheltenham the girls returned from the field day after day fresh, vigorous, and with healthy appetites. Dr. Clow asked for the views of school medical officers as to whether children should be allowed to play vigorous games immediately after their meals. Nature did not seem to prompt them to take any interval for rest, as did animals and adult human beings. From her own recollections of childhood and from observations it seemed to her that digestion proceeded just as easily if no restrictions were imposed. As to the effect of games on the organs of reproduction, Dr. Clow had taken special note on the effect of games on the menstrual function in school girls, and found that a smaller proportion of girls suffered from any menstrual disorder among those who played games than among those who did not, and that this small proportion was still further reduced if the usual exercise was continued throughout the menstrual period. For the last eight years she had advised every girl to continue her warm bath and her games, as usual, during the period, if she felt so inclined and had her mother's consent to do so, and a great many, who had formerly suffered from various degrees of dysmenorrhœa, were now entirely free from it. Those who consulted her for dysmenorrhœa were usually elder girls who were reading for examinations, and in their zeal for study had reduced their time for exercise. On resumption of their former daily exercise their symptoms had disappeared. There was a prevalent idea that girls should forgo exercise during menstruation. It was a very rare thing to come across a child who, of her own accord, would give up her games and walks at these times. The "headache" or any other disabling malady, which girls were taught to fake every month as an excuse for not taking part in their usual games, often became a matter of ridicule to their brothers and uninitiated playmates and of embarrassment to themselves, and Dr. Clow regarded restrictions as unnecessary. Dysmenorrhœa was more prevalent among the leisured than among the working classes, and Dr. Clow considered that compulsory work and exercise were the determining factors in their relative freedom from dysmenorrhœa enjoyed by the latter. As medical officer of a students' hostel, Dr. Clow had kept some records of 136 students trained for teaching in elementary schools. The number was too small to form data from which to generalise, but 69 per cent. had been in the habit of playing games as usual throughout the period. Fifteen per cent. of the total number experienced dysmenorrhœa in various degrees. Again, of 734 girls at the Ladies' College, Cheltenham, when only 35 per cent. were playing games during the menstrual period, 23 per cent. suffered from menstrual disturbance, whereas, later on, when, as the result of advice given, 67 per cent. were continuing their games through the period, only 15 per cent. had any menstrual trouble. These latter figures corresponded closely with those obtained at the training college. As to the remote effect of games and gymnastics on pregnancy, childbirth, and the child, Dr. Clow doubted whether anyone in this country was in the position to quote figures of large enough numbers to enable general deductions to be drawn. But she pointed out that coincident with the growing popularity of athletics among girls there had been a diminution in the number of fatalities connected with childbirth and in the rate of infantile mortality. Moreover, centuries had proved that generations of women who hunted had been the mothers of large and healthy families.

Evidence from a Physical Training College.

Miss M. STANSFELD (Bedford Physical Training College) said that in view of the many vague statements made, with no shred of evidence to bolster them up, she proposed to confine her remarks to direct evidence from her own experience. The bulk of the girls coming to a physical training college at 18 years old were among the best in their school at games; yet it was the very rarest thing to refuse an applicant for physical unfitness, except for such things as enlarged thyroid—and though every student had to undergo a probationary term, only two had been rejected from Bedford for health reasons. This was surely evidence that the girls who had played games most came into college uninjured. On entering college the girl began a life that increased her physical work about ten times. Yet the health of students was exceptionally good. Miss Stansfeld said that she made inquiries last year from a hundred girls then in college on the effect of this athletic life on menstruation. In 64 cases there was no pain; in 26 cases pain was said to be slight, and 20 of these said the pain had been lessened by training; in 10 cases the pain was said to be rather bad, but in 3 cases this only occurred in holidays. There was one effect to which she drew attention, and that was on the frequency of the period. In 7 cases menstruation stopped altogether for the first three months, but later established itself regularly; the flow was usually diminished, and in 47 cases the intervals between the periods were lengthened. A rather remarkable unanimity was shown in answer to a question asking what part of the work was affected most by menstruation. A very few felt no difference, but 97 out of the 100 said any work in the gymnasium requiring balance and coördination was adversely affected, and during the whole period their "eye was out" in playing games; they were less accurate and more easily tired; most of them said they were disinclined for games or dancing or gymnastics. Miss Stansfeld therefore did not allow any games or strenuous physical work during the first three days of the period. On July 26th last, at the end of a strenuous term, the hearts of 16 third-year students were examined and were found to be quite normal. To get some idea of the effect of games, &c., on maternity, Miss Stansfeld had sent round a questionnaire to old students who had children, and received answers from 34. She gave details of the answers. In all but three cases the mother had been able to lead her ordinary life up to the day before the baby was born. The answers to the question on health during pregnancy seemed satisfactory, since with the exception of the three cases mentioned the health was described either as "very good" or "excellent." Sixteen stated definitely that they had "no sickness." The third question, on conditions of labour, elicited the fact that 23 had what they described as a very easy time. Miss Stansfeld gave particulars of other cases, in one or two of which labour was prolonged and in two a very rapid delivery was attributed to over-strong abdominal muscles by the nurse only. Recovery in 24 cases was very rapid, normal habits being resumed in from ten days to a month after the birth. There were two cases of slow recovery. The weight and general health of the babies left nothing to be desired.

Discussion.

Dr. E. H. T. NASH (M.O.H., Wimbledon) said that such unadulterated trash had appeared in the lay press on this subject that the excellent papers by

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

The opening meeting of this Society was held at 1, Upper Montague-street, London, on Oct. 21st, when Dr. W. J. Howarth, M.O.H. for the City of London, the newly elected President, delivered an address on

Certain Public Health Problems.

After tracing the evolution of preventive medicine from primitive measures of self defence against gross conditions which offended the special senses, through the days of precautions based on experience without scientific foundation, to modern changes consequent upon the development of industrialism, Dr. Howarth pointed out that treatment in adult life meant treatment of conditions which the application of prevention in curative medicine at earlier ages would, in many cases, have rendered unnecessary. The position resolved itself into one in which the two groups of practitioners were not working along parallel lines. The preventive practitioner—that is, the medical officer of health—devoted his chief energies, so far as regards the individual member of the community, to conditions which were discovered mainly below the age of 14 years. The curative practitioner exercised his skill on persons over the age of 16, and under circumstances which did not fill him with enthusiasm for preventive work. A dual organisation therefore appeared to be necessary, curative work, whether in connexion with tuberculosis or venereal disease or such as would be performed by the special departments outlined by the Dawson report, being carried out by a distinct clinical organisation, early preventive work also being arranged for. To carry this proposal into effect the provisions of the National Insurance Act would require to be either extended or altered. Extension would mean the inclusion of dependents, but money was too scarce to expect any such plan to receive favourable consideration. The alternative appeared to him, as a medical officer of health, to require the cancellation of existing arrangements, leaving working persons above the age of 16 to make their own arrangements with doctors, and, if possible, for the State to use the money thus saved to ensure the continuous supervision by practitioners of families in which are children at growing ages.

Dr. F. E. Fremantle, M.P., in inducting the new President, spoke of Dr. Howarth's work extending over 21 years as M.O.H. of Derby, Kent, and the City of London in turn. He had been President successively of the Midland, Home Counties, and Metropolitan branches of the Society.

Prof. H. R. Kenwood proposed a vote of thanks to Dr. Fremantle, the outgoing President. He felt that in the future they would always have his valuable help as a Member of Parliament.—In his reply, Dr. Fremantle said that his year of office had been a critical one, because of the national after-war problems that had arisen, and of the reconstruction of the Society that had been proceeding.

Twenty new members and seven associates were elected at the meeting. A number of candidates were also nominated, arising out of the recent absorption of the Society of Medical Officers of Infant Welfare Centres as the maternity and child welfare Group of the Society of Medical Officers of Health.

MEDICAL WOMEN'S FEDERATION.

The first meeting of the London association was held on Oct. 18th at the Elizabeth Garrett Anderson Hospital. Dr. Louisa Martindale was unanimously elected to the presidency on the retirement of Mrs. Flemming, M.D., and she proceeded to read her opening address on the subject of

Birth-Control.

She pointed out that the movement began in England in 1877 when the Bradlaugh-Besant trial took place. In Germany the movement started later, but once started the birth-rate fell as much in 12 years as it had done in 70 years in France. The fall in birth-rate is, however, accompanied by a corresponding fall in infant death-rate, so that up till now the natural increase in the population had been little affected. Statistics showed further that both birth and infant mortality rates are lower in the more thoughtful and educated classes, and that it is among these classes that methods of birth-control are chiefly used. These methods might be classified as follows:—

1. *Natural.*—Either celibacy or voluntary abstinence, which may be total or during the most fertile part of the woman's monthly cycle.

2. *Methods used by the husband.*—(*a*) Withdrawal or coitus interruptus; (*b*) use of sheath or French letter; (*c*) a dose of X rays.

3. *Methods used by wife.*—(*a*) Quinine pessaries; (*b*) douching; (*c*) introduction of rubber cap.

Of these methods it was agreed that coitus interruptus is bad for the nervous system of both parties. The French letter was the most efficacious—douching and the Dutch cap were not entirely satisfactory.

Dr. Martindale then discussed the views of English Roman Catholic and Jewish churches on the ethics of the matter, and finally summed up the reasons for and against birth-control. Relative poverty, illness during pregnancy or confinement, the possibility of enforced separation should a baby arrive (as amongst Anglo-Indians), disease, such as tuberculosis, inherited insanity, &c., were among the chief reasons given in favour of the practice, whilst risk of encouraging sexual excess and the possibility of eventual sterility were the main reasons against it. The whole aim of the movement was undoubtedly to better the conditions of women's lives. Dr. Martindale thought that there were worthier ways of attaining this end—as, for instance, improved housing, an efficient scheme of employment, as well as educative methods which would help to decrease rather than increase sex excitation.

An animated discussion followed the reading of the paper, and it was decided to consider further aspects of the question in more detail at subsequent meetings of the association.

HEALTH WEEK.

From Oct. 9th to 15th Health Week was observed throughout the country, local arrangements including conferences, lectures, health exhibitions, visits to health centres, and many other activities calculated to rouse public interest in the health of the country. From among the popular lectures given during the week one or two examples may be cited. At Brighton Dr. H. Gervis, J.P., delivered an amusing address on "Bad Health and Good Intentions," in which he discussed the case of an imaginary recruit suffering from numerous ailments and disabilities which might have been prevented by better care in childhood. Thus corns, flat-foot, and ingrowing toe-nails resulted from tight footwear; indigestion from (1) a dose of castor oil administered almost immediately after birth with *a subsequent vicious circle of diarrhœa and constipation, and* (2) eating too much; rupture from too tight application of a "binder" at the same tender age; lung trouble from too much heavy clothing and from a diet containing too little fat; insufficient fresh air and exercise, from a devotion to the kinema and to watching other people play football; and various defects of teeth, throat, eyes, and ears, all derived from causes which might once have been averted. Dr. Gervis remarked, with reference to the neurasthenic condition resulting from these disorders, that he often thought "it would be a great kindness to certain unborn children if people of a highly neurotic nature abstained from procreating their race." At Wakefield, Dr. J. B. McDougall, chief tuberculosis officer of the West Riding County Council, pointed out in a lecture on "Simple Truths Concerning Tuberculosis" that the most difficult problem of propaganda was to make people unlearn false teaching, and instanced the belief, still widely held among the public, that tuberculosis was hereditary. At Poole Dr. R. J. M. Horne, medical officer of health, gave short dinner-hour talks to working-men with great success, pointing out to his audiences that health talks had been given in the schools, and that as the children would doubtless come home and ask questions, it behoved the adults to be able to answer them. Dr. C. W. Saleeby, lecturing at Earl Shilton, Leicestershire, took for his subject "The Light of Day," and discussed the smoke problem of cities and the necessity for a more open-air life for the combating of tuberculosis.

—Mr. TREACHER COLLINS considered that the primary factor was the cyclitis, which had produced a cyclitic membrane. This membrane probably caused an arrest of lymph circulation, which had resulted in the separation of the two layers of pigment at the back of the iris, a cyst being the sequel to that. He advised puncture of the body, which he believed would lead to its collapse.

Dr. WYLIE sent, and Mr. LESLIE PATON demonstrated, a case of Benedict's syndrome. The lesion was supposed to be in the red nucleus, catching the fibres of the third nerve.

The Fourth Cranial Nerve.

Mr. J. HERBERT PARSONS contributed an address on what he termed the riddle of the fourth nerve, the only nerve which had, in the complete sense, a dorsal decussation. It was probable there were no decussating fibres within the central nervous system other than those which passed out in the trunk of the nerve. A peculiarity of the fourth nerve was that it was purely somatic in mammals; it supplied purely somatic muscles and it had no visceral fibres. It was extremely difficult to produce experimental lesions in this neighbourhood sufficiently localised to give definite results. Explanation must therefore be sought in comparative anatomy and embryology. The fourth nerve existed down to the earliest vertebrates, as shown in a slide from a lamprey, in which the eyes were very rudimentary organs. The fourth nerve decussated dorsally, going through the anterior medullary velum in that animal exactly as in the higher vertebrates. Mr. Parsons exhibited slides illustrating the work of Davidson Black, showing the position of the nuclei of the cranial nerves and their points of exit from the central nervous system. The same kind of thing was seen in various specimens of amphibians. Kappers's view was that migration of motor nuclei was due to attraction to foci of incoming afferent impulses (neuro-biotaxis), and the last edition of Sir Arthur Keith's "Embryology" explained the fourth nerve as due to neuro-biotaxis, a view the speaker was sceptical about. Still, there was no doubt of the fact that in the evolutionary process the afferent side became evolved in advance of the motor response. In 1881 Marshall pointed out that in sharks the muscles associated with the third nerve came from the first or pre-mandibular head cavity, the fourth nerve muscles from the second head cavity, and the sixth from the third or hyoid. It was very difficult to obtain evidence of the same thing in the higher mammals. Mr. Parsons pointed out the near association of the fourth and fifth nerves, in the relationship of their branches at a very early stage in their development, and in regard to the ciliary ganglion. Investigation of the transient ganglion of the fourth nerve showed that it did not migrate from the motor part, but developed from the cells of the neural crest. There could be no doubt that this ganglion on the fourth was a posterior root ganglion, and that, at that stage at any rate, the fourth nerve had sensory somatic fibres in addition to motor somatic fibres. Mr. Parsons pointed out that complex synergic movements existed, brought about by nerve nuclei, with fibres which presumably decussated, and which were correlated with each other in a remarkable way in the absence of cerebral hemispheres. Therefore he thought it must be concluded that even at a low stage there was an arrangement for coördinating the synergic movements of the eye muscles. Coördination was usually regarded as entirely cortical, but he thought sufficient stress was not laid on lower coördination centres. This view did not detract from Hughlings Jackson's view, but rather divided that authority's "top storey" into a series of flats.

Mr. ERNEST CLARKE read a paper on

Milestones in Refraction Work

founded upon 40 years of work in the specialty, in which he reviewed the state of ophthalmology in 1881, pointing the great services of Donders in raising the subject of refraction to a scientific level. He said that in eye-strain it was the small errors which counted—i.e., low degrees of astigmatism and anisometropia. Eye-strain might be the "third partner" in any disease; but symptoms attributed to eye-strain might be due to nasal trouble or to dental infection, and extra-ocular conditions should not be lost sight of by the ophthalmologist. If a young person had errors of refraction, the correcting glasses should be always worn, if not at games, always in the house. With regard to myopia the common-sense treatment was to make the patient normal by giving the full correction of the myopia and insisting that the correction should be always worn. With regard to presbyopia, it took years for Donders's teaching to bear fruit. Presbyopes were people who had arrived at a critical stage of life, when there were many worries for them, and in many cases they were the subjects of intestinal toxæmia. Hence every possible channel of waste of nerve energy should be stopped. He proceeded to discuss the subjects of cycloplegics, heterophoria, convergent strabismus, the ophthalmometer, test-types, and trial frames. A short discussion followed.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on Oct. 18th, with Lord Justice ATKIN, the President, in the chair, when Mr. VALENTINE BALL, Barrister-at-Law, read a paper on

INCAPACITY FOR WORK WITHIN THE MEANING OF THE NATIONAL INSURANCE ACT, 1911.

He said: Since the National Health Insurance Act, 1911, it has constantly to be decided whether an insured person is capable of work. This question is decided by a committee of the society of which the insured person is a member. But there has always been a right of appeal. Cases are now heard by a referee and two assessors appointed by the Ministry of Health; the referee is generally a barrister-at-law and one of the assessors a medical man. The National Insurance Act, 1911, confers "periodical payments to the insured," whilst rendered incapable of work by some specific disease or by mental or bodily disablement continuing for a period not exceeding 26 weeks (sickness benefit); also in the case of disease further payments at the termination of sickness benefits (disablement benefit) so long as the subject is rendered incapable by the disease or disablement. Mr. J. H. Watts, in his work on National Insurance, gives it as his opinion that disablement benefit could only be given when the insured was totally incapacitated from doing any work. The decisions of the court—that is, the referee and his two assessors—make it quite plain that the insured person is not entitled to benefit merely because he is rendered incapable of doing the work at which he was employed when the sickness or disablement supervened. Thus, in a case decided in October, 1915, a man who combined the occupation of iron-ore miner with that of lodging-house inspector under an urban district council, and was admittedly unable to carry on the former occupation on account of bronchitis, was held to be not "incapable of work" within the meaning of the Act, since he had been able to carry on the duties of the latter post, partly himself, and partly by deputy. On the other hand, decisions of courts show that "the mischief at which the Act aims being the loss of wage-earning capacity through illness, the question of capacity for (any kind of) work cannot be regarded in the abstract without reference to the particular circumstances of the insured person concerned." It is, however, held to be the duty of an insured person to make an attempt to work if there is medical evidence to show that such attempt will not be prejudicial to his health. In one instance a man suffering from spasm of the œsophagus was suspended from receiving disablement benefit on the ground that, in the opinion of his society, and of its medical advisers, he would be better at work. The patient imagined that he was suffering from cancer. The court, however, found in the stool, nor that Bilharzia enters the human body in the form of a cercaria which penetrates the skin while people bathe or wade in water. The parasite of malaria and its carriage by the mosquito are dealt with in a sufficiently explicit manner, but the omission of any mention of the mosquito-net, the most important of all prophylactic measures with which a nurse has to do, is to be regretted. The section devoted to the consideration of vegetable parasites is clearly presented. It might be improved if greater emphasis were laid on the methods of infection. It is of the utmost importance that nurses should understand the dangers of infection in dysentery and typhoid, and clearly grasp the fact that the stools of such cases are swarming with bacteria, which may easily be transferred on the hands, utensils, or food to other individuals.

The book, which has two attractive plates, is undoubtedly useful and should help those for whom it was written better to understand many of the routine methods adopted for the handling of infectious patients.

NEUROLOGY.

The Form and Functions of the Central Nervous System. An Introduction to the Study of Nervous Disease. By FREDERICK TILNEY, M.D., Ph.D., Professor of Neurology, Columbia University; and HENRY ALSOP RILEY, A.M., M.D., Associate in Neurology, Columbia University; with a Foreword by GEORGE S. HUNTINGTON, Sc.D., M.D., Professor of Anatomy, Columbia University. London: H. K. Lewis and Co. 1921. With 591 figures containing 763 illustrations, of which 56 are coloured. Pp. 1020. £3 10s.

THE two American neurologists responsible for the production of this handsome volume have undoubtedly deserved well of the profession both as regards their detection of a lacuna in neurological literature and their effort to fill it. There always comes a time in the development of neurological knowledge on the part of the student or physician who is taking his subject seriously when he finds that he must know more nervous anatomy and more neuro-physiology. No amount of easy clinical acquisition derived from the observation of a large number of more or less similar cases—as occurred on a huge scale in the war in reference, e.g., to "shell-shock"—can in any degree compensate for anatomo-physiological ignorance of the nervous system. No study of mental disease, howsoever abundant the clinical opportunities, can be anything but incomplete if it is not erected on the fundamental basis of acquaintance with normal neural function. If the same mechanisms, physiological or psychological, are in activity in disease as in health, he neglects an essential factor in his comprehension of the former state who fails to make himself conversant with the processes of the latter. For the neurologist the detailed and comprehensive treatise of Dr. Tilney and Dr. Riley is practically a sine qua non. Within its boards he will find collected, organised, and clearly set out a body of doctrine, anatomical and physiological, which is, in the simple meaning of the word, indispensable; and its application to clinical medicine is throughout borne in mind, so that data otherwise relatively uninteresting or unimportant if detached from this application become meaningful and are seen to fit into the neurological scheme.

Merely to indicate the contents of a volume which runs to a thousand pages would occupy too much space in a brief review. The book consists in reality of several treatises, on nervous embryology, anatomy, physiology, pathology, and on clinical neurology. It is nothing if not ambitious. Take a single example—the cerebellum; in successive chapters its evolutional significance, its relations, surface appearance and anatomy, its internal structure, histology and embryology, its functional significance, its principal syndrome and its variations, are handled with ability and are admirably illustrated. This all-embracing plan of description is adopted throughout for all the components of the nervous system. There are various imperfections, only one or two of which can here be indicated. Thus the question of tonus and its modifications is dealt with in a scattered and incomplete fashion, and, as far as we have noted, there is no correlation of the disorders of tonus arising from lesions in various widely differing parts of the neuraxis. There appears to be no systematic description of the tendon reflexes, and ankle clonus is not to be found in the index; Babinski's plantar reflex is included under abnormal associated movements and is mentioned elsewhere in passing, but is not apparently described. Nystagmus is baldly stated to be the result of disturbance in the synergic units controlling the eye movements, but its importance as an organic symptom would have justified discussion at much greater length. The work is stronger on the anatomo-physiological than on the clinical side, but it does not pretend to be a complete text-book of semiology. A useful glossary, a bibliography, and an index running to more than 40 pages add to the value of a treatise which is a credit to American neurology, and which will at once take its place as a volume of reference.

SYPHILIS.

A Treatise of Ætiology, Pathology, Diagnosis, Prognosis, and Treatment. Section I. By Dr. H. H. HAZEN, A.B., M.B., Professor of Dermatology and Syphilis, Georgetown University, Washington, D.C. London: H. Kimpton. Pp. 647. 42*s*.

IN his introduction to this work Dr. Hazen states that "there exists no small book that covers the whole field of syphilis in an authoritative way." The statement is true. There are many voluminous tomes and there are many smaller works devoted to this subject. There are also sections in many books which, dealing with venereal disease as a whole, necessarily include syphilis. The voluminous tomes are too bulky, and the smaller works, useful as they may be to the elementary student, are not sufficiently wide on the one hand or definite upon the other to satisfy the requirements of the practitioner or advanced student. This volume is useful in that it not only gives a general sense of perspective but also deals with the subject of syphilis in respect to its more specific manifestations, affecting the special senses and the endocrine glands. After reading this book a general practitioner will not necessarily be in a position to undertake entire charge of patients suffering from every syphilitic manifestation, but at least his clinical horizon will be so developed as to enable him to know when expert aid should be invoked. The author protests against empirical and routine reliance upon the bacteriological and serological measures, which are only to be regarded as being adjuvants to clinical observation.

Dr. Hazen is unduly optimistic in his presumption that his readers possess an adequate knowledge of dermatology. Unfortunately, a large number of those responsible for the treatment of syphilis do not possess that knowledge of skin diseases which should be a preliminary to a practice involving the care of syphilitic cases. We should also be glad to see in a future edition a warning that the Wassermann reaction should only be carried out by those in constant practice. Chapter XV., by Dr. H. A. Fowler, on Syphilis of the Genito-Urinary Organs, is especially useful, though but little information is given in respect of the diagnosis of syphilitic lesions of the cervix. In the chapter devoted to syphilis of the nervous system by Dr. J. E. Lind, the section on neuroses is particularly enlightening. We regret that, possibly owing to considerations of space, more discussion of the problems of the prevention of syphilis by either medical or sociological means has not been included.

While congratulating Dr. Hazen and his colleagues upon their achievement, we may hope that on the appearance of a second edition we shall also be able to congratulate the publishers upon providing a binding of stability more worthy of the valuable material which it includes.

but only during that time; for the gradual acclimatisation of the insured subsequently warranted a reduction of the insurance rate. The most common causes of ill-health in the tropics were malaria and dysentery, which frequently invalided but comparatively seldom killed. Consequently the extra premium for insurance against death, he held, was not justifiable. He maintained that the statistical returns of companies issuing life insurance policies in the tropics were based on inexact reports, which gave an unfounded character of deadliness and additional risks to certain climates. Such returns were of little real value unless dependent on the reliable data of the resident medical men, who should be appointed to act as registrars. He asked pointedly whether the candid experience of the medical officers of the societies concerned bore out the statistics drawn up by the actuaries. Actuarial details of the insurance companies gave no information as to disease in the tropics, and the true particulars could only be obtained from medical men in the various countries affected. The injustices imposed by the high insurance rates were in part due to evils of red tape, hide-bound rule of thumb methods, and mechanical organisation which prevented a readjustment of the companies' rules to meet the present-day experience of the improved conditions of life in the tropics, and in part to the barrier offered by the combine of the insurance companies which opposed any reduction of premium. He instanced as an example of the paradoxical lack of equity in the insurance rates the case of an Anglo-Indian whose ill-health in England was only remedied, and his life prolonged, by a return to India. Yet, so long as he stayed in England, where it was risking life to remain, he paid a lower premium than he did in India, where conditions were more favourable to a maintenance of health. He had come to the conclusion that a just and fair remedy would be to reduce the extra premium, after a period of acclimatisation in the tropics of four or five years, on provision of a clear medical certificate; or, avoiding the extra premium altogether, the value of the policy might be reduced in the first years from, say, £1000 to £750, and subsequently raised to the full sum insured. He also referred to the readiness with which American companies were eager to insure life in the tropics at a lower rate than British companies.

Discussion.

Sir William Leishman felt sure that statistics were available to show that the risk attaching to young men going out to the tropics was greatly exaggerated, and that their publication should serve to relax the stringency of the additional insurance rate.

Sir Leonard Rogers drew attention to facts, which insurance companies seemed disposed to ignore—namely, that as the result of modern advances in tropical medicine conditions of living in the tropics had been much improved (e.g., antityphoid inoculation), the danger of typhoid fever had very largely disappeared, and by present methods of treatment death-rates from cholera, liver abscess, and dysentery had been greatly reduced and the risks to life and health much diminished. It was only right that such facts should be brought home to the insurance companies with a view to lowering the extra premiums charged for the tropics. He could confirm the President's reference to the activities of American agencies and their readiness to circularise their branches with information based on statistics of disease in the tropics.

Several subsequent speakers quoted their experiences of tropical insurance rates. In some instances no additional premium had been imposed by residence in the tropics, the policies being world-wide; others, less fortunate, however, had been obliged to pay a higher rate. In one case this amounted to an addition of 4 guineas per cent. of the total insured, and that only for transference from Northern Rhodesia to Tanganyika territory.

The President, in the course of his reply, sought explanation as to how far the frequency of leave demanded by the West African Service was due to the influence of climate or actual disease contracted on the West Coast, and referred to the prohibitive rates charged by shipping companies for the passage home of invalids as an evil which needed remedy. He suggested the advisability of the Society appointing a committee to inquire into the whole question of tropical life insurance. It was, he maintained, a matter in which the Society might well act in an advisory capacity and as referees.

On his proposal being put to the vote, the opinion of the meeting proved to be evenly divided.

Demonstration and Short Papers.

A demonstration was given by Dr. J. G. Thomson of the transmission of *Trypanosoma cruzi* by the bug *Rhodnius prolixus.* Living specimens of the male and female reduvid bug, *Rhodnius prolixus*, were shown which had been hatched out five months previously from ova sent from Venezuela by Dr. Henri Tjera. The bug, measuring about ½ inch in length, was common in South America, and infested the burrows of the armadillo, but readily bit other animals and human beings. The armadillo was regarded as a possible host of *T. cruzi*, transmission being effected through the agency of the parasitic bug. The specimens shown of *Rhodnius prolixus* had been fed on a young rat infected with *T. cruzi*, and the fluid dejecta of the bugs contained the living trypanosomes. The demonstration included microscopical specimens of (1) the recent secretion of the bugs exhibiting actively moving forms of *T. cruzi;* (2) stained films of the bug's secretion containing the trypanosomes; (3) stained section of the heart muscle of a rat infected with *T. cruzi* by intraperitoneal injection of the secretion of *Rhodnius prolixus*, showing trypanosomes in the muscle-fibres, where they had apparently curled up and assumed leishmania-like forms; (4) stained films from the blood and heart muscle of the infected rat showing *T. cruzi* in both the crithidial and fully developed stages; (5) flask-shaped ova of *Rhodnius prolixus* with their flap-like lids.

Dr. C. M. Wenyon, hon. sec., communicated an abstract of the following short papers which had been presented for publication in the Society's Transactions: (*a*) Note on Relation between Tsetse-Fly (*G. morsitans*) and Game in the Proclaimed Area Nyasaland. (*b*) History of the Introduction and Spread of Human Trypanosomiasis (Sleeping Sickness) in British Nyasaland in 1908 and following Years, by Dr. W. A. Murray (late Captain S.A.M.C. and Officer-in-Charge of Sleeping Sickness Investigation in Zululand). Sleeping sickness, usually transmitted by *G. palpalis*, had been introduced into Nyasaland in 1908 in the form of *T. gambiense*, and its excessive virulence there was ascribed to transmission by the tsetse-fly, *T. morsitans.* (*c*) A note on the Treatment of Suppression in Blackwater Fever, by Dr. A. F. Wallace (Medical Officer, Northern Rhodesia Administration), drew attention to the relief afforded by high rectal irrigation with hot saline injections. (*d*) A preliminary note on the Development of *Loa loa* (Guyot) in *Chrysops silacea* (Austen), by Dr. and Mrs. A. Connal, of the Medical Research Institute at Lagos. Since their previous communication[1] to the Society these workers had confirmed the important results of their earlier research on *Chrysops silacea* as the host of *Loa loa* by a number of experimental investigations of the feeding of infected chrysops on guinea-pigs. The reluctance of the infected fly to feed, which had been observed, was attributed to the obstruction caused by the presence of the filarial embryos in the fly's proboscis. It was noted that the fly endeavoured to free itself by milking the blocked proboscis with its forelegs; in the course of this process small masses of embryos were flicked off and could readily be seen by means of the microscope on the skin of the subject fed upon.

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[1] Lancet, 1921, i., 510; Trans. Roy. Soc. Trop. Med. & Hy., Feb.

osteitis fibrosa.—Sir Gilbert Barling publishes a series of 100 operations for gall-stones in private patients, referring specially to cases in which there was a recurrence of stones. He concludes that cholecystectomy is the operation of choice.—W. C. B. Meyer describes a case of the Klumpke type of upper limb palsy, caused by a cystic enlarged first rib. In addition to the bony lesion, there was a soft swelling in the subcutaneous tissues just above the left clavicle, and X rays revealed a second tumour close to the apex of the left lung. Operation relieved the symptoms and established the diagnosis of hydatid disease of the bone.—Valentine St. John describes four recent cases of tuberculosis of the flat bones of the skull, and suggests that the two generally accepted varieties are really only stages in the same process. He discusses the disease in all its aspects, emphasising the need for radical treatment.—Sir George Lenthal Cheatle continues his contribution on cystic changes in the breast; in this one he establishes a connexion between cystic and epithelial changes on the one hand, and the development of benign and malignant new growths on the other.—Sir W. I. de Courcy Wheeler records a successful reconstruction of the knee-joints in a girl aged 8. She had had acute osteomyelitis in both tibiæ, which resulted in bony ankylosis, on one side in marked flexion. A Murphy's arthroplasty was done on each knee with good results. He also gives an account of the reconstruction of a much damaged shoulder. The acromion, the deltoid, and the upper half of the humerus were missing, due to a wound. The loss of bone was repaired by a graft from the tibia, the loss of muscle and skin was overcome by transplanting the clavicular head of the pectoralis major and by a skin flap from the chest.—A. H. Burgess publishes a case of broncho-biliary fistula.—H. Poston gives details of a case of traction fracture of the lesser trochanter of the femur, which makes the twenty-fourth case recorded.—The operative treatment of closed fractures of the long bones by metal bands is discussed by E. G. Stanley and J. Gatellier, and details of a new instrument, devised by the latter, are given.—Accounts of visits to the clinics of Dr. Hugh Hampton at the Johns Hopkins Hospital, and of Sir Harold Stiles at Edinburgh are given.—G. G. Armstrong records a rare anomaly occurring in two patients, consisting in the absence of a mesentery for the terminal six inches of the ileum.—T. H. Kellock summarises the advantages of a two-stage operation in cleft palates.—The last part of the journal deals with instructive mistakes and notes on rare and obscure cases.

To the October number of the British Journal of Experimental Pathology L. Hill and J. McQueen contribute a paper, entitled Capillary Blood Pressure Measurement and the Glomerular Filtration Theory, which deals with the modern theory of the secretion of urine; evidence is brought forward to show that pressure in the glomerular capillaries is a low one, and that physiological permeation—not filtration—controls the passage of fluid through the glomeruli. Observations on the circulation in the frog's glomeruli are detailed and support these conclusions, which are also borne out by experiments of H. J. Hamburger demonstrating the selective action of the epithelium covering the glomeruli.—J. O. W. Barratt writes on the Theory of Agglutinin Estimation.—S. Yabe contributes an account of the Preventive Effect of Influenza Vaccine. In our statistics, he says, by the use of the heated influenza vaccine, the morbidity of those inoculated was reduced by a half as compared with the rate of those uninoculated. In other statistics, in which the inoculation was begun just at the commencement of the epidemic and was finished at its acme, this morbidity among the inoculated persons, as compared with that among the uninoculated, was reduced to one-sixth by the use of the vaccine. The complications from catarrhal pneumonia were lessened in the case of inoculated patients to one-half and deaths to one-seventh. The length of fever was less among the inoculated persons in proportion to the quantity of vaccine inoculated. The reaction after the inoculation was so slight that cessation from work was unnecessary.—J. Pratt-Johnson describes Comparative Immunity Tests with Saline Vaccines and Lipovaccines. (1) Lipovaccines prepared and employed in the manner described stimulate the production of agglutinins to a lesser degree than saline vaccines administered in the same doses. (2) The presence of a high titre of agglutinins does not necessarily indicate the presence of an established immunity even against small doses of a highly virulent organism. The same author, in Further Studies on the Production of Immunity in Rabbits against an Organism of High Virulence for the Species, describes experiments which demonstrate the possibility of securing the immunity of rabbits against an organism of high virulence by immunisation with a live related organism avirulent for the species. In this respect, Tenbroeck's observations are confirmed, and it is further shown that killed vaccines, prepared either from the homologous or from a related organism, fail to give solid immunity against the live virulent strain.—I. Walker Hall and A. D. Fraser discuss the pH Range for Staphylococci. The general pH range for the staphylococcal group extends from pH 2·6 to pH 10. But individual or group variations occur which do not exhibit any relation to saprophytic or pathogenic characters.

St. Bartholomew's Hospital Journal.—The October issue is in the main a freshman's number, for most of the matter is concerned with impressing upon those who are entering upon their medical career the importance of the work which they have undertaken, the difficulties thereof and how they should be met, and the fact that St. Bartholomew's Hospital is the best hospital in the world. Other hospitals think the same, and it is well that they should do. But St. Bartholomew's has at least one asset which no other hospital in the Empire has, with the exception of that dedicated to the same saint at Rochester—namely, a record of eight hundred years. The paper entitled "The Making of a Doctor," written from four points of view by four men of experience and distinction, is full of sound sense. The school is to be congratulated upon having obtained a Royal Charter of Incorporation, the text of which is given in full.

The current issue of the Journal of the Royal Naval Medical Service opens with a paper of great interest on eight cases of infection by *Schistosoma japonicum*, by Surgeon-Commander A. A. Sanders and Surgeon Lieut.-Commander J. L. Priston. The cases were contracted through wading in marshes during shooting expeditions in the Yangtse Valley. Clinically they were characterised by pyrexia (in one case lasting three weeks), urticaria, serious loss of weight, and eosinophilia. Ova, without any spine, are found in the fæces only. Antimony tartrate appears the most encouraging treatment.—Surgeon-Commander G. O. M. Dickenson writes on venereal disease in the eighteenth century, his text being a book by N. D. Falck, surgeon, 1772, who recommended mercurial ointment and a calomel injection as prophylactics, saying: "If I am blamed for this openness; I answer in my defence; my talk is to endeavour to do good: I cannot prevent abuse." The present instalment of the naval medical history of the war concerns the hospital ships.—Surgeon-Captain F. J. A. Dalton gives a detailed account of the treatment of the wounded who came from Gallipoli, and emphasises the need in a hospital ship for large well-ventilated theatres such as he had in *Rewa*. Surgeon-Commander A. R. Fisher tells of the hospital yacht *Liberty* attached to the Dover patrol. Excision of wounds appears to be less necessary on board ships. He found irrigation with Dakin's solution less satisfactory in *Liberty* than it had been in *Rewa*, but in *Rewa* the solution had been made up by Dr. Dakin himself.—Surgeon-Commander L. Kilroy recommends the immediate treatment of syphilis on board ship rather than in hospital.

Reviews and Notices of Books.

PARASITOLOGY.

The Intestinal Protozoa of Man. By CLIFFORD DOBELL, M.A., F.R.S., Protistologist to the Medical Research Council, National Institute for Medical Research, London, and F. W. O'CONNOR, M.R.C.S., L.R.C.P., D.T.M. & H., Wandsworth Scholar, London School of Tropical Medicine. London: John Bale, Sons and Danielsson, Ltd. 1921. Pp. 211. 15s.

IN an earlier publication Mr. Dobell dealt in detail with the human intestinal amœbæ. Now, in collaboration with Dr. O'Connor, he considers the whole subject of the intestinal protozoology of man, treating it in that same lucid, critical, and practical manner which characterised the earlier work. As a practical guide to the diagnosis of the various protozoa which inhabit the intestinal canal of man this book will undoubtedly fill an important place.

During the war a vast literature dealing with this special branch of human parasitology has accumulated. Any attempt to deal with these records is rendered the more intricate on account of the fact that many investigators who have published their views were approaching the protozoa without the previous knowledge and experience essential to accurate records and deductions. The whole of this war literature, as well as that of the pre-war period, has been carefully considered by the authors. That which can be reliably accepted has been sifted from the mass of ambiguous and erroneous statements, and has been presented to the reader as a most interesting narrative. The student may accept the volume with the assurance that he will not be misled and that he will find in it everything that is actually known about these protozoa—their mode of life and reproduction, the methods of their dissemination, their distinctive characters, their pathogenicity, and the drugs which affect them adversely, and which in consequence are used in the treatment of the diseases they produce.

After an introductory chapter dealing with the protozoa in general, their position in the animal kingdom, and their classification into various types, the authors pass on to consider the five species of the intestinal amœbæ of man, of which *Entamœba histolytica* alone is pathogenic. The important question of the carrier of this amœbæ, first brought to light through the investigations of E. L. Walker in the Philippines, is discussed in some detail. Chapter IV. is devoted to the intestinal flagellates of man, of which the authors admit five authentic species. In their opinion there is as yet no good evidence to prove that any intestinal flagellate found in man is pathogenic; on the contrary, the evidence suggests that most and probably all of them are harmless. In this opinion they differ from many clinicians who believe that in certain cases the flagellates are definitely harmful, though the absolute proof of this is difficult to obtain. The various coccidia occurring in man are next considered, the life-history of a typical coccidium is explained, and its method of destroying the intestinal epithelium is illustrated by a diagram. Human coccidiosis, as far as is known, is a transient condition, so that the extensive destruction of epithelium which occurs in heavy infection in animals is not seen in man. Of the three ciliates of the human intestine *Balantidium coli* appears to be the only one of practical importance, since it gives rise to balantidial dysentery much in the same way as *E. histolytica* produces amœbic dysentery. Carriers of *Balantidium coli* also exist, and the relationship of the human infection to that which occurs in pigs and monkeys is discussed by the authors.

In Chapter VII. are described the methods employed for diagnosis of the intestinal protozoa and the many pitfalls which beset the path of the unwary. If the instructions given in this practical section are carefully followed errors of diagnosis will be reduced to a minimum. The authors point out that no protozoologist will ever venture to diagnose an infection without actually seeing the particular organism. In this connexion various "clinical makeshifts," such as the character of the stool, its cellular constituents, and Charcot-Leyden crystals, are discussed. According to the authors, none of these lead to anything more than "plausible guesses" as to the nature of the condition present. They perhaps do not sufficiently recognise the fact that in certain cases the treatment of a patient has to be begun before an accurate diagnosis by the discovery of the parasite can be made. Furthermore, there is always the danger that the discovery of such a parasite may actually lead to an erroneous conclusion as to the cause of the illness. No one would withhold emetine in a case of hepatitis because amœbæ could not be discovered in the stool, and it would be quite unnecessary to administer emetine to a case of acute bacillary dysentery or malaria even if *E. histolytica* were present in the intestine. It is perhaps unfortunate, though unavoidable, that clinical diagnosis is in such cases a guess. The protozoologist may be able to assert that such and such an organism is present, but whether the symptoms of any particular case are actually due to the organism or not can often be decided only by the success or failure of special lines of treatment.

In Chapter VIII. the various treatments which have been recommended for intestinal protozoal infections are reviewed. Of the numerous medicaments which have been employed emetine and ipecacuanha hold first place and it would appear that these alone have any specific action. Curiously enough, emetine gets rid of infections of *E. histolytica* and *Iodamœba bütschlii*, two amœbæ of very different habits, though the other intestinal protozoa are not affected. In the last chapter a number of coprozoic protozoa are dealt with. These are free-living forms which produce resistant cysts. The latter are frequently ingested with food and pass unharmed through the intestinal canal. Soon after the stool has been passed these protozoa emerge from their cysts and commence multiplying, so that erroneous impressions as to their being parasites of the intestine are readily obtained.

The book is well illustrated with a series of eight plates and text figures. One plate deserves special mention, since it is bound to be of particular value in diagnosis. In this plate the appearance of a hypothetical cyst of each protozoon is shown under three conditions—in simple saline solution, in iodine solution, and stained by the iron-hæmatoxylin method.

The book should be read by every student of this highly specialised subject. It is the only up-to-date account of the human intestinal protozoa which exists, and the authors are to be congratulated on having presented to the scientific world such an excellent treatise.

Elementary Parasitology. (First Year.) By THOMAS T. O'FARRELL, F.R.C.S. Irel., D.P.H., President, Section of Pathology, R.A.M.I.; Pathologist, St. Vincent's Hospital, &c. Dublin: Fannin and Co. 1921. Pp. 32. 1*s*.

THIS little book has been written expressly for nurses, with a view to giving them some idea of the numerous parasitic diseases with which they come in contact in their professional duties. There are two sections, the first dealing with Animal and the second with Vegetable Parasites. The various ecto-parasites, such as the flea, louse, and itch-mite, are briefly described and the part they play in the carriage of disease is simply explained. The louse as a carrier of typhus fever is mentioned, but its transmission of relapsing fever is omitted.

Endo-parasites like the tape-worms, flukes, and round-worms are next considered. Though the method by which people become infected with tape-worms is described, there is no mention of the fact that Ascaris and Oxyuris gain entrance to the body by the eggs of the employers, while offering little temptation to the employed, was altogether unacceptable to the Irish National Party, and it was by a compromise with this opposition that the Government consented to remove the medical benefit from the Bill in its application to Ireland. The medical profession, though it made no formal decision on the point, was, on the whole, in favour of the Bill being the same for Ireland as for Great Britain. The medical benefit not applying in Ireland, it might have seemed that the medical profession would have no further concern with the Act, but it speedily appeared that their coöperation was necessary. For the administration of the sickness benefit medical evidence of incapacity was required, and the profession on this point made two demands: (1) that the evidence should be a certificate from the insured member's medical attendant, (2) that there should be provision for adequate payment for certificates. It is not necessary to go into the details of the bitter triangular struggle which lasted for nearly three years between the medical profession of Ireland, the officials of the approved societies, and the Irish Insurance Commission, before the points demanded by the profession were finally granted. Since the beginning of 1916 a scheme for the provision of evidence of incapacity has been in operation which, on the whole, has given substantial satisfaction to all parties concerned. The certificate of the medical attendant is accepted as evidence of incapacity, subject to appeal under certain conditions.

It will be seen, therefore, that whereas a panel practitioner in Great Britain is concerned under the Insurance Acts to supply treatment to insured persons and to give evidence of their incapacity, his confrère in Ireland is only concerned with the giving of evidence of incapacity. The position has failed to give satisfaction either to the medical profession or to the insured. The latter fail to see why they are left unprovided with the medical attendance which is given to their fellow-members in Great Britain. They resent the implication that they should make use of the Poor-law system, and be compelled to plead their poverty to obtain what insured persons in Great Britain receive as a right. They have persistently demanded that the medical benefit should be provided in Ireland as in Great Britain. The heads of the large societies, which operate in both countries, have pointed to a higher incidence of sickness among their members resident in Ireland than among those in Great Britain, and they have assigned the absence of the medical benefit as the cause of this higher incidence. The demand for the provision of medical benefit in Ireland was made with great force by the representatives of the Approved Societies to the Irish Public Health Council in 1919-20, although they were willing to consider other methods than the panel system of providing medical attendance in Ireland, should special conditions render some other system more convenient. Turning to the medical profession in Ireland, it has been equally dissatisfied. It has deplored the imperfections of the system of medical attendance under the Irish Poor-laws as degrading to the working classes, and owing to the conditions of service, equally degrading to the medical practitioner. But there has been a sharp difference of opinion as to the best policy to be adopted. In the industrial areas in and near Belfast the demand has been for the panel system as it is in Great Britain, leaving Poor-law reform aside as a separate problem. But the country doctors generally, and the great bulk of the profession throughout Ireland, thought that the two problems should be dealt with together, and urged as a solution the establishment of a part-time National Medical Service which should provide treatment both for the "poor person" and for the insured, the latter contributing as in Great Britain. This scheme found favour with the Irish Public Health Council, which, in its report published more than a year ago, urged the establishment of such a Service. No steps were taken by the Government to carry the advice of its Health Council into effect. It is likely, however, that when a legislature is effectively established in Ireland, reform will follow the general lines of the report of the Irish Public Health Council. At any rate, the working classes are not willing to rest content without the provision of medical treatment on a contributory basis and free from any taint of pauperism.

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Methods of Contraception.

THE publicity given to Lord DAWSON's address on the practice of birth control emphasises once again the immense importance attached by the public to medical opinion on this subject. Lord DAWSON spoke chiefly on the ethical and sociological aspects of the subject. The opinions he expressed will be shared by many of his colleagues in the profession; many would go farther and some would go less far. But, as we have pointed out, any practitioner is liable to be drawn into a discussion on the propriety of the artificial prevention of conception in certain given circumstances, and if he will not or cannot answer a definite question on the relative merits of different methods, the patient may be driven into hands less scrupulous and also perhaps less judicious.

The fact is that, contrary to a public impression, the doctor is not familiar with the scientific aspects of the subject, which have not as yet been thoroughly worked out, and there is no easily accessible medical literature pointing out the advantages and disadvantages of the various methods of contraception in current use. In THE LANCET recently we set forth the present position in the following words:—

> No part of the medical curriculum deals adequately with the applied anatomy, physiology, and pathology of the reproductive system. In certain physiological text-books detailed consideration of this system is omitted; in others it is disposed of in a brief chapter. Few teachers discuss openly and clearly with students the genesis, the psycho-physiological significance—with due reference to reaction time in either sex—of the sexual orgasm. Later on the gynæcologist is more concerned with the retained products of conception than with its prevention, and the venereal expert with problems of infection rather than human and social problems. And yet not only the gynæcologist and the venereal expert, but the neurologist and the alienist are daily concerned with the end results of the sexual life of the patient. Not only the ethics of the control of parenthood, but the less undesirable methods of control should be familiar to the profession; the public is prepared to turn to the doctors for guidance, and it is not the fault of the public that doctors are ill-equipped to give it. Even the subjects of impotence and abortion are better understood, though chiefly from the medico-legal standpoint. But any qualified doctor should be placed in a position to inform first himself and then, at his discretion, his inquirer, firstly, of the arguments for and against contraceptives, and secondly, of the relative degree of nervous wreckage to be anticipated from the use of any one method.

There is as yet nothing to be added to these generalities. The interest aroused by Lord DAWSON's courageous address makes the gap in medical knowledge a very noticeable one, and steps are already being taken at least to take stock of the present position. The Federation of Medical Women chose this subject for consideration at their first meeting of this session, which we report on p. 908 of our present issue. The Medical Council of the Federation of Medical and Allied Societies are discussing the question, and no

V.R. 76: A FRENCH MILITARY HOSPITAL.

By HAROLD J. RECKITT. London: William Heinemann. 1921. Pp. 292. 21s.

BOOKS dealing with war hospitals are always interesting although they naturally have a strong resemblance one to another. But the record now before us is remarkable in that it describes a military hospital practically founded and financed by one who, though himself a Quaker, had no scruples in doing what he could to help the fighters for freedom and justice. Mr. Reckitt tells us in his earlier chapters how he and his wife determined to do something more than give money; they were in the happy position of being able to do this, but as he says "giving without working seemed to my wife and myself an empty thing—we had to find out what we could do ourselves." So they determined to start a hospital in which they themselves could work, helped by inhabitants of their own village who were too old for army service. There were many difficulties in the way of realising this idea, and finally Mr. Reckitt went into partnership with Lady Johnstone, wife of Sir Alan Johnstone, British Minister at The Hague, who was also trying to found a hospital. Eventually a start was made in a disused Marist College at Ris Orange, about 20 miles from Paris on the Fontainebleau Road. The staff was mainly British and American, though there were also members of other nationalities, including French, Italian, Russian, Dutch, Norwegian, Luxemburg, Filipino. The hospital got under way about July, 1915, and continued its beneficent work until 1918, in September of which year it was moved to Juilly. This date concludes the first part of the book written by Mr. Reckitt; Part II. consists of chapters contributed by various members of the staff, written from their particular point of view.

The motto of Verdun, "They shall not pass," was the spirit which inflamed the Allies with that force which enabled them to win through, and although the Johnstone-Reckitt Hospital was but one, and that a comparatively small one out of many, its record shows a spirit of which its founders may well be proud.

PRACTICAL CHEMICAL ANALYSIS OF BLOOD.

By VICTOR CARYL MYERS, M.A., Ph.D., Professor of Pathological Chemistry, New York Post-Graduate Medical School and Hospital. London: Henry Kimpton. 1921. Pp. 121. 10s.

NOT only does blood analysis yield information of value in such conditions as diabetes mellitus, nephritis, and gout, but its sphere of usefulness is being extended daily to a variety of diseased conditions. That this is so is due primarily to the labours of American workers using the methods which they have themselves devised. The result of all this work has tended to show that the chemical analysis of the blood yields results of far greater value to the clinician than can be obtained from repeated urinary analyses. The American journals of recent years have been occupied by papers dealing with methods of estimation of various blood constituents, modifications of the methods, criticisms of reagents employed, and also with detailed accounts of the results obtained. It appears abundantly evident that methods in the hands of those who have devised them prove successful, but it does not follow that equally successful results are obtained by other workers using the same method. Much depends upon confidence in the reagents and apparatus employed. A useful feature of Prof. Myers's book is that a list of standard solutions and reagents is provided at the end. Careful directions are given for the preparation of the reagents employed in the text, and the frequent use of the words "pure" and "of the highest purity" is to be commended. In dealing with small quantities of blood it is necessary to use good reagents, and to obtain results with the minimum of error it is advisable to carry out the estimations in a well-equipped laboratory.

The book was designed as a brief survey of the subject of blood analysis for physicians and laboratory workers. Only those methods of analysis employed by the author are given in detail, with illustrations of particular types of apparatus used. Other methods might with advantage have been included, particularly those of Folin and Wu. The reasons for carrying out estimations of certain blood constituents are closely defined, and the results portrayed in the form of useful and clearly printed tables. A perusal of the methods given in this book will show that the technique is complicated and requires considerable practice before conclusions can be drawn from the results obtained. Exception may be taken to the term "renal diabetes" as giving rise to an entirely wrong conception. There is a distinct group of patients suffering from mild glycosuria without any of the clinical manifestations of diabetes mellitus. The condition is non-progressive, and needs no restriction as regards diet. A satisfactory diagnosis can only be made by an estimation of the blood sugar, which is invariably normal or subnormal. These patients are unfortunately labelled as "renal diabetes," when they present no evidence of renal insufficiency apart from the fact that their kidneys leak sugar, and they are not suffering from diabetes. Besides these there is a distinct type of parenchymatous nephritis with mild glycosuria and slight hyperglycæmia, which is included by Prof. Myers in the group of "renal diabetes"; these cases may perhaps be so labelled in the present state of our knowledge.

Physicians and surgeons who have reason to be interested in renal efficiency tests will obtain much useful information from a perusal of the chapters dealing with blood analysis of non-protein nitrogen, urea nitrogen, creatinine, uric acid, and chlorides, and also from the description of the phenolsulphonephthalein test, and the quantitative micro-methods of urine analysis. The importance of the determination of cholesterol in the blood is clearly recognised, and the author gives a simple, and apparently reliable, method for estimating this substance. The study of the variations in the cholesterol content of the blood is in its infancy, but bids fair to yield results of value.

To each chapter is appended a useful and fairly complete bibliography, and references are also given to various determinations of blood constituents which are of minor importance. The book is well printed, and contains a surprising amount of valuable information within small compass.

JOURNALS.

BRITISH JOURNAL OF SURGERY.—In the October issue, A. J. Walton discusses reconstruction of the common bile-duct in those cases where a cholecystenterostomy is unwise or impossible. He describes various groups of cases in which such a reconstruction is needed, and then reviews the usual operative procedures advised in the past. He gives the technique of an operation devised by him, first published in 1915, and a review of six cases in which he has used it.—Miss Maud Forrester-Brown examines a series of cases with a view to ascertaining the advantages and limitations of the many methods of bone grafting, more particularly in connexion with ununited fractures. In all she advocates a two-stage operation.—Sir D'Arcy Power's second eponym deals with the origin of "Baker's cysts" and "Baker's tracheotomy tubes."—D. P. Wilkie contributes an interesting article on Chronic Duodenal Ileus, the existence of which he has definitely established by a series of cases under his care. He goes on to describe the ætiology, pathology, symptoms, and treatment, and draws attention to the complications which may arise.—Zachary Cope describes five cases of appendicitis showing testicular signs.—E. E. Hughes records a case of spontaneous fracture of the humerus in an individual having obscure lesions in the right and left humerus, the right ischium, femur, tibia, and fibula. The lesions are not the same in all the affected bones, but some of them show unmistakable

Annotations.

"Ne quid nimis."

MEDICAL DEFENCE.

At the annual meeting of the Medical Defence Union, Ltd., held on Oct. 20th, at the rooms of the Medical Society of London, Sir Charles Ballance (President), in moving the adoption of the report for 1920-21, said that after his experience on the Council during the past 12 months he could not understand how any medical practitioner could fail to take advantage of the protection and security afforded by membership of the Union. Consideration of the report shows the Council to have good grounds for their claim that no diminution is to be found of the estimation in which the Union is held by the profession and by the general public. The total of membership reached a higher figure than in any previous year, and the Council is satisfied that the new arrangement whereby the premium for the Indemnity Insurance is included in the annual subscription (now raised to £1) payable by every member of the Union, is very generally appreciated. The single payment provides what is practically complete cover against all pecuniary risk, for, subject to certain conditions, each member of the Union is assured of indemnity against damages and costs to the extent of £2500 awarded against him in any case undertaken on his behalf by the Council of the Union. The report contains a reiteration of the warning previously given of the danger of placing the sale of a practice in the hands of more than one medical agency. In order to safeguard the interests of panel practitioners who employ assistants in their panel work, an addition has been drawn up for insertion in the restraining clause embodied in the ordinary agreement between principal and assistant; by this addition (1) the assistant undertakes to withdraw from the panel upon the termination of his assistancy, and (2) the principal is empowered to give notice on behalf of the assistant in the event of the assistant declining to do so. A form of restraining clause for the use of members has been drafted by the solicitor to the Union. No success attended the representations made to the Civil Service Commission by the Council with reference to the fee charged for the test examination—an examination invariably waived—of medical practitioners appointed on the staff of the Ministry of Health; but in every other direction the efforts of the Union on behalf of its members seem to have resulted in benefit to the latter. Disputed accounts, recovery of inquest fees and of moneys spent on vaccine for preventive inoculation of insured persons, difficulties with unsatisfactory locum-tenents, cases of forgery of practitioner's names—these and numerous other difficulties have been dealt with. The report points out that no medical practitioner enjoys immunity from attack, however skilfully and conscientiously he carries out his professional duties, and it is satisfactory to see the results of the Union's action in support of medical men who, failing that action, might have sustained more or less serious loss, either of reputation or of just material increment.

DIET IN RELATION TO NORMAL NUTRITION.

The principles underlying the subject of dietetics, with valuable illustrations upon the proper selection of foods, are clearly expounded in a recently issued report (No. 9, On Public Health and Medical Subjects), by Dr. J. M. Hamill, a medical officer of the Ministry of Health. They have been put together after numerous requests and are intended to give authoritative information to medical officers of health, medical practitioners, teachers, and lecturers. It is desirable that this information be widely disseminated, for much ill-health and physical impairment is due to dietetic deficiency from improper selection and use of foods. Many cases of vague ill-health may be caused by some inadequacy of the diet, and it is probable that numerous people are consuming a diet on the verge of inefficiency. The question of deciding what is sufficient and suitable food, or when a diet may be regarded as satisfactory, depends upon certain very definite principles. A large amount of physiological and biochemical research has been devoted during the last two or three decades to the elucidation and establishment of the essential factors. The different kinds of foodstuffs are not by any means of equal value, as is readily seen from the data of their chemical analyses; the food must contain adequate amounts of the so-called accessory food factors or vitamins, which at present cannot be expressed in concise terms. Food must firstly supply the energy needed for the maintenance of body temperature and for muscular work; the quantity so required depends upon the nature of the work, and varies from 2750 calories for sedentary work, such as that of a tailor, to 5500 calories for heavy work, such as that of a woodcutter, and higher quantities for still harder work. The figures are based on the requirements of a man of an average weight of 70 kilos. Body-weight is a variable, higher body-weight, of course, requiring a larger number of calories, while the lighter man requires relatively more calories per unit of body-weight. Weight for weight, woman requires less than a man, on the average one-fifth less. Children's requirements vary from 0·5 to 0·83 of that of a man, depending on their age, up to 14 years. Either of the proximate principles of the food (carbohydrate, fat or protein) can furnish this energy, but it is most adequately supplied by carbohydrate and fat, these two groups being, within limits, interchangeable. The function of protein is to replenish the wear and tear of tissues and to provide for growth. The most difficult problem is to decide the minimum quantity of protein required daily; the figure given by Atwater is 100 g. for light work, increasing to 125 g. for medium, and 150 g. for hard muscular work. For short periods less protein may suffice, even as little as 40 g. per day. In ordinary circumstances the analyses that have been made show that the usual consumption for light to medium work is from 80 to 100 g.; the lower amounts are fully adequate if the protein is largely of animal origin. The value of protein depends entirely upon the nature of the constituent amino-acids, many vegetable proteins being deficient in one or more of certain amino-acids which are absolutely necessary for life. The nutritional value of proteins of different sources has been compared and the results expressed under the term Biological Value of Proteins. Not only, therefore, must protein be sufficient in quantity but also of sufficient biological value; a diet containing protein of too low a biological value is now considered a probable cause of pellagra. A suitable mixture of inorganic salts is another important consideration in selecting a proper diet. The mineral requirements of the body are not so well known as the energy or protein requirements, but are satisfied by an ordinary well-mixed diet. The vitamin requirements are generally met by an ordinary well-mixed diet of natural foodstuffs. Disorders arising from vitamin deficiency can usually be traced to an ill-balanced diet or to a well-balanced one spoiled by commercial processes of manufacture or by improper cooking. The effect of commercial processes is best exemplified by the milling of cereals, which removes the B-vitamin. The suggestion that the loss of vitamin B of the grain may be compensated by baking with yeast has not been substantiated. The antiscorbutic or C-vitamin is present chiefly in fresh fruit and vegetables, and, again, these are variable. Oranges, lemons, cabbage, lettuce, &c., are richest in this vitamin. C-vitamin is a very unstable substance, the effect of ordinary drying processes being to destroy it; cooking has also a destructive action. The A-vitamin is contained in certain fats and green leaves. Butter is rich; lard poor; margarine varies according to its composition. All vitamins have their origin in vegetable food.

THE LANCET.

LONDON: SATURDAY, OCTOBER 29, 1921.

The Capitation Settlement.

On Thursday last agreement was reached between the Minister of Health and insurance practitioners in regard to the amount of the capitation fee to be paid to the practitioner on account of medical benefit under the Insurance Acts. The annual Conference of Representatives of Local Medical and Panel Committees held on this day—we summarise its proceedings on another page—reaffirmed its opinion that 13*s.* 6*d.* was the lowest capitation fee that should be offered for effective service, and that no justification existed for demanding any reduction below the arbitration award of 11*s.* in March, 1920. At the same time the Conference frankly recognised the force of the Minister's appeal to make some sacrifice for the common good in a great financial crisis, and after a deputation to the Minister from the Conference had ascertained that the state of the Exchequer did not admit at present of any higher fee than 9*s.* 6*d.*, the Conference agreed with unanimity and good humour to instruct its executive to accept the Minister's offer on grounds of citizenship. It was accepted on both sides that the question of the arbitration award was not reopened upon its own merits, but that, simply in view of the present admittedly desperate financial position of the country, panel doctors were prepared to bear their own share of sacrifice, provided that in so doing the public health did not suffer. That is, of course, the really crucial point. Speaking as chairman of the executive, Dr. Brackenbury is reported as having said to Sir Alfred Mond: "We do feel that there is a serious danger of the service becoming an unsatisfactory one"; a remark which has only been misunderstood in certain quarters because it has been taken apart from the speaker's assurance at the Conference that, whatever the capitation fee accepted, the panel doctor would render his best to his patient. It cannot be stated too forcibly that no question whatever arises of an insurance practitioner cutting his work to fit the reduced fee; but it is also abundantly clear that it is only a contented service which can produce results satisfactory to the panel patient. Fortunately, the Minister of Health, in regretting his inability to reconsider the fee of 9*s.* 6*d.*, was willing to guarantee its continuance for a period of two years, and in so doing eliminated, for a brief period at least, one disturbing element of uncertainty in the practitioner's daily life; at the same time he promised to see whether the reduction could be stated as rebate rather than depreciation of the basic fee.

Sir Alfred Mond, in the course of conversations, had already assured the panel executive that any sacrifice made by the medical profession now would not prejudice future discussion, for the Minister of Health has definitely promised that the whole subject of the administration of the Insurance Acts in regard to their effect on the health of the people shall fall under early review. This is the more likely to come about speedily, as both parties administering medical benefit express their desire for a wide and searching investigation, whereas by waiting until next spring a period of two complete years of medical benefit under the revised regulations will have elapsed. The official organ of the approved societies deprecates an inquiry at the present moment of extreme financial stringency. It may be recalled in passing that the total cost of medical benefit in England for the year 1920 approached £8,000,000, of which approximately £6,700,000 was paid to panel doctors. Other cash benefits under the Acts cost practically the same amount; sickness benefit, the principal of these, at its present enhanced rate of 15*s.* a week, is still actually less than the payment made to persons who are well but unemployed, and if only on this ground is likely to be increased rather than reduced. The cost of medical benefit is being met in the proportion of rather less than a half by the Exchequer and rather more than a half by the combined contributions of employers and employed, the ratio being roughly 19 to 22, and the reduction in the doctors' remuneration will be applied wholly in relief of Exchequer payments. With a working agreement reached on the subject of the capitation fee it becomes superfluous to consider how the sickness insurance principle would work out in this country in the absence of medical benefit, but it remains of interest to note the experience of Ireland where, from the first, this benefit was not granted.

INSURANCE WITHOUT MEDICAL BENEFIT.

The reasons why the medical benefit clauses in the National Health Insurance Acts did not apply to Ireland may be recalled with advantage. The Irish Poor-law system of medical attendance, which has now been in existence since the middle of the last century, provides medical treatment for every "poor person," whereas in England only a "destitute poor person" is entitled to attendance by the parish doctor. The term "poor person" has never been defined, as used in the Irish Poor-laws, and its vagueness has given rise to innumerable disputes, for it has permitted a large portion of the population to take advantage of rate-paid medical treatment without any proof of their right to such assistance. In other words, general practice as understood in England is almost unknown in rural Ireland. In the country districts not only all the wage-earning class, but also the small farmers have received habitually their medical attendance under the Poor-laws. Of course, while general practice, with its advantages, is largely absent, the club system has been also unable to flourish with all the abuses which centred round it before the passage of the National Insurance Act. There have been, of course, medical clubs in Dublin, Cork, Limerick, and some other of the larger towns, as well as in Belfast and a small industrial area in Armagh. Where clubs have existed abuses have not always been absent, and as a matter of fact it was the revolt of medical practitioners in Cork against the tyranny of club practice which started organised opposition against such abuses in England.

It was clear, therefore, that had the medical benefit of the Insurance Act been applied in Ireland, there would have been overlapping of two heterogeneous systems, one by which the whole population might enjoy rate-paid benefit by ranging itself under the undefined epithet of "poor," and one by which employers, employed, and the State provided medical treatment for a defined class. This is not the whole explanation of why the Bill was amended for Ireland as regards the medical benefit clauses before it became law; politics, of course, played their part. The Bill, which, as a whole, had roused the opposition gradually after the sixth month, leaving the child more susceptible during the first six years than at any other period of its life. The practical value of such a campaign, of course, depends upon two assumptions—viz: 1. That the Schick reaction is a reliable indicator of susceptibility to diphtheria. 2. That the injection of toxin-antitoxin actually confers active and lasting immunity. We pointed out some time ago that the crucial test of the value of the reaction had not been carried out, as no cases giving a negative reaction had been purposely infected with diphtheria. Whether toxin-antitoxin confers lasting immunity has yet to be demonstrated. So great, however, is the confidence in America that the methods proposed will stamp out diphtheria that public health authorities are beginning to hold parents responsible if their children contract the disease. This standpoint is strikingly illustrated by a letter sent by the sanitary authority in North Carolina to every home in which diphtheria occurred last year:—

> "Dear Friend,—We regret that you had a case of diphtheria in your home last year. We appreciate the care you took to keep this disease from spreading to others in your home or community. In the future you will be responsible if you have a case of diphtheria, as the North Carolina State Board of Health is preparing to furnish the doctors and the health officers toxin-antitoxin. When three doses of this are given, the person is protected against diphtheria for several years, possibly for life."

The importance of the issue is great and is worthy of earnest consideration and investigation on the part of those responsible for the maintenance of public health in this country.

GENERAL PARALYSIS IN OLD AGE.

Dr. Heinrich Herschmann,[1] assistant at the Psychiatric Department of the Vienna General Hospital, has made a clinical study of 84 cases of general paralysis which developed after the age of 60. Eighty of the patients were between 60 and 70 at the onset of the disease, and only four were over 70, the oldest being 75. Fifty-eight were males and 26, or about a third of the total, females. The relatively high proportion of women among aged general paralytics, a circumstance which had been previously observed by Kraepelin, Junius, and Arndt, is all the more remarkable as syphilitic infection after 50 is much rarer in women than in men. It is probable, therefore, that the interval between infection and the onset of general paralysis is longer in women than in men. The greater frequency of alcoholism in the male sex and the more intense strain on the nervous system caused by the struggle for existence probably account for the shortening of the incubation period. Of the 84 cases in the present series, 66 were kept under observation until their death, while the rest were sent home. The average duration of the illness of the 66 cases, reckoning from the time of their admission to the clinic, was 263 days, so that senile general paralysis does not assume a particularly rapid course. In only 22 of the 66 cases was death due to cachexia alone, the causes of death in the other cases being convulsive attacks, pneumonia, myocarditis, atheroma, or enteritis. The number of cases of tabo-paralysis was high, no less than 21, or exactly one quarter of all the cases, showing tabetic symptoms. In the 20 cases in which the date of syphilitic infection could be determined the length of the interval between it and the onset of general paralysis was remarkable; in six cases infection had occurred more than 40 years previously, in six more than 30 years, in seven more than 20 years, and in one 12 years before the onset of the psychosis. According to Dr. Herschmann, the special features of senile general paralysis are the rapid development of dementia, the loss of the power of orientation, nocturnal delirium, and, most of all, the frequency of the paranoid form. He suggests that this peculiar symptomatology is due to the histopathology of senile general paralysis, which will form the subject of a future communication.

RADIOLOGY AND PHYSIOTHERAPY.

IT was announced at the recent annual meeting of the British Association for the Advancement of Radiology and Physiotherapy that a certificate of incorporation had just been secured. Dr. Robert Knox, from the presidential chair, reviewed the work accomplished by the Association during the four years since its foundation, referring to the share taken in the institution of the Cambridge diploma in medical radiology and electrology. In conjunction with the Institution of Electrical Engineers, the Association had been successful in founding the Society of Radiographers, the Council of which was appointed in equal ratio by the B.A.R.P., the Institution, and the general body of its own members. The constitution of the Society of Radiographers had been approved by the General Medical Council, inasmuch as its diploma of membership (M.S.R.) was obtainable by examination only, all its members undertaking not to accept any patients for diagnosis or treatment except under the direction of a qualified medical man. In addition to its educational activities, Dr. Knox mentioned the policy recently initiated by the B.A.R.P. of issuing authoritative statements on medical subjects to the daily papers. The issue of manifestos approved by the Council but otherwise unsigned appeared to him to fulfil the joint requirement of being authoritative and at the same time free from any suggestion of personal bias. Dr. Knox expressed a hope to see in London some day a worthy institute of radiology, having its own museum and library, and perhaps its own clinic, and giving every possible facility for teaching and research.

THE UNSOLVED MYSTERIES OF ARTERITIS.

WHEN a pathologist with an international reputation publishes a series of cases closely observed by skilled clinicians during life, and searchingly investigated after death; and when his detailed summing-up ends in a frank avowal of ignorance, of inability to fix a truthfully descriptive label to the case, we are reminded that the sense of complete and nicely rounded-off knowledge is, most fortunately, withheld from every explorer. A few years ago our knowledge of the causes of arteritis was hardly even elementary, and when the relation of endarteritis to syphilis and of arteritis to tuberculosis had been noted, there was little more to be said—of importance, at any rate. Recent research has, indeed, added greatly to our appreciation of the part played by arteritis in such widely different diseases as CO poisoning, influenza, typhus and cerebro-spinal fever. That curious disease, periarteritis nodosa, is also better, though still imperfectly, understood. These recent advances should not, however, obscure the fact that we are still groping about the fringe of the problem, and this is the lesson on which Prof. F. Harbitz conscientiously insists when, in *Norsk Magazin for Lægevidenskaben* for September, 1921, he records one case after another of obscure arteritis observed at the Pathological-Anatomical Institute in Christiania. One of his cases was that of a man of 22 who was subject to idiopathic renal hæmorrhage. After it had continued off and on for about a year decapsulation was performed, and a piece of kidney excised for microscopic examination. This showed nothing abnormal, but as the hæmorrhage continued the whole kidney was removed. Its macroscopic appearance was normal, but the microscopic examination showed necrotic foci within which the arterioles were diseased; their walls were swollen, and the lumen of each vessel was reduced, in some places to the point of obliteration. The swelling of the walls was partly due to proliferation of the intima, partly to hyaline degeneration of the connective and elastic tissues. There was no sign of inflammation, syphilis, or arterio-sclerosis, and if the case was one of periarteritis nodosa, then this disease does occasionally develop as a strictly localised phenomenon. Arousing without satisfying curiosity, this case shows that the term idiopathic renal hæmorquestion can more fitly appeal to the consideration of a society whose fundamental idea is to correlate medical thought and endeavour with public work for general progress in health policy. We hope, therefore, that many persons of real experience along special lines as well as those who occupy public positions where knowledge of various sides of the question is necessary, will participate in the discussion; and we commend the subject to the consideration of other medical societies. A joint meeting of gynæcologists and neurologists might clear the ground of some of its rough places.

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[1] Medizinische Klinik, Oct. 9th, 1921.

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Small-pox and Vaccination in U.S.A.

THERE is indisputable evidence that during recent years small-pox has been increasing in the United States, giving rise to some uneasiness in responsible quarters. Inquiry has of late been made into the matter by two experts whose report[1] was published in a recent issue of the U.S. Public Health Reports. Until quite recently the collection of health statistics in the United States was attended with difficulty and their accuracy was sometimes in doubt; but for the purposes of the above-named report it was found possible to obtain trustworthy official figures for the six years, 1915 to 1920, regarding the incidence of small-pox in 20 States, the combined population of which was estimated at 51 millions. At the same time evidence was obtained showing how the law as to vaccination, especially of school-children, was being enforced or neglected in each of these 20 States. A study of these collected facts and figures was then made, with a view of determining, as far as possible, the geographical distribution of the increased incidence of small-pox, and its relation with the vaccinal condition of the inhabitants as judged by the way in which the vaccination law in each State was enforced. The average rate of small-pox incidence in each State during the six years period was calculated by the formula $R = \frac{1000\ T}{6\,P - 15\,D}$, T representing the total number of officially reported cases for the period, P the 1920 population, D the annual increase (one-tenth of the intercensal difference), and R the rate of small-pox incidence per 1000 of the population. A list was then made of the 20 States in the order of their small-pox incidence-rate, the States showing the lowest rate coming first. The three States which had the lowest average small-pox rate were New York, with a rate of 0·026 per 1000, New Jersey 0·027, and Connecticut 0·09. The three States with the highest rates were Oregon with a rate of 1·48, Washington 1·72, and Kansas 2·0 per 1000 of the population. The 20 States were classified into four groups, according to their geographical position—namely, (1) Eastern, (2) Southern, (3) Pacific, and (4) Central. The average small-pox rate for the Eastern States was 0·04, for the Southern 0·58, for the Pacific 0·91, and for the Central States 1·14. The States of New York, New Jersey, and Connecticut, which had the lowest rates, are included in the Eastern group. Oregon and Washington, which were among the highest rates, are in the Pacific group, and Kansas, which had the highest rate of all, is in the Central group of States.

There is no general vaccination law for the whole of the United States, but vaccination of children is generally secured by making it a condition of admission to school. Each State makes its own enactments as to vaccination, but in some States, although the law exists, it is not enforced. Vaccination of school-children appears to be well carried out in the Eastern States, particularly in the State of New York, where vaccination is a condition of school attendance in cities of the first and second classes, in which it is estimated that 100 per cent. of school-children are vaccinated. Outside the larger cities the enforcement of vaccination is less satisfactory. In the State of New Jersey the law directs that boards of education may prohibit the attendance of any unvaccinated child at school. This condition is strictly enforced in the large cities. In this State vaccination campaigns at previous times of epidemic small-pox have, in some instances, resulted in the protection of about 80 per cent. of the community. The attitude of the citizens of the Eastern States to vaccination is on the whole favourable. On the other hand, in the Pacific and Central States this attitude is less satisfactory. The exclusion of unvaccinated children from school, although enacted by law, is frequently not enforced. In the State of Washington the law has been neglected for some years, and in 1919 it was finally repealed altogether. Kansas, with the highest incidence-rate among the 20 States, does not enforce vaccination, and even in some of what are termed "progressive districts," approximately 80 per cent. of the school-children are unvaccinated. From consideration of the above and other facts and figures, it appears to the authors of the report that small-pox prevalence "depends upon the popular vote." In those States where popular sentiment backs up the enforcement of vaccination, small-pox is practically negligible. Where, however, the law gives discretionary powers to local authorities, or to individuals, as regards enforcement of vaccination, the small-pox incidence-rate tends to rise; and where there is absence of compulsory powers, or in States where there is no vaccination law at all, small-pox reaches a high average rate of incidence.

The type of small-pox now prevalent in the United States is, as our readers are aware, comparatively mild. But there is no assurance that this type will continue. There is always a possibility of the introduction of a more virulent strain of the infection into the States from Mexico or South America, where small-pox is continually occurring. The fact that nearly 58,000 small-pox cases were reported during 1920, in the 20 States under consideration, containing only about half the population of the United States, is a sufficient proof that the disease is widespread and likely before long to become severely epidemic in the absence of general vaccination. In view of the large amount of available evidence it is useless to deny nowadays the favourable influence which vaccination exerts in the protection of communities and individuals against small-pox. But, as in the past, it will need a severe shock in the form of a serious and fatal epidemic to rouse the public, not only in the United States but in England as well, from the sense of false security into which it has fallen as regards small-pox and the prophylactic value of vaccination and revaccination.

UNIVERSITY OF LEEDS.—Sir Edward Brotherton's gift for the endowment of bacteriological work at the University, to which we have already referred, was officially reported to the University Council on Oct. 10th. A resolution of appreciation was passed and the Council announced their intention of founding a chair of bacteriology, to which will be attached in perpetuity the donor's name.

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[1] Small-pox in Twenty States, 1915 to 1920. By John N. Force, Special Expert; and James P. Leake, Surgeon, U.S. Public Health Service. Public Health Reports for August 19th, 1921.

side of the third or transitional year, the students are engaged on this for about one-half of each week. During the hours they spend in the hospitals they are under the immediate supervision of a member of the staff, and either in the casualty rooms or wards or elsewhere they are systematically instructed in the elementary essentials of clinical work. As far as possible the subjects demonstrated clinically are made to correspond with the subjects which are being dealt with during the remainder of the week in the laboratory. No novelty is claimed for the scheme. On the contrary, it is a reversion to the practice of many medical schools a generation ago, as students of those days will remember. Those, however, who remember having to do six months' hospital practice before entering for their examinations in anatomy and physiology will remember also that the hospital practice was then a somewhat perfunctory affair. It was often regarded as an interference with the earlier studies. The student had to get "signed up" for it, and to this extent only it was important, but little or no attempt was made to show that clinical practice had any bearing on the earlier subjects. The present experiment, which has its counterpart elsewhere, will be watched with interest by all those responsible for training students of medicine.

THE ROYAL SOCIETY OF MEDICINE: SOCIAL EVENINGS.

The Council of the Royal Society of Medicine has decided to resume the Social Evenings, having regard to the general appreciation by the Fellows of the opportunities offered at such gatherings for scientific and social inter-communication. The first meeting has been fixed for Monday, Oct. 31st, when the Fellows and their friends will be received by the President of the Society, Sir John Bland-Sutton, with Lady Bland-Sutton, at 8.30 P.M., after which the President will deliver a short address on "Choroid Plexuses and Psammomas." Those who may recall an address delivered by Sir John Bland-Sutton, at a previous similar gathering, upon "Gizzards and Counterfeit Gizzards," will attend the Social Evening with pleasurable anticipation. The library of the Society will be open to the guests and various objects of interest will be on exhibition, while the lighter side of the reception will be represented by music, refreshments, and smoking. Fellows may invite guests, and tickets are not required.

In view of the large number of protests received from local authorities in regard to the threatened reduction from 50 to 5 per cent. in the Treasury grant towards the supply of milk to mothers and young children, the more generous scale has been extended by the Ministry of Health until March 31st, 1922.

The St. Pancras Borough Council has unfortunately maintained its attitude with regard to the dismissal of Dr. Gladys Miall-Smith. By this act a competent officer loses work for which she was not only well fitted but was actually discharging in a satisfactory manner. A question will be put to the Minister of Health on the subject.

At the Royal College of Physicians of London on Nov. 1st Dr. F. Parkes Weber will deliver the Mitchell Lecture on the Relations of Tuberculosis to General Conditions of the Body and Diseases other than Tuberculosis; on Nov. 3rd Dr. Michael Grabham will deliver the Bradshaw Lecture on Sub-tropical Esculents; and on Nov. 8th and 10th Dr. R. O. Moon will deliver the FitzPatrick Lectures on Hippocrates in Relation to the Philosophy of his Time. The hour in each case is 5 P.M.

The Services.

THE MINISTRY OF PENSIONS: CONCURRENT TREATMENT AND TRAINING.

The rules governing the admission of disabled ex-officers and nurses to concurrent treatment and training have been revised in the light of recently published decisions of the Ministry of Labour, and it must be remembered that the concurrent treatment and training are normally preliminary to passage under that department. Applications for concurrent treatment and training must reach the Commissioners of Medical Services of the various regions not later than the end of this month. Such applications cannot be entertained later unless the applicant has been demobilised or discharged for more than a year, or can show that, though out of the Services for a longer period, there has been continuous treatment, additional or retired pay or pension, or that unsuccessful endeavour since discharge has been made to resume pre-war occupation or to enter one equally remunerative. These arrangements do not at present apply to tuberculous cases.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. C. L. W. Bunton is placed on the retd. list at own request.

ROYAL ARMY MEDICAL CORPS.

Maj. A. C. H. Gray relinquishes the temp. rank of Lt.-Col.

Capt. L. Buckley retires, receiving a gratuity.

Officers relinquishing their commns.:—Temp. Maj. C. J. Marsh, and retains the rank of Maj. Temp. Capts. retaining the rank of Capt.: G. L. Lawlor, H. H. R. Bayley, I. A. Davidson, H. Gibson, H. E. M. Baylis, C. L. Herklots, and W. St. A. Hubbard.

ARMY DENTAL CORPS.

Temp. Capt. B. E. Gentleman, Dental Surg., from Spec. List, to be Lt., and to be temp. Capt.

Temp. Capt. W. Meeke relinquishes his commn. on ceasing to be empld. as a Dental Surg., and retains the rank of Capt.

SPECIAL RESERVE OF OFFICERS.

Capt. K. N. G. Bailey relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Capt. G. F. Shepherd (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Maj.-Gen. P. Carr-White, and the resignation of Capt. G. B. Harland.

Maj. R. H. Lee has been appointed to hold visiting charge of the office of Agency Surgeon, Eastern Rajputana States. Majs. H. W. Pierpoint, D. Heron, J. Husband, and A. N. Dickson have been confirmed in their appointment as Agency Surgeons. Lt.-Col. W. D. H. Stevenson, Assistant Director-General, has proceeded on a year's leave, and Maj. J. A. Cruickshank, of the Bacteriological Department, has been posted to Madras and appointed Assistant Director, King Institute, Guindy.

DEATHS IN THE SERVICES.

Surg.-Gen. Sir William Deane Wilson, K.C.M.G., R.A.M.C., who died at his residence at Westfield in Sussex on Oct. 19th, aged 77, saw service in the Afghan War of 1878–80, and in the Egyptian Campaign of 1882–84, being mentioned in despatches and receiving medals and clasps on both occasions. In 1898 he was Principal Medical Officer for the Western District at Devonport, and was created K.C.M.G. in 1900.

News has reached this country of the conditions under which Lt.-Col. E. A. Roberts, D.S.O., Third Surgeon of the General Hospital, Madras, was drowned on the Madras beach last month. The deceased went with a friend to bathe, and going out of his depth called for help. The friend reached him with great difficulty, and succeeded in bringing him to shore, where he rendered all possible aid, but without avail. An inquest was held, and the jury returned a verdict that death was due to accident.

Donations and Bequests.—The late Mr. Wm. Mitchell, sometime millwright at Stuartfield, and latterly residing at Hawthorn Cottage, Station-road, Mintlaw, has left, free of legacy duty, £100 to the Aberdeen Royal Infirmary, and £100 to the Aberdeen Sick Children's Hospital.—The Chelsea Hospital for Women has received a grant of £150 from the Alexandra Day Fund.

Milk fat will be deficient in A-vitamin if the animal be not fed upon food containing it, such as green leaf, which is its ultimate source. The antiscorbutic value of milk depends upon the animal's food. The two best foods are milk and green leaves. Milk supplies good protein and mineral matter, and vitamins if from properly fed animals. Green leaves are said to contain good protein, and they are certainly rich in vitamins. An ill-balanced diet will therefore be made adequate by the inclusion of milk and green vegetables.

THE SOLDIER'S LOAD.

WHAT weight can a soldier carry and yet march and fight well? Major N. V. Lothian deals with this important question in the opening paper of the *Journal of the Royal Army Medical Corps* for October. The diseases ascribed to overloading have been pulmonary emphysema, so-called soldier's heart, and, tentatively, trench nephritis. Some burden the soldier must have: arms, armour, spade, clothing, food, to which he adds souvenirs; together these cannot weigh less than 40 lb., and men have carried 88. The problem has faced soldiers of all times. The Athenian hoplite in battle carried 80 lb., but each had an attendant to carry his equipment to the field. Thus heavily weighted they were little mobile, consequently no sooner were they, as we may put it, standardised, than light infantry in considerable numbers were added to all armies, and it was these who gave Philip of Macedon much of his success. If a soldier is well trained he can carry greater weights more easily, so the Romans specially trained their recruits to carry a load of 45 lb., while the legionaries each month did three 20-mile route marches in heavy marching order, carrying about 50 lb. His pack he carried on a forked stick, introduced into the service by Marius, and called after him, "Marius's mule," but much of his burden was, on service, borne for him by a servant (calo) or in carts, as may be seen on the column of Trajan and elsewhere. Major Lothian's paper is a valuable contribution to military science, worthy of the Army School of Hygiene from which it comes, though it is defaced by careless printing of Latin words.

IRRADIATION OF LYMPHOID TISSUE.

As a result of clinical and experimental investigations into the action of radium and X rays upon normal and diseased lymphoid tissue carried out in the Department of Cancer Research of the Montefiore Hospital, New York, Dr. Isaac Levin[1] concludes that the lymphocytes in the blood stream and lymphoid tissue generally throughout the body are extremely sensitive to these radiations. Dr. Levin is not alone in this opinion; reports issued from various centres of radium-therapy will generally be found to include data showing the remarkable susceptibility of diseased lymphoid tissue to radium. Lympho-sarcomata figure among the tumours giving the highest percentage of favourable clinical results. Dr. Levin's paper consists for the most part of short descriptions of clinical cases illustrating his conclusions. Apart from the immediate clinical results, his observations are valuable as factors which must be taken into account when any sort of generalisation is attempted on this subject. More recent studies have shown that the physiological response of the organism must in no case be ignored when generalised exposures to radiation are given. Levin states that the rays do not act merely as a local agent, but produce a generalised effect on the lymphoid system of the whole organism. The evidence for this statement is based upon observations such as the following. In a case of lymphosarcoma, examination showed a large diffuse mass occupying the whole of the right axilla and invading the pectoral muscles. In the left axilla was an enlarged freely movable gland, the size of a hen's egg. The radium applications were made only at the right axilla, with complete disappearance of the mass there, as well as that in the other axilla; this and other cases cited by the author are probably paralleled by the experiences of radiologists elsewhere. Dr. Levin comments upon the hypothesis that specific enzymes are freed from the disintegrating lymphocytes, but offers the timely reminder that hardly any work has yet been done to clear up the problem. As the field of utility of these radiations widens in medicine, the necessity for investigations becomes increasingly urgent, for the feeling of insecurity of any practice based upon empiricism increases with the dimensions of the superstructure.

THE EFFECTS OF PROLONGED DEPRIVATION OF SLEEP.

Prof. G. W. Crile,[1] in his recent studies on exhaustion, has extended his observations on this subject, and has determined the effects in rabbits of prolonged deprivation of sleep—96–118 hours. Marked changes are thereby produced in the cells of Purkinje in the cerebellum; in the first stage there is an increase of the chromatin material—both in its diffuse and particulate form, in the plasma and size of the nucleus; the cells contain an average amount of chromatin, but changes manifest themselves in the dendrites. Then the chromatin diminishes, and its remains collect around the periphery of the cell and nucleus. In the next stage the chromatin completely disappears, the cytoplasm showing disintegrative changes, and vacuolisation; somewhat similar changes affect the nucleus, and in extreme cases there seems to be death and complete disintegration of the cells. It is suggested that neither man nor animal can survive the loss of 15 per cent. of the brain cells. In eight experiments, six animals showed more or less pronounced changes in the liver, especially at the periphery of the lobules. The nuclei lay excentrically and were deformed, the granules diminished or absent, vacuoles were present and the cell as a whole materially changed, including the disappearance of its glycogen. In five cases out of six the medulla of the adrenal glands was not affected, while the cortex in six out of eight cases showed changes and disintegration after loss of the nuclei. No marked changes were noted in the thyroid, pancreas, kidneys, spleen, stomach, or intestines. By inducing sleep at the end of a sleepless period, and by the action of different agents, the author endeavoured to mitigate the effects and restore the activities of the injured cells. Sleep and nitrous oxide have a marked recuperative effect, except in cases where the disintegration of the brain cells has proceeded too far. As experimental poisoning by acids produces similar changes in the cells of the brain, liver and kidney, the pH of the blood was determined, but it was found that sleeplessness produced no marked change, the pH being nearly the same during the sleeping as in the waking condition.

THE PREVENTION OF DIPHTHERIA.

LAST winter the incidence of diphtheria was high, the mortality correspondingly high, and the number of cases notified so far this autumn points to a severe winter epidemic. In America the mortality from diphtheria is apparently heavier than it is in England, and the public health authorities there are instituting a campaign to stamp out the disease on the principle that since its prevention and cure are known, the disease should be eradicable. The method of the campaign is to confer active immunity on all children between the ages of 6 months and 6 years by the injection of three doses of toxin-antitoxin, thereby rendering the children insusceptible of infection for several years or maybe for life. This is especially applicable to young children, as the mortality from diphtheria as well as the incidence of the disease is vastly greater in the younger age periods. Children at birth are found by means of the Schick reaction to have a natural immunity to diphtheria, which fades away

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[1] Journal of the American Medical Association, Sept. 17th.

[1] Archives of Surgery, vol. ii., 1921.

Disciplinary Procedure.

The I.A.C. was authorised to press for the play of public opinion on the disciplinary procedure in alleged breaches of agreement by a panel practitioner. In cases of removal from the panel the inquiry was in practice a public inquiry, though there was no provision that it must be public. In most cases, however, involving the infliction of a fine on the practitioner by withholding the Treasury grant, the inquiry was conducted in private by one or more officers of the Ministry without prescribed rules of procedure. If the practitioner desired to make oral representations he must do so in person, though in practice he was allowed to be accompanied by a representative of a medical defence society or by a solicitor. Cases had occurred in which it seemed to panel or to insurance committees that the fine inflicted has been disproportionate to the neglect or offence which occasioned it. The I.A.C. therefore thought it desirable for the sake of everyone concerned that public opinion should in some way have an opportunity of being informed and satisfied in these cases. The Conference took this view and authorised the I.A.C. to enter into negotiations with the Ministry, so that representatives of panel committees or other recognised professional bodies might be present at the inquiry, or so that the facts of the case as known to the Ministry and the fine proposed to be inflicted, should be submitted to the panel committee for its observations before the penalty became operative.

Inflated Index Registers.

The I.A.C. was instructed to bring before the Ministry the lax and dilatory manner in which some approved societies carried out the requirements of the Ministry in respect of such of their members as had ceased to be insured. A delegate gave as an instance the fact that he still had on his list the name of a boy who died in 1915.

Coöperation with Unqualified Practitioners.

Herefordshire asked the I.A.C. to take such action as would relieve panel practitioners of their obligation to supply certificates and treatment to insured persons who were being treated by bone-setters or other unqualified practitioners. It was pointed out that no such obligation in fact existed and that the practitioner was advised to cease attendance and make immediate application for the removal of the name from his list. The full support of the B.M.A. was offered to any practitioner who was obliged to fight such a case on behalf of the medical profession.

Regional Medical Officers.

A motion to abolish the office of regional medical officer in the interests of economy was ruled out of order by the chairman, who pointed out that the I.A.C. approved of the appointment of these officers and had indeed been partly responsible for the initiation of the policy.

Superannuation.

The last motion to be taken was by London to the effect that provision for the superannuation of practitioners working under the National Insurance Acts should be included in the terms of service, and that in any negotiation as to remuneration such provision should be taken into account. Dr. Cardale reminded the Conference that a practicable scheme was submitted two years ago and that its small initial cost would be likely to weigh with the Ministry of Health if asked to consider it. The chairman suggested that a matter of such importance could not be adequately dealt with at so late an hour, and it was left to the London representative to bring the matter before the I.A.C.

After passing by acclamation votes of thanks to Dr. Dain, chairman of the Conference, and Dr. Brackenbury, chairman of the Insurance Acts Committee, the Conference rose at 10.30 P.M.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

International Congress of Ophthalmologists at Vienna.

THE Ophthalmological Society of Vienna recently arranged an international congress in honour of the veteran Prof. Ernst Fuchs, inviting the attendance of all members of ophthalmological societies throughout the world. The significance of the meeting lay in the fact that it was the first really international scientific congress held since the outbreak of war. Not only neutral countries, but also former enemies—the U.S.A., Japan, Latin America, and Italy—were represented by their leading oculists. Only Great Britain, France, and Belgium sent no delegates. The meetings were held from August 3rd to 6th; 43 papers were read, and 20 demonstrations given in the eye clinics of the University of Vienna. The high standard of the work submitted was made evident by the large attendance of delegates at every session. Adherents of the old classic ophthalmology and investigators of more modern tendencies were equally energetic in pressing their claims to attention. The transactions were preceded by an address by Prof. Fuchs; and the hundredth anniversary of the birth of Helmholtz was the occasion of an eloquent speech by Prof. Friedrich Dimmer. Prof. M. Marquez de Rodriguez (Spain), D. Gourfein (Switzerland), and others; Maggiore (Italy) and Hagen (Norway) also took part in the opening ceremony. Amongst the interesting contributions to the congress may be mentioned a paper on glaucoma, presented by several German ophthalmologists, in which it was shown that Graefe's classic method of iridectomy still held its own as the best means of combating this condition. Nevertheless, modern research had shown that whilst treatment with instillations of pilocarpine alone had little effect, marked improvement resulted when pilocarpine was combined with the internal use of thyroid extract. Dr. Ernst Hertel (Leipsic) reported excellent results from this treatment. Suction seems of late years to have assumed importance. Prof. J. A. Barraquer y Roviralta (Barcelona) has applied it for extraction of cataracts by means of a small suction-pump driven by electricity; Dr. Zur Nedden (Dusseldorf) has used the same means to remove the corpus vitreum in cases of fresh infected injuries and of hæmorrhage of corpus vitreum and retina, or acute inflammations. A modification of the old methods of removing iron particles from the bulbus by means of a magnet was demonstrated by Dr. Gilbert (Munich), who, by the introduction of a very strong magnet into the interior of the bulbus, has removed particles even from the retinal layers. Experimental syphilis of the eye of rabbits was described by Dr. Iggersheim (Göttingen), who contended that the posterior strata of the cornea and the fibrinous deposits on the posterior aspect of the cornea harbour nearly all the spirochætes living in the eye. Accordingly he injected a new soluble preparation of salvarsan into the anterior chamber of the eye, with excellent results. Amongst other papers of interest was that by Drs. Koppanyi and Kolmer on the transplantation of the eyes of rats. These two authors claimed to have obtained successful function in transplanted eyes. The experiments were conducted in the Biological Department of the Academy of Science at Vienna, and the conclusions were received with reserve, but caused sensation. A paper on X ray treatment of tumours of the hypophysis was presented by Prof. Müller (Vienna) and Dr. Czepa, who had obtained good results without recourse to operation. Other cases where the hypophysis was attacked through the nasal route (method of Hirsch), were afterwards subjected to radium treatment, with equally satisfactory effect. In all cases the most welcome effect was the cessation of the characteristic violent headaches after one application. Acromegalic symptoms also yielded readily to this treatment. Of course, not all cases rhage is apt to be misapplied, the hæmorrhage being due to organic disease of the kidney. In addition to another case of inflammation of the arteries and veins of the skin associated with purpura rheumatica, Prof. Harbitz records two cases of arteritis of the brain. He concludes that true arteritis is much more common than was formerly supposed to be the case, that its causes are very varied, and that the task of distinguishing between the yet unknown forms of arteritis and those of syphilis, periarteritis nodosa, and even of tuberculosis may be extraordinarily difficult.

HEMIHYPERTROPHY AND MENTAL DEFECT.

Dr. Arnold Gesell,[1] of New Haven, Connecticut, who reports an example of hemihypertrophy associated with mental defect, describes hemihypertrophy as one of the rarest of developmental anomalies. He has collected 40 cases of true hemihypertrophy or total unilateral hypertrophy, including one under his own care, and 30 examples of partial and crossed hypertrophy which is much more common. Of the 40 cases only 5 were adults, 19 were males, 17 females, and in 4 the sex was not specified. In 27, or almost 70 per cent., the hemihypertrophy was on the right side. In 15 cases it was definitely stated that all the tissues were involved in the hypertrophy, in 19 cases abnormalities of the skin were mentioned as a complication, in 3 the skin was reported as normal, and in the remainder no details were given. As regards the mental condition, in 29 cases no information was supplied, in many instances the subject being too young for mental examination, in 6 cases the mentality was reported as normal, and in 5 cases, or 13 per cent., it was reported as defective. According to Dr. Gesell, who maintains that hemihypertrophy is not a hereditary character but a morphological anomaly dating back to an early embryonic stage, hemihypertrophy may be interpreted as an atypical or imperfect form of twinning, a variant of the same process which may produce a double-headed monster or a perfectly ordinary normal individual, the latter being an organism in whom there has been a precisely balanced inhibition of the biological process of bilateral doubling. The complication of mental defect is attributed to an abnormality in the process of bilateral twinning which involves a disturbance of normal tissue development.

INTERNATIONAL ASSOCIATION OF HISTORY OF MEDICINE.

A MEETING to form an International Association of the History of Medicine was held in Paris on Oct. 8th, at the Faculty of Medicine, at which representatives from Great Britain, Holland, Belgium, Spain, Portugal, Denmark, Norway, Switzerland, Roumania, France, and other countries were present. The object of this Association is to pursue the study of the history of medicine by means of research, bibliography, and communications presented by its members for discussion at the future meetings of the International Congress. The Association is the outcome of the successful International Congresses, the first of which was held in Antwerp in 1920, and the second in July last in Paris. It was then decided to form a permanent bureau or committee to meet in Paris to draw up a constitution and make regulations to indicate to members various subjects for research and investigation, so as to ensure unity and continuity, and to make their work of practical value. Prof. Jeanselme (Paris) presided and extended a cordial greeting to the foreign representatives. Prof. Laignel-Lavastine, General Secretary of the Faculty of Medicine of Paris, then outlined the proposed constitution. He suggested that the Permanent Committee should consist of a president, vice-presidents, secretary and treasurer, and delegates from each country represented. This proposition was accepted by the meeting, and Dr. Tricot-Royer (Antwerp) was elected president, Dr. C. Singer (Great Britain), Profs. Giordano (Italy), Ménétrier, and Jeanselme (France) were appointed vice-presidents, Dr. Fosseyeux archivist and secretary, and Dr. Boulanger treasurer, of the Permanent Committee of the Bureau.

Dr. Singer conveyed an invitation from the Section of the History of Medicine of the Royal Society of Medicine for the third International Congress to meet in London next year, which was cordially accepted, and the approximate date was fixed for the meeting for July 24th to 29th, 1922. The following subjects were suggested for the consideration of the members at the next Congress: (1) Principal seats of endemic and epidemic diseases in the Classical Orient during the Middle Ages. (2) History of Anatomy. (3) Revival of medical knowledge during the sixteenth century. The draft by-laws of the Association will be submitted to the Permanent Committee of the Bureau at the next meeting, which it is expected will be held in December next.

THE CAMBRIDGE CHAIR OF ANATOMY.

IN an annotation of Oct. 15th upon the innervation of striped muscle we alluded to Dr. J. T. Wilson as Challis Professor of Anatomy in the University of Sydney. This was an error of forgetfulness, for Prof. Wilson has now succeeded the late Prof. Alexander Macalister as professor of anatomy in the University of Cambridge, and began his work there this term. Prof. Wilson's translation from Sydney to Cambridge was due to the fact that the electors considered him the most likely man possible to build up a research anatomical department in the University of Cambridge. During his stay at Sydney he has educated a long line of sound anatomists, notable among these being Prof. Elliot Smith, while he is himself a pupil of that famous teacher of anatomists, Sir William Turner. Under Prof. Wilson the chair of anatomy at Cambridge should bring forth great things.

UNIVERSITY OF SHEFFIELD: UNION OF MEDICAL SCHOOL AND HOSPITAL.

THIS term new regulations come into force whereby an attempt is being made by the University of Sheffield to bring into closer contact the laboratory studies of anatomy and physiology, on the one hand, and the elementary principles of medicine and surgery on the other, and to show the student, whilst still engaged in the former studies, their practical application to the latter. It is hoped to attain this object by making the third or middle year of the curriculum into a kind of dove-tailed joint between laboratory and hospital. In order to bring this about the second M.B. examination in general anatomy and physiology has to be taken at the end of the second year—that is to say, six months earlier than heretofore; whilst a further examination in these subjects, with the addition of pathology and pharmacology, is held in the third M.B. examination at the close of the fourth year. Under this plan it is obviously impossible for the second M.B. examination to cover the whole of the subjects in detail, since the students will have studied them for one year only. The difficulty of the scheme lies in the proper distribution of the teaching of the subjects before and after the second M.B., and the grading of the examinations. At present the scheme is in the experimental stage. The second M.B. examination held last June was the first to be held at an earlier stage in the curriculum, and the results were distinctly encouraging. Possibly the anxiety of the teachers to show good results, and certainly the keenness of the students to make the scheme a success, played some part here. Even those who were inclined to doubt the wisdom of the innovation admitted that the outcome was better than anticipated. As regards the clinical

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[1] Archives of Neurology and Psychiatry, October, 1921.

Public Health Services.

SCARLET FEVER AND DIPHTHERIA IN LONDON.

REPLYING last week to a question in the London County Council, the chairman of the Public Health Committee stated that the number of cases of scarlet fever notified in London had recently increased, as was usually the case at this time of the year. The cases notified in the first and second weeks of October were 1155 and 1136 respectively. The disease was of a mild type. In the case of diphtheria, the corresponding figures were 389 and 417. The usual autumnal increase generally ceased later than in the case of scarlet fever and it was not surprising that the notifications were still increasing. Sufficient accommodation had been found for London cases by using beds earmarked for other infectious diseases not at present prevalent. Captain Warburg added that, notwithstanding the high prevalence of diphtheria and scarlet fever, and the resulting increase in deaths from these causes, the deaths from all causes during the first three-quarters of this year showed a mortality below anything hitherto recorded in London.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

CHESTERFIELD RURAL DISTRICT.

THE estimated population for 1920 was 74,148. Dr. Herbert Peck states that at the last census 55 per cent. of the occupied males were employed in coal-mining and quarrying, 11 per cent. in iron and allied trades, and 8 per cent. in agriculture. The birth-rate in 1920 was 32·47, and in the previous quinquennium 25·8. The death-rate during 1920 was 12·08 and the infant mortality rate 92·6, which latter, Dr. Peck remarks, cannot be considered satisfactory. The death-rate from tuberculosis was comparatively low, as one is accustomed to expect in a coal-mining district—viz., 0·63 in 1920 and 0·98 during the previous 10 years. Dr. Peck says: "The conversion of privies to water-closets is the greatest sanitary need of the district," but further reservoirs are needed before the conversion of the privies can be undertaken on the scale required. Dr. Peck expects the infant mortality rate to remain high until the abolition of the privy-midden system. He also thinks that some better system of disposal of refuse than tipping should be found. Successful vaccinations, which in 1907 numbered 58·9 per cent. of the births, have decreased year by year, and in 1920 they only numbered 12·9 per cent. of the births. There are 11 health visitors and 11 welfare centres, but, Dr. Peck believes, the poorer mothers, who would benefit most by bringing their babies to the centres, keep away on account of inability to provide good clothing for their babies and themselves. Out of 11 notified cases of ophthalmia neonatorum two of the infants were left partly blind; one was still under treatment; the remainder completely recovered. "The shortage of houses was estimated by the Minister of Health at 1619 at the end of 1919."

HULL.

Dr. J. Wright Mason tells us that the birth-rate, 29·1, and the death-rate, 13·2, are calculated on a population of 290,808. Other important statistics for 1920 were: infant mortality rate, 98; death-rate from pulmonary tuberculosis, 0·80; and from other tuberculous diseases, 0·34. Dr. Mason says that with the exception of diarrhœa, the mortality from infectious diseases was somewhat low. We note that for diarrhœa and enteritis under 2 years per 1000 births, Hull had the highest death-rate among the 20 large towns. There is a very complete maternity and child welfare scheme, including a maternity home, in which 236 confinements took place in 1920. The corporation have decided not to take over the two creches which are still at work in Hull. A third creche was closed during the year.

Dr. James A. Raeburn, the tuberculosis officer, gives particulars as to the work of the dispensary and allied institutions. He mentions that a large proportion of tuberculous patients give "dock labourer" as their occupation, and attributes this to the irregular work and pay, and to the fact that the less skilled and educated, who are not particular about their housing accommodation, drift into this work. Dr. Raeburn also thinks that unhealthy living conditions below deck account for the fact that so many sea-faring men and fishermen on trawlers become tuberculous. These speculations would be more interesting if it were possible to obtain the data from which to calculate the death-rate for these occupations. We should also like to see an analysis of the Hull tuberculosis rate for males, females, and children, as, judging from the nature of the men's occupations, the male phthisis rate in Hull ought to be lower than in most towns. The V.D. report shows that there were 1336 new patients suffering from venereal diseases, and that during the year 619 patients gave up attendance before completing a course of treatment or before a final test as to cure. Attendance is, of course, more likely to be interrupted in a seaport clinic than in an inland one. Dr. Mason has had the card advertising free treatment at the clinic translated into eight languages for the benefit of the foreign seamen coming to the port. 371 observations were taken of chimneys for black smoke, but "in no case has it been necessary to serve a statutory notice." We hope that the non-service of notices was due to the prompt action of the owners of chimneys rather than to the leniency of the local authority, but we should like some details as to what is considered an excessive emission of black smoke in Hull. We note that there are 37,966 water-closets and 41,316 privies in Hull, and that a privy conversion scheme is in hand. Last year 58 conversions took place. At this rate of progress the scheme will last long.

HERTFORDSHIRE.

Dr. H. Hyslop Thomson mentions with satisfaction that the death-rate for the county, which was 11·38 in 1919, has fallen to 9·92 in 1920, while the birth-rate has gone up from 14·69 to 22·3. The infant mortality rate was 49·5 in 1919 and 48·46 in 1920. There have been slight falls in the death-rates from pulmonary tuberculosis and epidemic diarrhœa, but a further increase in the death-rate from cancer. The Registrar-General estimates the population at 325,962 for birth-rate and at 325,684 for death-rate. The general death-rate was 9·66 in the urban districts, and 10·55 in the rural districts, while the infant mortality rate was 49·39 in the urban districts compared with 46·35 in the rural. Dr. Thomson complains that there are three large dumps for London refuse in the county. He says: "It is remarkable that one public health authority should have power to deposit such large quantities of refuse on ground within the jurisdiction of another public health authority without its knowledge or approval, or without being subjected to certain conditions," and asks: "Is it a mere coincidence that during 1920 the highest death-rate from infantile diarrhœa in the rural districts was in the district where two large refuse dumps are situated?" For V.D. purposes Hertfordshire is included in the London treatment scheme. During the year Kingsmead School was opened as a special school for mentally defective children, and has already proved its value. To quote Dr. Thomson: "Success, however, depends on the grade of defect and the age at which the child is admitted to the school. If taken early many of these defective children will become good manual workers in the future."

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The Entrance Scholarship in Anatomy and Physiology has been divided equally between C. E. Newman, B.A., of Magdalene College, Cambridge, and P. B. Wilkinson, of King's College, London.

THE PANEL CONFERENCE.

THE annual conference of representatives of local medical and panel committees was held in London on Thursday, Oct. 20th, and transacted its business in the course of a single strenuous day. Dr. H. G. Dain, of Birmingham, occupied the chair, being supported by Dr. H. B. Brackenbury (chairman) and other members of the Insurance Acts Committee (hereafter briefly called I.A.C.).

An Independent Executive.

After formal business a motion by Kent was taken urging that the views of panel committees should be focussed by a central statutory committee elected solely by panel committees. This gave the Conference the opportunity of passing, with 17 dissentients, a vote of confidence in the I.A.C. as its central negotiating body and of deprecating the formation of any new negotiating body as contrary to the interests of the medical profession as a whole. London withdrew a similar motion in view of the obvious need to support the I.A.C. at the present serious juncture.

Rate of Remuneration.

Dr. Brackenbury, on behalf of the I.A.C., moved a series of recommendations dealing with the rate of remuneration, which were accepted with practical unanimity in the following form:—

> This Conference reaffirms the opinion that 13*s.* 6*d.* is the lowest capitation fee that should be offered for an effective service, and asserts that there is no justification whatever for a *demand* that the arbitration award of 11s. should be lowered.
>
> This Conference recognises the force of the "appeal to citizenship" made by the Minister of Health to insurance practitioners "to make some sacrifice for the common good in a great financial crisis"; is willing to urge practitioners to respond to this patriotic appeal to any reasonable extent consistent with the interest of the public health; and asks the Government to discuss with representatives of the profession the best means of carrying this into effect.
>
> This Conference authorises the I.A.C. to consider with the Government (*a*) a rebate of 1*s.* on the present capitation fee; (*b*) any other relevant financial questions except that of mileage; (*c*) the date at which the new arrangements should come into effect; (*d*) the duration of such arrangement; and agrees to support any arrangement that may be arrived at.
>
> That the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of this system.
>
> This Conference, though of opinion that the Insurance Acts should be allowed to work during a number of normal years with such incidental improvements only as experience proves necessary, before any reliable conclusions can be drawn as to their effect on public health, would willingly take part in any wide inquiry into the working of those Acts that may be thought desirable, but suggests that any inquiry concerned with medical benefit should not be entered upon until April, 1922, at the earliest, that being the date at which the new regulations will have been two complete years in operation.
>
> That the I.A.C. be authorised to take immediate steps to see that the profession is so organised as to take any such united action as may be found necessary.

In moving these recommendations, Dr. Brackenbury said that it was not the first time that a patriotic appeal had been made by the Minister of Health to the medical profession which had already made sacrifices greater than those of any other section of the community. Other contract practice might also suffer concurrently with any lowering of the capitation fee, and the prevalent unemployment caused medical men to suffer also in other capacities. The decision was not for the medical profession alone to make, for medical benefit had become deeply rooted in the social system of the country.

These recommendations were submitted to Sir Alfred Mond during a recess in the Conference by a deputation including the I.A.C. and three members nominated directly by the Conference—viz., Dr. H. J. Cardale (London), Dr. J. A. Macdonald (Taunton), and Dr. D. F. Todd (Sunderland). The reply of the Minister was to the effect that he could not alter the suggested reduction of the capitation fee to 9s. 6*d.*—he had indeed been pressed to make it 8*s.*—but that he was prepared to guarantee its maintenance for two years and to discuss the date from which the reduction should become operative and the possibility of regarding it as a rebate and not a reduction of the basic fee.

After discussion the Conference agreed, with 13 dissentients, to instruct the I.A.C. to accept the Minister's offer "on grounds of citizenship."

Records.

The Conference, after accepting the recommendation of the I.A.C. that the *form* of record should remain as at present, with certain trifling verbal alterations, decided warmly that the obligation to enter on it the dates of all consultations and visits was irksome and unnecessary. Should this obligation be withdrawn, no exception would be taken to entering the date of initial attendance and the dates of issuing first and final certificates of incapacity, along with an appropriate clinical note. The proposal by Yorkshire W.R. of a single daily record card to last for a whole year, and to show the massed total of all services rendered during that period, met with a sympathetic reception. Apart from obligation it was admitted that the present form of record afforded practitioners desirous of making clinical notes a convenient means for so doing. The need for prompt transmission of records on request was again impressed on practitioners by their representatives.

Transfer of Practices.

It was agreed by overwhelming majority to press again for the withdrawal of the present regulations affecting the transfer of practices on death or retirement of the practitioner, and to do so on the lines indicated in the I.A.C.'s report. The right of an insured person to take this opportunity of making a fresh choice is freely admitted as well as the justice of making him aware of his right. But the I.A.C. contends that it is quite consistent with this right that insured persons who have not made a new choice within a reasonable period should be transferred to the successor's list as from the date of decease or retirement. The proposal is that on the decease or retirement of a practitioner the insured persons on his list would, as now, be informed of their freedom to make a fresh choice and of the willingness of the successor to the practice to accept them. A month before the first day of the next quarter but one, those who had not exercised their right would be further informed that unless they did so within a month they would be assigned to the successor. The patient, if for any reason dissatisfied, would thereafter be able to effect a change by giving notice to his insurance committee, the I.A.C. being prepared to agree to a simplified method of transfer, either at the quarter or forthwith by sanction of the allocation subcommittee. On this matter the Conference was evidently as united as on that of remuneration.

Defence Trust.

A report from the trustees of the National Insurance Defence Trust was received and approved. That fund had now been subscribed to by 101 out of a total of 197 panel committees, while 33 other committees had promised their support. A sum of £1300 had been received or promised during the year, bringing the fund up to a total of about £21,000. At the Conference itself, a considerable number of committees who had not so far supported the Trust expressed, through their delegates, willingness to do so. Dr. Brackenbury reported that it had already proved possible to make grants to certain panel practitioners who had suffered from their adherence to resolutions passed at a previous conference.

Bengal Board, F. Dec. 11, 1843; d. Bath, Oct. 17, 1853. Lunn, Wm., F. Aug. 26, 1844; Hull; d. 1866–67.

McDermott, Wm., Surg., R.N., F. Mar. 11, 1857; d. Dublin, Sept. 11, 1861. MacDonnell, Geo. Bean, F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. ? Nov., 1851. MacDougal, Alex. Mason, F. Dec. 14, 1865; Shanghai; d. May 6, 1888. Machen, John, F. May 13, 1858; Leamington; d. Nov. 25, 1890. Macpherson, Hugh Martin, M.A., I.G., F. Aug. 8, 1867; Bengal Army; d. Apr. 4, 1902. Magrath, Andrew Nicholson, Madras Army, H.E.I.C.S., F. Feb. 10, 1853; d. 1860–61. Maitland, Gilbert Geo. Wm., I.M.S. (Bombay), D.I.G., F. Feb. 9, 1865; d. at Bath, June 30, 1900. Mann, Geo. Smyth, I.M.S., F. Mar. 10, 1859; d. 1885–86. Marley, Miles, M.D., F. Aug. 12, 1852; Cork-st., W.; d. Nov. 15, 1854. Marshall, John, Surg.-Gen., Bengal Med. Estab., H.E.I.C.S., F. Aug. 26, 1844; d. ? 1860. Matthews, Thos. Leman, Surg., Madras Army, H.E.I.C.S., F. Aug. 12, 1852; d. July 23, 1861. Maurice, David Pierce, F. July 6, 1852; Marlboro; d. 1879–80. Mawdsley, John, F. Dec. 11, 1843; Hanover-sq.; d. 1869–70. Mayer, John Emilius, I.G. Indian Army, F. Nov. 3, 1870; d. Dec. 3, 1897. Melles, Jas., Bengal Med. Estab., H.E.I.C.S., F. Aug. 26, 1844; d. Mar. 17, 1846. Mitchelson, Wm., Bengal Med. Estab., H.E.I.C.S., F. Aug. 26, 1844; d. 1885–86. Moore, David, F. Aug. 26, 1844; Belfast; d. ? 1849. Morrill, John F. Apr. 13, 1866; p. ? abroad; d. in or before 1890. Morris, Harvey, Surg., R.N., F. Aug. 26, 1844; d. New Cross, Oct. 4, 1860. Morton, David Thos., Surg., Madras Army, H.E.I.C.S., F. Nov. 13, 1862; d. 1885–86. Moyle, John Grenfell, F. Dec. 11, 1843; Prest. Bombay Med. Board; d. Jan. 3, 1860. Muscroft, Jas., F. Aug. 26, 1844; Pontefract; d. in or before 1882.

Nash, Jas. Geo., F. May 13, 1857; Prest. Med. Board, S. Australia; d. Nov. 12, 1879. Naulty, John, Surg., R.N., F. Aug. 26, 1844; d. before July 28, 1846. Nedham, John, F. Dec. 11, 1843; Leicester; d. 1856. Nichols, Jas., F. Aug. 12, 1852; Savile-row, W.; d. Jan. 2, 1870. Nutt, Richd. Clarke, Fleet-Surg., R.N., F. Aug. 26, 1844; d. Oct. 4, 1894.

Ogilvy, Alex., F. Dec. 11, 1843; Montague-sq.; d. ? Dec., 1846; b. 1769.

Palmer, Edwd., M.B., F. Aug. 16, 1849; Sec. Paris Med. Soc.; d. 1860. Parkin, Henry, I.G., F. Dec. 11, 1843; Woolwich; d. Mar. 24, 1849. Parrot, John, F. Dec. 9, 1852; Clapham Common; d. Nov. 10, 1860. Penny, Henry Jas., D.I.G., Surg., Madras Army, H.E.I.C.S., F. May 1, 1856; d. Taunton, Dec. 22, 1901. Perkins, Houghton, F. Oct. 21, 1852; Mortimer-st., W.; d. Nov. 25, 1890. Peterkin, Jas., I.M.S., F. Aug. 13, 1863; d. Mar. 21, 1888. Phillips, Jas., F. Aug. 12, 1852; Bethnal Green; d. Nov. 27, 1857. Pitman, Henry, D.I.G., F. Feb. 9, 1865; d. Wyborne, Sept. 1, 1882. Potter, Henry Glasford, F. June 2, 1853; d. at Reform Club, June 3, 1868. Price, Jas., F. Oct. 21, 1852; d. Effra-rd., Brixton, Nov. 23, 1867. Price, Wm., Surg., R.N., F. Aug. 26, 1844; d. Sept. 20, 1867.

Raleigh, Edwd. Ward, F. Aug. 26, 1844; Bengal Med. Serv., Calcutta; d. Jan. 23, 1865. Ranken, Jas., F. Aug. 26, 1844; Bengal Med. Estab., H.E.I.C.S.; d. June 18, 1848. Rayner, John, F. Aug. 26, 1844; Stockport; d. Apr. 29, 1857. Renny, Chas., Surg.-Gen., Bengal Army, H.E.I.C.S., F. Apr. 12, 1855; d. Mar. 25, 1876. Rhodes, Herbt. Ellison, F. June 12, 1890; d. ?. Ridout, John, F. Dec. 11, 1843; d. Montagu-st., Russell-sq., Apr. 26, 1855. Ring, Thos. Edwd., Surg., R.N., F. Aug. 26, 1844; d. June 5, 1856. Rogers, Thos. King, Surg., Madras Army, F. Aug. 6, 1877; d. 1884.

Samwell, Francis Peter Ballard, F. Dec. 11, 1843; Margaret-st., W.; d. in or before 1890. Saunders, Arthur Richd., F. June 10, 1880; Jamaica; d. Jan. 27, 1915. Scales, Wm. Henry, F. Dec. 13, 1855; Surg., 33rd Native Inf. Madras; d. June 24, 1858. Scriven, Sam Swain, F. May 1, 1856; Weymouth; d. June 28, 1883. Seagram, Thos., F. May 15, 1856; Canada; d. ?. Seed, Joseph, Surg., R.N., F. Dec. 9, 1852; d. Dec. 6, 1868. Shields, Chas. James, F. June 14, 1888; Melbourne and N.Z.; d. Sept. 16, 1907. Shillitto, Wm., I.M.S., F. May 13, 1857; d. Jan. 5, 1902–03. Shute, Robert Grueber, M.D., F. Apr. 17, 1845; Paris; d. Jan., 1879. Siddeley, Thos., F. Oct. 13, 1853; Bowden, Chesh.; d. 1884–85. Smith, Chas. Case, F. Aug. 26, 1844; Bury; d. before ? 1880. Smith, John, Surg., R.N., F. Aug. 26, 1844; Tasmania; d. in or before 1890. Smith, Robt. Wm., F. Dec. 17, 1857; Winchester; d. ? 1870. Smith, Wm., F. Aug. 26, 1844; Asst. to Clive (? Cline); d. Swansea, Nov. 26, 1851. Smith, Wm. Henry, F. Aug. 12, 1847; Sydenham; d. Apr. 5, 1865. Sole, Wm., F. Aug. 12, 1852; d. St. Neots, 1856. Stacy, John Edwd., F. June 9th, 1870; N.S.W. and Epsom; d. before Mar. 15, 1881. Steinhauser, John Fred., I.M.S., F. Feb. 18, 1860; d. July 29, 1866. Stevens, John Borlase, I.M.S., F. Feb. 9, 1865; d. ? 1872. Stevens, Richd., Naval Serv. of H.E.I.C., F. Jan. 12, 1854; d. Feb. 16, 1862. Stokoe, Richd., F. Aug. 12, 1852; Peckham Rye; d. in or before 1890. Strover, Thos. Rogers, Surg.-Major, Bengal Army, F. Apr. 12, 1860; d. Jan. 8, 1870.

Tarn, John, Staff Surg., R.N., F. Aug. 26, 1844; d. Nov. 7, 1877. Taylor, Henry H., F. Feb. 14, 1856; Sunderland; d. 1879–80. Thom, Wm., Surg.-Gen., I.M.S., F. June 13, 1872; d. June 11, 1904. Thomas, Andrew Appleby, I.M.S., F. Dec. 11, 1873; d. July 14, 1876. Thomas, Wm. Lloyd, F. Dec. 11, 1843; Hatfield; d. Apr. 21, 1855. Thompson, John, F. July 6, 1852; Biggleswade; d. 1879–80. Timins, Chas., F. Apr. 12, 1848; Madras; d. Bath, Jan. 5, 1892. Tippitts, Richd., F. Oct. 14, 1858; Dartford; d. Jan. 14, 1870. Toms, Philip, Surg., R.N., F. Aug. 26, 1844; d. Plymouth, May 27, 1879. Trotter, Chas., F. Mar. 4, 1858; Stockton-on-Tees; d. Sept. 17, 1877. Tucker, Fred. Hosken, M.D., F. Oct. 21, 1852; Hopwood Hall, Halifax; d. June 18, 1861. Turner, John, Surg., Bombay Army, F. Feb. 13, 1862; d. in or before 1890.

Waddington, Joshua, F. Aug. 26, 1844; d. Margate, June 7, 1852. Wallis, Edwd., F. Dec. 11, 1843; Hull; d. ? 1860. Ward, John, R.N., D.I.G., F. Jan. 13, 1859; d. Aug. 1, 1891. Ward, Thos. Wm., I.M.S., F. Nov. 12, 1863; d. Quebec, 1907–08. Watson, Kenrick, F. Dec. 11, 1843; Stourport, Kidderminster; d. on or before June 26, 1845. Watson, Wm., Surg., H.E.I.C.S., d. Hove ?. Wells, Warwick Walter, I.M.S. (Bengal), F. Oct. 13, 1853; d. Apr. 9, 1892. White, Wm., Surg., Bengal Army, F. Nov. 10, 1859; d. 1885–86. Whitfield, Fred., M.D., F. Feb. 10, 1859; St. James's-ter., W.; d. ?. Wilkinson, Henry, F. Aug. 26, 1844; d. 1881–82. Webb, Jos., F. May 1, 1856; F. Oct. 16, 1856; Emigration Service; d. ?. Williams, Benj., F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. before Apr., 1853. Williams, John, Surg., R.N., F. Aug. 26, 1844; d. 1857. Willimott, John, F. Dec. 11, 1843; Marlborough-st.; d. ? 1876. Winchester, Jas. Webster, F. June 2, 1853; Surg., Bombay Army, H.E.I.C.S., d. ? 1889. Withecombe, John Rees, M.D., Surg. I.M.S., F. Dec. 17, 1857; d. Richmond, Feb. 1, 1904. Woodford, Chas. Osmond, F. May 9, 1861; Calcutta; d. before June 19, 1883. Wooldridge, Henry, F. Nov. 11, 1869; South Yarra, Australia; d. ? before 1900. Wright, Alex., F. Apr. 12, 1855; Norton, Sheffield; d. Texas, July 28, 1864.

Yeo, Gerald, Staff Surg., R.N., F. Oct. 10, 1861; d. Mar. 27, 1887. Young, Donald Smith, F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. Nov. 5, 1852. Young, Geo. Wm., F. Dec. 11, 1843; Mortimer-st., W.; d. ? 1850.

"SUNDAY CLOSING" AT BRITISH SPAS.

To the Editor of THE LANCET.

SIR,—An interesting paragraph in your last issue (p. 884) is a welcome reminder that the Federation of British Spas is doing good work. In the matter of the Sunday closing of bath establishments I cannot help hoping—although by no means a conservative in such matters—that they will adhere to the traditional British custom. Playing with what is after all serious treatment by week-end visitors ought not to be encouraged. We are now fully aware that the action of medical baths is gradual and cumulative and requires many days. And I think few spa physicians will assert that these ought to be given seven days in the week; or that the bath attendants during the busy season do not require a weekly respite from their responsible duties.

It is true that many years ago a Viceroy of India, since deceased, induced me, as his days (of treatment) were numbered, to obtain for him a Sunday bath in the most sabbatarian of British spas, but I am not sure that it benefited him, and it was certainly injurious to the health of the community. The recourse to the springs on Sundays is quite another matter, and religious sanction might be claimed for it and surely for music also.

As a strong believer in the intrinsic merits of the British spas, I welcome the efforts of the Federation to assist and coördinate their progress.

I am, Sir, yours faithfully,

London, Oct. 24th, 1921. R. FORTESCUE FOX.

HAIR-BALLS OF THE STOMACH.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Oct. 15th Dr. I. J. Davies, of Cardiff, gives an account of two recent cases of hair-ball or hair-cast of the stomach with an interesting analysis of 108 recorded cases. I should like to take this opportunity of briefly describing a case (not previously published) upon which I operated about 20 years ago.

The patient was a female child aged 2½ years admitted under my care to the East Suffolk Hospital. She was a persistent hair-eater; she would greedily devour portions of any rug, mat, or woollen garment such as a vest, which she could get hold of, and had torn off and swallowed most of her own hair. On examination a mass could be felt quite easily in the stomach; it was freely movable, having the shape of a cast of the interior of the organ. I operated, making a long incision on the anterior surface of the stomach midway between the curvatures and extracted the hair-cast. The stomach was closed with a double row of Lembert sutures, and the child made an uneventful recovery.

The hair-cast removed was of the shape and appearance shown in Fig. 3 in Dr. Davies's paper. Sir A. Mayo Robson asked me to give it to him for the Museum of the Royal College of Surgeons of England, where I believe it is at the present time. The case is, I think, worth recording owing to the extreme youth of the patient and the fact that it was diagnosed before operation and successfully removed. I have heard nothing of the subsequent history of the case.

I am, Sir, yours faithfully,

Ipswich, Oct. 18th, 1921. HERBERT H. BROWN.

are amenable to this therapy. Combination with small doses of iodine was found very beneficial, especially in the restoration of sight.

The New Institutes of Neurology and History of Medicine.

In spite of the difficult economic situation, two new institutes have lately been added to the large number of special departments of medical study in Vienna. In 1882 Prof. Heinrich Obersteiner began an agitation for accommodation for the study of neurology and of the morbid histology of the brain. It took him 23 years to obtain a few rooms and a small annual grant from the Government. Just before the outbreak of war a special building was at last allotted to his department, but the internal furnishing was only very recently completed. The institute contains spacious work-rooms, a class-room seating 100 pupils, a chemical laboratory, an aseptic theatre for animal operations, and housing for the animals, birds, and fishes used for experimental purposes. The library compiled by Prof. Obersteiner contains more than 50,000 volumes, and the department possesses one of the finest microtomes in the world, a gift from the Rockefeller Institute, but the unrivalled collection of microscopic specimens of the normal brain and cord is the proudest boast of the new institute. Many glass utensils, chemicals, &c., are still, however, lacking; the yearly Government grant is 1500 kronen, now worth about five shillings.

The Institute of History of Medicine owes its development to the persistence of Prof. Max Neuburger, who has striven for its foundation for 15 years. This institute is now housed in the former military surgical academy. The medical museum in this building illustrates the development of the Vienna Medical School during the past 150 years, and contains amongst other objects a unique collection of surgical instruments, given to the Medical Faculty of Vienna by the Emperor Joseph II. in 1785. The first stethoscope constructed by Laennec, the first ophthalmoscope of Helmholtz, and numerous letters, pictures, and documents pertaining to the old Vienna schools of medicine, are amongst the objects of historic interest in this museum.

Oct. 7th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

A Temperance Measure.

Deputy Holitcher has introduced a Bill into Parliament by which the sale of alcoholic drinks to persons under 18 years will be prohibited in bars and saloons. Every saloon keeper will be compelled to ask for documentary evidence if he suspects his customer to be within this age limit. The Bill has the support of all the Socialist parties, but there is strong opposition to it from the interests which stand behind the large brewing companies. The measure may be considered as the first results of the efforts of the Czecho-Slovak Temperance Union; the present time is particularly favourable for its introduction, as high war prices have greatly reduced the consumption of alcoholic liquor.

Tuberculosis Survey.

Dr. Jaroslav Hulka has just completed, under the auspices of the Ministry of Health, an extensive tuberculosis survey of Czecho-Slovakia. The survey contains figures which throw much light on the hitherto unknown situation of the country with regard to tuberculosis. It appears that out of a population of 13½ millions, about 48,000 people die of tuberculosis every year in the Republic. The tuberculosis death-rate per 100,000 for 1919 was 278 (all forms). The death-rate began to decline in the year 1886 and since then has fallen 38·3 per cent. Czecho-Slovakia occupies the fifth place in the series of States with a high tuberculosis mortality, being surpassed by Hungary, Serbia, Finland, and France. Thirty-five per cent. of the deaths in the working ages—i.e., 20–60—are caused by some form of the disease. This figure compares very unfavourably with the 10 per cent. rate in England. During the war the tuberculosis death-rate had risen 25 per cent. by 1916, remained at the same level during 1917, and reached its peak in 1918, the influenza year, showing an increase of 37 per cent. on the 1913 figures. Since then it has fallen rapidly. There are 58 public dispensaries in Czecho-Slovakia and 11 others privately owned by physicians; there are also 18 preventoria and sanatoria for children, 19 sanatoria for adults (3 of them military), and 11 tuberculosis hospitals. The total beds in all these institutions approximate 3500. The survey will be published by the Ministry of Health with an English summary.

Venereal Diseases Course.

The Section of Social Diseases in the Ministry of Public Health and Physical Education has organised a Venereal Diseases Course at the University of Prague. The course will consist of 50 lectures given by physicians sociologists, teachers, and lawyers. The number of persons attending has been limited, and the list has been closed for some time. The education of children in sex matters will be especially emphasised. The course has aroused so much interest that it will be repeated in December.

Oct. 14th.

Obituary.

EDWARD OWEN DALY, M.A., M.D. OXON., M.R.C.P. LOND.

Dr. E. O. Daly, who died at his residence in Hull on Oct. 18th at the age of 66, was the elder son of Dr. Owen Daly, honorary consulting physician to the Hull Royal Infirmary. He was educated at Cheltenham, University College, Oxford, and studied medicine at St. George's Hospital, where he afterwards acted as house physician and as assistant medical registrar. He qualified L.S.A. in 1880, and subsequently graduated M.A., M.D. Oxon., becoming also M.R.C.P. in 1884. In 1885, shortly after starting practice in Hull, he was elected honorary physician to the Hull Royal Infirmary. Later he became a consulting physician to that institution and to the Grimsby District Hospital, being also physician to the Hull and East Riding Convalescent Home and other institutions. In 1890 he was President of the East Yorkshire and North Lincolnshire Branch of the British Medical Association, a post which his father had held on two previous occasions. In 1902 he was President of the Hull Medical Society, and always gave of his best to both the Society and the Association. He contributed several articles to neurological journals, and had a profound knowledge of medical literature; his professional opinion was much sought after over a wide area. In questions of the day he was always interested, although he had no strongly marked political bias. In 1882 he married a daughter of the late Vice-Admiral E. P. B. von Donop. His married life was extremely happy, but a little more than two years ago he was severely shaken by a family bereavement, and of late his failing health was evident to his friends. The number of medical men who attended his funeral in Rowley churchyard bore witness to the respect in which Dr. Daly was held by members of his own profession. He is survived by his widow and two sons, both of whom have attained the rank of major in H.M. Regular Army.

ROYAL PORTSMOUTH HOSPITAL.—The sum of £10,000 has been allocated to the Portsmouth Hospital from the local War Memorial Fund. The unveiling by the Mayor of the memorial stone in the new gateway, which forms part of the scheme, took place on Oct. 19th, in the presence of a large gathering. Extensive improvements to the hospital buildings are in progress.

Medical News.

University of Cambridge.—At examinations recently held the following candidates were succesful:—

Examination for Diploma in Psychological Medicine.

Part I.—Mervyn A. Archdale, Douglas N. Hardcastle, Simon Kelly, Ralph A. Noble, and William D. Wilkins.

Examination in Sanitary Science.

The following have passed both Parts of the Examination:—

William Buchan (distinguished in Bacteriology), Dagmar Florence Curjel (distinguished in Practical Chemistry), Munohar Lal Dhir, Joseph H. Fairweather (distinguished in the principles of Hygiene and Bacteriology), Robert French (distinguished in the principles of Hygiene and in Practical Chemistry), William S. Gross, Bertram C. Haller, William J. G. Henderson, Godfrey W. Mitchell, Parasurama Parthasarathy, K. Raghavendra Rao (distinguished in the principles of Hygiene and in the Application of Sanitary Science), Henry Roger, George W. Shore, Isabel S. Thomson, Alandur Tirumalaiya, Edwin L. Warner, Robert Welch, and William L. Yell (distinguished in the principles of Hygiene).

University of Edinburgh.—At the graduation ceremonial held on Oct. 22nd the following degrees were conferred:—

Bachelor of Medicine and Bachelor of Surgery.—W. N. J. Chapman.

Diploma in Psychiatry.—Rachel M. Barclay.

University of Glasgow.—The following degrees were conferred on Oct. 17th:—

Bachelors of Medicine and Bachelors of Surgery.—Alice A. Alexander, Edith A. Allan, Mary Baird, Muriel C. S. Balfour, John J. Black, Alexander L. Brough, George Brown, Malcolm Brown, Muriel J. Brown, Duncan S. Buchanan, Albert J. G. Caporn, Daniel F. Cappell (with honours), Christabel L. M. Charlesworth, Alexander Chisholm, Jessie D. Christie, John Connal, David F. Craig, Margaret B. C. Craig, John G. Craik (with commendation), Elizabeth M'Vean J. Currie, James S. Currie, Alisdair C. Dewar, Joseph Dewar, Vina C. MacKay Donaldson, Arthur M'Donald Douglas, Mungo Douglas, Robert K. Duguid, James A. Dunlop, Andrew Gibb, Margaret E. Gibson, Mary D. Gilmour, Christina Gray, Alexander H. Greig, Beryl Grieve, John A. Hamilton, John K. Holmes, Benjamin Isaacs, Susan M. S. Jamieson, Frederick J. Kitt, Frances B. C. Livingston, Elizabeth K. B. Lockie, John M'Dougall, Edith M. F. M'Gill, Janet S. S. Mackay, William B. M'Queen, Ashie Main, Thomas D. Marshall, David Meikle, Nathan Mellamed, Hettie M. W. Miller, Malcolm J. Miller, Ian Murray (with commendation), Edith M. Neilson, Margaret R. Oulton, Catherine A. B. Pettigrew, Annie G. Pollock, Alexander H. Rankin (with commendation), Annabella A. Reid, Enid A. Robertson, Ian MacRae Sandilands, Jessie G. Service, Marion Smellie, Alexander Smith, Charles M. Smith, Margaret Sproul, Janet F. Steel, Donald Stewart, Jane W. Stocks, Helen Y. Stoddart, John M'Laughland Strang, Eva M. Sturrock, Hugh V. Sweeney, Dorothy B. Thomson, Edith I. Thornley, Robert R. Waters, Charles M. Whiteford, Janette R. Wilson, John Wilson (with commendation), Elizabeth M. Wyllie, John Young, and John Yule.

Mr. James R. Learmonth, who graduated on July 18th, 1921, gains the Brunton Memorial Prize of £10, awarded to the most distinguished graduate in medicine of the year.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates have passed the Triple Qualification Examination:—

Third Examination.

Oliver H. D. Oliver, Bruce F. Home, Daniel Maximos, Harry G. Triay, David R. Paterson, Wilhelmina C. Storrie, Johannes J. Malan, Samuel I. T. Wills, Annie F. Perry, Alexander L. Tinto, and James H. Murrell.

Pathology.—Hervey Anderson, Patrick Murray, James Kirkness, and Arthur W. H. Noble.

Materia Medica.—Charles J. Coventry, Oswald L. Shearer, Arnold Raff, and Leslie L. Armstrong.

Final Examination.

Vadakath Padmanabha Menon, Joseph Butler Dobson, Henry Ponnampalam Samuel, Hyman Penn, Gerrit Johannes Lamprecht, Grace O. D. Evans, John I. Hagard, Pauline Figdor, Jatindra Kumar Sen, Herbert W. Amyes, Peter E. Malloch, Lee Ee Liat, Stanley C. Alcock, Frank Walwyn, William Campbell, Leo H. Peries, John B. O'Neill, and Albert R. Rellum.

Medicine.—Edward J. Allan, Arthur R. Lambie, Arthur S. Wickremesinghe, and Parmanand Madan.

Surgery.—Andrus M. Samarasinghe and Jemima M. McKechnie Calder.

Midwifery.—Andrus M. Samarasinghe, Edward J. Allan, Arthur R. Lambie, Adriaan V. Bergh, Lionel R. Bergson, Parmanand Madan, Sayed Ghaleb, Mohamed Shafie Hassen, Jemima M. McKechnie Calder, and Frederick P. Lisboa-Pinto.

Medical Jurisprudence.—Lilian M. Williams, Matthew Burn, James M. Crombie, Andrew A. Dewar, Wilson O. Rodrigo, James A. McElroy Evers, James M. McInnes, John J. Mann, Israel Rostowsky, Otto Popper, Thomas J. Muir, Elizabeth Clark, and Isobel Reid.

Royal College of Surgeons of Edinburgh.—At a meeting of the College held on Oct. 19th Sir David Wallace was elected President for the ensuing year, Dr. George Mackay Vice-President, and Mr. Alexander Miles secretary and treasurer.—Mr. John Smith Fraser was awarded the Liston Victoria Jubilee Prize of £100 in recognition of his work on the Pathology of the Internal Ear and its bearing on the Surgical Treatment of that organ.—The following candidates, having passed the requisite examinations, were admitted Fellows:—

Catherine E. Anderson, Pauchanan Chatterjee, Patrick A. B. Clark, James McMurray Cole, Peter C. Davie, Thomas A. J. Duff, Ernest C. Dunlop, Henry H. Elliot, George D. Fairley, Alec T. Gibb, Arthur H. Guymer, John J. Kearney, Oswald F. Lamb, Gordon B. Lowe, Hugh E. McColl, John R. MacNeill, George Nicholson, Frank C. Ormerod, George R. B. Purce, Jotindra Mohan Rakshit, Cecil G. Richardson, William S. Robertson, John Scott, and Gilbert I. Strachan.

The following candidates, having passed the Final Dental Examination, were granted the Diploma L.D.S. R.C.S. Edin.:—John M. Elliot, Douglas G. Munro, Michiel Josias de Kock, and Peter J. B. Dyce.

University of Manchester.—The following appointments have been made: Dr. R. A. Webb, Demonstrator in Pathology; and Mr. J. H. Blackaby, B.Sc., Assistant Lecturer in Physics. The following awards have been made:—Junior Research Fellowship in Public Health: Dr. William Stott; Dalton Chemical Scholarship: Mr. L. R. Ridgway, B.Sc.—The annual dinner of the past and present students of the Manchester University Medical School will be held at the Midland Hotel, Manchester, on Wednesday, Nov. 9th, at 7 P.M. The president will be Dr. F. Craven Moore, and the vice-presidents Dr. D. Dougal, Dr. J. F. O'Grady, and Mr. J. Morley. Tickets, price 15*s.* 6*d.*, can be obtained before Nov. 5th from Mr. W. Geraghty, hon. secretary, at the Medical School.

University of London.—Dr. W. B. Tuck has been appointed to the University Chair of Chemistry tenable at Middlesex Hospital Medical School. Dr. Tuck was in 1908 appointed a member of the teaching staff of University College, London, and after lecturing during the absence of Dr. Kellas at Middlesex Hospital Medical School was appointed lecturer in Chemistry at that School.

Dr. Charles Bolton, F.R.S., of the Graham Research Laboratories at University College, has been awarded the William Julius Mickle Fellowship of £200 in recognition of the important work in experimental medicine which he has carried out during the past five years.—Mr. H. J. Waring has been appointed to represent the University at the centenary celebrations of the Faculty of Medicine of the University of Montpellier on Nov. 5th.

Association of Infant Welfare and Maternity Centres: Workers' Section.—A conference will take place at 8 P.M. on Monday, Nov. 7th, at 14, Salisbury-street, Lisson-grove, London, N.W., when Miss Mildred Ransom will speak on the Professional and Business Women's Hospital League. On Tuesday, Dec. 6th, at 8 P.M., at the same place, Lady Barrett will open a discussion on Birth Control. Medical men or women willing to address the section at one of the 1922 conferences on some subject of vital interest to infant welfare workers are asked to communicate with the Hon. Treasurer, Mrs. M. C. D. Walters, 105, Addison House, Grove End-road, London, N.W. 8, or the Hon. Secretary, Miss S. Elliott, St. George's House, 220, Cable-street, London, E. 1.

Society of Medical Officers of Health: Annual Dinner.—The annual dinner was held on Oct. 21st at the Café Royal, Regent-street, Dr. W. J. Howarth, the President, being in the chair. There was a large attendance of Fellows and members and the guests included the Bishop of London, Prof. C. S. Sherrington, Sir Aston Webb, Sir Anthony Bowlby, Sir George Newman, Mr. J. W. Pratt, M.P., Sir Philip Magnus, M.P., Sir Arthur Robinson, and Dr. T. W. H. Garstang (Chairman of the Public Health Committee of the British Medical Association). A letter was read from Sir Alfred Mond, M.P., Minister of Health, regretting his inability to be present. Mr. J. W. Pratt proposed the toast of the Society of Medical Officers of Health. He said that before entering Parliament he was a member of the Corporation of Glasgow and of its health committee, and had realised how much it had meant to Glasgow to have had in the last 60 years such a succession of eminent M.O.H.'s. In that time the death-rate of the city had been halved and twice halved, and this was largely due to the labours of these men, who were not only expert advisers, but patient and persistent pioneers in the path which the community now sought to follow. He referred to the recent action of a council in discharging a woman medical officer on her marriage, and hoped that no one, whether man or woman,

Correspondence.

"Audi alteram partem."

THE ROLL OF THE FELLOWS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—May I ask you to give publicity in your columns to the enclosed list of some 250 names of Fellows of the Royal College of Surgeons of England, whose biographies are at present very scanty, if not wholly lacking? It is reasonable to hope that descendants, relatives, or friends of these gentlemen are living who would be able to give information as to them, so that they may be worthily included in the Roll, which at present numbers over 2400 biographies, or references to biographies, of Fellows deceased since 1843. I shall be glad to forward a copy of such facts as I have been able to obtain in the case of any given life to those applying to me by letter at this library.—I am, Sir, yours faithfully,

VICTOR G. PLARR,
Librarian, Royal College of Surgeons of England.
Lincoln's Inn-fields, London, W.C., Oct. 17th, 1921.

ENCLOSURE.

Abbey, John, Fellow (F.) June 28, 1855; practised (p.) Wellingborough; died (d.) ? 1865. Acheson, Johnston Hamilton, Surg. R.N., F. Aug. 26, 1844; d. July 8, 1864. Adolphus, Sir *Jacob, F. Dec. 11, 1843; p. at Cheltenham; d. before 1845.* Ainger, Major, I.M.S., F. May 11, 1854; d. Feb. 10, 1861. Aldred, George Edward, Asst.-Surg. Indian Army, F. May 12, *1859; d. before 1868. Allen, James, Surg. Bengal Army, F.* May 15, 1856; d. Feb. 2, 1892. Allen, William Edward, I.M.S., F. June 9, 1870; d. May 15, 1885. Archer, Edmond, M.D., F. June 14, 1866; *latterly of W. Norfolk and Lynn Hosp.;* d. Aug. 12, 1869. Atkinson, Henry, F. Aug. 26, 1844; Boulogne; d. before 1882. Atkinson, Robert James, F. Jan. 10, 1861; *Calcutta; d. before 1890–91. Attree, William, F. Dec. 11,* 1843; Brighton; d. Apr. 24, 1846.

Baddeley, William Edward, F. May 10, 1860; Newport, *Salop; d. 1869. Badley, John, F. Dec. 11, 1843; Dudley,* Worcester; d. Apr. 16, 1870. Baillie, Herbert, M.D., Surg.-Major, Bengal Army, F. Mar. 4, 1858; d. Dec. 25, 1890. Bally, *Wm. Ford, F. Apr. 19, 1854; Bath; d. before 1859. Bancks,* Thomas, F. June 14, 1860; Stourbridge; d. before 1880. Banister, George, Surg., Ind. Army; F. Feb. 18, 1860; d. *Dec. 6, 1884. Barker, John, F. June 2, 1853; Coleshill, Warwick;* d. ? Nov., 1884. Bartlam, Edward Glover, F. June 8, 1871; Broseley, Salop; d. ? 1886. Batt, Frederic Collins, *F. Feb. 10, 1853; Abergavenny; d. Dec. 31, 1854.* Batten, Thomas, F. Dec. 13, 1866; Coleford, Glouc.; d. 1885. Beale, John Evans, F. Apr. 19, 1854; Plaistow, Essex; 1794–June 26, 1858. Beevor, Charles, F. *Dec.* 11, 1843; Harley-st.; d. Feb. 8, 1872. Bell, Wm., F. Feb. 12, 1864; Rochester; d. ? 1879. Bennett, Sam. Nevitt, F. Aug. 26, 1844; Chester; *d. ? 1844. Berney, Edwd., F. May 15, 1865; Croydon; d.* 1889–90. Betts, Hen. Augustus, F. Dec. 9, 1858; Stourbridge, then Galt, Canada, W.; d. before 1871. Bevan, Wm., F. Feb. 10, 1853; Surg., Swansea *Infirm.; d. July 15, 1856.* Birmingham, George, F. Feb. 10, 1853; Kentish Town; d. ? 1890. Birtwhistle, Richard L., R.N., F. Aug. 26, 1844; *d. 1846. Blasson, Thos., F. June 2, 1853; Billingborough,* Lincs; d. 1867. Bloxam, Robt., F. Dec. 11, 1843; Newport, I.W.; d. ? 1858. Bolton, Geo. Buckley, F. Dec. 11, 1843; Pall Mall; *d. before July 19, 1847. Boultbee, Henry, F. Aug. 26,* 1844; Sheffield; d. 1850. Boutflower, Charles, F. Dec. 11, 1843; Liverpool; d. Mar. 28, 1844. Bowden, Stephen, D.I.G., Fleet Surg., F. May 23, 1857; d. *Apr. 22, 1896. Boycott,* Thos., M.D., F. June 14, 1860; Montagu-sq.; d. May 12, 1886. Bradley, Wm. Henry, Asst.-Surg., H.E.I.C.S., F. Aug. 6, 1857; d. ? 1882. *Brigham, Wm., F. Aug. 26, 1844; Manchester and* Lymm, Cheshire; d. July 27, 1861. Broughton, Francis, I.M.S., F. May 13, 1857; latterly Ambleside; d. Oct. 14, 1882. Brown, Andrew A., F. Dec. 11, 1843; Paris; d. before May 7, 1852. Brown, Arthur Thomas F., Surg.-Capt., I.M.S., F. June 12, 1890; d. Aug. 29, 1893. Brown, Richard Willson, F. Dec. 11, 1843; d. 1860. Browne, James, M.D., R.N., F. Aug. 26, 1844; d. 1879–80. Browning, Benj.-Sen., R.N., F. Aug. 26, 1844; Surg., Parkhurst Prison; d. Mar. 27, 1876. Buchanan, Andrew, F. Feb. 10, 1853; New Zealand; d. ? 1877. Bucknall, Thos. Rupert Hampden, M.D., F. Dec. 14, 1899; Devonshire-st., W.; d. Mar. 18, 1913. Burke, John Page, M.D., Staff-Surg., Malta, F. Mar. 4, 1858; d. ? May 21, 1870. Burleigh, Richard Clarke, F. Aug. 7, 1856; Camden Town; d. ? 1901. Butler, James Henry, D.I.G., F. Apr. 10, 1851; Bengal Army; d. June 2, 1865. Bynoe, Benj., R.N. Staff Surg., F. Aug. 26, 1844; d. Nov. 15, 1865.

Campbell, George Gunning, F. Dec. 11, 1843; Montagu-sq., and India; d. ? May 7, 1858. Cape, Henry, Surg.-Major, Bengal Army, F. Oct. 11, 1860; d. Sept. 27, 1866. Carter, John, Army Surg., F. Aug. 26, 1844; d. ? 1867. Cartwright, Richd., F. Dec. 11, 1843; Bloomsbury-sq.; d. before June 26, 1854. Cary, Walt, M.D., F. Apr. 12, 1855; d. July, 1878. Champney, George, F. Dec. 11, 1843; York; d. ? 1861. Chapman, Henry Wilson, F. June 28, 1855; Palace-st. and Margaret-st., W.; d. May 30, 1875. Chesman, Thos., F. Dec. 24, 1844; Sheffield; d. Nov. 9, 1874. Clark, Edwd., F. Dec. 1, 1854; *Toronto; d. before Jan. 21, 1857. Clarke, John, F. Dec. 11,* 1843; d. ?. Coates, Henry, F. Dec. 11, 1843; Salisbury; d. in or before Apr., 1848. Cole, George, Army Surg., F. Dec. 1, *1854; d. June 15, 1858. Colebrook, Henry, F. Nov. 14, 1878;* d. at Bath, Feb. 25, 1890. Condell, Wm., F. Dec. 9, 1858; Tunbridge Wells; d. May 30, 1863. Couran, John Trebeck, F. Aug. 26, 1844; Madras Med. Estab.; d. Nov., 1851. Cormick, Wm., F. Oct. 19, 1876; Phys. to Crown Prince of Persia; d. Dec. 30, 1877. Cother, Wm., F. Dec. 11, 1843; Gloucester; d. before Sept. 27, 1852, or in 1854. Cottingham, Edwin, F. Oct. 14, 1858; Bexley; d. Nov. 28, 1858. Cousins, Edwd., F. June 13, 1862; Camden-rd., N.W.; d. Sept. 1, 1868. Cox, Charles Lindsey, Surg. Indian Army, F. Feb., 1860; d. May 23, 1886. Craddock, Wm., 70th Indian Native Inf.; F. May 12, 1859; d. ? 1886. Crawford, Henry, F. Aug. 26, 1844; Canterbury; d. ? 1872. Crelling, Fred, R.N., F. Aug. 26, 1844; d. Oct. 1, 1860. Cumming, Robt. Butterfield, M.D., Army Surg.; F. Oct. 11, 1866; p. latterly at Malpas; d. Grahamstown, ? 1890.

Dalton, Henry Gibbs, F. Feb. 12, 1864; Georgetown, Demerara; d. 1875–76. Darby, Wm., Army Surg., H.E.I.C.S.; F. Aug. 26, 1844; d. Mar. 10, 1867. Davis, Wm. Farquhar, Surg.-Major, Madras Army, F. June 13, 1867; d. Feb. 25, 1877. De Liefde, John, F. Dec. 9, 1869; Camden-rd., N.W.; d. 1871–72. Dent, Robt., I.M.S., F. June 2, 1853; d. June 19, 1903. Dollard, Wm., Asst.-Surg., Indian Army, F. Aug. 26, 1844; d. ? 1847. Dunsterville, George Edwd., F. Aug. 13, 1863; Port Elizabeth, Cape; d. before 1890. Dyer, Sam, F. Dec. 11, 1843; Cambridge-terrace, N.W.; d. before Dec. 15, 1845.

Earle, Edwd. Septimus, F. May 31, 1860; New Brentford; d. 1884–85. Edis, Fred. Pooley, Surg., Bengal Army, F. Dec. 10, 1868; d. *Oct. 10, 1881.* Edwards, John, Surg., R.N., F. Aug. 26, 1844; d. before Aug. 15, 1848. Ellison, King, F. June 2, 1853; Surg., Blue Coat Hosp.; d. Bath, May 6, 1860. *Evans, Wm., R.N., F. Oct. 21, 1852; formerly* Surg. to Prince Lucien Bonaparte; d. June, 1860.

Farmer, Wm., F. Aug. 10, 1854; Bedford Row; d. 1897–98. *Farquhar, Alex., F. Aug. 7, 1856; Turriff; d. ? 1890.* Figgins, Henry, F. Oct. 15, 1874; Birmingham; d. Nov. 4, 1881. Findlay, John, R.N., F. Aug. 6, 1857; d. ? 1890. Fletcher, *John Wm., Surg., I.M.S., F. Dec. 16, 1847; d. Dec. 2, 1860.* Folds, Wm., F. Aug. 26, 1844; Hon. Surg. Queen Victoria; d. 1869. Ford, Charles Geo. Edwin, Surg., Army of H.E.I.C., F. Mar. 10, 1859; *d. before Dec. 5, 1864. Franklin, Richd.,* F. Aug. 26, 1844; Limerick; d. ? 1848. Fuge, John Hele, F. Aug. 26, 1844; Plymouth; d. Oct. 7, 1871. Furness, Thos. *Albason, F. July 25, 1854; Newcastle; d. May 18, 1857.*

Garden, Alex., F. Aug. 26, 1844; Bengal Med. Estab., H.E.I.C.S.; d. before June 23, 1845. Gilson, Benj., F. Aug. 26, 1844; *Halstead, Sussex; d. May 28, 1856. Glover, Jos.* Tuthill, M.D., F. May 9, 1861; Bengal; d. 1874–75. Goldney, Harry, R.N., F. Aug. 26, 1844; d. at sea, Aug. or Sept., 1849. *Goldstone, Robt., F. Aug. 26, 1844; Bishopstoke; d. before* June 25, 1858. Goodall, Abraham, I.M.S., F. Oct. 11, 1860; d. Jan. 21, 1892. Grosjean, Jas. Keith Jeanneret, F. Dec. 12, *1867; Kensington and Alexandria; d. ? 1886. Gruggen,* Wm., F. Aug. 26, 1844; Chichester; d. 1868. Gunn, Theophilus Miller, F. Dec. 9, 1858; York-place, Portman-sq.; d. ?.

Hale, Fred, F. Mar. 11, 1857; d. Guernsey, Sept. 14, 1863. Halls, John Jas., Asst.-Surg., Bengal Army, F. Apr. 11, 1850; d. at sea; *Nov. 6, 1860. Hancorn, Robt., F. Mar. 10, 1859;* Swansea; d. ? 1891. Hargraves, Isaac, F. Feb. 10, 1853; Tunbridge Wells; d. Aug. 16, 1856. Harrison, George, F. *June 28, 1855; d. Grosvenor-st., Apr. 12, 1866. Harrison,* James, I.M.S. (Bengal), F. Jan. 10, 1861; d. Oct. 16, 1862. Hastings, Thos., Surg.-Gen., I.M.S., F. July 9, 1857; d. Jan. 27, *1897. Heath, Hen., F. Dec. 11, 1843; Newcastle-on-Tyne;* d. Dec. 6, 1855. Heward, Sir Simon, F. Dec. 11, 1843; Madras Med. Board; d. Apr. 14, 1846. Hill, Wm., F. Aug. 26, 1844; *Wootten-under-Edge; d. ? 1846. Hilliard, John, Surg., Bengal* Army; F. Feb. 10, 1853; d. ? 1886. Hobbs, Wm., Surg., R.N., F. Apr. 12, 1860; d. Feb. 4, 1884. Hopps, John, F. *Dec. 11, 1843; York; d. before June* 27, 1853. Hough, Henry, F. Aug. 26, 1844; I.M.S. (Bengal); d. 1881–82.

Ince, John, M.D., F. Jan. 12, 1854; Royal Pimlico Disp.; *d. June 21, 1867. Irving, Wm., F. Dec. 9, 1852; Penrith;* d. May 21, 1870.

Jackson, Edwd., F. Apr. 17, 1845; Chaddesley-Corbett; *d. ? 1890. Johnson, John, F. Dec. 11, 1879; Melbourne;* d. ? 1900. Jukes, Alfred, F. Dec. 11, 1843; Birmingham; d. before July 28, 1847.

Keate, Henry, F. Dec. 8, 1870; Shrewsbury; d. 1874. Kelly, Wm., Surg., R.N., F. Aug. 26, 1844; d. Dublin, Mar. 29, 1862. Kelsall, Henry, M.D., Surg., R.N., F. Aug. 26, 1844; d. Dec. 3, 1874. Kemball, Vere Clarke, F. Dec. 11, 1843; Med. Board, Bombay; d. Oct. 20, 1853. Kenny, Bernard, M.D., F. July 25, 1854; d. Hong-Kong, Nov. 2, 1859. Kent, Wm., Surg., R.N., F. Aug. 26, 1844; d. before Oct. 11, 1862. Kinsey, Robt. Bancroft, D.I.G., F. Oct. 8, 1857; Dinapore; d. Apr. 1, 1865. Knight, Chas., F. Feb. 11, 1869; Wellington, N.Z.; d. 1894–95. Knox, Geo., F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. before July 18, 1849.

Lane, Thos. Moore, F. Aug. 26, 1844; Madras Med. Estab., H.E.I.C.S.; d. 1844–45. Larkins, Thos. Brooks, Staff Surg., Bombay Army, H.E.I.C.S., F. Apr. 11, 1849; d. before Jan. 3, 1883. Lay, Peter Goodal, Surg.-Major, Bengal Army, F. July 9, 1857; d. Cairo, Nov. 21, 1892. Leather, Peter Wm., F. Nov. 18, 1858; Liverpool; d. ? 1900-01. Lees, Thos., F. Oct. 14, 1858; Southport. d. May 26, 1861 Leese, Lewis, Sen., F. Aug. 26, 1844; Norwood; d. before Jan. 17, 1848. Le Grand, Fred. Wm., M.D., Surg., R.N., F. Aug. 26, 1844; d. Nov. 4, 1874. Leyson, Wm., Surg., R.N., F. Aug. 26, 1844; d. Nov. 3, 1854. Lindop, Wm., F. Oct. 16, 1856; Newport, Salop; d. ? before 1875. Linton, Robt. Pilkington, Surg., I.M.S., F. Apr. 13, 1868; d. 1875–76. Loney, Wm., Surg., R.N., I.G., F. Nov. 18, 1858; d. 1898. Ludlow, Sam, Mem.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, Oct. 19th.

Medical Appointments at the Post Office.

Sir Walter de Frece asked the Postmaster-General if, in making any appointment of a medical officer to the Post Office, he would ensure that preference was given in every case to applicants who had served in the war; and in how many cases of recent appointments this had not been done.—Mr. Kellaway replied: In making an appointment as medical officer to the Post Office regard is paid to service with the forces; but consideration has also to be given to other factors, such as professional qualifications and length of residence in the district. There are no records available which would enable me to reply to the second part of the question.

Thursday, Oct. 20th.

Guardianship of Infants Bill.

Viscountess Astor asked the Prime Minister whether he could give an assurance that time would be given this Session to pass the Guardianship of Infants Bill through its final stages.—Mr. Lloyd George replied: In view of the definite assurance given by the Leader of the House on August 10th last that the only legislation to be taken would be that which necessitated the calling together of the House, I regret it will not be possible to deal with this Bill during the present sittings, which are only undertaken for the purpose of dealing with the problem of unemployment.

Milk for Infants and Mothers.

Viscountess Astor asked the Minister of Health whether he had received any protests concerning his decision to reduce the Government financial aid to local authorities for the provision of milk to infants and mothers; and whether he could reconsider the matter so as to give once again half the cost in cases where the medical officer to the local authority issued a certificate of need or where some other suitable safeguard against unnecessary expenditure was provided.—Mr. Myers asked the Minister of Health if he was aware that there was resentment on the part of the local authorities of the country towards the letter from his department which called upon them to keep separate accounts of the milk which were given free or below cost price to necessitous cases under maternity and infant welfare regulations and intimated that the State grant upon this part of the work was to be reduced from 50 to 5 per cent.; and whether, having regard to the good work which had been and was being done by the service, the reduction of the infantile death-rate which had been effected, together with the hardship which would be imposed upon poor people, the adverse effect upon infant life, and the added burdens to the local authorities under the conditions of the circular, he would withdraw the circular and restore the 50 per cent. grant for the whole of the infant welfare service.—Captain Coote asked the Minister of Health whether he had recently reduced the contribution payable by him to local authorities for the provision of milk to mothers and infants from 50 to 5 per cent. of the cost; whether he was aware that this reduction coincides with the beginning of winter, when milk was dearest, and with widespread distress owing to unemployment; what economy he was effecting by this reduction; and whether it could be secured in a less disastrous way.—Sir A. Mond replied: The very great increase in this service by local authorities has caused the estimate of the Government grant during the financial year already to be exceeded, and on strictly financial grounds severe reduction is entirely justified. But in view of the commitments of local authorities during the financial year and the distress existing from the extent of unemployment, I have decided that the 50 per cent. grant for milk supplied free or at less than cost price under the conditions laid down in Circular 185 will be continued until the end of the financial year.

Sickness among Children.

Mr. Leonard Lyle asked the Minister of Health if his latest reports showed any increase of sickness, especially among children, due to under-feeding or semi-starvation resulting from short time and unemployment.—Sir A. Mond replied: I cannot say from the information at my disposal that there has been an increase of sickness among children as a result of short time or unemployment.

Unemployment and Sick Insurance Benefit.

Mr. John Davison asked the Minister of Health whether, in view of the fact that large numbers of unemployed persons would be thrown out of the national health insurance benefit in consequence of arrears of contributions due to unemployment, he would take steps to exempt unemployed persons from national health insurance contributions during the present emergency.—Mr. William Thorne asked the Minister of Health if he was aware that large numbers of unemployed found that, although when in work they were compelled by law to insure themselves against sickness, now that they had been out of work for 12 months they had lost the right to all sick pay, even though they might have contributed in full since the Insurance Act was passed nine years ago, owed no arrears for periods of unemployment, and had never received any benefits; whether it was the intention of the Government to set matters right by passing a one-clause Act restoring to workers the right to remain insured against sickness during unemployment on having made proper payment for that purpose; and if he was aware that all the approved societies had entered a most emphatic protest against such men being deprived of their sick pay under the Health Insurance Act.—Sir A. Mond replied: I am aware that the provisions of the National Health Insurance Acts relating to the cessation of insurance on ceasing employment cause some hardship in special cases in the present abnormal conditions of prolonged unemployment, and the question of taking steps to meet this situation is at present under consideration.

Appointments of Medical Referees.

Sir Walter de Frece asked the Minister of Health whether he would undertake in future to give preference to all candidates applying for the post of medical referee who had served in the war, even if their absence from home in the service of the State naturally gave them a shorter record of home service in the district.—Sir A. Mond replied: In making appointments to the post of medical referee preference is given to men who have served in the war, other things being equal, but with due regard to the fact that many practitioners who did not serve in the armed forces had applied for such service and had been kept at home by the decision of the competent authorities that their services were indispensable for the needs of the civil population.

Construction of Roadway to Wingrove Hospital.

Mr. Grattan Doyle asked the Minister of Health whether he was aware that the Newcastle-upon-Tyne Board of Guardians, having received his consent to construct a roadway to their Wingrove Hospital and to employ on the work as much unskilled labour as possible from able-bodied unemployed men in receipt of assistance from the guardians, made application through the local authority to the Unemployment Grants Committee for a grant towards the expenditure incurred by them upon the labour directly employed, and that the Unemployment Grants Committee had declined to make a grant merely on the grounds that the men were not engaged through the local labour exchange, notwithstanding that the guardians' action was intended to save the payment both of unemployment benefit and Poor-law relief, all such labour employed being already registered at the labour exchange; and, if so, what action he proposed to take in the matter in view of the distressing prevalence of unemployment in Newcastle-upon-Tyne.—Sir A. Mond replied: This matter was dealt with by the Unemployed Grants Committee, and I understand that they refused a grant because the guardians failed to comply with the condition requiring preference to be given to unemployed ex-Service men, but I am in communication with the committee on the matter.

Monday, Oct. 24th.

Testing Clinical Thermometers.

Mr. Hailwood asked the President of the Board of Trade if he was aware of the inaccuracy of a large percentage of clinical thermometers; and would he take steps to introduce some method of test and certificate of correctness.—Mr. Stanley Baldwin replied: This is a matter which can only be dealt with by legislation, and I would remind my hon. friend that a Bill to require the testing of clinical thermometers was introduced by the Government earlier in the session, but was not proceeded with owing to lack of time. I hope to reintroduce the Bill next session. In the meantime I am glad to say that most British manufacturers of clinical thermometers are voluntarily having their products tested at the National Physical Laboratory.—Mr. Kiley asked the President of the Board of Trade whether, in the case of a person purchasing a clinical thermometer and not being content with the maker's guarantee and desiring to have the instrument tested, it was possible for the individual to take the same to the national laboratory, Kew, and have it tested for a few pence; and, if this was not so, could he make arrangements for it being done in such cases where it was desired.—Mr. Stanley Baldwin replied: Single clinical thermometers can be tested at the National Physical Laboratory on payment of a fee of 1s. 6*d.*; the fee when large quantities are submitted is 3*d.* per instrument. This arrangement has been in existence for several years.

THE COMPOSITION OF CIGARETTES.

To the Editor of THE LANCET.

SIR,—*Recently an American friend sent to me the* following paragraph from the *Spartanburg Journal* of Sept. 20th :—

Sept. 20, 1921. The Board of Managers of the Anti-Cigarette League in Chicago announce that they have procured the results of investigations of American medical laboratories and the London *Lancet* Laboratory which disclosed that, in addition to nicotine, cigarette and tobacco smoke were found to contain prussic acid, acrolein and carbon monoxide. "These gases were used in large quantities in the late World War to kill soldiers," *adds the announcement.* "There were also found several other deadly poisons, *including furfural, an irritating substance said to be about* 50 times as poisonous as ordinary alcohol."

As it refers to investigations of the Laboratory connected with your paper, I think that the paragraph calls for serious notice. I have read numerous articles in THE LANCET from 1899 to the present date on the question of whether or no cigarette and tobacco smoking affects the health, but I do not recollect having seen any reference, in such articles, to cigarette and tobacco smoke containing prussic acid, acrolein, furfural and the like, and I should be glad to know whether there is any truth in the statements, as to the results of your alleged investigations, made by the Board of Managers of the Anti-Cigarette League in Chicago. I am, Sir, yours faithfully,

Wembley, Middlesex, Oct. 18th, 1921. A. E. MAWN.

*** An analysis of the composition of American cigarettes was made in THE LANCET Laboratory at the end of 1899, and the report was published on Dec. 9th of that year. Its issue was determined by some remarkable statements in certain New York newspapers of paralysis, collapse, lunacy, and suicide stated to have been caused by cigarette-smoking. Our correspondent in New York purchased various brands of cigarettes in shops in New York City and sent them to THE LANCET Laboratory, while we purchased in London cigarettes of American manufacture, being in the majority of instances the same brands. The cigarettes were then subjected to close investigation, the percentage amount of nicotine being calculated as well as that of saccharine matters, opium, phosphorus, arsenic, mercury, copper, and other heavy metals. The paper, whose ratio to tobacco had been calculated, was subjected to the same scrutiny. Our examination showed that the allegations in regard to the presence of foreign poisonous materials in the cigarettes were entirely unfounded, save that in one instance there was bare evidence of a trace of copper in the paper. No reference was made in the report to the presence of prussic acid, acrolein, furfural, or the like. In an article on the toxic factors in tobacco in general, published on April 6th, 1912, acrylaldehyde or acrolein is mentioned among the irritating bodies which may be present in tobacco smoke. In a further article on the same subject the presence of furfural in minute quantities is noted in the tobacco smoke of certain cigarettes and smoking mixtures, and the chemistry of its presence is explained. The mention of furfural in the *Spartanburg Journal* is misleading. The poisonous character of this substance was alluded to in connexion with an investigation into alcohol.—ED. L.

THE HARVEIAN ORATION.

To the Editor of THE LANCET.

SIR,—Owing to an unfortunate printer's error (for which you are not responsible) in your issue of Oct. 22nd (p. 840) Malpighi is credited with the authorship of "De Sedibus et Causis Morborum"; it should, of course, be Morgagni. May I take this opportunity of asking those Fellows who have received uncorrected copies of the Oration kindly to correct the error, which occurs on page 32, line 1.

I am, Sir, yours faithfully.
HERBERT SPENCER.

Harley-street, W., Oct. 24th, 1921.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—There has recently appeared in the popular press an account of some cases of belladonna poisoning, and my name was mentioned in connexion with them. The account was published without my knowledge or consent.—I am, Sir, yours faithfully,

Limpsfield, Surrey, Oct. 12th, 1921. J. R. BENTLEY.

VICTOR HORSLEY MEMORIAL FUND.

A MEETING of the executive committee of the subscribers to the Victor Horsley Memorial Fund was held at 1, Wimpole-street, London, on Oct. 20th, with Sir CHARLES BALLANCE, K.C.M.G., in the chair.

Sir FREDERICK MOTT (hon. treasurer) presented a financial report stating that the amount of subscriptions promised was £1025, of which £875 had been paid into the bank. There was little doubt that the whole amount promised would shortly be paid, and it was probable that the interest on the deposit would be sufficient to defray the cost of printing and postage. The number of subscribers, exclusive of groups, is 229.

The following recommendations from the executive subcommittee were received and proposed for adoption by the Chairman :—

(1) That the Victor Horsley Memorial Fund be invested in the names of a Board of Trustees consisting of the President of the Royal Society, the President of the Royal College of Surgeons of England, the President of the British Medical Association, the Senior Physician of the National Hospital for the Paralysed and Epileptic (Queen-square), the Senior Surgeon of University College Hospital, in virtue of their office, together with Mr. Edward Robinson (the son-in-law of Sir Victor Horsley) and Mr. Edward J. Domville, one of the hon. secretaries of the fund, the vacancies caused by the resignation or death of either or both of these last named not to be filled up.

(2) That the trustees shall triennially appoint a lecturer to deliver a lecture in London, under the title of The Victor Horsley Memorial Lecture.

(3) That no limitation be placed on the trustees as to the country or profession from which the lecturer should be appointed, nor on the subject of the lecture to be delivered.

The resolution for the adoption of the recommendations was seconded by Sir WILLIAM ARBUTHNOT LANE, supported by Dr. GEORGE MURRAY, Dr. MARY STURGE, and Mr. W. G. SPENCER, and carried unanimously.

A vote of thanks to Mr. Domville for his services was carried by acclamation. It was resolved to close the list of subscriptions on Dec. 31st.

THE LATE DR. ELLERINGTON REED TURNER.—The death has occurred of Dr. E. R. Turner, of Kintore. Dr. Turner, who was a native of Brora, graduated M.B., C.M. at Aberdeen University in 1891. He took up general practice in Kintore 28 years ago. He was for several years Provost of Kintore, and at the time of his death was a member of the town council. He was also chairman of the late School Board, and a justice of the peace for the county. He is survived by a widow.

MEDICAL BENEFIT AMENDMENT REGULATIONS (No. 5), 1921.—These regulations make slight alterations in the rules for certification to meet certain difficulties, viz.: (1) The practitioner is asked to sign final certificates after the insured person has resumed work. This is met in para. 6, which allows a final certificate to be given for the second day, or in rural areas for the third day, after the date of the examination. (2) The absence of a suitable form of certificate in cases where the insured person is ordered a change at the seaside, or goes into a convalescent home. This is provided in the intermediate convalescent certificate. (3) The practice of certain practitioners of issuing more than one certificate without making a fresh examination of the patient. Para. 9 orders that "A practitioner having issued a certificate under these Rules shall not issue a further certificate without again examining the insured person, except that, if the original certificate is lost or mislaid, he may issue a duplicate, but in that case the form shall be clearly marked 'duplicate.'"

East London Hospital for Children and Dispensary for Women, Shadwell, E.—S. Asst. S. Asst. P.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.

Great Northern Central Hospital, Holloway-road, N.—Two S.'s.

Grimsby and District Hospital.—R.H.S. £300.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S.'s. £50.

Hove Hospital, Sackville-road, Hove.—Res. M.O. £250.

Hull Royal Infirmary.—Hon. Pathologist.

Kensington, Marloes-road Infirmary.—Fourth Asst. M.O. £200. Visiting Phys. £100.

Kettering and District General Hospital.—Res. M.O. £250.

Leeds, Beckett's Park Hospital.—Radiologist. £600.

Leeds Public Dispensary.—Res. M.O. £200.

London Fever Hospital, Islington, N.—Res. M.O. £500.

London Jewish Hospital, Stepney Green, E.—R.M.O. £150. J.R.M. and Cas. O. £100. Also A.P.

Manchester County Asylum, Prestwich.—Asst. M.O. £528 18s.

Manchester Royal Infirmary.—Asst. M.O. £35.

Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W. 1.—Two Sen. Clin. Assts.

Mothers' Hospital, Lower Clapton-road, E.—Res. M.O.

North Riding of Yorkshire County Council Education Committee.—Asst. Sch. M.O. for Saltburn District. £500.

Oxford, Radcliffe Infirmary and County Hospital.—Hon. P.

Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.

Preston and County of Lancaster Royal Infirmary.—H.S. £200.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Sen. Res. M.O. £100. Asst. Res. M.O. £60. District Res. M.O. £80.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.

Rochdale Infirmary and Dispensary.—Sen. H.S. £300.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Asst. Cas. O. £50. Female Obst. H.S. £50.

Royal National Orthopædic Hospital, Great Portland-street, W.—Pathologist. 50 gs. Hon. Surg. for Ear, Nose, and Throat. Hon. Ophth. Surg.

Royal Naval Medical Service.—Surg. Lieuts.

Salford Royal Hospital.—Hon. A.P. Hon. A. Gynæcologist.

Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Asst. Cas. O. Each £150.

South Africa Mental Hospital Service.—Asst. P. £400.

Stockport, Stepping Hill Hospital.—Res. Asst. M.O. £250.

Sunderland Royal Infirmary.—H.S. £200.

Swindon, Venereal Diseases Clinic.—Part-time Officers. £1 1s. per hour.

University College Hospital, Gower-street, W.C.—Tuberc. O. £250.

Virginia Water, Surrey, Holloway Sanatorium.—Jun. Asst. M.O. £100.

Warwickshire County Council.—Asst. M.O.H. £550.

West London Hospital, Hammersmith-road, W.—Hon. Surg. Registrar.

Winchester, Royal Hampshire County Hospital.—H.P. H.S. Each £150.

Worcester General Infirmary.—Res. M.O. £200.

The Chief Inspector of Factories, Home Office, S.W., gives notice of the following vacant appointments: Eyam (Derby), Rufford (Lancaster).

Births, Marriages, and Deaths.

BIRTHS.

Hall.—On Oct. 21st, at 1, Eslington-road, Newcastle-on-Tyne, to Margaret, wife of George Hall, C.M.G., M.D., M.R.C.P.,—a son.

Jackson.—On Oct. 15th, at Queen's Hospital, Sidcup, the wife of T. Jackson, L.R.C.P.E., L.D.S., of a son.

Sampson.—On Oct. 20th, at Sudbury, Ryde, I.W., the wife of Basil F. Sampson, M.C., M.B., B.S.Lond., of a son.

Savy.—On Oct. 23rd, at The Grange, Kingussie, Inverness-shire, the wife of Felix Savy, M.B., Ch.B., of a son.

Weston.—On Oct. 17th, at 23a, Connaught-street, Marble Arch, W.2, the wife of Bt.-Major T. A. Weston, M.B., B.C., R.A.M.C., of a daughter.

MARRIAGES.

Rowe—Matthews.—On Oct. 19th, at Seven Kings Wesleyan Church, Harold Ridges Rowe, L.D.S.Eng., of Queensland, South Africa, to Emma E., only daughter of Thomas M. Matthews, Pembroke-road, Seven Kings.

Vevers—Carpentier.—On Oct. 12th, at the Church of the British Embassy, Paris, Oswald Henry Vevers, M.R.C.S., L.R.C.P., to Geneviève Gabrielle Marie, only daughter of the late Julien Carpentier and the late Madame Bournisien de Valmont.

DEATHS.

Daly.—On Oct. 18th, at Albion-street, Hull, Edward Owen Daly, M.D.Oxon., aged 68 years.

Scarlett.—On Oct. 20th, very suddenly, at Higham's Park, Chingford, Essex, Ferdinand L. L. Scarlett, M.D., M.Ch., aged 70 years.

Steele.—On Oct. 22nd, the result of an accident, Richard Steele, M.R.C.S., L.R.C.P., of Willifield Way, Golders Green, and late of Peatling Magna, Leicester, aged 66 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Oct. 31st.

SOCIAL EVENING: The first Social Evening of the Session will be on Monday, Oct. 31st, at 8.30 P.M., when Fellows and their friends will be received by the President, Sir John Bland-Sutton and by Lady Bland-Sutton. The President will deliver a short Address at 9 P.M. on Choroid Plexuses and Psammomas.

The Library will be open and various objects of interest will be exhibited. Music, light refreshments, and smoking.

MEETINGS OF SECTIONS.

Tuesday, Nov. 1st.

SURGERY: SUB-SECTION OF ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Cases will be shown by:

Mr. P. Maynard Heath: Resection of Upper End of Diaphysis of Humerus for Myeloma, and Replacement by Beef Bone Graft.

Mr. R. C. Elmslie: A Case of Congenital Absence of Sacrum.

Cases will also be shown by the President (Mr. Laming Evans), Mr. H. A. T. Fairbank, and Mr. W. Rowley Bristow.

PATHOLOGY: at 8.30 P.M., at the Laboratories of the Imperial Cancer Research Fund, 8–11, Queen-square, W.C. 1.

Dr. W. Cramer: Vitamins and Cancer Growth.

Dr. A. H. Drew: In-vitro Culture of Tissues in Artificial Media.

Dr. B. R. G. Russell: Carbohydrate Metabolism of Tumours

Dr. J. A. Murray: Experimental Tar-cancer.

Wednesday, Nov. 2nd.

SURGERY: at 5.30 P.M.

The opening paper of the session will be given by the President (Mr. Raymond Johnson) on Carcinoma of the Small Intestine.

Thursday, Nov. 3rd.

BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.

Presidential Address by Dr. Hill Joseph: A Retrospect of a Quarter of a Century of Seaside Practice.

Members of the Section, with guests, will dine together at the Welbeck Palace Hotel, Welbeck-street, W., at 6.30 P.M. Those intending to be present are requested to send their names to Dr. C. F. Sonntag, 80A, Belsize Park-gardens, N.W. 3, not later than the last post on Nov. 2nd.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Exhibits: Mr. A. E. Mortimer Woolf: A Specimen of Double-ruptured Interstitial Ectopic Pregnancy.

Dr. W. J. O'Donovan (introduced by Mr. Gordon Luker): A Gold Button Contraceptor.

Short Communication: Dr. G. Cranstoun: Cystic Adenoma of the Uterus.

Paper: Dr. R. L. MacKenzie Wallis: Glycosuria in Pregnancy.

Friday, Nov. 4th.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)

Cases and specimens will be shown by Mr. Thomas Guthrie, Mr. E. D. Davies, Dr. Irwin Moore, Mr. G. W. Dawson, Prof. Shattock, Mr. Lawson Whale, Sir James Dundas-Grant, and others.

ANÆSTHETICS: at 8.30 P.M.

Mr. H. E. G. Boyle: Report on his visit as Official Representative of the Section to the first meeting of the Canadian Society of Anæsthetists at Niagara, and to the meeting of the American Society of Anæsthetists at Boston in June last.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

Wednesday, Nov. 2nd.—8 P.M. Opening Meeting.—Mr. A. A. Campbell Swinton: Wireless Telegraphy.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—

Monday, Oct. 31st.—5 P.M., Prof. S. G. Shattock: Degenerations: Necrosis.

Friday, Nov. 4th.—5 P.M., Sir Arthur Keith: Specimens and slides illustrating various kinds of Disordered Growth at the Epiphyseal Line.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

Tuesday, Nov. 1st.—5 P.M., Mitchell Lecture:—Dr. F. Parkes Weber: The Relations of Tuberculosis to General Conditions of the Body and Diseases other than Tuberculosis.

Thursday, Nov. 3rd.—5 P.M., Bradshaw Lecture:—Dr. Michael Grabham: Sub-Tropical Esculents.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Oct. 31st.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. Dr. Simson: Diseases of Women. 5 P.M., Mr. Donald Armour: Practical Surgery. (Lecture I.)

Tuesday, Nov. 1st.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. Mr. Steadman: Dental Department. 12 noon, Mr. Sinclair: Gall-would be forced to remain unmarried as a condition of holding high office. Long before a Ministry of Health was talked of there was in every M.O.H.'s office the promise and prophecy of such a ministry. The Society of M.O.H.'s had a great influence on public opinion which was never more ripe for great advances along all paths of physical improvement. The President, in the course of his reply, said the Ministry was the Ministry of Health, and not the Ministry of National Health Insurance, and that money spent on preventive medicine was capable of much greater return than anything spent on curative medicine. Sir George Newman proposed the toast of "Pulpit, Parliament, and the Public Health." He said that these terms stood for the moral law or law of conduct, the law of the State, and the law of science. In the lean years that lay before them it was by the association of these three principles that they would commend the laws of preventive medicine to the English people. This had not yet been done, nor had the principles been practised. There was a vital and integral relationship between the character of a people and its public health. He associated with the toast the Bishop of London, whom he characterised as an ally of public health in the highest sense; and Sir Philip Magnus, who would always be remembered for securing fixity of tenure for M.O.H.'s, and who had that day been elected as an Honorary Fellow of the Society. The Bishop of London recalled his past experiences in association with public health at Bethnal Green and Fulham, and his present position as chairman of the Council for Public Morality of London. Sir Philip Magnus said that half of his constituency was composed of the medical and teaching professions, and that he represented more doctors than any other M.P. As the Bishop had claimed for the Church, so he claimed for teachers that they were colleagues of that Society, their common motto being *Mens sana in corpore sano*. Dr. F. E. Fremantle, M.P., proposed the health of the visitors. Prof. Sherrington, replying, said that to the pure scientist the vocation of the M.O.H. was perhaps the most attractive branch of practical medicine. The fruits of science were partly practical (like wireless telegraphy, or the rotatory hair-brush !) and partly theoretical (like relativity, or the nuclear structure of the atom). The M.O.H. was out for both kinds of result, and thus showed a real acceptation of the true faith of science. The President spoke in appreciation of the work of Captain Elliston, their executive secretary, during whose term of office their membership had increased from 600 to 1600. Dr. Herbert Jones proposed the health of the officers of the Society, and Dr. G. F. Buchan and Dr. R. A. Lyster replied.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At the annual stated meeting of the President and Fellows of the College, held on Oct. 18th, the following officers were elected for the coming year:—President: Sir James Craig. Vice-President: Dr. N. M. Falkiner. Censors: Dr. N. M. Falkiner, Dr. J. A. Matson, Dr. W. G. Harvey, and Dr. R. A. MacLaverty. Representative of the College on the General Medical Council: Sir John Moore. Representatives of the College on the Committee of Management: Dr. Walter Smith, Sir John Moore, and Dr. T. P. C. Kirkpatrick. Treasurer: Dr. H. T. Bewley. Registrar: Dr. Kirkpatrick. Librarian: Mr. R. Phelps.—The St. Luke's Day service of the College—the first held since 1913—was held in the evening, when more than a hundred Fellows and guests dined together. Immediately before dinner, when the company had assembled, the Provost of Trinity College, the Right Rev. and Right Hon. Dr. J. H. Bernard, who had recently been elected an Honorary Fellow of the College, was introduced by the Registrar, Dr. T. P. C. Kirkpatrick, and admitted. Among the guests present at the dinner were the Archbishop of Dublin, the Lord Chancellor of Ireland, the Vice-President of the Royal College of Surgeons in Ireland, and the President of University College, Dublin.

UNIVERSITY OF SHEFFIELD: *Post-graduate Demonstrations.*—The series of post-graduate demonstrations arranged by the Faculty of Medicine for the Michaelmas term promises to be most popular. Already about 50 practitioners have applied to attend, and it is probable that more will join later. The subjects have been chosen after consultation with the local branch of the B.M.A. and the Panel Committee, whose advice and help to the Clinical Studies Committee of the Faculty has been valuable. On each day, twice weekly, two members of the staff give short demonstrations of about three-quarters of an hour each on their own special subjects. Demonstrations on pathology and physiology are included. The demonstrations are held at the Royal Infirmary and Royal Hospital, and a certain number on gynæcological cases at the Jessop Hospital for Women. The opening demonstrations were held at the infirmary on Oct. 12th, when Prof. A. M. Connell dealt with cases of fracture, and Prof. E. Mellanby discussed diets.

LADIES MEDICAL GOLFING SOCIETY.—The autumn meeting will be held at Oxhey Golf Club on Tuesday, Nov. 8th. Particulars may be obtained from the Hon. Secretary, Mrs. E. Laming Evans, 50, Seymour-street, London, W. 1.

ROYAL SUSSEX COUNTY HOSPITAL.—Princess Mary will visit Brighton on Nov. 22nd to open the additional branch of the Royal Sussex County Hospital's Nurses' Home. The Nurses' Home has been extended and admirably equipped at a total cost of £23,000.

ROYAL SOCIETY OF ARTS.—The opening meeting of the session will be held at John-street, Adelphi, London, W.C., on Wednesday, Nov. 2nd, when an address (illustrated by experiments) will be delivered at 8 P.M. by Mr. Alan A. Campbell Swinton, F.R.S., chairman of the council, on Wireless Telegraphy. On Nov. 9th, at 8 P.M., Mr. D. R. Wilson, secretary of the Industrial Fatigue Research Board, will address the society on the Work of the Industrial Fatigue Research Board and its Applications to Industry, Mr. William Graham presiding.

RONTGEN SOCIETY.—A general meeting will be held on Nov. 1st, at 8.15 P.M., in the Institution of Electrical Engineers, Savoy-place, Victoria Embankment, London, W.C. 2. The plaques awarded for the best collections of four prints submitted for the exhibition of radiographs in June will be presented, and the presidential address will be read by Prof. J. W. Nicholson, F.R.S. Members wishing to read papers or to show apparatus or lantern slides to the society are requested to communicate with the hon. secs.: Dr. E. A. Owen, D.Sc., the National Physical Laboratory, Teddington, Middlesex; and Dr. Russell J. Reynolds, 140, Harley-street, London, W. 1.

PROVISION FOR THE BLIND IN ROSS AND CROMARTY.—At a meeting of the Ross and Cromarty County Council, held on Oct. 20th, the finance committee reported on the conference held in connexion with the working of the Blind Persons Act. Subject to the approval of the Board of Health, it is proposed that the counties of Moray, Nairn, Inverness, Ross, Sutherland, and Caithness should combine in forming a joint scheme, under which provision could be made for blind persons within the area through the agency of the Northern Counties Institute for the Blind, and their outdoor society, and that each authority should contribute towards the total cost in accordance with the number of blind persons from their respective areas receiving benefit through the institute.

FIELD LABORATORY FOR FEEDING EXPERIMENTS. A few months ago the Sheffield Panel Committee allotted a sum of £1000 to the equipment of a field laboratory. The University has now acquired a site, and the work of building the necessary laboratories and animal houses is in active progress. The site chosen is on the west side of the city about two miles from the University. It is on the edge of the moors, nearly a thousand feet above sea-level. To those who only know Sheffield from passing through it in the train, it may be somewhat of a surprise to hear that within such short distance of the city and its smoke there should be grouse moors. Yet so it is, and at the site of the new field laboratory there is no sign of the smoke or sound of the noise of a great manufacturing centre. The laboratory will be under the immediate charge of Prof. E. Mellanby, and he and Mrs. May Mellanby will continue there the experimental work which has hitherto been carried on in the field laboratory at Cambridge.

ROYAL VICTORIA HOSPITAL, BELFAST: PRESENTATION BUST.—At a meeting held on Oct. 19th a presentation bust of Sir William Crawford, J.P., a former chairman of the board of management of the hospital, was placed in the King Edward Hall of the institution. The presentation was made on behalf of the subscribers by the Rev. W. A. Watson. In accepting the gift Prof. J. A. Lindsay, chairman of the board, spoke in warm terms of Sir William Crawford's services. He was chairman from 1901 to 1908, and again from 1914 to 1918, when he retired on grounds of health. He was assiduous in the discharge of his duties and took an active interest in all departments of the institution, while his unfailing courtesy earned for him the warm regard of all his colleagues. His period of office covered an important period in the history of the hospital—the epoch which coincided with the removal of the hospital from its former premises in Frederick-street to the present buildings. It was a matter for congratulation that, at a time when so many problems had to be faced, and such large financial responsibilities incurred, the hospital had had such a capable administrator and so wise a guide at its head. The present financial position of the hospital, so much more favourable than that of most of the great hospitals of the kingdom, owed much to his financial ability and judicious oversight. The bust was executed by Miss Acheson, a niece of Sir William Crawford, and is a faithful and pleasing likeness.

the bottom covered with a dirty-coloured, fœtid, firmly fixed, tattered necrotic coating. Pain still very severe. On the 16th, dressing with Fischer's fluid. On the 24th, ulcer much cleaner, pain almost ceased. On the 31st pain ceased, ulcer filling up with granulations. On April 23rd ulcer now filled up, granulations fresh. On May 21st ulcer reduced to half. On August 25th, ulcer healed, skin smooth and only slightly atrophic.

CASE 2.—"Kommunehospitalet" (Municipal Hospital), Copenhagen. Chr. H., male, aged 47; burns. On May 6th, on the fore side of the right thigh, near the groin, were found two ulcerations of about the size of a sixpenny-piece, with irregular, necrotic edges and sunk central part, covered with a yellowish-green necrotic tissue. Fischer's fluid prescribed. On the 8th the central parts of the burns almost on a level with the surrounding sound integument; necrosed tissue of the edges is partly cast off. On the 11th sores diminished; edges fresh with pinkish epidermis. On the 24th sores healed.

CASE 3.—Kommunehospitalet. T. E., male, aged 15; adenitis inguinalis, ulceration. Transferred from Ward 4, where he had been since Oct. 28th, 1919, under the diagnosis of ulcus penis, balanoposthitis acuta, right inguinal bubo. An incision had been made above and below the ligamentum, and a good deal of pus had been evacuated. The ulcer was treated with resorcin, lapis infernalis, iodoform, salicylic acid, sulphate of copper, and sublimate; the cavity persisting, he was removed to Ward 5 on April 7th, 1920. Physical examination showed nothing abnormal except ulcer in groin, of irregular shape with edges rolled up, being a good centimetre in depth. Skin cicatricial and red; ulcer only slightly tender. On April 8th, in probing the cavity two recesses were felt extending upwards and inwards, one for 2-3 cm., and the other for 2 cm. A V-shaped section was removed for microscopic examination. Plugging with iodoform gauze. On the 14th, only a little secretion; edges slightly infiltrated. On the 27th, still some secretion; superficial ulcer healing slowly. On the 30th, ulcers practically unaltered. Dressing with iodoform gauze. On May 8th, no retention; ulcers spreading on the surface. Dressing with Fischer's fluid. On the 10th a furuncle had appeared just above the symphysis. On the 12th *B. pyocyaneus* had appeared. On the 14th, the ulcers in the right groin had for the last six days been dressed with Fischer's fluid. At the beginning of that time there was a plum-sized cavity, and above it a filthy ulcer (8 by 15 cm.), flat, covered with rather flabby granulations; on this date cavity was filled up from its base, and only the size of an almond; granulations in both ulcers fresh and clean: new growth of epidermis progressing in a broad border from the edges. On the 17th healing constantly advancing; formation of new epidermis on superficial ulcer twice as broad as on the 14th; deep ulcer filling up well with granulations, and now size of kernel of a nut. On the 21st granulations growing rapidly, everywhere vigorous and clean; growth of epidermis advancing in a surprising manner; fresh epidermis seems especially vigorous and powerful; recess has further diminished. On the 25th large cavity completely filled up and almost healed. Superficial ulcer progresses with formation of epidermis like a fine veil over the granulations. Growth of epidermis seems slower than at first. On the 27th ulcers nearly healed. On June 11th ulcer healed, except a few spots the size of a pea. On the 14th ulcer healed; patient discharged.

CASE 4.—Kommunehospitalet, Copenhagen, Ward 5. M. B., male, aged 19, unmarried; burns on forearm. Admitted March 23rd, 1920. Five days previously had sustained burns, having fallen into a pail of charcoal whilst feeling ill (pleuritis). Burns on both legs and right forearm; below the elbow on the extensor side a burn of third degree, about 4 by 10 cm. On April 21st, record states that very considerable granulated skin defects had gradually formed below and around elbow. At bottom of defect nearest the ulna, bone denuded to extent of finger's breadth. On the 24th, under regional anæsthesia with novocaine-adrenalin, transplantation from the right thigh. Firm closing salt-water dressing; dressing changed. On May 1st, only a few islets of skin fixed on large ulcer; heavy secretion. On the 3rd, dressing changed. On the 5th, a few scattered patches left from the transplantation; cavity above upper part of ulna filling up. On the 8th, during local anæsthesia with novocaine-adrenalin another transplantation (Thiersch's method) performed on the remaining surfaces. Salt-water dressings. On the 14th the salt-water dressing had been shifted a few times; some patches adhered. On the 20th dressing with Fischer's fluid. On the 22nd, sores of considerably smaller extent; granulating surfaces fresh and slightly bleeding. On the 27th ulcer diminished wonderfully well and rapidly; new growth of epidermis appears particularly strong. On June 8th epidermis growing over nearly whole surface of sore; only three very small spots not yet healed. New growth of epidermis remarkably good and strong; all movements of elbow entirely free. Patient discharged. On the 11th, after ambulant treatment, sores completely healed.

CASE 5.—Private. H. K., male, married, aged 51. X ray, ulcerous. Seen on May 21st, 1920; during some years had suffered from "eczema" on right calf; treated successfully with X rays two years ago; owing to relapse the treatment was repeated last year. Received altogether five irradiations—dose unknown. Shortly after last irradiation diffuse reddening of irradiated area occurred early in December; later a deep painful ulcer developed, not perceptibily influenced by treatment during past six months. Pains so excruciating and persistent that he can only get a little rest by sprinkling sore with anæsthetics several times daily. On right calf a sharp-edged ulcer, about 6 by 6·5 cm. on surface and about 2 cm. deep, covered with soiled, yellowish-green foulness, through which spots of reddish tissue faintly seen. In circumference of ulcer five or six large blebs. Fischer's fluid used. On the 22nd pain considerably abated; anæsthetics not used. On the 23rd blebs spreading; patient admitted to Kommunehospitalet; discharged after a week for further treatment with Fischer's fluid. On July 3rd sore clean, and of smaller extent; patient free from pain, able to attend to his duties. On Oct. 15th sore the size of a shilling. On Nov. 10th, sore smaller, 2 by 2 cm.; bottom clean.

CASE 6.—X ray clinic of Kommunehospitalet. J. O., female, aged 62; ulcus cruris. On June 5th patient had been treated in the Policlinic for about ten weeks with boiled water, chloric lime-water, lapis, with no success; experimental treatment was therefore suggested. In the fore part of the right lower leg an irregular, filthy, undermined ulcer of the size of a penny, with excruciating pain. Treatment with Fischer's fluid. On the 10th sore cleaner, pain nearly ceased. On the 14th ulcer superficial, pain ceased. On August 6th ulcer healed. During treatment she has done her work as a charwoman. On Oct. 2nd patient seen; ulcer is still healed.

Remarks.

All these cases refer to patients with ulcerations that had either appeared quite refractory to previous treatments, or had only shown a slight tendency to heal. In every case the treatment with incitamin gave a particularly favourable result, and it cannot be disputed that the time of treatment was considerably shortened for these patients. Among these patients, and others whom I have treated, several were spared sojourn in hospital—a fact worthy of emphasis.

Case 3 showed a serpiginous ulceration in the right groin. At first a bubo was found which was incised above and below the ligamentum. In spite of six months' treatment with such different remedies as resorcin, lapis, iodoform, sulphate of copper, and sublimate, the cavity remained; the patient was transferred into the surgical department, where two abscesses were opened; but on the surface the ulceration spread. Fischer's fluid was prescribed. At that moment there was a cavity the size of a plum, and above it an unclean ulcer, covered with rather flabby granulations. Six days later the cavity was filled up from its bottom, and was only of almond size, while the new growth of epidermis was rapidly advancing. A week later granulation was proceeding with great rapidity, and the tissue was everywhere strong and vigorous. On the eleventh day the great cavity was entirely filled up, and after the lapse of five weeks the ulcer was healed. Ten days later the cure proved to be lasting.

Case 4 exemplifies very well that the new growth of epidermis in an ulcer can take place in a surprisingly quick manner when the latter is treated with incitamin. The patient had a large burn on his forearm, which remained practically unaltered for about a month. Graftings had been tried with no great result. Two days after incitamin dressings were begun the ulcers had diminished considerably, and a daily advance of the new growth of epidermis was noted. On the eighteenth day there only remained three very small spots, covered with epithelium. The patient was then discharged and treated ambulatorily; on the twenty-second day the ulcers were entirely healed with good and strong epidermis. Finally, it must be pointed out that epidermis formed during treatment with incitamin has always been particularly good and strong.

When ulcers were unclean, covered with necrotic tissue, and fœtid, they cleansed wonderfully rapidly; a fresh vivid red, often slightly bleeding granular tissue developed, at times with granulations so luxurious that cauterisation with lapis was expedient. Of late I have often applied this method. No caustic was applied, however, to the above-mentioned patients, for it was important to make the tests as far as possible exclusively with incitamin. Wherever ulcers were attended with pain, the latter ceased after a short time; this fact is greatly in favour of the preparation. In one case of ulcus cruris one remedy after the other had in turn to be given up owing to the pain it caused; treatment with incitamin was carried out with no difficulty, and the ulcer healed. Even in the case of X ray and radium ulcerations—where pain is most intense and persistent and, as a rule, can only be relieved through the employment of strong narcotics—the preparation did not fail. In Case 5, an X ray ulcer, the patient was under the necessity of sprinkling the ulcer with anæsthetics to sustain the pain. As soon as dressing with incitamin was employed the pain diminished considerably, and ceased entirely a few weeks later. The same thing happened with other patients with similar ulcerations.

Properties and Indications.

Incitamin is no panacea; like every other remedy it has its limitations, but the lines of these cannot be indicated with any degree of certainty on the basis of the comparatively slight material—about 50 cases—at present at my disposal. The estimation of the importance of a vulnerary remedy is no easy matter; the number of these remedies is legion, and if particular interest attaches to a new remedy, it must necessarily accomplish more than those previously employed. The recorded instances make indisputable the various qualities of incitamin; not least important of them is its soothing power, which induces the patients gladly to acquiesce in its employment. In cancerous sores its effect

Importation of Sodium Salts.

Mr. NEWBOULD asked the President of the Board of Trade whether he was aware that six small samples of sodium salts, sent on the 5th instant from Paris to a firm in London for test purposes, were being detained by the Customs authorities; that, on the 11th instant, the Customs authorities advised the consignee that the samples were being detained in order that entry should be made, value declared, and duty paid: that the consignee replied on the same day that the samples together weighed less than 1 lb., were of no commercial value, and were not dutiable; and that he wrote again on the 18th instant complaining that the samples were still detained; and whether he would have inquiries made into this case.—Mr. HILTON YOUNG (Financial Secretary to the Treasury) replied: I am having inquiries made and will inform the hon. Member of the result in due course.

Housing Schemes.

Mr. NEWBOULD asked Sir John Gilmour, as representing the First Commissioner of Works, whether he could make a statement as to the number of housing schemes on which the Office was still engaged and the number which had been completed.—Sir JOHN GILMOUR replied: The Department is engaged on 47 schemes for 32 local authorities. Four schemes have been completed.

Suggested Repeal of the Insurance Act.

Sir EDWARD NICHOLL asked the Minister of Health whether, in view of the dissatisfaction with the working of the National Insurance Act, he would consider the advisability of its early removal from the statute book.—Sir A. MOND replied: I am aware that there is periodical criticism of certain aspects of the scheme embodied in the National Health Insurance Acts, but on the whole all the evidence tends to show that national health insurance has been most beneficial in its operation. While I am considering the advisability of inquiring what improvements may be effected in its working there can be no question of repeal.

Insurance Act Contributions and Expenses.

Mr. HAYWARD asked the Minister of Health what were the total contributions of the State, employers, and employed, respectively, under the National Health Insurance Acts for the last complete financial year; and what were the total administrative and working expenses under all heads for the same period apart from payments made in respect of medical attendance, drugs, and other benefits.—Sir A. MOND replied: The totals (in round figures) for the year 1920 as respects England and Wales are as follows:—Total contributions by State, £8,800,000; by employers, £9,800,000; by employed, £10,300,000. Total administrative and working expenses under all heads, £1,500,000.

Medical Examination of Aerodrome Workers.

Mr. MYERS asked the Secretary of State for Air whether he was aware that in connexion with work at the Shotwick Aerodrome for a permanent depot for the Air Force the workmen were being subjected to medical examination although the employment was only of a temporary character; that several men over 50 years of age had been discharged in consequence; that one man had been discharged for having three defective teeth; that this action was causing resentment amongst the workmen and might involve a stoppage; and whether he would give instructions that all men employed on work of a temporary character should not be subjected to medical examination of this kind.—Capt. GUEST replied: The regulations provide that civilian employees (unless casually employed for less than six working days) will, on engagement, be examined by a medical officer as to their physical fitness for employment. A rigid standard of physical fitness is not, however, required, and it is sufficient for the medical officer to ensure that prospective employees are—(*a*) fit to carry out the work for which they are engaged; and (*b*) not suffering from any infectious or contagious disease. I am calling for a report in the case referred to, and will communicate with the hon. Member.

Expenditure on Public Assistance.

Sir WILLIAM DAVISON asked the Chancellor of the Exchequer what was the total national expenditure from both rates and taxes on public assistance in 1910 and 1920 respectively, especially under any Acts relating to the Poor-law, education, provision of meals, old age pensions, public health, housing, national health insurance, unemployment insurance, &c.—Mr. HILTON YOUNG replied: The hon. Member will find all the information available set out in a recent return of the total expenditure under certain Acts of Parliament, House of Commons Paper 139 of 1921.

Post Office Medical Appointments.

Sir WALTER DE FRECE asked the Postmaster-General whether he would undertake in future to give preference to all candidates applying for the post of Post Office medical officer who served in the war, even if their absence from home in the service of the State naturally gave them a shorter record of home service in the district.—Mr. F. G. KELLAWAY replied: Service with the forces during the war is regarded by the Post Office as a very important factor when appointing medical officers. But to regard it as the only factor of importance would be detrimental to the medical service. The fact of a doctor being absent from his district during his service with the forces would not be allowed to prejudice his prospects of obtaining a Post Office appointment.

TUESDAY, OCT. 25TH.

Venereal Disease and Divorce.

Mr. RENDALL asked the Secretary of State for the Home Department whether, as the giving of venereal disease by a husband to a wife, or vice versa, could not be made the subject of an action for damages or the sole ground of an application for a separation or a divorce, the Government would propose legislation to amend the law in these respects.—Mr. SHORTT replied: I regret that I cannot hold out any hope of legislation on this subject at present.

Employed Contributors and Health Insurance.

Mr. ALFRED DAVIES asked the Minister of Health whether he had received any protests from approved societies with regard to the circular issued to them allowing to treat employed contributors under the National Health Insurance Act with a certain amount of latitude in the event of the necessary number of contributions not having been paid in consequence of unemployment; whether he was aware that the circular was regarded as inadequate and that certain approved societies were urging the reintroduction of the benevolent fund or the deduction of a percentage of each society's valuation surplus to be placed in a separate fund, so that the liability might be distributed over the whole of the societies and not limited to any particular one whose members had been hardest hit by unemployment: and whether he would give this matter further consideration.—Sir ALFRED MOND replied: It has been represented to me by approved societies of various types that the concession recently made with reference to the arrears of insured persons who were employed for less than 26 weeks in the past contribution year is not sufficient to meet the needs of the case, and the whole question is having my careful consideration with a view to the immediate introduction of amending legislation.

Appointments.

KIRK, JOHN, M.A., B.Sc., M.B., Ch.B.Glasg., D.O.Oxon., has been appointed Honorary Assistant Ophthalmic Surgeon to the Royal Eye and Ear Hospital, Bradford.

THOMAS, W. E., L.R.C.P. & S.Edin., L.R.F.P.S.Glasg., Medical Officer of Health for Bridgend, Glamorganshire.

TURTON, J. R. H., M.B., B.S.Lond., F.R.C.S.Eng., Assistant Surgeon to the Royal Sussex County Hospital, Brighton.

WATKYN-THOMAS, F., B.Ch. Cantab., F.R.C.S. Eng., Assistant Surgeon to the Central London Throat and Ear Hospital.

Bradford Municipal Hospital (St. Luke's).—Senior Physician, WILLIAM WRANGHAM, O.B.E., M.D.Lond.; Junior Physician, W. H. THOMPSON, M.R.C.S.Eng; Senior Surgeon, BASIL HUGHES, D.S.O., F.R.C.S.Eng; Junior Surgeon, COLIN MACKENZIE, O.B.E., F.R.C.S.Eng; Ophthalmologist, G. H. OLIVER, M.R.C.S., D.O.Oxf.; Anæsthetist, W. E. HAYBURN, M.B.Camb.

St. Mary's Hospital Medical School Medical Unit.—LANGMEAD, F., M.D., F.R.C.P.Lond., Director; WILSON, C. M., M.D., B.S., F.R.C.P.Lond., First Assistant; ALPORT, C., M.D., M.R.C.P.Lond., Second Assistant; CALVERT, E. G. B., M.D., D.P.H.Belf., Third Assistant.

Certifying Surgeons under the Factory and Workshop Acts.—MILNE, J. M., L.R.C.P. & S.Edin., L.R.F.P.S.Glasg. (Carnoustie); REYNOLDS, W. A., M.B., Ch.B.Bristol (Paignton); and MCTURK, J., L.R.C.P. & S.Edin., L.R.F.P.S.Glasg. (Newton Stewart).

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary and Cardiganshire General Hospital.—Res. H.S. £250.

Bedford County Hospital.—Asst. H.S. £150.

Birkenhead Borough Hospital.—Jun. H.S. £200.

Birmingham General Hospital.—Two H.S.'s. £100.

Bootle Borough Hospital.—Third H.S. £150.

Bristol General Hospital.—Cas. H.S. £175.

Bristol Royal Infirmary.—H.S. £120.

Bury Infirmary.—Junior H.S. £150.

Cardiff, King Edward VII. Hospital.—Hon. Asst. S.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road.—Second Res. H.S. £75.

Clinical Research Assoc., Adelphi.—Asst. Director of Labs. £250.

Cornwall Education Committee.—Female Asst. Sch. M.O. £500.

Darlington County Borough.—Ven. Dis. M.O. £750.

Dumfries, Crichton Royal Mental Hospital.—Clin. Pathologist. £400.

rapidly to the attack of the fungus as to starve it showed what was called hyper-sensitiveness. What happened was not known; no toxins or antitoxins had been shown to exist, symbiosis appearing to be a delicate balance between physiological processes of the host and the parasite. Where the host plant carried the disease there was a condition somewhat similar to the case of carriers in human disease.

One of the striking things about plant as compared with animal diseases was the absence of known cases of acquired immunity, and, as a result, of true cure. In plant disease no substances had been detected corresponding to antitoxins, bacteriolysins, and so forth, nor was there any evidence of chemical warfare between plant and infecting organism. The cells of the host plant once entered nearly always died; the plant, therefore, resisted disease by keeping the invader out. In man one of the common results of disease was a bodily reaction associated with high temperature and evidence of general poisoning. In plants there was no general reaction; plants were attacked locally and each cell or group of cells fought a lonely battle. As the result of local attack, and the absence of a central reservoir, it was naturally difficult to isolate toxic substances. It had been suggested that botanists might get some help from vaccine and serum therapy, but, apart from the lack of evidence as to the production in plants of immune bodies, no satisfactory means existed of introducing sera or vaccines, there being no blood stream to distribute them. A fundamental difficulty often overlooked was the manner of growth. The plant continuously produced new organs; hence, to be effective, acquired immunity would have to be transmitted to what really was a new generation of the plant.

An Ultra-Microscopic Organism.

A class of disease known as "mosaic" had come to the front in the last few years; it was characterised by alternate patches of light and dark green coloration on the leaves. Known for a long time in plants like tobacco, this disease was highly infectious, although no infecting organism had been observed. In this respect it might be compared with yellow fever or measles. There were many theories as to the origin of the disease, but Prof. Blackman himself believed it to be due to an enzyme, the virus being destroyed by alcohol and other antiseptics as well as by heat. As with yellow fever, mosaic disease was largely carried by insects—namely, aphides. One of the best known cases of symbiosis was that known as *Mycorrhiza*, which actually penetrated and lived inside the cells of roots. Although the host plant controlled the development of the fungus, yet without its presence in the soil the plant did not develop satisfactorily. In one group there was a compulsory association between the fungus and the higher plant; in the case of ling (*Calluna vulgaris*) the seed even would not develop properly without the presence of the fungus. The fungus exhibited the phenomenon of attenuation when cultivated by itself; in symbiosis something occurred like phagocytosis, as hyphæ underwent digestion inside the cells. Stimulus to development, however, took place long before digestion began, and the higher plants could keep the fungus away from the growing points. A Japanese orchid had become so dependent on an invading organism that it had ceased to produce roots and depended absolutely upon the fungus for its water and food. A unique case was that of darnel (*Lolium temulentum*), the fungus being present when the embryo developed, passing through the integument into the interior of the embryo, from which it never emerged.

In conclusion, said Prof. Blackman, in spite of a number of definite points in which plant disease showed resemblance to animal disease, the similarities were less than the dissimilarities. Comparative pathology in the case of plant and animal diseases was still in its infancy.

SMITH'S PHYSICIANS' AND SURGEONS' VISITING LIST.

We have received from Messrs. Hazell, Watson and Viney, Ld., of Long Acre, London, a copy of Smith's Physicians' and Surgeons' Visiting List, which is now in its seventy-sixth year, and is presumably well known to many of our readers. This pocket-book is prefaced by an almanack, and by the usual contents of all almanacks, such as postal regulations, the monthly and weekly value of annual incomes from £1 to £1000, directions for making a will, tables showing the expectation of life, weights and measures, &c. For a more specially medical public suggested scales are given for professional fees, a table of eruptive fevers, and other tables showing average heights and weights of man, and the proper dosage for drugs in proportion to the age of patients. There are also lists of the principal poisons and their antidotes, an elaborate prescribers' compendium, an abstract of the Infectious Disease Notification Act, and a list of benevolent societies having the medical profession as their object.

A large portion of the pocket-book is naturally taken up with a journal ruled for ordinary visits and for obstetric and vaccination engagements, with spaces in which to keep cash accounts. Vacant pages are left for lists of drugs and instruments wanted, and (quite an important matter) for things lent. We have nothing but praise for a handy and comprehensive pocket-book.

X RAY APPARATUS.

We have received from Messrs. Schall and Son a new edition of their catalogue descriptive of the X ray apparatus which they are prepared to supply to the medical profession, and it is accompanied by a note upon X rays in gynæcology and in the treatment of malignant diseases. This interesting note gives a fair summary of the good results which have been reached at the Universities of Erlangen and Freiburg in the treatment of some diseases of women and some deep-seated malignant diseases by X rays, while the catalogue contains full description of the apparatus for the production of rays of suitable power for deep radiotherapy.

BRIGHTON WATER-SUPPLY.

For the first time for 30 years or more the Brighton corporation has been obliged to give only an intermittent supply of water. Street watering disappeared long since, but still the daily consumption in the district showed no diminution, averaging, in fact, 40 gallons per day per head of the population. This the authorities consider represents a considerable waste, and with a shortage of water in the wells the corporation has felt bound to curtail the supply. This is now being done by shutting off the water from the mains daily from 5 P.M. to 5 A.M. The Brighton water-supply is obtained from chalk wells on the South Downs.

THE REAPPEARANCE OF OSCAR GRAY.

To the Editor of The Lancet.

Sir,—The disappearance of a Rugby schoolboy was described in a letter to The Lancet of Oct. 15th, which gave reasons for supposing that it might have been due to temporary mental conditions consequent upon a fall, which, in fact, had immediately preceded it. The boy's absence must have caused acute distress to his relatives, as there have been other disappearances, recently chronicled in the press, for which no solution has ever been found, and which may have had a fatal ending through foul play or otherwise.

Oscar Gray has, however, been found, enlisted as a private in the Royal Engineers. An interview with him in the *Daily Express* assigns military ambition and a desire to earn his living at once as his motives, and records him as saying with reference to the search made for him that it was "very amusing." One of his observations was, "I never wrote to my people, I kept on putting it off. I suppose I had not the imagination to realise how they would be worrying about me." If this boy is a typical schoolboy his performance is a curious revelation of boyish psychology. Lack of imagination may have played its part, but it was combined with a lack of consideration for others which, it is to be hoped, is not characteristic of the younger generation. He appears to have found no difficulty in enlisting under an assumed name, and presumably without any inquiry as to his identity or character. This at his age is a circumstance which seems to require explanation.

I am, Sir, yours faithfully,

Oct. 23rd, 1921. A Parent.

Irish Births and Deaths.—For the second quarter of the present year the birth-rate for Leinster was 23·7, Munster 19·3, Ulster 24·1, and Connaught 18·0—the figures being per 1000 of the population according to the census of 1911. During the same period the death-rate was 15·9, 14·9, 10 1, and 14·5 for the four provinces taken in the same order.

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stones. (Lecture.) 2.15 P.M., Mr. Addison: Operations. 2.30 P.M., Mr. Tyrrell Gray: Visit to Surgical Wards. Dr. Pritchard: Demonstration of Cases, Medical Wards. 5 P.M., Mr. Banks Davis: Nasal Catarrh. (Lecture.)

WEDNESDAY.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children. 11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Tyrrell Gray: Operations. Mr. Gibb: Eye Department. 5 P.M., Dr. Burnford: Diagnosis of Infective Diseases.

THURSDAY.—12 noon, Dr. Scott Pinchin: Disease of the Heart. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Simmonds: Orthopædic Department. 5 P.M., Mr. Donald Armour: Practical Surgery. (Lecture II.)

FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Department. 2 P.M., Dr. Burrell: Medical Out-patients. Dr. Pernet: Skin Department. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 5 P.M., Mr. MacDonald: Hæmaturia. (Lecture.)

SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy Department. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.

MONDAY, Oct. 31st.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., Dr. Moon: In-patients. 5.30 P.M., Lecture:—Dr. F. W. Price: *Angina Pectoris.*

TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.

WEDNESDAY.—10 A.M., Dr. Parkinson, and 2 P.M., Dr. Moon: Out-patients.

THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.

FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Goodall: In-patients.

SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 3rd.—4 P.M., Lecture:—Mr. P. G. Doyne: Squint.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Nov. 3rd.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: *The Pathology of Skin Diseases.*

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children, by Dr. E. Pritchard, to Qualified Practitioners.

WEDNESDAY, Nov. 2nd.—6 P.M., Lecture IX.:—The Tuberculous Mother and Her Child.

FRIDAY.—6 P.M., Lecture X.:—*The Syphilitic Mother and Her Child.*

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Nov. 1st.—4.30 P.M., Mr. W. H. Hey: Recent Advances in Surgery.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURES, Whitworth-street, West Branch, Manchester.

FRIDAY, Nov. 4th.—4.30 P.M., Dr. Clifford: Conditions Simulating Prolapse.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE.

Post-Graduate Lectures and Demonstrations.

TUESDAY, Nov. 1st. (At the Royal Infirmary.)—3.30 P.M., Dr. A. R. Hallam: Diagnosis and Treatment of Skin Diseases in Infants. 4.15 P.M., Mr. T. Mouat: Nerve Injuries.

FRIDAY. (At the Royal Hospital.)—3.30 P.M., Dr. A. E. Naish: *Demonstration of Children's Diseases.* 4.15 P.M., Mr. F. Wilson: Surgical Aspects of the Hip-Joint in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.

A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.

WEDNESDAY, Nov. 2nd.—4 P.M., *Lecture III.*:—Dr. H. M. Vernon: The Influence of Atmospheric Conditions on Industrial Efficiency.

THE annual dinner of the medical staff of the Central London Throat and Ear Hospital will take place at the Trocadero Restaurant on Thursday, Nov. 3rd, Dr. Andrew Wylie presiding.

CONVALESCENT CARE FOR ARMY NURSES.—A Red Cross holiday hostel for nurses and V.A.D. members is to be opened at St. Helena's, Folkestone, on Nov. 1st. The hostel will be staffed by V.A.D. members recently returned from France, and the warden is an ex-Army matron. Guests will remain for a month, or longer if necessary, the prices charged being reasonable. There is a compassionate fund at the Red Cross headquarters, from which grants can be made to cover visits to convalescent homes and for supplementary treatment.

Notes, Short Comments, and Answers to Correspondents.

INCITAMIN:

A NEW REMEDY FOR THE TREATMENT OF SLOWLY HEALING SORES.

BY PROF. J. F. FISCHER,
DIRECTOR-GENERAL AT THE MUNICIPAL RONTGEN CLINICS OF COPENHAGEN.

ON the introduction of the antiseptic method, when the primary healing of ulcers became the rule, the administration of ulcer remedies had to be considerably limited, and they were likewise to a great extent modified and simplified. There are, however, many ulcers which, owing to their situation and nature, cannot be treated antiseptically, and, notwithstanding the very considerable progress made in local treatment, we still have to contend with ulcers which only heal with difficulty and to which one treatment after another is applied in vain.

During many years' work as an X ray therapeutist, I have been sometimes confronted with the task of having to treat deep, gangrenous, very painful, necrosed ulcers with a minimal healing tendency, the chronic course of which is the despair of both patient and physician. When treating such ulcerations, where nutrition of tissue is exceedingly slight and the regenerative power almost lost, every generally applied remedy is tried in turn; if the necrosis is deep-rooted, the treatment will, as a rule, prove useless, but continuous treatment lasting years may now and then lead to a satisfactory result, or the object may possibly be attained through an operation.

A patient who had on the back of his hand an ulcerous cancer slightly larger than a penny (the only possible form of operation being an amputation) was first treated with radium, and thereafter with X rays. Though the growth proved only very slightly radio-sensitive, and the radiotherapeutic result could not consequently be very encouraging, treatment was nevertheless continued for a rather long period, at the earnest request of the patient. The consequence of the prolonged treatment finally became apparent, the irradiated part being transformed into a deep, fœtid ulceration, with necrosis of the sinews and denudation of the osseous tissue at the bottom. This deep ulceration was found to be considerably larger than the original tumour, and the question of amputation was no less remote than before. During my attempts to heal this ulcer—which presented a problem apparently insoluble—I had ample opportunity of studying the effect of the various methods, and in this case I first used a preparation made up on the basis of previous experiences. To this preparation, gradually altered in composition, I later gave the name of "incitamin," as I consider its main effect to be founded chiefly on an incitation of the sound tissue.

Results Gained by Use of Incitamin.

The application of this remedy produced a most surprising result; the necrosed tissue sloughed away, the fœtid odour disappeared, and in the course of some months the ulcer healed, except in two bean-sized places at the bottom of which were found partly relaxed sequestra. In this state the ulcer remained unaltered for a long time. The sequestra, displaying no tendency to slough, were removed by an operation, and the microscopic examination proved that they contained cancerous tissue.

Highly encouraged by this case—where, contrary to my expectations, a healing of the sore had occurred, except in the places where the malignant tissue had not yet been destroyed—I have during the last eight or nine months made use of the preparation on other ulcers of a more or less chronic nature. Altogether I have had the opportunity of completing the treatment of about fifty patients. Space will only permit me to record some few of these cases, and only the essentials of each case have here been noted. The preparation is referred to in the reports as "Fischer's fluid."

CASE 1.—M. G., female, aged 42, unmarried; X ray, late ulceration. Treated from March to June, 1919, for fibromyoma uteri. Received during the three months on each skin area 15 Holzknecht units, beneath 4 mm. aluminium filter. Three seances. Distance 28 cm. In November of the same year the skin on the right side of the abdomen became much infiltrated and red; here a very painful and progressively deepening ulceration was formed. There was no irritation in any part of the irradiated skin. Was treated with ordinary remedies without success, the pain continuing the same. In March, 1920, the ulcer had the extent of a hen's egg, with infiltrated, undermined edges, and in this case be preferred to a gift of facile teaching; if both cannot be had. The Unit may not teach much directly to the undergraduate, but it will form his teachers and "create an atmosphere." Those of us who had not such advantages—at any rate not at home—found out to our shame that on the old individual system it took us a quarter of a century to learn how to teach the beginner. And, as Dr. Wilson admirably says, in the Unit there is something more than the craft teaching—"nothing is so important (to the students) as the mute example of the lives of their teachers. . . . . that they should have in their midst a body of men whose lives are given to something other than the lucrative rewards of private practice."

And as for the Director, so for his associates; the settled work of the unit brings many blessings with it—not least a relief for a while from care and fuss, from hustling advertising methods, and anxious pressure towards premature publication. The organised worker has time to read and, what is better, to think, to assimilate new knowledge in meditation and converse, to sweeten his mind in familiarity also with art and letters; on the other hand, he has not to grudge the time for the prosecution of the more tedious and elaborate methods which make for thoroughness. If we fail to secure Directors having these ideals and qualities, the great expense of their institution will, as Dr. Wilson says, be wasted. Such a waste is to be deprecated at any time, at this time it is perilous to the whole movement. No risks must be run while parsimony is to begin, not in the fortresses of material ascendency, but upon the finer issues of the human spirit—in education, in health, in the finer arts, about which the public is supposed to be less vigilant.

ELECTION OF DIRECTORS.

The difficulty of securing Directors such as we desire suggests a few remarks on the mode of their election. It is easy now, when good appointments have been made in the London University, to say, nevertheless, that the mode leaves something to be desired. At present the election is virtually in the hands of the honorary staff of the hospital concerned. It is true that hitherto the hospital staffs have used their power loyally and with moderation; but this gives us no guarantee for the future. In the London University it would be better for the Senate to establish standing election committees, renewed by rotation, of independent—that is, ad hoc unofficial—persons of distinction in the several parts of Medicine. The hospital staff would thus be relieved of the duty not only to consider the claims of particular interests or promotions, but also those of past services or private friendships.

On the distribution of the teaching of the hospital I venture to formulate some definite principles. We are not to suppose that, in medicine, surgery, or gynæcology, to establish the Unit is to disestablish, or even to diminish, the teaching of the rest of the honorary staff. In my view of this matter the teaching of the undergraduate would remain almost wholly with the honorary and resident staff, as in the past; though the several parts and methods of it should be distributed and organised in some close dependance upon the Unit. Advanced instruction in the specialist departments would be in intimate association with the Unit. Do we not foresee two kinds or varieties of teaching, each to be distributed to its own quarters? The undergraduate knows that his time is short, and examinations near ahead; he wants his instruction to be precise, terse, and dogmatic; he is not ready for twilight apprehensions, nor for tentative and balanced judgments, nor for adventures on the outskirts of the known. He is apt to call them "rot." What he wants he will get better from the less speculative and more empirical side of the house. As I have said, our English teaching is for the prentice stage excellent, perhaps incomparable: do not let us disturb it. The director of the more advanced work, the team-work, will gather about him rather the pioneer squadron, the graduates who need "refresher" courses, men who have gained time and self-control enough to let loose a little imagination; he will attract the foreign visitors, and draw to his side—let us hope—some of his own honorary colleagues. Bence-Jones's frequent introduction of eminent foreign professors is among my happiest and most fruitful recollections of St. George's. Such an audience, such disciples, will be numerous enough to make the Directors' classes as large as they ought to be. And besides these there will always be borderers, half-ripe students moving between the junior and senior sides, who will blend the teaching into a whole, and diffuse the "creative atmosphere," the breath of the spirit on the face of the waters. If I may allude to my own experience, the Directors will do wisely to make place incidentally for their brother directors of pathological and biochemical laboratories to address the classes on special or more knotty points of their several subjects. Thus the senior student is led to recall his half-forgotten drills and discarded text-books on physics and chemistry, to realise the unity of all these sciences, to discover in their search the omnipresence and omnipotence of surface actions, of ions, of catalysis, of colloid and other molecular chemistry, and so forth. Thus they learn also that to look forward they must continually look backward and beneath. Nevertheless each unit should be provided with its own small laboratory for current work; the larger or more continuous work being consigned to the central laboratories. Indeed, the unit laboratory will be rather differently schemed and more specifically furnished. It can hardly be said as yet to exist in English hospitals, and abroad it is often too far from the wards. One general feature of the unit teaching however there must be which I would not overlook—one of wider appeal. The Director in each clinical department should be expected to give a clinical lecture—say once a week—in the chief theatre, generally with a patient before him; lectures which should be open free to all and any hearers, lay or medical (many biologists, &c., are not doctors), who may choose to attend. Such lectures should be milestones on the pathways of hospital research, and, as they would need careful and leisurely preparation, one public lecture a week in term from each director is all that should be required. I would urge also that, if possible, *a pupil of any one Unit should be made free of all Units*, London and provincial.

THE OUT-PATIENT DEPARTMENT.

Now let me touch upon—I need do no more, as Dr. Wilson has made mention of it—a cardinal feature in the new system—namely, a radical reform of the Out-Patient Department. The changes needed, and the main lines of them, are, I think, so well recognised that I need not stay to dwell on them. But in view of these changes let us not, as Dr. Wilson warns us, overload the Directors with beds. The Director ought not to be burdened with routine, and the out-patient work, with its "beginnings of disease," will occupy much of his attention. One might suggest 40 beds, male and female, as sufficient if, by the courtesy of his colleagues, he is offered some selection from the other beds in the house. By their aid he would be enabled to group cases along special lines of research. The intention is, I hope and believe, especially in the out-patient rooms, to invite outside practitioners to make use of the hospital for consultations in necessitous cases; and further perhaps, under some system of payments, for opportunities of hospital resources, such as X ray work, cardiography, blood culture and morphology, metabolic rates, biochemistry, and so on for patients in less narrow circumstances. In these days of insurance, when almost everyone has his doctor, an office notice should be sent of every in-patient reception to the family practitioner, with a statement of the hours of attendance of the consulting staff and an invitation to attend if he wishes to do so. The wish would grow. We do not realise the waste and mischief of dismissing a patient after (say) eight weeks or more of elaborate investigation and treatment, often indeed has naturally been temporary, although as an anodyne and cleansing agent it has not been without effect. In strongly suppurating ulcers incitamin is not particularly indicated, its domain being pre-eminently the torpid, stagnant ulcerations. In syphilitic and tuberculous sores the remedy does not produce any great effect. But in ulcera cruris incitamin has, on the whole, proved very satisfactory. The recorded cases prove that ulcers of long standing, uninfluenced by all other methods, have been healed with comparative rapidity through treatment with incitamin. With regard to tibial sores, the aim is to have them healed while the patients are yet in motion. If they heal during confinement to bed, the risk of relapse when the patient gets up is very great; ulcers treated with incitamin may be more secure against relapse than those healed in another way, but the healing is not fully reliable. Confinement to bed cannot, as a rule, be avoided at the beginning of treatment, but when the size of the sore has obviously diminished—i.e., when the growth of fresh epidermis is progressing—the patient should get up for increasingly long periods every time, in order to proceed to ambulatory treatment as soon as possible. I have sometimes carried a successful treatment through outside hospital by means of home nursing.

At the beginning of this article I mentioned that my interest in the question of a vulnerary remedy which would effect to a higher degree than those hitherto employed, the generation of tissue, arose through my dealings with ulcers which both as regards pain and healing tendency proved intractable within a reasonable period. The usual inorganic preparations and vegetable infusions (the latter in several cases proving superior to the former) proved, on the whole, to be of so little use that I experimented with other preparations, and ended by treating these ulcers exclusively with animal-organic substances. As appears from the above, my work in this direction has not been without success.

Composition of Incitamin.

My attention has chiefly been directed towards extract of the pancreas, pepsin with its tissue-conserving qualities, saliva—which so far as animals are concerned plays a part in the healing of sores—and towards serum. I shall not enter more closely into my numerous experiments—some satisfactory, others futile—the result of my researches is the organic preparation, usually referred to as Fischer's fluid, to which I have now given the name "incitamin."

This preparation is composed of horse serum treated with trypsin and freed from coagulable substances, horse saliva, and carbolic acid. The composition is about to be altered, and I cannot at present give it more exactly. The preparation is now produced under my personal supervision, and may be obtained from Serpens, Ltd., Christianiagade 16, Copenhagen.

Incitamin is a colourless or slightly yellowish, not quite clear fluid; after standing for some time it deposits a sediment, but is not thereby rendered less useful. The durability of the preparation has been tested by keeping it for a considerable time in a thermo-state, but it is always safer to keep it in a cool and dark place. It is non-poisonous when the method of producing it prescribed by me is followed; this fact is sufficiently demonstrated by the extensive controlled use made of it. In the preparation of incitamin certain precautions must be strictly observed; and for this reason every bottle will therefore be provided with a control number which guarantees that the preparation has been tested by injection into mice and guinea-pigs, and in other ways. Incitamin is administered in the form of poultices in such a way that a thick, well-wrung gauze-compress, a little larger than the sore itself, is placed on the sore and covered with a waterproof substance, preferably gutta-percha paper, the whole being kept in place by a dressing. The dressing is changed every morning and evening, but more frequently if there is much suppuration or any pain. Any cavity in the ulcer must be filled up with gauze, moistened with the preparation. As a rule incitamin does not irritate the skin surrounding the sore; even if—as often occurs with ulcus cruris—the skin is atrophic, there may be a beneficial effect. Any irritation of the skin may be treated with an ointment, but the latter must not reach the edges of the sore. Incitamin is counter-indicated where idiosyncrasy for carbolic acid is present; but carbolic acid is only present in ½ per cent.—and in none of those treated by myself have I found idiosyncrasy.

For assistance rendered me in preparation of the remedy my thanks are due to Mr. Marcussen, chemist. I must also thank the senior physicians who have permitted trial of the remedy in their wards, especially Dr. P. N. Hansen, chief surgeon, and Dr. H. Bing, senior physician, who has in many ways rendered me valuable assistance.

Rescue Work in S. Africa.—Dr. L. G. Irvine's book on First Aid and Rescue Work in Mining, reviewed in THE LANCET of Oct. 8th, may be obtained in London from the Technical Bookshop, Salisbury House, London, E.C. 2.

COMPARATIVE PLANT PATHOLOGY.

IN his Chadwick Lecture on Plant Diseases and their Relation to Diseases in Man, delivered before a large audience in the lecture room of the old Chelsea Physic Garden on Oct. 20th, Dr. V. H. Blackman, F.R.S., professor of plant physiology and pathology in the Imperial College of Science, attractively set out the resemblances and differences between disease in the animal and the vegetable organism. There was, he said, great variety in the degree of anatomical association between host and parasite. Sometimes the actual parasite merely lived on the surface of the leaves or other parts of the plant, any injury being mainly indirect, either by blocking the pores or by obstructing light. There was a closer association when the surface parasite by means of suckers took nourishment from the host. A more intimate degree was shown by the parasite which actually lived within the plant. The main part of the fungus might live in the intercellular spaces, putting out suckers to absorb the nourishment of the living cells; or the parasite might live wholly inside the cells. Some of these conditions were illustrated on the screen by microscopic sections of *Plasmodiophora brassicæ* (club root), which attacks turnips, kohlrabi, and other cruciferous plants, causing tuber-like swellings.

Physiological Association.

Plant disease, the lecturer went on, was simply abnormal physiology, and the most promising line of investigation involved the question of physiological association. Some associations could hardly be called parasitical—when, for instance, the invading organism lived on the products of death, or when two organisms lived together to their mutual advantage. He would take two cases from the extreme ends of diseases as shown in plants. When a plant was attacked by grey mould (*Botrytis cinerea*) the threads of the fungus penetrated the tissue of the host in all directions and brought about the death of the plant tissues. The cells of the host were reduced to a mere mush, the killing action being due to secretion by the hyphæ of an enzyme which dissolved the cell walls. It was not necessary for the cells to be penetrated as the hyphæ could kill at a considerable distance; the fungus really lived on dead tissue and was therefore hardly a parasite at all. How did it get into the tissues, to do which it was necessary to penetrate the cuticle covering the leaves which acted as a barrier against invading organisms? The fungus had either to force the barrier or turn it. The spore of *Botrytis* threw out a tube surrounded by a gelatinous layer, with the help of which the tube attached itself to the leaf and forced its way through the cuticle. It was not till the tube had got through, that chemical action occurred and the cells were killed; the cuticle prevented any action by the enzymes. The physiological relations of *Botrytis* were thus very simple; it mechanically forced its way into the plant, when the enzyme which it secreted killed the cells and the fungus lived on the dead matter. An example more physiologically complex was afforded by the rust fungi (*Puccinia*), the highest group of true parasites. They had no gelatinous sheath and a totally different method of penetrating the tissue of the host. They did not force the barrier, they turned it. The spores sent out germ tubes along the leaves of the host until they found a stoma which was entered, whereupon the hyphæ came in contact with the cells and abstracted nourishment from them. So far from the cells being killed they were stimulated by the presence of the fungus and proliferation of the tissue followed. This presented one of the great difficulties in studying plant disease, for symbiosis often developed. In the present case the fungus was the dominant partner. After a time certain changes took place in the cells; they became disorganised and died, and the symbiosis passed into a condition of true parasitism. Knowledge was needed of the process which led to harmony at the beginning and later on to disharmony.

Defence Against Disease.

What defence had the plant against such diseases as these? The *Botrytis* forced the barrier, but if the cuticle was resistant enough a fungus could not get in. In some cases the chemical nature of the cell wall was such that the plant could not be attacked. The cuticle also played another part. The fungus cells could not penetrate unless supplied with nutriment, and the supply was related to the degree in which the cuticle allowed the diffusion of substances out of the leaf. This was illustrated on the screen by slides showing that germination of spores on glass produced very short hyphæ, on a rose petal they were longer, and on a cactus longest of all, since the cactus supplied the most food.

In discussing the defences of higher plants against disease, the lecturer said that many forms of *Puccinia* attacked cereals and different wheats showed varying degrees of immunity. Almost any rust fungus could enter almost any leaf, but unless the plant was susceptible the fungus did not inoculate the leaf. Tissues which succumbed so and deeper study; a difference which is perhaps coming about, more or less undesignedly. In any case the universities must not trifle with their standards. At the Congress of Universities at Oxford, on July 8th, 1921, Prof. Joly dwelt on the educational value of even elementary research. He said: "I believe the outlook of a student who has carried out one single research of an elementary kind is different from that of one whose outlook is derived solely from the text-book and the examination. He learns first hand the mental point of view of the investigator. He gets ideas of scientific truth, and of the legion of errors which lie in wait around it, as may in no other way be acquired. He sees the plausible prima facie conclusion break down under the control experiment, or in the light of the inexorable requirements of other participating laws of nature." This lesson we learn in Cambridge from our M.B. and M.D. theses; the student who has done no more than work up an M.B. thesis has awakened in himself a new faculty; he is a new man.

WHOLE-TIME AND PART-TIME.

One point of Dr. Wilson's article only remains: Is the director of a Unit to be a "whole-time man" or a "part-time man"? It may seem that with the growth of a reputation outside the hospital the temptation to strain a permission to accept outside calls would become irresistible. Again, it is said that the public have some claim on a physician or surgeon of exceptional skill; and furthermore that some outside experience gives the professor a wider view of life, and makes for gentleness and humanity. These last qualities surely have a rich soil for growth in the hospital itself. From my knowledge of foreign clinics, where the professoriate is generally on unit lines, I believe that usually some outside consultations are permitted; yet I am assured, on good authority in many cities, that no misunderstandings arise. The outside fees are pitched high, the professor has work enough to make him indisposed to add largely to it, and he gains moreover an affection for his clinic and a love for research which tend to keep him at home.

Finally however we shall abide by Dr. Wilson's counsel to go slowly, learning our way as we go; that we may develop a system, not in facile imitation of other countries and conditions, but in harmony with the needs and temperament of our own people.

PS.—The important memorandum presented to the University Grants Committee by Sir Wilmot Herringham and Sir Walter Fletcher on their return from the United States in May, 1921, came into my hands after this article had gone to press. All I can now do is to desire for it universal attention; and not in our profession only. It is an encouragement to find that the opinions and counsels of the authors are in close accord with my own.

THE FIRST

Mitchell Lecture

ON

TUBERCULOSIS:

ITS RELATIONS TO GENERAL BODILY CONDITIONS AND TO OTHER DISEASES.

Delivered on Nov. 1st, 1921, before the Royal College of Physicians, London,

BY F. PARKES WEBER, M.A., M.D., F.R.C.P.,
PHYSICIAN TO THE GERMAN HOSPITAL, LONDON; FORMERLY PHYSICIAN TO THE MOUNT VERNON HOSPITAL FOR CHEST DISEASES.

PRESENT POSITION OF TUBERCULOSIS PROBLEM.

MY lecture consists mainly in explanatory remarks on some of the main points of the modern tuberculosis problem, illustrated by the relations of the disease to other diseases and general conditions of the body.

The results of clinical observation and experimental research seem to show that tuberculosis, which Sir Robert Philip terms "a vicious by-product of an incomplete and ill-formed civilisation," is—if all "carriers" of tubercle bacilli and all cases of latent tuberculosis be included—so widely spread in the civilised communities of the world that it would be far more reasonable to try to segregate those individuals who have escaped infection than those who have been infected.[1] On the other hand, amongst civilised communities the mortality from tuberculosis seems to be gradually diminishing, apparently as a result of: (1) Relative immunity to "massive" infection, due to infection during early life with minor forms of the disease; (2) diminished frequency of "massive" infection—a result of the modern application of hygienic preventive measures; (3) increase of the general standard of health—less poverty, less overcrowding, less overwork, better food, and better air.

In civilised communities infection (according to the results of von Pirquet's cuti-reaction and similar tests) chiefly takes place during childhood, the occurrence of congenital tuberculosis being so rare (see further on) that it is practically negligible. Apparently the initial infection generally escapes attention, and the disease is at once more or less effectually resisted by the natural vital processes of reaction in the body so that it remains permanently latent, the tubercle bacilli becoming quiescent or gradually dying out altogether. Obviously, all state or national anti-tuberculosis schemes should include special attention to the welfare of children (especially the children of the poorer classes): (1) by furthering their general health; (2) by diminishing the chances of "massive" and frequently recurring infection—for example, by removing them (as is done by the French "Œuvre Grancher") from parents and others suffering from "open" tuberculosis; and (3) by methodically looking out for the first signs of infection and by employing the best means to oppose the disease directly that the first signs of infection are discovered. The tendency to suffer from severe or fatal tuberculosis probably varies somewhat according to inheritance (families and races)—that is to say, owing to a process of Darwinian survival of the fittest amongst communities which have been long exposed to tuberculous infection (Karl Pearson, &c.). Doubtless, the chief reason why the disease especially often tends to assume a grave, rapidly progressive and fatal form in members of primitive communities is that they have hitherto escaped infection (owing to want of exposure) and in their resulting unprotected condition have, on their coming to live in towns or coming in contact with cases of open tuberculosis, been exposed to "massive" infection, just as unprotected children are exposed to "massive" and recurring infection by close contact with tuberculous parents, nurses, &c. (suffering from active and "open" tuberculosis).

Routes of Entry of the Tubercle Bacillus.

The most important routes by which tubercle bacilli gain admission to the body are by inhalation through the air-passages and by the alimentary canal. I may mention here that the placental route (congenital tuberculosis) is so rare that in 1916 I was able to collect practically all the known examples (published in various countries) into a short article on the subject.[2] It is doubtful whether infection ever takes place from man to woman by the genital route. The bacilli very seldom enter the body by way of, or through, the skin, but infection by this route has probably occasionally occurred, for instance, in connexion with the operation of circumcision, by chance wounds, or by direct cutaneous inoculation in various ways. In patients with lupus vulgaris or "scrofulodermatous" lesions, who likewise suffer from tuberculosis of the lungs or other internal parts, the infection with tubercle bacilli has almost certainly been much more often carried from the internal parts to the skin than from the skin to the internal parts.

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Some Comments
ON
CLINICAL UNITS.

BY THE RT. HON. SIR CLIFFORD ALLBUTT,
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IN the issue of THE LANCET for July 2nd of this year (p. 33) Dr. C. M. Wilson, of St. Mary's Hospital, published certain reflections of weight and importance on this subject. I have been invited to make some comments on Dr. Wilson's article, and to express a further opinion upon this new system—new in England—of medical teaching and research. Dr. Wilson's article is so far-sighted and even-handed, so well balanced between the ideal and the practical, that if I may venture to comment upon it, and to underline it, I can add nothing. How then for the best is the new system to be constructed, and to be used for these ends? We all agree that, in advanced work, teaching, if it is to be effectual, must be inspired by research; and, to most researches at any rate, teaching, if not too elementary or too laborious, is one of the incitements.

Some years ago, in the pre-war period, Sir William Osler wrote to ask me to take part in an endeavour to attract to English schools some of those overseas students who then were betaking themselves to Paris, Berlin, or Vienna; but hardly deigned to visit our medical schools, even on their way. With these aspirations I agreed, warmly agreed; but argued that these visitors would come here when there was something definite to come for, and not till then. In those continental capitals, as also in the New World, Medicine was taken seriously both as science and art; as seriously, let us say, as astronomy, engineering, chemistry, agriculture, and so forth. In these and other vocations, to teaching and research highly qualified men were giving their lives. In like manner, in the foreign cities, scientific medicine was in the hands, and under the influence, of a professoriate. Yet the visitor to a great London hospital school would then have found some admirable elementary teaching for junior classes it is true; but that for the eminent men of the staffs, men whose names were household words, the hospital visit was but a part, indeed a secondary part, of their calling. As things were, the main time and available energy of these masters of their craft were spent, and necessarily spent, not in the medical school but in Harley-street. Their hospital teaching was but a scattering of crumbs from their tables. In a short hour or two the visitor would pick up some impressive and sagacious remarks; aphorisms worthy of Hippocrates; thoughts distilled out of a large empirical experience and great personal qualities; but to leisurely and systematic clinical research, to patient devotion in clinical investigation, there was hardly a pretence. Nor was any one member of a hospital staff made personally responsible for the coördination of the clinical studies. Osler's brief reply was characteristic of him: "I am showing your letter to X., Y., and Z.; it will do them good." I need not occupy space in saying how, under one influence and another, a revolution is now coming about in certain large hospitals; a professoriate has been founded in their schools, and systematic progress is being made.

PRACTICAL *v.* THEORETICAL.

There is an old and perhaps perennial schism between the "practical man" and the "man of theory"; indeed, the word "theory" has become almost a term of abuse. Each has some right on his side, and the "practical man" is well aware of the right on his own. But in our time the development of the physical sciences has become an essential condition of congregation in large cities, as essential as was magic in the welding of primitive folk; and as under this urgency the strides they have made have been enormous, the contrast has become more and more vivid; the theoretical man is regarded as a child in affairs, the practical man as a "muddler through." Thus in our profession the practical, that is the clinical, man declares that he has little use for the laboratory, while the scientific physician is apt to regard the clinician as a mere empiric. Yet, if there are truths and values on both sides, we must try so to blend these opposites that each may enlighten and reinforce the other.

For it is true that if the two methods are not radically different they are somewhat divergent. The scientist, seeking for a "shorthand" expression of a series, must proceed by selecting those features of things which they have in common, and by neglecting those which are individual. He empties out the peculiar features which to the clinical man are precious. To the scientist values are irrelevant, the clinical man thinks that it is only in *being* that one thing is better than another; the scientist delights in the width of his comprehension of things, the clinical man tries to penetrate into the innermost recesses of the personality, and finds it to be no less inexhaustible. Moreover the practical man complains that the scientist encourages the student to evade the discipline of particular diagnosis by instrumental short cuts. Happily however the majority of physicians are neither mere scientists nor mere clinicians, but partake of the qualities of both characters. The ideal therefore that we have to aim at is so to educate the student—graduate or undergraduate—that he shall not be a scientist detached from individual instances, but, whatsoever his calling, a practitioner; a practitioner however whose clinical observation and invaluable traditional rules of thumb shall be enlarged and corrected by the breadth, the methods and the accuracy of analytic science. How is this end to be attained? To answer this question Sir George Newman and the Clinical Units are addressing themselves, and Dr. Wilson is examining their position and prospects.

COMPOSITION OF A CLINICAL UNIT.

In any field of science and practice a small school must depend on the chances of individual leaders; but for the growth and advance of a large school the "spearhead" must be forged of more permanent and more various materials. The leader must not be superseded; he must become the foreman of a team. Such a combination is called the "Unit"; and the members of it are in union to fortify, inspirit, and supplement each other in the search for and discovery of knowledge. This function, if less directly engaged in the teaching of students, yet makes for the life and increase of the whole school. In Medicine there has been, indeed, a great waste of workers. Young graduates of ability, attracted by the life and movement of the school, and unwilling to pass away at once into the somewhat superficial routine of practice, too often, during the most precious years of their lives, have been left to hover about the field while they ought to have been in the thick of the battle. These men are now to be welded into the spearhead, and will do brave work; helping on the cause, and training and storing their own minds before settling down to more material engagements.

But who are to be the leaders? I am tempted to go so far as to say that, if possible, a school should not construct, or renew, its unit until it sees, within or without its own walls, the man it needs. It must have the foresight to discover its new leader among the young men, say under 40 years of age; the leader should not be a mere clinician, nor merely a laboratory worker, but one who has a "footing in both camps," and knows the scope and power of each. He should produce evidence of work, not merely diligent and incidental, but systematic, consistent, coherent, and imaginative; work showing both grasp of detail and breadth of view; and above all he must have in him the fire to kindle other men. These qualities should peritoneal tubercles. In the same way a temporary tuberculous bacillæmia may lead to the development of single or multiple tuberculous foci in various parts of the body—lungs, bones, urogenital organs, choroid tunic of the eye, &c.—which may or may not ultimately (directly or indirectly) give rise to grave trouble. A minute subpleural tuberculous focus, arising in the same way, may become quiescent or obsolete, and yet (as I shall further on endeavour to explain) subsequently give rise to an attack of pneumothorax.

INFLUENCE OF OTHER DISEASES ON TUBERCULOSIS.

Besides the general conditions of nutrition and specific immunity already referred to as favouring or opposing tuberculosis, the latter disease may be influenced by other diseases. I discussed the evidence on this subject in 1901, in a paper on the "Relations of Tuberculosis to other Diseases,"[7] and since that time I have, of course, observed other illustrative cases and have collected many additional references on the subject, which, however, I cannot fully enter into here.

Diabetes; Syphilis, &c.

The condition of the blood in diabetes mellitus, when there is hyperglycæmia, has been supposed to favour the growth of tubercle bacilli,[8] and the emaciation due to the severer forms of the disease has been supposed to lower the general resistance of the body towards tuberculosis and some other infections. But the severer forms of diabetes mellitus occur especially at youthful ages, when grave pulmonary tuberculosis is likewise rather frequent, and the less severe forms of diabetes mellitus in older persons seem to be by no means specially associated with tuberculosis. The wasting due to diabetes insipidus has been similarly supposed to favour pulmonary tuberculosis, but in certain cases the diabetes insipidus itself has seemed to be caused by tuberculosis in some way affecting the posterior lobe of the pituitary gland.[9] Syphilis, by producing a condition of cachexia, is said to favour tuberculosis, but syphilis is often unaccompanied by any cachexia, and I am by no means satisfied that it always increases the gravity of tuberculosis when both diseases are present together. True syphilitic cachexia is, I think, relatively rarely seen nowadays. It is, indeed, astonishing to note how generally "well-nourished" old syphilitics often appear. Septic counter-infections apparently favour the re-awakening and dissemination of old tuberculous foci, as traumatism[10] (contusions, &c.) may also do. I am inclined to think that the presence of old quiescent tuberculous pulmonary lesions of moderate degree does not greatly increase the gravity of attacks of pneumonia and the pulmonary complications of epidemic influenza, if the influenzal infection does not re-activate the tuberculous lesions. There is a general idea that alcoholism diminishes the resistance of the body towards tuberculosis. Broken-down alcoholics furnish favourable soil for the extension and dissemination of tuberculosis within the body, but doubtless the effect of alcoholism in regard to tuberculosis is largely an indirect one—connected with neglect of (or want of) general hygienic conditions, poverty, &c. Unfortunately, the young children of alcoholics may be adversely affected by the same indirect influences, and become thus likewise predisposed towards tuberculosis, because of their alcoholic parentage.

Hepatic Cirrhosis.

The relation of tuberculosis to hepatic cirrhosis in human beings has been the theme of many clinical and pathological reports; and investigations—chiefly experimental—in animals have been undertaken to elucidate the subject, a subject which was concisely summed up by Sir H. D. Rolleston in 1912.[11] The published literature would fill a large volume, but an elaborate analysis of it was made in 1914 by S. Schönberg,[12] who also contributed some original work of his own. It is probable that tuberculosis, as well as many toxic conditions, especially those directly and indirectly due to alcoholism, favour the development of cirrhosis of the liver. But various forms of hepatic cirrhosis, with or without jaundice,[13] may be a direct result of a chronic tuberculous process within the liver itself, associated with tuberculosis in the territory of the portal circulation or elsewhere in the body. For the development of cirrhotic changes a local vital conservative reaction is, of course, necessary. When the liver is unusually deficient in resistant power, obvious macroscopic caseous changes may occur, and, as is well known, in terminal cases of miliary tuberculous dissemination it is usual to find tubercles present on microscopical examination of the liver. A tuberculous cirrhosis may result when the tissues are very resistant towards the tubercle bacilli, or when the latter are few in number or of low virulence.[14] In connexion with tuberculosis a terminal toxæmic jaundice with hepatic atrophy occurs in rare cases.[15]

This subject is connected with that of the rôle of alcohol in the production of hepatic cirrhosis. Chloroform and various other toxins have been proved, by experiments on animals and by accidental occurrences in human subjects, to injure the liver so as, in "massive doses," to give rise to acute or subacute necrotic parenchymatous changes—and probably, under certain circumstances, to bring about chronic cirrhotic changes—for instance, if administered in smaller repeated doses (that is to say, when chronic reactionary processes are set up in the tissues). Undoubtedly, alcohol is one of those toxins which can injure the liver (though probably its injurious effects vary in different individuals), but its direct rôle in the production of cirrhosis has been over-estimated. Cirrhosis of the liver may arise, altogether independently of alcohol, from various known and unknown causes. On the other hand, alcoholism probably tends to diminish the resistance of the hepatic tissue (as if it dulled the sensitiveness of the cells and lowered the rapidity of their reaction) towards various pathogenic microbes, including tubercle bacilli, and enables the microbes to remain alive in the liver and thus (when not virulent enough to cause extensive cell-necrosis), to set up chronic reactionary inflammatory and sclerotic changes. Alcoholism is now becoming much less frequent in most parts of the world, and the effect of this circumstance on the frequency and types of hepatic cirrhosis will furnish an interesting and important field for future observation and investigation. As the rôle of alcohol becomes less and less, the other factors in the causation of cirrhosis will probably become more manifest.

Hodgkin's Disease; Heart Disease, &c.

In spite of the view that Hodgkin's disease (lymphogranulomatosis maligna) is intimately—and perhaps causally—allied to tuberculosis, I do not think the obtainable clinical and pathological evidence and the ordinary experience of hospital physicians point to much real relationship between the two diseases. The two diseases may certainly be both present together, because Hodgkin's disease often shows itself in early adult life when grave pulmonary tuberculosis is common. Neither do I think that there are any special relations between tuberculosis on the one hand and the various forms of carcinomata and sarcomata on the other, though carcinomata most commonly occur in persons beyond the period of life at which grave tuberculosis is most frequent. In regard to heart disease everyone must admit that pulmonary tuberculosis in an active stage is very seldom found (clinically or by post-mortem examination) in persons with mitral valve disease and chronic passive hyperæmia of the lungs,[16] but the supposition that patients with congenital pulmonary stenosis who reach the age of puberty mostly die from pulmonary tuberculosis is probably incorrect. In former times the latter patients were doubtless often kept, as many chronic invalids, under unhygienic conditions (in insufficiently ventilated rooms, &c.), specially favouring the onset of pulmonary tuberculosis. At present they not rarely die from super-added malignant endocarditis. In connexion with this subject it must not be forgotten that heart disease in rare cases is due to an active cardiac tuberculosis.[17]

Gout; Renal Disorders.

Active pulmonary tuberculosis is seldom found in gouty subjects or associated with true granular kidney, though at post-mortem examination in such cases fibrotic patches in the lungs may point to a active tuberculous disease having been formerly of grave or crucial operation, and then leaving the home doctor in the dark to pick up the broken threads as he can. Moreover, with his aid the "following up" of patients will be made easier and more perpetual.

On the medical side I am strongly of opinion that insanities, at any rate in their manageable phases, should be included with other maladies in the ward and out-patient services, even if only for example's sake. The methods of convenience which exclude and segregate these diseases probably have a bad effect on the sufferers themselves, but they are infinitely more noxious in implanting and nursing the notion that "mental" disease is not bodily disease but something over, under, or beside it. What would be the misfortune to pathology if, let us say, diseases of the kidney were swept out of sight of general medicine? All bodily functions are interdependent; yet again, in tuberculosis, syphilis, and some other infections, such divorces are at least foreshadowed, and should be distrusted.

GRADUATE TEACHING.

On the arrangements for graduate teaching I must make some brief remarks. Of the efforts made to this end by the Royal Society of Medicine and by individuals we cannot speak too gratefully. But, as in my correspondence with Sir William Osler, I drew back a little until the unit system should be settled and in action; for it seemed to me that the two movements must hang closely together. Before the Earl of Athlone's committee I demurred to, and indeed deprecated, the costly proposal of setting apart a peculiar hospital for this part of advanced instruction. Graduate teaching, if not confined to the units, must surely be sown, rooted, and watered in them. A central office and club for these graduates is desirable, but to separate their hospital study would cut the graduate off from the main streams of medical ideals, organisations, and activities; would deprive the units of their senior disciples, and compel the aspiring graduate, whose time is limited, either to desert the peculiar hospital or to surrender the privilege of attending the courses, and of coming under the influence, of one or more of the half a dozen most eminent leaders of the day in medicine and surgery, men of whose friendly encouragement he would have retained a happy memory for the rest of his days. As to the graduates who need only a "brush up," surely there are already in the great hospitals many competent teachers, and hundreds of beds, awaiting their arrival. We are agreed that the choice of leaders is strait; these men are few, and these few are needed for the units; and as the senior men on the honorary staffs are not likely to desert their posts, so the staff of a hospital peculiar to graduates would fall into the second rank. But, after all, of the irony of the world we have many instances, and is there one more mordant than this—that whatsoever we may do to develop and furnish the mind and enlarge the experience of the general practitioner, and to display to him what *can* be done, we send him away (unless he happens to practise near a university town) whither he will find none of these modern means for the application of his new knowledge. Is it not kinder to keep his eyes closed, and his mind in ignorance, that his soul may be at peace?

PROPORTION IN MEDICAL EDUCATION.

And these problems of education lead us on to other difficulties, which the units will have to work out. In his interesting and plain-spoken Hunterian Oration of 1921[1] Sir Charters Symonds declares that in our zeal we are piling up the weight and number of subjects of medical instruction beyond all toleration. To lighten the burden Sir Charters Symonds proposes a utilitarian reform or rather retrogression; he advocates what, rightly or wrongly, is virtually a return to apprenticeship. The student is to be brought to the bedside at the outset, in order that he may have before him continually the aptitudes for which he is to work. Anatomy is to be pruned, and a good third of it cut out, by rejections of its academic features (p. 12). Physiology is to be domesticated in like manner, but not so drastically. The peculiar discipline of anatomy as a standard of close observation and accuracy might thus be lost, for this discipline is all or nothing. Sir Charters Symonds (p. 15) "by no means wishes to be understood as decrying the study of the collateral sciences—these 'handmaids' of medicine"—(but) "do they hold, as taught to-day, their due proportion to the later subjects? However well informed a man may be in the preliminary sciences, the final court of appeal is at the bedside." He must attend rather to the cry of the children than to physical apparatus. And (p. 16) "*The only opportunity the student has for independent observation, it seems to me, is in the clinical field, and the sooner he is brought there the better.*" (Italics in original.) This assertion seems a little hard on the present training in the "collateral" sciences. With one sentence at least we shall all hopefully agree—namely, that "one day we may see the physiologist at the bedside" (p.17). The pathologist should be a frequent, or indeed a regular, assessor.

Does not this discourse on the whole reflect the mind of the craftsman, and rightly so, but at the same time diminish the scientific and thinking physician and surgeon? More than once I have discussed this sort of scheme with engineers, both professorial and practical, and find, with them as with ourselves, that promising as a plan of early shop work may appear, the apparently irremediable consequence, in the ordinary student, is that at a later stage his attention to the science of his profession cannot be recovered; he settles down on rule of thumb, and is quite contented without its principles. The housemaid knows well enough how hot water may crack a glass vessel, but cares not why. But ere long the scope of the units will have to be reconsidered. I venture to repeat my oft-told opinion that the divorce of medicine and surgery, due to medieval disdain of handicrafts, cannot last. In this generation already it has landed us in an absurd position. Such specialism as must be will be on a plan, perhaps a topical plan, of redistribution, and the physician (to use the word in its general sense) must learn to deal, as does the gynæcologist, with all sides of his case. And are not these phrases "collateral" sciences, "handmaids of medicine," and the like, misleading? These sciences are not annexes of medicine, nor frills about it, but partake of its very nature; they are mothers, not hirelings. As Sir David Prain said the other day to the Pharmaceutical Society: "Originally, practical pupilage worked fairly well. The surgical *fabrica* . . . . was patent to the eye, and (aseptic principles being unknown) success in practice depended on caution, manipulative skill, ... natural capacity, and saving common-sense. But students discovered that they could not grasp (the underlying truths) . . . . without some kind of physics, and some understanding of the structure and function of vital mechanisms."

But it is true notwithstanding that the tides of teaching are overflowing the banks! What are we to do? We may indeed take parts of the past into the future, but we cannot walk backwards. At present we are asking what the Units will tell us. Sir Charters Symonds says that under the unit system the first year's men are being called into the out-patient department: a call that should come from all the recognised teachers. He says also that no one desires to lengthen the curriculum. This may not be our desire but it is what we are inevitably doing. At Cambridge we are putting back the physics and chemistry to the schools, and with some success; yet, even with this anticipation, university students are in their sixth-seventh year when they come up for graduation. It may be that professional preparation will divide into two courses—into a five-years course on craft lines for the diploma of the colleges, and a university course for those who have the turn and the time for wider within two months, but later the patient died suddenly from the effects of a dissecting aneurysm of the aorta. At the necropsy the lungs were found free from tubercles, but there were some dilated air-cells, *especially near the apex of the left lung*. Here, again, it must be remembered that emphysema-bullæ near the apex of the lung (especially in the young) are likely to be connected with a cicatricial tuberculous process. In short, it seems that most cases of "spontaneous pneumothorax arising in apparently healthy persons," and certain cases (rapidly spontaneously recovered from) arising in persons with clinically obvious tuberculosis, are late or accidental results of a cicatricial reaction to a local process. They are (rare) "accidents" directly connected with the normal healing process, by which most (if not all) of us in civilised communities have to resist the invasion of our bodies by tubercle bacilli. The prognosis in most cases is good, both in regard to the pneumothorax and in regard to the tuberculosis; for in most cases the tuberculosis has already been practically overcome by the time that the "accident" in question occurs.

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[1] THE LANCET, Feb. 19th, 1921.

CONCLUSION.

I ought perhaps to apologise for having made the title of this lecture so widely inclusive. Indeed, the relation of tuberculosis to various general conditions of the body includes a consideration of the various clinical forms of tuberculosis in relation to the specific resistance of the body towards tubercle bacilli (both the human and bovine types), and, therefore, also the relations of pulmonary tuberculosis to lupus, tuberculosis of the lymphatic glands, &c.; the whole subject of "scrofulosis"; and also the relations of pulmonary tuberculosis to local disorders and "accidents" connected with the resistance of the tissues to local tuberculous foci. I have merely been able to sketch the subject in this lecture. I have practically not entered into the question of the relations of tuberculosis to the so-called cutaneous tuberculides and the various other skin diseases which have, by certain writers, thought to be (at all events, sometimes) ætiologically in some way connected with tuberculosis. In regard to the single subject of the relatively rare cases of spontaneous pneumothorax occurring in apparently healthy persons a volume could be filled by short descriptions and an analysis of the 200 cases or more that have already been published.

The general trend of my remarks may be summarised as follows:—

1. That one of the most important connecting links between tuberculosis, especially pulmonary tuberculosis, and various general conditions of the body and local diseases and "accidents" in various viscera, is the state of the patient resulting from the tuberculous infection itself, either through its toxins or through the local presence of tubercle bacilli, and through the local and general reactive processes by which the body more or less successfully opposes or overcomes the bacillary parasitic invasion.

2. That it is only with the help of such relative processes of resistance, which may be greatly favoured and encouraged by general and special antituberculosis hygiene, that the human race can hope eventually so far to gain the upper hand that tuberculosis may very largely lose its character as one of the most frequent causes of death and disability.

3. Occasional visceral and cutaneous diseases and "accidents," of which I have taken "spontaneous pneumothorax arising in apparently healthy persons"—though relatively rare—as a type (and have therefore dealt with it at slightly greater length than the others), should be regarded as tokens of the price which we may be called on to pay if our struggle against tuberculous infection is, on the whole, effectual.

References.

I have referred to very few authors out of the immense number whose work deals with the subjects of my lecture. I take it that many of the omitted names of authors are household words to medical men interested in the subject. My own writings which I have quoted can be consulted for some of the numerous references that I have failed to give here.

1. Cf. the various speakers at the Second Conference of the International Union against Tuberculosis, London, July, 1921; abstract in THE LANCET, 1921, ii., 301. Cf. also the Special Discussion on Eradication of Tuberculosis from Man and Animals, at Roy. Soc. Med., Lond., March, 1921 (Sir John McFadyean and others), Proc. Roy. Soc. Med., 1921, xiv., 11–25.
2. F. Parkes Weber: Congenital Tuberculosis—A Survey, Brit. Jour. Child. Dis., Lond., 1916, xiii., 321–332 and 359–368.
3. Cf. G. H. Lancashire: On the Association of Skin Tuberculosis with Visceral and Other Tuberculous Manifestations, Brit. Med. Jour., 1921, ii., 551–553.
4. Cf. F. Parkes Weber: A Note on Calmette's Ophthalmo-Reaction, Medical Press, London, 1908, cxxxvii., 166.
5. Cf. G. W. Norris and H. R. M. Landis: Diseases of the Chest, 1920, p. 306 ("Reinfection in Tuberculosis").
6. Cf. F. Parkes Weber: Traumatic Pneumonia and Traumatic Tuberculosis, London, Adlard, 1916.
7. F. Parkes Weber: THE LANCET, 1904, i., 924–928.
8. Cf. Nathan Raw: The Influence of Diabetes and Gout on the Tuberculous Infections of the Human Body, Trans. Med. Soc. Lond., 1911, xxxiv., 261–266.
9. Cf. F. Parkes Weber and H. Schmidt: Diabetes Insipidus with a Peculiar Necropsy Finding in the Posterior Lobe of the Pituitary Gland, Amer. Jour. Med. Sci., Pa., 1916, clii., 892.
10. Cf. F. Parkes Weber: Traumatic Tuberculosis, Clinical Journal, 1916, xlv., 249; T. D. Lister: Industrial Tuberculosis, THE LANCET, 1910, ii., 1122.
11. Sir H. D. Rolleston: Diseases of the Liver, second edition, London, 1912, 345–348.
12. S. Schönberg: Lebercirrhose und Tuberkulose, Ziegler's Beiträge z. path. Anat. u. z. allg. Path., Jena, 1914, lix., 601–673.
13. J. M. Cruice: Jaundice in Tuberculosis, Amer. Jour. Med. Sci., Philadelphia, 1914, cxlvii., 720–726.
14. Cf. E. Kirch's elaborate critical study, Ueber tuberkulöse Leberzirrhose, tuberkulöse Schrumpfnieren und analoge Folgeerscheinungen granulierender tuberkulöser Entzündung in Pankreas und Mundspeicheldrüsen, Virchow's Archiv, 1918, ccxxv., 129–195.
15. F. Parkes Weber: Toxæmic Jaundice with Hepatic Atrophy in Connexion with Tuberculosis, St. Bartholomew's Hospital Reports, London, 1908, xliv., 55–59.
16. Cf., however, G. W. Norris, Tuberculosis and Heart Disease, Amer. Jour. Med. Sci., Pa., 1904, cxxviii., 649–668.
17. In England only a few cases of cardiac tuberculosis have been reported. Cf. W. O. Meek: Tuberculous Endocarditis, Proc. Roy. Soc. Med., Pathological Section, 1908, i., 116; Fawcett's case, Guy's Hospital Gazette, London, 1911, xxv. 549 (Case III.); P. Bahr and G. C. Low: Tuberculosis with Special Involvement of the Heart, THE LANCET, 1912, i., 362; W. J. McKeand and D. McKinlay Reid: Large Caseous Tubercle of the Myocardium, THE LANCET, 1912, ii., 693; T. H. and H. O. Gunewardene: Extensive Primary Tuberculous Disease of the Heart, Proc. Roy. Soc. Med., Section for Study of Diseases in Children, 1920, xiii., 38; W. W. Adamson: Tuberculosis of the Myocardium, Jour. Path. and Bact., Cambridge, 1920, xxiii., 399.
18. In England, Dr. J. E. Pollock, Sir Dyce Duckworth, Sir Hermann Weber, &c.
19. Cf. F. Parkes Weber and W. R. Kirkness: A Note on Body-Weight in Relation to Pulmonary Tuberculosis, Brit. Med. Jour., 1909, i., 142.
20. Cf. H. Batty Shaw: Body-Weight in Adult Consumptives, Clinical Journal, London, 1920, xlix., 127.
21. Cf. Reinhold Nauclér's discussion: Ueber den Blutdruck bei Lungentuberkulose, Acta Medica Scandinavica, 1920, lii., 271–310.
22. I need not allude to amyloid disease here. Amyloid disease of great degree is at the present time rarely seen in connexion with tuberculosis, but lesser degrees of amyloid change in the kidneys are not infrequently present in the later stages of chronic pulmonary tuberculosis.
23. W. H. Dickinson: Diseases of the Kidney, London, 1875, 378.
24. F. Parkes Weber: On the Association of Chronic Interstitial Nephritis with Pulmonary Tuberculosis (Cambridge M.D. Thesis), printed by J. Bale and Sons, London, 1892, 7 et seq.
25. S. Schönberg: Ueber tuberkulöse Schrumpfnieren, Zeitschrift f. klin. Med., Berlin, 1913, lxxviii., 371–386; also Idem, Ueber tuberkulöse Schrumpfnieren, Virchow's Archiv, 1915, ccxx., 285–294.
26. E. Kirch: Loc. cit.
27. O. Kieffer: Zur Klinik und Pathologie der Nierenerkrankungen im Verlaufe der Lungentuberkulose, Zeitschrift für Tuberkulose, Leipzig, 1920, xxxiii., 9–23, 65–77, 137–148.
28. F. Parkes Weber: Pneumothorax without Effusion in an Apparently Healthy Man, Trans. Clin. Soc. of London, 1900, xxxiii., 171. Cf. F. Parkes Weber: The Clinical Forms of Pneumothorax, especially Pneumothorax in Pulmonary Tuberculosis and Pneumothorax arising in Apparently Healthy Persons, Zeitsch. für Tuberkulose, 1903, iv., 477–491; Arrested Pulmonary Tuberculosis, ibid., 1904, v., 214; Pneumothorax in Tuberculous Subjects, THE LANCET, 1905, ii., 813–817; and Some Unusual Cases of Spontaneous Pneumothorax, Practitioner, 1919, cii., 190–198.
29. H. B. Whitney: Philadelphia Medical Journal, 1899, iii., 93, Case 2.
30. Dittrich's case was first published by Dr. M. A. Wintrich, in his Krankheiten der Respirationsorgane, Erlangen, 1854, 352.
31. A. Brünnicke: English translation in the Dublin Hospital Gazette, 1856, iii., 3.
32. G. Newton Pitt: Trans. Clin. Soc. Lond., 1900, xxxiii., 95.
33. F. W. Zahn: Virchow's Archiv, 1891, cxxiii., 197.
34. W. H. Ranking: Brit. Med. Jour., 1860, 665.

I may here give my personal experience of a cutaneous infection, though it was hardly likely to have been my first infection with tubercle bacilli. One early morning, about October, 1890, when house physician at the Brompton Hospital, I happened to get a slight punctured wound into the deeper cutis vera of the terminal segment of the right forefinger. This bled rather freely at the time, but I had forgotten its existence by the afternoon, when I handled a lung at the post-mortem examination on a virulent case of pulmonary tuberculosis. The slight wound on my finger nevertheless healed up, but afterwards there was troublesome itching and swelling, and, later on, intermittent painful swelling with more or less local redness; there was no actual formation of pus. The little swelling was kindly excised by Prof. von Eiselsberg in Vienna about January, 1891. He wrote to me that microscopical sections showed that it contained giant cells, but that no actual tubercle bacilli were found. The small operation wound healed up, but afterwards broke down again and discharged for some time, and then slowly healed up. During the winter 1907–1908, when examining patients at the Mount Vernon Hospital for Chest Diseases by the Wolff-Eisner-Calmette ophthalmo-reaction for tuberculosis,[4] I discovered that my own ophthalmo-reaction was more strongly positive than that of most or all of my patients who were tested in that way. In July, 1916, my Pirquet's cuti-reaction was an excessively strong one. Although, as I have said, the infection in 1890 is hardly likely to have been my initial infection with tubercle bacilli, an inoculation of that kind is, I think, interesting. It occurred just at the time when my general health and bodily vigour were at their maximum, and certainly my diet at the time was as antituberculous in quantity and quality as any diet could be (so indeed was that of all the house physicians at the Brompton Hospital at the time). It seems to me that in other cases chance infection with tubercle bacilli can seldom have occurred under circumstances more ideally favourable for the production of some degree of relative immunity.

According to Calmette, infection through the conjunctiva is possible in human beings—as by a crying baby's eyes being wiped with a handkerchief soiled with tuberculous sputum—and instillation experiments have proved that this port of entry may occur in animals. Calmette thinks that the usual initial site of entry of the bacilli in tuberculous subjects of all ages is the alimentary canal (including the mouth, tonsils, and pharynx) and holds that the bacilli may pass through a healthy mucous membrane without leaving any trace of their passage or noticeable disease in the nearest lymphatic glands—a process of infection not conforming to the so-called "Cohnheim's law." On these points, however, Calmette's views have not met with universal assent. The bovine type of tubercle bacillus, though relatively rare in ordinary chronic pulmonary tuberculosis of adult human beings, is now acknowledged to be by far the most common cause of tuberculosis of lymphatic glands in children. Calmette, however, points out that human tuberculosis is common in some countries where bovine tuberculosis is absent.

Problem of Immunity against Fresh Infection.

It is an important question how long persons who have successfully resisted tuberculous infection, and in whom all the invading tubercle bacilli have died out, retain any specific immunity towards fresh infections with living tubercle bacilli. Animal experiments suggest that this period is not long, and that successful specific preventive treatment, if any is possible, can be carried out only with cultures of living bacilli (in measured doses, and possibly attenuated) and not with any vaccine obtained from dead cultures.

The grave and fatal forms of pulmonary tuberculosis, occurring in young adults (and later on), which constitute the majority of cases of "consumption" seen in hospitals, are explained as due to dissemination (possibly during a period of temporarily lowered resistance) from a latent tuberculous focus left from an infection in childhood, or else as due to massive reinfection[5] in an enfeebled individual, or in an individual whose specific resistance to tuberculosis has been lowered as a result of all the tubercle bacilli from his initial infection in childhood having died out. The specific power of resistance to tuberculosis can certainly not be measured by the general state of the health. Analogously, during the last severe influenzal epidemic some strong and robust individuals rapidly succumbed to influenzal pneumonia, whereas, apparently weak and chronically diseased individuals, though similarly affected, recovered. It is well known that a strong healthy native of some primitive community, who has not been exposed to tuberculous infection, may fall a ready victim to the disease on coming into contact with tuberculosis in civilised centres of the world (cf. "Römer's law"). A vigorous man with a latent quiescent tuberculous focus may suffer from grave or fatal tuberculosis if massive dissemination occurs as a result of some chance contusion.[6]

The reason why the ordinary pathological-anatomical features of tuberculosis in adults of civilised communities differ from those most frequent in children and in natives of hitherto non-tuberculous regions of the world (on being brought to centres of civilisation) is now explained as being partly due to relative immunity and reactive power acquired by most persons through tuberculous infection in childhood. In this connexion one may note that there is probably some antagonistic relationship between ordinary lupus (or other relatively mild forms of tuberculosis) and grave pulmonary tuberculosis, in so far as patients suffering from ordinary lupus seldom fall victims to grave forms of pulmonary tuberculosis, unless they already suffer from the pulmonary disease before the lupus shows itself. In fact, patients with lupus generally appear to be resistant to the rapidly progressive forms of tuberculosis. When a patient has tuberculous infiltration in the upper part of the larynx, the tuberculous disease usually, I believe, proves fatal unless it is a case of lupus. This is quite in accord with the view that lupus is due to the bovine type of tubercle bacillus rather than to the human type.

In most cases, as previously mentioned, the initial tuberculous infection in childhood is doubtless overcome by the natural vital mechanism of resistance in the body, but tubercle bacilli probably generally remain alive for a long while, though latent and more or less encapsuled, in various parts of the body, for instance, in lymphatic glands. These bacilli are certainly not always effectually imprisoned, but may keep up a kind of guerilla warfare against their host by occasionally entering his blood-stream (temporary "tuberculous bacillæmia") from their fibrous fastnesses; and during such "raids" they may do serious or fatal mischief, for instance, by setting up tuberculous meningitis. Owing to such a condition of temporary tuberculous bacillæmia (which may be clinically supposed to be an "influenzal attack" or some passing febrile infection of unknown nature) an apparently non-tuberculous subject—in reality, a case of latent or "closed" tuberculosis—may disseminate tubercle bacilli in his secretions (Calmette), just as a tuberculous cow may secrete milk containing tubercle bacilli, even in the absence of any recognisable mammary tuberculosis, and (in animal experiments) tubercle bacilli may pass out in the bile without there being any obvious tuberculous lesion in the liver.

In this connexion I take it that temporary conditions of primary or secondary tuberculous bacillæmia (the "typho-bacillosis" of Landouzy, Léon Bernard, Armand-Delille, &c.) are much more common than is generally supposed—that these cases are often passed by as febrile attacks of unknown origin—that, though death may result owing to tuberculous meningitis, &c., the natural resistance of the body at the time is often sufficient to overcome the bacillary invasion—that in some cases the disseminated tubercle bacilli are able for a time to live and increase locally in various parts of the body, giving rise to attacks of miliary tuberculous pleurisy (including many cases of ordinary subacute and chronic pleurisy) and miliary tuberculous peritonitis, which are often more or less spontaneously recovered from. It is thus that attacks of tuberculous peritonitis would in many cases have been recovered from without having been recognised, had not a surgical operation for suspected disease of appendix or pelvic organs, or (as I have known) for the treatment of hernia, unexpectedly revealed the presence of metabolism, such as may be caused—possibly in common with other factors—by a vitamin deficiency in the diet.

The *modus operandi* in the case of the various vitamin deficiencies is still a matter of discussion. It has been suggested that there may be an aberrant metabolism of carbohydrate, in the absence of a particular vitamin. Alternatively, acidosis has been several times claimed to exist in connexion with deficiency disease, notably scurvy [12] and beri-beri.[13] I have been attracted by the somewhat picturesque suggestion of Dr. Eric Pritchard[14] that, in rickets, calcium ("available base") is withheld from developing bone, since it becomes more urgently required to neutralise acid products of incomplete oxidation. It is subsequently excreted in combination, and thus lost to the system. So also with magnesium and sodium of nervous and muscular tissues. I do not suggest that in rickets lime salts are actually dissolved out of bone, though indeed this must happen in osteomalacia, and perhaps also in adolescent rickets.

Probable Compensated Acidosis in Rickets.

The hydrogen-ion concentration of the blood has been shown to be normal in rickets, but the assumption is that a compensated acidosis is present, in that there is a lowering of the alkaline reserve of the organism. According to Haldane[15] the term used is a misleading one. The deviation from the normal in the hydrogen-ion concentration is actually too small to be observed by known physical and chemical methods. It can, however, be shown by the far more delicate method of observation of the accompanying changes in breathing, and in the excretion of acid or alkali and of ammonia by the kidneys.

In the case of rickets, the clinical findings previously referred to, as regards both excess feeding and the association of debilitating conditions with the histories of rachitic children, appear favourable to the existence of such a condition. Hyperpnœa, the obvious clinical manifestation of increased CO_2 output consequent on the presence of abnormal acid in the circulation, is certainly present in the acute crises of rickets. It occurs also in the spasmophilia and respiratory catarrhs associated with milder cases. The fact that such symptoms are entirely absent over intervening periods would point to the underlying condition being an intermittent or recurring one, of very varying intensity at different periods. This is borne out in the variations found from day to day in work on the calcium metabolism.

Dr. Engel[16] has recently chronicled cases of rickets in Germany, permanently dyspnœic, and dying with symptoms of acute air-hunger. There is, further, in rickets an increased urinary excretion of phosphates,[17] suggesting that an increased proportion of monosodium phosphate, relative to di-sodium phosphate, is being excreted for purposes of blood equilibrium. Dr. Pritchard's suggestion is further substantiated by the excretion of creatine in the urines of rachitic children.[18] This phenomenon has been shown by Underhill to occur in conditions of acidosis in absence of defect in carbohydrate metabolism.[19] Since creatine may be regarded as a substituted guanidine the recognition of guanidine as the toxin factor in tetany is of importance [20]; the injection of guanidine into rabbits with the production of tetany has been shown by Watanabe to be associated with acidosis.[21] Some degree of acidosis is without doubt present in both tetany and osteomalacia.[22] As regards blood-calcium depletion the condition in tetany would appear to be an exaggeration of the condition in rickets.[23]

A careful study of work on the calcium metabolism in rickets reveals nothing to negative Dr. Pritchard's view. The outstanding feature of the disease must be said to be an inability to use the calcium salts; the greater number of cases in my series developed rickets on a diet of cow's milk, containing a large excess of calcium compared with human milk. Unfortunately, it is impossible to distinguish between deficient absorption and true excretion in the calcium loss in the stools. There is no disturbance of fat metabolism; fat-splitting is adequate and normal.[24] Steinitz, Langstein and Meyer [25] identified fatty-acid excretions with loss of mineral constituents akin to the loss in rickets, with conditions of acidosis in young children suffering from gastro-intestinal disease, and showed an increased ammonia ratio in such cases.

Comparative Investigations into Urines.

With the object of deciding whether or no rachitic children were suffering from a lowering of their alkaline reserve (whether from the cause indicated by Pritchard or from some other cause) I decided, on the advice of Prof. W. Ramsden, to compare the urines of a series of rachitic children with those of normal children of the same age as to the proportion of nitrogen excreted as ammonia relative to total nitrogen excretion—and at the same time (or just subsequently) directly test their alkaline reserve, on the method of Sellard, Henderson and Palmore, by noting the amount of bicarbonate of soda dosage necessary to change the reaction of the urine (acid to alkaline).

The difficulties of the task I set myself were obvious; in the first place it was likely to be difficult to obtain urinary specimens from such young children, of the training and habits of the class indicated. Secondly, it was only possible to obtain such specimens in hospital, or some other available institution, where the main difficulty was to find an adequate number of children whom I could pass as sufficiently healthy to use as controls.

In all 65 children were investigated, comprising 30 rachitic children (healed, active, or recovering), 25 healthy children of the same class (controls), and 10 unhealthy children of the same class, not rachitic (further controls).

The children on the first list of controls (healthy children) were selected by me personally in two of the Liverpool Day Nurseries, to which I was admitted by kindness of Dr. Ruby McBirnie, infant welfare officer for the City of Liverpool. I was fortunate in securing almost complete 12-hourly specimens (the children went home at night) for my ammonia ratio estimations, in a majority of cases. In others it was only possible to take a mean of separate estimations on morning and evening specimens—as had to be done subsequently with the hospital children in a majority of cases. The rachitic children, with one or two exceptions, were in-patients at the Leasowe Hospital for Children (annexe for rickets and wasting babies), as also were the unhealthy controls. This second control list was undertaken for the purpose of ascertaining whether or no there was a distinction between this type of child and the rachitic child in the state of the alkaline reserve, the ammonia ratio being high in each case.

Method of Procedure.

The method of procedure with the bicarbonate of soda dosage was as follows: On the first day a normal afternoon specimen of urine was obtained and tested as to reaction to litmus (usually acid), titration acidity and ammonia content per 100 c.cm. On the second day gr. v. sodium bicarbonate was given three times between the hours of 9 A.M. and 3 P.M., and a specimen obtained for examination after 3 P.M., usually about tea time. If the reaction was still acid the dosage was increased to gr. x. three times on the third day, and, if necessary, to gr. xv. and gr. xx. respectively on the fourth and fifth days.

For charting purposes the children were subsequently graded as follows:—

Grade A Urine alkaline to litmus from the start.
" B " " " following gr. v.
" C " " " " gr. x.
" D " " " " gr. xv.
" E " " " " gr. xx.
" F Urine still acid, in spite of dosage.

All specimens were carefully preserved; a saturated solution of camphor in chloroform was used throughout for the purpose. Ammonia estimations were carried out by the Sorenson formalin method, immediately following receipts of specimens. For the nitrogen estimations the method chosen was Folin's micro method; this consists of a miniature Kjeldahl with present and having been successfully overcome. Many medical men have supposed that gout is antagonistic to, or retards, pulmonary tuberculosis,[18] and it seems that a genuine antagonism of the kind exists. In this connexion it may be remembered that according to life assurance inquiries, &c.,[19] "normal weights" and "over-weights" are less likely to die from tuberculosis than "under-weights," and so-called over-feeding probably in some cases both favours the development of gout and opposes pulmonary tuberculosis. However, the prognostic significance of "under-weight" in regard to the danger of developing active tuberculosis is much less in the second than in the first half of life. Under-weight may, moreover, sometimes be a chief clinical sign of the actual existence of, not merely of predisposition to, tuberculosis.[20] Equally complicated is the question of a relationship of pulmonary tuberculosis to habitually low brachial systolic blood pressure, relative cardiac hypoplasia, and the so-called "drop-heart" (as seen in Röntgen photographs of the thorax). Does the actual presence of the slighter forms of tuberculosis help to produce such conditions? [21] Albuminuria, chronic renal irritation, and actual chronic nephritis[22] may be due to the passage of tubercle bacilli and their toxins through the kidney. In some such cases, when there is great tissue resistance towards tuberculosis, miliary tubercles doubtless repeatedly develop in the kidneys and disappear again with or without giving rise to fibrotic changes.

I may mention here that W. H. Dickinson [23] (1875) found tuberculosis in 20·8 per cent. of 250 persons dying from granular degeneration of kidneys, which, according to statistics, was less than the average frequency of tuberculosis at all post-mortem examinations. I myself recorded (1892) that in a series of 145 necropsies on patients over 40 years old with pulmonary tuberculosis (nearly all of whom had actually died from their lung disease) there was evidence of some degree of chronic interstitial nephritis in 40 per cent., whereas, in a series of 44 necropsies on patients over 40 years old with healed or quiescent pulmonary tuberculosis 61·3 per cent. showed evidence of some kind of chronic interstitial nephritis.[24] Amongst the more recent writings on the connexion of chronic interstitial nephritis with tuberculosis those of S. Schönberg,[25] E. Kirch,[26] and O. Kieffer [27] may be especially mentioned. It seems that when tubercle bacilli are passing through the kidneys the resulting reaction and changes (if any) in the kidneys depend (much as the changes under analogous conditions in the liver) on the resistance of the tissues towards tuberculosis and on the number of tubercle bacilli and their degree of virulence. Typical tuberculous changes—macroscopic with caseation, or microscopic tubercles—may result when the tissue-resistance is low or the tubercle bacilli are relatively numerous or of high virulence; whereas cicatricial sclerotic changes (forms of interstitial nephritis) may occur, when the tissue-resistance is great or the tubercle bacilli are few or of low virulence.

In regard to all the above points I am sorry I cannot furnish any elaborate statistics of my own, and there is no time at my disposal in the present lecture to discuss them further. But I wish to explain that probably the most important of the conditions of the body related to tuberculosis are the conditions due to the actual tuberculous process itself—the results of the past fight of the body against the invading tubercle bacilli—especially the presence of encapsuled tuberculous foci and fibrous (cicatricial) areas in the lymphatic glands, the lungs, and elsewhere, pleural and peritoneal adhesions, and (most important of all) a general condition of resistance and partial immunity towards fresh tuberculous outbreaks and dissemination within the body and fresh tuberculous infections from without.

Tuberculides; Pleurisy; Pneumothorax.

Some of the results of these conditions may almost be dignified as "diseases"—for instance, some of the so-called cutaneous tuberculides (if they are really of tuberculous origin) and the renal troubles above alluded to as due to the presence of tuberculosis. Other results may be termed "accidents"—for instance, intestinal obstruction due to adhesions or stenoses resulting from past or chronic tuberculous processes in the mesenteric glands, peritoneum, or abdominal viscera. Modern observations show that very frequently attacks of pleurisy are due to miliary pleural tubercles and that very often the resistance of the body is sufficient to produce a cure. As "accidents" of the kind above referred to I would include nearly all cases of co-called spontaneous or "idiopathic" pneumothorax arising in the apparently healthy.

I first observed a case of this kind in 1899, and the literature on the subject is quite extensive.[28] At least 60 or 70 such cases had been published up to 1903, and since then many cases have been described from time to time in the medical journals by writers, most of whom apparently regarded the condition as one of extreme rarity. The pneumothorax in such cases may arise absolutely spontaneously or there may be some exciting cause such as laughing, coughing, or sneezing. The abnormal physical signs generally disappeared spontaneously within four or five weeks from their onset. In most of these cases I believe that the pneumothorax was due to localised emphysematous changes associated with localised quiescent or healed pulmonary tuberculosis—for instance, to the tearing of a superficial (subserous) bulla, perhaps connected by an adhesion with the opposite (parietal) pleural surface. (I believe that some of the cases of spontaneous pneumothorax, arising in clinically obvious cases of tuberculosis, but rapidly recovered from without liquid effusion or active interference, are due to a similar cause.) H. B. Whitney [29] recorded a case of pneumothorax occurring suddenly in a man, aged 70 years, who was supposed to have suffered formerly from pulmonary tuberculosis. On account of severe pressure symptoms the pneumothorax was tapped and a cannula was left in the chest for several days. Complete recovery followed. A superficial emphysematous change or a pleuritic adhesion, associated with chronic or obsolete tuberculous lesions, afforded the most reasonable explanation for the occurrence of pneumothorax in such a case. In support of this view Dittrich's case might be abduced.[30] It was that of a medical man, aged 28 years, who had quiescent pulmonary tuberculosis. Whilst walking he was suddenly seized with fatal left-sided pneumothorax, which the post-mortem examination showed to be caused by rupture of a subpleural emphysema-bulla situated in a portion of the lung (apex) showing cicatricial changes. It was long ago pointed out by A. Brünnicke, of Copenhagen,[31] that emphysematous changes might in certain cases be regarded as a connecting link between tuberculous lesions and pneumothorax; and it is noteworthy that in some such cases, in which pneumothorax has appeared to be due to the rupture of an emphysema-bulla, the emphysematous change has been found, not in the lower part of the lung—its favourite site in cases of ordinary pulmonary emphysema—but in the upper part, at or near the apex, in which position it is often associated with obsolete or quiescent tuberculous lesions. Thus, in a case of fatal hæmo-pneumothorax, described by G. Newton Pitt,[32] the cause was apparently the rupture of an emphysema-bulla near the apex of the right lung, but the bulla was adherent to the chest wall, and it seems to me that the existence of both adhesion and bulla in this case may very likely have been due to a former minute tuberculous lesion. Examples of pneumothorax due to the tearing of a superficial (subpleural) bulla fastened by an adhesion to the opposite (parietal) pleural surface are to be found in F. W. Zahn's paper of 1891.[33] In this connexion W. H. Ranking's case[34] may likewise be referred to, though it has often been quoted in support of a different view. It was that of a young man, aged 19 years, who, while at church, was suddenly seized with the symptoms of left-sided pneumothorax. The pneumothorax was gradually recovered from had very definite spasmophilia. G. M. on one occasion at least was seen in tetany. All were cases of uncomplicated rickets with the exception of A. H. (impetigo), A. S. (adenoids), and P. L. (otorrhœa). The majority at one year had no teeth, and were quite unable to raise themselves or to sit up. Most of the children were comparatively recent admissions to hospital. In view of the findings of Frew[26] concerning acetone in a series of cases at the Great Ormond-street Hospital, none of them were investigated during their first week.

Three points have to be considered in a comparison with controls: 1. The ammonia ratio—high in all cases—an average of 14·3 compared to 6·2 in the control list. 2. The condition of the alkaline reserve—reduced—out of 12 children tested, six were grade F, four of these were investigated the second week after their admission to hospital, and may be reckoned "untreated"; the fifth child, W. N., had been in hospital one month; the sixth, G. M., had suffered from tetany. The children graded C and D were either rather older children or cases of a less severe type. 3. The ammonia content (grammes per 100 c.cm.) is less constantly reduced following bicarbonate dosage. This suggests that a high ammonia formation was an essential of the metabolism present, even when additional alkali was supplied.

Recovering Cases.

These were a series of 14 children, slightly older than the active cases, with flabby musculature, bony deformities, and other general stigmata of rickets, usually well-developed. The majority had the more or less typical thoracico-abdominal deformity. They had been in-patients of the hospital for very varying periods—from 14 days up to one year. I believed the condition to be improving in all cases. The ammonia ratio remains high—average 13·2—though not quite so high as in active cases. The alkaline reserve is well established, in some cases above the normal. The urines of five of the children were alkaline on first examination—an alkalosis may be said to be present in these cases. Finally, it occurred to me that a comparison of three children admitted on the same day, two of uncomplicated marasmus, and one of active rickets, might be of interest. The children, of approximately the same age and weight (about half the normal at one year), were: T. W. (marasmus) 10 months, weight 10 lb. 9 oz.; L. M. (marasmus) 14 months, weight 11 lb. 12 oz.; M. H. (rickets) one year, weight 11 lb. 6 oz.

Clinically there was absolute distinction between the case of rickets and those of marasmus. The latter had good, white, well-formed teeth and hard bones; they sat up readily in bed, and could stand with assistance, T. W. at 10½ months. M. H., the rachitic child, had no teeth, and was quite unable to sit up at one year. Of the marasmic children, one—T. W.—had undoubtedly been simply starved. At the end of 14 days he had put on 2 lb., though still thin and miserable; appetite and digestion good and normal. The ammonia ratio in this case was high—17 per cent. The second case, L. M., was a more generally unhealthy child. In this case the ammonia ratio was 3·6 only. The children were together in Grade A of the alkaline reserve. The rachitic child showed acidosis; her reserve was Grade F. There was very little compensatory ammonia formation—ammonia ratio 8·6 per cent.

Remarks.

It is admittedly impossible to dogmatise on the metabolism in rickets from urinary work in a comparatively small number of cases. I do, however, claim that there is sufficient indication of a lowering of the alkali reserve in cases of active rickets for further work to be undertaken, more particularly work on the alveolar CO_2 content, when a satisfactory apparatus can be devised for use with children or from blood examinations, more particularly of the dissociations curve of hæmoglobin.

As regards the ammonia ratio in rickets, I believe this is a very variable quantity, according to the amount of reaction to the disease which is going on. In the most acute cases one finds a lowering of the alkaline reserve associated with a comparatively small ammonia ratio (cases Grade F in Table IV. show such a ratio, compared with other cases in the series). As the condition improves the ammonia content increases, and the alkaline reserve tends to resume the normal. Later the alkaline reserve will have become normal, and active disease is arrested, but the ammonia ratio is likely to remain above the average, so long as any tendency to acidosis persists. This is shown in the recovering cases. Ultimately in healed cases the alkaline reserve and the ammonia ratio are both normal.

It must be admitted that the relationship as to cause and effect between the condition shown and the disease is not clear. It is impossible within the limits of this paper to refer more fully to individual cases. One case I mention because I am quite unable to explain the phenomena present, even on the hypothesis of an acidosis, unless some specific toxic factor such as might give rise to an acute hæmolysis were present, possibly a specific acid. The child, M. C., aged 1 year, 11 months, included in my cases of recovering cases was a very ordinary typical case of rickets. From time to time she had run an intermittent temperature—on four separate occasions up to 103° or 104°—without general constitutional disturbance. The temperature was attributed to teething, which had been much delayed. No other abnormality was noted. After five months in hospital she became suddenly ill one afternoon, refused food and vomited. Her temperature ran up to 105°. She looked very ill and miserable, but nothing definite could be found wrong with her. The bowels had been opened freely that day, chest condition normal. Within 12 hours she became semi-comatose, high-pitched rhonchi developed in the chest, with rapid respiration and considerable dyspnœa. It was quite impossible to give food. There was no improvement under salines and stimulants. A few hours later I recognised acetone in the breath, but there was a very small quantity only present in the urine (catheter specimen). Typical post-mortem staining appeared in the skin, about the same time and at least six hours before the death of the child took place. There was a moderate amount of collapse, but I believe death was from asphyxia. I had never previously seen skin hæmorrhages of so marked and severe a character, except in very acute bacterial infections or in septicæmia. On post-mortem examination no cause of death was found; all organs appeared normal; the lungs showed no signs either of bronchitis or of broncho-pneumonia; the spleen was quite hard, normal colour, doubtfully enlarged. Blood cultures taken from the left ventricle of the heart were reported by Prof. J. M. Beattie (Liverpool City Laboratory) negative.

The only clinical condition which I have been able to find in any text-book at all resembling the conditions in this case is that described by Prof. Still, under the name of recurrent pyrexia. The cause is said to be an unidentified toxin, in Still's opinion, of intestinal origin. The hæmolysis in this case is interesting, in view of the blood picture in rickets. A secondary anæmia is usually described. Pritchard believes that the epiphysial enlargement is the result of the reaction of the blood-forming elements of the bone marrow to an active condition involving blood destruction.

It is obvious that new light thrown upon the metabolism in rickets is only valuable in so far as it may be utilised in the prophylaxis and treatment of the disease. In the present state of our knowledge the provision of easily digested and assimilable fat containing adequate vitamins (e.g., cod-liver oil) will remain popular. My own belief is that cod-liver oil is definitely serviceable when the diet has previously been deficient in fat, more especially if excess feeding is carefully guarded against by a careful regulation of the diet. Schloss has recently pointed out that there is no special efficacy in cod-liver oil alone, but good results are obtained by giving it in conjunction with calcium salts, presumably by a more efficient absorption of the latter.[27] This should apply to its addition

VITAMIN DEFICIENCY AND FACTORS IN METABOLISM

RELATIVE TO THE DEVELOPMENT OF RICKETS.

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I HAVE followed with keen interest recent controversy on the position of the fat-soluble vitamin as a factor in the causation of rickets. The work of Mellanby[1] has established that experimental rickets in puppies can be produced by a vitamin deficiency in the diet. Further, recent workers in America—McCollum, Simmonds, and Pitz[2]—have produced rickets experimentally in rats by diets deficient in other single factors—viz., low calcium content, poor quality of protein, and unsatisfactory salt combinations. Other workers emphasise the influence of confinement and laboratory conditions upon the health of the experimental animal.[3,4] This is not without importance in view of the opinion that confining conditions of modern civilisation, especially conditions in large towns, are at least predisposing factors in the development of the disease. There remains great enthusiasm in experimental circles for the deficiency theory of rickets; the theory is likely to become the more generally popular, outside those circles, because the step from the popular conception of a fat deficiency in rickets to the deficiency of a fat-soluble vitamin is an easy one. On the clinical side, interesting results have recently been published by Dr. Corrie Mann, Dr. Elsie Dalyell, and others.[5] It must be observed, however, that the work of Hess and Unger referred to by Hopkins [6] as a "clinical experiment," and perhaps the most valuable clinical contribution to date, is unfavourable to a vitamin theory of rickets.

It is now rather over one year since I began to keep exact records of cases of rickets in infant welfare clinics in the city of Liverpool, primarily with a view to checking and coördinating my own ideas on the subject. I will briefly state the results shown.

Results of Records of Cases in Infant Welfare Clinics.

Rickets occurs on every type of dietary, even on the breast alone, with no evidence that the natural supply is insufficient or unsatisfactory, and equally on an artificial diet of an entirely irreproachable character. One hundred and twenty cases were collected; of these 80 were breast-fed up to at least six months, 60 for a normal period (eight months to one year). The following table shows the occurrence of various foods in the dietary of rachitic children in this series when brought to the clinic:—

Cows' milk or modified cows' milk, including Corporation sterilised milk, 14	51
Full cream dried milks, Glaxo 22, Cow and Gate 1	23
Condensed milk (Nestlé's)	16
Neave's food	6
Allenburys' food	7
Savory and Moore's food	3

It is certain that war conditions and post-war prices, with the scarcity of animal fats, have extended the possibility of a vitamin deficiency, more particularly of the fat-soluble vitamin in the diets of a large section of the British public. I personally came to the conclusion that such a deficiency in the diet is not specially associated with rickets in a majority of cases. While certainly so associated in a proportion of the cases, it is equally a feature of the dietary of other children who do not suffer from rickets.*

While the character and chemical nature of the fat-soluble vitamin remain obscure or a matter of contention, and with its distribution as yet inadequately worked out, it is admittedly difficult to dogmatise as to its presence in or absence from dietary. Following the work of Hopkins and others,[7] rather than that of Drummond[8] recently published, I am assuming that the fat-soluble vitamin is relatively thermostabile. I have thought it safe to infer that this accessory factor is adequately present both in home-sterilised or pasteurised milk, and in the rapidly heated dried milks of the Just-Hatmäker or cylindrical process, but less generally so in the condensed variety of milk. In the case of slightly older children one may assume that a good supply of the factor is furnished by a diet containing butter, or cream, eggs, fresh country whole milk—especially if freely supplemented by such substances as virol or cod-liver oil. In the case of the breast-fed child the diet of the mother must contain a sufficiency of such substances and of green vegetables.

Consideration of Diets Received.

On these lines, I came to the conclusion that of 120 cases 64 had received a good supply of so-called anti-rachitic factor; of these, upwards of 30 had been taking virol or cod-liver oil sufficiently long for some degree of prophylaxis to be anticipated.[9] Twenty cases had definitely *not* received an adequate supply of vitamin. On the remaining 36 cases I found it impossible to arbitrate, the reason being that the source of the milk-supply in these cases was unknown. I must explain that a proportion of the Liverpool milk-supply is from fodder or meal-fed cows, kept in cow-sheds within the city. This milk, which is naturally fresher, is much sought after for infants as opposed to "railway milk." It is obviously deficient. As regards butter, owing to the generally persisting prejudice against margarine in the class to which these children belonged, many of the very poorest of them had received a ration of butter in their diet, whatever else they had gone without. Various faults in dietary were from time to time identified, but no constant common peculiarity between the cases could be established. There was, however, a history of abnormal appetite, accompanied by very definite over-feeding in a fair proportion of the cases. This is compatible with the opinion expressed by Hess and others—more commonly held in America than in this country—that rickets is apt to be associated with an *excess* rather than a *deficiency* in dietary. There would appear to be a relationship between the fulfilment of energy requirements—in which both dietary and hygiene are concerned as a law of supply and demand—and the development of rickets. A history of infection, with subsequent development or marked exaggeration of rachitic phenomena, was present in a much larger number of cases than I should have anticipated. Thus 36, out of 120 cases, had a history of infectious disease, often of one infection following on another, whereas other debilitating conditions, which may have been predisposing or contributory, were present in 32 cases, as follows:—

Measles	5	Gastro-intestinal conditions	14
Whooping-cough	5	Adenoids and otorrhœa ..	5
Chicken-pox	1	Infantile paralysis ..	2
Scarlet fever	2	Operations, harelip, and intussusception	2
Pneumonia	10	Tuberculosis, family history	3
Measles and whooping-cough	6	Furunculosis and eczema..	2
Measles and chicken-pox..	1	Scurvy	2
Measles, chicken-pox, and whooping-cough ..	4	Syphilis	1
Whooping-cough and influenza	1	Bright's disease	1
Whooping-cough and diphtheria	1		
Total ..	36	Total ..	32

I came finally to the conclusion that while errors of hygiene[10] and dietary and debilitating conditions generally were incidental, probably predisposing to the development of rickets, there must be some common determining factor still to be found, of which no obvious clinical or bacteriological evidence was in existence. It may be possible to trace some positive error in practice of massage the heart has been exposed by resecting the costal cartilages and opening the pericardium, but this method has been attended with a single success only. It is a somewhat severe operation, and the delay incurred is a serious disadvantage. The subdiaphragmatic mode of approach has nearly all the recorded successes to its credit, but I believe likewise a very large number of failures. It can rarely be entirely satisfactory. Bost and Neve[1] say that compression of the heart in this way is possible though difficult in the child, but in the adult it can rarely be effected, as only the cardiac apex can be reached, and this tends to slip upwards. Further they say that it is possible to obtain direct access to the heart inside the pericardium by an incision into the base of it from below the diaphragm; the left lobe of the liver and the stomach are, however, liable to get in the way in this operation; there is a risk of injuring the musculo-phrenic artery, and considerable difficulty in inserting sutures in the diaphragm and finally closing the incision. Bost and Neve[1] have therefore devised another method of obtaining direct access, which is briefly as follows: An abdominal incision is made, and through this the attachments of the diaphragm to the left costal margin are cut for 2 inches. The right hand is inserted into the left pleural cavity and the heart grasped outside the pericardium. During massage the parts are pressed around the right wrist to prevent air entering the pleural cavity. This method appears to me to satisfy most nearly the required conditions. Bost and Neve[1] obtained a success with it in a case in which the subdiaphragmatic method had previously failed, and Coleman[2] has recently narrated a somewhat similar experience.

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* It is argued, of course, that if we assume an accessory factor responsible for growth, deficiency of which factor is responsible for rickets, a normal supply becomes a deficiency in the more rapidly growing children. This would be an adequate explanation of one of my cases—otherwise inexplicable except from the point of view of individual metabolism—a case occurring in one of twins who had been identically reared and fed. The better grown of the two was rachitic, the other was normal. The diet of these children had been unsuitable and inadequate, owing to extreme poverty, but not obviously deficient in fat-soluble A, as fresh country milk (1½ pints only daily between the two) had been furnished by the Liverpool Invalid Children's Association, and malt and oil supplied regularly to both children from the clinic

The Performance of Artificial Respiration.

Success as a result of cardiac massage is almost out of the question without artificial respiration, but there is abundant evidence that its performance has frequently been neglected. In man, judging by clinical records, as in cats, there is frequently a strong tendency to persistence of the respirations after primary cardiac failure, and no doubt cardiac massage, if performed soon enough, will assist to maintain them. Such efforts can, however, only be fitful and quite inefficient for the purpose in view as a general rule, although it would appear that recovery by massage has occurred in a few instances without artificial respiratory assistance. Artificial respiration by Sylvester's method is possibly sufficient when there is no opening into the pleural cavity, if it can be done without interference with the proper performance of massage. In an operation for direct access to the heart perflation of the lungs is without question the right method to adopt; it obviates the risk of the production of pneumothorax and provides for full inflation of the lungs when the hand is in the left pleural cavity. Intubation of the larynx can easily be performed on an individual in the flaccid condition following cardiac syncope, when the initial asphyxial spasm, if any, has passed off, and the lungs can be readily blown up through the tube by the lung power of another person. Perflation of the lungs by means of the apparatus employed for the intratracheal method of administering an anæsthetic should likewise be effective; a steady stream of oxygen passed direct from a cylinder through an intratracheal tube would serve exceedingly well, provided, of course, that the force of the blast is carefully controlled. A pair of bellows constitutes a simple apparatus for performing intermittent perflation. Even mouth-to-mouth perflation may be practised in an emergency, but one or other method must be employed in an efficient manner in conjunction with intrathoracic massage if cardiac massage is to be a practical success.

I agree with Gunn as to the importance of a proper mechanical device for the purpose of artificial respiration; there used to be an apparatus of this kind called a lung motor on the market, but I have no personal experience of its employment. It has been urged that the rigidity of the human thoracic cage tells against intermittent perflation, but the pliability of the diaphragm allows sufficient room for pulmonary expansion. W. E. Fisher[3] has practised with success a method of combined massage and artificial respiration; by a series of thrusts with the fingers under the diaphragm he at the same time compressed the heart and expelled air from the thorax. Such a method as this can only be regarded as tentative, and not likely to have a large measure of success; I am convinced that both surgeon and anæsthetist must be absolutely thorough in their methods if they are to justify the performance of massage.†

The Method of Applying Cardiac Compression.

I have tested the effect of varying the rate of compression, and do not myself regard this as a matter of much importance. It is necessary to maintain sufficient circulation pressure in the arteries, so I do not think the rate should be much less than that of the natural beat. The rate of compression bears no relation to that of the spontaneous beat on recovery. Gunn and Martin[5] have found that in the overdosed heart a spontaneous beat develops more readily after a pause in the massage, and they recommend that after a time massage should be intermitted by short pauses. I have independently found that recovery after primary cardiac failure is influenced similarly, a matter to which I will refer again later. The interruption of massage is evidently a point of considerable importance.

Limit of Interval between Occurrence of Syncope and Commencement of Massage.—Posture.

This point appears to be fairly well decided. The limit is not conditioned by any cardiac consideration, at least not mainly, for the heart possesses remarkable powers of recuperation after prolonged periods of suspended circulation. The limit is a quite narrow one and is set by the length of time that the nerve centres can stand deprivation of blood; if this interval is too long, severe nervous symptoms supervene on restoration of the circulation, such as tetany, rigidity, screaming, incontinence of urine, and signs of severe cerebral irritation, and these generally terminate fatally. Evidently A. E. Russell's[11] limit of five minutes is a safe one, and is now generally accepted, but the case need not be regarded as absolutely hopeless after a longer interval; in Mollison's[9] case it was 13 minutes, but the patient only recovered after prolonged and serious cerebral symptoms had occurred. This time limit is within that in which intravascular clotting can occur, so that clotting requires no special consideration.

Partial inversion is no doubt of benefit in assisting the cerebral circulation, and the filling of the heart chambers. There is no experimental evidence to show that it assists recovery in any other way.

Chloroform Syncope.

The foregoing principles have a general application to cardiac massage under any circumstances. In chloroform narcosis two principal forms of syncope require some separate consideration.

1. *Syncope from Overdosage.*—In this form of syncope both the heart and respiratory centre are affected by the excess of chloroform, but the respiration fails first, and the heart subsequently, partly from the effect of the chloroform and partly from lack of oxygen. The heart's action is never totally suppressed by an overdose and it continues to beat, faintly it is true, but yet without doubt sufficiently to maintain a measure of pulmonary and coronary circulation; artificial respiration can thus restore the heart beat, first by supplying much needed oxygen, and secondly by causing exhalation of the excess of chloroform. It is my personal opinion that recovery can always be effected by artificial respiration alone when the latter is promptly applied, as probably it always is, but I recognise that if it be neglected the heart becomes totally asphyxiated and incapacitated and may not then be amenable to this treatment. In such an exceptional circumstance cardiac massage would be called

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† I presume the anæsthetist devotes his attention to the pulmonary ventilation.

Nesslerization of resultant ammonia. It was found to be convenient, rapid, and very constantly accurate, controlled by the usual Kjeldahl.

The excretion of acetone bodies, ketosis, is frequently associated with acidosis in supposed disturbance of the carbohydrate metabolism. Wishing to eliminate a possible ketosis as a factor in any condition of acidosis found to be present, we systematically examined all urines, both of controls and rachitic children, for acetone by Rothera's test on the day of the first examination. Acetone was absent in all cases, with the exception of one of the control cases, which was discarded.

Results.

For the purpose of tabulating results the children have been arranged according to age. From the control list of healthy children (Table I.), it will be seen that in the healthy child the ammonia ratio is roughly constant, approximating to the adult proportion of 5 per cent., average 6·2 per cent. The alkaline reserve is graded B or C—i.e., these children originally had an acid urine, but a dosage of gr. v. or gr. x. sodium bicarbonate was sufficient to turn it alkaline. Cols. 5 and 6 are of minor importance. They show the reduction in ammonia content (grammes per 100 c.cm.) under the influence of bicarbonate dosage, from the time of the original specimen until the reaction to litmus was changed. Owing to the varying concentration of urinary specimens from day to day, the comparison for these two columns is not a precise one. Generally speaking, however, there was a reduction of upwards of one-half on the content of the original specimen.

The control list of unhealthy (actually convalescent) children (Table II.) shows a definite increase in the ammonia ratio, which is, of course, known to be a very variable quantity in ill-health in early childhood. Average of this list = 10·5 per cent. Three series of rachitic children are shown: Table III., active cases, 13; Table IV., recovering cases, 14; and Table V., healed cases, 3. For all practical purposes the three children classified as healed rickets in Table V. rank with the controls. The average ammonia ratio was 5·9 per cent. and the grade of alkaline reserve was C. Two of these cases were seen by me just previous to their discharge from hospital, *after six months and one year respectively of in-treatment.* The third, I. C., was an *older* child, 4 years, who was admitted for double femoral osteotomy for genu valgum. She was otherwise healthy and normal.

Active Cases.

The series of active cases (Table III.) consists necessarily of the younger children, 8 months to 1 year and 4 months, actually, with acute manifestations of the disease. The clinical condition consisted of flabby musculature, associated with enlarged epiphyses, craniotabes, delayed dentition, sweating about the head, and in many of the cases bronchitis and laryngospasm. P. O'N. and Ch. C.

TABLE I.—CONTROL LIST OF HEALTHY CHILDREN.*

1	2	3	4†	5	6	7†
Child.	Age in years.	Nitrogen content, g. per 100 c.cm.	Ammonia content, g. per 100 c.cm.	Ammonia ratio.	Grade of alkaline reserve.	Reduction in ammonia content. G. per 100 c.cm. during period of dosage.
M. H. ..	8/12	0·77	0·0108	1·4	—	—
J. M. ..	8/12	1·0	0·1156	11·5	B	0·0935 to 0·1496
A. H. ..	10/12	0·84	0·1054	12·5	C	0·1938 ,, ?
D. D. ..	10/12	—	—	—	C	0·102 ,, 0·1411
G. H. C. ..	1 1/12	—	—	—	B	0·1156 ,, 0·0010
H. E. ..	1 1/12	—	—	—	A	0·0136
T. C. ..	1 2/12	1·25	0·0564	4·5	B	0·0714 to 0·0204
F. M. ..	1 2/12	—	—	—	B	0·0530 ,, nil.
E. B. ..	1 4/12	0·28	0·0272	9·7	B	0·0544 ,, 0·0816
C. C. ..	1 8/12	0·99	0·0224	2·5	C	0·0068 ,, 0·0051
E. B. ..	1 10/12	0·8	0·0731	8·2	B	0·0585 ,, 0·0292
D. H. ..	2	0·84	0·0653	7·7	C	0·0748 ,, 0·0258
T. J. ..	2	0·44	0·0292	6·6	B	0·0136 ,, 0·0163
E. L. ..	2	0·42	0·0122	2·9	C	0·0299 ,, 0·0197
S. R. ..	2	—	—	—	C	0·0408 ,, 0·0353
R. H. ..	2 6/12	0·92	0·0374	4·04	B	0·0153 ,, 0·0448
I. M. ..	2 6/12	1·66	0·0115	0·69	B	0·0700 ,, 0·0380
A. W. ..	2 6/12	0·62	0·0469	7·5	B	0·0272 ,, 0·0142
J. W. ..	2 10/12	0·68	0·0429	6·2	B	0·0306 ,, 0·0204
J. W. ..	3	—	—	—	B	0·1475 ,, 0·0333
T. W. ..	3 3/12	0·98	0·0707	7·2	B	0·3451 ,, 0·0040
M. F. ..	3 3/12	0·96	0·0816	8·5	B	0·085 ,, 0·0251
J. S. ..	3 4/12	1·04	0·0156	1·5	B	0·0281 ,, 0·0068
G. McG. ..	4	0·76	0·0493	3·75	C	0·0612 ,, 0·0414
N. McG. ..	4 6/12	0·76	0·0285	3·75	B	0·0085 ,, 0·0374

Average ammonia ratio = 6·2 per cent.
Grade of alkaline reserve, B or C (one exception A).

TABLE II.—CONTROL LIST OF UNHEALTHY CHILDREN.

Child.	Age in years.	Nitrogen content, g. per 100 c.cm.	Ammonia content, g. per 100 c.cm.	Ammonia ratio.	Grade of alkaline reserve.	Reduction in ammonia content. G. per 100 c.cm. during period of dosage.
T. W.[a] ..	10/12	0·92	0·1683	17·3	A	0·2992
L. M.[b] ..	1 2/12	0·82	0·0365	3·6	A	0·0051
J. B.[c] ..	1 5/12	0·97	0·0739	6·9	C	0·1156 to 0·0221
W. M.[d] ..	1 6/12	0·8	0·1071	11·68	C	0·1802 ,, 0·0629
R. E.[e] ..	1 7/12	1·01	0·0384	8·1	C	0·1292 ,, 0·0085
J. M.[f] ..	1 10/12	1·1	0·1496	13·6	B	0·1428 ,, 0·0340
O. J.[g] ..	2	0·82	0·0799	9·8	B	0·0918 ,, 0·0272
D. W.[h] ..	2	1·0	0·0654	6·5	B	0·0578 ,, 0·0187
J. J.[i] ..	2 6/12	1·23	0·1487	12·7	C	0·1904 ,, 0·0799
B. C.[j] ..	2 8/12	0·74	0·1108	14·9	D	0·2601 ,, 0·0313

Average ammonia ratio = 10·5 per cent.
Grade of alkaline reserve, A—C (one case D).
Suffering from *a*, *b*, *c*, marasmus; *d*, *e*, debility: adenoids; *f*, general malnutrition; *g*, tuberculous knee; *h*, septic scalp and glands; *i*, debility; *j*, adenoids, cough.

TABLE III.—RACHITIC CHILDREN. *Active Cases.*

1	2	3	4†	5	6	7†
Child.	Age in years.	Nitrogen content, g. per 100 c.cm.	Ammonia content, g. per 100 c.cm.	Ammonia ratio.	Grade of alkaline reserve.	Reduction in ammonia content. G. per 100 c.cm. during period of dosage.
G. M. ..	8/12	0·82	0·1237	15·1	F	0·0204 to 0·306
E. W. ..	9/12	0·78	0·1197	14·1	F	0·0780 ,, 0·0442
P. O'N. ..	10/12	0·98	0·1173	12·0	F	0·0918 ,, 0·1054
A. M. ..	11/12	0·8	0·2380	29·7	D	0·1411 ,, 0·1292
W. N. ..	11/12	0·69	0·0768	5·9	F	0·0768 ,, 0·1102
M. H. ..	1	0·89	0·1307	8·4	F	0·1224 ,, 0·085
Ch. C. ..	1	1·2	0·2584	21·2	—	—
J. K. ..	1 1/12	1·2	0·1402	11·5	C	0·1802 ,, 0·0969
S. M. ..	1 1/12	0·81	0·0637	7·7	D	0·0867 ,, 0·0578
P. L. ..	1 2/12	1·16	0·1453	7·4	F	0·1207 ,, 0·0901
A. S. ..	1 2/12	0·74	0·2248	30·4	C	0·2244 ,, 0·0408
S. A. ..	1 2/12	0·7	0·094	13·4	D	0·0931 ,, 0·0408
C. C. ..	1 4/12	1·0	0·0986	9·5	D	0·1399 ,, nil.

Average ammonia ratio = 14·3 per cent.
Grade of alkaline reserve, D to F (two cases C).

TABLE IV.—*Recovering Cases.*

Child.	Age in years.	Nitrogen content, g. per 100 c.cm.	Ammonia content, g. per 100 c.cm.	Ammonia ratio.	Grade of alkaline reserve.	Reduction in ammonia content. G. per 100 c.cm. during period of dosage.
J. R. ..	10/12	1·2	0·1370	11·6	B	0·0323 to 0·0030
F. H. ..	1	1·37	0·1516	10·9	A	0·102
E. H. ..	1 3/12	1·0	0·1139	9·9	B	0·1139 to 0·0102
K. K. ..	1 9/12	0·99	0·0714	7·2	A	0·0576
M. C. ..	1 11/12	1·77	0·1315	11·4	B	0·1298 to 0·0653
A. H. ..	2	0·87	0·0680	8·6	B	0·1020 ,, 0·0326
A. S. ..	2	1·47	0·1780	12·6	B	0·1462 ,, 0·0476
E. B. ..	2	0·81	0·22	25·6	A	0·1
I. R. ..	2 3/12	0·96	0·1924	20·0	C	0·0421 to 0·0102
A. M. ..	2 6/12	0·97	0·2193	21·6	A	0·2873
A. P. ..	2 10/12	0·79	0·0766	9·7	A	0·1434
G. A. ..	3	0·94	0·1180	12·7	C	0·1183 to 0·017
E. B. ..	3 3/12	1·48	0·2580	17·2	B	0·1416 ,, 0·0238
W. J. ..	3 4/12	0·84	0·0567	6·5	B	0·0319 ,, 0·0204

Average ammonia ratio = 13·2 per cent.
Grade of alkaline reserve, A or B (two cases C).

TABLE V.—*Healed Cases.*

Child.	Age in years.	Nitrogen content, g. per 100 c.cm.	Ammonia content, g. per 100 c.cm.	Ammonia ratio.	Grade of alkaline reserve.	Reduction in ammonia content. G. per 100 c.cm. during period of dosage.
K. A. ..	1 4/12	0·76	0·0357	4·7	C	0·0357 to 0·0323
S. C. ..	1 11/12	0·76	0·0612	8·0	C	0·0612 ,, 0·0428
I. C. ..	4 4/12	0·68	0·0346	5·1	C	0·0300 ,, 0·0272

Average ammonia ratio = 5·9 per cent.
Grade of alkaline reserve, C.

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* In the control cases only partially recorded, owing to their mothers being out of work, the children unfortunately ceased to attend the nursery before the investigation was complete. When, as in the majority of these cases, the investigation of the alkaline reserve had been done first, a week was allowed to elapse before the ammonia ratio was taken, in order that the effects of alkali dosage might wear off.

† Column 4 contains "whole-day" specimens; column 7 contains single specimens taken late in the afternoon (during period of dosage). A few cases curiously show an increase with dosage. This was also the case with many of the cases of active rickets, as though the alkali dosage actually helped them by encouraging their own reaction—i.e., the production of ammonia.

incidentally such an experiment shows how mechanical stimulus plays no part in the resuscitation of the normal beat. The recovery from fibrillation is sudden and characteristic; the first beats are sufficiently powerful to cause the blood pressure to mount up rapidly (Fig. 2), for the heart has not been depressed by an excess of chloroform.§

Sometimes a temporary cessation of fibrillation occurs within the first few minutes of onset, but the heart cannot beat because it is asphyxiated, and fibrillation is soon resumed. If such a period happens to be hit upon when commencing massage, recovery is easy and rapid, but the beats are first feeble and gain strength slowly, for it is a recovery from simple asphyxia. Apart from this happy chance the length of interval between syncope and the commencement of massage is not of great importance in relation to the rapidity of cardiac recovery, at least up to a limit of 15 minutes. The duration of massage is fortuitous; it varied from one up to 48 minutes in a series of 20 cats upon which I experimented. The following table shows my results *in extenso*. Every case had a successful issue, so that the absolute efficiency of massage for fibrillation in cats is remarkable.

Results of Massage for Fibrillation in Cats.

(A) Shows interval in minutes from moment of syncope to commencement of massage.

(B) Duration of massage before ventricular beat returned.

(A)	(B)	(A)	(B)
2 ..	19 min. 30 sec.; 20 sec.*; 1 min. 10 sec.*; 1 min.*; 9 min. 35 sec.; 1 min.*; 4 min.; 12 min. 30 sec.	5 ..	30 sec.*
2½..	2 min.; 4 min. 30 sec.; 9 min.	7 ..	48 min.
3 ..	16 min.; 5 min. 30 sec.; 20 sec.*; 2 min. 50 sec.	8 ..	22 min. 25 sec.; 6 min. 10 sec.
4 ..	3 min.	9 ..	23 min.
		10 ..	3 min. 15 sec.; 5 min. 40 sec.
		11 ..	4 min.
		12 ..	8 min.
		13 ..	4 min. 10 sec.; 7 min.
		15 ..	24 min. 30 sec.

* In those experiments marked by asterisks fibrillation was in abeyance when massage was commenced.

The blood pressure on recovery from fibrillation is nearly always satisfactory; should it be unsatisfactory an injection of pituitrin will improve it very much.

Use of Drugs.

McWilliam[8] tested the action of adrenalin and a number of other drugs upon the fibrillating ventricles; he used them in conjunction with massage and obtained successful results. I have repeated most of these experiments, but in my experience the results of massage alone are equally good, and I have so far been unable to convince myself that any of the drugs are of real service. Further research is desirable upon the subject, but for the present drugs are better left alone; the drug that will stop fibrillation is yet to be found.

It is for the treatment of primary cardiac syncope from ventricular fibrillation that cardiac massage finds its most urgent application. If a patient fails to recover spontaneously from fibrillation within two minutes massage becomes imperative, for there is no other remedy. I think I may claim to have demonstrated the effectiveness of this remedy; the treatment of ventricular fibrillation by this method in cats has been shown to be consistently successful, and I believe similar results can be obtained in man. It must, however, be admitted that the conditions are not so favourable in man. In animal experiments the chest is laid open and the heart made thoroughly accessible; it can be compressed by the fingers without undue fatigue, the efficiency of massage can be judged by inspecting the colour of the left auricle, the lungs are seen expanding and the efficiency of the artificial respiration can be gauged, and the nature of the fibrillary movements can be inspected. In man there must be some difficulty in getting at the heart and efficiently embracing the ventricles in the grasp, and fatigue of the operator's hand is an element which is not negligible in a prolonged case. The proposition in man seems to me a somewhat different one and occasional failures must be expected, but with a proper knowledge of the principles involved and their careful application very much better results may, I am persuaded, be obtained in cases of massage than has hitherto been the case.

Rules for Performance of Cardiac Massage in Chloroform Syncope.

(*a*) In syncope from overdosage. Partial inversion and immediate artificial respiration by Sylvester's method. If recovery does not occur within three minutes, artificial respiration alone is not likely to avail. Proceed after three minutes to perform intrathoracic massage with perflation of the lungs. (*b*) In syncope from primary cardiac syncope. Partial inversion for two minutes (with artificial respiration if the diagnosis is not quite certain). If spontaneous recovery does not occur within two minutes, proceed at once to intrathoracic massage, with perflation of the lungs. (*c*) In the interest of the nerve centres cardiac massage should be commenced within five minutes of syncope. (*d*) Success depends upon proper access to, and the efficient compression of both ventricles, and an efficient system of artificial respiration. (*e*) If continued rhythmic compression is not successful in five minutes, it should be intermitted for periods of up to 45 seconds' duration. (*f*) Massage should be continued, if necessary, up to one hour's duration before abandoning the case. (*g*) It is advisable to rely throughout on massage alone and discard the use of drugs. (*h*) If the circulation is feeble after recovery, an intravenous injection of pituitrin is desirable.

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§ Fibrillation does not occur in full chloroform anæsthesia.

A NOTE ON THE INVESTIGATION OF GASTRIC FUNCTION BEFORE AND AFTER GASTRO-JEJUNOSTOMY.

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IN obtaining these notes on the effects of gastro-jejunostomy on gastric secretion use has been made of the fractional test-meal as described by J. A. Ryle[1] and J. H. Ryffel,[2] the pioneer being Rehfuss.[3] All types of case have been examined—e.g., gastric and duodenal ulcers, carcinoma of the stomach—where a gastro-enterostomy has been performed, alone or together with a partial gastrectomy. The notes may give an indication as to what one anticipates will occur in a large series of each type of case. Such a complete paper will be published ultimately.

Ryffel has described the relative merits of the two methods of test-meal examination of the stomach, and Ryle has published his facts on the fractional test-meal for the diagnosis of gastric and duodenal lesions, and also his series of normal curves. Use was therefore made of the latter type of meal to arrive at a diagnosis before operation, together with a chemical examination of the fæces and also a barium meal examination of the stomach; notes were made about the lesion found at operation and of what was done; and after six months the patient was re-examined by X rays and by test-meal.

Four types of curves are shown in this paper: (1) Prepyloric gastric ulcers; (2) pyloric ulcers; (3) duodenal ulcers; (4) carcinoma of the stomach. The first curve, for comparison, is one of a so-called normal type (Fig. 1).

Group 1: Prepyloric Ulcers.

B. B., female, aged 46 years, had complained for two years of frequent attacks of indigestion; pain of a gnawing character usually came on about 35 minutes after taking to a diet of cow's milk (containing an excess of calcium salts) the usual empiric treatment in this country.

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[1] THE LANCET, 1920, ii., p. 490. [2] Ibid., 1921, i., p. 586.

[3] Amer. Journal of Science, 1914, Ch. 147, p. 848.

The presence of an acidosis in rickets calls for careful prophylactic measures, along lines likely to prevent such a condition, whether it be the determining factor in the disease or otherwise. Treatment on these lines has been excellently outlined by Pritchard.[14] It includes the correction of faults of dietary, more particularly overfeeding, provision for adequate exercise, surface stimulation by baths and fresh air, relief of respiratory embarrassment from whatever cause, and the avoidance of infections—catarrhal or otherwise—in so far as this can be arranged. Remedial measures must include the treatment of the underlying condition—that is, the treatment of an acidosis from whatever cause it has arisen.

In conclusion I have to thank Prof. Ramsden, Dr. Ruby McBirnie, the staff, medical and nursing, of the Liverpool Day Nurseries and of the Leasowe Hospital, and Dr. Phœbe Bigland for help at various stages of my work.

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WORTHING CHILDREN'S CARE SOCIETY.—Dr. R. H. Wilshaw, M.O.H. of Worthing, addressed this society at its annual meeting on Oct. 17th. He said that 12 years ago, when the society was first formed, the infantile mortality-rate of Worthing was over 100. In five or six years the rate was halved; in 1920 the figure was down to the record level of 39. These figures provided a sufficient answer to those who said there was no need for a Children's Care Society. Dr. Wilshaw attributed the fall in infantile mortality largely to the influence and work of this society and of the Infant Welfare Centre, and emphasised that the object of the two organisations was to keep healthy babies healthy, and not to cure sick ones.

SOUTH-WESTERN OPHTHALMOLOGICAL SOCIETY.—A meeting of this Society was held on Oct. 24th at the Eye Hospital, Bristol. After an exhibition of cases of interest Mr. Ransom Pickard opened a discussion on the Development of Normal and Abnormal Disc Cups, drawing particular attention to the need for systematic record of the dimensions of the disc cup; it should be available for future reference and comparison in the event of subsequent morbid developments within the eye. He brought forward a method for the charting of these data. After the meeting the members dined together at the Grand Hotel. An invitation to meet the Midland Ophthalmological Society next April in Birmingham was received from its President, Mr. Bernard Cridland, and accepted.

CARDIAC MASSAGE.*

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THE principles underlying massage of the heart are very much the same for whatever condition it is applied. I propose first to state these general principles, and later to discuss the employment of massage in chloroform syncope, a form of syncope with which I am most familiar from an experimental point of view, and a form which is, I think, of more interest to the surgeon than any other. The conclusions at which I have arrived are mainly the outcome of a recent investigation, and whilst I have some things to say which are new, a good deal is not new, but is in agreement with and serves to confirm the opinion of others.

J. A. Gunn[4] has recently published a paper in which he lays down certain physiological principles for guidance in performing massage, and whilst I am in accord with much that he has written, his paper requires expansion, for he deals with one form of chloroform syncope only—viz., that from overdosage—whereas primary cardiac syncope is the condition which calls most urgently for the application of this method of resuscitation.

I think that the small number of cases in which cardiac massage has been practised with a successful result are sufficiently well known to excuse further comment upon them, but I am sure that the large number of the unsuccessful attempts is unappreciated; they are, in fact, almost sufficiently numerous to bring cardiac massage into disrepute. This is not as it should be: I am therefore showing how consistently successful results are obtained in animals, and giving my reasons for the belief that similar results can be obtained in man. The sole function of cardiac massage, as I maintain in common with others, is to create an artificial circulation; to perfuse the lungs, and to supply the heart and central nervous tissues with oxygenated blood in order to preserve their function. This view has been brought forcibly home to me in my special work.

"Massage" a Misnomer—Massage and Mechanical Stimulus.

The term "massage" is a misnomer; it is not massage of the muscular tissue of the heart which is required, but a rhythmical compression of the heart efficient in expelling with fair force the contents of both ventricles; the right ventricle must be compressed as well as the left, and I have not found my experimental results to be consistently satisfactory unless this point receives careful attention. Obviously a good supply of oxygenated blood to the left ventricle can only be obtained by emptying the right. In the human heart the hand must therefore have ready access to the right ventricle, and this is one of the points in surgical technique which tend to turn the scale between success and failure.

I may digress for a moment to a point of more academic interest. Gunn[4] maintains that massage also acts as a mechanical stimulus to the heart beat; it is, however, difficult to see how this can be, or to agree that sufficient reason has been given in support of this view. Personally I believe massage is deleterious to the heart beat and I think Gunn and Martin's[5] own experiments may be interpreted as bearing out this point of view; the heart beat is most certainly not initiated in cases of ventricular fibrillation (see Fig. 2) by mechanical stimulus, and I think this theory should be entirely disregarded in considering practical methods.

Surgical Technique.

The technique of obtaining proper access to the heart and compressing it is evidently of great importance; direct access to the heart appears to me to be essential. In a number of recorded cases of the

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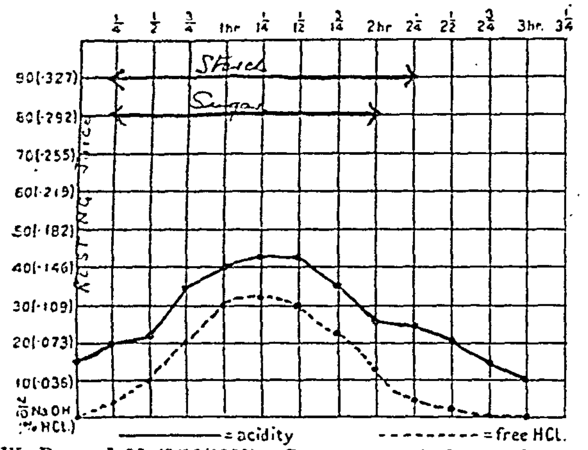
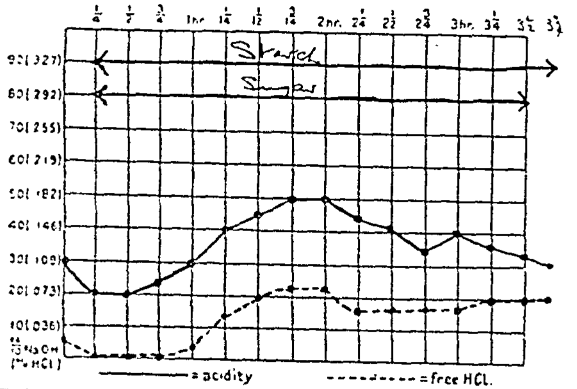
* A paper read at a meeting of the Section of Surgery of the Royal Society of Medicine on July 1st, 1921.

FIG. 1.



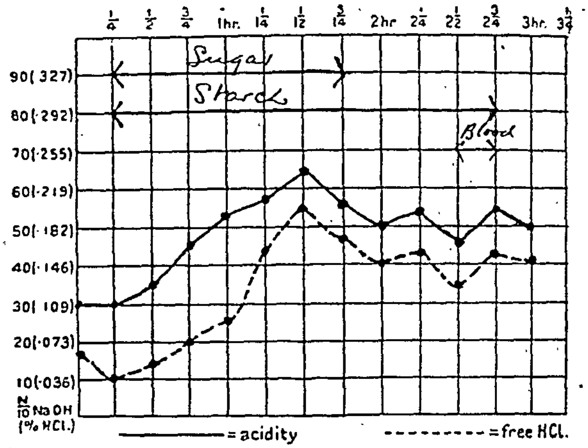
W. B., aged 35 (3/12/1920). Curve of so-called normal type. Note that the rise of free hydrochloric acid and the total acidity does not reach any great level, and that the stomach is emptying in normal time (2¼–2½ hours) as indicated by the sugar and starch estimation. Any other constituent present—e.g., bile or blood—will be found charted on the curves.

FIG. 2.



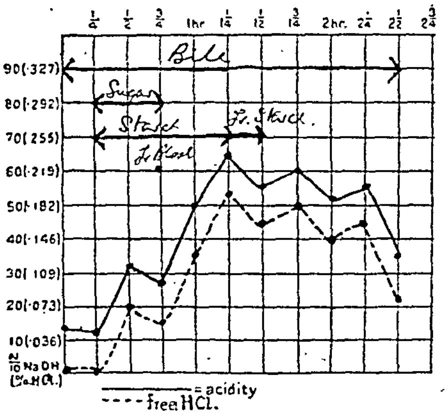
B. B., aged 46 (3/11/1920). Before operation. Note the delay in emptying of the stomach and slow rise of acid.

FIG. 4.



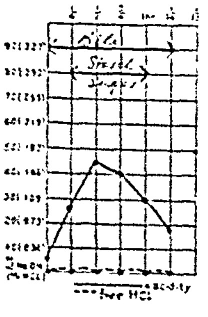
T. G., aged 27 (10/6/1920). Pyloric ulcer. Note stomach late in emptying; hyperchlorhydria; presence of blood.

FIG. 5.



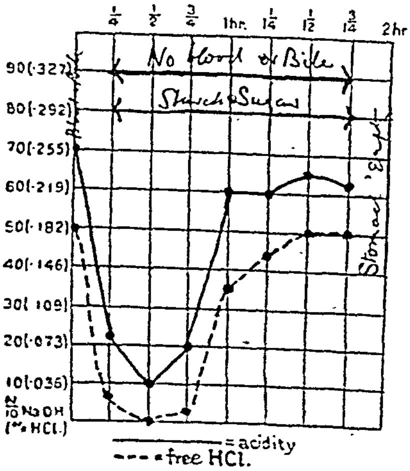
Same patient as Fig. 4 (14/1/1921) after gastro-jejunostomy. Note stomach emptying rapidly; bile present; maximum total acidity and maximum free hydrochloric acid reach same level before and after gastro-jejunostomy.

FIG. 3.



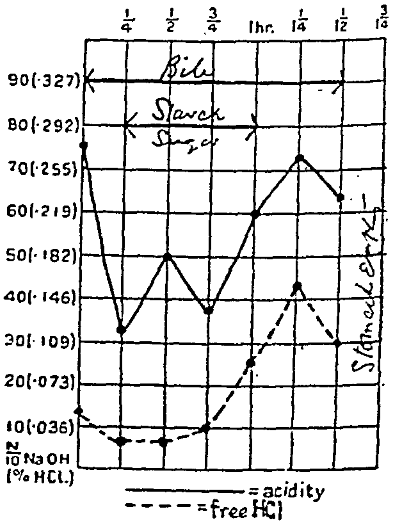
Same patient as Fig. 2 (11/3/1921) after gastro-jejunostomy. Note the rapid rate of emptying of the stomach and the presence of bile; no free hydrochloric acid. Total acidity reaches 46 (cf. before operation 50).

FIG. 6.



T. C., aged 45. Duodenal ulcer before operation. Note highly acid resting juice, rapid emptying of stomach; hyperchlorhydria.

FIG. 7.



Same patient as Fig. 6. Duodenal ulcer after gastro-jejunostomy. Note high total acidity resting juice, but the free hydrochloric acid is diminished. During the meal the total acid reaches as high a level as before operation, whereas the free hydrochloric is slightly diminished. Bile present throughout; rapid emptying of stomach.

for. The adequacy of massage to restore the beat of the overdosed heart has been fully proved; my personal experience in experiments on cats has been a rapid success in all cases, even in hearts artificially overdosed to the complete extinction of the ventricular beat. The heart recovers from an overdose in a characteristic fashion. The beat is at first very feeble and may require further massage to improve it. Thenceforth improvement in both beat and blood pressure is gradual and progressive, consistent with the view that the heart gains in strength as the blood excretes its chloroform (Fig. 1).

Jones[6] following the injection of adrenalin under chloroform were certainly due to ventricular fibrillation, yet they all recovered without treatment; a number of reports of spontaneous recovery from primary cardiac syncope in chloroform anæsthesia are found in the pages of the Report of the Anæsthetic Committee of the British Medical Association, and in these instances there can be little doubt fibrillation had occurred.

I am laying stress upon this tendency towards spontaneous recovery from fibrillation in man, because it is correlated with success in the practice of cardiac massage, massage being merely a means of saving the heart from asphyxia, and affording it a prolonged opportunity of exerting its natural tendency to recover spontaneously. In dogs there is little of this tendency, and attempts at resuscitation by massage generally terminate in failure. In cats, on the other hand, there is a conspicuous tendency towards spontaneous recovery, and in these animals I have found cardiac massage consistently successful. I therefore class man in the same category as the cat, in respect of the successful issue of massage. In cats spontaneous recovery always occurs whilst the heart is still vigorous and the fibrillary movements active—that is, within the first one and a quarter minutes from the moment of syncope; it cannot occur later when the heart has become asphyxiated. On perfusing the heart with oxygenated blood by massage with artificial respiration the active fibrillation is sustained until sooner or later, provided massage is continued sufficiently long, the fibrillary movements are replaced by the normal sequential beat.‡ The practical lesson is obvious: not more than two minutes should be allowed for the chance of spontaneous recovery following primary cardiac syncope in man and thereafter cardiac massage should be proceeded with without hesitation. If recovery has not been effected after five minutes of continuous massage, this should be intermitted by a pause of about 15 seconds, later extended to 45 seconds, and this procedure may be found successful either during the pause or on resumption of massage. A pause appears to rest the heart from the depressing influence of manipulation, for it results in increased fibrillary activity. An illustration of this event is shown in Fig. 2;

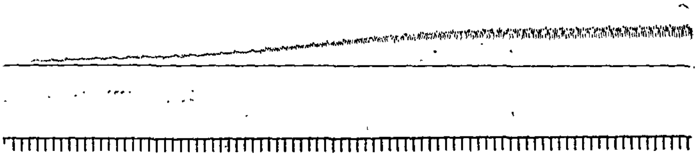


FIG. 1 (full size).—Blood-pressure curve from an experiment upon a cat. Hurtlé manometer, time marked in seconds. *The heart had been overdosed with chloroform to extinction of the beat.* The heart beat was restored by massage and artificial respiration, and the tracing shows the characteristic gradual improvement of beat and blood pressure which occurs after an overdose.

Gunn[4] recommends washing adrenalin into the heart through the jugular vein before commencing massage, but it cannot enter the coronary circulation unless the heart is beating, when it is not wanted, or until the commencement of massage, which succeeds without it. In my own experimental experience adrenalin has no beneficial effect upon a heart which has been overdosed with chloroform to the extinction of its function, so that it does not appear to me that the risky combination of adrenalin and chloroform is justified by any theoretical consideration. If the blood pressure is low following recovery, then pituitrin should be injected, not adrenalin, for the latter is dangerous to the heart which has thrown off its excess of chloroform. I can confirm Gunn and Martin's observation that although the action of the vasoconstrictor agent be temporary, the effect in such circumstances tends to be a permanent rise of pressure.

2. *Primary Cardiac Syncope.*—In this form of syncope the respiratory centre is not depressed by the chloroform, and the respirations continue for a short period after the stoppage of the heart, but the respirations fail likewise shortly afterwards owing to cessation of the circulation. Neither is the heart depressed by the chloroform; it fails *quite suddenly* from the onset of ventricular fibrillation in the course of full activity. Sometimes the respirations are exaggerated immediately before they finally cease, sometimes there is a spasm of the whole body; sudden pallor and extreme dilatation of the pupils also help to identify this form of syncope. Ventricular fibrillation has generally been regarded as necessarily fatal, but this is by no means the case; that recovery may occur in man is proved by the electrocardiographic record obtained by Robinson and Bredeck,[10] and there is indeed in my opinion clinical evidence that spontaneous recovery is more common in man than a fatal termination. Three cases of serious syncope noted by Seymour

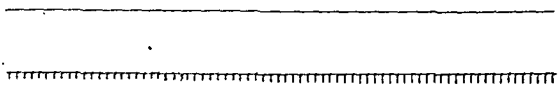


FIG. 2 (full size).—Blood-pressure curve from an experiment on a cat. Hurtlé manometer. Time marked in seconds. Resuscitation of the fibrillating ventricles by cardiac massage combined with artificial respiration. The tracing shows two periods of massage, 1 and 3, and two pauses, 2 and 4. The heart recovers during a pause. The recovery from fibrillation, 5, is characteristically rapid, and contrasts vividly with the gradual recovery after overdose.

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‡ Recovery from fibrillation is not merely a recovery from inactivity, as it is in the case of overdosage. The normal beat is not superposed on fibrillation, and the latter must cease before recovery can take place; there is a momentary phase of inactivity interposed.

Clinical Notes:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
CYSTICERCUS CELLULOSÆ IN MAN.

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THE following case of *Cysticercus cellulosæ* occurring in an army pensioner is of sufficient rarity and interest to merit record.

J. V. B. was admitted to this hospital on Jan. 24th, 1921, with the invaliding disability of malaria and an indefinite history of fits. During the routine case-taking examination of this patient it was found that he had what appeared to be several subcutaneous nodules, varying in size from that of a pea to a cherry. The body distribution was as follows: One at the angle of the right lip, three on the front of the chest, 15 on the back and posterior aspect of the neck, and five on each of the arms and legs. As the nodules seemed roughly to follow the line of the cutaneous nerves a provisional diagnosis of multiple neuro-fibromata was made pending the removal and examination of one of the nodules.

On the 30th three of the small tumours were excised. During the process of removal it was found that the nodules were intramuscular cysts, being covered by a few muscle fibres, subcutaneous tissues, and skin.

Following is a description of the condition found:

(1) Each individual cyst really consisted of two, an ectocyst and an endocyst. The wall of the ectocyst was composed of dense fibrous tissue, reactive from the patient.

(2) On opening the wall of the ectocyst about half a c.cm. of serous fluid escaped and the endocyst was exposed; this was the true *Cysticercus cellulosæ*.

(3) The wall of the smaller cyst—i.e., the *Cysticercus cellulosæ*—was the caudal vesicle of the worm, into which the worm's head and body were invaginated like a glove turned partly inside out. We were able, by gentle pressure, to evaginate these parts of the worm from its caudal vesicle, through a very small aperture in the cyst wall. The head carried four suckers and a rostellum armed with a double row of chitinous hooks.

Signs and symptoms.—The patient complained: (*a*) That he had fits, about one every four weeks; (*b*) that whenever he had a high temperature, whether from malaria or from other causes, the "little lumps" become very sore. With regard to the fits, he was observed in three of these during his stay in hospital; they were not epileptiform in character, but were more like vertigo. There were no localising signs of a cerebral tumour; the patient's cranial nerves, as well as his deep reflexes, were quite normal. There was no history of headaches, or of vomiting, nor was there any error of refraction present; the fundi oculi were quite normal. Several blood counts were taken: an average of these showed red blood corpuscles 5,675,000, white blood corpuscles 11,375, and of the white blood corpuscles 20 per cent. were consistently eosinophiles.

History.—A brief account of the patient's life before his admission to hospital may be of interest. Born in London, in 1885, he lived there until 1908, employed for some years as a horse-breaker; he was always healthy. He joined the Regular Army in 1908 and went direct to India, where he was stationed for six years, during which period there was no history of any illness. He stated that he never bathed in rivers or lakes, but that when in India he used to drink rain-water. He returned to England in 1914 and was drafted to Salonica in 1917; at this latter place he contracted malaria in 1918. During the latter year he noticed "little lumps" forming in the skin of his face and on the back of his neck.

Treatment.—In addition to treatment of the malaria every attempt was made to rid the patient of the cysticerci. A concentrated couse of intravenous neokharsivan was given without any apparent benefit. Following this a course of antimony tartrate intravenously was tried, but with little or no appreciable result. The third method of treatment was purely local and was of some benefit; it consisted of puncture of the superficial cysts with a hypodermic needle and injection of carbolic acid in glycerine (20 per cent.) into them. A brisk local reaction occurred, but it was followed by the disappearance of the cyst in a day or two. Unfortunately, it was only the most superficial cysts that could be treated in this way. In all 18 cysts have been destroyed, but numerous others are probably present in the deeper tissues.

Mode of infection.—It is an acknowledged fact that if man eats "measly pork"—viz., pig's muscle in which *Cysticerci cellulosæ* are embedded—he will develop the adult *Tænia solium*, which will live as a parasite in his intestines. If, however, he unfortunately ingests, either in his food or drink, the ova or an egg filled segment of the *Tænia solium* he stands a chance of infection with the encysted embryonic form (i.e., *Cysticercus cellulosæ*) of the tape-worm, and may himself become "measly." Man seems to be particularly immune from this condition, and I have only been able to trace six prior brain-cases in the literature [1] as having occurred in Great Britain. When, thus rarely, the ripe ova of the tape-worm find their way into the human stomach their shell is dissolved by the gastric juice; the freed embryos pass, by means of their hooklets, through the walls of the stomach or intestines, and are dispersed by the blood-stream into all parts of the body, but they seem to have a particular tendency to settle in the brain, spinal cord, and the inter-fascicular connective tissue of the muscles. Küchenmeister, whilst experimenting on condemned criminals in 1855,[2] and Leuckart in 1856, found that auto-infection could occur—viz., that a patient harbouring tape-worms could infect himself with *Cysticercus cellulosæ* either by contaminating his food-stuffs with hands soiled with ova, or by regurgitating the ova or ripe segments of the worm during the act of vomiting.

Exactly how this pensioner became infected is purely a matter for speculation. He had never, to the best of his belief, passed a tape-worm, and certainly did not pass one during his stay in hospital, as his stools were most carefully examined, against a dark background, after the administration of large doses of anthelmintics. It is possible that he ingested the ova or a ripe segment of a tape-worm in the rain-water that he used to drink whilst in India.

I am permitted to publish these notes by the kind permission of Colonel F. J. Greig, C.M.G., A.M.S. (R.), medical supt. of the hospital, and of Dr. D. Wells Patterson, the consulting physician.

I am indebted to Dr. P. C. Laws, bacteriologist to this hospital, and to Mr. T. W. Flattely, lecturer in zoology at Armstrong College, Newcastle-on-Tyne, for their kind help in examining the cysts with me, and for making serial microscopical sections of them.

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2. Küchenmeister, F.: Wiener medicinische Wochenschrift, 1855 and 1860. Leuckart, R.: Blasenbandwürmer, 1856.

A CASE OF GENERAL INFECTION BY
CYSTICERCUS CELLULOSÆ.

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THE following case of general infection by *Cysticercus cellulosæ* is sufficiently uncommon to be of interest. The disease was believed to have been contracted in India.

A female patient was admitted to the Mental Hospital on July 13th, 1918, suffering from melancholia and with a history of headache and dimness of vision for two months, having also had two fits with transient weakness of left side a fortnight before admission. Her general condition was fairly good and she talked rationally but was very depressed. She complained of pain on left side of head; there was deafness in left ear; sight in both eyes was so diminished that she could not read newspaper headings; no sign of hemiplegia. There were numerous small shotty sub-food, lasting for about five hours; it was not alleviated by taking food or medicine. She never had had hæmatemesis, and only on rare occasions did she vomit. In the last three months she had lost a considerable amount of weight; this loss she ascribed to her inability to take food for fear of the pain it would cause her. Physical examination showed the patient to be thin and wasted, but no abnormality was detected on palpation. Test-meal showed that her rise of acid was slow and that her rate of emptying was also slow. This pointed to gastroptosis, but as the fæces contained altered blood, as shown by an acid hæmatin spectrum and a positive guaiac reaction, it was decided that she might have a prepyloric ulcer with adhesions.

X ray examination of the stomach—carried out with all other X ray examinations recorded in these notes by Mr. J. Magnus Redding, surgical radiographer to Guy's Hospital, and by whom all X ray examinations published in these notes were performed—resulted in the following report: "Stomach deeply ptosed and is hypotonic, and contains a good deal of fluid. The motility is poor. There is a projection from the posterior surface of the stomach near the lesser curvature in the prepyloric position. ? an ulcer. The duodenum shows considerable deformity, suggestive of adhesions." Note that the diagnoses arrived at by test-meal and X rays are practically identical.

An operation was performed a few days later and a prepyloric gastric ulcer on the lesser curvature of the stomach was found. The greater omentum was bound down to the pelvis, a fact due to a previous operation (hysterectomy) performed; and so this binding down of the stomach via the greater omentum caused a certain amount of gastroptosis. Posterior gastro-jejunostomy was performed; the patient made an uneventful recovery.

Six months after her discharge from hospital I saw patient again and carried out another test-meal examination. She stated that she had had no recurrence of pain, had put on weight, and felt much better in every way. Test-meal showed that at no time did she get free hydrochloric acid into her stomach, but that the total acidity in ½ hour reached the maximum and was as high as the total acidity before operation, but in this case she had bile in her resting juice, and a great quantity of bile was poured into the stomach during the period of examination. It was impossible to extract fluid after 1¼ hours (stomach empty).

From comparison of the test-meal before and after operation it seemed that: (1) Bile entered the stomach in large quantities; (2) the stomach emptied rapidly; (3) no free acid was obtained ? due to neutralisation from the bile; (4) the total acidity reached the same level as before operation, but the free hydrochloric acid was diminished. These four facts have been found to occur in every case of prepyloric ulcer examined up to the present time.

Group 2: Pyloric Ulcers (with or without Stenosis).

As will be seen from the accompanying curves, before and after gastro-jejunostomy in this type, the total acidity reached in both curves is about the same level, although the time relation may alter and also that the same rule applies to the free hydrochloric acid. The stomach is emptying usually more rapidly, and bile is entering the stomach.

T. G., male, aged 27 years, gave a three years' history of intense pain coming on very quickly after meals, and at first persisting for one hour; but this period later extended so much that in the end the patient had scarcely any interval between the pain of one meal and the pain coming on from the second. In spite of medicinal treatment and dieting patient's symptoms steadily got worse, and in the end became so severe that he was unable to leave his bed. Test-meal examination showed delayed emptying of the stomach as shown by the persistence of starch and sugar; there was also hyperchlorhydria and blood was present. Pyloric ulcer with stenosis was diagnosed. Fæces contained altered blood. X ray examination showed no abnormality.

At operation a large pyloric ulcer stuck down to the pancreas was found, causing pyloric stenosis. In addition there were numerous adhesions to the liver and gall-bladder. A posterior gastro-jejunostomy was performed. Six months after operation patient looked a new man, and felt strong and well. He had put on almost eight pounds in weight, could take any type of food, although he restricted himself somewhat on previous advice, and he had had no recurrence of symptoms.

Group 3: Duodenal Ulcers.

T. C., male, aged 45 years, has had attacks of indigestion for some years. In the last three months the attacks of pain which came on about 1¼ hours after taking a meal had become steadily worse. He was awakened at nights with "hunger pain." In the early stages the taking of food had relieved the pain a little, but in the later stages this had had no effect. He had much flatulence. Physical examination showed patient tender in the epigastrium rather to the right of the mid-line; otherwise no abnormality. Test-meal showed a high resting juice containing bile; during the meal the free acid and total acidity rose to a much higher level than in any curve mentioned before. The stomach was emptying rapidly. Fæces contained altered blood. X ray examination showed presence of an irregularity near the pylorus on the duodenal side.

At operation a duodenal ulcer ½ in. from the pyloric ring was found. A posterior gastro-jejunostomy was performed. Six months later patient was very much better, had put on weight, and had had no recurrence of pain. Test-meal showed bile to be present throughout the whole meal—the resting juice was still high in acidity, the maximum of the curve for total acidity was as high as before, whilst the free acid almost reached the same level. The free acid in the resting juice is diminished in quantity.

Group 4: Carcinoma of the Stomach.

(A) *Partial Gastrectomy and Gastro-jejunostomy.*—Mary W., aged 39 years, had been losing weight steadily for six months, and had begun to get pain on taking her meals. She vomited occasionally, and was now able to take sloppy foods only. Examination showed the presence of a hard movable mass in the epigastrium about the size of a florin. Test-meal showed a low free hydrochloric acid and a moderate curve for total acidity. Blood was also present as coffee grounds. This was taken as an indication of carcinoma. X rays: Stomach showed profound ptosis, the greater curvature lying nearly at the upper border of the symphysis pubis. Motility poor and meal leaving slowly. Pyloric canal elongated with an irregularity. Sixth hour: Some of meal still in stomach. Thirtieth hour: Still some meal in stomach. Fæces, altered blood present.

Operation.—A movable pyloric growth (carcinoma microscopically) discovered. Some enlarged glands along the curvatures of the stomach. Partial gastrectomy, and gastro-jejunostomy (Polya-Mayo method). Six months later patient could eat a hearty meal, and had no pain. She had put on weight—about 7 pounds—and had no vomiting. Test-meal showed the absolute absence of free hydrochloric acid and a very low total acidity curve. The remains of the stomach were emptying quickly.

In the other cases of gastrectomy I have collected there was no free hydrochloric acid in either curve, before or after operation.

B. *Carcinoma Ventriculi: Gastro-jejunostomy only.*—A. C., male, aged 51 years, had been losing weight for about a year. Pain in the epigastrium, present at all times, was getting steadily worse, and it was accompanied by vomiting. Physical examination revealed nothing, but it was noticed that patient was extremely wasted. Test-meal showed great delay in the emptying of the stomach, blood was present, and the free hydrochloric acid was low and late in appearing. Diagnosis was pyloric stenosis, probably due to growth. X rays showed the stomach to be of large capacity, the lower pole being 2 inches below the iliac crest. No irregularity along either curvature, but the barium was leaving slowly. After five hours stomach was a quarter full; no tenderness.

At operation a large pyloric carcinoma was found, and there were secondary deposits in the liver. A posterior gastro-jejunostomy was performed. Subsequent examination showed that patient had been relieved of his pain and that his stomach was emptying in about normal time. A certain amount of bile was present and a positive guaiac was obtained in the stomach contents. The free hydrochloric acid was not present, and the total acidity was lower than in the first meal before operation.

I have also had the good fortune to have two cases of prepyloric ulcer—one treated by excision of the ulcer only, and the other where the ulcer was cauterised and a gastro-jejunostomy performed, and in both cases have the results followed into the prepyloric group. I have also had the better fortune to have the pre- and post-operative results of three cases of gastro-jejunal ulcer following a previous gastro-jejunostomy. In each case after excision of the gastro-jejunal ulcer, the previous curve being of the duodenal ulcer type, the second curve has followed into the same group—i.e., the duodenal ulcer grouping.

Conclusion.

The indications at present arrived at seem to show that—

(*a*) Ulcers can be grouped under three headings: (1) Prepyloric, including cardiac ulcers; (2) pyloric urine for examination. The modern patient led his life in much greater comfort, and we were justified in believing that as long as he conformed to treatment his expectation of life was much increased. These were no small gains; but, concluded Sir Archibald Garrod, whilst our control of the malady was now much more efficient we were unfortunately still as far as ever from being able to cure our patients.

Mild and Severe Types of Diabetes.

Sir WILLIAM WILLCOX said that cases of diabetes varied enormously in severity, the milder types being more commonly treated by the general practitioner, while hospital cases were, as a rule, of the severer type. The milder type, called by Pavy "alimentary diabetes," could be recognised clinically by the condition of the patient, who did not exhibit wasting, and in whom thirst and polyuria were not marked. Usually acetone and diacetic acid were absent from the urine, although sugar might be present in high percentage. In cases of this type treatment by a short period of fasting quickly banished sugar from the urine, and the carbohydrate tolerance was then gradually determined by a graduated dietary of known carbohydrate content. Sugar should not be permitted, and the treatment of such cases consisted in so regulating the diet that the urine remained sugar-free. Sir William Willcox said that certain cases of this type occurring in well-nourished and plethoric patients only exhibited glycosuria after such indiscretions in diet as alcohol or excess of meat, quite apart from carbohydrate. A careful regulation of all the constituents of the diet should be insisted on, and toxic causes of glycosuria sought for and removed. The severe type of diabetes was associated with a more or less complete impairment of the pancreatic function of control of the carbohydrate metabolism. In very severe cases pancreatic control appeared to be permanently lost. Such cases were incurable, although the symptoms might be to a great extent alleviated. The pancreas from its deep-seated position in the body was incapable of physical examination, and irreparable damage might occur to the islands of Langerhans without any warning. No premonitory symptoms such as occur in the case of the liver became evident, and glycosuria was the first sign of damage which had already been effected.

Toxic Foci to be Removed.

The first step in the treatment of diabetes should be the detection and removal, if possible, of the cause; and the true cause of diabetes was damage to the pancreas by some toxic agent, in many cases no doubt bacterial. Sir William Willcox had seen severe glycosuria associated with carbuncle disappear after successful treatment of the septic lesion. In such a case it appeared that the toxins absorbed caused temporary arrest of the pancreatic function. Temporary glycosuria was well known in mumps, and numerous cases of glycosuria in syphilis had been cured by anti-syphilitic treatment. In several of the speaker's cases of diabetes bacteriological investigations had revealed abnormal intestinal infections. In one case the stools contained an excess of pathogenic streptococci and a non-lactose-fermenting Morgan's bacillus. In this case there was a history of catarrhal jaundice followed three months later by severe influenza, glycosuria being accidentally discovered six months later. Sir William Willcox did not think that the importance of the removal of possible toxic foci had been sufficiently realised in the treatment of diabetes. In every case it was of the utmost importance to make a most careful search. Examination of the tonsils and naso-pharynx, X ray examination of the teeth, bacteriological examination of the stools and urine, the Wassermann test, and so forth, should all be carried out, and any source of toxic poisoning found appropriately treated. Unfortunately many of the severe cases of diabetes were not seen until the pancreas had already suffered irreparable damage, and in such cases little could be expected from treatment.

The Routine of Treatment.

Sir William Willcox said that during the last two and a half years all his cases of diabetes at St. Mary's Hospital had been treated on the lines laid down by Allen and Joslin. Glycosuria had been removed in all cases, and marked improvement had occurred in all but one patient, who also suffered from advanced phthisis. During the patient's stay in hospital the carbohydrate, protein, and fat tolerance was determined and alternative diets were drawn up which were well below the limits of his tolerance, so that the regulation of the dietary had been possible after the patient left hospital. The patient was further instructed to test the urine, and carry out regular fasts; with occasional supervision glycosuria had either been prevented or at least kept under control. In severe cases with low carbohydrate tolerance, two ounces of whisky might be added to the diet, thus providing a much-needed 210 calories, and giving the patient a sense of well-being. Alcohol should not be given on fasting days, and was best avoided in milder cases. The early signs of acidosis should always be carefully looked for and fat and protein withdrawn from the dietary and carbohydrate reduced to 1 g. per kilo. of body-weight in the form of oatmeal and orange juice. Alkalies, although they did not neutralise the toxic group in aceto-acetic acid, helped by increasing the CO_2 elimination. He gave citrate and bicarbonate of soda in doses of 40 gr. every two hours in cases of threatening acidosis, with beneficial results. During the last year, at the suggestion of Prof. B. J. Collingwood, he had given glucose solution by the rectum in 10 severe cases. The amount of glucose so administered greatly exceeded the carbohydrate tolerance, but in no case did glycosuria result. Analyses of the fluid in the rectum made it clear that more than 25 per cent. of the glucose had been absorbed. He thought this might be useful in cases of acidosis with threatening coma. Drugs were not usually needed, other than alkalies for acidosis, but Sir William Willcox said he had found codeine in doses of ½ to 1 gr. t.d.s. useful in controlling the glycosuria in patients who must of necessity carry on their work.

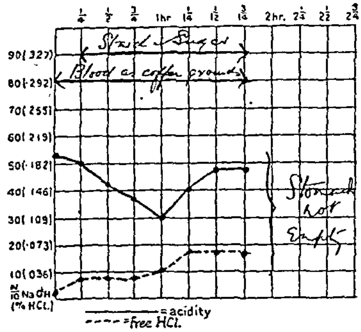
Three Groups of Patients.

Dr. O. LEYTON said that for purposes of treatment patients suffering from diabetes mellitus should be divided into three groups. The first group consisted of patients who had comparatively recently developed the disease, were over 40 years of age, and in all probability came into this world with undersized pancreases and oversized appetites. After years of overwork the pancreas began to degenerate. This degeneration might be arrested if the work thrown upon the gland were decreased. Allen's experiments upon dogs, from which he had removed fractions of the pancreas, suggested the existence of this group. Allen found that a dog could live with one-sixth of its pancreas intact provided it was not overfed; whilst a dog with half its pancreas could be made to develop diabetes mellitus and die from it, provided it was systematically overfed. One might assume that the individual developing diabetes mellitus had a congenitally small pancreas since all gourmands did not develop diabetes mellitus.

The second group consisted of patients in whom acute diabetes had developed comparatively recently. Occasionally the onset was associated with some definite disease, or with a slight pyrexia suggestive of an infective origin. Dr. Leyton had seen quite a number of young people who had given similar histories—namely, that they had felt feverish, had been sent to bed for a few days by their doctor, and had attributed their thirst to the fever, but that after getting up the thirst had persisted. This had led to an examination of the urine which demonstrated sugar.

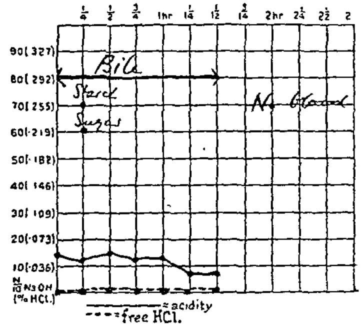
The third group consisted of all those cases in which the pancreas had deteriorated to such an extent that it was impossible to find a diet possessing sufficient energy to maintain life and keep the blood-sugar normal. This group contained the patients who earlier

FIG. 8.



M. W., aged 39 (16/10/1920): Carcinoma pylorus. Note presence of blood and low degree of free acid.

FIG. 9.



Same patient as Fig. 8 (15/1/1921): After gastro-jejunostomy and partial gastrectomy. Note diminished total acidity and free acid; bile present throughout. Absence of blood in second meal.

ulcers (simple or with stenosis); (3) duodenal ulcers. Growths form a fourth group, regardless of type of operation.

(b) No matter the type of operation (e.g., gastro-jejunostomy alone or together with excision of the ulcer), in prepyloric ulcers the curves obtained before and after operation differ in that the free hydrochloric acid is diminished, but the total acidity reaches roughly its previous level; bile enters the stomach during the meal, and the stomach is emptying more rapidly than before.

(c) Pyloric ulcers, after gastro-jejunostomy, have the same type of curve as before operation.

(d) Duodenal ulcers have a highly acid resting juice, with a slightly diminished free hydrochloric acid, and the remaining part of the curve reaches about the same maximum as before, although it may be obtained quicker after operation.

(e) Carcinomata have a low free and total acidity both before and after gastro-jejunostomy.

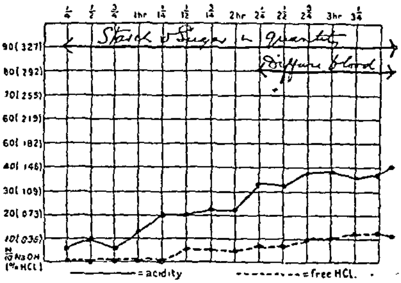
(f) In all cases of gastro-jejunostomy the stomach is emptying quicker than before the operation.

(g) In all cases a varying amount of bile gets into the stomach during some part of the meal.

(h) In all cases when the gastro-jejunostomy has been successful, pain has been relieved.

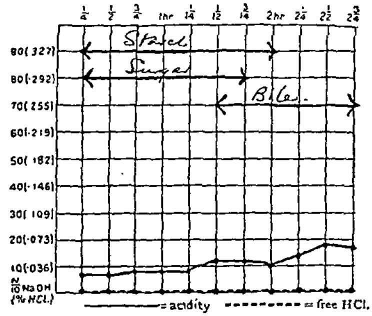
(k) In most cases of simple ulcer weight has been put on.

FIG. 10.



A. C., aged 51 (9/1/1921): Carcinoma ventriculi. Note great delay in emptying of stomach. Low free acid; presence of blood.

FIG. 11.



Same patient as Fig. 10 (27/6/1921) after gastro-jejunostomy. Note presence of bile; no visible blood; stomach emptying more quickly than before. No free acid in second meal.

I should like to take this opportunity of expressing my thanks to the surgeons and assistant surgeons of Guy's Hospital for the facilities they have given me to make use of their cases, and particularly to Dr. Ryffel and Dr. Ryle for numerous suggestions and advice on the varying difficulties that had to be overcome.

GENEVA MEDICAL SOCIETY.—Dr. F. G. Crookshank will deliver the Revilliod-Julliard Lecture on Thursday, Nov. 10th, the subject being the Traditions and Development of British Medicine.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The first meeting of the session was held at the Miller Hospital, Greenwich, on Oct. 14th. Dr. C. T. T. Comber was elected President and on taking office remarked that the society was the oldest local medical society in the London area, being instituted in October, 1856. Mr. Cecil A. Joll showed a female patient of 79 years of age from whom he had removed part of the stomach. Dr. H. Nockolds showed a curious case of generally distributed and painful bony tumours which had been present from birth. Dr. Montague Hine showed two cases of glaucoma, a case of complete ophthalmoplegia externa, and an injury to the retina due to a shrapnel wound of the cheek. Mr. Hugh Davies showed part of the stomach removed from a woman aged 75 years very similar to the case of Mr. Joll. Dr. E. P. Cumberbatch showed a case from whom he had removed a bony growth from the heel by caustic potash and ionisation.

out of the diet in the home depended, as a rule, upon the patient, who should know the why and wherefore of each step and be able to make simple changes for himself. Dr. Spriggs had recently introduced at Duff House a short course of instruction for patients while their cases were being investigated. A class was held by the diet sister, in which patients were shown how to weigh certain portions of food accurately and how to make special dishes, including diabetic bread. In the chemical laboratory instruction was given in the collecting and measuring of urine, and, in certain cases, its testing. The scheme included also simple instruction by a doctor in the nature of food and food-stuffs, food values, the reasons for the dietetic measures adopted in diabetes, and the construction of the patient's own diet. A selection was made of the patients who would be invited to attend the course or any part of it. In the young, with well-marked diabetes, anxiety and apprehension might be engendered, but the judicious instruction of patients about diet need not make them as apprehensive as they used to be in former days on a diet of abundant protein and fat, on which glycosuria and symptoms were increasing. The time for which a serious breakdown of metabolism could now be postponed in young patients was still unknown, but it was certainly several years longer than formerly. While laying stress on the value of keeping the urine free from sugar it was important not to give the patient the impression that all was lost if this result could not be attained, since experience showed that many people who could not be kept free from sugar could live and work.

With older patients and less severe types the closest collaboration of the patient and the fullest knowledge of the modes in which the proportions of protein, carbohydrate, and fat can be varied in the diet were wholly advantageous. In such the control of his own diet by the instructed patient might postpone indefinitely the progress of the complaint. Dr. Spriggs was of opinion that every hospital should have a course of instruction for both in- and out-patients with diabetes. The expense would be trifling, and the benefit to the sufferers would be great.

Home-made Diabetic Bread.

Every doctor was aware that most of the diabetic breads offered to the public, with the exception of those made by one or two well-known firms, either contained a great deal of starch and sugar, or were unpleasant to the taste, whilst all were expensive. Messrs. Callard and the Protene Company had made products which gave fairly consistent analyses, and these were used widely. Patients were well advised to do without bread or bread substitutes altogether, eating boiled greens with meat, and lettuce or tomatoes, &c., with eggs. But the need for a bread substitute remained. A particular disadvantage, even of the reliable breads, was that they contained a good deal of fat. When the diet was being built up after fasting it was convenient to have a bread substitute which did not contain fat. After a careful trial of bran cakes, which were not found, even with the same method of preparation, to be consistently starch-free, he had suggested to the chemist and the diet sister at Duff House that fat-free casein bread should be prepared from separated milk. The method at present in use was as follows:—

Duff House Home-made Diabetic Bread.—One gallon of separated milk (cost about 6*d.*) is placed in an enamel dish and warmed, with stirring, to 100° F. A mixture of 45 c.cm. (= 1½ fluid oz.) of glacial acetic acid and 450 c.cm. water (about ¾ pint) is prepared and poured into the milk at 100° F., with constant stirring. The caseinogen separates as a white clot. The mixture is left to stand for about five minutes and then poured through muslin placed on a fine sieve for about two minutes, meanwhile working the caseinogen with the hand so that most of the other milk products and acid may be washed away. The muslin containing the precipitate is taken from the sieve, pressed, placed in a bowl of cold water, and kneaded for about five minutes. The water is now changed six times with repeated kneadings each to ensure that all traces of milk-sugar are removed from the casein. The washings are to be tested with Fehling's solution. The muslin containing the white material, henceforth called "casein," is squeezed to remove as much liquid as possible, the muslin opened out, placed on a sieve, and left on the kitchen shelf for a few hours to dry. The casein is now rubbed through the sieve on to the muslin and put back on to the shelf overnight or until it is practically dry to the touch. About 160 g. (5½ oz.) of the casein in this condition should be obtained from one gallon of separated milk.

To prepare the bread beat up the whites of two eggs to a stiff froth, add 50 g. of the above casein (nearly 2 oz.), a pinch of salt, and 2 g. each of cream of tartar and bicarbonate of soda (i.e., a teaspoonful of each powder, levelled off, but not pressed down). Mix lightly together, form into cake or cakes and bake in a moderate hot oven for 15 to 20 minutes. The tin on which the bread is baked should be greased with liquid paraffin. This gives an unpleasant smell in the oven, but the bread has no taste of it.

The casein can be prepared at any time and in any quantity at the convenience of the housewife. It is best kept in a dry place in open vessels. The bread itself is made in a few minutes by whipping up the casein with the egg white, salt, and baking powder. Sweet cakes can easily be made from it by putting in a little liquid saccharin and some desiccated cocoanut or other flavouring. When freshly baked the well-known and objectionable cheesy taste of diabetic bread is less marked in this bread than in those on the market, but it is important that it should be made and eaten fresh; this taste develops if the bread is kept long. As the making and baking take only a very short time, it is easy by keeping a supply of casein powder to make bread fresh once a day or more than once a day.

The analysis of the bread as served gave: Protein (nitrogen × 6·25), 52·5 per cent.; carbohydrate (starch and sugar), nil; fat (ether extract), 0·2 per cent.; 20 g. of it gave, therefore, approximately 10 g. of protein. In addition to its general use as a not unpleasant and inexpensive home-made bread substitute, rolls of about 20 g. are specially valuable when it is desired to increase the protein daily after fasting, without adding fat or carbohydrate.

Dr. Spriggs said that with eggs at 3*s.* 9*d.* a dozen the cost worked out at a little under 3*d.* for each 20 g. roll. The yolks of the eggs were, of course, included in the price, but would be used for some other purpose, such as for custard. Dr. Spriggs showed actual rolls, and also some small cakes made from the same material and flavoured with coconut.

The Treatment of Coma.

Dr. E. P. Poulton said that he agreed with the previous speakers as to the general treatment of diabetes, but wished to say something about the treatment of coma. He described a case of a comatose child of 9 whose alveolar CO_2 amounted to only 1·5 per cent.; Dr. Poulton injected intravenously 300 c.cm. of a 5 per cent. solution of sodium bicarbonate, followed by rectal dextrose, lactose by the mouth, and later by subcutaneous saline. The alveolar CO_2 rose to 5·2 per cent. on the nineteenth day. The patient was finally discharged from hospital on a diet sufficient to maintain and even to increase the weight. Dr. Poulton described the administration of saline through a tube passed into the duodenum to another patient and expressed his conviction that the introduction of saline was of definite service in diabetic coma.

Treatments Compared.

Dr. George Graham agreed with Dr. Spriggs that it was most important to teach the patient a great deal about his disease in order that he might understand the details of its treatment. After the patients left hospital, it was often impossible for them to collect their urine during the whole of the 24 hours, and the patient should test the urine which was passed after the principal meal of the day. The difference between Allen's line of treatment and that used in St. Bartholomew's Hospital was not very great. The same principle of undernutrition was maintained, but whereas Allen started the diet by adding carbohydrates in the form of vegetables, at St. Bartholomew's the carbohydrate value of the diet was kept as low as possible, while the proteins and fats were increased. Allen's recent work on dogs had shown that it was much easier to convert a mild diabetic dog into a severe diabetic one by overfeeding with sugar than with starch. It was cutaneous nodules, especially on the right upper arm, which appeared, according to the patient, about seven months before. Before coming here the eyes were examined by Captain P. J. Hay, R.A.M.C., who reported as follows: Two local detachments of the retina of right eye due to cyst-like bodies behind; deficient vision in left eye, apparently due to opacities in the lens; fundus normal. No ova of parasites could be found in the stools, and the urine was normal. The Wassermann reaction was negative and the blood count showed only slight lymphocytosis. One of the small cysts was excised from the right arm and sent to the London School of Tropical Medicine and reported to be *Cysticercus cellulosæ*, and the opinion was expressed that she must have been both the direct and intermediate host of this parasite. There had been no sign of the intestinal infection while in hospital. She improved gradually in mental and bodily condition and was discharged recovered in December, 1918. She was readmitted on July 18th, 1919, again suffering from melancholia, and was said to have been upset by the sudden death of her husband. Early in 1921 she developed tuberculosis. The disease made rapid progress and she died on Sept. 14th.

Post mortem it was found that the whole convex surface of the brain was studded with cysts, as was also the heart. Neither organ was opened, as I wished to send them to the museum of Trinity College, Dublin. The subcutaneous tissue of arms, thorax, and abdomen was full of cysts, and the peritoneum was profusely studded with them. There were none in the lungs, liver, kidneys, or spleen, but the lungs were full of tubercle.

A CASE OF ACUTE TETANUS,

SUCCESSFULLY TREATED WITH LARGE DOSES OF ANTITETANIC SERUM.

BY C. E. SHATTOCK, M.S. LOND., F.R.C.S. ENG.

THE following case of acute tetanus, successfully treated with large doses of antitetanic serum (A.T.S.) would seem worth recording, as showing the large quantity of A.T.S. which may be safely given in early childhood.

F. L., aged 3½ years, injured the tip of one finger in a street accident. She was noticed not to be well and to stumble when walking 11 days after the accident. On the twelfth day she could not get food into her mouth, and in the evening "fits" began, the child becoming stiff whenever she was touched. One thousand units of A.T.S. were given subcutaneously by her doctor on the thirteenth day, and a further 1500 units subcutaneously early on the fourteenth day. When the patient came under my care (Sept. 29th, 1920), the fourteenth day after the injury, she showed generalised rigidity, most severe in the arms; there were marked trismus and some opisthotonos. The facial muscles showed tremors, the reflexes were increased, and the child was sweating profusely. Pulse 148, respiration 36, temperature 100·4°. There was a sloughing wound on the tip of the injured finger. A.T.S. was administered as shown in the table:—

Date in 1920.	Intravenously.	Intramuscularly (each injection, 750 units).	Subcutaneously.
28.9	—	—	1000 units.
29.9	4500 units.	3 injections.	1500 ,,
30.9	4500 ,,	4 ,,	—
1.10	—	5 ,,	—
2.10	—	4 ,,	—
3.10	—	3 ,,	—
4.10	—	2 ,,	750 units.
5.10	—	—	750 ,,

The patient was anæsthetised for the intravenous injections, the serum being diluted with saline; the terminal phalanx of the injured finger was amputated whilst the first of these injections was given, the wound being left open and subsequently dressed frequently with H_2O_2. Chloral, gr. v., with pot. brom., gr. x., was administered two-hourly during Sept. 29th and 30th, and was then continued in the same dosage four-hourly until Oct. 11th.

The patient's general condition improved greatly during the first 48 hours of treatment, but the general rigidity passed off slowly, being quite noticeable on Oct. 7th. The jaw was still slightly stiff on the 12th. On the 19th the child seemed perfectly well. The total number of units of antitetanic serum given to this child was: intravenously, 9000; intramuscularly, 15,750; subcutaneously, 4000.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

A MEETING of this society was held on Oct. 24th, Mr. JAMES BERRY, the President, being in the chair, when Sir ARCHIBALD GARROD opened a discussion on

THE MODERN TREATMENT OF DIABETES.

He called attention to the advances made, in recent years, in the study of diabetes and allied conditions; the estimation of sugar in the blood, as well as in the urine, had thrown much light upon the metabolic disturbances, and had given valuable indications for prognosis and treatment. Such estimations, for which only minute quantities of blood were required, enabled us to distinguish between cases in which the blood-sugar was high, normal, or subnormal, and to study the response to the administration of doses of glucose. We were learning that the prognosis of diabetes was not so uniformly gloomy as was formerly thought, and that there were cases to which the name of diabetes innocens might rightly be applied. The "threshold," by which was meant the degree of glycæmia above which sugar begins to appear in the urine, was a matter of interest and importance, and there were indications that the patient might protect himself, to some extent, by a raising of this threshold. Sir Archibald Garrod said that it had been recognised for some long time that the tolerance of the patient for carbohydrates became impaired progressively as the disease continued, and that by dietetic restraints it was possible to bring about some recovery of tolerance, with the result that after a period of "alimentary rest" the patient could take larger quantities of carbohydrate food without passing sugar in his urine. Of recent years much attention had been directed to the part played by the substances of the acetone group, and especially by aceto-acetic acid, in diabetes, and in the production of diabetic coma. We had learnt much as to the sources of these products in the body, and the influence of restrictions of diet upon their production. The prime objects aimed at in the dietetic treatment of diabetes were the reduction of the amount of sugar in the blood, and the consequent resting of the damaged mechanism, and at the same time the avoidance of over-production of the acetone bodies. Sir Archibald Garrod sketched the progress of dietetic treatment from its inception by Rollo in the early part of the nineteenth century, through the period during which the elimination of carbohydrate from the diet was the chief aim; he recalled the gradual improvement of that method and the recognition of the danger of too abrupt or rapid restrictions. He alluded to the Guelpas plan of treatment by fasting days and copious purgation, to the oatmeal treatment of von Noorden, and lastly to the most modern plans of treatment introduced by Allen in America, and by Graham in this country. These two plans of treatment were reached independently along different lines: both relied largely upon fasting days, and both produced results far better than had been obtained on any previous plans. Timidity in imposing fasting days, on the ground that starvation induced acetonæmia, has proved to be unjustified; far from increasing acetonæmia, fasting days tended to diminish or remove it. Sir Archibald Garrod described the modern treatment of diabetes as based upon the value of periods of alimentary rest in restoring carbohydrate tolerance; i.e., on the facts which Allen had brought out clearly, that a diabetic patient did best when somewhat underfed, and that restriction of protein and fat was no less important than restriction of carbohydrates. Patients treated by modern methods seldom passed sugar in their urine, and in hospitals it was often difficult nowadays to find specimens of sugary recognised in the skiagram: but without stereoscopic pictures the interpretation was not always correct. A mastoid process with pneumatic spaces occurred in 79 per cent. of European skulls. In the 1000 crania, anatomical asymmetry occurred in 12 per cent., mostly that of a pneumatic process on one side, an infantile on the other. Clinical asymmetry—i.e., as contrasted with anatomical—obtained in only 7 per cent. of the skulls. In Esquimaux, Melanesian, and Polynesian crania the pneumatic processes were found greatly to preponderate, irrespective of the type of skull. The frontal sinus, like the pneumatic mastoid process, was oftenest found in the brachycephalic skull. The frontal sinuses were better represented in the crania of the mixed European peoples than in the skulls of the relatively pure races, the pneumatic mastoid processes being found chiefly in relatively pure breeds of men. There was no evidence that the frontal sinuses and the pneumatic mastoid spaces attained a similar degree of development.

Mr. ARTHUR CHEATLE alluded to the remarkably close percentages to Dr. Turner's figures which he himself arrived at by the examination of a large series of skulls.

Diagnostic Exploration of Posterior Ethmoidal Cells.

Mr. E. WATSON-WILLIAMS read a paper by himself and Dr. P. WATSON-WILLIAMS (his father) on this subject. The cells are entered with a cannula similar to that used for the sphenoidal sinus. It is passed into the nose, above or below the middle turbinate, until it rests on a point corresponding to the back of the middle turbinate in its attachment. The cell can then be washed out and the contents examined. Unless the entry is found to be easy, the attempt should not be persisted in, for pressure brings risk of disaster. To do the exploration the nose should be pushed over to the opposite side.

Vertigo Cured by Ossiculectomy.

Sir J. DUNDAS-GRANT showed a woman, aged 40, who had had attacks of vertigo with loss of consciousness and occasional double vision two or three times a month for a number of years. Sometimes she lost the vision of the right eye for about two minutes, also she had attacks of double vision. Pus had been periodically discharged from the ear since childhood. A large perforation in the attic was found, through which desquamative material protruded. After ossiculectomy she had been free from pain, and there remained only a slight "swimminess."

Result of Double Schwartze Operation.

Mr. L. COLLEDGE showed a female child, aged 6, on whom, last December, he did a Schwartze operation on the left mastoid for acute suppuration; and three days later the same was done on the right ear. In both ears the tympanic membrane had now healed, and all suppuration had ceased; a large dry cavity still persists in the left mastoid, though both sides were treated alike.

SECTION OF PATHOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 18th with Dr. W. S. LAZARUS-BARLOW, the President, in the chair.

Dr. J. C. MOTTRAM read a paper on

Observations Upon the Action of Radium and X Rays Upon the Mononuclear Leucocytes of the Blood.

He said that by direct measurements of the size of mononuclear cell in the blood of rats he had found that in the lymphopænia following radiation the small lymphocytes were greatly diminished whilst the larger types remained relatively unaltered in numbers. This finding could account for the facts discovered by Prof. Russ and his collaborators, that the percentage decrease in lymphocytes following X radiation is more or less constant over a wide range of dosage, and that a second exposure to radiation, before regeneration has occurred, does not cause a further in the number of circulating lymphocytes.

Dr. W. CRAMER and Dr. MOTTRAM contributed a paper on Changes in Lymphoid Tissue after Exposure to X Rays, and in Vitamin Starved Animals.

Dr. J. A. MURRAY demonstrated sections illustrating the Dissemination along Nerve Trunks in Tar-cancer.

Prof. S. G. SHATTOCK showed a section demonstrating Dissemination along Nerve in Carcinoma of the Tongue.

Dr. A. LEITCH showed Casts of Tar-tumours in Rabbits.

Dr. C. C. OKELL read a paper on the

Sachs-Georgi Reaction in Syphilis,

the purpose of which was to give the results of a number of tests by two modifications of the original reaction. In the first method the antigen used was prepared by mixing five parts of a simple alcoholic extract with five parts of a 1 per cent. solution of cholesterol in alcohol. This was diluted with an equal quantity of saline run slowly down the side of the tube, and the tube was then shaken. More saline was then added to make a dilution of 1 in 10; the resulting fluid was a suspension of cholesterol protected by the presence of the lipoidal extract. It had a shimmering watered-silk appearance. The serum was inactivated and tubes containing 1 c.cm. of dilutions 1/10, 1/20, 1/40, 1/80, were put up. To each tube 0·5 c.cm. of antigen dilution was added; the tubes were shaken and incubated at 37° C. Readings were taken over-night and in 48 hours. Definite flocculation in any of the tubes was read as a positive reaction. Controls were, of course, included. The results of 550 tests compared with the Wassermann test were as follows:—

Total	..	S.G. + W.R. +	S.G. − W.R. −	S.G. + W.R. −	S.G. − W.R. +
550		138	357	7	48

Total agreement 90 per cent.

The special points in favour of using an antigen rich in cholesterol were: (1) flocculation being heavy the tests were usually simple to read; (2) the reaction was usually well-marked, even in turbid or blood-stained sera or sera preserved for several months with chloroform; (3) only 1·27 per cent. of cases gave a positive Sachs-Georgi reaction and negative Wassermann reaction, so that where the Sachs-Georgi was used in place of the Wassermann only a small percentage of patients would be unnecessarily submitted to treatment.

The second method employed was the Dreyer-Ward[1] modification. Dr. Okell said that the features of this modification were: (1) The serum dilutions start low 1/1·25 or 1/2·5, and go up to 1/462; (2) the lipoidal extract is prepared by Bordet's method and appears to be very constant—the cholesterol content is low; (3) the standardisation of apparatus and methods, the whole technique being similar to Dreyer's standard agglutination methods; (4) the ease with which flocculation can be read against the controls which are opalescent in appearance but free from visible particles; (5) the test is claimed to be particularly useful for following the results of treatment; and (6) high percentage of agreement with the Wassermann reactions. The disadvantages were: (1) The reaction is somewhat more difficult to carry out than the original Sachs-Georgi reaction; (2) more serum is required; (3) the serum should be free from contamination or turbidity and must not contain preservative; and (4) seven hours incubation in a water bath at 37° C. are sometimes difficult to fit in with the ordinary laboratory routine. Dr. Okell said he had found that all the small technical details accentuated by Dreyer and Ward must be carefully observed if good results were to be obtained. His results were:—

Total	..	S.G. + W.R. +	S.G. − W.R. −	S.G. + W.R. −	S.G. − W.R. +
177		67	105	3	2

Giving 97 per cent. agreement between the reactions.

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[1] THE LANCET, 1921, i., 956.

might have belonged to group 1 or 2 and in whom the disease had been neglected or treated incorrectly; but in addition to these cases, in some patients the disease was progressive in spite of the most skilled modern treatment, possibly due to a chronic infection of the pancreas. Apparently chronic infection was not essential, for in many cases in which the alteration in the pancreas seemed to have been arrested, toxin resulting from an incidental infection such as tuberculosis, influenza, or malaria, might cause progress in the disease.

Appropriate Restricted Diet.

Dr. Leyton said that the treatment of these three groups might be termed a treatment of restricted diet. Restricted diet by itself was sufficient in group 1. Usually these patients had a blood-sugar in the region of 0·2 per cent. about two hours after a meal containing carbohydrate, but no evidence of an acidosis. In these cases the blood-sugar fell to normal upon restricting the daily diet to: carbohydrate 20 g., protein 50 g., fat 50 g. When this diet had been taken for seven days and the blood-sugar had fallen to normal, a daily increase in the carbohydrate was made and the blood-sugar was estimated at intervals. Directly the blood-sugar began to rise above the normal the quantity of carbohydrate was reduced. Protein might then be raised perhaps up to 2 g. of protein per kilo body-weight, provided the blood-sugar did not rise; and then, finally, fat might be increased until the number of calories per kilo per diem became 30, or the blood-sugar rose or some evidence of acidosis developed. The treatment of the second group was much less easy; the removal of sugar from the urine was simple, but the elaboration of a diet which would arrest the progress of disease in the diabetic and allow the patient to live indefinitely was far from simple.

Most important was the eradication of any infection. Recently attention had been drawn to a condition called "sapræmic glycosuria." Assuming that such a condition existed, Dr. Leyton pointed out that to treat true diabetes mellitus in association with a sapræmic glycosuria would be beyond the skill of any man with the present methods of investigation, for in sapræmic glycosuria the sugar in the blood and the sugar in the urine was increased. Pyorrhœa alveolaris, pustules, and infected tonsils all led to an alteration in metabolism which made the estimation of the optimum diet impossible. Dr. Leyton quoted cases in support of his contention that infection affected the metabolism and that the amount of toxin necessary to change the metabolism was minute. The ideal diet for the diabetic was one in which sufficient energy was supplied in the food whilst the sugar in the blood did not rise above 0·12 per cent. and no excess of any acid or acetone appeared in the urine. In the more severe cases of diabetes mellitus this ideal diet could only rarely be attained, although frequently a diet could be found in which glycosuria was absent, while the blood-sugar rose to 0·18 per cent. Dr. Leyton's experience showed that in these cases the disease was progressive, and therefore the problem resolved itself into the decision how far the patient should be submitted to the inconvenience of a very limited diet in order to prolong life for some months or perhaps years. In some cases a patient would not submit to any very great restriction without a reasoned argument. The opportunity of discussion with the patient should be afforded to the consultants in such cases. Dr. Leyton said that in a certain number of cases belonging to group 3 the patient's urine could not be freed from sugar. The majority of these cases were either very advanced, or were suffering from pulmonary tuberculosis. By giving large doses of atropine and codeine sugar might sometimes be expelled from the urine, but it had not been his custom to use this method. In Dr. Leyton's opinion, when it became evident that life could not be prolonged indefinitely, the object of treatment was completely changed; a diet had then to be arranged whereby the patient would get the most satisfaction out of the remainder of his life.

The Importance of the Blood-sugar Curve.

Dr. W. LANGDON BROWN said that true diabetes was characterised by an exaggerated katabolism involving all the foodstuffs. Since carbohydrate formed about 70 per cent. of the normal diet and yet was not present in the tissues to more than 1 per cent. of the body-weight, it was clearly the most rapidly metabolised food; hence it would be the first affected in exaggerated katabolism. Dr. Langdon Brown brought forward observations to show that carbohydrate tolerance varies with the total metabolism. The success of treatment by alimentary rest depended on the way that it could slow down the whole of the metabolism. The special point to which he wished to call attention was the guidance that can be obtained in treatment by investigation of the blood-sugar curve in glycosuria. It had generally been assumed that hyperglycæmia preceded glycosuria, but by following up the course of a case it might often be seen that in the earlier stages hyperglycæmia was slight and transitory, becoming much more marked later on, showing that the kidney was capable of raising its threshold for sugar. Dr. Langdon Brown showed a number of curves illustrating (1) the normal response of the body to the ingestion of sugar; (2) cases with a low threshold, the so-called renal type, which required no treatment; (3) cases of obesity with consecutive glycosuria, showing an impaired power of storing sugar as glycogen; (4) cases of exophthalmic goitre, showing marked delay in dealing with ingested sugar, with consequent hyperglycæmia but not necessarily any glycosuria; (5) cases of transitory or intermittent glycosuria where the sugar curve showed a short, sharp rise above the threshold, but a normal fall. For this type he did not advise abstention from starch, usually abstention from sugar as such was sufficient. The next series of curves, (6), showed mild and intermittent forms of the disease, some of which were suitable for treatment by alimentary rest, while others did better with more lenient methods. The final group, (7), were cases of severe diabetes, practically all showing continuous hyperglycæmia with an extraordinarily sharp rise and then fall after administration of dextrose. In all these alimentary rest seemed strongly indicated, and Dr. Langdon Brown quoted instances of the good effect of this treatment. In two cases he had observed the threshold for sugar pushed up so much that the blood held a considerable quantity of sugar and only a small amount escaped into the urine in a manner recalling the renal type, since it varied little with the diet. The blood-sugar curve was, therefore, necessary to distinguish a case of this sort which required active treatment from one of the renal type where no treatment was called for. After experience of both Allen and Graham's methods of treatment by alimentary rest, he had come to the conclusion that although Allen's plan might rid the urine of sugar more quickly it was more trying to the patient than Graham's, and the ultimate results of the latter appeared to him as good.

The Education of the Patient.

Dr. E. I. SPRIGGS said that the fasting treatment in diabetes had been used at Duff House for six years. The first 18 months' experience of the method was described in a discussion at the Royal Society of Medicine in May, 1916.[1] Subsequent work had confirmed the good report of the method then given. Dr. Spriggs wished to speak on two points—first, the importance of the education of the patient so that he could coöperate with his doctor in the treatment, and, secondly, on the home-made manufacture of a starch- and fat-free bread substitute. The preliminary examination of the case should be made under medical care, with daily examinations of the urine, frequent blood-sugar estimations, and a weighed diet. On the results of this investigation, which might take from a fortnight to six weeks, a scheme of diet should be drawn up. The carrying

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[1] Proceedings of R.S.M., 1916, vol. ix. (Therap. and Pharmac. Section), pp. 76–90.

Reviews and Notices of Books.

PATHOLOGY.

A Text-book of Special Pathology. Second edition. By J. MARTIN BEATTIE. M.A.. M.D., Professor of Bacteriology. University of Liverpool; and W. E. CARNEGIE DICKSON. M.D., B.Sc.. Director of the Pathological Department. Royal Hospital for Diseases of the Chest, London. London: William Heinemann. 1921. Pp. 591. 31*s.* 6*d.*

THIS is the companion volume to the authors' "Text-book of General Pathology" which was reviewed in THE LANCET of July 30th. but whereas in the first edition it had a separate existence, it is now quite definitely Part II., for the numbering of the pages and figures is carried on from the first volume. There has been little progress in morbid anatomy in the last few years, but the authors have revised their book and considerably enlarged it, and the opportunity has been taken to notice recent work on such subjects as heart-block, dysentery, and gastric ulcer. In other branches, however, the teaching is somewhat old-fashioned—the treatment of cirrhosis of the liver, hypernephroma, and myeloma leaves a good deal to be desired; while the chapters on Bright's disease and arterio-sclerosis are neither very clear nor very profound. A curious omission in a work of this magnitude and price is that of the description of the pathology of the female genital organs. It is undoubtedly true that this branch of the subject is dealt with in text-books of gynæcology; but it is also true that a certain amount of pathology is included in practically every general or special text-book on medicine or surgery. It is the province of the pathologist to consider disease processes from a different—possibly a broader—point of view than the physician or the surgeon, and this voluntary abdication of the position is scarcely to be commended. Several new illustrations, some very good, have been introduced, but on the whole the illustrations are not the most satisfactory feature of this work, which is for the rest admirably suited to the needs of the student.

General Pathology: An Introduction to the Study of Medicine. Being a Discussion of the Development and Nature of Processes of Disease. By HORST OERTEL. Strathcona Professor of Pathology and Director of the Pathological Museum and Laboratories of McGill University and of the Royal Victoria Hospital, Montreal, Canada. New York: Paul B. Hoeber. 1921. Pp. 357. $5.

THE author's aim in this book is to bring together in a concise and readable form the facts and considerations upon which modern pathology rests, and to treat pathological processes as expressions of physico-chemical laws, not in terms of the older conceptions of use, harm, defence, vital forces, conscious purposes, and so forth. Further, wherever possible he has attempted to present modern ideas in a rational manner by tracing their historical development, since, as he justly claims, the history of science, the bearing and influence which one step of thought exerts upon the next, is of real educational value. This is an ambitious programme and a difficult one to carry out in a book of some hundred thousand words. Unfortunately, the author's style is not suited to conditions which demand that one sentence shall do the work of three. He is compelled to resort to a liberal use of brackets—in one place no less than six occur in eight consecutive lines, and many adjectives; and there is nothing more inept than the ill-chosen adjective. What conception of the plasma cell, for example, is the student likely to get when he is told that it has "smooth, supple protoplasm"? And how likely is he to recognise an actinomycotic lesion on the strength of the information that "the centre exhibits the characteristic radiating, often club-shaped, filamentous convolutions"? Such descriptive lapses might have been mitigated by illustrations, but there are none. Nor do we think the author has discriminated wisely in the amount of space he has allotted to the various divisions of this subject. While one-third of the book is devoted to elementary bacteriology, other subjects are dealt with in the most superficial way, and what may be called functional pathology is scarcely mentioned.

If the general arrangement and presentation of the subject are open to criticism, so is the standard and even the accuracy of the teaching. The chapter on the pathogenic protozoa contains no reference to the Sarcodina, although it includes a subsection on the filterable viruses. But on page 47 we read "there exist a number of infective organisms in relation to dysentery, some of which are not even bacteria, but protozoa. Since the discovery of the ameba coli by Koch and Kartulis in Egypt, which was later confirmed by Osler, Councilman and Lafleur, and others, amebic dysentery has come to be recognised as a tropical disease." Such an error as this is unpardonable in any text-book, however elementary.

The chapter on immunity is interesting and the author has the courage to discard old shibboleths, but we are surprised to find that his researches lead him to the conclusion that blood for the Wassermann test must be drawn directly from vessels and never taken after a meal, during a fever, during any acute infectious disease, during suppurations, including ulcerating or necrosing tumours, and after narcosis. Surely this teaching is directly opposed to experience. The section dealing with the degenerations is adequate if not profound, and the same may be said for the treatment of inflammation. The section on tumours is not well done. The nomenclature employed is often unfortunate; it is quite unnecessary to call a fibrosarcoma a fibroma sarcomatodes, and the use of the word organoid to describe the epithelial neoplasm has nothing to recommend it; a carcinoma is a dreadful thing at any time, but it becomes unspeakably bad when it is described as an "undifferentiated, immature, uncoördinated, generalising organoid tumour." One of the most important fields of research in the pathology of human cancer is the separation of the blastomatoid processes from the true neoplasms, but this aspect of the subject is not touched upon; and in the subsection on metastasis, instead of the modern doctrines of permeation, we have vague generalisations about tissues of selection and the preparation of soils for metastases by inflammation and degeneration, "which occurs frequently in the neighbourhood of tumours, especially in the regional lymph glands into which tumour products drain concentrated products."

We can see no reason why Professor Oertel's book should supersede any of the text-books on general pathology now in use.

NEUROLOGY.

Traumatismes Cranio-Cérébraux. Accidents Primitifs, leurs Grands Syndromes. By H. DURET, ex-Chirurgien des Hôpitaux de Paris. Paris: Librairie Felix Alcan. 1921. In two volumes. Vol. II., Parts 1 and 2. Pp. 1356. Fr.150.

IN this monumental book the veteran Dr. Duret, whose initial work on a subject he has made peculiarly his own dates back more than 40 years, has tackled in comprehensive fashion injury to the head, and its sequelæ. The first volume (not now under review) dealt with cranial fractures; the second, divided into two sub-volumes of 1300 pages, is concerned with the rôle of the cerebro-spinal fluid as a compensating and regulating agent, and with commotio cerebralis, which is reviewed and re-examined from every standpoint. Here is a mine of information from which material of value will be extracted for many years to come.

In the great majority of cases of external violence to the head the force applied to the cranial cupola divides itself into two parts; one spends itself in vain against the solid resistance of the head coverings, the difficult to convert a mild diabetic dog into a severe one by overfeeding with proteins. These experiments seemed to show that the practice of keeping carbohydrates very low was the right one. Allen had well said that the patient should order his life according to the size of his pancreas. Dr. Graham would prefer to say, according to the number and the health of the islands of Langerhans in the pancreas, since it had been shown by the work of Bensley and of Allen that the islands of Langerhans had specific granules and are intimately connected with carbohydrate metabolism.

"Pancreatic," "Hepatic," and "Concurrent" Curves.

Dr. P. J. CAMMIDGE said that the modern "fasting" treatment of diabetes was undoubtedly a great advance on any previous form of treatment. But it demanded considerable will power from the patient, who, in many cases, had only a bare subsistence diet. Of 143 cases treated by Dr. Cammidge by this method 52 had died, giving a mortality of 36 per cent. In some cases the treatment gave rise to disquieting symptoms from an early stage. Rapidly increasing acidosis has been reported by Allen, and Dr. Cammidge had also met with nervous disturbances—ataxia, tetanic convulsions, and pronounced œdema—which necessitated abandonment of the treatment. Allen's treatment was based upon experiments on partially depancreatised dogs, and it was assumed that the results of these experiments could be applied to diabetes in man. It was, however, only possible to demonstrate pancreatic disease post mortem in a small proportion of cases of diabetes. It must be remembered that fasting treatment gave physiological rest to other organs besides the pancreas and without some new method of testing it was impossible to decide whether Allen's hypothesis was correct. Dr. Cammidge believed that we now had such a method. This depended upon determination of the difference (called the "difference value") between the percentage of sugar and the percentage of total carbohydrates in a series of samples of blood taken before and after a test breakfast of known composition. The "difference value" in health did not exceed 0·006 per cent. fasting; as the blood-sugar rose after breakfast the "difference value" might fall slightly, to rise again as the percentage of sugar in the blood diminished. It should never exceed 0·01 per cent. In a partially depancreatised dog the fasting "difference value" was always abnormally high. After a mixed meal it fell for several hours while the blood-sugar curve rose. A similar relation between the blood-sugar and "difference value" curves was found to occur in cases of pancreatitis in man. Dr. Cammidge therefore thought that the method when applied to diabetes might help in deciding whether the disease was or was not due to pancreatic lesions. A few of the cases tested gave typical opposed or "pancreatic" curves, but others showed a different type of curve which could be reproduced in animals by interference with the functions of the liver, and which Dr. Cammidge therefore termed the hepatic type of curve. There was a third ("concurrent") type of curve which was still being investigated.

Of 140 cases of diabetes investigated by this method, 45 showed "pancreatic" curves, 48 "hepatic" curves, and 31 "concurrent" curves. It would therefore appear that clinical diabetes was not a simple entity, but a symptom complex which might develop along at least three lines of which disturbance of the pancreas was only one. We could now understand why no one system of treatment would yield uniformly satisfactory results in all cases: the fasting treatment most nearly attained a satisfactory result probably because it secured physiological rest for other organs besides the pancreas. Dr. Cammidge had found that the pancreatic type exhibited rapid improvement, whereas the hepatic type did not do so well under the fasting treatment, and, indeed, was apt to develop serious acidosis. Further experiment suggested that patients of the latter type were peculiarly sensitive to fats and protein, while they could tolerate a diet relatively rich in carbohydrate, and particularly in dextrinised starch. These were the patients who derived benefit from the Van Noorden oatmeal cure. Dr. Cammidge himself thought the large amount of fat advised by Van Noorden to be a mistake. By means of a modified oatmeal diet and a judicious arrangement of semi-fast or vegetable days, he found it possible to bring about a great improvement in these cases. Acidosis rapidly cleared up, and the sugar content of the blood could gradually be brought within normal limits.

Dr. F. J. POYNTON spoke of the disappointing results of the dietetic treatment of children under 8 suffering from diabetes. Even if the children remained sugar-free for months they seemed to relapse; and each time they relapsed it was more difficult to get them sugar-free. Dr. Poynton felt that we must look further than elaborate dieting for a real cure of diabetes.

The PRESIDENT said that no points of a very contentious nature had been raised in the interesting discussion, and he would therefore not call upon the opener to reply.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 21st, with the new President, Dr. LOGAN TURNER (Edinburgh), in the chair.

The Structural Type of the Mastoid Process.

Dr. Turner chose as the subject of his Presidential address the Structural Type of the Mastoid Process, based upon the skiagraphic examination of 1000 crania of various races of mankind. The contribution was profusely illustrated, and table summaries of cases were presented. It was preceded by general remarks on the position of the specialty. The President said the prestige of otology in this country lay largely in the hands of the members of that section, and that in the summer of next year an international meeting in Paris was promised. Many problems still remained for solution, and he urged younger members of the department to concentrate upon some particular piece of scientific investigation which would reflect credit on themselves and give added kudos to the position of otology in the country. The recent inauguration of a department of literary research by the American College of Surgeons was a movement which must appeal to members. Fifteen years ago Dr. Turner himself commenced issuing reports as departmental surgeon, and had ever since published a statistical survey of the work done.

Turning to the special subject of his address, he said the application of radiology to the study of the mastoid process on an extensive scale had not hitherto received the attention of anatomists, though Beck, of Chicago, had examined many in this way. The present research had been made into the skulls of men of a number of races, giving to it an anthropological interest. He commenced the study in 1913, in association with the late Major W. G. Porter, D.S.O., and shortly before the war Dr. Porter had radiographed 2000 temporal bones in 1000 crania. The following were the anatomical points inquired into: (*a*) relative frequency of occurrence of the two types of mastoid process; (*b*) the symmetry and asymmetry of the mastoid types; (*c*) the types and their asymmetry in the two sexes. On the anthropological side the inquiry had been made into the relative frequency of the two types of mastoid process in dolichocephalic, mesaticephalic, and brachycephalic crania; the mastoid types as they occurred in pure and mixed races; the development of the mastoid and frontal air-spaces in crania of a similar cephalic index and in the skulls of the same races of men. The infantile and pneumatic types of mastoid could be devoted to the leucocytic formula, biological investigation and bacteriological and parasitic examination, while the concluding chapter of this part of the book deals with the most recent methods of research such as Lange's colloidal gold reaction, elaborated by Miller and Levy and by Lowrey, Smith's mastic reaction, Szeci's oxidase reaction, and the Weil-Kafka hæmolysin test.

The third and fourth parts of the work consist of details of 177 cases, comprising 206 analyses. Those dealt with are syphilis, tabes, general paralysis, tuberculous meningitis, non-tuberculous meningitis, meningismus, exanthemic typhus, meningeal hæmorrhage, hemiplegia, myelitis, polyneuritis, cerebral tumour, various other organic nerve lesions, neurosis, various diseases other than those of the nervous system, and Bright's disease. The fifth part is a description of the technique employed by the author in carrying out the various investigations. The most noteworthy points in his conclusions may be summed up as follows: The average quantity of urea was 0·2 against 0·06 calculated by Mestrezat; Noguchi's reaction when negative excludes syphilis, when positive gives an indication in favour of syphilis if the amount of albumin is normal or only slightly raised; the existence of meningitis without cellular reaction is not admitted, unless in exceptional cases of localised meningitis, a conclusion contrary to the views of various observers, among them being Anglada and Mestrezat; leucocytosis is much more frequent than is supposed, even in atypical affections of the central nervous system. During generalised syphilis, even before secondary symptoms have arisen, modifications in the fluid were frequently met with, especially excess of albumin, lymphocytosis, and even a positive Wassermann, and syphilitic epilepsy was more common than is supposed. It was found that the W.R. was always positive in general paralysis; also that a marked lowering of the percentage of chlorides was an almost certain indication of tuberculous meningitis.

The work is completed by an extensive bibliography, in which we note the names of Graham Forbes, Lowrey, Miller and Levy, and Louis Weed. A systematic treatise on the cerebro-spinal fluid such as this supplies a want and constitutes a valuable text-book of reference both for the clinician and the pathologist. Prof. Pereira's book is a monument of arduous work and intelligent research summarised in a useful and complete form.

LABORATORIES: THEIR PLANNING AND FITTINGS.

By A. E. MUNBY. London: G. Bell and Sons. 1921. Pp. 220. 25*s.*

THE excellence of the work done in laboratories depends a great deal more on the people who use them than on the building and fitments. But it is no doubt easier to do good work in convenient and well-equipped institutes than in such places as Claude Bernard had, and it is not invariably true that the building of a new laboratory is the last work of every fertile investigator to whose duties this exacting task is added. Anyone who has to undertake the job will find many useful hints in Mr. Munby's book; anyone who has actually done it will find some points of disagreement and some of omission. The design and especially the internal arrangement of laboratories naturally reflect the individuality which is characteristic of laboratory workers, and no one could think of standardised laboratories without having visions of standardised brains. On some general points, however, advice is very useful, especially to those who may not have had much opportunity of seeing a diversity of institutions.

The book is arranged in the main under subjects—physics, chemistry, and biology with a specially good chapter on "laboratory services"—and this is perhaps rather an objection, since it obscures the sound principle that laboratories should be capable of being used for almost any purpose. What is wanted, shortly, is a good firm building, the shell of which will stand by itself, with the internal divisions on each floor constructed in such a way that they can be easily remodelled for changing requirements; as many windows and as large as can be secured; abundance of gas, water, electric current and drains, with adequate arrangements for heating and fume cupboards; standardised blocks of drawers and cupboards on which bench tops can be arranged as required. These are the essentials which require attention before the building is begun; and on this foundation almost any sort of specialised work can be accommodated. There are 165 useful plans and pictures and an interesting historical introduction on early laboratories by Sir Arthur Shipley.

CHEMISTRY.

Introduction to Qualitative Analysis. By TH. WILHELM FRESENIUS. Seventeenth edition of the original work by C. R. FRESENIUS. Translated by C. A. MITCHELL, M.A., F.I.C. London: J. and A. Churchill. 1921. Pp. 954. 36*s.*

THE original German edition of this standard work appeared as far back as 1840 and the present volume has been remodelled to make it conform with the modern conceptions of chemistry. Part I. is concerned with the general principles and methods of analytical chemistry and Part II. with a systematic course of qualitative chemical analysis. The author rightly insists that to conduct qualitative investigations it is necessary to have a knowledge of the chemical elements and their most important compounds, and also of the fundamental laws of chemistry, whilst practice in the visualisation of chemical processes is also essential. If to manipulative skill is added the practice "when results contrary to experience are obtained of looking for an error in the experiment itself, or rather in the absence of a condition necessary for the production of the phenomenon, since this habit must be based on a firm belief in the unsuitability of the laws of nature, then all the conditions necessary for a fruitful study of analytical chemistry are present." These words are worth the quoting since they express the ideals of a great master of analytical chemistry.

The portion of the work dealing with the examination of natural waters and the detection of poisonous elements is well up to date and will enhance the value of this recognised standard work to the medical profession. Mr. Mitchell has carried out a difficult task well, and it is obvious that the greatest care has been taken in the rearrangement and translation.

Dictionary of Applied Chemistry. Vol. II. By Sir EDWARD THORPE, C.B., LL.D., F.R.S. London: Longmans, Green and Co. 1921. Pp. 717. 60*s.*

VOL. II. of this important work, which starts with "Calculi" and ends with "Explosion," follows with commendable rapidity on Vol. I. Many of the articles will be read with great interest by medical men. The section on carbohydrates, contributed by Dr. E. F. Armstrong, F.R.S., is an admirable survey of the properties and occurrence of these important compounds. Under the heading of dextrin it is stated that maltodextrin $6(C_6H_{10}O_5)H_2O$ is the only dextrin which has been prepared in anything like a state of purity; we may point out that Mr. J. L. Baker in 1902 described the preparation and properties of α-amylodextrin which is quite a well-defined compound. The section on cellulose is written by the well-known authority, Mr. C. F. Cross, F.R.S., and is worth reading by those who are interested in this subject. The manufacture and properties of chloroform are described by Dr. A. J. Ewins, who points out the need of especial care in the manufacture of chloroform for anæsthetic purposes. The presence of small amounts of impurities has a deleterious and often dangerous influence, and many cases of death under chloroform have been attributed to the employment of impure anæsthetic. The effect of alcohol as a preservative of chloroform is

SOCIETY OF M.O.'S OF INFANT WELFARE CENTRES AND SOCIETY OF M.O.H.

A JOINT meeting of these societies was held at University College, London, on Oct. 20th, with Dr. H. C. CAMERON in the chair.

Dr. CAMERON, representing the Society of Medical Officers of Infant Welfare Centres, presented the report of the subcommittee recommending amalgamation of this Society with the Society of Medical Officers of Health.

Prof. H. R. KENWOOD, representing the latter Society, supported the adoption of the report. His Society, he said, was becoming very representative, including all those engaged in public health work of any kind. It was at that moment contemplating the formation of a section for maternity and child welfare. Each of its groups was autonomous except for questions of general policy. The groups had a one-third representation on the Council; groups were already formed all over the country. The Society of M.O.H. would welcome amalgamation with the Society of M.O.'s of Infant Welfare Centres. All members of the latter, whether working for municipal or voluntary centres, would be eligible.

Dr. A. B. MCMASTER proposed and Dr. H. RONALD CARTER seconded the adoption of the report, and this was carried unanimously.

The committee of the newly-formed group of the Society of M.O.H. was then elected with power to appoint its own officers.

Dr. CAMERON then read a paper on

The Nature of Summer Diarrhœa.

He maintained that the usual belief that summer diarrhœa was due to an organism conveyed in milk, communicated directly from child to child and disseminated by the house-fly, was not proved. Heat was said to act indirectly by encouraging the bacterial decomposition of milk. The weight of evidence, in his opinion, went rather to prove that it was due to the direct action of heat on the unstable heat centre of the infant. It was admitted by all that contamination of milk with streptococci or other pathogenic organisms is capable of producing epidemics of diarrhœa; but that the mere multiplication of the usual milk saprophytes could produce diarrhœa Dr. Cameron maintained that we had no evidence. In spite of present-day methods of milk sterilisation the dangers and difficulties of the artificial feeding of infants were still with us. Infants fed on the breast, cow's milk, dried and condensed milks and proprietary foods were alike affected. The mortality of infantile diarrhœa resulted from several types of disease all favoured or caused by persistently high temperature. Dr. Cameron described the effect of the latter upon infants and concluded that the great summer mortality was not entirely or chiefly due to infective enteritis, the result of the contamination of the milk-supply, but was to be attributed to the prejudicial effect of heat (1) in lowering the need for food and the tolerance for food, (2) in diminishing the force and activity of the digestive secretions, (3) in encouraging the overgrowth and migration of bacteria, which are normal inhabitants of the colon, in other parts of the bowel. He divided summer diarrhœa into four groups: (*a*) group showing some disturbance of the heat-regulating mechanism together with digestive disturbances of greater or less severity; (*b*) a group comprising cases of acute catarrhal or follicular colitis and a few in which the bacilli of dysentery have been found; (*c*) a group of cases of "heat stroke" in which cerebro-spinal symptoms are the most prominent; (*d*) a terminal state of "intoxication," the very characteristic symptoms of which are evident in almost all cases before death. Preventive propaganda at present assumed the infective nature of the disease. It was possible that measures to assist the young child to combat the direct influence of heat would be more fruitful of results.

Dr. Cameron concluded by picturing the infant enveloped in many layers of impervious flannelette, lying on a feather bed in the most airless corner of an airless room, crowded with adults, and opening only upon a court-yard in which the temperature is 90°F. in the shade; an infant whose restlessness and crying and thirst is soothed by the free administration of an artificial diet. He maintained that such an infant is under conditions peculiarly well fitted to produce the disturbance of body temperature which leads to a loss of all tolerance to food, and to ultimate intoxication from bacterial overgrowth and endogenous infection. To urge the overwrought mothers of such an infant to practise rigid cleanliness in the handling of the milk or to demand a low bacterial count of milk saprophytes per cubic millimetre in the milk were measures not in themselves sufficient.

Discussion.

Dr. E. H. T. NASH compared the summers of 1898, 1911, and 1921, all of them intensely hot. In 1898 and 1911 terrific epidemics of summer diarrhœa occurred, but this year although the heat and drought had been greater than ever, nothing like a serious outbreak had occurred. He maintained, therefore, that heat was not the most important factor. Was the change due to the introduction of dried milk?

Prof. T. E. HILL suggested that the change was due primarily to the education of the mother through the infant welfare movement, and partly also to the replacement of the privy system by the water-carriage system of drainage.

Dr. H. SCURFIELD said that Dr. Cameron's idea received support from the fact that mothers had now been taught to put their infants to sleep out of doors.

Dr. CAMERON, in reply, agreed that infant welfare work had been the most important factor in reducing infantile diarrhœa, but thought the result to have been achieved rather by educating mothers in rational clothing and other methods of combating the effects of heat than by the careful preparation of feeds.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The first evening meeting of the present session will be held in the Society's lecture theatre at 17, Bloomsbury-square, London, W.C., on Nov. 9th, 1921, at 8 P.M., when Prof. W. E. Dixon, F.R.S., will read a paper on the Drug Habit. Medical friends of members and student-associates will be welcomed.

YORK MEDICAL SOCIETY.—At the indugural meeting of the session of the Society, held in the Tempest Anderson Hall at the Museum, York, on Oct. 19th, Prof. T. Wardrop Griffith delivered an address in which he discussed the future of the voluntary hospitals. The financial conditions affecting these institutions, the policy guiding the destinies of the Poor-law infirmaries, and the degree of intelligent generosity of the public of Yorkshire, made up, he said, an equation with as many unknown terms as there were considerations. If voluntary hospitals were taken over by the State or by municipal or Poor-law authorities, the cessation of private benevolence would necessitate increased taxation or rates; a hospital allotted to a stated area would lose its county reputation; the staff would cease to be honorary, and the question would arise of the comparative merits of full-time and part-time staffs. He was inclined to think that the service of part-time men—who were paid a moderate salary and were allowed to do private consulting practice—was the most likely form of service for hospitals of the future. He did not agree with Dr. Addison that the voluntary and municipal hospitals might go on for many years together; the former would be starved of pecuniary support and of suitable staffs as, unless he was greatly mistaken, was going to happen at Bradford. In conclusion, Prof. Griffith sketched his idea of the way in which the hospital system of the country might best be worked. In this system the present Poor-law infirmaries, with improved equipment, would be manned by a visiting staff of paid part-time officers, some of them young men fresh from the universities and medical schools, desirous of specialising or becoming consultants; whilst the voluntary hospitals, substantially subsidised by the State, would yet retain their freedom. An arrangement might be made by which those who benefited should pay, if they could afford it, for their maintenance in hospital, without loss of the truly voluntary character of the institution; in this way such patients would still be able to command the eager services of the best men in the profession.

to prevent clotting is a function of the amount of thrombin present, and the quantity required to prevent the serozyme-cytozyme combination is proportionate to the relative concentrations of these two substances in any given experiment. The author also considers that hirudin can exert an influence at a yet earlier stage, and inhibit the transformation of proserozyme into serozyme. Thrombin and antithrombin form an inert complex, the antithrombin being neutralised but not destroyed: heating will destroy the thrombin and set free the antithrombin again. The paper finishes with a quite interesting comparison between the action of thrombin and antithrombin in the presence of fibrinogen, and of toxin and antitoxin in the presence of the cell.—This number also contains a short paper by H. Limousin on the direct cultivation of *B. tuberculosis* from the sputum on Pétrof's medium, which has given the author satisfactory results.

Reports and Analytical Records

"VALEDA" INVALID FOOD AND "GOOD AS GOLD" BABY FOOD.

(AUSTEN FOODS, LTD., BATH.)

THESE two foods when analysed gave the following results:—

	"Valeda" per cent.		"Good as Gold" per cent.
Carbohydrates, starch, &c. ..	78·0	....	75·6
Fibre	0·6	....	0·5
Protein	12·1	....	11·1
Fat	1·5	....	1·4
Mineral matter	0·9	....	0·8
Moisture	6·8	....	10·6
	99·9	....	100·0
Matters soluble in cold water	6·3	....	5·8
Alkalinity (as $NaHCO_3$) ..	0·17	....	0·17
Starch liquefying enzyme ..	absent	....	absent
Nature of starch	wheat	....	wheat

These figures are characteristic of "heated flour" preparations. Nothing can be said against "Valeda" as an invalid food. With regard, however, to the infant's food, the words of Dr. F. J. H. Coutts in his report to the Local Government Board[1] may be quoted:

> "I am of opinion that foods containing unchanged starch or starch altered only by heating should not be given to babies under 7 months of age, except on the advice of, and under the supervision of, a medical man."

"ASEPSO" SOAP.

(MESSRS. EDWARD COOK AND CO., LTD., BOW, LONDON.)

This soap is stated to be a remedy for eczema, ringworm, and other skin troubles. When analysed it was found to contain 2·8 per cent. of mercuric iodide (HgI_2), which confirms the manufacturers' claim of 3 per cent. of this ingredient. The germicidal value of mercuric iodide is well known, and it is obvious that this soap, used with discretion, should be of considerable value to the medical practitioner.

LYND'S "WELL-MADE" SOAP.

(WM. LYND AND CO., BOWMAN-LANE SOAP WORKS, LEEDS.)

We have received a sample of soap of the "Well-made" brand for examination. Our analysis showed the following percentage composition:—

Water	27·07	per cent.
Fatty anhydrides	61·48	"
Free alkali as NaOH	0·01	"
Alkali (Na_2O) combined as sodium carbonate	0·64	"
Alkali (Na_2O) combined as soap..	6·87	"
Insoluble matter	0·10	"
Resin acids	present.	

This soap is of good quality and suited for domestic purposes. The amount of free alkali and insoluble matter is negligible.

VERMOUTH, FRATELLI CORELLI, TORINO.

(EDWARD YOUNG AND CO., LTD., 62–3, MARK-LANE, LONDON, E.C. 3.)

On analysis this vermouth was found to have the following composition:—

Alcohol (by weight)	11·34	per cent.
Fixed acidity (as tartaric).. ..	0·36	"
Volatile acidity (as acetic)	0·06	"
Extract	15·26	"
Total sugars	14·70	"
Specific gravity		1011·72°

This vermouth consists of a matured wine to which has been added certain vegetable extracts, mostly derived from the cinchona family. The analytical results quoted above are typical of a good vermouth. Skilful blending of the flavouring matters has resulted in a very palatable product, which is free from "harshness" or excessive sweetness.

WILBERT'S INVALID PORT.

(WILLIAMS, HUMBERT, AND CO., 38, MINCING-LANE, E.C.)

When drawn from bond and analysed this wine was found to have the composition:—

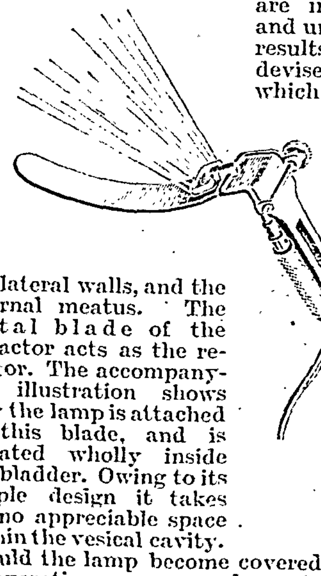
Alcohol	21·3	per cent. (by volume)	
equivalent to	37·3	"	proof spirit.
Total extractives	9·4	"	
Containing—Mineral matters	0·2	"	
" sugars ..	8·5	"	
Total acidity (tartaric) ..	0·33	"	
Volatile acidity (acetic) ..	0·03	"	

The sugars consist of a mixture of dextrose and lævulose, cane sugar being absent. The analytical results confirm the statement of the vendors that this is a straight Douro port wine containing no admixtures.

New Inventions.

A NEW BLADDER LAMP.

THE method commonly in use for the artificial illumination of the interior of the bladder during an open operation is to reflect electric light from either a hand- or head-lamp through the opening made in the anterior abdominal wall. Both these lamps are inconvenient to use and unsatisfactory in their results. Recently I have devised an electric lamp which can be fitted to the posterior blade of Thomson Walker's bladder retractor. It completely illuminates the base of the bladder, the lateral walls, and the internal meatus. The metal blade of the retractor acts as the reflector. The accompanying illustration shows how the lamp is attached to this blade, and is situated wholly inside the bladder. Owing to its simple design it takes up no appreciable space within the vesical cavity. Should the lamp become covered with blood during an operation a gauze swab on forceps will efficiently clean it. The lamp with its attachment can be sterilised by insertion in methylated spirit or 1 in 40 carbolic acid. During the operation the cable lies beneath a sterilised towel and does not come in contact with any instrument.



The lamp can be obtained from the Genito-Urinary Manufacturing Company, to whom I desire to express my thanks for much valuable help in its design.

Welbeck-st., W. CLIFFORD MORSON, O.B.E., F.R.C.S.

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[1] 1914, New Series, 80, p. 31; see also THE LANCET, 1914, ii., 512.

other originates within the skull an active secondary force, universally known as commotion, which is transmitted in all directions by the incompressible cerebro-spinal fluid. Hence result all grades of traumatic lesion of the neuraxis, described by the author with profusion of detail, ranging from hæmorrhages and contusions to molecular disturbances. Some attention is paid to the curious cases of death, without obvious objective findings, consecutive to trauma, and the author is convinced that more minute investigation, especially of the medulla, would in such cases reveal adequate cellular or other modification. The volumes are well illustrated, personal and other cases are cited copiously, and while many of the bibliographical references date back to the latter half of last century recent work derived from war experiences is by no means ignored. It is somewhat tiring to the eye to encounter everywhere in the book a most prodigal use of italics and of capitals, and, as too commonly still the case with French scientific volumes, an index is wanting, for which lack a *table des matières* in no way compensates.

Leitfaden der Neurologischen Diagnostik. Eine Differentialdiagnose aus dem führenden Symptom für praktische Aerzte und Studierende. By Dr. KURT SINGER. Berlin and Vienna: Urban and Schwarzenberg. 1921. With 33 illustrations. Pp. 201.

Dr. Singer's little guide to neurological diagnosis is based on the principle that for the general practitioner it is unnecessary to be able to differentiate between, say, Friedreich's disease and hereditary cerebellar ataxia, whereas he ought to be in a position, recognising the main symptoms of nervous cases, to determine their localising or diagnostic import. Rigorous exclusion of non-essentials has enabled the author to produce a book suitable for the needs of the busy practising physician arranged under such headings as paralysis, amyotrophy, disorders of sensibility, gait, twitching, cramps or fits, tremors, neuralgia, headache, giddiness, &c. Only a sound and wide knowledge on the author's part has enabled him to pack so much information into so little space. The book appears well calculated to fulfil its mission.

THE DIRECTION OF HUMAN EVOLUTION.

By E. G. CONKLIN, Professor of Biology in Princeton University. London: Humphrey Milford. 1921. Pp. 247. 12*s.* 6*d.*

THE lectures which go to form this interesting volume were given under the John Calvin McNair lectureship in the University of North Carolina "on the mutual bearings of science and religion upon each other." In the first part, on the paths and possibilities of human evolution, the author examines the past history of man for indications of his future. He concludes that there is no probability that a higher animal than man will ever appear on the earth and that man has reached the limit of his possible physical and intellectual development. Social development is the only path left open for him, and just as evolution has progressed from the individual to the family, the tribe, and the modern State, so some day it will bring the whole human race together into a federation of the world.

The argument rests on many disputable statements; the intellectual, as distinct from the æsthetic, superiority of the Athenians over the moderns may well be questioned, as may the statement that the "great increase in nervous and mental disorders" indicates that "the evolution of the brain and nervous system of man has practically reached its limit." Hardly adequate credit seems to be given to Samuel Butler for his illuminating idea of "detachable limbs," nor to Benjamin Kidd for his "Social Evolution" and "Science of Power." The great goal towards which the human race is moving being the rational organisation of society, the author next turns to the question as to whether democracy will serve this purpose. This section of the book is chiefly of interest for its demonstration of how far the Americans are at present from appreciating what democracy is about. It is commonly thought, says Prof. Conklin, to involve the idea of maximal individual freedom and minimal social control; freedom is exalted above service, and "Liberty" is stamped on the coins with pictures of an Indian and a buffalo to show what it means. This, he points out, is a very primitive state of mind and recalls, from Huxley, that each bee has its duties and no bee has its rights; what is wanted is social coöperation rather than class antagonism, reason instead of passion, humanity in place of nationalism. Noteworthy is the expression of the conviction that the further progress of humanity will necessarily involve the breaking down of the segregation of white and coloured races. Man is a wild animal and there is no one to domesticate him; he combats and overcomes the cosmic processes that dominate other animals; pure lines and selected breeds are therefore impossible. Democracy, with all its faults and difficulties, is the only route for further evolution. There is in this section of the book so much that is opinion rather than fact that criticism in brief is hardly possible. But it is not clear that the author has realised that democracy is a means, a mode of freedom, not an end in itself. The final third of the book deals with evolution and religion, and here the author becomes obscure and difficult to follow beyond his obvious thesis that there is nothing incompatible between natural knowledge, evolution, and religion. Prof. Conklin is a rationalist and he finds the usual difficulties in applying his intelligence to an analysis of his relation to God. Sundar Singh remarks that milk does you more good if you drink it than if you analyse it, and advises you to take religion in the same way; Bosanquet says much the same. But Prof. Conklin's gospel is that you get more real benefit from analysis, and he proceeds to consider how that is to be done in a series of chapters which are interesting but not very illuminating.

The book as a whole can be warmly recommended to those who are curious about the relation of mankind to the world; it is suggestive and provocative, an effect enhanced by the jerky style and ejaculatory method of presentation; it would do splendidly for reading aloud in a small circle for discussion. Some possibilities are not discussed and it would be interesting to hear the author's views on the likelihood that the route for further human progress, which he can see only in social coöperation, is along lines which, in our present terminology, we should call spiritual; the path at any rate is probably not an altogether obvious and intelligible one, else we should be on it already. Laying, as he does, so much stress on the lessons about the course of evolution which we can collect from its past history, it is surprising that he does not deal more fully with the chance that mankind is "destined" to suffer the fate that is known to have overtaken so many large and highly-specialised vertebrates and be completely obliterated. Perhaps his cheery and stimulating optimism deflected him into more encouraging topics.

CEREBRO-SPINAL FLUID.

Liquido céfalo-raquidiano. Its Clinical Value Estimated from Observations in the Laboratory of Prof. Alberto de Aguiar. By Prof. ALFREDO DA ROCHA PEREIRA, of the Faculty of Medicine of Oporto. Oporto: Companhia Portuguesa Editora. 1921. Pp. 336.

THIS work is divided into five parts and a bibliography. The first part, describing the normal cerebro-spinal fluid, its anatomical and physiological characters, and its composition, calls for no particular comment. In the second part the variations from the normal are dealt with, the aspect and colour, tension, the presence of albumin. Froin's syndrome (massive coagulation and xanthochromia), albumino-cytological dissociation, Noguchi's reaction, and the presence of urea, chlorides, and glucose. Chapters are also last year, bearing on the pathological physiology of Jacksonian epilepsy following gunshot wounds of the head. Mr. LERICHE took the occasion to examine his patients in the seated and not the recumbent position, the tension of the cerebro-spinal fluid being very different, according to him, when the subject is seated, and when a local and not a general anæsthetic is employed. In these circumstances he has observed on several occasions that the onset of a Jacksonian fit is immediately preceded by an arrest of cerebral pulsation and by instantaneous blanching of the cerebral pial vessels at the same moment; and he has made the further observation, in similar experimental circumstances, that in a large number of Jacksonian cases the tension is below rather than above the normal. Such observations, coupled with those made by Mr. SARGENT, seem to warrant closer investigation with wider material, for their bearing on the pathogenesis of epilepsy is at once apparent. Mr. SARGENT is led, from a consideration of his great, if not indeed unique, experience of gunshot head wounds in connexion with epileptiform attacks, to suggest that one of the most frequent causes of local circulatory disturbance, and so, ex hypothesi, of convulsions, depends on the fixation of the brain at the point of damage to the overlying membranes and scalp; it is occasioned by the cerebral movements. It is true, no doubt, that but a small proportion of patients with "anchored brains" develop epilepsy, and the fact suggests the question of a possible constitutional factor and of neuropathic inheritance. Mr. SARGENT sees in a "low degree of stability of the nervous tissue" that undefined something from the necessity of postulating which the student of epilepsy cannot apparently escape. Here we find ourselves in the region of the imponderabilia once more, and it is precisely here that the door is left open for the intrusion of speculation if not of fantasy.

We shall welcome the result promised of Mr. SARGENT's operations on some 120 patients suffering from epilepsy following on gunshot wounds of the head, and the communication will, we feel sure, be enhanced in value by the inclusion of information as to the individual constitutional inheritance of the patients operated on. If only some 5 per cent. of patients with head injury sustained in warfare develop subsequent epilepsy, and if they do not all show some definite traumatic cranial defect, then clearly trauma alone is inadequate to cause convulsions, and the necessity of authoritative investigation of individual antecedents is more than ever patent. As for the group of idiopathic epilepsies, Mr. SARGENT declares that at the present time surgery has nothing to offer by way of treatment; in any case he deprecates recourse to surgical interference if medicinal and other therapeutic measures cannot be prosecuted at the same time over a long period.

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Epidemic Situation in Soviet Russia.

THE new Health Committee of the League of Nations, which met in Paris on Oct. 20th to 23rd, received an important communication on the present epidemic situation in Russia from Dr. NORMAN WHITE and Dr. L. RAJCHMAN, who have just returned from a visit to Moscow in their capacity as members of the Epidemic Commission of the League of Nations. It had been decided that the work which this Commission has accomplished in dealing with the risks of spread of epidemic diseases from Russia to the States which border that country on the west should as far as practicable be supplemented by inquiries in Soviet Russia itself, and the Commissioners have already succeeded in obtaining much valuable information as the result of their visit, a report of which is promised at an early date.

In view of the persistent reports of outbreaks of plague during recent years it is interesting to learn that in European Russia not a single case of plague has been officially verified. Cases have been reported but immediate bacteriological inquiry has in each case negatived the diagnosis. There was, however, a real outbreak in Batum, where prompt recourse was had to anti-plague vaccination on a considerable scale. The outbreak of cholera which has been so severe in the regions of Russia affected by scarcity and famine in the summer months of the present year is reported now to have come to an end very abruptly and unexpectedly; no adequate explanation is, however, so far forthcoming for this rapid cessation. As regards typhus, official notifications aggregate more than two million cases in 1919 and nearly three million in 1920. It is acknowledged by the Russian authorities that these figures very much understate the gravity of the outbreaks. It is estimated that if the Caucasus, Siberia, the Ukraine, and other parts of Russia for which no figures are available, be included, the number of typhus cases in these two years would approximate to 20 millions. Epidemic typhus has been less severe during the present year, but it is difficult to forecast the severity of the outbreak to be expected in the coming winter season, and it is noteworthy that this disease is already again prevalent in the areas afflicted by scarcity and famine. During 1921 relapsing fever has been more prevalent even than typhus; a similar state of affairs has been reported from contiguous parts of Poland. It has caused much sickness, but, as usual with this disease, very little mortality. At the present time enteric fever is very widespread and is causing considerable anxiety to the Russian public health authorities. Dysentery has not been very serious, though a very severe outbreak was experienced in Petrograd in 1920, when the mortality rates were very high. Small-pox is widespread but is not considered to present a very serious problem; vaccination has been very extensively carried out in the affected areas. Malaria has been extremely severe in the Volga districts; while a considerable outbreak of malaria was reported this summer as far north as Archangel.

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Venereal Clinics and their Clients.

AT a conference of the Western District Branches of the National Council for Combating Venereal Diseases, held recently at Bristol, one of the main topics of discussion was the difficulty of securing the attendance of patients at treatment centres until they have been rendered non-infective. Medical officers of health, not for the first time, raised this question and insisted on its importance. A summary of the reports of the London County Council on venereal diseases, for which Dr. F. N. K. MENZIES and Colonel L. W. HARRISON were responsible, has dealt with the matter,[1] as did proposals made by a subcommittee of the Liverpool City Council, which were included in the annual report for 1920 on the health of Liverpool by Dr. E. W. HOPE. There is, in fact, a consensus of informed opinion as to the existence of the loss of efficiency involved by this discontinuance of treatment, and as to the desirability of dealing with it. But although the situation is beyond dispute it may be difficult to secure unanimity between Parliament, the medical profession, and the public as to the best course to be discussed and a list of tests is given for the presence of impurities other than alcohol, which the pharmacopœias usually insist on. A lengthy and interesting article on alkaloids is written by Mr. B. F. Howard and Mr. O. Chick. The history and cultivation of cinchona, and the many alkaloids found in the barks are described. The quinine market is a curious one and, considering the extent to which this drug is used in the British Empire, it seems remarkable that we cannot make all the quinine we require by undertaking the scientific cultivation of cinchona in our colonies, instead of being subject to the control of Dutch merchants. Contributions on camphor, cocoa, coffee, cheese, and particularly on disinfectants, will repay perusal. Throughout the volume few errors are noticeable; the writing is clear and the editing admirable.

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[1] THE LANCET, August 20th, 1921, p. 408.

AUTOBIOGRAPHY OF AN ANDROGYNE.

New York: The Medico-Legal Journal. 1918. Pp. 265. $4.

THIS is the auto-biographical story of a life-long struggle between devoutly religious ideas and intensely perverse desires. The book is not for general reading, but whoever is called upon to deal with disorders of impulse and conduct—whether he be doctor, lawyer, or legislator—will act with fuller justice if he has such knowledge as a book of this nature can give him.

A MANUAL OF PHARMACOLOGY.

Fifth edition. By WALTER E. DIXON, M.D., F.R.S., Reader in Pharmacology, Cambridge University. London: Edward Arnold and Co. 1921. Pp. 468.

THE new edition of Dr. Dixon's Manual of Pharmacology has nothing to fear from critics. The strength of the book is the common-sense way in which the author, who knows all there is to be known on the subject of pharmacology, limits what he imparts to the useful and applicable side of the drugs. He gives the information which counts. The non-therapeutic drugs receive their due without being over-emphasised. The book does not aim at any theory in arrangement and is essentially practical; thus many-sided drugs like the atropine group and sulphur do not break down any high-aiming scheme. Dr. Dixon has by his pharmacological work been in part responsible for the recent revival of the application of physiology to medicine, which implies also a revival of pharmacology. This book is the summary of his own and others' work which has made this revival possible. It is a manual of pharmacology which does not encroach on therapeutics. If students could be persuaded to learn scientifically, considering the actions of drugs in the manner laid down in the early pages of the book, learning would be easy; instances given there make the rest of the book simple reading. The tracings and formulæ, which at first sight suggest that the book may be technical and tedious, are found on nearer examination to add materially to the interest of the text. We note that Dr. Dixon assents to, but is not an enthusiastic adherent of, the myoneural junction theory, and that he considers that alkalies taken before food do inhibit the secretion of gastric juice; recent work would hardly seem to support this view. As regards minor details of accuracy the book is excellent.

The fifth edition is well up-to-date and is not hampered by old formulæ and out-of-date drugs. It is, we believe, the best book of its class on pharmacology.

JOURNALS.

HEALTH: JOURNAL OF THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES, 12, Stratford-place, London, W. 3*d*.—The journal of the Federation of Medical and Allied Societies has made its appearance this week, and states concisely on the title page its object. It is "concerned in assisting the formation of opinion on public health questions." In a lucid foreword by Sir Malcolm Morris this idea is further explained: "It is not enough," writes Sir Malcolm Morris, "that the leaders of the societies should meet in conference as they are doing. If this great combination is to pull its full weight, it must be sustained by an instructed and vigorous public opinion in the membership. The rank and file, numbering scores of thousands, must be brought into the debate. They must be kept informed of what is afoot, they must have opportunities of adding their knowledge and wisdom to the common stock. That is why *Health* has been started." The contents of the new journal, modest though it is in size and price, fairly live up to a large promise. A statement of the position under which an inquiry into the working of the Insurance Act is being sought for is followed by an excellent special article on the voluntary hospitals and the national provident scheme, by Dr. Gordon Dill. The *revue* of the week takes particular notice of the public interests in such questions as grants towards milk for necessitous mothers, the payment for insurance under the Unemployment Insurance Act by nurses, and the exemption of nurses and midwives from juries, now that women can take their place in the box. A thoughtful article by Dr. Jane Walker upon the question of whether marriage should be regarded as a bar to the employment of women deals with a matter of topical urgency. The diary of the proceedings at the meetings of societies and associations where these and similar subjects are discussed forms a useful section of the paper, and one which is probably intended to become a regular feature. We wish our contemporary all prosperity.

ANNALES DE L'INSTITUT PASTEUR.—In Vol. XXXV., No. 8 (August, 1921), Gengou has taken up the study of the substances causing breaking up of bacteria within the leucocyte, and by extracting with acids and neutralising the product obtains a substance capable of producing a similar result in vitro. Since the morphological changes undergone by the bacteria under these circumstances are the same as those occurring within the leucocyte in vivo he considers that his extracts contain the active substance of the leucocytes. Other tissues fail to give similar extracts. The extracts are only active within a moderate range of alkalinity or acidity on either side of neutrality. The extracts contain a single substance capable of acting on a variety of organisms, not specific substances for different organisms. The active substance is protein in nature or closely bound up with the proteins of the extract. They exert no hæmolytic action on red blood corpuscles, and cannot be made to do so by the addition of either fragment of the complement from which, and from other considerations, Gengou considers this substance distinct from complement, and, although capable of digesting gelatin, also distinct from the proteolytic ferments of the leucocytes.—The Mechanism of Action of Hirudin and the Antithrombin of the Plasma obtained after an Injection of Peptone, is the subject of a long paper by André Gratia. The author accepts the classical theory of coagulation, as enunciated by Bordet and Delange, which assumes the presence of three substances essential for coagulation: a thermolabile humoral substance (serozyme), a thermo-stable cellular product (cytozyme), and fibrinogen. He accepts the lipoidal nature of the cytozyme and habitually uses a lipoidal extract as cytozyme in his experiments. In general the antithrombin of peptone-plasma and that of hirudin have similar properties; he does not agree with Mellanby and others that the former, like that set free in anaphylactic shock, is merely an increased alkalinity of the blood, but considers it a specific substance. Both these antithrombic substances have the property of being effective in much smaller doses the earlier they are made to intervene in the process of clotting; a quantity capable of inhibiting the combination of serozyme and cytozyme to form thrombin being insufficient, at a later stage, to neutralise the thrombin when once this is formed. The amount of hirudin required

Annotations.

"Ne quid nimis."

FRENCH GOVERNMENT AND TOWN SANITATION.

PARTLY to facilitate the increase of population, which is so necessary in France, and partly in the hope of finding work for the unemployed, Mr. Leredu, the Minister of Public Health, has addressed a circular to all the Prefects, in which he points out that the laws on public health sanction special investigations as to the sanitary conditions of towns. The Minister is urging that a thorough inquiry should be held in all towns where the death-rate is above the average. The use of such a measure is obvious, particularly as during the war little or nothing could be done in respect to domestic or public sanitation. If the waterworks, the sewers, the disinfecting stations, were kept in good working order, it was the most that could be expected under the circumstances. But much more was needed, and is now in some places very urgently needed. It may be asked, however, if the fact that the death-rate is above the average is a sufficient reason for neglecting other places where the death-rate is below the average. A town may have a very low death-rate, taken as a whole, and yet there may be a scandalously high death-rate in one or two special districts. Indeed, it is just because the general conditions are so good that the exceptionally dark spots are apt to be overlooked. These slums, bad in themselves, are likely, in times of epidemic, to be centres from which the whole town is infected. During the last great cholera epidemics this was the case, especially at Havre and Hamburg. At Hamburg the deaths from cholera varied from 4·48 per 1000 inhabitants in the Harvestehude district to 27·50 in the Vedde district. Yet all had the same water-supply. At Havre, some of the localities most afflicted had an ordinary death-rate, before the epidemic, of 50 per 1000 per annum, though the town, as a whole, was not particularly unhealthy. Such contrasts are to be found in many large towns, and a moderate death-rate cannot be taken as evidence that plague spots do not exist. Sanitary commissioners have visited and described for us in these columns many such unwholesome streets, blocks of houses or districts which exist in London and in various provincial towns, in England as well as in large continental cities. In Paris, to this day, close to the seat of Municipal Government, the Hotel de Ville itself, and further off, in the XVIII., XIX., and XX. arrondissements, there are still numerous streets where the death-rate is very high and where drastic measures are urgently needed. In such circumstances, all local authorities, whether the general death-rate is high or low, should be called upon to deal with their slums, thus finding, moreover, work for the unemployed while benefiting public health.

CURE DE JEÛNE IN DIABETICS.

IN a recent article[1] Dr. Marcel Labbé describes his experiences with the method of treating diabetes mellitus by means of starvation. He gives the credit to his French colleague, Dr. Guelpa, who introduced a form of fasting and purgation treatment in 1910, but at that time he was not much impressed. The work of Allen and Joslin caused him to experiment again with the fasting treatment with the result that he modified his views. He found that the treatment was of great value in treating diabetic patients who had not lost weight. The glycosuria disappeared and the ketosis was much reduced. He was convinced, however, that the treatment was not a cure, using the word in the sense of a complete restitution. Allen, it should be pointed out, has never claimed that it was. Labbé does not believe that the treatment is of use for the patients who have lost weight, giving several instances in which the glycosuria either did not disappear or reappeared again as soon as any attempt was made to feed the patient. These patients also tended to pass into coma very suddenly. It is, of course, well recognised by those who use the fasting treatment in this country that patients with severe and advanced diabetes have already passed beyond the stage in which striking improvement can be expected. Nevertheless, fasting may improve the condition of the patient enormously since it removes the thirst and pruritus which render his life a misery. For the sake of the diabetic patients in France it is to be hoped that Dr. Labbé's article will induce his colleagues to read the numerous papers and books published in America and also in England, and to practise, with discrimination, the fasting treatment, which was so fully discussed before the Medical Society of London last week (see p. 957).

A RED CROSS HEALTH CAMPAIGN.

IN a paper recently published Dr. C. E. A. Winslow,[1] Director of the Department of Health, League of Red Cross Societies, sketches a programme for a Red Cross health campaign which commands sympathy from the breadth of outlook shown. Nothing less than the amelioration of "all woes of all men"—to quote Swinburne—is contemplated as worthy of the Red Cross, the deepening and broadening of whose ideals is counted by Dr. Winslow as among the greatest of the compensating gains of the war. Of the magnitude of the task thus visualised there can be no question. An annual loss of 9½ million lives in Europe alone from so-called "natural causes" represents a staggering volume of illness and suffering, largely preventable; and it is to the preventive character of the peace-time efforts of the Red Cross that Dr. Winslow draws special attention. The journal in which he writes is itself one of the most interesting and useful developments of international Red Cross activity.

To ensure the voluntary coöperation of the individual citizen without which Government and municipal health authorities can effect little, an educational campaign is imperatively demanded, although the wide diversity of conditions in the different countries makes adherence to any rigid plan undesirable—and, indeed, impossible. Dr. Winslow suggests as a basic feature in a health programme the local establishment of a system of classes under the leadership of the Red Cross, for the study of the principles of hygiene and of local health conditions and needs; a scheme of lectures suitable for this purpose should be outlined, and the practical details connected with the organisation of an adequate health education programme set out. In localities where special societies devoted to particular phases of public health work already exist, the Red Cross may play an important part in coördinating their work and facilitating its execution, an example of this being the agreement entered into in this country between the British Red Cross and the national societies devoted to child welfare, tuberculosis, and venereal disease. Dr. Winslow's scheme is, however, in its essence elastic, and while in many countries child welfare work or tuberculosis work is already adequately covered, he is emphatically of the opinion that in almost all countries there is some important gap which the Red Cross can fill. A section of the paper is devoted to a consideration of the objections that have been or might conceivably be raised to the initiation of such a health programme by the Red Cross. These objections are stated with fairness, but are fully met, and a strong case made out for the extension of the Red Cross functions to a definitely constructive policy—not indeed in any way competing with established organisations or institutions, but

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[1] Annales de Médecine, 1921, vol. x., No. 1.

[1] International Journal of Public Health, September–October, 1921.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 5, 1921.

Of Clinical Units.

THE clinical units, which have been established for some two years at several of the London and provincial general hospitals, mark a new era in the attempt to solve the problems of medical education, and at the same time they indicate an effort to promote the scientific study of medicine. It is too soon as yet to assess the progress made, but it is not too soon to attempt an estimate of their chances of success or failure. The formation of these units has evolved from the desire to explore old ground by new methods, as Sir CHARTERS SYMONDS recently said of the Hunterian era, and their establishment marks the close of a system of professional education which, until quite recently, had been a private enterprise. In no other country than our own could a complete system of medical education have been maintained continuously by private effort, and there are some, no doubt, who will deplore the modification of a system that has attained so large a measure of success. Reform is welcomed in the face of failure, but in the face of great results it requires close justification. Though the time is not ripe to pass judgment on the unit system, its existence is beginning to awaken general interest and its sphere of activity to take a more concrete form; as recent communications to THE LANCET have shown, informed opinion is crystallising as to the more immediate aims that the clinical units should keep in view. Elsewhere in this issue there appears an article by Sir CLIFFORD ALLBUTT, which, though it claims only to be a comment on an article on clinical units by Dr. C. M. WILSON, of St Mary's Hospital, is in itself an inspiration to all who have the interest of medical education at heart.

If the new clinics could attract visitors from foreign cities to British medical schools they would at once be missions with a more than medical significance. In pre-war days the German and Austrian medical schools were centres for the dissemination of continental thought, and with every year that passes we can, as a nation and as a profession, less afford the island isolation that was once our boast. In the more immediate field of work Sir CLIFFORD ALLBUTT counters an implied objection to the unit system, an objection based on the assumption that the teaching of professors of medicine—that is, of men who do not practise medicine in the ordinary sense—will be theoretical rather than practical, and that these attitudes of mind must be poles apart. When science was in its infancy its votaries were often abstract thinkers, but with the development of controlled experiment a new type of scientist has been born. He is a man with vision and imagination, who pursues his goal undeterred by side-issues and undismayed by failure; at the same time he is a man of fact and practical ability, using dispassionate observation and experiment as his working tools. Such men are a composite in themselves of what is practical and theoretical. Convincing proof of this was furnished in the war when the nation applied to the purest scientists for practical help and physicists and chemists turned their energy to the manufacture of engines of destruction, and biochemists laid down the principles that determined the rationing of our armies in the field and the civilian population at home. In the matter of teaching Sir CLIFFORD ALLBUTT looks to the units to take their share in the pioneer work of advanced teaching, but if they follow the lead of the great universities, in which their members have been trained, their directors will take a share in undergraduate teaching. It is well known that principles are more difficult to inculcate than details, and that advanced teaching is a simple matter for anyone who has made an intensive study of the subject he is called upon to teach. In our older universities it is the practice for the elementary courses of instruction to be given by the professors, while the more advanced lectures are given by lecturers and assistants, and by the professor himself only in that particular subject in which he has a special knowledge.

Those who are responsible for medical education, and especially those who are interested in the success of the clinical units, will guide the workers in these units in balancing the somewhat conflicting demands which are made on them by the duty owed to the patients under their care, which must necessarily come first; by teaching, whether graduate or undergraduate; and by research, without which any teaching must lose its inspiration. With the small staffs of which these units are at present composed these demands may become insistent and deprive the workers of the leisure required for the assimilation of new knowledge and for research. Though the personnel of the units may be spared the care and strain of private practice, the units in bulk must be on their guard against the temptation of striving to arrive at maturity too soon. They have a difficult path to tread before they can achieve full success. The enthusiasm and vigour that is part of a new life or a new idea will not be lacking, but diligent consistency in following defined aims will best attain the end in view.

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Observations on Epilepsy.

THE presidential address delivered by Mr. PERCY SARGENT before the Section of Neurology of the Royal Society of Medicine bears on certain as yet unsolved problems connected with epilepsy, and is the more welcome in that it is written from the viewpoint of the neurological surgeon. Sharing, apparently, the recently expressed opinion of Dr. JAMES TAYLOR that the attempt to enmesh epilepsy in the net of psycho-analysis represents a definitely retrograde movement, Mr. SARGENT devotes himself to a discussion of the pathogenesis of convulsive seizures, and in this connexion admits that he has been impressed by the striking rapidity with which visible circulatory changes occur in the exposed cerebral cortex in response to various disturbing causes. The vascular theory, as it may be called, of spasmogenesis was sustained and illustrated by Dr. A. E. RUSSELL in his Goulstonian lectures of 1909, and it is examined afresh by Mr. SARGENT with the aid of personal observations. His suggestion is that the tonic stage of an epileptic attack is the sequel to sudden and transient disorder of the cortical circulation, resulting immediately in a "decerebration" such as has been recently the subject of clinical study in man, while clonic movements may conceivably be the expression of returning circulation. Mr. SARGENT cites a personal experience from the laboratory of Prof. C. S. SHERRINGTON, when the pia mater was seen to blanch during the application to the cortex of a faradic stimulus of sufficient strength to evoke epileptiform movements. This observation is not, of course, new, and yet the phenomenon may not have received the attention it merits.

An interesting article[1] was published by Mr. LERICHE consider it desirable that a standard of accuracy should be set up which will show the British article to be above suspicion; they recall the fact that the Order in Council for the compulsory testing of clinical thermometers, which operated from November, 1918, till March, 1921, resulted from the discovery that many instruments supplied to the army were found too inaccurate for use. Large contracts had been hastily placed with every maker, and production was increased regardless of quality. The first tests revealed serious inaccuracy in 25 per cent. of instruments tested; rejection of this proportion speedily reduced the percentage to 5, and at the time of the abolition of the test the rejections had fallen to 1½ per cent. In November, 1919, 135,000 thermometers were tested monthly, under the compulsory regulation: in March, 1921, when the testing of exported thermometers was abolished, 65,000 were submitted, and in June, when the compulsory test was itself abolished, 55,000 was the quantity under test. We agree with the manufacturers who are responsible for the publication of this circular that it is superfluous to comment on the unwisdom of abandoning the principle of a strict test at a time when France, Japan, Germany, and certain States in the U.S.A. have all instituted compulsory legislation dealing with the matter. It will be recalled that a special clause, forbidding the sale of any clinical thermometer not approved by the Ministry, formed part of the Ministry of Health Miscellaneous Provisions Bill introduced in 1920. On the occasion of the defeat of that measure in the House of Lords one speaker referred to the clause in question as an example of grandmotherly interference; but in the report for 1919 of the National Physical Laboratory it is stated that in one month of that year, of 9000 clinical thermometers submitted for testing by a single firm, 28 per cent. were rejected as being in some way unfit for use. The medical man can no doubt see to it that his own instruments are accurate, but when the periodical taking of temperatures is left in the hands of a lay person the use of a faulty thermometer may be attended with disastrous consequences.

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[1] Presse médicale, 1920, xxviii., 615.

PHYSICAL EXERCISE IN HEART DISEASE.

DR. C. W. Chapman called attention in our correspondence columns of Oct. 22nd to the merit of the Burke Foundation, N.Y., in popularising the notion of occupation therapy for cardiac patients in America. Not long ago Sir James Mackenzie[1] described the observation of response to effort as the most important method of estimating the heart's efficiency, adding that the method is "apparently so simple that everybody feels confident that he has recognised it, used it, and exhausted its possibilities," while, as a matter of fact, few people have given it the study it requires. It is no less true that physical exercise as a therapeutic measure in cardiac disease has suffered from neglect, a lacuna which Dr. Theodore Barringer, jun.,[2] in a recent paper on the subject, ascribes mainly to the prevalent but mistaken idea that the chief cause of heart failure in patients suffering from cardiac disease is physical overstrain. In an earlier investigation made by him[3] of the clinical records of 154 cases of heart failure complicating chronic valvular or myocardial disease, it was found that in only three cases was there a definite history of physical strain immediately preceding the onset of symptoms, the dominant factor undoubtedly being that of infection. Dr. Barringer in his later papers describes the blood-pressure reaction during and after exercise in normal persons and in persons with heart disease. In the normal individuals experimented on it was found that the pressure rose during work, the degree of rise being proportional to the intensity of the work; and that this height was maintained for the first 60 seconds after work. In the patients with heart disease the pressure which rose during work rose still further on the completion of the work, the rise at both periods being much more marked than in the normal controls. A delayed rise and prolonged fall were noticed whenever the work over-taxed the heart. As the object to be aimed at in giving exercise to a diseased heart is so to grade the exercise that the heart muscle is stimulated to contract more energetically, thus increasing both the output per beat and the supply of blood to the muscle while avoiding any degree or duration of exercise which would fatigue the heart, the height of the blood-pressure curve affords in the majority of patients a convenient indication as to the effect of a given exercise on the heart. A rise of more than 20 mm. of mercury from the pre-exercise level indicates an energetic and favourable reaction in the absence of any signs of over-taxation of the heart. Among the forms of exercise recommended by Dr. Barringer are various movements with dumb-bells from 1 to 15 lb. in weight, stair-climbing, and skipping, for the more energetic exercises, and walking, croquet, and arm and leg exercises for the milder forms, the selection of the particular type for each case being based on the amount of increase in the systolic blood pressure after exercise. The mild form should as a rule be used for patients with small cardiac reserve power, and also to supplement the more energetic exercises. Dr. Barringer concludes by a statement of his opinion that physical exercise increases both the resistance to general infections in patients with heart disease precisely as it does in normal people, and the resistance of the heart muscle itself to reinfection leading to heart failure, insisting that there is no excuse in most cases for advising heart patients against exercise, or for vagueness and indefiniteness in prescribing this valuable therapeutic measure. Dr. Barringer's findings refer mainly to adult patients, but Dr. May Wilson[4] studied the circulatory reactions to graduated exercises found in normal children and obtained similar results. She also formulated a working table of standardised test exercises followed by normal systolic blood-pressure curves without symptoms of dyspnœa and fatigue, by the use of which she convinced herself that in children with chronic organic heart disease exercise tolerance tests are of undoubted value as a scientific basis for the regulation of the child's activities. Dr. Wilson endorses Dr. Barringer's dictum that the widespread fear of exercise in heart disease is unwarranted.

COORDINATED HEALTH SERVICES IN WILLESDEN.

AN interesting feature of Dr. G. F. Buchan's report for 1920 as medical officer of Health for Willesden urban district is his description of a scheme for the coördination of medical services. This scheme Dr. Buchan claims to be much on the lines indicated in the Dawson Report and to have been set going two years before this report appeared. For purposes of health organisation Willesden is divided into four areas of approximately equal size, each of which is in charge of an assistant medical officer, who is the pivot of the public medical work of his area and controls within his district infectious diseases, maternity and child welfare work, and school medical work. He has at hand for the elucidation of cases of difficulty, the services of part-time consultants appointed by the urban district council and a hospital with beds for the observation or treatment of cases when necessary. In this way Dr. Buchan is satisfied that there is available for patients attending the council's clinics the best possible medical skill for diagnosis and treatment. He admits that neither the clinics nor the hospital are as yet fully equipped, but when this is achieved the mothers and children will be in a position to know that the local authority has left nothing to chance in its endeavour to secure healthy child life. The advantage of the medical arrangements consists adopted. The treatment of venereal disease at clinics has been instituted that the sufferings of individuals infected may be alleviated without expense to themselves, and also that so far as persons presenting themselves for treatment are concerned, the infection of others by them may be averted and the transmission of venereal disease by infected persons, including parents, checked. The cure of the patient is not the main end aimed at but one of the means by which a measure of prevention may be attained. Universal treatment of all persons suffering from venereal diseases is out of the question, at present at all events, but two objects have to be kept in view in striving towards that ideal. These are the attracting for treatment of as many patients as possible and the effective arrest of the disease so far as they are concerned. The former is largely a matter of rendering all the circumstances of treatment at a clinic as little repellent to infected persons as possible, and of inducing them to seek it by diffusing the knowledge that everything possible will be done to relieve them, provided that they will do their share conscientiously. According to estimates made by those qualified to judge, the persons who do not persevere until there is no fear of their infecting others constitute not less than 30 per cent. of the number treated, and may in some localities amount to 60 per cent., so that to this large extent the clinics fail in fulfilling their mission. Dr. R. E. Roberts gave one such estimate in our own columns (August 6th, p. 277).

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[1] THE LANCET, June 11th, 1921.

[2] Jour. of Amer. Med. Assoc., July 2nd, 1921. Amer. Jour. of Med. Sciences, July, 1921.

[3] Jour. of Amer. Med. Assoc., April 23rd, 1921.

[4] Amer. Jour. of Diseases of Children, September, 1920. Jour. of Amer. Med. Assoc., June 11th, 1921.

As causes of this defect, lack of better conditions for treatment, and failure to attract patients no doubt play their part. There remain also to be taken into account the careless recklessness of the uneducated patient, the optimism which mistakes the relief of the more distressing symptoms for a completed cure; the difficulty of explaining absence from work or from home in attending the clinic; and the call of various occupations, such as those of the seaman or commercial traveller—the list is not exhaustive. The London County Council report deals in detail with the conditions desirable in clinics, and with the other causes of interrupted treatment. At the meeting at Bristol it was suggested that some form of administrative procedure might be instituted which would induce, if it did not compel, attendance to the point at which no further danger of the infection of others is possible. Legislation to compel persons suffering from venereal diseases to seek early and adequate medical attention seems to us to be out of the question—those who talk glibly of such measures are not living in a world of facts. There is, however, plenty of evidence that the offering of free treatment to those who may seek it voluntarily is so far appreciated that many clinics suffer rather from congestion and from the difficulty of dealing with the flow of patients than from the lack of them. The L.C.C. report plainly suggests that overcrowding, long periods of waiting, and inadequate opportunity for attention during examination contribute to promote the lapses in perseverance. There is, therefore, a considerable number of persons to be treated, although all may not offer themselves, while legislation to compel the public to do more than they do already appears not to be practicable. Anyhow, the time is not ripe for such procedure, but it may be possible to effect considerable improvement without it. The example of other countries affords us some guide. Without the exercise of such compulsion there remains the power of persuasion, instruction, and advice, exercisable already where there is time and the necessary personnel to apply it. There is, further, the practicable course, if it were to be introduced, of following up cases from the clinic to the home, whenever the patient, still capable of spreading infection, appears to have discontinued treatment. The officer from the central office, or the clinic, the almoner or the health visitor would seek out the man or woman, and endeavour by persuasion and personal influence to bring him or her back to the clinic. The objection would, no doubt, be made to such a proposal, that the promised and advertised secrecy of the clinic's treatment would in such cases be liable to be sacrificed, and the efficacy of the whole scheme impaired by a deterring influence thus aroused. It is, however, open to question, as some who have had practical experience maintain, whether the persons seeking treatment for venereal diseases at clinics, or at any rate the men so situated, attach quite so much importance to the concealment of their condition as many believe. Men and women of mature age and of a different social standing from the young people affected may overrate the value of secrecy.

But even if the dread of disclosure exists to the full extent imagined, it might conceivably be made to play a useful part in inducing perseverance in attendance at the clinic. If the patient were warned at the outset that the treatment sought would be given only on the condition that he must persevere to the end, he then, in the full consciousness of his symptoms and his need, would be likely to accept any terms so imposed upon him. He would, moreover, know after a time from the experience of his fellows what had happened in their case and would hesitate before discontinuing his attendance prematurely. He would learn that he could not throw up all the advantages which he had gained without an effort being made to reclaim him. It need hardly be said that the task of following up patients would have to be entrusted to persons of the appropriate sex carefully selected for the purpose, and to be carried out with tact and discretion. Consideration would have to be accorded to the case of women as distinct from men and also to the classes of women affected. It must also be admitted that the net could hardly be drawn in such a manner that none would escape it. The giving of false addresses and names by those seeking treatment no doubt takes place to an appreciable extent, and the giving of true names and addresses would, in any circumstances, remain difficult to enforce, at any rate in large cities and urban communities. Nevertheless, however great the difficulties may be and however imperfect the result likely to be obtained, the fact remains that the treatment now given is to an appreciable extent ineffective as a measure for the protection of the health of the community. Until public opinion is ripe for compulsory legislation it can be rendered more effective by eliminating from the clinic circumstances and conditions likely to deter patients from continued attendance; by impressing upon them at the clinic the vital importance for themselves and for others of persistency, even when to them the desired end appears to have been attained; and by such following up of cases as may be found in the light of experience to be productive of results. As in every other function of public importance already overtasking those who perform it, extended usefulness will demand in many cases increase of staff and will involve greater expenditure. The stage, however, has not been reached at which the financial difficulty or the precise extent to which voluntary effort may be utilised need be dealt with in concrete terms. Free discussion of the problems involved and the securing of appreciation of them by the lay public appear in the first instance to be desirable. They would form a necessary preliminary to any tentative measures that might follow.

and from the changes which sometimes take place late in life as the result of an alteration in the refractive index of the crystalline lens, these changes have attracted little attention; many an oculist when he finds a difference of, say, half a dioptre of astigmatism in the refraction of a patient compared to the record of his earlier adult years is inclined to attribute the circumstance to an error of observation on the former occasion, whether on his own part or on that of a colleague. It is satisfactory to be assured by one who has recorded these changes during a period of 40 years that they do actually occur. Mr. Clarke did not explain the mechanism by which they are effected. In the case of an increase in the axis of the eye in one meridian we can understand it by supposing a yielding of the sclera, as in myopia. In the case, however, of a decrease of myopia or increase of hypermetropia or hypermetropic astigmatism, it is difficult to understand, unless we suppose that at the first test the ciliary muscle was incompletely paralysed. A still more difficult phenomenon to understand is an alteration in the axis of astigmatism which is said sometimes to take place. Since most tests for the angle of oblique astigmatism are subjective, the chances of an error of observation are considerable. Yet Mr. Harrison Butler, in the discussion that followed Mr. Clarke's paper, asserted that changes in the axis do actually take place—by what mechanism he did not explain. He did, however, remark that the angle of the cylinder required for reading glasses is sometimes different from that required for distance, and we may make the suggestion that the action of the oblique muscles, one of whose functions is to keep the axes of the eyes parallel, has something to do with it. The subject is one that requires further investigation on the part of those who have the opportunity of following up their refraction cases during a long series of years.

THE FIRST MITCHELL LECTURE.

THE history of the foundation of this lecture is as follows. The late Mr. F. W. Mitchell, a Birmingham manufacturer and a good citizen, was a liberal giver to any object which appealed specially to his views. He was interested in social-hygienic questions and had often expressed a wish to do something towards the "prevention and cure of consumption." With such an object in view he, altogether unsolicited, sent Sir Edward Malins a sum of money, which the latter forwarded to the Royal College of Physicians of London, and this was by the College used to found a biennial lecture on tuberculosis. To Dr. Parkes Weber has fallen the honour of delivering the first of these lectures, which will be found in the opening pages of this issue.

SUBLUXATION OF THE SHOULDER DOWNWARDS.

Dr. F. J. Cotton[1] has recently described a condition which appears to be not uncommon and yet has not previously received attention—subluxation of the shoulder downwards in cases of injury, due to the weight of the arm, and made possible by gradual exhaustion of the muscles, particularly of the deltoid. He has for years watched this condition occurring in case after case as a complication of shoulder and arm injuries, yielding promptly if treated early, becoming troublesome if neglected. He considers that many cases diagnosed as circumflex paralysis belong to this group. Dr. J. W. Courtney has shown that altered electrical reactions, even the reaction of degeneration, do not prove the nerve origin of paralysis or exclude a mechanical origin by stretching of muscle with consequent displacement of the head of the bone downwards. The type of case in which this occurs is uncomplicated fracture of the humerus, in which the weight of the heavy and perhaps swollen arm suspended, as in the routine treatment, only by the wrist, tires out the supporting muscles. A subluxation downwards, which is well shown in a radiogram taken with the patient standing, gradually appears. In the supine position the subluxation disappears. Eight out of nine cases seen in private occurred in women whose ages ranged from about 40 to 70 years. This fact is explained by the combination in them of a heavy arm with weak muscles. The subluxation is easily overlooked, but if the surgeon is on the alert, it can readily be diagnosed by finding a groove below the acromion, which is often visible and always easily felt. If untreated, the arm becomes helpless and stiff, the condition being not unlike that of subdeltoid bursitis, particularly the form complicated by supraspinatus rupture. Treatment consists of early massage, and, as soon as the main lesion allows, exchange of traction for support of the whole arm. Unless the neglect has been too long prompt improvement is obtained. In a quite recent case a stout but vigorous woman, aged 38 years, broke her humerus on April 19th, 1921. The treatment necessarily involved traction, cautious massage being used from May 10th. Traction was abandoned on June 1st and under support, massage, and exercises she recovered with a solid arm and nearly normal function of the shoulder. Older and less vigorous people require much longer treatment, but Dr. Cotton has never seen a case properly recognised and treated that had permanent disability. These cases show for a considerable time not a trace of deltoid power and several show definite electrical changes. He never sees deltoid paralysis from circumflex damage. All the cases seem to be either due to lesions of the brachial plexus or to the condition now described. Thus a photograph, recently sent to him of "isolated circumflex lesion" from a fall on the shoulder, showed marked atrophy of the scapular muscles as well as of the deltoid, and was obviously a partial traction lesion of the plexus.

AWARD OF THE JENNER MEDAL.

AT the first sessional meeting of the Epidemiological Section on Oct. 28th, the Jenner Memorial Medal of the Royal Society of Medicine was handed to Sir Shirley Murphy in recognition of distinguished work in epidemiological research. This medal was founded on the centenary of Edward Jenner's first successful inoculation of cow-pox from one human being to another, and has been awarded for pre-eminence in the prevention and control of epidemic disease. Dr. A. K. Chalmers, in bestowing the medal, spoke of Sir Shirley Murphy's name as worthy to follow those of W. H. Power, Laveran, and Patrick Manson. As the first medical officer of health for Greater London, he set himself quietly and firmly to clear up insanitary areas, whatever they might be, leaving the metropolis, as Dr. W. H. Hamer has put it, one of the best scavenged cities in the world. Sir Shirley Murphy's whole life has been spent in the endless task of caring for the health of London, and all over the world practical sanitarians will endorse the action of the Epidemiological Section in selecting him for signal honour.

THE resumption of the social evenings held by the Royal Society of Medicine was welcomed by a large number of Fellows and their friends who were received by the President, Sir John Bland-Sutton and Lady Bland-Sutton in the library of the Society's House on Oct. 31st. The success of the evening warrants the hope that such gatherings may now take place regularly.

LECTURES BY DR. MARMOREK.—Sixteen lectures, in English, on Experimental Medicine and Therapeutics, will be delivered in Paris by Dr. Alexander Marmorek at the Institut Océanographique, 195, Rue St.-Jacques, beginning Nov. 21st. The lectures will deal with such matters as: experimental production of specific human maladies, biological replacing of organs, experimental syphilis, tuberculin, origin of goitre and diabetes, proteinotherapy, and predisposition in infectious diseases.

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[1] Boston Medical and Surgical Journal, Oct. 6th.

coöperating with and supporting all public health movements, and in certain cases possibly forming a central clearing house for voluntary activities of this kind.

The national Red Cross Society contemplated by Dr. Winslow is one that should include in its permanent membership from 10 to 20 per cent. of the population of the country, but he points out the impossibility of attaining such a standard unless the members receive something for their membership, and—an even more important point—are given something practical to do for the organisation of which they form a part. We agree with Dr. Winslow that the secret of the strength of the Red Cross movement undoubtedly lies in the fact that it constitutes a challenge to the spirit of human service.

TRYPANOCIDE.

IN a critical review[1] of recent work on the treatment of sleeping sickness, Prof. Warrington Yorke discusses the fundamental assumptions on which C. H. Marshall and S. Vassallo base their optimism as to the efficacy of serum treatment. These assumptions are, broadly speaking, (1) that although the administration of one dose of salvarsan or a substitute is sufficient to sterilise the blood-stream, symptoms reappear within a variable period, averaging about four months, and the disease progresses to a fatal termination; (2) that quite early in the disease the trypanosomes appear to gain an impregnable position in the central nervous system, where they are protected from the action of drugs and whence they can re-infect the blood. We recently pointed out[2] that the presence of trypanosomes in the cerebro-spinal fluid may be fortuitous, and it is by no means proven that they are invariably present at any stage in the course of the disease. Before the 53 successful cases published by Dr. Marshall are accepted as cures Prof. Yorke considers that we ought to know what proportion of cases (1) die, (2) are alive after more or less prolonged periods when untreated, when treated with one or several doses of arsenic or antimony compounds, and when subjected to prolonged treatment. In the absence of sufficient controls to answer these questions Prof. Yorke contends that Marshall and Vassallo have produced no satisfactory evidence that intrathecal injections of salvarsanised serum sterilise infected cerebro-spinal fluids. The doubt expressed by such an authority in tropical medicine as Prof. Yorke on the efficacy of the method which the mission recently organised by the Tropical Diseases Prevention Association was primarily designed to test, adds strength to our plea to the medical officers in charge thereof not to confine their investigations to a single method but to explore trypanocide in general.

CENTRAL COUNCIL FOR LONDON BLIND.

IN pursuance of the scheme for the welfare of blind persons in the County of London, which was approved by the London County Council in July last, the Council has now decided upon the constitution and order of reference to the Central Advisory Council which will be appointed under the scheme. The Council will consist of: (a) One representative appointed by each of 19 associations and institutions located in the London area. (b) Not more than six persons, selected by the London County Council, with special knowledge of the needs of the blind. (c) The chairman and vice-chairman of the Special Committee of the London County Council dealing with the welfare of the blind. (d) One representative appointed by the Minister of Health. (e) One representative appointed by the Board of Education. (f) One representative appointed by the Royal College of Surgeons of England. The County Council will review annually its appointments, and will appoint the chairman. The vice-chairman will be elected by the Advisory Council. The clerk to the London County Council will act as clerk. The order of reference to the Council will be as follows:—

> To assist the London County Council (1) by advising on matters specifically referred to it by that authority and on any other matters to which the Central Council may deem it expedient to direct attention; and (2) in such other ways as that authority may suggest in connexion with the administration of the scheme for the welfare of the blind in London, especially with the object of securing the essential coöperation between the several societies and associations and between such societies and associations and the London County Council.

All meetings of the Central Council and its committees will be held in private, and all expenditure incurred will, after prior sanction, be defrayed by the London County Council. The Special Committee is taking immediate steps to obtain nominations to the Council from the various associations concerned.

OVARIAN GRAFTS.

Prof. Th. Tuffier contributes a valuable surgical study of 230 ovarian grafts to a recent issue of the *Bulletin* of the French Academy of Medicine.[1] These operations were performed with the twofold object of preserving the menstrual flow after removal of the ovaries, when the uterus is left, and of obviating the general disturbance following excision of the ovaries and uterus. Two varieties of grafts were investigated, the homograft derived from another woman, and the autograft, which involved the use of a portion of the patient's ovary. The former was found to be without effect. The autograft, which must be fresh, was placed in the subperitoneal tissue, the subcutaneous tissue, or in the mammary gland. If the graft does not "take" it disappears in from six months to two years. In successful cases no changes were observed for four to five months, the graft then commenced to enlarge and might be painful for a few days before a period was due. When menstruation was re-established, it occurred about five to seven months after the operation, and was often irregular in quantity, duration, and time of recurrence. Dr. Tuffier found the most favourable subjects for grafts to be young adults; in patients over 40 years the grafts were not successful. The average persistence of menstruation in all cases was, however, only one to two years, as the transplanted ovaries appeared to undergo a precocious senescence.

THE TESTING OF CLINICAL THERMOMETERS.

IN reply to a recent question in the House of Commons concerning the inaccuracy of a large percentage of clinical thermometers in use in this country, Mr. Stanley Baldwin, President of the Board of Trade, stated that he hoped next session to reintroduce the Bill dealing with the testing of thermometers, which was introduced by the Government earlier in the session and abandoned owing to lack of time. Mr. Baldwin also stated that most British manufacturers of clinical thermometers are voluntarily having their products tested at the National Physical Laboratory, where the fee charged for large quantities is *3d.* per instrument, but where any single clinical thermometer can also be tested on payment of a fee of *1s. 6d.* In a circular issued a few days ago by the British Lampblown Scientific Glassware Manufacturers' Association, Ltd., it is pointed out that, whilst makers of good clinical thermometers would naturally depend upon the ordinary course of business to obtain orders solely on quality or make, only rarely do instruments bear the makers' name or trade-mark. The bulk are labelled with "Best British Make," or some similar phrase, and it is very difficult to trace the maker of a faulty instrument. This association of manufacturers

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[1] Tropical Diseases Bulletin, Oct. 15th, 1921.

[2] THE LANCET, Sept. 10th, p. 573.

[1] Bulletin de l'Académie de Médecine, 1921, No. 30.

Public Health Services.

NATIONAL INSURANCE IN MANCHESTER.

THE last meeting of the Manchester Insurance Committee as at present constituted was held on Oct. 25th. The Committee was originally instituted in 1912, and its present chairman, Mr. Walter Davies, has served since its inception. He gave an account of the work of the Committee during the nine years of its existence. At first it consisted of 60 members, but under a recent Act of Parliament it will in the future have 35 members only. The number of insured persons in Manchester entitled to medical benefit at October, 1912, was 254,034, and with varying fluctuations it reached 349,441 in October, 1921. The percentage of women in 1912 was 34, and in 1921 had increased to 40. The highest number on the register was 361,278 on April 1st, 1921. About 650,000 medical cards were sent out by the registration department: over 360,000 letters were received and 260,000 were despatched, the number of forms and notices sent out were very large, while personal calls at the Committee's offices reached 220,000. There are now 266 medical men and 150 chemists on the lists of the Committee. By the end of the year the Committee will have contributed nearly £1,000,000 for treatment, while the medical men have provided over 11 million services of all kinds. The cost of prescriptions dispensed—about nine millions—was over £260,000, while over £120,000 had been spent on sanatorium benefit. On a total expenditure of over £1,400,000 the administration cost only amounted to about 5 per cent. There is a balance on the general purposes fund of £8500. A striking feature of the medical benefit service was the very small number of persons who had applied to be allowed to make their own arrangements for medical treatment—out of 350,000 persons treated there were only 61 such cases. Moreover, the number of complaints received was very small considering the number of services rendered. The relations of the medical profession and the Insurance Committee had been completely harmonious, and that happy state of affairs had conduced to an efficient medical service; while at all times the chemists had rendered loyal service. Mr. Davies referred to the encouragement given by the Committee in the matter of nursing, saying it had become a burning question whether nursing should not be absolutely a part of medical benefit. Mr. Davies said in conclusion: "We began our work amidst strong opposition, we have carried on during a period of national upheaval, and we hand over our work to the new Committee with all the services running smoothly, efficiently, and free from grumbles or complaints of any kind. I think this is a record of which we may well be proud."

REPORTS OF MEDICAL OFFICERS OF HEALTH.

HALIFAX.

Dr. J. T. Neech presents his farewell report and reviews the great improvements and changes which have taken place in health matters during his 21 years' tenure of office. Lead poisoning from the water was common at the beginning of this period and has been abolished by adding milk of lime to the water. Dr. Neech has for 12 years been in the habit of disregarding desquamation and discharging uncomplicated scarlet fever cases from hospital after four weeks with eminently satisfactory results as regards return cases. He tells us that cleanliness in the production of milk still leaves much to be desired and that his "council is beginning to awaken to the necessity of replacing the Goux pail by the water-carriage system.

The Registrar-General's estimate of the population of Halifax in 1920 was for death-rate 105,817 and for birth-rate 106,029. The birth-rate was 18·9, the death-rate 13·3, the infant mortality rate 96, and the total tuberculosis rate 0·87. Dr. Neech concludes his report with an article on the need for better ventilation of the home and especially for the open bedroom window, and gives the result of an inspection made in September, 1920, during congenial autumn weather when out of 1419 houses only 498 had open bedroom windows at night.

DERBY.

In his annual report on the health of the county borough of Derby for 1920, Dr. A. E. Brindley tells us that the Registrar-General's estimate is for death-rate 128,868 and for birth-rate 129,220. Some of the important statistics for 1920 are as follows: birth-rate, 25·9; death-rate, 10·8; death-rate from pulmonary tuberculosis, 0·79, and from other tuberculous diseases, 0·13; and the infant mortality rate, 72·7. The death- and infant mortality rates are the lowest, the marriage-rate the highest ever recorded, and the birth-rate is the highest for 13 years. Among unsatisfactory features, Dr. Brindley notes the continued high prevalence of ophthalmia neonatorum and the fact that persons suffering from venereal diseases are under no obligation to continue under treatment till cured or free from infection; to the latter cause he attributes in part the comparatively large number of deaths from premature birth. Good progress is reported in the provision of housing accommodation, 165 houses having been completed and 1420 others begun. A special subcommittee has been concerned with the renovation of existing houses, additional housing inspectors being appointed and a systematic house-to-house inspection initiated. Less progress was made in getting defects remedied when discovered; of 13,809 defects only 2107 could be put right. Improvements were made at the sanatorium, including the provision of a school room for tuberculous children and a workshop for the adult patients, designed to allay discontent among the ex-Service men. Dr. Brindley expresses the hope that maternity and child welfare work will not be curtailed on the grounds of economy, and refers to the increasing usefulness of ante-natal clinics and the valuable help given by voluntary workers.

PORTSMOUTH.

Dr. A. Mearns Fraser is able to present very satisfactory figures in this his twenty-fifth report. He tells us that the death-rate, 11·1, is the lowest ever recorded, and that the infant mortality rate of 60 "is the lowest ever reached in this or any other of the 20 large towns." The civil population is estimated for 1920 at 233,805. The birth-rate was 25·9. The death-rate from tuberculosis of the lungs 0·84, and from other forms of tuberculosis 0·23. The death-rate from diarrhœa and enteritis under 2 years per 1000 living, 0·09, was also the lowest recorded in the 20 large towns. The municipality manufactures and distributes electrolysed sea-water as a disinfectant. One fatal case of tetanus in a baby was recorded, which was traced to the application to the umbilicus of vaseline contaminated by the grey paper washer inserted under the lid of the vaseline pot. Dr. Fraser, in referring to the disappointing results of sanatorium treatment, expresses the fear that the great overcrowding, due to scarcity of housing accommodation will very seriously affect the tuberculosis rate in the large towns. A chart is given showing the remarkable decline in the infant mortality rate from over 170 in 1900 and 60 in 1920, and Dr. Fraser thinks that the Midwives Act of 1902 has been "not the least factor" in this reduction. The net cost of milk, &c., issued to mothers and children under the Order was £970, which does not seem extravagant for a population of nearly a quarter of a million. A municipal maternity hospital, with accommodation for 14 was opened in April, and is intended for patients whose income is under 60*s.* a week. Much work is done under the V.D. scheme. We note that 723 new patients were treated during the year, and that 311 persons ceased to attend either before completing a course of treatment or before a final test as to cure. As is now well known, Portsmouth has adopted the policy of the Society for the Prevention of Venereal Disease, and Dr. Fraser in placing under the control of one medical officer the care of the child before birth, after birth up to five years of age, and during school life, so that preventive measures may be studied and applied in the early years and a minimum amount of work consequently be required later. This ideal has not yet been attained, even in Willesden, because owing to the mass of defects discovered amongst children, and the urgent need for treatment, time has not hitherto been available for the study and application of measures for prevention which should proceed pari passu with treatment. It is obvious that, if and when desired, the Willesden scheme might readily constitute the germ of a public medical service by salaried doctors. Each municipal clinic has its service of doctors, dentists, district nurses, and health visitors, with the use of a municipal hospital and the services of consultants when needed. Domiciliary medical treatment could be added by an increase of the medical staff of the clinic. The public of Willesden appear to like the arrangement.

TURTLE VACCINE.

JUDGING from the interminable discussions in the German medical press since the armistice, Friedmann's remedy still continues to excite interest. The appearance of a critical monograph[1] on the subject is now welcome: it is in the form of a supplement to the *Zeitschrift für Tuberkulose*, one of a series published under the general editorship of Prof. Lydia Rabinowitsch, who has herself recently done some work on the remedy. The stuff, it will be remembered, came before the medical public with a disconcerting flourish of trumpets two or three years before the war, and was then reputed to consist of a vaccine prepared from a living avirulent culture of an acid-fast bacillus isolated from the turtle. Since the war the vaccine is stated by its critics to contain also attenuated human tubercle bacilli. The monograph sets out to investigate carefully the whole question of Friedmann's remedy. A careful analysis is given of the published literature on its value as a means of treatment in tuberculosis. Dr. Ulrici and Dr. Grass have collected records of more than 80 authors, dealing with many hundreds of cases of pleurisy, phthisis, abdominal tuberculosis, meningitis, Addison's and other diseases. In a second section Dr. S. Meyer sets out his investigations into the cultural properties and pathogenicity of the vaccine, with animal experiments designed to test both its protective power as an immunising agent and its curative power in guinea-pigs experimentally infected with bovine and human strains of tubercle bacillus. The conclusions on both counts throw doubt on the value of Friedmann's turtle vaccine.

INTERNATIONAL CONGRESS OF OTOLOGY.

THERE has been no international congress of otology since the meeting in Boston in 1912. The various national committees then appointed have been canvassed and have selected Paris for the tenth congress to be held next year. The cordiality and goodwill of the French Committee towards this country have been marked by a special visit of their secretary-general, Dr. A. Hautant, who came over on purpose to attend the annual dinner of the Section of Otology of the Royal Society of Medicine under the chairmanship of Sir Charles Ballance. He joined in the first meeting of the section on Oct. 21st, when the new President, Dr. Logan Turner, occupied the chair and gave the address which we briefly report on p. 961. Dr. Hautant made the acquaintance of many otologists in London and extended to them and their colleagues a cordial invitation to the congress next summer. A committee of organisation for Great Britain and Ireland has been appointed with Prof. Urban Pritchard as President and Sir StClair Thomson as chairman of the committee and the hon. secretaries are Mr. Lionel Colledge and Mr. J. S. Fraser. No less than 100 otologists have already sent in their adhesion to the committee, and all who are interested are invited to apply to one or other of the hon. secretaries. Those who do so will be kept informed of all the arrangements for the congress as they develop. The office-bearers in Paris are Prof. P. Sébileau (President), Dr. Georges Laurens (treasurer), and Dr. A. Hautant, 28, rue Marbeuf, who is secretary-general. Although the congress remains in name purely otological, it is intended to embrace both rhinology and laryngology. Prof. Sébileau is known not only as an otologist but as a leading exponent of the surgery of the nose, throat, and neck. We are glad to hear that the congress will have a marked practical character, the mornings being devoted to visits to clinics, operating theatres, and museums.

Further details can be obtained from the secretary-general or from the secretaries of the British Organising Committee.

INVOLUTION OF THE UTERUS.

THE conditions that determine the involution of the uterus after parturition are of paramount importance, and they can perhaps be more definitely established in animals than in the human subject. C. Kuramitsu and Leo Loeb have made experiments on rats and guinea-pigs[1] to determine the influence of suckling and castration on this process. The degree of involution was determined quantitatively, and the condition of the whole uterus was compared with that of its individual component tissues. It was found that the process of involution was similar in rats and guinea-pigs, and that sucking accelerated the process; when sucking was suppressed the process was retarded. Castration made it more active. The effects of sucking and castration add to the normal involution changes, and both processes affect all the chief constituents of the uterus, and powerfully influence the growth and structure of the respective tissues. The influence of castration is opposed to that of the suppression of sucking, but when both occur the influence of the former overcomes that of the latter. In guinea-pigs lactation does not interrupt the functional cycle of the ovary and uterus, though it does so in the rat. Sucking or its cessation act indirectly on the uterine tissues. As a corollary to this research, the observers studied the direct effects of lactation on the sexual cycle in the rat and guinea-pig. In the rat ovulation during lactation is inhibited. In the guinea-pig, which suckles its young, ovulation and the normal cycle of changes in the ovary take place. Possibly the corpus luteum functions for a longer time in the rat.

REFRACTIVE CHANGES IN LATER LIFE.

CORRECTION of errors of refraction cannot be properly performed by mechanical rules alone. Even presbyopia needs to be corrected with intelligence, having regard not only to the age of the patient and the purposes for which the glasses are prescribed, but also to the fact that the accommodation of different individuals of the same age varies considerably. The eyes of children frequently undergo considerable changes in the course of their school life, the tendency being for hypermetropia to become less in degree, for low hypermetropia or emmetropia to become myopia, and especially for astigmatism to change from the hypermetropic variety into the mixed and from the mixed into the myopic. It was not, however, of these changes that Mr. Ernest Clarke was speaking in his interesting paper on "Milestones in Refraction Work," read at the Ophthalmological Section of the Royal Society of Medicine and briefly reported last week. There are other refractive changes which take place during mature life. Apart from progressive myopia

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[1] Tuberkulose-Bibliothek: Beihefte zur Zeitschrift für Tuberkulose; Nr. 3.—Kritische Wertung des Friedmann-Mittels. By H. Ulrici, H. Grass, and S. Meyer. Leipzig: Johann Ambrosius Barth. 1921. Pp. 46. M.16.

[1] American Journal of Physiology, vol. lv., 1921.

Correspondence.

"Audi alteram partem."

THE FLEET STREET WEEK FOR "BART.'S."

To the Editor of THE LANCET.

SIR,—I wish to appeal through your columns to all the many doctors who are ex-Bart.'s men to support our effort for this hospital. Fleet-street devoted the whole of last week to an effort to lessen the great burden of debt which is slowly stifling the activities of the hospital. Over £40,000 have now to be found each year beyond the income of the institution. Add to this a bank overdraft of £25,000 and the position is plain. Many big movements were successfully promoted last week, and if we are strongly supported by all old students of St. Bartholomew's Hospital, and any sympathisers that they can bring, such efforts will be a real help.

Subscriptions will be gratefully received by the Hon. Treasurer, "Fleet Street Week for 'Bart.'s,'" Anderton's Hotel, E.C. 4.

I am, Sir, yours faithfully,
F. H. WILKINSON,
Joint Organising Hon. Secretary.
Oct. 31st, 1921.

"SUNDAY CLOSING" AT BRITISH SPAS.

To the Editor of THE LANCET.

SIR,—I read with much interest the paragraph in your issue of Oct. 22nd, and Dr. Fortescue Fox's letter in to-day's LANCET. I entirely agree with Dr. Fox. I have given mineral baths for many years, and have a personal knowledge of the treatment practised at some foreign and British spas, and I am convinced that a seven-days' week is a drawback in bath treatment, and that a day's rest is of decided benefit once a week at least, and in some cases twice a week. It would be interesting if some of the physicians at our British spas would give their opinions and experiences on this point.

I am, Sir, yours faithfully,
LESLIE THORNE THORNE.
London, Oct. 29th, 1921.

CONTRACT PRACTICE.

To the Editor of THE LANCET.

SIR,—No one will disagree with the statement made by the Federation of Medical and Allied Societies in THE LANCET of Oct. 22nd that many panel doctors give of the best to the service. But how about the majority? It was stated in 1911 that large contract medical work was bad for patient and doctor. Has the profession changed its opinion? If the system is sound why are such large numbers of patients refusing to see insurance doctors, and why in London, out of 7000 names in the Medical Directory, only about 1400 are on the panel? In the *Daily Telegraph* of Oct. 15th, 1921, Sir Dyce Duckworth, referring to the panel system, is stated to have said, "That it had resulted in general failure and had tended to lower the public respect for worthy practitioners. . . . The medical profession had been placed in bureaucratic hands, whose tyranny was injurious to its honour, its independence, and its dignity." In the Hearts of Oak *Journal* for October, 1921, a writer stated that in his district 25,000 out of 125,000 insured persons had not chosen their panel doctor. A writer in the *Daily Mail* some time back informed us that 500,000 insurance persons had refused the same "benefit," and if one takes into account the large number of patients who, although they have panel cards, never go near a panel doctor, the number must be millions.

I am, Sir, yours faithfully,
E. H. WORTH.
Streatham, S.W., Oct. 29th, 1921.

NATIONAL PROVIDENT SCHEME.

To the Editor of THE LANCET.

SIR,—It is now announced in the daily press that there is a great middle-class rush to enrol in the above scheme, through which hospital doctors are to be had for £1 a year. Four general hospitals in London are named as having joined in the scheme. As regards one of them—the Hampstead General and North-West London Hospital—it may be of interest to state that the Medical Committee, after careful consideration of the working arrangements (prospectus dated September, 1921), have informed their board of management of their unanimous decision that the members of the honorary medical and surgical staff are not prepared to take any part in the working of the scheme. A majority of the medical committees of the London general hospitals seem to have acted in the same way, and to have been supported by their governing boards. It is difficult to see how the medical staff of any hospital can retain the title of honorary and at the same time become the paid servants of a commercial insurance company which buys their hospital time and services.

I am, Sir, yours faithfully,
G. A. SUTHERLAND,
Senior Physician to the Hampstead General Hospital.
Oct. 31st, 1921.

Obituary.

FRANCIS ARTHUR BAINBRIDGE, M.A. CAMB., M.D., D.Sc., F.R.C.P. LOND., F.R.S.,

PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF LONDON.

BY the premature death of Francis Arthur Bainbridge, at an age when he had hardly reached the fullness of his power, medical science loses a worker who had made substantial contributions to several of its other branches, before he settled down to follow his natural bent as a teacher and investigator in physiology. At one time he had intended to give himself to clinical medicine, though even then he was making important contributions to pure physiology; indeed, his work on the relation between lymph-flow and glandular activity, dating from this period, is perhaps the most clearly finished of his investigations. Later he turned for a time to general pathology, holding for some years the Gordon lectureship at Guy's Hospital. For a further period he was on the bacteriological staff of the Lister Institute, and several publications on the food-poisoning group of bacteria form a record of sound work in this department of experimental medicine. His real chance, to follow the line of his most genuine inclination, came with his appointment to the chair of physiology at Newcastle. Here he began a valuable series of investigations on the mechanisms coördinating the activities of the heart and the respiratory centre, which he continued after his return to St. Bartholomew's to the chair of physiology there, and which he had still in hand to the end. His own personal contact with these problems, and the wide and critical knowledge of the literature which he acquired in their pursuit, gave a high value to the monograph on "The Physiology of Muscular Exercise," which he published at the end of 1919, and which met with warm appreciation from all who could value its sound and scholarly qualities. As a teacher he was conscientious and increasingly successful, and gave evidence of the high standard which he achieved, to a wider circle than that of his own immediate pupils, in the well-known student's Text-Book of Physiology, which he wrote in collaboration with his colleague at Newcastle, the late Prof. J. A. Menzies. The loss of these two, in the space of a few months, is a loss which the teaching of physiology in this country will find very difficult to make good.

The following appreciation of Bainbridge has been written for us by one with the very best opportunities of knowing him as he was.

THE OUTPUT OF RESEARCH PLACES IN THE UNITED KINGDOM.

BY A. D. WALLER, M.D. ABERD.

(From the Physiological Laboratory, University of London.)

MEASURE of the efficiency of a machine is afforded by its output of energy per unit of energy by which it is fed. We are organising new machinery for the acquisition of fresh knowledge by scientific and industrial and medical research; it will obviously be important to measure the efficiency of such machinery, old and new, and projected. At what cost is the yearly harvest of fresh knowledge being produced, and how can the harvest be measured? The chief objective measure of the harvest of new knowledge is afforded by publication in scientific journals; the number of original papers published by scientific laboratories affords measure of the activity of such laboratories, and when taken in ratio with the annual cost, affords measure of their comparative *efficiency* as research factories. It would be impossible for any single person to undertake a numerical survey of the whole field. It is comparatively easy, however, to carry out a rational survey of a limited portion of the field, by enumerating, e.g., the number of contributions from recognised scientific laboratories to their common outlet of publication, in London—i.e., through the Proceedings of the Royal Society.

The table here given represents the outcome of such a limited survey of the field of biological science, inclusive of physiology and pathology as shown by the list of papers published in the Proceedings of the Royal Society during 15 years from the year 1905 (when the division between series *A* and series *B* was first made). Obviously these figures do not afford any measure of the relative efficiency of the several research factories, since no attempt is made to assess "cost of production" in terms of money.

Proceedings of the Royal Society: Series B Papers of a Biological Character.

Year and volume.	Univ. College.	King's College.	Imperial College.	Lister Institute.	Univ. of London (Physiol. Lab.).	London hospitals.	Oxford.	Cambridge.	Scotland.	Ireland.	Provinces.	Independent Students.
1905 76	4	1	6	4	1	3	—	8	3	1	6	17
77	6	—	4	5	2	7	—	5	2	—	6	15
78	1	—	1	2	5	2	1	2	2	—	5	19
79	3	—	4	7	3	6	4	5	4	1	6	8
80	2	1	3	4	7	9	2	3	5	—	8	9
81	3	3	3	3	7	5	6	5	4	—	4	14
82	3	4	3	4	2	5	2	2	3	—	5	15
83	1	—	—	3	2	5	2	6	1	—	5	25
84	6	4	4	5	2	4	4	8	3	—	8	18
85	7	1	5	3	2	6	4	6	3	—	4	28
86	3	—	6	1	1	6	4	2	6	—	4	22
87	1	—	3	2	1	5	3	9	2	—	10	22
88	1	2	—	—	—	9	2	7	2	—	4	20
89	4	5	5	—	1	4	1	10	2	1	4	11
90	1	1	4	4	4	5	—	2	3	—	3	13
1920 91	1	3	2	—	—	—	—	8	—	—	—	8
Total*	46	25	52	47	40	81	35	88	45	3	82	254

* *During 15 years, 1905–1920.*

All London schools	291
Schools of the rest of United Kingdom	253
Independent students	254
Grand total	798

DONATIONS AND BEQUESTS.—The Manchester Royal Infirmary Board at its last meeting acknowledged the receipt of nearly £820 all available for income. A legacy of £300 from the late Mr. John Bardsley, £175 from the late Miss Mary Hardman, and other donations amount to over £280.—The Great Northern Central Hospital has received a grant of £1000 from the executors of the late Mr. Henry Mayer to endow in perpetuity the Julia and Henry Mayer bed at this institution.

THE MOTOR EXHIBITION:

POINTS FOR THE MEDICAL USER.

(FROM OUR OWN CORRESPONDENT.)

THE Fifteenth International Motor Exhibition opens to-day (Friday) at Olympia and the White City, and closes on Nov. 12th. The medical visitor looking for a car will find many from which to select. For the well-to-do colleague there are automobiles costing well into four figures, and alongside them are others priced at from two to five or six hundred pounds. Contrary to what was the case a few years back, this year's Show is marked by the limited number of models produced by the average individual manufacturer. Where once were found half a dozen and more models on a single stage, the average to-day is round about three, resulting in greater concentration on the types made, saving of capital, and reduction in the number of spare parts which have necessarily to be stocked.

A walk round a large number of depôts and factories has resulted in the conclusion that whereas the 1919 exhibition had much to be seen though little that the purchaser could obtain, the 1920 plenty for delivery though not a few lacking in workmanship and quality of material, the 1921 has, as already mentioned, numerous exhibits to suit all purses, and, what is more, cars of excellent construction and good material. The chief points to be noted are that the four-cylinder engine is still the prime favourite, and no doubt rightly so. There are some two-cylinder light cars, and, of course, the opposed air-cooled horizontal engine which is simple and efficient and has advantages in the matter of cheapness of production, though the cylinders are liable after extended use to become oval through bed wear. Detachable cylinder heads, which permit of machined domes, and are therefore less likely to encourage carbon deposit and pre-ignition, with joints which are easily made and permit of ready cleaning of the piston heads, are on the increase. The overhead valve is certainly gaining ground, although more slowly than was expected. The type actuated by the overhead cam seems to be preferable to the complicated rocker and push-rod kind. Water cooling is still the rule, though a novelty in this connexion is the new oil-cooled little Belsize. Four-speed gear boxes are now in the majority, and the final drive is in most cases by spiral bevel, which is both silent and reliable. The efficient worm drive is still a favourite with some makers, and, when made and fitted by a good firm, is undoubtedly hard to beat. Regarding suspension, the half elliptic spring more than holds its own, as does the cantilever. Most cars are now fitted with electric lighting and starting, the British retaining magneto ignition, though the battery type is quite satisfactory and very common on French and American makes.

Apart from mechanical improvements, the Show has other desirable features. Coachbuilders are paying much more attention to the comfort of drivers and of passengers, ample leg room especially being provided, whilst on many cars the seats themselves can be tilted or moved backwards or forwards. What certainly will appeal to the medical profession is the all-weather type of body, such as the Standard people have produced. A moment suffices to convert the open car into a really enclosed vehicle, with panels or curtains which open with the doors. Another point that will appeal to the owner-driver is the increased attention which is being given to the accessibility of working parts. In the past this did not receive nearly as much consideration as it deserved.

The outstanding feature of the Show is the rapid development of the low-powered car, with its consequent economy in the cost of running and upkeep. Many of the 10–12 h.p. cars are quite capable of giving good and efficient service, and will certainly meet the professional demands of the majority of town and country general practitioners.

ABERDEEN UNIVERSITY CLUB DINNER.—The Aberdeen University Club, London, holds its sixty-sixth bi-annual dinner at Gatti's Restaurant, on Thursday, Nov. 17th, at 7.30 P.M. Graduates desirous of attending the dinner or of becoming members of the Club should apply to Dr. W. A. Milligan, 11, Upper Brook-street, London, W.

GARDEN CITIES AND TOWN PLANNING ASSOCIATION.—The second lecture of the series organised by this association on Great Cities of the World will take place at 5.30 P.M. on Thursday, Nov. 10th, at King's College, Strand. Dr. H. P. Berlage, of The Hague, will lecture on Amsterdam, Past and Present. Sir Walter Townley will be in the chair. The lecture will be given in English and tickets can be obtained from the secretary of the association, at 3, Gray's Inn-place, Gray's Inn, London, W.C. 1.

SOCIETY OF M.O.H.'S: TUBERCULOSIS S.W. SUB-GROUP.—At the first meeting of this sub-group, held at Bristol on Oct. 22nd, members attended from Weston-super-Mare, Bristol, Exeter, Barnstaple, Salisbury, Paignton, and Plymouth. Grievances were discussed in connexion with the drawing up of reports to the Ministry of Pensions, with the advertisement of resident appointments in sanatoriums carrying a salary of £500 to £700 per annum, with board and residence, confined to unmarried men, and with the insecurity of tenure of tuberculosis officers. It was agreed to coördinate the work of officers of the group on the effect of marriage, pregnancy, and parturition on tuberculosis. Domiciliary reports from general practitioners were held to be generally valueless. The acting hon. secretary of the sub-group is Dr. F. G. Bushnell, tuberculosis officer for Plymouth.

LITERARY INTELLIGENCE.—Messrs. William Heinemann, Ltd., announce the early appearance of "Surgical Exposure of the Deep-Seated Blood Vessels," by Dr. J. Fiolle and Dr. J. Delmas; "Surgical Treatment of Non-Malignant Affections of the Stomach," by Dr. C. G. Cumston and Dr. Georges Patry; a new and revised second edition of Dr. Thomas D. Luke's "Manual of Physiotherapeutics"; "The Practitioner's Manual of Gynæcology," by Dr. A. G. Magian; "History of Electro-Therapy," by Dr. Hector A. Colwell; "Rickets," by Dr. J. Lawson Dick"; "Influenza," by several authors, edited by Dr. F. G. Crookshank; and "Dosage Tables for Deep Therapy," by Dr. Friedrich Voltz, edited by Dr. Reginald Morton.—The J. B. Lippincott Company announce the following new publications: "Gynecology," by Brooke M. Anspach; a third edition of "Obstetrics," by G. P. Shears and P. F. Williams; a twelfth edition of White and Martin's "Genito-Urinary Surgery," by Edward Martin, B. A. Thomas, and Stirling W. Moorehead; "Brain Injuries," by William Sharpe; "The Basis of Psychiatry," by Albert C. Buckley; and "Scurvy," by Alfred F. Hess.

ROYAL MEDICAL BENEVOLENT FUND.—Following is a summary of some of the cases relieved at the last meeting of the Committee held on Oct. 11th. The amount voted was £137 to 20 cases.

L.S.A., aged 78, married. Practised in London, but through an epileptic seizure is quite unable to work. His wife has been earning a livelihood as a clerk, but for the past 12 months has had very little to do owing to trade depression, and they have had to sell their belongings to be able to live. The applicant's only income is 10s. per week from the Old Age Pension. Rent 11s. a week. Voted £5 and £26 in 12 instalments.

Daughters, aged 63 and 65 respectively, of M.R.C.S.Eng. who practised in Acton and died in 1902. The younger sister suffers from spinal curvature and requires a lot of attention. Owing to failure of dividends their income has been greatly reduced, and with a friend's help of £22 they only received the total sum of £108. Their rent for two furnished rooms is 30s. per week. Voted £18 in 12 instalments each.

Widow, aged 56, of M.R.C.S. Lond. who practised at Birmingham and died in 1913. Applicant is a trained nurse, and during her late husband's illness took a house as a nursing home. After his death she had to give up the home as her own health broke down, and she went abroad as a companion and unfortunately contracted malaria, and during convalescence discovered that her lungs were affected; she returned to England and received treatment at Midhurst Sanatorium, and lived with her mother until her death. Applicant now asks the Fund for assistance as the pension which her mother received as an officer's widow ceased at her death. She would like to take a country cottage to keep poultry and bees. Voted £18 in 12 instalments.

Widow, aged 69, of L.R.C.P.Edin. who practised in London and died in 1897. Applicant was left totally unprovided for, and owing to old age and infirmity she is entirely dependent on daughter who is the widow of a soldier, and her only income is derived from a pension of £1 6s. 8*d*. per week and what she is able to make by letting. She had a post as a clerk, but this terminated last month. Applicant is asking the Fund for assistance owing to her inability to maintain herself. Voted £26 in 12 instalments.

Widow, aged 35, of M.B.Edin. who practised in Hull and died in May, 1921. Applicant is left totally unprovided for with two small children. Her late husband was only insured for 100, and the majority of this was paid away in funeral and other expenses. At the time of this application she has only £50, and her parents with whom she and her children are now staying are not in a position to continue assistance. Voted £20 in four instalments.

Widow, aged 30, of M.R.C.S. Eng. who practised at Flaxton and died in 1919. Applicant endeavoured to earn a living by shopping on commission and the last 12 months made about £50; she also received £25 from the O.F.F. Applicant and her little daughter are dependent on relatives for a home. Voted £20 in four instalments.

M.B. Edin., aged 71. Practised in Vancouver and Taunton. Through paralysis has had to apply to the Fund for help to pay the fees at the convalescent home connected with the National Hospital, to which he has been sent after receiving treatment. Voted £25 4s. towards convalescent home fees.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters J. Symonds, K.B.E., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

BELFAST UNIVERSITY SERVICES CLUB.—The third annual dinner will be held on Friday, Nov. 11th, 1921, in the Great Hall of the University at 6.45 P.M.

IRISH MEDICAL SCHOOLS AND GRADUATES ASSOCIATION.—The autumn meeting of this association will be held at Pagani's Restaurant, Great Portland-street, London, W., on Thursday, Nov. 17th, at 7 P.M. Members will dine together at 7.30 P.M., Maj.-Gen. W. Wallace Kenny, C.B., taking the chair. Dinner tickets from the hon. sec., Dr. F. Howard Humphris, 8, West Chapel-street, London, W. 1.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.—A dinner to celebrate the centenary of the Society was held on Oct. 28th in the hall of the Royal College of Surgeons. The chair was taken by Prof. F. M. Caird, the President of the Society. There was an attendance of about one hundred, the company including Sir J. Bland-Sutton, Sir Alfred Ewing, Prof. F. O. Bower, Dr. Byrom Bramwell, Sir James Mackenzie, Dr. George Mackay, Dr. W. K. Hunter, Dr. J. F. Fergus, and Prof. F. J. Charteris. The toast of the King having been honoured, Sir J. Bland-Sutton proposed that of the Medico-Chirurgical Society of Edinburgh, and read a congratulatory message from the Royal Society of Medicine. He referred to the part played by the Society in the cause of medical science, and to the great advances made in all branches of medicine and surgery in recent years. Prof. Caird, in reply, made some interesting references to the early history of the Society. He spoke of the part played by its first President, Dr. Andrew Duncan, senior, in the foundation of the Royal Asylum at Morningside, and reminded the company that the second President was Sir James Young Simpson, and the third, Lord Lister. The Society had proved a mirror of the events passing in the medical world around them, and its members had endeavoured to add their share to the quest of knowledge. The toast of Sister Societies was proposed by Dr. George Mackay, and replied to by Prof. Bower, Dr. Hunter, and Dr. Davidson. Dr. Fergus proposed the toast of the President of the Medico-Chirurgical Society of Edinburgh, and paid a high tribute to the Medical School of Edinburgh, Prof. Caird replying.

ST. THOMAS'S HOSPITAL OLD STUDENTS' ANNUAL DINNER.—A happy re-union of old students of St. Thomas's Hospital and their friends took place at the Wharncliffe Rooms of the Hotel Great Central on Oct. 28th, Dr. H. W. G. Mackenzie presiding. The chairman proposed the toast of the evening, "St. Thomas's Hospital and its Medical School," coupled with the names of the Treasurer, Sir Arthur Stanley, and the Dean of the Medical School, Sir Cuthbert Wallace. He pointed out that the dinner marked the jubilee of the new St. Thomas's Hospital, which had arisen like a phœnix on the banks of the Thames and was opened by Queen Victoria in June, 1871. Dr. Mackenzie traced in brief outline the history of the hospital from the days before the Norman Conquest when a small convent was built on the banks of the Thames by a pious maiden from the proceeds of a ferry over the river, and he passed in review the great names associated with the institution. Dr. Mackenzie referred to the newly-instituted "unit system" as a great success; St. Thomas's, he said, was more than "unit-ed" it was united; for complete harmony existed among the staff, between the staff and the governing body, and, in fact, between all concerned in the organisation and management of the institution. In his reply, Sir Arthur Stanley spoke of the chairman's allusion to Mead, and said that from the time and trouble which that great physician spent on his patients he must have been the forerunner of the panel doctor. Sir Arthur Stanley said that he was an optimist in regard to the financial position of the hospital; he hoped that the money for the students' hostel would be soon forthcoming and that the sports ground at Chiswick would be permanently acquired for the present and future generations. Sir Cuthbert Wallace alluded to the present position of medical education, and spoke of the advantages which might be gained by the correlation of the curriculum of various universities. Dr. R. P. Smith proposed the health of the chairman in felicitous terms, and this was drunk with musical honours.

includes in the present issue a special report which he made to his authority in February. The special report, couched in temperate language, puts forward the case for what has now come to be known as "prophylaxis."

PRESTON.

Dr. F. A. Sharpe was appointed medical officer of health in August, 1920, and refers feelingly to the tremendous difficulty confronting sanitary authorities at the present time—viz., the vast arrears of work to be overtaken with resources depreciated. On the most vital part of public health administration, that dealing directly with the environment of the people, Dr. Sharpe finds that ground was definitely lost in 1920. The health department, he writes, has had to watch with folded hands the steady progress of deterioration in property unchecked by main repairs. Towards the end of the year there was some improvement, but he doubts the ability of private enterprise in the near future to supply the needs of housing. But in spite of a large proportion of the population being unsuitably housed, the absence of epidemics, good climatic conditions, and an improvement in public knowledge each contributed to a favourable year.

The estimated population for birth-rate was 122,133 and for death-rate 121,950. The birth-rate was 24·43, the death-rate was 13·6, the death-rate from pulmonary tuberculosis 0·91, and from non-pulmonary tuberculosis 0·38. The infant mortality rate was 101. In commenting on the milk-supply Dr. Sharpe writes that the high price and poor quality of the milk sold in the county are rendering it an unpopular diet for the children of the wage-earners, contrasting this state of affairs with New York and other cities of the U.S.A., where a determined effort is being made to produce a clean and reliable article, and where the consumption of milk is at least three times greater than in this country. There were 21 cases of ophthalmia neonatorum notified; 18 recovered completely, in one case one eye was lost and the other injured, in two cases both eyes were lost, one of these babies dying at the age of two months.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

THE RECENT SMALL-POX EPIDEMICS IN BASLE AND ZURICH.

THE epidemics of small-pox in Basle and Zurich have come to an end. In the latter place some 120 cases were recorded with no death, all cases having been of a very mild type. It has even been suggested that it was not small-pox at all. The outbreak at Basle, however, has proved more serious. There were only 47 cases, but 8 deaths. The epidemic has been very closely studied, and Swiss towns, with their stable populations, are a very proper object for the investigation of an epidemic. Some details which are contained in the report of Dr. H. Hunziker, health officer of Basle, may be of interest. The 47 cases included three persons who had left Basle during the incubation period and developed small-pox abroad. One of them could be traced to Berlin. The disease was brought into Basle by a German railway official on service between Basle and Frankfort who had lodgings in a Basle family. He infected his landlord who developed small-pox, which remained undiagnosed, being taken for chicken-pox. The disease was not brought to the notice of the authorities until a friend of this man developed typical small-pox. Four other cases could be traced to the same source. Afterwards it was found that the first man during his disease, which was of the mild type, had helped to pack about 1000 rolls of butter in a dairy-shop, but no cases could be traced to clients of this particular shop. Apart from persons who had contracted the disease by direct contact there remained a considerable number of cases where the source of infection was absolutely obscure. Several of them were known as leading a very secluded life—one was an inmate of an asylum whose whereabouts could be exactly controlled and whose visitors were checked. It was further noticed that all these cases lived within a short radius of the isolation hospital where the small-pox cases were nursed. Dr. Hunziker after careful investigation came to the conclusion that the epidemic in these cases was spread by flies. He corroborates this statement by the following facts. Flies were always found in great number round the small-pox patients; this was noticed in the hot days of July, when there was a great increase of flies. The epidemic subsided when cooler weather set in.

Dr. Hunziker was further able to show that he could, by inoculating the cornea of a rabbit with stuff from flies caught near small-pox patients, obtain a positive result of Paul's reaction. In some cases the incubation period could be observed exactly; it varied from nine to ten days. It was also found that the patients were not infectious during the period of the prodromal symptoms and at the beginning of the rash. Early isolation proved always successful. The age of the small-pox patients varied between 1 and 67 years. Twenty-four cases had never been vaccinated, 16 of them were severe. Eleven cases were vaccinated only once and had never been revaccinated, one being a severe case. Ten cases had been revaccinated, none of them was severe. During the epidemic there was a great rush to the vaccination stations. But there remains still a very large proportion of the population which is unvaccinated. In the cantonal council a motion has been introduced for the adoption of compulsory vaccination. The hope of it being carried, however, is but small.

NATIONAL BABY WEEK COUNCIL.

THE National Baby Week Council held its annual meeting in the Armitage Hall, Great Portland-street, London, on Oct. 25th. Lord Astor, who presided, said that while everybody was talking of economy it was useless to think that economic problems could be solved on any other basis than that of an intelligent understanding of the issues involved. Real economy was not achieved by an indiscriminate reduction of expenditure; a nation which wisely regarded its children as its greatest asset would realise the false economy of unreasonably reducing its output on their behalf. The work of the Council was not confined to the saving of life, but included also the prevention and reduction of incapacity with its inevitable financial burden. Dr. W. Allen Daley, medical officer of health for Blackburn, read a paper on the Economic Value of Maternity and Child Welfare Work, emphasising at the outset the importance of having all the facts in our possession, in order that we may put before the public a convincing statement as to what child welfare work is, and what it does. People who regarded a high infant mortality-rate as a convenient means of weeding out the unfit were wrong; a high death-rate among infants was almost invariably associated with a high damage-rate, many children being allowed to become and to remain unfit. An example of the result of public health work was furnished by the borough of Kensington, which included among its inhabitants two extremes of social class. By means of special work undertaken by the medical officer of health, including the appointment of 15 health visitors for the north, as against 4 for the south, the infantile mortality-rate was lower in North than in South Kensington in 1920 for the first time. The average expenditure on public health work in 1919–20 had been at the rate of 5*s.* 3*d.* per head, of which 1*s.* 4*d.* was spent on treatment for infectious diseases, 1*s.* 7*d.* on tuberculosis, 8*d.* on maternity and child welfare, 3*d.* on venereal disease, 6*d.* on school medical service, and 11*d.* on general administration, inspection, and so forth. Dr. Daley considered that the cost of infectious diseases might be reduced by nursing mild cases of scarlet fever at home instead of in hospitals, a point which was taken up by Major C. P. Lovelock, whose experience was that scarlet fever could be quite satisfactorily isolated in the home without risk of spreading infection. The annual report and balance sheet were unanimously adopted; Mrs. H. B. Irving and Dr. E. Sloan Chesser were re-elected as joint hon. secretaries and Mr. James Marsden as hon. treasurer, with the addition of Mr. Henry Higgs as co-treasurer with Mr. Marsden.

lunatic asylums, and whether the supervision of female lunatics was conducted by men or by women.—Sir A. MOND replied: The answer to the first part of the question is in the affirmative. As regards the second part all the attendants and nurses for female patients are women.

Proposed Registration of Herbalists.

Lieut.-Commander KENWORTHY asked the Minister of Health whether His Majesty's Government contemplated any steps for the better regulation and registration of herbalists on the lines of the recent Dentists Act.—Sir A. MOND replied: The answer is in the negative.

FRIDAY, OCT. 28TH.

Lapsed Insurance Contributions.

Sir A. MOND (Minister of Health), in moving the second reading of the National Health Insurance (Prolongation of Insurance) Bill, explained that its object was to keep in benefit a large section of contributors to Approved Societies who, owing to unemployment, had lapsed. The subscribers would be credited with contributions for a certain number of weeks, the cost falling on the Approved Societies. There would be no charge on the State.

The Bill was read a second time.

MONDAY, OCT. 31ST.

The Territorial Voluntary Aid Detachment.

Lieut.-Colonel PINKHAM asked the Secretary for War what progress was being made with the Territorial Voluntary Aid Detachment scheme: how soon would the actual conditions of service and establishment be determined; and was he aware that at the present moment the existing detachments were rapidly dwindling, whilst others had been or were being disbanded owing to lack of any definite rules and regulations, the temporary rules sent out not meeting the case.—Sir LAMING WORTHINGTON EVANS replied: The Army Council have approved the principles of a new scheme, the details of which are to be considered by a committee on which the British Red Cross Society and other authorities concerned will be represented. In regard to the last part of the question, so far as I am aware there has been since Jan. 1st last a net reduction of 21 detachments only out of a total of 4037.

Taxation of Lactose.

Mr. LAMBERT asked the President of the Board of Trade why, seeing that the Board of Trade under the Safeguarding of Industries Act was not permitted to tax food, lactose or milk sugar, an important ingredient in the manufacture of infant food, had been scheduled for taxation.—Mr. BALDWIN replied: Articles of food or drink are expressly excepted only from the operation of Part II. of the Safeguarding of Industries Act, and not from Part I., under which lactose of a certain grade and purity is dutiable.

Proposed Drawback on Hospital Chemicals.

Dr. MURRAY asked the President of the Board of Trade whether he was aware that a large number of proprietary articles of continental origin included in the Key Industries Schedule of the Safeguarding of Industries Act were used by hospitals, and that, owing to the duty now imposed, these hospitals would have to pay much higher prices; and whether he was prepared to allow a drawback to these hospitals on such medical chemicals, in view of the low state of the finances of these institutions.—Mr. STANLEY BALDWIN replied: A number of the commodities covered by the general chemical heading of the schedule to the Safeguarding of Industries Act are, no doubt, of the kind stated by the hon. Member. The experience of the war years showed, however, the grave danger of dependence upon foreign sources for important medical supplies, and the need of action to prevent so far as possible its recurrence; and I am not prepared to introduce the legislation necessary to give effect to the hon. Member's suggestion.

The Government Grant to Voluntary Hospitals.

Mr. LEONARD LYLE asked the Minister of Health whether the Government still adhered to its promise, arising out of the Cave Committee's Report, to allocate £500,000 to the voluntary hospitals; what steps in that case had been taken towards the allocation of the fund; within what period was it intended it should be allocated; and whether in each case a stipulation was to be attached to the effect that before a hospital could receive a grant it must put up a sum equal to the grant made up of new money.—Sir A. MOND replied: The grant of £500,000 towards the liquidation of the voluntary hospital deficits was voted by the House last August. The Voluntary Hospitals Commission are taking steps to establish local hospital committees on the lines recommended in Lord Cave's Report, and it is hoped that the personnel of a number of these committees ill be complete within the next few weeks. King Edward's und, who act as the local committee for London, have de considerable progress with their work, and emergency nts will be distributed at an early date to the most necessitous of the metropolitan hospitals. I am informed that it is not anticipated that the full amount of the grant will be spent during the current financial year, and an estimate will be submitted to the House next session for a re-vote of the unexpended balance. As regards the conditions attaching to the grant I would refer my hon. friend to the White Paper (Cmd. 1402) which was circulated in July.

The Spahlinger Treatment of Tuberculosis.

Sir CLEMENT KINLOCH-COOKE asked the Minister of Health whether any further investigation had been made in the matter of the Spahlinger treatment for tuberculosis; and when it was likely the treatment would be available for patients suffering from this disease.—Sir A. MOND replied: I understand that certain unofficial investigations have been made in this matter, but that no definite conclusions have been arrived at. As I have already stated, it will not be possible to undertake any independent investigation as to the efficacy of the Spahlinger treatment which is essential in a matter of this importance until supplies of the serum are available in this country. I understand that such supplies are not yet forthcoming.

TUESDAY, NOV. 1ST.

Ex-soldiers and Tuberculosis.

Mr. SITCH asked the Minister of Pensions the number of applications for pensions received from ex-soldiers suffering from tuberculosis; the number of awards conferred on cases of such disability certified as resulting from service with His Majesty's forces; and the number of cases of tuberculosis not so certified or accepted as being due to service during the war.—Major TRYON replied: The records of the Ministry are not kept in such form as to enable a complete answer to be given to this question without a very considerable amount of research which my right hon. friend is not prepared to impose on his staff. I can, however, inform my hon. friend that during the past 18 months 6500 awards were made in respect of tuberculosis; but as rejections are not classified according to diseases, I am unable to state the number of claims in respect of tuberculosis which were not accepted during that period.

The Services.

ROYAL ARMY MEDICAL CORPS.

Temp. Capt. J. A. Marsden to be temp. Maj. whilst empld. as Dep. Asst. Dir. of Hygiene.

Capt. J. E. Brooks is secd. for service under the Colonial Office.

Capt. T. Young relinquishes the actg. rank of Maj.

The undermentioned temp. Capts. relinquish their commns., and retain the rank of Capt.: R. E. Smith and J. M. Browne.

Capt. W. McM. Chesney retires receiving a gratuity, and is granted the rank of Maj.

2nd Life Guards.—Surg. Lt.-Col. J. H. Power retires on ret. pay.

ARMY DENTAL CORPS.

Capt. D. Blair to be Maj.

Temp. Capt. A. McCormack, Dental Surg., from Spec. List, to be Lt., and to be temp. Capt.

OVERSEA FORCES.

S. Afr. Med. Corps.—Temp. Capt. L. W. Blazey, Dental Surg., relinquishes his commn. on completion of service, and retains the rank of Capt.

REGULAR ARMY RESERVE OF OFFICERS.

The undermentioned, having attained the age limit of liability to recall, cease to belong to the Res. of Officers:—

Army Medical Service.

Maj.-Gens.: Sir W. W. Pike, Sir H. N. Thompson, L. E. Anderson, S. Macdonald, and W. T. Swan.

Cols.: A. J. Luther, C. W. R. Healy, F. W. Begbie, S. F. Clark, W. L. Gray, and H. N. Dunn.

Royal Army Medical Corps.

Lt.-Cols.: N. Tyacke, C. A. Stone, H. W. H. O'Reilly, and D. Lawson.

Majs.: A. Pearse, Bt. Lt.-Col. F. J. Brown, R. F. E. Austin, and T. J. Lenehan.

Capt. J. M. Darling to be Maj.

TERRITORIAL ARMY.

Maj. (Bt. Lt.-Col.) E. S. Forde resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Majs. W. H. Rowell and J. D. C. Swan resign their commns. and retain the rank of Maj.

"To those of us who, knowing him intimately, could appreciate the fine qualities of his brain and his character, it seemed that he came rather late to the full recognition which he deserved. His early tendency to diffuse his interests had some part in this, and his career was not without its discouragements, met with a quiet persistence which was characteristic and admirable. His physique, his voice, his quiet manner, were not such as easily command attention, and in presenting his own work to his colleagues he had not, at first, that gift of vividness which strikes the imagination. Yet by quiet determination and conscientious work he made himself an unusually successful teacher of his subject, and caution and reticence had their own reward in the sincere and growing respect with which his work, his knowledge, and his judgment were regarded by his fellow physiologists.

There are many, without as well as within the circle of physiologists, who will mourn the loss not only of a valued colleague, but of a dear and staunch friend. To the writer this sense of a double loss comes with a peculiar intensity. A personal intimacy and scientific comradeship, beginning when, as boys at school, we started to read Foster's Physiology together, lasted unbroken through student days at the same college and the same hospital, and survived all minor separations of domicile or of interest to the end. This loyalty was an outstanding quality of Bainbridge's character. In a circle of widening friendships, he kept and cherished those of his boyhood and youth as few men do. A friend to both of us from Cambridge days writes to me, very truly, that 'Bainbridge was one of the exceedingly few people in whose case a long absence was merely a temporary gap, not a separation and a change.' Family affection and early friendship struck very deep roots in a character which was quiet, reserved, and firm, rather than facile and enthusiastic. During the last few years ill-health had made sad inroads on his time and his strength. He chafed at the enforced interruption of his work, but looked to the future with quiet courage and determination. To his widow, gallant comrade in his success and in his losing fight with physical adversity, to his sisters and his young daughter, will go out the sympathy of all who had come to know and honour his steel-true character; and science will be the poorer for the cutting short of a career, which still showed as much of promise as of achievement."

FREDERIC THORNE, M.D. ST. AND., M.R.C.P. LOND.

Dr. Frederic Thorne, who died at Adderbury East, Banbury, on Oct. 16th, in his seventy-sixth year, was a younger brother of the late Sir Richard Thorne-Thorne, sometime principal medical officer to the Local Government Board. Like him, he received his medical education at St. Bartholomew's Hospital, qualifying M.R.C.S.Eng. in 1869, and becoming later M.R.C.P.Lond. and M.D. St. And. His professional career began with 20 years of general practice at Leamington, followed by consulting work—he was on the staff of the Midland Counties Home for Incurables—from which he retired ten years ago, entering then with great activity into public life. He was elected a member of the Banbury rural district council in 1911, and held various offices on that body, including that of chairman of the public health committee. In his early days he had held a commission in the Warwickshire Volunteers, and after the outbreak of war, when the Volunteer Force was formed, he took over command of the Banbury Company in spite of indifferent health. Under his guidance the company grew in strength and efficiency and when it became absorbed into the general military system he was appointed a Captain in the Oxford and Bucks Light Infantry, to which his battalion had been affiliated. For the past two years he had suffered from an internal malady and his death, which is mourned by a wide circle of friends, was not unexpected. Dr. Thorne was thrice married, one of his sons being Dr. James Thorne of Edinburgh.

CHARING CROSS HOSPITAL: A NEW WARD.—The new ward at Charing Cross Hospital, which was dedicated by Princess Louise, Duchess of Argyll last month, owes its inception to the Shanghai Race Club which, during the war, continued racing and devoted the proceeds to charitable purposes. By the end of 1920 the Club had distributed something in the neighbourhood of £120,000. The new ward has been endowed with a sum of £12,000, and the stewards have undertaken to make what contributions they can towards its upkeep.

Medical News.

UNIVERSITY OF CAMBRIDGE.—The following degrees have been conferred:—

M.B. and B.Ch.—L. W. Jones, Emmanuel.
M.B.—L. P. Garrod, King's; H. H. Brown, Caius.

CAMBRIDGE TUBERCULOSIS COURSE.—A course of lectures, demonstrations, and practical work on the pathology, diagnosis, and treatment of tuberculosis, with special reference to administrative measures for dealing with the disease, is being arranged for the month Nov. 14th to Dec. 17th, at the Medical School, Cambridge, and the Papworth Colony. Further details in our advertisement columns.

MEDICO-LEGAL SOCIETY.—A meeting of this Society will be held at 11, Chandos-street, London, W., on Tuesday, Nov. 15th, at 8.30 P.M., when a paper will be read by Dr. Thomas Good on Nature *versus* Law, with special reference to the development of psychotherapy and its problematical use in the treatment of feeble-minded persons and criminals. The annual dinner will be held on Wednesday, Dec. 14th, instead of as previously announced. Further particulars will be announced shortly.

ROYAL SOCIETY.—The President and Council wish to continue the collection of engravings and photographs of Fellows in their possession on the lines which have been adopted by the trustees of the National Portrait Gallery—namely, by photographs uniform in size and character, which will be stored and catalogued. Arrangements have been made with Messrs. Russell and Sons, 73, Baker-street, London, W., by which they will take a photograph (by appointment) of any Fellow, free of charge, and deposit a copy with the Society. Those Fellows who have not within the last two or three years given a sitting to Messrs. Russell are asked to assist in making the collection complete by arranging for a sitting as soon as possible.

HOSPITAL SATURDAY IN MANCHESTER: A SECOND APPEAL.—During last week a second and special collection in aid of the Hospital Saturday Fund was made in places of business, factories, workshops, and warehouses in Manchester and Salford. The second appeal was made because in June last—the usual time for the appeal—many sources of income were closed on account of the coal dispute. The response was, in fact, £1000 short of the contributions of the previous year. In Manchester, as elsewhere, the hospitals are faced with a falling income. At the Ancoats Hospital during the last nine months the expenditure exceeded the income by over £3000. In past years the people of Manchester do not appear to have subscribed to their own hospitals to nearly the same extent as other large towns do. Last year the 21 local hospitals provided treatment for 36,040 in-patients, 343,344 out-patients, 20,821 home patients, and 61,217 sufferers from accidents—a total of 465,023 cases. There are also two convalescent homes for workers, one at Deganwy, in North Wales, with 50 beds, and one at Arnside, with 31 beds for women only.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia was held on Oct. 27th, Sir Norman Moore, the President, being in the chair. It was announced that Mr. Ronald Henry Knight had been elected as the twenty-ninth Jenks scholar.—Dr. A. J. Cleveland and Dr. F. H. Jacob, elected at a previous meeting, were admitted to the Fellowship.—The following were admitted to the Membership of the College: Dr. J. R. Bell, Dr. W. H. Best, Dr. R. E. Collins, Dr. G. C. Linder, Dr. A. G. Maitland-Jones, Dr. W. E. Waller, Dr. P. H. Wells.—Licences to practise physic were granted to 77 candidates who had passed the necessary examinations.—Dr. Sidney P. Phillips and Dr. G. F. Still were nominated by the President to serve on a committee called together by the College of Preceptors to consider the physical education of girls.—Dr. M. K. Robertson was granted permission to resign his membership of the College.—The application of Dr. J. J. Macwhirter Dunbar for restoration of his membership resigned in 1881 was read a second time.—Prof. C. S. Gibson was appointed an examiner in chemistry in place of Dr. Le Sueur, deceased.—A committee was appointed to consider changes in the curriculum and examination for the Conjoint Diploma, consisting of the President and Registrar ex officio, Sir William Hale-White, Sir H. D. Rolleston, Sir James Galloway, Dr. H. M. Fletcher, Dr. G. F. Blacker, and Sir John Broadbent.—The High School for Girls, Wimbledon, was recognised for instruction in chemistry, physics, and biology.—Sir William Hale-White was re-elected a member of the Committee of Management.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Nov. 7.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., Dr. Moon: In-patients. 5.30 P.M., Lecture:—Dr. J. S. Goodall: Extra Systoles and their Significance.
TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 10 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.
WEDNESDAY.—10 A.M., Dr. Parkinson, and 2 P.M., Dr. Moon: Out-patients.
THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.
FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Goodall: In-patients.
SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Nov. 10th.—4 P.M., Lecture:—Mr. L. E. Barrington-Ward: The Management of Acute Abdominal Conditions.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Nov. 10th.—6 P.M., Chesterfield Lecture:—Dr. J. L. Bunch: Pruritus and Itching Diseases of the Skin.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children, by Dr. E. Pritchard, to Qualified Practitioners.
WEDNESDAY, Nov. 9th.—6 P.M., Lecture XI.:—Rickets, Causes, Symptoms, and Treatment.
FRIDAY.—6 P.M., Lecture XII.:—The Feeding of Children between Nine Months and Two Years.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Nov. 8th.—4.30 P.M., Mr. W. F. Shaw: Urinary Symptoms in Gynæcology.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURES, Whitworth-street, West Branch, Manchester.
FRIDAY, Nov. 11th.—4.30 P.M., Dr. Fothergill: Pelvic Varicocele.

ANCOATS HOSPITAL.
THURSDAY, Nov. 10th.—4.30 P.M., Dr. G. Langley: The Significance and Treatment of the Irregular Pulse.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE.
Post-Graduate Lectures and Demonstrations.
TUESDAY, Nov. 8th. (At the Jessop Hospital).—3.30 P.M., Mr. W. W. King: Demonstration of Gynæcological Cases.
FRIDAY. (At the Jessop Hospital).—3.30 P.M., Prof. M. H. Phillips: Demonstration of Gynæcological Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.
WEDNESDAY, Nov. 9th.—4 P.M., Lecture IV.: Prof. L. McIlroy: The Problem of the Working Mother.

Appointments

Borthwick, G. A., M.B., Ch.B. Edin., has been appointed Assistant Medical Officer of Health and Assistant School Medical Officer for Barnsley.

Simpson, Keir, M.D., Ch.B. Edin., D.P.H., Deputy Medical Officer of Health and School Medical Officer for Croydon.

Certifying Surgeons under the Factory and Workshop Acts.—**Dwyer, M.**, L.R.C.P.Lond., M.R.C.S.(Tattenhall): **Allan, J. G.**, M.B., Ch.B.Edin. (Catrine): **Wall, D.**, M.B., Ch.B. Edin. (Hoo, Kent); **Pirie, A. W. R.**, M.B., Ch.B.Aberd. (Preston).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen, Royal Hospital for Sick Children.—Hon. S.
Bedford County Hospital.—Asst. H.S. £150.
Birkenhead Borough Hospital.—Jun. H.S. £200.
Bristol General Hospital.—Cas. H.S. £175.
Bury Infirmary.—Junior H.S. £150.
Camberwell Infirmary.—Jun. Asst. M.O. £350.
Cambridge, John Bonnett Clinical Laboratory.—Clin. Path. £300.
Cape Town University.—Lectureships. £150 and £400.
Cardiff, University of South Wales and Monmouthshire.—Lecturer in Path. and Bact. £750.
City of London Hospital for Diseases of the Chest.—Half-time M.O.
Coulsdon, Netherne Mental Hospital.—Two Asst. M.O.'s. £400 to £500.
Dumfries, Crichton Royal Mental Hospital.—Clin. Pathologist. £400.
Durham County Council.—Asst. Welfare M.O. £600.
East London Hospital for Children, &c., Shadwell, E.—H.S. £125.
Epsom Manor Certified Institution.—Asst. M.O. £400.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.
Great Northern Central Hospital, Holloway-road, N.—Two P.'s.
Grimsby and District Hospital.—R.H.S. £300.
Hull Royal Infirmary.—Hon. Pathologist.
Kensington Dispensary and Children's Hospital, 49, Church-street, W.—Hon. Dent. S.
Kensington and Fulham Hospital. Hon. P.
London Fever Hospital, Islington, N.—Res. M.O. £500.
Manchester Royal Infirmary.—Res. M.O. £250.
Manchester, St. Mary's Hospitals for Women, &c.—Two H.S.'s. Each £100.
Middlesbrough, North Riding Infirmary.—Sen. H.S. and Jun. H.S. £200 and £150.
Mothers' Hospital, Lower Clapton-road, E.—Res. M.O.
Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £200.
Nottingham General Hospital.—H.S. £200.
Portsmouth Royal Hospital.—Third H.S. £150.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Sen. Res. M.O. £100. Asst. Res. M.O. £60. District Res. M.O. £80.
Royal Dental Hospital, Leicester-square.—House Anæsth. 10*s.* 6*d.* each Attendance.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S.
Royal Naval Medical Service.—Surg. Lieuts.
Royal Sea Bathing Hospital, Margate.—S. £200.
St. Mary's Hospital, Paddington.—Med. Supt. £350.
South Eastern Hospital for Children, Sydenham, S.E.—Res. M.O. £100.
Sunderland Royal Infirmary.—H.S. £200.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Virginia Water, Surrey, Holloway Sanatorium.—Jun. Asst. M.O. £400.
Warwickshire County Council.—Asst. M.O.H. £550.
West London Hospital, Hammersmith-road, W.—Hon. Surg. Registrar.
Western Ophthalmic Hospital, Marylebone-road.—Hon. Radiologist amd Hon. Asst. Anæsth.
Winchester, Royal Hampshire County Hospital.—H.S. £150.
Wokingham, Berks, Pinewood.—Med. Supt. £600.
Worcester General Infirmary.—Res. M.O. £200.

Births, Marriages, and Deaths.

BIRTHS.

Bernard.—On Oct. 24th, at Lower Stone-street, Maidstone, the wife of Dr. E. A Bernard, of a daughter.

Fenton.—On Oct. 24th, at Farfield House, Kidderminster, the wife of V. N. Fenton, M.B., B.Ch.Cantab., of a son.

Smalley.—On Oct. 29th, at a nursing home, Manchester, the wife of Major J. Smalley, I.M.S., of a son.

MARRIAGES.

Morton—Dobie.—On Oct. 24th, in London, Flight-Lieut. T. C. Morton, M.B., D.T.M., R.A.F.M.S., to Emily Frances, eldest daughter of D. Robertson Dobie, M.D., F.R.C.S., Crieff, Scotland.

DEATHS.

Bainbridge.—On Oct. 27th, at Clarence Gate-gardens, Regent's Park, Dr. Francis Arthur Bainbridge, F.R.S., F.R.C.P., aged 47 years.

Beaumont.—On Oct. 28th, suddenly, at Charing Cross Hospital, Edgar Beaumont, M.D., of Montague House, Upper Norwood.

Brockatt.—On Oct. 24th, in London, Andrew Alexander Brockatt, M.D., lately of Great Malvern, in his 58th year.

Gardiner.—On Oct. 28th, suddenly, at his residence, the Old Court House, Richmond, Surrey, Matthew Henry Gardiner, M.B., C.M. (Edin.), aged 64 years.

Rolston.—On Oct. 27th, at Glen Maye, Yelverton, Devon, George Theodotus Rolston, J.P., L.R.C.S., L.S.A., late of Stoke, Devonport, aged 91 years.

Wickham Legg.—On Oct. 28th, at Woodstock-road, Oxford, John Wickham Legg, Hon. D.Litt. Oxon., F.R.C.P. Lond., aged 77 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Presentation to a Medical Man.—Dr. T. P. Stewart, of Newport, Fifeshire, has recently been presented with a complimentary letter bearing the names of 600 friends and patients, as well as a silver salver and a cheque for £1400, "as a token of affectionate regard and grateful thanks for his 31 years skilful, generous, and self-sacrificing service."

Warneford Hospital, Leamington.—The new out-patients wing of this hospital, erected at a cost of £25,000, was opened on Oct. 26th by Princess Helena Victoria. Dr. Bernard Rice, consulting surgeon to the hospital, said that last year there were 37,000 attendances in the out-patient department, and although the hospital had been losing something like £2000 a year the committee felt that they must maintain a hospital which had existed on a voluntary basis for 90 years. At the reception held in the afternoon purses were received containing about £2500.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Unemployment and Health Insurance.

A BILL was introduced by Sir ALFRED MOND, Minister of Health, and read for the first time on Wednesday, Oct. 26th, entitled the National Health Insurance (Prolongation of Insurance) Bill. The measure extends temporarily the period during which persons who are unemployed may remain insured under the general provisions of the National Health Assurance Acts, 1911 to 1921.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 26TH.

The Demolition of Slum Areas.

Major BARNES asked the Minister of Health whether any schemes had come before the Ministry for the demolition of slum areas in respect of which a special grant had been offered by the Government in the current year.—Sir A. MOND replied: In view of the necessity of concentration on the production of new houses, comparatively few proposals for the demolition of slum areas have been submitted. Definite schemes have been received in respect of 19 areas, while in a number of other cases informal proposals have been discussed with the local authorities. Four schemes have been confirmed or confirmation promised, of which one is the Brady-street scheme of the London County Council.

Infant Death-rates.

Dr. ADDISON asked the Minister of Health what the infant death-rate for London had been for each quarter of the present year up to the end of September, and what had been the corresponding rates for England and Wales.—Sir A. MOND replied: According to the Registrar-General's returns the figures are as follows:—

Deaths under 1 per 1000 Births, 1921.

	London.	England and Wales.
1st quarter	85	101
2nd ,,	59	67
3rd ,,	93	83

The excess of the London rate over the rate for England and Wales in the third quarter is mainly due to infantile diarrhœa which has, of course, a heavier incidence in towns than in the country as a whole.

Pure Lactose and Safeguarding of Industries Act.

Mr. LAMBERT asked the President of the Board of Trade if lactose is a dutiable article under the Safeguarding of Industries Act; if so, was he aware that lactose was used to prepare in this country reliable infant foods; and whether, in view of pledges given that food should not be taxed for what reason, since infant food manufactured abroad could be imported free, was the manufacturer of infant food in this country to be penalised by the taxation of an important ingredient in his product.—Mr. BRIDGEMAN replied: Crude lactose is not dutiable, but the purer qualities, such as those which fulfil the requirements of the British Pharmacopœia, are held to be dutiable under the Safeguarding of Industries Act, under the general heading of Fine Chemicals. I am aware that the purer qualities are used for the purpose described by my right hon. friend. The Board of Trade have no power to exclude on any ground from the operation of the Act any commodity properly included within the general headings of the Schedule. The question as to whether lactose is properly so included is a matter which can be referred to the referee to be appointed under Section I. (5) of the Act, and a complaint on the point is being referred accordingly.

Deaths from Disease in Mesopotamia.

Sir THOMAS POLSON asked the Secretary of State for the Colonies how many deaths from disease had occurred during the last six months among officers and men of the British forces stationed in Mesopotamia.—Mr. CHURCHILL replied: The figures are as follows: British forces under the War Office, 56; British forces under the Air Ministry, 7; Total deaths from disease, 63.

THURSDAY, OCT. 27TH.

Ex-Service Men in Lunatic Asylums.

Captain LOSEBY asked the Minister of Pensions the number of ex-Service men at present confined in lunatic asylums who were in receipt of treatment allowances.—Major TRYON replied: The number of ex-Service men classified as Service patients in respect of whom treatment allowances are paid or credited is 6135.

Tuberculous Gland Treatment by X Rays.

Lieut.-Colonel DALRYMPLE WHITE asked the President of the Board of Education whether, in view of the great superiority of the treatment of tuberculous glands by X rays over the former surgical treatment, he would reconsider his decision not to sanction any further treatment by X rays, at all events in such localities where there was a general hospital with X ray installation.—Mr. FISHER replied: I presume that the hon. and gallant Member has in view the limited experiment at Southport in this form of treatment which the Board sanctioned in October, 1919. I am advised that the results of that experiment are not such as to justify the Board in entertaining at present proposals for further expenditure on the continuance or extension of the experiment.

Appointments at Holloway Convicted Hospital.

Lieut.-Colonel Sir SAMUEL HOARE asked the Secretary for the Home Department whether a wardress with no nursing experience had recently been placed in charge of the convicted hospital at Holloway over the heads of five trained nurses; whether this appointment was made on the advice of the Voluntary Advisory Nursing Board; and who were the ladies and gentleman who constituted that board.—Mr. SHORTT replied: It is not the case that a wardress with no nursing experience has been placed in charge of the convicted hospital at Holloway. The officer selected has had much nursing experience as she had been engaged on hospital duties for 17 years, and was selected to be a hospital officer in 1913, since when she has been wholly employed on hospital work. She is reported by the medical officers to be fully qualified and very capable. The Voluntary Nursing Board was not consulted as to the appointment, nor have they made any representation on the matter. It consists of the Medical Commissioner (Chairman); Dame Sarah Swift; Miss Hogg, Matron of Guy's Hospital; Miss McIntosh, Matron of St. Bartholomew's Hospital; Jessie, Lady Camoys; Dr. Mary Scharlieb; Miss Edith Blunt; The Governor of Holloway Prison; and the Hospital Lady Superintendent of Holloway Prison.

Insurance Act Medical Records.

Sir J. D. REES asked the Minister of Health whether the decision that doctors under the National Insurance Act should keep elaborate records of the cases of their patients had been cancelled; and, if not, whether that decision would now be cancelled in view of the cost of maintaining such records and of the objection generally entertained to bureaucratic registration, and even possible disclosure of incidents in the private life of patients concerned.—Sir A. MOND replied: The keeping of records was one of the original conditions of the insurance medical service. The present system was recommended in 1920 by a special committee, mainly consisting of medical men, among whom insurance practitioners were strongly represented. The initial cost has already been met, and the cost of maintenance is small. Resolutions were passed only last week in favour of the keeping of records by the annual conferences of panel committees and insurance committees respectively. In these circumstances I see no reason for reversing the decision that records should be kept.

Regional Medical Officers.

Mr. SUGDEN asked the Minister of Health what the cost had been in salaries, also expenses for travelling, of the officers and insured persons concerned, rent of premises, clerical assistance, &c., of the regional medical officers appointed by the Ministry of Health Act, 1920.—Sir A. MOND replied: The answer to the question is as follows: Salaries, full-time medical officers, £11,918 6s. 3d.; fees to part-time officers, £58 16s. Travelling expenses, officers and clerks, £1572 13s. 5d.; insured persons, £948 12s. 5d. Rent, offices, £2001. Part-time examination centres and women attendants, £2202 0s. 4d. Clerical assistance, &c., £7680 Incidental expenses (equipment, &c.), £810 18s. 6d. Total, £30,908 15s. 11d.

Mr. SUGDEN asked the Minister of Health how many cases examined had been referred to the regional medical officers by the panel doctors of insured persons concerned for assistance in treatment by consultation, and how many by the Friendly or Approved Societies and doctors for the purpose of deciding as to the fitness of the patient to return to work.—Sir A. MOND replied: The provision at present made in regard to the duties of the regional medical staff does not include the routine examination of cases of the kind referred to in the first part of the question. I would remind my hon. friend that Approved Societies and doctors were notified at the commencement of the service in November, 1920, that for an experimental period incapacity references only would be accepted. In reply to the second part of the question the aggregate number of references from Approved Societies, doctors, and insurance committees on questions of doubt as to incapacity for work for the period Nov. 1st, 1920, to Oct. 1st, 1921, was 50,318.

Women Visitors of Lunatic Asylums.

Viscount WOLMER asked the Secretary for the Home Department whether there were any women visitors of

THE LIFE OF THE HOUSE-FLY IN WINTER.

In the July number of the *Japan Medical World*, Dr. Harujiro Kobayashi, Sc.D., of the Chosen Government Hospital, Seoul, Korea, describes an investigation into the problem of the wintering of *Musca domestica*. Various claims have been made by writers on the subject to the effect that the fly passes the winter only in the adult stage, or only in the larval or pupal stage; but Dr. Kobayashi points out that the finding of any form does not necessarily imply wintering, since places have been noted where flies breed even in mid-winter. As a result of laboratory experiments and observation under natural conditions, Dr. Kobayashi has arrived at the following conclusions: (1) Certain species of *Musca domestica*, principally the female, "overwinter" in the adult stage in Korea. These flies are not in a state of hibernation, as active movement and oviposition occur from time to time. (2) In Seoul there are probably certain places where continual breeding of flies occurs in the winter. (3) No exact confirmation of the "overwintering" of larvæ and pupæ of the house-fly in Seoul has been obtained. (4) By experiments in feeding of the adult house-fly its longevity seems to be above 120 days in the winter. (5) *Scatophaga stercolaria* and *Calliphora lata* may also live through the winter in the adult stage. (6) *Stomoxys calcitrans*, *Sarcophaga carnaria*, and several other types apparently winter in the pupal or larval stages. (7) The destruction of wintering adults and detection of breeding-places in the winter must effectively counter the prevalence of the house-fly in the hot season.

COLONIAL HEALTH REPORTS.

East Africa Protectorate.—A belated report for 1918-19 contains some interesting passages relating to the public health. The general health of all sections of the community during the year was exceptionally bad. There was a considerable addition to the number of cases treated, which, even allowing for the normal rise in attendance at hospitals consequent on the development of the country, was much above the average. The mortality was abnormal, due to a variety of explainable causes which could not be controlled. The effect of the year's work was further reflected in the increase of the invaliding rate amongst the official class. Stoppage of leave, the withdrawal of every available man either from his billet here or who might have been selected to fill that post from home, resulted in the retention of an understaffed, overtaxed body of war-stale Government servants to carry on the administration of the country. Briefly the adverse conditions were the universal drought throughout the greater part of the year, due to the failure of both rains, and the consequent famine conditions, which greatly stimulated the continued existence of the usual communicable diseases. It became apparent that the return of large numbers of discharged soldiers and Carrier Corps porters had, and is having, its inevitable effect on the country; this, in spite of the most admirable efforts of the medical staff of the Carrier Corps. It was not possible for the civil department to take over the segregation of disease "carriers." Thus it was that various diseases became especially prevalent. The rapid spread of tuberculosis is becoming a serious menace. Equally with the rest of the world, this Protectorate was devastated by influenza, which swept like a tidal wave to its very confines, practically exhausting itself after nine weeks. Generally speaking, the most noticeable thing about it was that its virulence was more deadly in the colder up-country regions than in the moister and hotter coast areas. One condition which the progress of medical work during the war has demonstrated very clearly is the enormous liability of the African to helminthic affections. Fully three-quarters of the native population is infected, and the question of ankylostomiasis alone must have a marked bearing on the labour market. In fact, it is possible that the African lethargy inherent in this tropical region is largely dependent on this cause. In the principal towns trained anti-malarial gangs are employed clearing drains, filling in excavations, and oiling water. Rat-trapping and systematic investigation have been continued, though the coast and Nairobi were free from plague, and only one case was reported from Kisumu and eight at Nakuru. Voluntary prophylactic inoculations have been popular among Asiatic communities. A satisfactory vaccine has not yet been prepared that affords complete immunity from small-pox. The experience gained is that no strain, whether from overseas or locally prepared, has been successful over a prolonged period unless it has been reinforced. Generally a new strain has been substituted for the old. The total population is estimated at 2,627,080, composed of 5570 Europeans, 15,407 Indians, 202 Goans, 7468 Arabs, 236 other races, and 2,596,370 natives. Of the European male adult population (2193) 508 were classified as Government officials, 1105 as planters and farmers, 498 as commercial, 123 as missionaries, and 57 as professional men, the remaining 22 ing unclassified.

EVACUATION OF WOUNDED IN LAPLAND SNOW.

In his thesis for the degree of M.D.Vict., Dr. A. H. Macklin, who is now on his way as surgeon in the *Quest* to the Antarctic again, gives a good account, with excellent pictures, of the difficult country in Lapland about Murmansk, in which he was fighting in the North Russian *Syren* Expeditionary Force in 1918–19. The country was within the Arctic Circle, and very cold, though not always very cold as the Gulf Stream just touches the Murman coast. Major (as he then was) Macklin had to organise the evacuation of the wounded and sick from the mobile columns, and would seem to have done it well. The wounded man was carried out of action probably in a man-drawn sledge, but men could not carry him far, so the orderlies quickly changed him into another sledge drawn by reindeer or ponies, after they had dressed his wound and wrapped him in a special bag against the cold, and thus he went to the regimental aid-post. Here he was given food, had his wounds dressed and splints applied, had his feet dry rubbed and anti-frostbite socks put on. Then, his feet packed in dry hay if available, he was rolled up in his special bag again with a hot-water bag, and sent on. The "special bag" was a wadded quilt, 7 ft. by 7 ft., of wool and cotton in a close-woven cloth cover (*not* waterproof); this was secured round him, the foot-end turned up to prevent draughts, and a blanket tucked round his shoulders as well. He was then laid amongst hay in a sledge with a hood over him. At relay posts the animals might be changed, the patients got hot food, urinals, bed-pans, and were held for resuscitation if necessary, and in time they reached the advanced dressing station. The great problem was to avoid cold and frost-bite. Dr. Macklin, whose two years' experience as a dog-driver with Shackleton in the Antarctic, as well as his service in the war in the Italian Alps, give his opinion weight, recommends against frost-bite of feet: 1. No oil or grease. 2. Dry rubbing of feet, three pairs of socks, each successive pair a size larger than the last, and then loose boots; no constriction; two loose pairs of socks being better than three that are tight. Conditions were very different in North Russia from those in the other theatres of war. It sounds odd to find 20 reindeer in the war establishment of a medical unit ("10 to draw, 10 to break trail"). In that country, too, matches were very valuable; so while the "establishment" shows "Rations, 425 lb.," there also appears "Matches, 17 boxes."

Dr. A. H. Macklin is the son of Dr. T. T. Macklin, of Lancaster.

A GARDENING DIARY.

The medical man who devotes his scanty leisure to gardening or to the superintendence of the care of a garden will find in the Garden Lover's Diary, 1922, published by the Cable Printing and Publishing Co., at 2*s*., brief hints as to appropriate tasks for any season, interspersed with pleasant illustrations and a few verses.

K. V. C.—The address of the Medical Defence Union is 4, Trafalgar-square, London, W.C. 2.

We are asked to state that the old-established businesses of Messrs. John Bell and Croyden, Ltd., of Wigmore-street, London, W., and Messrs. Arnold and Sons, of Giltspur-street, London, E.C., have been amalgamated under one directorate.

We are informed that Messrs. Grout and Co., Ltd., of Great Yarmouth, having acquired the business of the Norwich Crape Company (1856), Ltd., will continue to manufacture the Norvic Crêpe Bandages.

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Maj. W. A. Taylor, having attained the age limit, is retired, and retains the rank of Maj., with permission to wear the prescribed uniform.

Capts. F. Rowland, J. Anderson, J. McGlashan, and C. C. Grummitt, having attained the age limit, are retired, and retain the rank of Capt.

Supernumerary for Service with O.T.C.—Capt. E. W. A. Walker, having attained the age limit, is retired, and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Col. R. Jackson, having attained the age limit, is retired, and retains the rank of Col., with permission to wear the prescribed uniform.

Capt. A. J. Williamson, from Genl. List, to be Lt.-Col.

Capt. S. S. Greaves, from Genl. List, to be Maj.

Capt. S. G. Reed, from 2nd Lond. San. Co., to be Capt.

ROYAL AIR FORCE.

Medical Branch.—Flight-Lt. A. Parker relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

Flight-Lt. (Hon. Squadron Leader) J. Keenan relinquishes his temporary commn. on ceasing to be employed, and is granted the rank of Maj.

Dental Branch.—The undermentioned Flight-Lts. are transferred to the Army Dental Corps (and will receive all emoluments from Army funds), with effect from the dates indicated. They will continue to hold their temporary R.A.F. commns. while attached to the R.A.F.: Actg. Squadron Leader C. L. Colbran and D. Blair.

INDIA AND THE INDIAN MEDICAL SERVICE.

Majs. A. E. J. Lister, T. S. B. Williams (Bt. Lt.-Col.), S. H. L. Abbott (actg. Lt.-Col.), J. E. Clements, H. B. Steen, E. Bisset, A. W. Overbeck-Wright, J. W. McCoy, R. M. Carter (Bt. Lt.-Col.), T. G. F. Paterson (Bt. Lt.-Col.), D. G. R. S. Baker, J. R. J. Tyrrell, Dewan Ganpat Rai, R. M. Barron (Bt. Lt.-Col.), W. R. J. Scroggie, T. H. Gloster, and H. H. G. Knapp to be Lt.-Cols.

Lt.-Col. L. J. M. Deas, on return from leave, has been posted as Agency Surgeon, Kotah. Maj. A. D. White has been permanently posted to Education Department, Bengal. Maj. J. E. Clements, on return from leave, has assumed the appointment of Medical Superintendent, Central Jail, Agra. Maj. J. H. Murray, C.I.E., has handed over the appointment of superintendent, Central Jail, Lahore. Maj. H. W. Acton has been posted to School of Tropical Medicine and Hygiene, Calcutta. Maj. H. H. King has been granted a year's leave. Maj. A. F. Hamilton has been appointed Professor of Midwifery, Grant Medical College, Bombay, and Physician, Bai Motlibai and Peti. Hospitals, vice Lt.-Col. S. C. Evans retired. Maj. D. P. Goil has been transferred from Murshedabad to Rajshahi. Maj. S. C. Chakrabatty, superintendent Central Lunatic Asylum, Berhampore, acts as Civil Surgeon, Murshedabad, in addition to his other duties. Maj. H. Watts, officiating civil surgeon, Sangor, has been appointed to executive and medical charge of Sangor District Jail. Maj. L. B. Scott, civil surgeon, Shillong, has been granted a year's leave.

METEOROLOGICAL CONDITIONS AND DISEASE.—A general meeting of the Association of Economic Biologists will be held on Friday, Nov. 11th, at 2.30 P.M., in the Botanical Lecture Theatre of the Imperial College of Science, South Kensington, London, S.W., when Dr. E. J. Butler, director of the Imperial Bureau of Mycology, will open a discussion on Meteorological Conditions and Disease.

NORTH ORMESBY HOSPITAL.—A new X ray department was opened recently at the North Ormesby Hospital, Middlesbrough, by Mr. J. H. Amos, manager of the Tees Conservancy Board, who raised practically the whole cost of the installation—namely, £1200. Acknowledging a vote of thanks, Mr. Amos stated that the hospital's annual income of about £17,000 came for the most part from the employers of labour and the working men in the area. Unlike most institutions of the kind, they were free from financial worries. The hospital was a household word in the district for homely comfort.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, Nov. 10th.—List of probable papers:—A. J. Wilmott: Experimental Researches on Vegetable Assimilation and Respiration. XIV. Assimilation by Submerged Water Plants in Dilute Solutions of Bicarbonates and of Acids: an Improved Bubble Counting Technique (communicated by Dr. F. F. Blackman, F.R.S.). E. G. Young: *The Coagulation of Protein* by Sunlight (communicated by Prof. F. G. Hopkins, F.R.S.). E. G. Young: On the Optical Rotatory Power of Crystalline Ovalbumin and Serum Albumin (communicated by Prof. F. G. Hopkins, F.R.S.). A. R. Ling and D. R. Nanji: On the Longevity of Certain Species of Yeast (communicated by Sir E. Thorpe, F.R.S.). F. Kidd, C. West, and G. E. Briggs: A Quantitative Analysis of the Growth of *Helianthus Annuus. Part I. The Respiration of the Plant and of* its Parts throughout the Life Cycle (communicated by Dr F. F. Blackman, F.R.S.). G. S. Currey: The Colouring Matter of Red Roses (communicated by Prof. F. Keeble, F.R.S.).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 8th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Presidential Address by Dr. W. Langdon Brown: The Threshold of the Kidney. (*Discussion is invited.*)

PSYCHIATRY: at 8.30 P.M.
Paper:—Sir Frederick Mott: Further Researches upon the Reproductive Organs in Dementia Præcox.

Wednesday, Nov. 9th.

SURGERY: SUB-SECTION OF PROCTOLOGY: at 5.30 P.M.
The President will raise for informal discussion some topics of interest to the Sub-Section.
Cases also will be shown.

Thursday, Nov. 10th.

NEUROLOGY: at 8.30 P.M.
Discussion:—The Treatment of Persistent Pain due to Lesions of the Central and Peripheral Nervous System (introduced by Sir William Thorburn and Dr. Wilfred Harris).

SURGERY: Members of the Surgical Section are invited to join in the above discussion.

Friday, Nov. 11th.

CLINICAL: at *5.30 P.M. (Cases at 5 P.M.).*
Exhibition of Cases.

OPHTHALMOLOGY: at 8.30 P.M.
Papers:—Dr. W. S. Inman: The Relationship of Squint, Lefthandedness, and Stammering.
Dr. Charles F. *Harford: The New Psychology* and its Relation to Problems of Vision.

HARVEIAN SOCIETY OF LONDON, Town Hall, Paddington Green, Harrow-road, W.
THURSDAY, Nov. 10th.—8.30 P.M. Paper:—Dr. G. A. H. Barton: Ether: Some Simple Methods and Musings.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, Nov. 9th.—8 P.M., Mr. D. R. Wilson, Secretary of the Industrial Fatigue Research Board: The Work of the Industrial *Fatigue Research Board* and its Applications to Industry.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
MONDAY, Nov. 7th.—5 P.M., Prof. S. G. Shattock: Cysts.
FRIDAY.—5 P.M., Sir Arthur Keith: Recently added Specimens of Clinical and Anatomical Interest.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
TUESDAY, Nov. 8th and THURSDAY.—5 P.M., Fitz-Patrick Lectures:—Dr. R. O. Moon: Hippocrates in Relation to the Philosophy of his Time.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Nov. 7th.—2.30 P.M., Dr. Arthur Saunders: Demonstration of *Cases* in Medical Wards. 5 P.M., Dr. Donald Armour: Practical Surgery (Lecture III.).
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 5 P.M., Mr. Banks Davis: Nasal Deafness. Lecture.
WEDNESDAY.—2 P.M., Dr. Burnford: Visit to Medical Wards. 5 P.M., Mr. Simmonds: Surgical Emergencies (Lecture II.).
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 5 P.M., Mr. Donald Armour: Practical Surgery (Lecture IV.).
FRIDAY.—11 A.M., Dr. McDougal: Electrical Department. 5 P.M., Mr. MacDonald: Cystitis. Lecture.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Medical *Diseases of Children.* 2 P.M., *Dr. Owen:* Medical Out-patients.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

or to cases of *dysuria* in which, again, instrumental examination reveals no renal or vesical origin. The importance of taking a wide view of all these cases as they present themselves becomes more and more apparent with the growth of knowledge. As I am this evening dealing with the urinary tract and not with renal conditions—though the distinction is frankly a loose one—I shall not enter into the question of mobile kidney and its obvious interest for both physician and surgeon.

INFECTION.

But it is, after all, the large and important subject of infection which provides the chief meeting-ground for physicians and surgeons in urinary diseases, whether the infection be of the urinary tract, of the kidney, or of the peri-renal tissues. I suppose the fact that so-called primary infections of the urinary tract are still very largely dealt with by surgeons is a survival of the old doctrine which taught that all infections were "ascending" in nature. Practitioners are still to be met who visualise a stone in the bladder, or some other gross lesion, so soon as a case of acute urinary infection presents itself. It is perhaps only fair to suggest that another reason why surgeons still hold a lien over many of these cases is that they have been more in the van of progress than have the physicians in the matter of elucidation of the problems connected with this subject. All the same, I am quite sure that it is in the interest of patients generally—I do not speak of any individual patient, nor of any individual practitioner—that the chief centre of interest in these cases should shift to the medical side. I say this quite apart from the fact that the general majority of these acute cases do very well with medical treatment. I say it because there are so many associated ætiological factors of a general kind, requiring careful consideration, in order to arrive at a complete diagnosis and a convincing programme of treatment. The state of the bowel, the nervous and vascular tone, the patient's habits—all these need investigation, because they have important bearings upon treatment during the actual attack, and even more important bearings upon prophylaxis against future relapses. This is not to say that the surgeon is incapable of taking long views, nor of giving excellent advice on all the points just mentioned, any more than it is to say that the physician is possessed of no technical ability. It is rather that this class of case is better adapted to the physician's routine methods of work than to that of the surgeon.

It is generally agreed that instrumental investigation is not only unnecessary but contra-indicated in acute urinary infections, except those of the urethra in gonorrhœa. And the more acute the infection the more emphatic the contra-indication. But from a lack of appreciation of the true pathology of these acute primary infections, this rule is by no means always followed. If, however, an acute infection persists, *despite adequate treatment* (and the opinion of someone fully versed in the particular problem may well be that the treatment has *not* been adequate) it is considered sound practice to use the cystoscope, and by its means determine more accurately the local conditions. There may then arise the question as to the desirability or otherwise of lavage of the pelvis of the kidney. Into this question I will not go fully this evening. I have an open mind in regard to this as, I hope, in regard to most other conditions in which we have alternative treatments, but I have not yet met with a case in which really careful and detailed management on general lines failed to cure, and in which pelvic lavage did. Let me repeat: "really careful and detailed management." And without going into particulars I may instance the dietetic part of the régime, which I find personally to be of the greatest importance, yet which is frequently quite neglected. In acute cases it too often happens that the firmly established British conviction that milk is the proper diet for all acute illnesses determines the matter here also. And even after the acute stage is over milk is often a staple article in the diet. My own experience leads me to exclude milk (as such) entirely from the diet in all these cases, and at whatever stage. In the cases of the disease occurring in nervous little girls, the suggestion to exclude milk from the diet is often met with great distrust by the mother, who fears loss of weight, and if this happens during the first week or so the milk is often promptly resumed. If time allowed I could refer to some very striking instances of emergence from prolonged acute attacks, and of rapid improvement in subacute and intermittent cases, as the direct result of changing the milk diet which the patients were taking for a diet free from milk, and also, I may add, free from eggs. I will only mention one case, that of an adult male who had been ill with an acute coliform infection for some six weeks, running a very high and intermitting temperature, and showing the usual depression, lethargy, foul tongue, constipation, and abdominal tympanites. After ordering a trial of antistreptococcus serum and silver injections intramuscularly, and getting no response in a couple of weeks, an eminent genito-urinary surgeon cut down upon both kidneys, freed them in the perirenal tissues, and stitched them in the horizontal position, explaining by the aid of diagrams that in this way the pelves would be able to drain more efficiently than was possible when the kidneys lay in the position chosen by Nature. The immediate result was complete anuria for three days, and a desperately ill patient. Then the former condition of affairs was gradually resumed, with the symptoms exactly as before, except that the abdominal distension was somewhat greater. This was the state of things when I saw the patient. From the naked eye and olfactory characters of the urine the infection was clearly coliform in nature. As a preliminary measure I changed the milk diet, expressing agreement with the rest of the treatment, and I promised to report concerning the urine, and whether or no I advised the use of a vaccine. Within three days, however, and before my report arrived, the patient had improved, and by the end of the week the temperature was normal.

We must not, of course, confuse the question, whether patients get well after pelvic lavage, with the question whether the lavage is necessary. Like many other organs in the body the kidney pelvis will tolerate chemical interference with little or no detriment, provided the technique be sufficiently skilled. No doubt each case must be treated on its merits—a principle, like a good many other principles, sufficiently hackneyed but too often disregarded. It is quite reasonable to make a local effort to reduce the pelvic infection in cases which continue to resist general measures of treatment. But I must confess that, in some of the cases that have come under my observation after the treatment has been adopted, the procedure has seemed to me to illustrate the triumph of technique over reason. I certainly think this is so where efforts have been made to soak the kidney with antiseptic, rather than to disinfect the pelvis. For if, as is allowed—nay, insisted—by one ardent apostle of this method, the kidney is really more sinned against than sinning in the matter of the infection, and if the microbe is not primarily but only indirectly responsible, by an upset in the "bacterial balance" (I borrow the expression for the moment) resulting from faults in the patient's general health—if things be so, then is it rational to think that an effort to get an antiseptic solution to percolate backwards through the kidney will materially alter the course of the disease?

The more I see of these cases of coliform infection the more convinced I am that until the function of the colon is healthy, the patient is not free from relapses or from a chronic bacilluria. And, since I saw, some years ago, a case of some 15 years' standing (if not longer) completely clear up after an emergency operation for intestinal obstruction caused by a band which had evidently caused some degree of mechanical difficulty for a very long time, I have given up any idea as to the possible duration of a bacilluria before

Notes, Short Comments, and Answers to Correspondents.

RAT WEEK, 1921.

IN connexion with the Rat Week fixed by the Ministry of Health for the week Oct. 31st to Nov. 5th a popular lecture on the Rat Problem was given on Oct. 28th at the Institute of Hygiene by Dr. C. W. Hutt, medical officer of health for Holborn. He explained that one object of the Ministry of Health in arranging the rat week was to endeavour to arrange that everybody should make concerted efforts to destroy rats and that rats should not be merely driven from one place to another. The only good point the rat has is that he preys on mice and keeps the number under. If we kill rats we must kill mice, otherwise the mice would find the struggle for existence less severe and multiply up to the extent of the food-supply. South Australia and Victoria recently suffered from a mouse plague which destroyed the wheat and hay, while horses fed on contaminated hay generally died.

Rats carry disease germs and spread disease to valuable domestic animals and man. Horse influenza is spread from stable to stable by rats. Where the outbreak of the disease has led to the closing of a stable the disease promptly appears in other stables in consequence of the migration of the rats as soon as their food-supply is stopped. Foot-and-mouth disease is carried by rats; pigs contract trichinosis by eating infected rats. At the Glasgow abattoirs it has been shown that 3 per cent. of the rats were suffering from trichinosis. More important still is probably the cause of meat poisoning, which is now known to be due to the pollution of raw and cooked meat with bacilli of the Gaertner group. The most dramatic of the hygienic dangers due to rats is the ever-present possibility of the spread of plague by their agency. Great as is the hygienic danger from rats the economic loss is even more appalling; it is estimated that at least £50,000,000 (fifty million pounds) worth of damage is caused every year in this country by rats alone. The damage done to the farmer is often equal to his rent and rates combined. The rat, like other rodents, must keep his incisor teeth from growing; to maintain them at the proper length he has to gnaw hard substances. He burrows under foundations, through walls, and by biting his way through joists at times causes the collapse of buildings. To free premises from rats the first matter to receive attention must be the prevention of the access of any more rats. Any defective house drain allowing an unobstructed passage from the sewer to the house must be remedied; all other possible entrances must be guarded by wire netting or metal guards. In the case of the black rat—a Blondin among rats—any means of access to the higher floors must also be blocked. This rat often gains access to the refreshment kitchens of city firms on the upper floor by running along telephone wires.

The cheapest way to destroy rats is by poison; the safest poisons to use are barium carbonate and liquid extract of squills; traps should be used after a poisoning campaign and in the winter, but they must be used with skill. The rat has the largest brain in proportion to its size of any mammal, and the trapper has to use all his ingenuity. The experience in Holborn is that the handling of a trap by a human being does not stop a rat from entering it. The Ministry of Health, Dr. Hutt concluded, should allow local authorities to spend a moderate sum on the purchase and free distribution of rat poisons, and as in the parallel instance of infectious diseases encourage the building up by public health committees of a more or less complete organisation to cope with this source of danger and loss to the community.

THE FOOD VALUE OF WHITE FLOUR.

WE have received from the hon. secretary of the Bread and Food Reform League some comments upon the official memorandum on Diet in Relation to Normal Nutrition, the subject of an annotation in last week's issue. The League would have liked to see more attention directed to the mineral content of oatmeal and whole wheatmeal. We alluded then, as on many previous occasions, to the danger arising from the milling of cereals. The energy requirements of the body vary from 2750 to 5500 calories per day according to the work of the individual. They are mainly satisfied by fat and carbohydrate in the proportion of 90 g. of fat to 530 g. of carbohydrate. Carbohydrate is chiefly consumed in the form of starch from white wheat flour in bread, cakes, pastry, &c.; the average quantity eaten per day may be reckoned as 2 lb. of bread, which furnish 2000 of the necessary calories. Proteins, salts, and vitamins are the other essential constituents of the diet. The protein and salt requirements are easily satisfied by the ordinary mixed food, but such food may not supply the vitamin requirement. Like proteins, definite amounts of each vitamin are required daily to keep the body in perfect health, but as yet the amounts have not been determined. The germ and outer portions of the cereal grains supply B-vitamin, the absence of which from the food leads to beri-beri, as has been clearly demonstrated both in the case of polished rice and white wheaten flour. Seeds of grains and legumes are the natural foods richest in B-vitamin. The milling processes remove the B-factor from the grain, and its loss is not easily made good by the other articles in the diet of the poorer classes. Flesh and fish are poor in respect of this vitamin, eggs are good, and so are most fruits and vegetables; yeast contains this vitamin in considerable amount. The addition of yeast to flour in the making of bread does not compensate for the vitamin lost in milling. No attempt is made to compensate for it in making cakes, &c., for which baking powder is used. Milk is variable in its vitamin content, and can hardly be considered as rich in B-factor. The loss of B-factor from the grain will only be replaced if eggs and large quantities of vegetables and fruits are eaten. As B-vitamin is a highly important constituent of the food, and is only amply supplied by the germ and outer parts of cereal grains, health is not promoted by the preference of the population for white flour. Whiteness does not represent goodness. The people should be encouraged to eat wholemeal flour, which can be obtained finely ground, so that they get a proper supply of B-vitamin. Highly milled flour is also deprived of good protein, A-vitamin, and salts. It is of special importance that patent cereal foods for infants should be prepared from the whole grain.

THE GLOVED HAND.

AN article in the September number of the *American Journal of Clinical Medicine* entitled "The Passing of the Rubber Glove," suggests that some American surgeons find that gloves render large incisions and multiple adhesions unavoidable, because of the marked diminution of tactile sensibility which they entail. In preference, preparation of the hands with Dakin's water-soluble chloramine soap is recommended, and a subsequent coating of varnish. It is difficult to appreciate the advantages of varnish over gloves, and multiple adhesions are more liable to follow button-hole incisions than a proper technical exposure. The crux of the matter remains—can hands be sterilised by washing? The evidence appears to show that while a temporary sterilisation may be possible the secretion of sweat glands soon floods the surface with cocci hidden in the ducts and other crypts in the skin. But the suggestion that the rubber glove is more trouble than it is worth may do good in stimulating glove manufacturers to produce a more durable brand.

THE COST OF CLEAN STREETS.

To keep Manchester "clean" involved last year an expenditure of £181,096, against an income of £109,247, while in 1914 the corresponding cost was £145,615—the increase being due chiefly to cost of labour and materials. The cleansing department of the city has a staff of 1056 employees, who have to look after 616½ miles of streets within the city. Over 1000 tons of refuse were disposed of every week-day, and the total amount exceeded 307,400 tons. Something like 2,108,000 tons of this refuse have been deposited on the Carrington and Chat Moss Estates—the property of the city—with the result that the moss land has been completely reclaimed; and owing to this and other factors the market value of this moss area has been greatly enhanced. There are now over 50 farmsteads on what was previously moss land, while the raw peat itself is used for bedding of horses and the manufacture of bacterised peat.

CONGENITAL HEART BLOCK.

AUTHENTIC instances of this condition being rare in medical literature, interest attaches to a unique case recently recorded by Drs. P. D. White, R. S. Eustis, and W. J. Kerr,[1] in which the irregular pulse was observed before birth and verified by the electrocardiograph on the fourth day after birth. The case was that of a Mongolian idiot whose fœtal heart rate was found to be markedly irregular. On the second day after birth the pulse showed variations between a regular rate of 80, a bigeminal rhythm of 105, a trigeminal rhythm of 120, and a rapid regular rate of 160. On the fourth day electrocardiograms showed partial heart block and evidence of right ventricular preponderance, succeeding examinations at two and half, five, and eight months suggesting that the partial heart block was paroxysmal. The anatomical defects were probably a patent ductus arteriosus with the usual interventricular septum defect The authors describe a second case of complete heart block in a child of 5¼ years, the congenital origin of which is strongly suggested by the age of the child and the absence of a history of severe diphtheritic infection. These two new cases are discussed in detail and correlated with the ten other cases found in the literature, in all but two of which the block was complete.

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[1] American Journal of Diseases of Children, September, 1921.

an idea of the rate at which the disease is progressing. The results given in Table I. obtained with the "urea concentration" test (MacLean and de Wesselow) in an advanced case of nephritis are given to illustrate my meaning.

TABLE I.

Patient aged 52. Syst. B.P. 130–140. Œdema + + +. Total coagulable protein + + + +.

Date.	Urea concentration tests.						Remarks.
	1st hour.		2nd hour.		3rd hour.		
	Urea %.	Urine in c.cm.	Urea %.	Urine in c.cm.	Urea %.	Urine in c.cm.	
30/12/20	2·38	60	2·13	90	1·89	30	Urea concn. pract. normal.*
14/1/21	1·49	60	1·52	60	1·70	60	Urea concn. obvsly. dmnshd. (2 wks. interval).
22/1/21	1·74	90	1·90	120	1·74	150	Urea concn. slightly better (1 wk. interval).
28/1/21	1·78	105	1·94	[illegible]	1·77	120	Urea concn. stationary (1 wk. interval).
7/2/21	1·40	30	1·25	60	1·28	30	Urea concn. obvsly. worse again (1 wk. interval).†

* Probably at least ¼ kidney tissue functioning.
† Probably less than ¼ kidney tissue functioning.

To my mind it is not at all extraordinary that Dr. Davies's patient died within one month of normal results for certain kidney function tests. The case is a good example of the danger of exaggeration of the usefulness of a single test. It is surely just as necessary in the case of the kidneys to weigh up all the evidence in estimating functional capacity as in the case of any other organ—e.g., the pancreas. Chemical tests provide most valuable additional means of estimating function—sometimes indispensable, often of little help—but no chemical pathologist claims that they do away in any sense with the necessity for complete clinical examinations of patients. Their great value lies in the fact that they enable a quantitative picture of the damage done to be made on the day of the test. With reference to the protein precipitated by acetic acid in the cold "lipoid-globulin" (Mackenzie Wallis) or "nucleoprotein," or whatever it may eventually be shown to be—no constant proportion between this protein and the total coagulable protein in any given sample of urine could be demonstrated in the three cases tested. (The urine of No. 4 was not tested for this protein.) The variations were from 0 per cent. to 100 per cent.

The Four Cases.

It was at the suggestion of Dr. G. F. Still that the urine was examined at frequent intervals (two-hourly by day and occasionally at night). The results of the examinations of Cases 2 and 4 are given in tabular form, with brief accounts of the four cases and a table of kidney function tests.

Brief Accounts of the Four Cases.

CASE 1.—E. C. Female. First admission. Jan. 31st, 1918, aged 7 years 11 months. "At intervals of about two months during the last two years the patient has complained of 'pain in the back' with passage of 'thick urine.' The backache may be accompanied by headache and very occasionally by vomiting. During such attacks the child takes no interest in anything, and her bowels are apt to be constipated, though she appears to require to micturate more frequently than is her wont. She has never complained of her eyes troubling her. No swelling has ever been observed by her mother.

"On examination throat normal, heart a little enlarged, its apex being one finger's breadth to left of nipple line in fifth intercostal space; a systolic murmur over the pulmonary area. Discs normal; urine with specific gravity of 1020, contains no sugar. Five early morning specimens obtained on separate days before rising contained no albumin. Shortly after rising, however, urine contains protein. Temperature normal." She was in the ward a little over a fortnight; on three occasions her evening temperature was recorded as 100° F.; otherwise nothing of note was observed until she developed diphtheria and was transferred to a fever hospital on Feb. 15th, 1918.

Second admission, Sept. 16th, 1919, age 9½ years. Her doctor found "albumin" in the urine and sent the case to hospital as "nephritis." "Every six or eight weeks the child suffers from attacks of listlessness with anorexia and slight vomiting after breakfast. Such illness generally lasts for two or three days and may be accompanied by 'bad nights,' the child lying awake till midnight. She never complains of headache but suffers from constipation. She does not have 'sore throats' and no swelling of any part of the body has been observed. She has been ailing thus for two or three years. At 1 year 3 months she was 'comatose' for two days. When 2 she caught chicken-pox, when 4 she suffered from whooping-cough, and when 5 from measles, and just before her eighth birthday she developed diphtheria, as already recorded under 'first admission.'

"The patient has one brother of 7½ who is healthy and has no albuminuria. Her father had influenza in January, 1919, followed by double 'pneumonia' and 'bronchitis.' After this attack albuminuria was reported. His urine had not been examined before this illness. There is no albumin now (see below). Her mother is healthy and has had no miscarriages; 13 years ago she had 'pleurisy.' No albuminuria has ever been found. There is no question of consanguinity, and no history of albuminuria in either the

TABLE II.—*Showing Results of Urinary Examinations.*

CASE 2.—Q. S., aged 19, female. Total days during which urine was examined at frequent intervals = 31, of which 7 are tabulated.

Date, &c.	Time of day.	Total coag. prot.	Date, &c.	Time of day.	Total coag. prot.
5/1/21	10 a.m.	0	30/1,21	2 p.m.	V. sl. tr.
Up 1.15 p.m.	12 noon	0	(cont.)	4 p.m.	Sl. tr.
Bed 5 p.m.				6 p.m.	Trace
	2 p.m	0		8 p.m.	V. sl. tr.
		+ +		10 p.m.	0
	4 p.m.	0·11 %	31/1/21	3 a.m.	0
		Aufrecht	Up 6.15 a.m.	6 a.m.	0
	6 p.m.	0	Bed		
	8 p.m.	0	8.45 p.m.	8 a.m.	V. sl. tr.
25/1/21	6 a.m.	0		10 a.m.	0
Breakfast				12 noon	V. sl. tr.
6.5 a.m.	8 a.m.	+		2 p.m.	V. sl. tr.
Up 6.25 a.m.				4 p.m.	0
Lunch				6 p.m.	V. sl. tr.
10.5 a.m.	10 a.m.	Trace		8 p.m.	0
Dinner				10 p.m.	0
12.5 a.m.	12 noon	Trace	1/2/21	3 a.m.	0
Tea 4.5 p.m.	2 p.m.	0	Up 6.30 a.m.	6 a.m.	0
Supper			Bed		
8.5 p.m.	4 p.m.	Trace	8.30 p.m.	8 a.m.	V. sl. tr.
Bed	6 p.m.	V. sl. tr.		10 a.m.	V. sl. tr.
8.30 p.m.	8 p.m.	V. sl. tr.		12 noon	V. sl. tr.
	10 p.m.	0		2 p.m.	0
26/1/21	3 a.m.	0		4 p.m.	0
29/1/21	3 a.m.	0		6 p.m.	0
Up 6.35 a.m.	6 a.m.	0		8 p.m.	0
Bed 8 p.m.	8 a.m.	Trace		10 p.m.	0
	10 a.m.	Trace	2/2/21	3 a.m.	0
	12 noon	V. sl. tr.	Up 6.30 a.m.	6 a.m.	0
	2 p.m.	0	Bed		
	4 p.m.	0	8.30 p.m.		
	6 p.m.	V. sl. tr.		8 a.m.	V. sl. tr.
	8 p.m.	V. sl. tr.		10 a.m.	+
	10 p.m.	0		12 noon	+ +
30/1/21	3 a.m.	0		2 p.m.	+ +
Up				4 p.m.	Sl. tr.
12.30 a.m.	6 a.m.	0		6 p.m.	V. sl. tr.
Bed				8 p.m.	V. sl. tr.
8.45 p.m.	8 a.m.	0		10 p.m.	V. sl. tr.
	10 a.m.	0	3/2/21	6 a.m.	0
	12 noon	0			

Meals.—Meals after 25/1/21 were given uniformly as on that day.

Tests for Nucleo-protein.—These were performed on 5/1/21 at 10 a.m. and 12 noon, when none was discovered; on 25/1/21 at 8 a.m., 10 a.m., and 12 noon, at each of which times 5 per cent. was discovered; on 2/2/21, at 10 a.m., 12 noon, and 2 p.m., when none was discovered.

Deposit.—The following were results of tests for deposits: 25/1/21, 8 a.m., pus cells 0, casts 0, oxalates 0; 4 p.m., pus cells 0, casts 0, oxalates 0.

Remarks.—25/1/21 and 29/1/21, albuminuria disappears and then reappears whilst erect. 30/1/21, cal. lact. gr. xxx. at 3 p.m., 8 p.m. 31/1/21, cal. lact. gr. xxx. at 8 a.m., 2 p.m., and 8 p.m. Cal. lact. gr. xxx. t.d.s. appears to make very little difference to the albuminuria. Note that if the urine had been examined on 31/1/21 at 10 a.m. or at 4 p.m. only, a cure might have been claimed—i.e., careful controls are essential. 1/2/21, 8 a.m., cal. lact. gr. xxx. At the end of the six doses of cal. lact. the albuminuria does stop temporarily. 2/2/21, there is an unusually *large amount of albumin* in the urine immediately after the cessation of treatment by cal. lact.

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Presidential Address

ON THE

MEDICAL ASPECTS OF SOME URINARY DISEASES.

Delivered before the Section of Urology of the Royal Society of Medicine

BY SIR THOMAS HORDER, M.D. LOND.,
PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

MANY of the problems met with in uro-genital diseases are of joint medical and surgical interest, requiring the combined efforts of surgeons and physicians for their proper elucidation, and offering a field for both types of mind and for both kinds of training. The contemplation of the physician and the technique of the surgeon combine to secure the patient's welfare, for in the last analysis it is the study of the pathology of his disease and a survey of his general state which must dictate both diagnosis and treatment.

THE ENLARGED PROSTATE.

At first sight it would seem that the diagnosis and treatment of simple prostatic enlargement with its mechanical disabilities, to which our first president, the late Sir Peter Freyer, made such a valuable contribution, is a purely surgical affair; and no doubt in a large number of cases the medical interest in this condition is reduced to a minimum. And yet the mortality in prostatectomy, even to-day, is by no means a negligible affair. It is probably not less than 10 per cent. by the two-stage method, nor less than 15 per cent. by the one-stage method.[1] And this consideration alone raises the question of the desirability of reducing, if possible, the risks of operation. When the patient is elderly, as he frequently may be; when the urine is infected, as is not uncommon; or when the trouble coexists with some other known defect which may introduce its special risk during or after operation—then the case is no longer entirely surgical. Elderly patients are sometimes the subjects of latent diseases (only discovered by a complete overhauling), which may, or may not, constitute a bar to a major operation. Recently, during a routine examination of a candidate for prostatectomy, I found the patient to be a case of *chronic lymphatic leukæmia*. The reason he had been sent to me was that he was short of breath, and this symptom was thought to be of cardiac origin. Some treatment led to great improvement in his condition, and he stood his operation very well. I think most careful surgeons like their prostate patients examined methodically before the final decision is given relative to excision. I know this is not an invariable rule, because a short time ago I was asked to see a very ill man a week after his prostate had been removed, and whilst examining the bases of his lungs I came across a good-sized lump, densely hard and firmly fixed to one of his ribs—no doubt a metastatic deposit from a primary growth in the prostate, which I learned had been unusually difficult to remove. When my surgical colleagues ask me to see these candidates for prostatectomy, I find, after examination, that they can be placed in one or other of these three groups: (1) Cases in which examination reveals no abnormality which is not commensurate with the patient's age, or only reveals trivial defects which cannot be regarded as likely to prejudice the results of operation. (2) Cases in which one or more defects add to the normal risk of the procedure—defects in the heart, kidneys, blood-vessels, bronchial tract, lungs, portal system or central nervous system—but in which the degree of the defect does not contra-indicate major surgery, given very definite surgical indications for the procedure. In a good many cases some preliminary treatment will reasonably lower this added risk. (3) Cases in which one or more of these same disabilities is present to a degree sufficient seriously to imperil life by the operation, and in which little or no improvement is to be expected from treatment.

The exact surgical position is, of course, made clear to the physician at the time the patient is sent for examination, or during consultation. The surgeon may estimate that eventual difficulties are not likely to arise within a time shorter than the duration of life estimated by the physician; if so, and especially if the patient come into group 3, prostatectomy is definitely discountenanced. In group 2 come a good many cases demanding very careful judgment, as all who are familiar with this type of patient will know.

Mr. John Pardoe, a friend and former colleague of many of us here this evening, was speaking to me recently of the cases, very grave but fortunately uncommon, in which late hæmorrhage followed prostatectomy, and he confessed himself puzzled as to their meaning. An obvious suggestion is that the underlying cause is sepsis; but this is by no means certain, or demonstrated, and here seems one more problem in the elucidation of which physicians and surgeons are probably both concerned.

Whilst it is the patient's general state, rather than the local lesion, which has medical bearings in prostatic enlargement, it is both the general and the local condition which are of interest to the physician in

NEPHROLITHIASIS.

Indeed, the surgical interest in this disease centres round the end-result rather than round the pathological process. It is true that our metabolic studies do not, as yet, give us any very definite lead in the direction of the prevention of uratic and oxalic deposits in the kidney and renal pelvis; but, at least, the main principles of prevention are understood, and it is fairly certain that a large number of patients are kept in a safe position with regard to the re-formation of calculi when once they have been frightened into obedience by the experience of a nephrotomy or a nephrectomy. One of the most interesting problems that presents itself is the type of case in which calculi are known to be present in the kidney, perhaps in both kidneys, but the condition is largely latent as regards pain or hæmaturia. In these cases it is important to assess, as nearly as may be, the probable future history of the patient in respect of his trouble. His renal adequacy, and the question of sub-infection of the urinary tract—perhaps of the intermitting kind—are points which need investigation, and must be taken into account, together with points of general health and future mode of life, before a sound opinion can be given as to whether any surgical procedure shall be adopted and what its nature shall be.

PHOSPHATURIA AND OXALURIA.

Phosphaturia and oxaluria are probably of more medical than surgical interest, when not complicated by concretions of a gross kind. The known associations of both of these conditions with gastric and intestinal dyspepsia, and the close association of phosphaturia with nerve states, make it of paramount importance that the patients suffering from them should be fully and carefully examined. In the great majority of the cases it is found that such symptoms as are referable to the urinary tract are of secondary and not of primary origin, and that they yield to treatment on general medical lines, if this is carried out thoroughly and perseveringly. Again and again, however, this class of case requires, for its satisfactory elucidation, that both surgical and medical aspects of the problem be passed in review.

I will not stay to refer to difficult cases of *renal pain* with no obvious cause discoverable by the surgeon, and the moot question of exploration that arises in connexion with them; to cases of obscure *hæmaturia*,

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[1] Since writing this Mr. Thomson Walker informs me that statistics at St. Peter's Hospital show a smaller total mortality than this: 8·13 per cent. in 1276 cases from 1901 to 1918.

On examination the patient is tall, thin, and "weedy"; pale complexion; nothing abnormal found in any of the systems. Blood pressure is 122/85; temperature is 99° F., nearly every evening. The albuminuria is postural in type, but protein reappears while recumbent (see urinary tables).

TABLE IV.—*Results of Kidney Function Tests.*

Test.	Normal findings.	Cases.			
		1	2	3	4
Urea conc. (MacLean and de Wesselow). $\frac{\text{Urea }\%}{\text{Urine c.cm.}}$ at end of—					
1st hour ..	—	$\frac{0{\cdot}81\ \%}{240\text{ c.cm.}}$	$\frac{2{\cdot}84\ \%}{6\text{ c.cm.}}$	$\frac{3{\cdot}64\ \%}{60\text{ c.cm.}}$	$\frac{3{\cdot}32\ \%}{120\text{ c.cm.}}$
2nd hour ..	2 to 4 %	$\frac{2{\cdot}59\ \%}{120\text{ c.cm.}}$	$\frac{3{\cdot}53\ \%}{105\text{ c.cm.}}$	$\frac{3{\cdot}78\ \%}{60\text{ c.cm.}}$	$\frac{3{\cdot}44\ \%}{70\text{ c.cm.}}$
3rd hour ..	—	—	$\frac{3{\cdot}58\ \%}{48\text{ c.cm.}}$	$\frac{3{\cdot}10\ \%}{60\text{ c.cm.}}$	—
Diastatic index (24 hours' urine).	6 to 20 units.	—	10	6·7	10
Alkaline tide after water meal (Leathes)	Alkaline tide present.	—	Present.	Present.	—

Remarks.—All the above kidney function tests are normal in all four cases. Therefore no very gross lesions of the kidneys are present. Probably considerably more than one-quarter of the total kidney tissue is functioning (at the dates of the tests) in each patient.

TABLE V.—*To Compare the Two Groups of Postural Proteinuria (Cases 1, 2, 3, and 4) and to Summarise the Findings.*

Point investigated.	Cyclic proteinuria or functional postural proteinuria.		Organic postural proteinuria.	
	1	2	3	4
Reappearance of proteinuria while recumbent	No	No	Yes	Yes
Casts—Hyaline ..	0	0	Yes	Yes
Granular ..	0	0	Yes	0
Deposit—				
White blood corpuscles	0	0	Yes	Yes
Red blood corpuscles	0	0	0	Yes
Epithelial cells ..	0	0	0	Yes
Oxalate crystals ..	0	Yes	0	0
"Mucus"	—	0	Yes	Yes
Maximum percentage of protein passed ..	Low	F. low	High	High
Esbach	0·04 %	—	—	—
Aufrecht	—	0·11 %	0·33 %	—
Disappearance of proteinuria while erect ..	Yes	Yes	Yes	—
Quantity of urine in 24 hours	N.	N.	N.	N.
Control of proteinuria by calcium lactate ..	No†	Incomplete‡	No‡	—
Kidney function tests ..	N.	N.	N.	N.
Bacteriology of urine ..	—	—	Ent. T.B. = 0	Sterile
Œdema	Nil	Nil	Nil	Nil
Optic discs and fundi ..	N.	—	N.	—
Systolic blood pressure—				
Recumbent	—	98 to 112	122	—
Erect	—	92 to 116	96 to 122	—
Kidneys palpable ..	No	No	No	No
Lordosis	No	Slight	No	No
Temperature	N.	N.	E. 99° to 100°F.	E. 99°F.
Leucocyte count ..	—	—	21,600	—
Wassermann reaction ..	—	—	Neg.	—
Cardiac and other systems*	N.	N.	N.	N.

* Excluding the urinary system.
† Gr. viiss. t.d.s. for 7 days. ‡ Gr. xxx. t.d.s. for 2 days.
N., normal. F. low, fairly low. Ent., enterococcus.
E., evening. Neg., negative.

Centrifugalised deposit contains a very small number of hyaline casts, epithelial cells, white and red blood corpuscles; always a trace of mucus. No oxalate crystals ever observed. Culture of urine sterile. Total volume of urine per 24 hours is normal.

Conclusions.

1. "True proteinuria" probably never reappears in the recumbent position in cases of cyclic proteinuria. If proteinuria does recur while the patient is lying in bed an organic lesion should at once be suspected. "True proteinuria" is emphasised because it is obviously necessary to make certain that the protein does not come from other parts—e.g., the vagina.

2. Posture appears to be an important factor in causation but not the only factor, because in three cases on certain days protein disappeared from the urine while still in the upright position.

3. Cases 1 and 2 are regarded as true cyclic proteinurics. Case 3 is regarded as organic for the following reasons: (*a*) Proteinuria occurred while recumbent on several occasions; (*b*) a few granular casts and a few degenerate pus cells were found more than once; (*c*) the boy had an evening temperature of 99° to 100°F., and a leucocytosis of 21,600 for which no cause was found unless it was kidney disease. Culture of the urine yielded an enterococcus on one occasion (but was sterile at a later date); (*d*) occasionally the boy passed large amounts of protein—e.g., 0·33 per cent. (Aufrecht). Case 4 is also regarded as organic because of pyuria, the fact that protein recurred while recumbent and occasionally was large in amount, and the evening temperature of 99°F.

4. The albuminuria of a small organic kidney lesion may be postural in type, or in other words, the amount of protein may fluctuate in organic albuminuria so as to simulate a condition of functional cyclic albuminuria. In the latter condition, however, once the protein has disappeared from the urine as a result of lying down, it probably never reappears while the ordinary recumbent position in bed is maintained.

5. It is possible that in certain cases of mild organic disease of the kidney (or other part of the urinary tract) the proteinuria is postural in type simply owing to the drainage of the foci of disease in the erect attitude.

6. The fact that in postural proteinuria the "albumin" may appear, then disappear, and then reappear (the erect posture being maintained throughout) should make us very chary of claiming cures as a result of any particular treatment (e.g., by cal. lact.). Careful controls are essential.

I desire to express my thanks to Dr. G. F. Still, Dr. H. W. Wiltshire, Mr. J. W. Thomson Walker, and Dr. A. C. D. Firth for the opportunity to investigate these cases.

THE ESSENTIAL CAUSES OF ADENOIDS AND THEIR ASSOCIATION WITH RICKETS.

BY H. MERRALL, M.B., CH.B. VICT.

IT is obvious to even a desultory reader of contemporary medical journals that many conflicting opinions, and some downright ignorance, exist on the subject of that hyperplasia of the pharyngeal tonsil known as adenoid vegetations. Concerning the ætiology of this extremely common condition the writings even of deservedly acknowledged experts are vague and unconvincing, while their opinions on the proper treatment of the secondary enlargement of the palatine tonsils are flatly contradictory. Communications have been read at important medical gatherings preaching the rank heresy that operative treatment is unnecessary; and in widely read daily papers the public is periodically misinformed on the subject of this, perhaps the commonest, and in its national aspect perhaps the most important, disease of our time. The exacting work of the general practitioner may sufficiently excuse his lack of knowledge, and the significance of the immense accumulation of expert observations is largely misinterpreted or overlooked.

In this paper I shall endeavour to show: (1) the essential cause of "adenoids"; (2) that the close association between adenoids and rickets, long ago pointed it should be regarded as incurable. In a chronic case, whether in child or adult, no point in treatment having the least bearing upon the bowel condition seems too trivial for attention. The choice of aperients is an important point, and patients should be made to understand that it is not the frequency or regularity of the bowel action that matters so much as the character of the stool passed.

CONCLUSION.

It is, however, my métier to-night not to deal specifically with treatment of any type of case, but rather to indicate the importance of taking broad views of the pathology underlying several types. Upon staphylococcus infection I will not dwell, but merely remind you of the great importance of the cases, because of their frequent obscurity and also because of their great gravity. Both the urinary infection and the peri-renal abscess that may develop are manifestations of a pyæmia, and although prompt surgical measures are of the utmost value in draining foci when these are established, the main onus of treatment is medical in coping with the underlying septicæmia.

Before leaving this important matter of urinary infection, the mere knowledge of the fact that no longer can we regard the mere discovery of micro-organisms in the urine of a patient as indicating an infection within the urinary tract is sufficient to establish the thesis that all cases should be considered to have possible medical bearings until this is proved not to be the case. For what is the actual position? Micro-organisms in the urine may indicate one of the following conditions: (1) A mere elimination of these from the blood stream without any urinary infection at all; (2) a focal infection at some point in the urinary tract; (3) a focal infection outside the urinary tract, but communicating with it either by gross continuity or by lymphatic spread; (4) a diffuse infection of the urinary tract; (5) that the urinary tract is a "carrier" of the micro-organism, as seems the nature of some cases of bacilluria. With all these possibilities before us it is, as I say, clear that wide views should be taken of any case with which we have to deal.

OBSERVATIONS ON POSTURAL PROTEINURIA.

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OWING to the interest which has recently been shown in "albuminuria of uncertain origin,"[1] the notes of four such cases are recorded below. If postural proteinuria be considered to include all cases of "albuminuria" which decreases or disappears on lying down only to increase or reappear on rising again, then the term includes at least two distinct groups of patients—viz., group (1) where no evidence is forthcoming of any organic lesion of the kidneys (or of any part of the urinary tract)—I propose to call this group "cyclic proteinuria" or "functional postural proteinuria"—and group (2) where there is evidence of some slight organic lesion of the kidneys (or of some part of the urinary tract)—e.g., slight pyuria, occasional casts (other than hyaline), &c.—I propose to call this group "organic postural proteinuria." Naturally, where the actual position of the lesion can be defined, the cases will be termed nephritis, pyelonephritis, pyelitis, cystitis, prostatitis, &c., even though the resulting proteinuria may be postural in type at some stage of the disease (for instance, occasionally in nephritis, during recovery, the albuminuria may become postural in character); I am not referring to such cases under the heading of organic postural proteinuria, but rather to those mild organic cases which cannot so be labelled.

Of the four cases I regard Nos. 1 and 2 as cyclic proteinuria (functional postural proteinuria) and Nos. 3 and 4 as organic postural proteinuria. It is more than likely that all such groupings are purely artificial. It is possible that it is merely a matter of the severity of the disease. Very mild organic lesions tend to recover of themselves and are apt not to be followed up. It may be that our methods of investigation are not sufficiently delicate to prove the existence of an organic lesion in cyclic proteinuria.

Importance of Careful Investigation.

From the point of view of examination for life insurance, there is a tendency to regard cases of cyclic proteinuria as healthy beings, whereas cases of organic postural proteinuria would probably be deferred or heavily loaded on account of the results of the microscopical examination of the deposit, if such examination was performed. The main purpose of this paper is to indicate the importance of very careful investigation of these cases of postural proteinuria, lest the patient belong to the second group (organic), and the early stages of disease be allowed to pass untreated. It is admitted that the majority of the second group probably recover spontaneously, but it is possible that some of them may advance, and so occasionally justify the suspicion with which postural proteinuria is viewed by insurance companies. It is suggested that the examination of the urine for protein at frequent intervals (e.g., every two hours for one or two days), combined with a microscopical examination of the centrifugalised deposit of some of the specimens in which protein is found, provides a simple (though somewhat laborious) method of determining whether the patient belongs to the group of organic postural proteinurics or to the group of cyclic proteinurics.

I consider the term "cyclic proteinuria" very appropriate for the latter group. It contains no suggestion of the underlying cause, but reminds one of the extraordinary variations which may occur in any given period of 24 hours—variations, which to my mind, it is essential to demonstrate before diagnosing cyclic proteinuria. "Albuminuria of adolescence"[2] is not sufficiently comprehensive because this condition may occur long before puberty; "hæmatogenous albuminuria" is far too comprehensive because many physicians use it to embrace albuminuria resulting from various anæmias, or occurring in the course of acute specific fevers, &c. "Proteinuria" is obviously a more accurate term than "albuminuria."

I wish particularly to emphasise a fact often overlooked in judging the value of quantitative renal function tests—viz., that it is estimated that probably not until about three-quarters of the total kidney tissue has functionally been put out of action do such tests reveal any abnormality. I refer, of course, to estimations of the functional activity of the two kidneys together. The surgeon is able with the aid of ureteric catheterisation to compare the function of the two kidneys. How far "catheter inhibition" may interfere with the absolute quantitative measure of the function of each kidney separately is at present imperfectly known. Obviously, therefore, in cyclic proteinuria the current tests of renal efficiency will chiefly be of negative value in that they exclude very gross kidney lesions. While discussing this point I should like to draw attention to the case published by Dr. Ivor T. Davies in THE LANCET of Dec. 18th, 1920. It is perfectly reasonable to consider that at the time the diastatic index was normal (a month before death) probably more than a quarter of the total kidney substance was functioning—that is all the result implied at the time the test was made. It is necessary to repeat kidney function tests at intervals if it is desired (*a*) to show that the amount of damage has not reached the "three-quarter line,"[3] or (*b*) the degree of damage having reached that point, to obtain

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[1] THE LANCET, 1920, i., p. 868, and 1921, i., pp. 116, 126, and 136.

[2] Dr. R. Hingston Fox: THE LANCET, 1921, i., 116.

[3] Three-quarters is adopted merely as a rough working hypothesis.

At a meeting of the section of the Royal Society of Medicine devoted to the subject of "the causes and non-operative treatment of adenoids," to which reference has been made, many causes of adenoids were given by various speakers—e.g., faulty digestion of starch, bottle-feeding, improper food; all these are also claimed by pediatrists to cause rickets. It will doubtless be urged that defective feeding will produce rickets in animals, but Zeim's experiments showed that deformities in the neighbouring bones are induced in puppies by closing up their nostrils.

Essential Element of Causation.

The essential element in the causation of adenoid vegetations is the overworking of the lymphatic glands situated behind the soft palate by repeated colds and by the exanthemata.

In this situation exist a number of collections of adenoid or lymphoid tissue, called lymphatic glands, and when in certain places, tonsils. As Waldeyer pointed out, they form a double ring, inner and outer, the members of the latter ring being situated amongst the muscles of the neck and under the skin, and only becoming obvious when swollen, inflamed, or suppurating. The inner ring is formed by the pharyngeal tonsil, also called Luschka's gland) by the Eustachian tonsils (collections of lymphoid tissue situated at the orifice of the tubes of that name), by the palatine and lingual tonsils, and by various unnamed patches of adenoid tissue on the walls of the pharynx and naso-pharynx. The glands of this inner ring all possess two striking features common only to them and to certain similar structures in the alimentary canal —i.e., they appear on the surface, are subepithelial instead of being covered by superimposed structures, as are the lymphatic glands of the limbs and trunk; and they possess no afferent lymphatic vessels. Enlargement or catarrhal inflammation of the naso-pharyngeal tonsils constitutes adenoids. These tonsils are not dangerous vestigial relics, but extremely important organs constituting local defences, and bearing a large share in the production of "immunity." The subepithelial members are situated at various points in the alimentary canal in zones which have been referred to as vulnerable spots. The glands forming Peyer's patches, and even the appendix vermiformis, are examples of these defences. These glands are composed of nodules, the lymph follicles, consisting of a network of adenoid tissue in which are embedded large and small lymph cells identical with the leucocytes in the blood. Both varieties are powerfully phagocytic, but the smaller type is far more numerous; its members pass into the blood directly and also through the efferent lymph vessels, and constitute 20 per cent. of the total white blood cells.

The subepithelial masses of adenoid tissue lie so close to the surface that lymph cells and epithelial cells are intermingled. Though scarcely represented in fœtal life they reach their highest development and are functionally most active in the early years of childhood, when immunity is acquired against the exanthemata and other infectious diseases. The facts that lymphocytosis occurs most frequently during childhood and that lymphocytes form a relatively larger portion of the blood in very young children are thus explained. Numerous important investigations have been made with reference to the function of these glands by Watney, Ranshoff, Ruffer, Flemming, and Digby,[16] amongst others, and the phagocytic action of the lymph cells, which goes on freely not only in the interior of the glands but on the surface, must be regarded as conclusively proved.

Inflammatory enlargement of the subepithelial glands, with consequent lymphocytosis, is characteristic of a variety of diseases—e.g., tuberculosis, diphtheria, malaria, mumps, rickets, syphilis, the exanthemata, and recurring colds; in the last case the glands affected are the pharyngeal and palatine tonsils. Consisting of a congeries of lymphocytes, held together by a supporting meshwork of retiform tissue, these tonsils become greatly enlarged when the throat and nose are invaded by the micro-organisms which occasion a cold. The first to suffer is the pharyngeal tonsil; repeated attacks render the enlargement permanent. The tonsil becomes fibrous and its defensive functions are thereby lessened. A more severe cold results in the destruction of many of the lymphocytes, and these, with the increased amount of mucus secreted, constitute the muco-purulent discharge of catarrh. A great number of micro-organisms have the property of causing symptoms of a cold. R. W. Allen[17] has identified five, but it is highly probable that besides these, and those others which cause the various exanthemata, many more produce catarrh.

Functions of the Nose.

Leaving out of consideration the olfactory, respiratory, vocal, and gustatory functions, also the drainage of the sinuses and ventilation of the Eustachian tubes, the principal nasal functions are to filter, warm, and moisten the air. According to StClair Thomson and R. T. Hewlett,[24] from 1500 to 14,000 organisms enter the nose during one hour's tranquil respiration.

The cilia sweep back the grosser particles, and the nasal mucous membrane has been said to be bactericidal; the expired air is sterile, but this alteration, in virtue of some ingenious experiments performed by Greville Macdonald and others, have proved this sterility to be due to conditions obtaining in the nose and naso-pharynx. It is obviously quite impossible that in health all the micro-organisms entering the nose are expelled by the ciliated epithelium or entangled in its bactericidal mucus. Diagrams have been made to show how the air in its passage through the nose arches upwards, backwards, and downwards. But for each and every individual micro-organism to come into contact with one or other of the walls of the nasal cavities and for none to pass through the nose without touching these walls during the short period of the time taken in the performance of even only one respiratory act, is manifestly impossible. Entering through the nostrils, the air impinges on the posterior naso-pharyngeal wall in the situation of the pharyngeal tonsil and is deflected into the larynx. The remarkable researches of Metchnikoff, which proved the function of the white blood cells to be not merely scavenging but also effectively bactericidal, should have led us to suspect the fate of the hordes of micro-organisms entering the body during respiration. Is it not remarkable that the stream of air entering through the nose first impinges on a group of surface defences? The sterilisation of the air is partly, perhaps mainly, performed by the naso-pharyngeal tonsils which are the first to suffer from enlargement, inflammation, and suppuration, the other members of the inner ring only becoming affected secondarily.

Presence of Micro-organisms in the Subepithelial Lymphatic Glands.

Digby[18] found the presence of bacteria easily demonstrable in the vermiform appendix of the rabbit, and quoted Ruffer and Butterfield who, working independently, found them present in large numbers in human tonsils. Mucus from the tonsils of four healthy (human) subjects was found by Ruffer to contain numbers of "leucocytes full of microbes."

It is highly probable that the small lymphocytes passing between the epithelial cells attack, kill, and absorb the micro-organisms present on the surface, and return with them to the interior of the gland from which they emerged. They are definitely phagocytic and motile. They originate from the same blastodermic layer as the digestive tract. General increase of lymphatic structures, particularly of the subepithelial variety, signifies prolonged bacterial assaults. The heart may be weakened by the presence of toxins in the blood, and therein lies the explanation and the cause of status lymphaticus.†

The overworked, chronically enlarged pharyngeal and palatine tonsils become a source of danger to the individual and may give rise to toxæmia. "That chronically enlarged tonsils or marked adenoids have lost their defensive powers, and come to resemble a choked filter, is shown by the greater frequency with which adenoid children contract diphtheria and scarlatina and by the severity of throat and ear complications in such cases" (Thomson).[19] And besides the remarkably prompt and beneficial results following operative removal of adenoids, it is a matter of almost daily observation to note the improvement in the complexion and health of patients suffering from naso-pharyngeal catarrh after a course of local treatment. The frequency with which appendicular troubles are relieved by similar throat treatment cannot be explained as coincidence. Pybus[20] mentioned the occurrence of appendicitis following throat affections in 1915, and Eustace Smith points out that in some specific fevers—e.g., scarlatina—it is found post mortem that all the subepithelial lymphatic glands are affected.

Examination of the blood reveals, as the phagocytosis or lymphocytosis would lead one to suspect, a degree of anæmia. There is also diminution of alkalinity—sometimes referred to as acidosis—due probably to respiratory obstruction occasioning increased production of carbon dioxide. Some of the mental and physical defects noticed have been explained by these changes in the blood. Many authorities[21] have commented upon the improvement after operation. Given anæmia, lack of muscular tone is inevitable, and the habit

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† Ehrlich suggested that preliminary to phagocytosis the blood plasma played a part in virtue of alexin and the amboceptor, and Wright teaches that micro-organisms are first acted upon by a mysterious opsonin which prepares the way for the phagocytes. But the phagocytic action of the large and small glandular lymphocytes appears difficult to explain by either of these theories.

TABLE III.—*Urinary Examinations.*

CASE 4.—S. G., aged 17, male. The urine of this patient was examined at short intervals for 1½ days only.

Date.	Time of day.	Total coag. prot.	Deposit.	Posture with time.
21/3/21	3 a.m.	V. sl. tr.	—	In bed.
	6 a.m.	V. sl. tr.	—	—
	8 a.m.	0	—	Up 8.15 a.m.
	10 a.m.	+	Hyal. casts, v. few Epith. cells, few W.b.c., v. few R.b.c., v. few Mucus, trace	—
	12 noon	Trace	—	—
	2 p.m.	+ + +	Casts, nil E.p.c., few W.b.c., v. few Mucus, trace.	
	4 p.m.	+ +	Same as at 10 a.m.	—
	6 p.m.	+ + +	Same as at 2 p.m.	Bed 6.30 p.m.
	8 p.m.	+	—	—
	10 p.m.	0	—	—
22/3/21	6 a.m.	0	—	—
	7 a.m.	V. sl. tr.	—	—
	8 a.m.	V. sl. tr.	—	—
	9 a.m.	0	—	Up 10 a.m.

Remarks.—21/3/21 (3 a.m. and 6 a.m.): Albuminuria while recumbent. 22/3/21 (7 a.m. and 8 a.m.): Albuminuria recurs though lying flat.

maternal or the paternal grandparents. Specimens of urine have been obtained from father, mother, and brother, in the morning immediately before rising, at midday, and in the evening. No albumin had been found in any of these specimens.

"The child is pale with a waxy complexion; dark lines are visible under her eyes and she is apt to get 'styes.' No abnormal degree of lordosis is present. Her tongue is clean and both tonsils have been removed except for a fragment of tonsillar tissue on the right. Nothing abnormal in lungs or abdomen; apex of heart one finger's breadth to left of nipple line in fifth intercostal space, but heart sounds normal; fundi and discs quite normal; urine, acid to litmus has a specific gravity of 1025. Albumin, sugar, and acetone bodies all absent. The deposit shows nothing abnormal, no calcium oxalate crystals or casts. Albumin in evening specimen if the girl is allowed to get up during day; it never reappears while recumbent. On several occasions protein has disappeared and then reappeared whilst erect. The patient passes a normal quantity of urine during the 24 hours." She stayed in hospital until Oct. 7th, 1919, for the purpose of the observations here given. She vomited once during the evening, probably due to an indiscretion in diet. She developed a stye in her left upper eyelid on Oct. 1st, 1919. Otherwise she remained perfectly healthy throughout.

On March 21th she came to see me as an out-patient: "She has been up and about like other healthy children since leaving King's College Hospital on Oct. 7th, 1919, nearly six months ago. She has suffered two or three attacks of listlessness with anorexia, and there has been very occasional morning vomiting during these attacks (compare history obtained on second admission). Otherwise she has been perfectly well. She has been to school throughout. I have examined her thoroughly all over but find nothing fresh. Her abdomen has been carefully palpated both in the erect and the recumbent position for any sign of movable kidneys with negative result. The lower margin of the liver is just palpable."

In May, 1921, this patient developed miliary tuberculosis, culminating in death on June 28th. At autopsy the findings were typical of the condition. The lungs were so closely studded with miliary tubercles that on section no normal tissue was anywhere visible. The mediastinal glands were much enlarged and caseous, especially about the left bronchus. Both kidneys were slightly enlarged; cortex pale; capsule slightly adherent; surface of each nodular, due to cortical tubules. On section both showed very numerous tubercles, especially in the cortex; the left organ also contained a fair number in the medulla. Histologically a complete investigation has not yet been made, but it is doubtful whether anything of value re the postural proteinuria could be demonstrated with such extensive tuberculous changes superimposed. The cause of death is of special interest in that Mazzolini (*Ric. Osped.*, Jan. 15th, 1920) regards postural proteinuria as possible evidence of incipient tuberculosis.

CASE 2.—Q. S., age 19, female. "Admitted December, 1920, complaining of malaise and pain in the back for two years; has not been able to work since November, 1919, because she often feels faint. Has had to come out of church for the same reason; actually fainted twice, a year ago. Pain in back not relieved by lying down. She has never vomited. Vision subjectively is perfect; no swelling ever observed. She had measles and whooping-cough as a child, and scarlet fever at 12. Seven years ago she attended this hospital for 'spinal curvature' and believes that she also had a 'bad heart.' Both parents alive and well; no consanguinity. Three brothers and one sister alive and well. Mother's sister died at the age of 40 from 'kidney trouble.'

"On examination, patient's complexion pale, she looks frail and 'weedy,' and is somewhat thin. No glandular enlargement. Slight lordosis is present. Nothing abnormal detected in any of the systems. Kidneys not palpable in either erect or recumbent position. Systolic blood pressure, while recumbent, varies from 98 to 112 mm. Hg, and while upright from 92 to 116; after taking exercise it has risen to 136, falling to 112 in five minutes, temperature normal. Posture is perhaps the chief, though not the only, factor in the production of albuminuria (see urinary table). On one occasion she has stayed up all night and has gone to bed in the day. As would be expected she passed albumin that night, but not during the day, while in bed. Protein has never reappeared in the urine while the patient is recumbent. Calcium oxalate crystals are frequently found in the urinary deposit, but never any cells or casts. Cultures of the urine have not been made. The effect of calcium lactate is shown in the urinary table. The quantity of urine in the 24 hours is normal. She has felt faint and turned very pale several times while in hospital, and has had to lie down, but has never become unconscious. Menstruation normal; X ray of chest reveals nothing abnormal."

CASE 3.—A. K., age 15, male. "Admitted January, 1921, for investigation. Albumin has been found in the urine, and there is a history of two 'fits' (1) 18 months previously; (2) Christmas, 1920. The history is not typical of epileptic fits; more probably they were only faints. Otherwise the boy has been perfectly healthy; no shortness of breath, no swelling, 'vision perfect.' Had measles and chicken-pox as a little boy and German measles at 11; has never had scarlet fever or any sore throats. His father and mother alive and well; they are second cousins. He has one brother of 24 who is said to have albuminuria, and one sister of 21 who has fainted four times. Specimens of urine have been obtained from brother and sister in the morning before rising, at midday, and in the evening. The brother's midday specimen contains a very slight trace of protein, but nothing abnormal in centrifugalised deposit. The other specimens are protein-free, as are those obtained from the sister. Further investigation is not possible.

"On examination the boy looks perfectly healthy. Nothing abnormal has been discovered except for the evening temperature of 99° to 100° F., the leucocytosis, and the urinary findings. No lordosis; X ray chest normal. Kidneys not palpable erect or recumbent. Discs normal. No œdema. Testes and cords normal. White blood corpuscles 21,600, of which polymorphs = 76·4 per cent., eosinophils 1·2 per cent., lymphocytes 16·8 per cent., hyalines 5·2 per cent., and mast cells 0·4 per cent. Wassermann negative. Systolic blood pressure recumbent = 122, erect 96 to 122. The albuminuria is postural in type, but on several occasions protein has reappeared while the patient remained in bed. On two occasions the percentage of protein excreted has been high. At different times granular casts, hyaline casts, and leucocytes have been found in very small numbers; calcium oxalate crystals have never been seen; there is always a trace of mucus. Culture of urine on one occasion yielded an enterococcus, on second occasion sterile. Tubercle bacilli have not been found. Calcium lactate (gr. xxx. t.d.s. for six doses) has not controlled the albuminuria. The quantity of urine passed in the 24 hours is normal. The very marked variations in the quantities of protein passed on different days suggest that the albuminuria may have been postural in type simply as a result of the drainage of the foci of disease in the erect attitude."

The boy was readmitted in April, 1921, under Mr. Thomson Walker, who has very kindly allowed me to report the following findings: cystoscopy, nothing abnormal observed in the bladder or at the mouths of the ureters. X ray of kidneys: no evidence of calculus. Catheterisation of ureters; free flow of urine from each side; catheter passed more easily on the left than on the right. The urine from the right kidney contained a fair number of granular and a few hyaline casts; on the addition of a few drops of salicylsulphonic acid, the specimen went almost solid, indicating the presence of considerably more protein than could be accounted for by the small quantity of blood resulting from the passage of the catheter; culture sterile. No casts were found in the urine from the left kidney; there was a trace of protein due to the slight amount of blood resulting from the operation.

CASE 4.—S. G., aged 17, male. Admitted March 15th, 1921, for investigation. Albumin had been found in urine during a medical examination required when applying for an appointment. Family history and past history: *nil ad rem.*

Ziehl-Neelsen method for acid-fast bacilli; (2) each tonsil was cut into two halves with a sterile knife and films made from the cut surfaces. These films were examined for acid-fast bacilli in the usual way; (3) one half of each tonsil was fixed, dehydrated, and embedded in paraffin. Sections were stained by (*a*) hæmatoxylin and eosin for histological structure, and (*b*) carbol-fuchsin and methylene-blue for acid-fast bacilli; (4) the other halves of the two tonsils were ground together in a mortar (with a little sterile sand added to facilitate disintegration), digested with 40 c.cm. of 1 per cent. antiformin for an hour to destroy secondary organisms, centrifuged and washed several times, and the resultant deposit inoculated subcutaneously into guinea-pigs.

Results of Examination.

One hundred cases were investigated. Unfortunately in five instances the animal test was omitted, and in one instance the crypts and cut surfaces were not examined. The histological section proved to be the most satisfactory method of examination; and it was considered important to prepare both acid-fast and hæmatoxylin and eosin sections in each case. In those instances where histological examination raised any questions of doubt, another series of sections was made. Space does not permit us to give a detailed record of the cases, but briefly stated the results obtained were as follows:—

1. Ninety-five cases showed no bacteriological evidence of tuberculosis.
2. Five cases (Nos. 30, 35, 53, 74, and 90) showed typical giant cell systems.
3. Two of these (Nos. 30 and 53) showed acid-fast bacilli morphologically identical with tubercle bacilli.
4. No positive findings were obtained either in films from crypts or cut surfaces, or from guinea-pig inoculations. Unfortunately, the deposit obtained from the tonsils of one of the two cases showing bacilli was not inoculated into guinea-pigs.
5. The histological lesions in the five positive cases were beneath the crypts of the tonsil, thereby corresponding to the "focal crypt" type of infection recorded by Weller.
6. No family history of tuberculosis was obtained in any of the five positive cases.
7. Incidentally it was noted that three cases (Nos. 40, 52, and 71) showed minute multiple abscesses of non-acid-fast bacteria. This question of the inter-relation of septic infection and the tubercle bacillus we regard as very important, and it will form the subject of our inquiry in another series of a hundred tonsils, upon the examination of which we are now engaged.

Conclusions.

1. Five per cent. of unhealthy tonsils associated with enlarged cervical glands were found to show histological lesions of tuberculosis (giant cell systems). Two per cent. contained morphologically typical tubercle bacilli. These results agree closely with those obtained by other workers in general routine examination of tonsils.

2. Failure to obtain any positive results when large quantities of tonsillar tissue were injected into guinea-pigs is difficult to explain. Considerable care was taken at the autopsies of these animals, and in each case naked-eye evidence was not considered sufficient. Films were always made from the splenic pulp, and from the site of inoculation or any other suspicious lesion which existed. Three explanations of this failure are possible: (1) the tubercle bacilli, being very few in number, were lost in the manipulations of centrifugation, &c.; (2) the lymphoid tissue had effectively dealt with invading tubercle bacilli; (3) the tubercle bacilli were of low virulence (? bovine).

3. Pending a more thorough inquiry now being carried out in a second series of cases, we would tentatively suggest that the chain of events in enlarged tonsils with cervical adenitis is as follows: (*a*) enlargement of tonsils from chronic septic absorption from crypts and unhealthy surfaces of tonsils, followed by (*b*) cervical adenitis due to toxæmia; and (*c*) implantation of tubercle bacilli on the already enlarged unhealthy tonsil, with (*d*) subsequent absorption of bacilli along the lymphatics from tonsil to cervical glands. This process is probably slow and insidious, and the infecting tubercle bacilli are few in number. And, of course, presumably not every enlarged tonsil goes on to stages (*c*) and (*d*).

Inasmuch as the march of infection is normally from the tonsil towards the cervical gland—as indicated by the anatomical researches of Wood,[6] Poirier,[7] and others—the correct surgical procedure would appear to be removal of the tonsil rather than of the cervical glands. Our clinical experience during the past few years further supports this view, so that we now look with disfavour on primary operations on the glands. If the tonsils are properly enucleated it will be found that in a large number of cases the glands tend to disappear; in some cases the operation on the tonsils may cause the glands to break down, in which case aspiration with a suitable syringe is all that is required, and the remainder of the gland undergoes absorption, but should a sinus persist one or two doses with X rays will usually suffice to produce a cure without any disfiguring scar.

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A STUDY OF DYSENTERY IN THE FIELD.

WITH SPECIAL REFERENCE TO THE CYTOLOGY OF BACILLARY DYSENTERY AND ITS BEARING ON EARLY AND ACCURATE DIAGNOSIS.

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Introductory.

HAVING been attached to a casualty clearing station which landed on Suvla Bay at the beginning of August, 1915, and remained there till the evacuation in December of the same year, I had an opportunity of studying dysentery from the clinical point of view during its period of maximum prevalence, at a time when the morbidity rate from this disease had a very critical bearing on the military situation. The clearing station was afterwards moved to Egypt, and during the three succeeding years had to deal with troops which included always a residue of the Gallipoli force together with reinforcements which were continually arriving from temperate as well as tropical climates. In this way I was enabled to collect material and make notes during three subsequent dysentery epidemics—namely, those of the autumn of 1916 on the Suez Canal, of 1917 in the Sinai desert, and during 1918 in various parts of Palestine.

This paper therefore embodies the results of work during my four years' experience of dysentery in the field. Observations during the first two years were necessarily confined to clinical and statistical phenomena. In 1917 a laboratory was attached to the casualty clearing station and from that time pathological records were always available. Special attention has been given to the subject of early diagnosis based upon the cytological examination of the cellular exudate.

STATISTICS.

The importance of the disease under discussion, in its relation to military operations, is shown by the figures (Table I.) collected from the returns of the casualty clearing station on Suvla Bay in 1915.

While the Imperial Forces were being concentrated in Egypt, that is, during the comparatively quiescent period from January to December, 1916, I was out by Biaggi,[1] Marfan,[2] and others, may be due to a close relation of the causes of these two diseases.

Causes of Adenoid Vegetations.

Essential Causes Overlooked.—On the subject of adenoid vegetations, as they were termed by Meyer in his classical description, much has been written, but their essential cause has, in the main, been overlooked; and lacking a clear understanding of the cause of this hyperplasia of the pharyngeal tonsil, efforts at prevention must be ill directed and ineffectual. But an experience of many years and of a large number of cases teaches me that the essential ætiological element can be clearly differentiated, not only with great advantage to methods of prevention but also with an increase of understanding of the numerous complications of this common and serious condition.

Causes according to Rhinologists.—StClair Thomson,[3] in his remarkably clear and comprehensive text-book, mentions heredity, status lymphaticus, climate, and catarrh. Ballenger[4] refers to the exanthemata. Tilley[5] believes in heredity but quotes Osler on the influence of disturbances in the lymphatic system. Ball[6] lays stress on the exanthemata, particularly measles, whilst Greville Macdonald[7] many years ago pointed out the influence of cold and damp climates, the frequency with which the Jewish race is affected, and, in common with many other observers, mentioned the influence of frequent cold-catching, although he, like most others, thought that this latter might be an effect rather than a cause. Indeed, this is one of the vicious circles so familiar to all rhinologists: adenoids cause catarrh and catarrh causes adenoids.

Causes according to Pediatrists.—H. Campbell[8] thinks that hyperplasia of the pharyngeal tonsil is part of a general hyperplasia of adenoid tissue throughout the body—i.e., status lymphaticus—due to a defect in the plasma resulting from intestinal indigestion caused by imperfectly salivated food. Cautley,[9] whilst attaching some importance to the vicious circle of adenoids and catarrh, believes bottle-feeding and rickets mostly to blame. He thinks almost all children with adenoids suffer from rickets, but that rickets may be present without adenoids. Pritchard[10] believes that Mellin's food, which is largely maltose (the penultimate stage in the digestion of starch) renders children particularly liable to the disease. Stuart Low has, however, pointed out that adenoids are extremely common in breast-fed children.

Symptoms and Sequelæ of Adenoid Vegetations.

In the compass of an article it will be impossible to do more than tabulate the symptoms of adenoids, which are classified by their production of (1) nasal obstruction, (2) reflex phenomena, (3) secondary affections, (4) constitutional changes.

1. *Nasal Obstruction.*—The posterior naso-pharyngeal wall in many subjects presents a plane surface; in a few it is protuberant over the situation of the second and third cervical vertebræ, and in the latter cases a moderate degree of enlargement of the pharyngeal tonsil causes obstructed respiration. In other cases a large mass of adenoid tissue, infiltrated with the products of inflammation and giving rise to effects other than obstruction, may be sunk in a recess. In infants stenosis causes convulsions, laryngo-spasm, and vomiting; they are said to swallow their tongues and fight for breath. In older children are apparent mouth-breathing, snoring, breathlessness, slowness at meals or bolting of food, and alterations in the voice, which becomes "dead." "Clapham Common" becomes "Claphab Cobbod." These patients are said to speak through the nose, which is precisely what they do not do. The most pleasing quality of the human voice depends upon the naso-pharyngeal passage being free and its walls smooth. The mouth is dried by the passage of air, and thirst results. The presence of muco-pus behind or below the soft palate is always pathognomonic.

2. *Reflex Phenomena.*—Such are paroxysmal cough, sneezing, stridulous breathing, laryngo-spasm, asthma, chorea, convulsions, epilepsy, nocturnal enuresis, restlessness, stammering, and stuttering. To relieve most of these symptoms—even epilepsy—by operation is a matter of daily occurrence; in obstinate recurring colds with attacks of dyspnœa, and in cases of nocturnal enuresis, results of operation are remarkable.

3. *Secondary Affections.*—The commonest and most important complication is the affection of the ear. More than 60 per cent. of patients with adenoids are more or less deaf. Inflammation spreads through the Eustachian tubes and may extend through the tear duct, leading to conjunctivitis and other ocular troubles. The appearance of stupidity is due to the open mouth, to deafness, and to deficient oxygenation of the blood. Gastric disturbances are caused by the extension of catarrh into the stomach, and by the swallowing of affected mucus—hence dyspepsia, anorexia, morning nausea, and vomiting. Cervical adenitis, at first simple inflammatory hyperplasia, but apt to become tuberculous, is another important secondary affection.

4. *Constitutional Changes.*—The upper jaw undergoes a striking alteration in shape, which many observers ascribe to rickets. It is usually bent upwards, but sometimes forwards. The normal flattish Norman arch becomes Gothic; this upward bending brings the alveolar edges of the jaw closer together; the teeth become crowded and irregularly set. In some cases the incisors and canines appear one in front of the other. The upward displacement also obstructs nasal breathing, for the roof of the mouth is the floor of the nose; in this manner deflection of the septum nasi is accounted for. Alteration in the shape of the jaw also accounts for the characteristic "adenoid-facies." Chest deformities arise from impeded nasal respiration, particularly where oral breathing is also obstructed, as by enlarged palatine tonsils. Inspiration draws in the lower ribs with retraction or depression of the manubrium sterni, or the ribs are drawn upwards along the costo-chondral margins, and the child becomes pigeon-breasted. Besides these changes, I have frequently noted lateral curvature of the spine, and in an experience of well over a thousand cases have almost invariably found falling of the plantar arch with the production of marked flat-foot. According to Reinhardt, 17 per cent. of United States recruits were rejected for flat-foot alone—an indication of the extent to which that disability exists among the people of a vigorous nation. Other important disabilities are occasioned by the interference in education and physical development brought about by repeated attacks of feverish colds, often mistaken for the preliminary stage of measles and constituting—when the outer members of Waldeyer's ring of lymphatic glands are affected—the so-called glandular fever. Extension of catarrh or inflammation into the Eustachian tubes, with consequent deafness, may partly explain the fact that many school children of this type occupy the lowest positions in their classes. Unfitted by their disabilities for games, the young subjects of adenoid growth frequently become soured by misunderstanding and their sense of deficiency in comparison with other children. They are seldom heard whistling or singing. In an institute devoted to the treatment of rickety children, Biaggi[11] found 90 per cent. had adenoids, while according to Marfan[12] all adenoid children are the subjects of rickets. Deformities of jaw, spine, feet, and chest—catarrh of the naso-pharynx extending to the ears, nose, larynx, lungs, stomach, and intestines—what are these but symptoms of rickets?

Causes of Rickets.

According to most authorities the causes of rickets are chiefly dietetic. Bottle-feeding, starchy food, and other improper alimentation are mostly held to blame. But, as previously mentioned, Stuart Low[13] pointed out the common occurrence of adenoids in breast-fed children, whilst according to Pritchard[14] Mellin's food renders them particularly liable to the condition.

The Catarrhal Side of Rickets.—R. Hutchison[15] quotes with approval two sayings of Sir Wm. Jenner's: first, "Rickets is the most common and in its indirect results the most fatal of all the diseases which peculiarly affect children"; and secondly, "It would be as reasonable to regard rickets as a disease of the bones only, as it would be to regard typhoid fever as merely a disease of Peyer's patches." And Dr. Hutchison remarks, "You must remember there is a visceral side as well, which so far as effects upon life are concerned, is more important than the mere deformities due to alterations in the bones" and "The visceral changes consist first and chiefly of catarrhs affecting the lungs, stomach, and intestines."*

Rickets and adenoid vegetations were both known long before Meyer and Glisson described them. Reference to the paintings of the Renaissance or to the sculptures of antiquity will show the characteristic "adenoid facies," while Hippocrates frequently referred to the disease; he wrote, "those who suffer from headache and running ears have a high arched palate and irregular teeth."

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* Several of the photographs illustrating Dr. Hutchison's work on children's diseases are very characteristic of adenoids.

amœbic variety. Taking the bacillary cases at the very minimum, that is, those in which Shiga's bacillus or the Flexner Y bacillus were isolated and gave the correct biological and agglutination tests, the numbers are:—

Bacillary dysentery	116, or 95·9 per cent.
Amœbic dysentery	5 ,, 4·1 ,,

If we take the bacillary figures at their maximum, that is, including all diagnosed from a microscopic examination of the cellular exudate provisionally as bacillary dysentery, then the numbers are:—

Bacillary dysentery	385, or 98·7 per cent.
Amœbic dysentery	5 ,, 1·3 ,,

Either of these findings can be taken as a significant indication of the relative importance of the two main types of dysentery in the field.

In 1918 the troops had advanced well into the hills of Palestine, where the water difficulties of the previous year were practically at an end, where the climatic variations were less suited to the rapid increase of flies, and where the conditions of life generally were less foreign to men from the Dominions or the United Kingdom. The result was, that from a military point of view, dysentery became a disease of secondary importance and at no period of the year did it acquire the significance of an epidemic. For the greater part of the year I remained attached to No. 3 Military Laboratory, which had moved up with the advancing troops, and the total examinations of fæcal specimens for the 12 months did not exceed 2000.

In the late summer and autumn a widespread malarial infection threw a heavy strain upon all the laboratories, and little time could be spared for the culture of fæces, so that dysentery statistics are not as complete and telling as they were in the previous years of the war. Out of 2000 examinations the cases diagnosed as true "dysentery" numbered 708. Of these only 80, or 11·3 per cent., were diagnosed as amœbic, and 628, or 88·7 per cent., as "probably bacillary." A certain number of the latter were cultured and in a small proportion B. Shiga and B. Flexner Y were definitely isolated.

Note.—Under the heading of B. Flexner Y I have included the classical mannite-fermenting bacilli. The slight differences between the original Flexner[1] strain and the Y bacillus of Hiss[2] and Russel are so evanescent that for all practical purposes they can be disregarded. Both are agglutinated in moderate dilution by the specific sera issued by the Lister Institute.

CYTOLOGY.

The special investigation regarding the cytology of the stools of bacillary dysentery, with a view to establishing a differential diagnosis as near the front line as possible, was carried out chiefly during the period of highest incidence in 1917. At that time the casualty clearing station with the adjacent laboratory was situated about ten miles behind the active troops, and patients were usually under observation within from one to three days after the commencement of their illness. The rule was that every patient admitted with diarrhœic symptoms was allotted a clean bedpan, and his first stool after admission was immediately taken down to the laboratory, where the microscopical examination of the fresh specimen was carried out often within 15 minutes of defæcation. A likely piece of the stool was selected and transferred by means of a platinum loop from the bedpan to a clean slide. A cover-glass was then superimposed and gently pressed down so as to give an even transparent film of a thickness sufficient to allow the free movement of any contained entamœbæ.

Classification of Cells.

The microscopic picture in an early case of dysentery is always a striking one, on account of the typical cellular exudate presented, and it is perhaps convenient to describe here the differential features of the characteristic cells and organisms found therein.

1. *Cells derived from the gut wall*:—(*a*) *Squamous epithelial cells.*—These are derived from the margin of the anus, are usually of horseshoe shape, and have the characteristic large oval nuclei.

(*b*) *Columnar epithelial cells.*—These are derived from the inner coating of the intestinal wall, are usually isolated, but are sometimes found in orderly clumps. Owing to osmotic pressure in the liquid stool they are often pear-shaped and the rounded nuclei are usually easily identified.

(*c*) *Endothelial cells* may be recognised in at least three distinct varieties. (i.) *Plasma cells.*—These are larger than mononuclear leucocytes and are oval in shape. The protoplasm is not refractile and there is a large oval nucleus usually ex-centrically placed. (ii.) *Macrophage cells.*—These are derived probably from the endothelial lining of capillary walls, vascular as well as lymphatic. They are polygonal when in clumps but usually are isolated and of rounded shape. In size they are generally larger than any other cells in the stool, measuring 15–30 μ in diameter, or even more, and have a large well-defined nucleus of reticular structure and ex-centric in position. The cytoplasm is not refractile but is often vacuolated and may contain red blood corpuscles, leucocytes, and lymphocytes—that is, they are phagocytic. Their exact appearance is dependent to some extent upon the degree of osmosis which has taken place. The size and shape of these cells and the presence of included particles sometimes render it a difficult matter to differentiate them from entamœbæ, but the motility and refractility of the latter are usually conclusive, and in the living state there should be no great difficulty. (iii.) *Irritation or tissue mast cells.*—These are irregular in shape and about the size of a leucocyte. The nucleus is ill-defined and the protoplasm coarsely granular. It is difficult to differentiate these cells from eosinophiles until they are stained.

2. *Cells derived from the blood.*—There are usually large numbers of red blood corpuscles in all varieties of acute dysenteric stools. The white cells are classified according to the nomenclature used in most text-books:—(*a*) Polymorphonuclear leucocytes; (*b*) large mononuclear leucocytes; (*c*) small lymphocytes; and (*d*) eosinophile leucocytes.

3. *Pathogenic entamœbæ.*—The *Entamœba histolytica* is now accepted as the sole causal agent in amœbic dysentery, and while different phases in its life history, such as encysted or tetragena forms and minuta forms are occasionally met with in stools that appear normal, the vegetative or active entamœba is present in all acute cases of the amœbic type.

The Cellular Exudate in Bacillary Dysentery.

The exact degree of reliance which may be placed upon a diagnosis of bacillary dysentery made from a preliminary examination of the cellular exudate has for some years been a controversial point, but the experience of the epidemics during the war has, I think, definitely proved its value.[1] When a film of the blood-stained muco-pus from the scanty gelatinous stool is placed under the microscope, the most striking feature is the abundance of cells, and the scarcity or absence of digestive débris. The cells found consist of varying proportions of the following types:—

(*a*) *Polymorphonuclear leucocytes.*—These form the majority of the cells in all stages of the disease. They may have the normal fresh appearance of healthy leucocytes, but more frequently they are swollen and altered in a characteristic manner. The cytoplasm undergoes a fatty degeneration, the nuclei become distended and ghost-like, and the cell dies *en masse*. This appearance is very different from that found in amœbic dysentery, where the leucocytes seem to undergo a digestive process and become progressively reduced in size owing to a marginal disintegration.

(*b*) *Other blood cells.*—The red blood corpuscles vary considerably in number according to the stage and the degree of acuteness of the attack. In subacute or chronic cases, where the stool is composed largely of mucus, there may be an entire absence of red cells in the field, whereas in amœbic dysentery they are present in nearly all cases.

Lymphocytes and large mononuclear leucocytes are present in insignificant proportions, while eosinophiles are very seldom seen.

(*c*) *Macrophages. Endothelial cells.*—These cells form a small proportion of the total exudate, but their size and characteristic appearance mark them out for special attention. Like the polymorphs, they are found in various stages of degeneration, the cytoplasm becoming granular, vacuolated, and then hyaline; the nuclei becoming granular, distended, and finally broken up and scattered as irregular fragments throughout the cytoplasm.

(*d*) *Epithelial cells.*—Either columnar or squamous. In the early inflammatory stage of the disease, there may be very few of these cells, but in the later desquamative phase they are found often in large numbers.

(*e*) *Plasma cells and irritation cells.*—Present in small variable proportions, depending apparently on the depth to which any ulceration of the gut wall has taken place.

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[1] Willmore and Shearman, THE LANCET, 1918, ii., pp. 200–208.

of lounging follows. The affected subject stands with the body-weight chiefly supported alternately on one leg and on the other. The plantar muscles and ligaments participate in the general muscular flabbiness; therein lies the cause of flat-foot. Lateral curvature of the spine is due to the same habit of lounging. Standing with the weight mainly on one foot it will be observed that unless a compensating curve in the spine is introduced the whole body is thrown into a slanting position, one hip is raised higher than the other and the spine-bending, unconsciously performed to bring the head into a position over the middle line of the body, becomes a natural sequel. Catarrhal conditions extending into the larynx, trachea, or bronchi render themselves obvious by unmistakable symptoms. But the extension of these morbid processes into the stomach, bile-duct, and intestines, occurring far more frequently, is infinitely more insidious.

Hitherto the cause of rickets has in the main been held to be dietetic; some authorities on pediatrics hold that adenoids are also due to alimentary disturbances. It has also been pointed out that even if the two conditions are separate and distinct—about which there is at least an element of doubt—the gastric disturbances and defective assimilation held to be the causes of rickets may be due to the catarrhal condition of the mucous membrane lining the alimentary canal, rather than to starchy food. Catarrhal jaundice in adenoid subjects, particularly in those who suffer from attacks of asthma, is frequently observed. Catarrh of the stomach is obviously sufficient to account for dyspepsia, anorexia, morning sickness, and vomiting. Extension of catarrhal inflammation into the stomach and intestines accounts for many of the symptoms of adenoids and rickets, and has in my opinion a much more pernicious influence than that caused by the swallowing of infected mucus. Colyer[22] claims that: (1) micro-organisms developing in the adenoid area and directly infecting the alimentary tract, favour the production of intestinal toxæmia; (2) adenoids lead through lethargy and constipation to intestinal toxæmia.

Whilst I do not agree with the observer, mentioned by Colyer, who stated that 95 per cent. of all diseases result from intestinal toxæmia, the latter condition is certainly responsible for very many. An American writer drew attention to the frequency with which appendicitis follows adenoids; Watson-Williams[23] has quoted several cases of this sequence in his own practice, and I have also met with several examples. In one instance it was decided to operate on a boy aged 7, who, suffering from adenoids, suddenly developed an acute attack of appendicitis. In consultation it was agreed, as there seemed no fear of dangerous complications, to wait till the attack had subsided and then remove the appendix. The boy recovered; his parents declined to sanction the abdominal operation pending the development of further symptoms, so I removed the adenoids. It is now 12 years since this operation was performed; there has been no recurrence of the appendicitis and the patient has enjoyed good health ever since.

Conclusion.

To recapitulate: Here we have naso-pharyngeal catarrh extending into the alimentary canal and affecting both digestion and assimilation; exaggerated lymphocytosis and swollen lymph glands rapidly losing their protective influence owing to fibroid changes; the swallowing of large quantities of infected mucus, a drain on the system from the over-production of lymphocytes causing anæmia—to say nothing of the abnormal secretion of the connective-tissue element containing mucin and of the lessened alkalinity of the blood.

The chief cause, excluding the exanthemata, is the mainly disregarded frequently-recurring colds.

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UNHEALTHY TONSILS AND CERVICAL ADENITIS.

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THIS research was undertaken with a view to inquiring into the relationship, if any, which exists between enlargement of the palatine tonsils and cervical adenitis. It was hoped also that the work might throw some light on the more general question of the portals of entry of the tubercle bacillus. The importance of the tonsil as a channel of infection was emphasised by our colleague Dr. Hugh Walsham[1] and others many years ago. During the past 20 years much has been written on the subject, and an excellent summary with an extensive bibliography will be found in a recent article by C. V. Weller.[2] This author has collected published records of 4522 tonsils examined, with positive findings as regards tuberculosis in 3·1 per cent. of cases, which agree closely with the findings (2·35 per cent.) obtained by Weller himself in 8697 consecutive cases of tonsillectomy. On the more particular question of the possible relationship between enlarged tonsils and cervical adenitis less extensive inquiries have been made. Mitchell[3] published a series of cases during the war in which he found tuberculosis in 38 per cent. of tonsils removed from children and adults with enlarged cervical glands. Other workers[4] have made clinical and pathological notes of this association of the two conditions, but the exact proportion of tuberculous tonsils found still remains *sub judice*, the figures varying in different published series from 7 to 38 per cent. Is the palatine tonsil a common portal of entry for the tubercle bacillus, and are enlarged and unhealthy tonsils, therefore, generally tuberculous? Or does the tonsil, acting as a filter, become enlarged and unhealthy from septic absorption, and merely receive the tubercle bacillus from time to time as a secondary invader? These questions have an important bearing on both the pathology of tuberculosis and the surgical treatment of the unhealthy tonsils and cervical adenitis. On the pathological side questions are naturally raised, not only as to the portals of entry, but also as to the reaction of tissues to the tubercle bacillus; whilst on the clinical side the surgeon is required to decide whether the unhealthy tonsils or the enlarged glands, or both, should be removed.

Selection of cases for examination.—Only cases with both unhealthy tonsils and enlarged glands were included in this investigation. In some instances the tonsils were small and embedded, and in others large and prominent; similarly the glands were in some cases small, firm, and discrete, and in others soft and much enlarged. In a few cases the glands had already been treated for tuberculosis. A record was made in each case as to the possibility of infection from some other member of the family. The cases were all drawn from the laryngological departments of St. Thomas's and Victoria Park Hospitals.

Operation.—In all cases the tonsils were removed complete in their capsules, either by dissection or by the blunt guillotine method. The personal technique of these operations has been described by one of us (W. G. H.) elsewhere[5]; it is therefore unnecessary further to refer to it.

Laboratory examination.—Four methods of investigation were employed in each case: (1) Films of muco-pus from the crypts were stained by the usual the bacteriological records must differ very widely from those of a laboratory behind the front line where specimens can be examined possibly on the same day as the man first appears on "sick parade." It has been stated that bacillary dysentery is a self-limiting disease, and whether treatment has been rigidly carried out or not, the clinical and microscopical picture has generally undergone fundamental changes in 10 or 12 days. On the other hand, amœbiasis, unless specifically treated, is notoriously chronic and progressive. The onset is slow and insidious, and for the first few days an examination of the stool in an advanced laboratory may reveal nothing definite. By the time the patient reaches the base, if no emetine has been administered in the meantime, the symptoms are usually well marked, and the pathogenic amœbæ are found without much difficulty. It is not surprising therefore to find variations in the records of different laboratories.

2. The freshness of the fæcal specimen bears a very close relationship to the proportion of positive bacteriological findings compared with the total number of stools examined. Ceteris paribus, the percentage of positive findings reaches its maximum when the laboratory is attached to an advanced field unit, and the bacteriologist can select his specimen directly from the bedpan within half an hour after the stool has been passed.

In order to determine the rate at which dysenteric bacilli disappear from the fæcal specimen, I carried out a series of experiments with some typical stools, and came to the conclusion it was rarely possible to recover, by cultural methods, the specific bacilli from a motion that had been passed eight hours previously.

The practical side of this question may be demonstrated by a few figures taken from the returns of the laboratory with which I was connected in 1918. Here the specimens were sent in from various medical units, most of which were situated at some distance away. Portions of the stools were placed in fæces tubes, and sent to the laboratory by post or by messenger, and frequently an interval of from six to 24 hours had elapsed before the examination was made. Out of 900 specimens examined by culture during the year, only 75, or 8·3 per cent., gave definitely positive results. Of these 75, organisms of B. Shiga type were isolated in 58 cases, and B. Flexner Y in the remaining 17. The results should be compared with the findings of the laboratory during the autumnal incidence of dysentery in 1917 (vide Table). During that period the conditions for successful culture were ideal, because the bacteriological camp was adjacent to the casualty clearing station and bedpan specimens were carried to the laboratory immediately they were passed. Out of 194 specimens cultured under such conditions, 116, or 60 per cent., gave positive results. Of that number, 56 were of B. Shiga type and the remaining 60 were B. Flexner Y.

SUMMARY AND CONCLUSION.

In conclusion, as the result of personal experience of epidemics of dysentery in the field, I would lay emphasis on the following points:—

1. The clinician and the pathologist should be as constantly associated as the surgeon and the anæsthetist.

2. The laboratory should be in close proximity to the source of material.

3. Considering the vicissitudes which surround the isolation of specific dysentery bacilli, much more stress should be laid on a diagnosis founded upon the characteristic cellular exudate. The most important factor in the treatment of acute dysenteric conditions is time, and as a provisional diagnosis by this method can be made at least 24 hours before the bacteriological report is ready, the advantage to the patient is incalculable.

References.—1. Flexner: B. M. J., 1901, i., p. 786. 2. Hiss: Jour. Med. Res., xiii., 1904, No. 1, p. 1. 3. Wenyon and O'Connor: Human Intestinal Protozoa in the Near East, 1917. 4. Garrow: THE LANCET, 1917, i., p. 262.

AN UNUSUAL CASE OF INJURY TO THE PETROUS BONE.

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THIS case has not hitherto been reported because it seemed better, in view of the remarkable history, to await the subsequent issue before comment.

Lieut. R. D. C., aged 27, was wounded at Loos in March, 1915. A piece of shrapnel traversed the right cheek, nasal cavities, and both maxillary antra; en route it destroyed the right eye. It was recognised that the shrapnel had lodged in the depth of the petrous bone; but here it caused no local symptoms. And so, although the patient underwent several beneficial nasal and plastic facial operations, the missile had designedly been left undisturbed. On Nov. 11th, 1919, he contracted influenza, very soon complicated by left otitis media. On Dec. 15th he was urgently driven 30 miles to London, and staggered in, very ill, to my consulting-room. Mastoid tenderness and œdema, headache, and mild pyrexia presented an obvious picture of acute mastoiditis. A stereoscopic skiagram taken at once by Dr. N. S. Finzi showed the foreign body 1 in. deep to the skin surface on the same horizontal line as the mastoid antrum, and ¾ in. anterior to it, ⅝ in. superior to the external auditory meatus and the temporo-maxillary joint, and about equidistant from both, evidently lodged in the body of the petrous bone. As regards otorrhœa, the history was that this had now ceased for five days, and that previous to its cessation the discharge had been of a rusty colour, containing a few minute black specks which might have been metallic.

Operation.—An operation was performed next morning, Dec. 16th, Dr. D. H. Fraser anæsthetising. The mastoid antrum and cells were full of pus. Bony necrosis extended so far downwards to the mastoid apex and forwards above the ear that the ordinary post-aural incision had to be prolonged down to the digastric fossa behind and anterior to the pinna in front. The outer attic wall was found to be diseased and was resected; also a small part of the body of the petrous bone immediately superior to the external semicircular canal. There was now a large horseshoe-shaped cavity extending from the digastric fossa behind to within ½ in. of the posterior zygomatic root in front; and since the tegmen antri, the posterior wall of the mastoid process, and part of the tegmen tympani had been resected during the operation, the greater part of this large cavity was bounded peripherally by dura mater. The lateral sinus was evidently healthy. By careful search no fistula could be found which might reveal the position of the shrapnel. At this stage the stereoscopic skiagram was again investigated; bone was then cautiously gouged away from the petrous. The shrapnel was found, as nearly as could be surmised, in the concavity of the superior semicircular canal. After its removal projecting spicules of bone were curetted away in various situations and the cavity drained as for a cortical mastoid operation. Throughout the whole procedure the membrana and the region including the annulus tympanicus had been left untouched, and the posterior bony meatal wall cut away only at the top sufficiently to give free drainage to the attic region, as in a "modified" radical mastoid.

Convalescence was slow but uncomplicated. Eight weeks later a meatal flap was cut and turned back into the cavity; this was henceforth drained by the meatus, the post-aural wound being sutured. After another three weeks the patient went to Eastbourne in charge of a nurse. In May, 1920, five months after the first operation, he was playing golf. On his pre-war handicap of 8 he finished, in a bogey competition at Ashdown Forest, all square with bogey, winning the second prize. Golfers will note that he had only one eye, the left. Since that time his health has been in all respects normal. The epithelialised mastoid cavity has always remained quite dry, the membrane healed, and the cosmetic result perfect. And, with the right (sound) ear excluded by a noise-apparatus, he hears a whisper with the left (injured) ear at a distance of 30 feet.

SOUTH-WESTERN POLYTECHNIC INSTITUTE.—A conversazione will be held on Friday, Nov. 18th, from 7–10 P.M., at the institute, Manresa-road, Chelsea, London, S.W. The lecture rooms, laboratories, studios, and workshops throughout the institute, together with the equipment and apparatus, will be open to inspection.

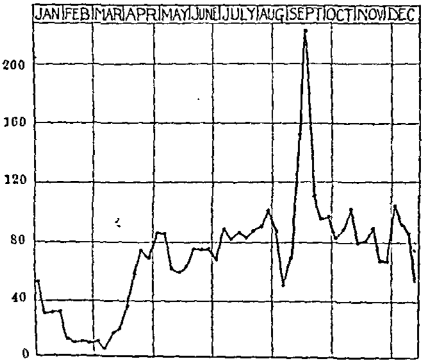
TABLE I.

(A) Periods of four days.
(B) Wounds—bullet, shrapnel, accidental.
(C) Intestinal diseases—"dysentery," "enteritis," &c.
(D) Other diseases.

(A)	(B)	(C)	(D)	Total
Aug. 14–17, inc.	181	101	98	380
18–21. inc.	649	160	68	877
22–25.	514	236	179	929
26–29.	271	384	240	895
30–Sept. 2.	227	436	239	902
Sept. 3–6.	111	321	230	662
7–10	96	193	149	438
11–14.	66	169	170	405
Sept. 15–18.	61	202	198	461
19–22.	54	233	179	466
23–26.	37	201	151	389
27–30.	98	242	195	535
Oct. 1–4.	37	143	144	324
5–8.	35	95	95	225
9–12.	29	108	112	249
Totals, 60 days.	2466	3224	2447	8137
Per cent.	30	40	30	100

afforded an opportunity for making a more comprehensive epidemiological survey of the disease and the accompanying chart (Chart 1), though limited in scope, may be taken as typical. By this time pathological laboratories had been established in the most important centres, such as Cairo, Alexandria and Port Said, and the figures quoted are all supported by bacteriological data.

CHART 1.—*Incidence of Dysentery in 1916. Weekly Rate per 100,000 Strength.*



The first quarter of 1917 was a period of rapid military progress, and the climatic conditions under which the main body of the army lived were almost ideal from a hygienic point of view. Food was excellent; flies were seldom seen; there was no call for exhaustive work on the score of military necessity; intestinal disease had practically disappeared. At the end of the spring a very strenuous campaign was initiated in front of Gaza. The weather became uncomfortably hot; the forces were physically exhausted; the water supply was a matter of difficulty and flies began to abound. During the period of active operations the casualty clearing station was flooded with surgical cases, but towards the end of April the admissions were practically all medical cases, of which intestinal conditions accounted for the great majority. A field laboratory was by this time attached to the clearing station, and during the period April 25th to May 8th 470 diarrhœic cases were examined bacteriologically, with the following resultant diagnoses:—

Amœbic dysentery	8
Bacillary dysentery (bacilli proven) ..	55
Lambliasis	1
Acute diarrhœa	415
Total	470

The bacillary findings again were subdivided as follows:—

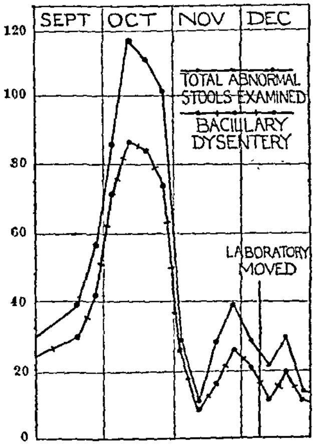
No. in which organisms isolated were		
	B. Shiga ..	31
	B. Flexner Y ..	6
	Not specified ..	18
	Total	55

Taking only the true dysenteries found in this series—namely, amœbic 8, bacillary 55—the relative proportion would be: amœbic dysentery, 12·7 per cent., bacillary dysentery, 87·3 per cent., a result which approximates the percentage recorded as the average for all the laboratories in the previous year.

Creditable as these results are, considering the difficulties under which the work was performed, they do not fully represent the true position. Dysentery bacilli were isolated from only a small proportion of the specimens submitted for examination, and amongst the 415 cases diagnosed as "acute diarrhœa" there must have been a large proportion of bacillary infections.

From the middle of May till the middle of August, 1917, the troops had a period of comparative rest, and as the great heat militated against the spread of flies, there was very little sickness of an intestinal nature. The usual autumnal rise in dysentery commenced about the end of August and reached its maximum in mid-October (see Chart 2). During this period, No. 3 Military Laboratory (officer commanding, Captain P. Manson-Bahr, R.A.M.C.) was attached to the casualty clearing station, and I had the privilege of combining bacteriological investigation with the clinical work in the hospital marquees.

CHART 2.—*Dysentery: Epidemic Rise in 1917. Figures per Week from One Casualty Clearing Station.*



A careful study of this autumnal rise in the dysentery rate afforded some significant statistics, and these have been summarised in Table II., covering the period of highest incidence, that is, during the six weeks ending Nov. 3rd.

TABLE II.—*Figures during Period of Highest Incidence, Sept. 23rd to Nov. 3rd, 1917.*

Total No. of abnormal stools examined	501
Simple diarrhœa	95
Flagellate diarrhœa	16
Amœbic dysentery	5
Bacillary dysentery, provisional diagnosis ..	385
Cultured	194
B. Shiga isolated	56
B. Flexner Y isolated	60

A striking feature in Table II. is the marked preponderance of the bacillary as compared with the

The Blood Sugar Content.—The estimation of the blood sugar had been made by the micro-chemical method described by Dr. Wallis and Dr. C. D. Gallagher in THE LANCET, 1920, ii., 784.

Glucose Tolerance Test.—Dr. Wallis said that the method of applying this test used by him was as follows:—

> A light meal was given in the early morning, which consisted of one egg and tea or coffee with no sugar; three hours later the urine was collected and the amount of normal urinary sugar and blood sugar estimated. 50 g. of glucose in 150-200 c.cm. of water were given, and the blood sugar was estimated again a quarter of an hour and half an hour after the sugar had been consumed, and the urine as well as the blood sugar was estimated one hour and two hours after.

Curves had been plotted of these results and the patients appeared to fall into four distinct groups besides the normal controls. There appeared, moreover, to be a correspondence between the curves of blood sugar and the nature of the disease causing the glycosuria. Dr. Wallis differentiated: (1) a thyroid pancreatic group; (2) severe glycosuria; (3) renal glycosuria; (4) hyperpituitary cases. A striking feature was that cases of glycosuria in pregnancy fell into the fourth group.

Hyperpituitarism in Pregnancy.—Dr. Wallis felt convinced that in the glucose tolerance test we had the best, and at present the only means of detecting minor degrees of hyperfunction of the pituitary body. He said that this explanation of transitory glycosuria in pregnancy would appear to be the most reasonable and that the results are certainly suggestive. Dr. Wallis referred to cases published by him in association with Dr. F. A. Roper (1912) and Dr. Geoffrey Evans (THE LANCET, 1921, vol. i., p. 70) of intermittent glycosuria of pregnancy, and said that both these cases showed many of the characteristic signs and symptoms of hyperpituitarism. In acromegaly the signs of hyperpituitarism were so marked that there was little difficulty in diagnosis, but in milder cases the glucose tolerance test seemed to Dr. Wallis the only one available. Acromegaly was often accompanied by glycosuria in the early stages, often transient in character and frequently occurring without relation to diet; polyuria was frequently exhibited by these cases and extreme lassitude. In pregnant women intermittent glycosuria unaffected by diet, associated with normal or only slightly raised blood sugar, also occurred. Dr. Wallis spoke of the changes in the pituitary body during pregnancy and advanced arguments in favour of his contention that certain signs and symptoms exhibited by pregnant women could be attributed to excessive functioning of the pituitary body. He showed glucose tolerance curves illustrating the resemblance between known cases of hyperpituitarism and intermittent glycosuria in pregnant patients. The outcome of his investigation was that these cases were best left alone. They were able to tolerate 50 g. of glucose without the passage of abnormal amounts of sugar in the urine, and restriction of carbohydrates in their diets was unnecessary and might be harmful.

Severe Glycosuria in Pregnancy.—Every case of glycosuria in pregnancy should be regarded as a potential case of diabetes mellitus until proved otherwise. The presence of lactose should be excluded; if the fasting blood sugar showed a value over 0·2 g. per cent. of glucose there was evidence of gross disturbance of carbohydrate metabolism. Dr. Wallis quoted cases illustrating the value of blood-sugar estimations in glycosuria of pregnancy. The glucose tolerance test was not yet available as a means of prognosis, insufficient data having been collected.

Discussion.

Sir WILLIAM WILLCOX asked Dr. Wallis whether he had considered the thyroid gland in connexion with the glycosuria of pregnancy. This gland was known to vary in size with changes in the genital organs, and, in Sir William Willcox's opinion, was probably a factor to be considered. As to the severer cases showing evidence of diabetes mellitus, Sir William Willcox discussed the importance of acidosis as shown by the presence of acetone and diacetic acid in the urine. Acidosis might be present apart from diabetes—as in pernicious vomiting. Sir William Willcox asked whether diabetic patients were as susceptible as normal patients to acidosis. The conditions under which pregnancy should be allowed to continue were of importance. In America, apparently, patients suffering from severe forms of diabetes were allowed to go to term on special diets, but in Sir William Willcox's experience where there was low carbohydrate tolerance, such as 10 g. or 20 g. it was unwise to allow the pregnancy to continue.

Dr. P. J. CAMMIDGE said that Dr. Wallis's apparent assumption that dextrose was the only sugar, apart from lactose, to be found in the urine was contrary to his own experience. In looking through his cases, Dr. Cammidge had found that about 50 per cent. were passing dextrose, 22 per cent. lactose alone, and 24 per cent. lævulose. He had repeatedly been asked to see pregnant women said to be developing coma, in whom there was much sugar in the urine but the blood sugar was normal. Of the urinary sugar ½ g. or 1 g. proved to be dextrose and the rest lævulose. If these patients were made to fast they became ill and even comatose, whereas if given a full carbohydrate diet, with much toast, they improved rapidly. Dr. Cammidge had been converted to a belief in the value of dextrinised starch under these conditions, and quoted cases in which this treatment had proved successful. Only those cases showing dextrose in the urine benefited from starvation. Dr. Cammidge expressed himself unable to follow Dr. Wallis's classification. His own classification included a pancreatic group who improved with fasting and a hepatic group who became better when the liver was relieved by the decrease of proteins and increase of carbohydrates in the diet.

Dr. GEORGE GRAHAM differed from Dr. Wallis in his interpretation of the blood-sugar curves. The curves of cases described by Dr. Wallis as suffering from glycosuria of pregnancy resembled those shown by cases of mild diabetes. Dr. Graham considered that patients who showed glycosuria during pregnancy were comparable with those who showed glycosuria when attacked by carbuncles and with those recently described by Castellani in whom glycosuria was present only during a malarial attack. Any acute illness might lower the blood-sugar tolerance. Dr. Graham quoted a patient who had temporary glycosuria when suffering from impetigo. He deduced from these analogous conditions that the diminution of sugar tolerance arose from the extra strain put upon the metabolism by pregnancy. He was much interested in Dr. Cammidge's observations on the frequency of the appearance of lævulose.

Dr. HERBERT WILLIAMSON asked for an explanation of the association of glycosuria and hydramnios. He spoke of the occasional effect of maternal glycosuria on the infants, quoting a case in which he had been associated with Dr. Cammidge where the patient was delivered of three live children who died within a few hours of birth in a state of apparent coma.

Dr. CAMMIDGE mentioned that these children were abnormally large, a circumstance not unusual in cases of true maternal diabetes. The purely theoretical explanation that occurred to him was that these infants when in utero were accustomed to a medium of excessive sugar and could not adapt themselves to normal metabolic conditions after birth.

Dr. J. D. BARRIS asked Dr. Wallis what effect the administration of pituitary extract had on sugar tolerance.

Dr. WALLIS, in reply, said that the thyroid gland probably did play a part in the glycosuria of pregnancy since the actions of all the endocrine glands were balanced against one another. The cases investigated were those who showed dextrose. Dr. Wallis agreed with Dr. Cammidge that lævulosuria is connected with hepatic function. In his experience pancreatic glycosuria, as demonstrated by patients suffering from carcinoma of the head of the pancreas, was always fatal. In reply to Dr. Graham, Dr. Wallis objected

Cellular Exudate in Amœbic Dysentery.

The differential diagnosis of the two main types of dysentery would seem to present little difficulty if one is dealing with ordinary uncomplicated cases; the microscopic examination in a fresh specimen presents a very different picture from the one just described. The most striking feature here is the scantiness of the cellular exudate unless, as is sometimes found, the specimen consists of almost pure blood from ulceration through the wall of a vessel. With regard to the cells that are present, those consist of:—

(*a*) *Polymorph leucocytes.*—These are rarely seen in their normal condition. A proteolytic process is obviously at work, and they are usually partially ingested, giving them a "mouse-eaten" appearance. The process commences at the periphery of the cytoplasm and progresses until only remnants of the nuclei remain scattered throughout the film—a very different picture from that in the bacillary type where the leucocytes die by a massive toxic necrosis.

(*b*) *Other blood cells.*—These also exhibit differences that are equally striking. The lymphocytes are relatively increased in number and have the same degenerated appearance, while the eosinophiles are markedly increased. The prevalence of eosinophiles is so noticeable that it might almost be regarded as a pathognomonic sign of the presence of entamœbæ.

The red blood corpuscles also show a remarkable phenomenon. In bacillary dysentery the red cells are isolated as in diluted normal blood, but in the amœbic type they are generally clumped together in small groups of from two to eight, suggesting some agglutinative effect. This phenomenon, so far, does not appear to have been mentioned by other observers.

(*c*) *Macrophage cells.*—Very rare in uncomplicated cases of amœbic origin.

(*d*) *Epithelial cells.*—Usually present together with plasma cells, but there is nothing to distinguish them from those found in the desquamation of bacillary origin.

(*e*) The vegetative *Entamœba histolytica* or its encysted form. This clinches the diagnosis of amœbic dysentery, but where that organism cannot be found—and Wenyon[3] has pointed out that the chances of not finding it are considerable—then in a case presenting a pathological picture such as has just been described one is justified in reporting it as "probably amœbic dysentery."

The recognition of the outstanding features of the cellular exudate, and their great importance as a factor in the rapid diagnosis and early treatment of two diseases differing so widely as regards their pathology and therapeutic requirements, naturally calls for a closer investigation of this field. With that object in view I arranged to make careful observations in a series of suitable cases admitted to hospital during the epidemic rise of 1917.

In each case clinical notes were taken on admission and the first stool was carried at once to the laboratory, where the fresh specimen was examined macroscopically as well as microscopically. In the absence of pathogenic entamœbæ, a provisional diagnosis of bacillary dysentery was made. Another film was prepared, fixed, and stained for a subsequent and more prolonged examination. In addition, a piece of muco-pus was spread for culture on a plate of MacConkey's medium, and the bacilli of dysentery subsequently recognised by the usual serological and biochemical tests. In carrying out the former tests, Garrow's agglutinometer[4] proved to be of great practical value.

Differential Count of the Cellular Exudate.

In each slide 500 cells were counted, and the table of figures (Table III.) gives the results in 15 cases of acute bacillary dysentery. The diagnosis in each case was established by the isolation of colonies which (*a*) gave the correct sugar reactions, and (*b*) showed agglutination in the appropriate serum. The first eight cases of the series have been arranged according to the stage of the disease; the last seven were taken in the order of admission. Other bacillary cases were counted, but as the results were all so uniform, it was considered that the 15 selected would be sufficient to give an average estimate.

In order to emphasise the significance of the figures in the differential diagnosis of bacillary dysentery, I have drawn out a contrast table (Table IV.) to show the average cellular content of an amœbic stool. Five cases were selected at random, in all of which the *Entamœba histolytica* was found in the active vegetative form, and in none of which were any dysentery bacilli recovered from cultures. The five cases are placed in the order of admission, and in this table a further column has been added to include the cells undergoing pyknosis. In each slide 500 cells were again counted, and a percentage struck.

TABLE III.—*Details of Cellular Exudate in Acute Bacillary Dysentery. Differential Counts.*

Case No.	Day of illness.	Type of bacillus isolated.	Per cent. polymorph leucocytes.	Large mononuclears.	Lymphocytes.	Eosinophiles.	Macrophages.	Epithelial cells.	Plasma cells.
1	1st	F.Y.	93·6	1·0	2·2	—	1·2	0·8	1·2
2	2nd	S.	90·2	0·4	3·2	—	2·0	0·8	3·4
3	3rd	F.Y.	87·8	1·2	2·8	—	1·8	4·2	2·2
4	4th	S.	94·2	0·6	2·4	—	1·0	0·8	1·0
5	5th	F.Y.	94·2	0·6	2·6	—	1·6	0·6	0·4
6	6th	S.	85·4	2·2	1·4	—	6·4	3·8	0·8
7	7th	S.	87·6	6·2	3·2	—	1·2	0·8	1·0
8	8th	S.	89·8	4·0	3·4	—	1·0	1·4	0·4
9	—	S.	92·0	1·8	3·2	—	1·4	0·2	1·4
10	—	S.	91·6	0·6	2·0	—	1·6	1·4	2·8
11	—	S.	90·4	0·6	3·8	—	1·6	1·2	2·4
12	—	F.Y.	87·4	1·6	3·2	—	2·2	2·4	3·2
13	—	F.Y.	91·6	0·8	2·4	—	1·2	2·0	2·0
14	—	F.Y.	91·4	0·8	3·6	0·2	1·4	1·4	1·2
15	—	S.	93·2	1·8	2·6	—	1·2	0·4	0·8
	Average ..		90·69	1·61	2·80	0·01	1·80	1·48	1·61

F.Y., Flexner Y. S., Shiga.

TABLE IV.—*Details of Cellular Exudate in Acute Amœbic Dysentery. Differential Counts.*

Case No.	Per cent. polymorph leucocytes.	Large mononuclears.	Lymphocytes.	Eosinophiles.	Epithelial cells.	Plasma cells.	Pyknotic cells.
1	5·6	0·8	3·4	2·4	2·0	3·4	82·4
2	4·8	1·0	2·2	4·4	2·2	2·4	83·0
3	5·6	0·2	1·8	2·4	1·4	1·6	87·6
4	10·8	0·6	2·4	2·0	0·8	0·8	82·6
5	10·6	0·8	2·6	4·8	0·2	0·8	80·2
Average	7·5	0·7	2·5	3·2	1·3	1·8	83·0

In each case the organism found was active *E. histolytica*. Macrophages, no result.

A comparison of Tables III. and IV. brings out the following salient features:—

Bacillary Dysentery.

1. The preponderance of polymorph leucocytes, which constitute on an average 90 per cent. of the total cellular exudate.
2. Eosinophile cells were seldom or never present.
3. Macrophages were present in limited numbers, averaging about 2 per cent., but their size renders them very conspicuous.
4. "Pyknotic" bodies were not found in any of the 15 cases under review.

Amœbic Dysentery.

1. The small proportion of polymorph leucocytes, the average content being only 7½ per cent.
2. The presence of eosinophiles is a conspicuous feature, the number varying from 2 per cent. to nearly 5 per cent.
3. Macrophages were not found in any of the five cases of this series.
4. "Pyknotic" cell remnants were present in all cases, their average number reaching the very high proportion of 83 per cent.

Essentials of the Problem.

After studying the effect of varying conditions on the fæcal constituents in a number of cases I am of opinion that the whole problem can be narrowed down to an examination of two points: (1) the proximity of the laboratory to the active troops: (2) the freshness of the fæcal specimen.

1. If a laboratory is situated at the base, and, as not infrequently happens, cases do not reach the base hospital until their tenth or twelfth day of illness,

Reviews and Notices of Books.

HEALTH OF THE INDUSTRIAL WORKER.

By EDGAR L. COLLIS, M.D., and MAJOR GREENWOOD, M.R.C.P. With an introduction by Sir GEORGE NEWMAN, K.C.B. London: J. and A. Churchill. 1921. Pp. 450. 30s.

IN their preface to this work the authors point out the lack of a book which deals at all adequately from the standpoint of hygiene with the profound changes in the lives of civilised people during the past century and a half consequent upon the rise and development of modern industry, and whilst disclaiming the possession of the erudition necessary for the task of writing such a book, refer to the experience in industrial hygiene which they individually possess. They express the belief that they "have made plain how great is the influence of employment upon general health, how many are the opportunities presented in industry for studying conditions which lead up to divergencies from health—divergencies which, when neglected, pass into disease, how ready to hand are means for improving the workaday life of the productive classes, and how important to the whole of preventive medicine are lessons learnt in the school of industrial hygiene." No one, after reading the book, will quarrel with such a belief. The importance of the whole matter is beyond question, and the authors' book should do much to advance its study. The introduction by Sir George Newman shows a broad minded and wide grasp of the subject matter.

Two chapters in Part I. deal with Industry and Health, and a Review of Industrial Legislation, and these are excellent. It is very desirable to clear away the misapprehension existing in the minds of so many that the position of industry is novel, and that the remedies suggested to cure its ills to-day are new. It should be made apparent that the industry of to-day is merely a link in a chain, and depends upon what has gone before, just as it must influence what may come after. In view of recent happenings it will scarcely be a matter for surprise, though it may be of regret, to learn that in the progress recorded the reasonable recommendations of important committees and Royal Commissions have been passed by unheeded, whilst attention has been paid to subjects pressed to the front by uneducated or biased voices. Chapters III. and IV. deal with the Utilisation of the Statistical Method in Industrial Preventive Medicine, and the Effect of Industrial Employment upon Health as Indicated by Vital Statistics. It will occur to some readers that these might well have been shortened, since the book is not suitable as a text-book for serious students of statistics, whilst in uninstructed hands statistical methods are likely to lead to error. While a briefer outline might have been sufficient, especially when, as the authors indicate, the book is addressed to the novice, familiarity with statistical procedure is now so necessary to workers in public health that there is much to be said for any inducements to its study.

Part II., dealing with Industrial Activity and Fatigue, Tuberculosis and Industry, Cancer, Accidents, and the Industrial Employment of Women will prove of value in facilitating that general dissemination of knowledge, existing indeed but to a large extent hidden away in Government publications. These are not inaccessible, but their study is apt to be a difficult matter, and many will be grateful to have a handy manual dealing with so new a subject as fatigue. It must not be forgotten, however, that much of the work still awaits confirmation and amplification, and that even the methods employed in arriving at present results have not been free from criticism. With psychological arguments also this is true, and they cannot be relied on as sure guides, though as indications they may be useful. We cannot altogether agree with the authors in their condemnation of common sense as a guide in administration (p. 204). In the absence of facts bearing directly upon the question in hand, common sense may prove an excellent guide, whilst to proceed in any course without it would be foolish. Indeed, we think that in one of the instances cited common sense would have suggested to anyone familiar with the workers' home life that women on night work would, if possible, engage in domestic duties during the day, and thus tire themselves unduly. It is common knowledge, if not common sense, that domestic claims must be uppermost in the minds of most women, and these will always sacrifice themselves in the interests of the home whenever the opportunity presents itself. Is it, therefore, correct to say that the existence of this "interfering social influence" "could not be determined without careful investigation?"

The authors are on sure ground in Part III., which deals with the Feeding of the Industrial Worker, Food at the Factory, the Use of Alcoholic Beverages by the Industrial Worker, Ventilation, Lighting, Washing and Sanitary Accommodation, Drinking Water, Working Clothes, Cloak Rooms and Seats, and everyone will be glad to make use of their experience. The treatment of feeding is likely to be especially useful, since it lies at the base of industrial efficiency. One passage puzzles us. The authors say (p. 252): "This branch of the subject is so commonplace, it offers so few scientific novelties, such scanty occasions for the exercise of intellectual ingenuity, that we cannot expect the reader to be greatly interested." They cannot be meaning to imply that it is only subjects which offer "scientific novelties," and "occasions for the exercise of intellectual ingenuity" that prove attractive: those of their readers who matter are in search of something more than this! For the rest, the value of the factory canteen is fully recognised, and the chapter on alcohol, though short, is perhaps as much as could be looked for. The subject is one of immense difficulty and beset with prejudice. Industrial drinking cannot be treated effectively by itself, but only as a part of the general hygiene of the worker.

In Part IV., which includes chapters on Labour Turnover, Supervision of Industrial Health, and Reclamation of the Disabled, the writers are dealing with familiar subjects, and give us valuable material from which to come to decisions. The same words of commendation might be employed of the work as a whole. It will be useful, especially to the industrial administrator, who, though often necessarily ignorant of the subjects treated, is anxious to learn and to act upon sound information.

PRINCIPLES OF IMMUNOLOGY.

First edition. By HOWARD T. KARSNER, M.D., Professor of Pathology, and ENRIQUE E. ECKER, Ph.D., Instructor in Immunology, Western Reserve University, Cleveland, U.S.A. London: J. B. Lippincott Company. 1921. Pp. 309. 21s.

THIS book has been written as "a concise statement of the facts and more important hypotheses concerning resistance to infection," and being designed for those readers who have no facilities for mastering the technical details of such an intricate subject, the work has been confined to fundamental principles without any elaborate descriptions of experiments. That the authors have produced so clear an account of their subject in face of the difficulties of their self-imposed task is no mean achievement.

Early in the book the authors face the vexed problem of theories of immunity, and although apparently not prepared altogether to discard Ehrlich's side-chain theory, they recognise that Ehrlich was much influenced by the status of chemistry which prevailed at the time the theory was enunciated and that modern researches on colloids have profoundly modified our views. A number of these researches are quoted (p. 49), particularly those emphasising the difficulties which surround the question of union of toxin and antitoxin. The authors find the question of specificity the most difficult to explain on a colloidal

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Exhibition of Cases and Specimens.

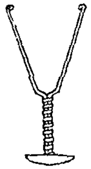
A MEETING of this section of the Royal Society of Medicine was held on Nov. 3rd, Prof. HENRY BRIGGS, the President, being in the chair.

Mr. A. E. MORTIMER WOOLF showed a specimen of Double-ruptured Interstitial Ectopic Pregnancy.

Dr. W. J. O'DONOVAN showed a

Gold-Button Contraceptor.

He said that a patient, aged 26, who had been married for 12 months had consulted him for pruritus vulvæ of six months' duration. There was no history of menorrhagia or severe dysmenorrhœa, but there was a slightly malodorous vaginal discharge. Vaginal examination revealed a hard foreign body across the cervix which Dr. O'Donovan had removed by a firm pull and now showed to the section. The patient said it had been inserted by a doctor in New York soon after her marriage for a fee of £20. The device consisted essentially of a cup-shaped gold button, which fits over the cervix with a stem of coiled gold wire the thickness of piano wire, which plugs the cervical canal, and two prolongations which spring apart and which in the uterus would extend up to the Fallopian internal ostia and by their springing apart would fix this appliance permanently in place. A central hole in the cup permits menstrual and other fluids to pass through. Dr. O'Donovan considered it unnecessary to dwell upon the dangers inherent in such an instrument, which would be appreciated by members of the section.



Gold button used as contraceptor. Half actual size.

Dr. A. E. GILES said that a patient had asked him to insert one of these pessaries as a contraceptive. On making inquiries from the makers he ascertained that they were sold at two guineas each and were advertised as the latest cure for sterility. Dr. Giles strongly deprecated the use of such an instrument for any purpose.—Dr. NORMAN HAIRE said that the instrument was really an abortifacient and in Germany was sold as such. Since the instrument was hollow, conception might occur; he had heard that abortions following its use were often septic. He considered the instrument very dangerous.

Dr. GORDON CRANSTOUN read a short communication on a case of

Cystic Adenoma of the Uterus.

Unfortunately, the specimen had been destroyed but microscopic sections were available. The patient was a nullipara, aged 45, with a two years' history of gradual enlargement of the abdomen and increasing dyspnœa. Menstruation had been regular until eight months before admission to hospital when it had ceased. A diagnosis of unilocular broad-ligament cyst was made, and Dr. J. Fairbairn operated on April 13th. On exposure the cyst wall was found adherent to the parietal peritoneum, omentum, and gut, and efforts to separate it resulted in rupture and the escape of large quantities of opaque brown fluid. On exploration of the pelvis the uterus was found to be enlarged and to contain what appeared to be several fibro-myomata, while the surrounding structures were adherent. Pan-hysterectomy was performed. The mass removed consisted of a uterus enlarged by the presence in its wall of three connected masses resembling fibro-myomata about the size of tangerines, of which one apparently arose from the left upper cornu of the uterus. It appeared to be interstitial and composed of uterine tissue, and presented an ovoid flattened surface to the abdomen forming a kind of plateau. The wall of the cyst was continuous with the edge of this plateau and the point at which a section was cut was composed of uterine tissue containing spaces filled with degenerated blood-clot similar to that covering the surface of the plateau. The degeneration and distension of the tumour, according to Dr. Cranstoun, might have started centrally, and the dilatation on the abdominal side caused by the lack of resistance, so that the upper part of the tumour had gradually stretched to form the wall of an immense cyst, which contained three or four gallons of fluid as well as altered blood-clot. The right tube and ovary and the left ovary were normal, also the left tube, the proximal end of which, however, appeared to be lost in the wall of the cyst. The patient recovered and is now well. Dr. Cranstoun said he had shown the sections because this type of tumour was apparently very rare. Cystic adeno-myomata of small size had been recorded, but this one occupied the whole abdomen.—Dr. J. FAIRBAIRN said that the material that came out of the cyst was dark and treacly and might have been a secretion from the glandular masses.—Mr. GORDON LEY agreed that the microscopic sections looked like those from an adeno-myoma.

Dr. R. L. MACKENZIE WALLIS read a paper on

Glycosuria in Pregnancy.

He said that he proposed to divide the cases of glycosuria in pregnancy into two groups: 1. Transient or intermittent glycosuria. 2. Severe glycosuria and diabetes mellitus. Most of his work had been concentrated on the first group. The investigation of cases comprised: (1) the detection and estimation of normal and abnormal amounts of sugar in the urine; (2) the variations in the blood sugar in normal non-pregnant women and in pregnant women; and (3) the application of the glucose tolerance test as a means of diagnosis.

Method of Estimating Normal Urinary Sugar.—The normal urinary sugar content was too small to be detected with the ordinary reagents, and, moreover, other substances present in the urine might possess a reducing substance of their own and at the same time interfere with the reducing powers of the sugar present. Dr. Wallis said that after a long search he had found a means of removing these substances without interfering with the sugar present and proceeded to describe the following method which had been perfected with the help of Dr. P. J. Bose:—

The urine is collected at hourly or two-hourly intervals, and the estimation carried out as soon as possible after collection. If this is impossible toluol is added to the urine as a preservative, and in this way the urinary sugar keeps for a considerable time. One c.cm. of the urine is precipitated by 2 c.cm. of the phospho-tungstic reagent made up to contain 2 per cent. P.T.A. in 5 per cent. sulphuric acid. A dense pigmented precipitate appears and the mixture is now thoroughly shaken. The whole is made up to 10 c.cm. by adding 7 c.cm. of distilled water, shaken, and filtered. The filtrate is of a clear watery colour, and is found to be free from creatinin, pigments, and all substances likely to interfere with the detection and estimation of sugar. One c.cm. of this clear filtrate is heated for six minutes in a boiling water bath with 2 c.cm. of an alkaline copper solution. At the end of this period the tube is taken out, and treated with a solution of phospho-molybdic acid. The presence of sugar is revealed by the appearance of a deep blue colour. In order to estimate the amount of sugar present in the urine the colour produced by the standard solution of glucose treated in a similar manner with that of the urine is compared in a good colorimeter.

Thus a large number of estimations had been made upon every variety of urine. So far a clear filtrate with the phospho-tungstic acid reagent had always been obtainable, no matter how deeply pigmented the urine might be. In comparing the results obtained on a large number of individuals, the constancy of the amount of sugar in normal urine was striking. It exceeded 1 g. a day on an ordinary mixed diet, and the percentage of sugar in the urine corresponded curiously closely with that regarded as normal in blood—viz., 0·08–0·1 per cent.

especially the small models provided in the so-called universal machines, is strongly condemned, because these currents are not perfectly constant, and therefore cannot be used when a strong current is required. The authors show that the frequent failure to treat successfully many cases of pain due to neuralgia is due to the inability to apply currents of sufficient strength when these dynamos are used, because the patient is unable to bear a strong current if it is not absolutely constant.

This book would be more suitably addressed to those readers who have some experience of medical electrology. The general practitioner in this country will find it too large for the purpose for which it has been designed. The specialist will, however, find much that will interest him, for the descriptions are clear and the illustrations good.

The Sahara.

By Pierre Loti. Translated from the French by Marjorie Laurie. London: T. Werner Laurie. 1921. Pp. 216. 10s. 6*d.*

M. Loti shares with Kipling and M. Claude Farrère the faculty of making his readers feel that if they go out of the door they will at once be in the country about which he is writing. This feeling was very obvious in Madame Chrysanthème and is equally obvious in the book now before us, in which M. Loti gives us an unforgettable picture of the loneliness of life for Europeans in Senegal, of the witchery and magic of the land and of the horrible fascination which its manners and customs can and do exercise. Readers of Kipling will recollect that in his grim story called the "Mark of the Beast" he begins by saying, "East of Suez, some hold, the direct control of Providence ceases; Man being there handed over to the Gods and Devils of Asia. . . . ." The same thing, mutatis mutandis, holds good for Africa, especially the western part thereof, for whether it be simply the call of the bush, or that blessed word "environment," or hypnotic suggestion, or some form of devilry, it is an undoubted fact that men do get caught up into a very unpleasant set of circumstances, and M. Loti's story gives a vivid picture of the fate of a spahi who was thus enmeshed. It is intensely real and subtle.

The translation is good, but why should the translator have changed the title from "The Romance of a Spahi" to the Sahara? for the book *is* the romance of a spahi and has but little to do with the Sahara.

Colloids.

Rôle des Colloïdes chez les Etres Vivants. Essai de Biocolloïdologie. Nouvelles Hypothèses dans le Domaine de la Biologie et de la Médecine. By Auguste Lumière. Paris: Masson et Cie. 1921. Pp. 312. Fr.16.

The author herein presents a theoretical discussion based upon certain of the properties of colloids. He epitomises his views in the statement that life is conditioned by the existence of the colloidal state; illness and death are caused by its flocculation or precipitation. There are many other properties of colloids than those specially selected for his theory, and it would have been of more value if these properties had also been brought into the discussion and carefully examined before the theory had been brought forward. It cannot be doubted that the colloidal state of the living cell and the colloidal state of the circulating and other fluids will be affected by extraneous reactions, such as the injections causing anaphylaxis, but other changes, especially the chemical, involving the production of the actual toxin, are more probably the real cause. The change of the colloidal state is the effect produced by these substances. The theory now put forward is of some interest and worth consideration, but further experiments, as pointed out by the author, are required. The little book contains a useful list of references to anaphylaxis and colloids and some very excellent illustrations.

Burdett's Hospitals and Charities, 1921.

The Year Book of Philanthropy and Hospital Annual. London: Scientific Press, Ltd. Pp. 1027. 17*s.* 6*d.*

This year book is now so widely known, and has been found so useful and reliable, that notice of a new issue seems almost superfluous. The customary concise and valuable information is given concerning hospitals and all other forms of medical, nursing, and convalescent establishments, not only in this country, but also in the Dominions and Colonies and in the U.S.A. Considerable revision has been made in the directory of institutions; the names of those which have remained closed for two years or more have been omitted, and particulars of charitable institutions which have not supplied information for some years have been curtailed. To the military and naval section have been added the hospitals for which the Ministry of Health is financially liable, with a definition of the class to which each hospital belongs. The chapter and table concerning convalescent homes are omitted, pending a time when more of these institutions shall have returned to normal conditions. A list of hospitals approved by the Ministry of Health for the treatment of venereal diseases has been added to the index. It may occur to some readers that "an exhaustive record of charitable work for the year" is not absolutely complete without a reference to the Homes of St. Giles, the one establishment in this country devoted to the treatment of leprosy.

Ophthalmology.

Grundriss der Augenheilkunde. Second edition. By Dr. C. H. May and Dr. E. H. Oppenheimer. Revised and translated into German by Dr. Oppenheimer. Berlin: August Hirschwald. 1921. With 266 figures and 22 coloured plates. Pp. 427. M.60.

This, one of several moderate-sized text-books of ophthalmology published in Germany since the war, is the German edition of a book originally published in America, and is considerably enriched by figures and coloured plates from the American edition. The authors' task appears to have been for the most part adequately performed, though in some parts the matter is scarcely up to date. How long shall we continue to find in text-books the traditional classification of iritis into syphilitic, rheumatic, and gouty, without any recognition of the importance either of gonorrhœa or of septic infection in its causation? In the operative treatment of glaucoma, trephining of the sclera is allotted only a few lines in small print. The account of toxic amblyopia is insufficient and the section on colour-blindness is written on traditional lines. It is a pity that the binding is so bad that the pages fall asunder as soon as they are cut.

JOURNALS.

Quarterly Journal of Medicine (October, 1921). —R. Coope: The Sugar Content of the Cerebro-spinal Fluid and its Diagnostic Value, especially in Encephalitis Lethargica. In the first accounts of encephalitis lethargica in 1918 the cerebro-spinal fluid was described as showing no marked abnormalities, but in the 1920 epidemic several French observers found an increase in its sugar content. Accepting 60 to 70 mg. sugar per 100 c.cm. fluid as normal, 54 per cent. of the 11 cases of encephalitis lethargica examined by the author showed an excess of sugar, but as in a series of 69 cases of other diseases, chiefly insanities, an excess of sugar was found in 53 per cent., this cannot be regarded as diagnostic. In 15 cases, however, of tuberculous and acute meningitis, all showed a reduction in sugar content, often to a considerable degree.—R. A. Guy: Observations on the Percentage of Sugar in the Blood of Atrophic Infants. The blood sugar was determined in the case of 18 marasmic infants, using 43 normal infants as a control. The wasters showed a slightly lower percentage of blood sugar, but no relationship was established between to the name of mild diabetes for cases who did best when left alone, as this name implied that they required treatment. To Dr. Williamson he pointed out that the pathology of hydramnios was still obscure. To Dr. Barris Dr. Wallis said that the effect of pituitary extract on sugar tolerance had not been established, but that adrenalin in repeated doses had a certain effect.

SECTION OF MEDICINE.

AT a meeting of this section of the Royal Society of Medicine held on Oct. 25th, Dr. G. **NEWTON PITT**, the President, being in the chair, Dr. W. W. **PAYNE** read a paper by Dr. E. P. **POULTON** and himself on

Epigastric Pain.

Experiments were detailed arising out of the work of one of the authors, in which it was shown[1] that distension was an important element in the pain of gastric ulcer, and that this pain could be abolished by reducing the intragastric pressure. The method adopted was to pass a Ryle's tube with a bulb on the end of it containing water and connected with a manometer outside the body. Alterations in the level of the manometer gave an indication of the contractions of the viscus in which the bag lay. It was found that pain experienced at the umbilicus and just above it was associated with contraction of the pyloric end of the stomach, the duodenum, or even the jejunum. The latter fact was discovered in a patient in whom pain had returned after performance of a gastro-jejunostomy for gastric ulcer. A feature of special interest particularly from the theoretical aspect was that pain high up in the epigastrium was associated with powerful contractions of the lower end of the œsophagus. The authors regarded this as due to abnormality in a special gastro-œsophageal anti-regurgitation reflex. Contrary to the generally accepted belief they held that activity of the lower end of the œsophagus and not merely contraction of the cardiac opening was responsible for stopping regurgitation from the stomach. The paper was illustrated by numerous diagrams.

Discussion.

Dr. R. **HUTCHISON** thought the authors could not account for all epigastric pain on this hypothesis. It was well known that a child suffering from congenital hypertrophic stenosis of the pylorus, with violent peristalsis visible through the abdominal wall, apparently suffered no pain. He thought there was also a possibility that the pain might cause a reflex contraction rather than the contraction cause the pain.—Dr. **PARKES WEBER** regarded the method as possibly useful in investigating cases of idiopathic dilatation of the œsophagus, so-called cardio-spasm.—Dr. T. **STACEY WILSON** remarked that Sherrington had shown that muscular tone was involved in keeping the intestine patent. When a peristaltic contraction reached a portion of the bowel thus tonically kept open, the opposing muscular actions gave rise to pain.

Dr. **POULTON**, in reply, said that the epigastrium was a large area, and he did not contend that all epigastric pain arose in the way that had been described. He agreed with Dr. Hutchison that the violent contractions in congenital hypertrophic stenosis were apparently painless.

LIVERPOOL MEDICAL INSTITUTION.

THE first ordinary meeting of the session took place on Oct. 27th, Dr. J. E. **GEMMELL**, the President, in the chair.

Mr. **EDGAR STEVENSON** read a note on the

Treatment of Septic Ulcer of the Cornea by Chauffage,

first described to him by Mr. Harrison Butler about 12 months ago. During this year Mr. Stevenson had treated a considerable number of septic ulcers of the cornea by this method with exceptionally good results, and he considered it far better than any other method of treatment. In addition to the rapid healing of the ulcer, an important point was that with chauffage the resulting scar was much thinner than that following healing by any other method.

Dr. G. F. R. **SMITH** read a note on Post-anæsthetic Complications.

Dr. **DINGWALL FORDYCE** read a paper on the

Significance and Treatment of Some Abnormalities of the Urine in Children.

He held that thorough examination of a child includes chemical and microscopical examination of the urine, which may disclose the presence of pus cells and motile bacilli. He said that these are never present in great numbers in a perfectly healthy child, but there are a considerable number of children, probably mainly girls, whose urine is in this condition and who are yet "fairly well." The bacilli belonged to one of the types of the "coli" group, and the exact site of the infection was impossible to determine in young children. Dr. Fordyce stated that the essence of both preventive and "therapeutic" treatment was correct diet and the avoidance or cure of septic foci. A common statement in the text-books was that sugar was rarely found in the urine in children, but in a recent series of 100 unpicked cases of ailing children, evidence of sugar in the urine was certainly present in 10. However slight and fleeting the positive test results may be, an explanation should be sought for them. In a large proportion of cases the presence of a positive test corresponded with indiscretion in diet or digestive disturbance and disappeared on its correction. In other cases a septic process was the cause.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the Royal Devon and Exeter Hospital on Oct. 20th, Dr. P. H. **STIRK**, the President, being in the chair.

Sir **JAMES PURVES STEWART** delivered an address on

Delirium.

Classifying his subject in the three divisions of acute delirium, non-febrile toxic delirium, and delirium in organic brain affections, he subdivided these forms of delirium, and then discussed their diagnosis, prognosis, and treatment.

In the discussion which followed, Dr. **RICHARD EAGER**—speaking from his experiences in mental hospitals—considered that acute delirious mania was a very rare condition, and that in the cases which had come under his notice there had been no high degree of pyrexia. Dr. Eager spoke of the value of Stoddart's treatment in this condition. He considered that "senile mania" was often influenced by traumatism, and that "exhaustion psychosis" was often wrongly classified as "delusional insanity." Dr. Eager advocated the early treatment of mental cases in special hospitals regarding certification as an objectionable procedure.—Dr. W. **GORDON** congratulated the lecturer on his classification of the subject. He also described a case of rabies and one of tuberculous meningitis with aphasia. Dr. Gordon discussed the "coloured nightmares" mentioned by Sir James Purves Stewart, and related his own visual impressions during the course of a severe infective illness.—Mr. **NORMAN LOCK** referred to so-called "catheter fever," and the question of a septic causation or an origin from bladder colic.—Dr. F. A. **ROPER** advocated a more extended use of hyoscine in delirium.

Sir J. **PURVES STEWART**, in his reply, agreed that hyoscine in repeated full doses had often proved of great value in the quieting of delirium.

Sir J. Purves Stewart was subsequently entertained at the Exeter and S.W. annual medical dinner, Mr. A. C. Roper, F.R.C.S., being in the chair.

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[1] THE LANCET, 1921, i., 263.

among the employees examined were found to be the onset of acute infection, constipation, poor hygiene, psycho-neurosis, and eye-strain in the order named. One variety, fatigue headache, is specially described; it occurs as the result of over-work, mental or physical, particularly among persons with unstable vaso-motor systems. The writers call for more extensive study of headache by physicians working in industrial communities.—The scarcity of contributions from this side of the Atlantic in this Anglo-American journal continues to be noticeable.

BIO-CHEMICAL JOURNAL. Vol. XV., No. 3. 1921.—Influence of Free Fatty Acids in the Intestinal Contents on the Excretion of Calcium and Phosphorus, by S. F. Telfer. The absence of bile from the intestine occasioned by biliary atresia and obstructive jaundice leads to no marked reduction of the completeness of the splitting of fats, but to the appearance of a very large amount of fatty acid in the form of calcium soaps in the fæces. The calcium would be normally excreted as calcium phosphate. Under the pathological conditions the phosphoric acid remains free, is absorbed from the intestine, and appears in increased amount in the urine.—Effects of an Unbalanced Diet on the Production of Guinea-pig Scurvy, by G. M. Findlay. The development of scurvy in guinea-pigs deprived of vitamin C is not accelerated by feeding excess of either protein, fat, or carbohydrate, but death occurs rather earlier on an excessive protein or carbohydrate diet than on a fat diet.—Oxygen Consumption of Amphibian Muscle and Nerve, by N. K. Adam. The author's apparatus shows very clearly the regular consumption of oxygen by a resting muscle and nerve, the largely increased rate of absorption after stimulation of the muscle and a very small and doubtful increase as a result of stimulation of the nerve.—A Critical Study of the Methods of Estimating Cholesterol and Allied Substances, by J. A. Gardner and M. Williams.—A Source of Error in the Colorimetric Methods for the Estimation of Cholesterol in Tissue Fats, by J. A. Gardner and F. W. Fox.—Specific Electrical Resistance of Frog's Muscle, by W. Hartree and A. V. Hill. The specific conductivity of a muscle at any temperature is the same as that of a sodium chloride solution of 0·36 per cent.—i.e., half the isotonic strength—at the same temperature. This seems to be due to a hindrance of the diffusion of the sodium and chlorine ions by membranes and colloidal structures in the tissue.—Stability of Tryptophan in Baryta Hydrolysis, by H. Onslow; Nature of the Substances Precipitated by Mercuric Sulphate from Hydrolysed Caseinogen. with reference to the Estimation and Isolation of Tryptophan, by the same author.—Method for the Colorimetric Estimation of Carnosine, by W. M. Clifford.—Deterioration of Cotton on Wet Storage, by N. Fleming and A. C. Thaysen.—Nature of the Reducing Substance in Human Blood, by E. A. Cooper and H. Walker. Improvements in MacLean's method of estimating blood sugar are described. Uric acid and creatinine do not vitiate the method. The reducing power of deproteinised blood is usually increased after boiling with dilute hydrochloric acid; this indicates the presence of some hydrolysable complex. But the increase of reducing power so produced is difficult to estimate accurately because the acid tends to destroy the glucose already present. and further, the sodium chloride formed on neutralisation exerts a powerful inhibitory effect on the apparent reducing power of the sugar.—Differential Dialysis of the Antineuritic and the Antiscorbutic Factors, by S. S. Zilva and M. Miura. The antineuritic and antiscorbutic vitamins are found to pass through a collodion dialysing membrane of such permeability that it also allows the passage of such molecules as methylene-blue. neutral red, and saponine.—Relation of the Fat-Soluble Factor to Rickets and Growth in Pigs, by S. S. Zilva, J. Golding, J. C. Drummond, and K. H. Coward. No definite rickets was induced in sucking-pigs fed from birth on a diet rigorously restricted in the fat-soluble factor. The addition of the fat-soluble factor in the form of cream, cod-liver oil, and lucerne to a deficient diet stimulated growth in pigs declining in weight.—Synthesis of Vitamin B by Yeasts (Preliminary Note), by A. Harden and S. S. Zilva. Saccharomyces ellipsoides can synthesise vitamin B when grown on media not originally containing it.—Action of Salts and Non-Electrolytes upon Buffer Solutions and Amphoteric Electrolytes and the Relation of these Effects to the Permeability of the Cell, by D. Haynes. A detailed discussion, partly theoretical, partly practical, of the effects of neutral salts and non-electrolytes on the reaction of buffer mixtures and of the properties of ampholytes. A theory of the permeability of membranes is put forward in which the membrane is supposed to be most readily permeable in the uncharged iso-electric condition. Changes of permeability may then be the result of changes of reaction in the buffer solution which constitutes the liquid phase of the membrane, or of a change in the iso-electric point of the more solid phase.

New Inventions.

A NEW STETHOSCOPE.

I HAVE found this stethoscope a great advantage over ordinary stethoscopes. Its merits are chiefly derived from the fact that the chest-piece is set at a right angle, which allows the instrument to be more readily adjusted and to be used under clothing, so that very little undressing is required. The instrument can be used to examine dependent parts, the heart sounds being more distinctly audible when the patient lies face downward. In the same manner the fœtal heart is best heard, and prostrate and paralysed patients may be thoroughly examined without disturbing their position. In the case of children the chest can be auscultated whilst the doctor stands behind the child, thus tending to prevent crying through fright. In a busy practice this instrument saves much time and gives much information in a hurried examination. It can be used as an ordinary stethoscope by merely unscrewing the diaphragm.

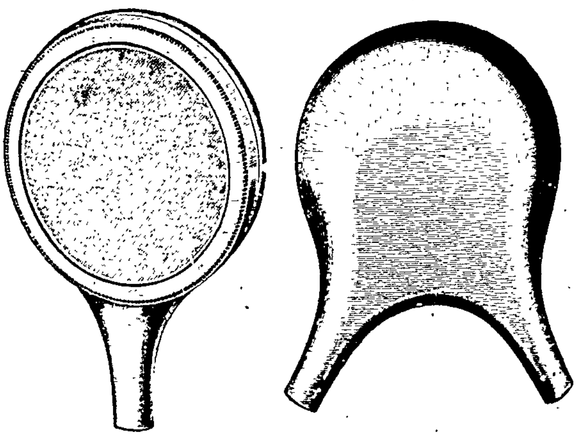

FIG. 1. FIG. 2.

FIG. 1.—Single chest-piece. This may be used with a single tube for those who use but one ear, or it may be connected with a binaural frame with a Y-shaped connexion.
FIG. 2.—Double chest-piece for use with binaural frame.

The chest-pieces can be obtained from all surgical instrument dealers at a cost of 10*s.* 6*d.* each.

WM. C. MINCHIN, M.D., B.Ch., B.A.O. Dub.
Sheerness.

LIEUT.-COL. J. H. DUDGEON, V.D., J.P., of Stainburn, near Workington, has been appointed Deputy Lieutenant for the County of Cumberland.

basis, and we wish that more space could have been found for a full discussion of this aspect of the subject, since it has important bearings on the application of immunological theories to clinical practice. In the subsequent chapters dealing with individual toxins there is a concise description of the Schick test; a fairly full discussion on tetanus toxin viewed in the light of the war researches from 1914 onwards, together with army statistics; and a good account of the phyto- and zoötoxins. Antibodies also receive fairly full consideration. We note the inclusion of a description of Dreyer's method of performing the agglutination test, a full account of iso-hæmagglutinins and blood transfusion, the "typing" of anti-pneumococcal serums, and other recent researches. The discussion on the rôle of complement in immunity is exceptionally full and the Wassermann test enjoys its full prominence, but we could wish the authors had given more consideration to those questions of complement fixation in bacterial diseases—especially tuberculosis—which are giving rise to so much confusion of thought and practice at the present time. The cutaneous tests for asthma are given in detail—indeed, the whole section on anaphylaxis is dealt with comprehensively.

The weakest point of the book—a most unfortunate blemish—is the lack of detailed references. Beyond a short list of text-books on immunity given in the preface, there is not a reference to be found to original sources of information, beyond the authors' names. Some of the illustrations are most helpful, but we do not quite understand why the writers have included in a book dealing with principles and not with laboratory details, illustrations showing how laboratory animals are bled. These are, however, largely matters of detail. Viewed as a whole the book is an eminently sound text-book and can be recommended to the senior student as a safe guide to the fundamental principles of immunity.

PRACTICAL MEDICAL DICTIONARY

Of Words used in Medicine, with their Derivation and Pronunciation, including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance, and other special terms; Anatomical Tables of the titles in general use, and those sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, official in the U.S. and British Pharmacopœias and contained in the National Formulary; Chemical and Therapeutic Information as to Mineral Springs of America and Europe, and comprehensive lists of Synonyms. Sixth revised edition. By THOMAS LATHROP STEDMAN, A.M., M.D. London: Baillière, Tindall and Cox. 1921. Illustrated. Pp. xii. + 1144. 42s.

WE received this book nearly six months ago, but deliberately delayed our review until we had opportunities of practically ascertaining the merits, and demerits if any, after continued consultation. This is the sixth and revised edition, and our previous notices hold good, but every dictionary, if kept steadily up to date, is in a sense a new book, not so much because many things may have to be added and a few perhaps subtracted, but because, with the march of events in any science like medicine, the relative importance of things alters, and where a long explanatory meaning might have to be appended to a work in the earlier stages of the lexicographer's art, in the later stages a much briefer definition suffices. How carefully Dr. Stedman has discharged what he calls the truly Sisyphean task of a continuous revision is indicated by the fact that, while much that is new has had to be included, suppressions and compressions have only necessitated in the current volume an increase of 20 pages.

Dr. Stedman shows his exactness by removing the numerous mistakes that occur in medical literature between words beginning "ideo" and the words beginning "idio," those beginning "ileo" and those beginning "ilio"; there are a good many authors who might be saved, by consulting pp. 484–485, mortifying little errors, while acquiring useful acquaintance with etymological points. In definitions, also, the dictionary is happy, while its catholicity is shown by the fact that we have practically never failed to find what we were looking for, even when such modern abbreviations as P.U.O. and V.D.H. were in question. It is now necessary to include these abbreviations in medical dictionaries, for they have passed into medical language. Three misprints only have been noted after six months' consultation, and we note them so as to help the author in carrying on for future issues. On p. xi. "Mamely" is given for "namely" in the definition of the abbreviation "sc."; on p. 655 the German "nahr" has the "a" unmodified; and on p. 1061 the editor cannot make up his mind how to spell John Tyndall's name.

As will be seen, we have employed this medical dictionary steadily and with convenience in the course of producing a medical journal, with the result that we are able to commend it, as before, very highly to our readers; but Dr. Stedman will be ill-advised to allow the pressure of new things to compel him to make the dictionary inconveniently large. He may be grateful therefore for the suggestion that some prefixes common to a great many words might appear in a paragraph, with the prefix only printed once, the affixes being assigned to it by hyphens. An examination of the entries under the prefix "laryng-" will reveal what we mean. While the plates are good and useful, space would be gained if some of the textual illustrations were suppressed; many of these can be found in more useful and detailed form in well-known text-books. "Feet" is the plural of "foot," but it seems hardly necessary to mention it—there may be other needless definitions, but we allude to this one with the comment that we have not found any others so clearly unwanted. This is considerable praise when it can be added that the exhaustive sub-title is justified by the contents.

ÉLECTROLOGIE.

By LOUIS DELHERM, Chef du Laboratoire d'Électroradiologie de l'Hôpital de la Pitié, and ALBERT LAQUERRIÈRE, Chef du Laboratoire d'Électroradiologie, Suppléant de l'Hôpital de la Pitié. Paris: A. Maloine et Fils. 1921. Pp. 324. Fr.18.

THIS book is the thirty-first volume of the series "Traité de Pathologie Médicale et de Thérapeutique Appliquée." It has been written, not as a complete treatise on medical electricity, but as a guide to the practitioner who wishes to learn something about the uses of electricity for diagnosis and treatment, and to practise the simpler methods which do not require special experience and elaborate apparatus. In the first part of the book the elementary physical principles are simply explained, together with the various electrical currents and the apparatus which produces them. In the second part, which occupies about three-quarters of the book, the diseases and morbid conditions suitable for electrical treatment are considered and their treatment described. Diseases of metabolism, of the skin, of the digestive tract, of the circulatory apparatus, of the nervous system, and of the uro-genital system are considered in separate chapters. Electro-diagnosis is described in a chapter on the treatment of diseases of the peripheral nerves and the neuralgias. In an appendix the risks that accompany the use of currents from the main and the way to avoid them are explained. The surgical uses of electricity as a means of cauterising abnormal tissue are not described. Bergonié's method of producing artificial exercise by the electrically provoked contraction of the muscles is fully dealt with, and the authors speak highly of the value of this treatment, not so much for the reduction of obesity, but for improving the health of gouty and plethoric individuals. A form of electrical lavage is described in detail, and the authors recommend it for cases of stasis of the colon. It combines mechanical and electrical stimulation of the intestinal muscle. The use of the continuous current obtained from being struck by two things—namely, in the first place, the enormous amount that is now done by the educational authorities in behalf of their charges; and in the second place, the almost unlimited field for effort which remains. The prevalence of dental disease, of ophthalmic defects, of tuberculosis in varied forms, and mental defectivity and abnormality make up an appalling total, even while we can congratulate ourselves upon progress. That these sad things were with us in greater bulk before there was any machinery for their detection or alleviation is undoubted, but the evils being uncharted remained largely unnoticed. Now we all know that the health of our school children is seriously assailed in countless directions, and it is a matter of quick conscience with us to do everything to remedy the ills; for it is to our young that we have to look, more anxiously than ever, to make good the wastage and ill sequences of war. This sentiment is on every lip, but it should also stimulate every action.

We can make no attempt to review seriatim the contents of this closely packed report, nor does the concentrated information in the different chapters lend itself to abstraction or condensation. The report is essentially one that should be read by the medical profession and public alike; if here two things are selected for comment it is because the opportunity offered to the public of coöperation with medicine in remedial measures is very clearly indicated. The problem of the care of the eyes of many thousands of British school children in England from their infancy throughout their school age is a very pressing one. The eyesight of so many is defective that the amount of work here presented to remedial medicine may seem unending. And, no doubt, before the number of the defective can be reduced to a figure representing only the measure of unpreventable default, a great deal of steady and intensive work must be done. It should be done as quickly as possible. Defective vision stands, Sir GEORGE NEWMAN reminds us, in the front rank of all school maladies, for by the eye the child mainly learns, while all methods employed to teach him tend necessarily to increase any existing mischief. Yet it is during elementary school life that every practicable step should be taken to detect and remedy physical defects. School medical officers work to this end with assiduity, but their efforts must be supplemented by a public, the whole of which has to-day received some measure of education, if those efforts are to bear prompt fruit. Medical wisdom may diagnose the form and extent of the physical mischief, may secure proper natural and artificial lighting in the schools, may insist upon the school furniture being of the right sort and rightly placed, and may prescribe the glasses appropriate to the case, but if the parents do not play their part much of this good and costly work will be wasted. If the small patients for whom glasses have been ordered do not obtain them because their parents have taken no pains in the matter, medicine can hardly be blamed if the process of catching up a mass of accumulated evil becomes a lengthy one. This one instance of the provision of glasses shows well how necessary is public coöperation. Where there are satisfactory arrangements for the following-up of children under medical treatment there will be many fewer cases of apathetic neglect. The parents do not really understand how necessary it is that measures for the relief of eye mischief, when their need has been discovered, should be taken immediately. The trials of domesticity press severely upon many of them, but if they can be made to realise the urgency that should mark their share in the treatment of their children, few of them would be backward: The Royal Surgical Aid Society has now come forward with an offer to provide the best English lenses in English metal steel frames at a cost of one subscriber's letter for each pair of ordinary spherical corrections, so that the cost of spectacles, both initial and at renewal, is largely met. In this way a real excuse for the do-nothing attitude has been removed.

An important section of the report is devoted to physical education in schools, which Sir GEORGE NEWMAN has long recognised as one of the most important branches of preventive medicine as well as of education. Organisers of physical training have now been appointed by 79 out of 316 education authorities in England and Wales, and the syllabus of this training, reissued in 1919, has had a circulation running well into six figures. Dealing with the rôle of games in secondary schools for girls, the report sees no reason to anticipate that injury, either immediate or remote, will result if the games are properly chosen and played in moderation, and in these words sets out a conclusion substantially the same as that reached in the recent discussion at the Medical Officers of Schools Association (THE LANCET, Oct. 29th, p. 902). But a warning is given against making undue demands upon the physical strength of the present generation of girls which has not been trained for generations in vigorous bodily exercises of all kinds. The medical officer of the Board of Education seems almost to make an excursion into Lamarckianism when he adds that boys have acquired a tolerance of exertion, a physiological habit of resistance to fatigue which girls have yet had no equal chance of acquiring. Games simpler than hockey or lacrosse—e.g., net-ball and rounders—are found more suitable for pupils at a town school between the ages of 14 and 17. Where no playing field is available, ingenuity and resource on the part of the gymnastic mistress will result in more interest and variety in playground and gymnasium games than these are generally found to possess. All should be directed towards forming habits of open-air recreation and love of pursuits likely to bring girls out of doors and into the fresh air during an after life which for most of them will be of a sedentary character. The results of remedial gymnastics in secondary schools are frankly admitted to have been disappointing, and the intensive treatment of marked abnormalities in a few pupils should be supplanted by small daily classes in corrective exercises for all children needing special attention, the needs of the many taking precedence over those of the few. Attention is called to the work of Fröken FALK of Stockholm, which is largely remodelling gymnastics in the Scandinavian countries where there is a definite reaction against the specialist in physical education alone. A recent decision on the part of the London County Council to go ahead with increasing from 25 to 50 its classes of remedial exercises is in harmony with the spirit of this report, and displays, moreover, that practical coöperation between medical and lay guidance in which the hopes of the future reside.

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Defective Diet as a Cause of Sterility.

IN works on sterility the attention of the reader is chiefly drawn to the anatomical and pathological causes of the condition. Very little is said about physiological causes. We might define as cases of physiological sterility those in which there is apparently no obstacle to the union of the gametes, but in which, owing to some faulty characteristics in either the spermatozoa or the ova, union does not take place;

the amount of sugar ingested, and that found in the blood, and the latter does not afford an indication of carbohydrate absorption.—E. E. Laslett: Notes on Four Cases of Paroxysmal Tachycardia. The first, a case of paroxysmal fibrillation of the auricles in a man, aged 46, was considered to be due to excessive tobacco-smoking. It disappeared, to a large extent, when the tobacco consumption was reduced, but tended to reappear with resumption of the habit. The second was a man, aged 48, also a heavy smoker, who suffered from attacks of giddiness, due to paroxysms of auricular tachycardia. On smoking less the attacks disappeared. The third was a man, aged 19, who had been a very heavy cigarette-smoker from an early age. He died shortly after a recurrent attack of tachycardia, which was probably ventricular in origin. The fourth, a man, aged 55, appeared to be a true case of ventricular tachycardia, of which probably only six undoubted cases are on record. Electrocardiographic evidence is not forthcoming in this case.—William Stobie: An Inquiry into the Clinical Manifestations of a Syphilitic Infection upon the Heart. The author endeavours to determine the proportion of cases of heart lesions met with in clinical practice which are due to syphilis. He commences with a brief historical review of the descriptions of syphilitic cardiac lesions, and then proceeds to discuss their pathology and symptoms. He found clinically that in 18 cases of aortic disease 13 gave a history of syphilis, a positive Wassermann reaction, or both. In 15 cases of mitral stenosis 3 gave a positive Wassermann reaction, and of these none gave a history of rheumatic fever, but one had suffered from scarlet fever. None of his 16 cases of mitral regurgitation gave a positive Wassermann reaction, but 4 out of 7 cases of myocarditis reacted positively to this test, and were very suggestive of being syphilitic in origin. A series of 13 cases of congenital syphilis of varying ages was examined, but only one exhibited a cardiac abnormality. In one fatal case of this disease a gumma was present under the endocardium, and spirochætes were found in the pericardial fluid.—H. F. Höst and Rolf Hatlehol: Investigations on the Concentration of the Nitrogenous Metabolic Products in the Blood under Physiological and Pathological Conditions. The authors investigated the nitrogenous blood constituents, using Folin's methods, in 34 healthy and diseased people. The most interesting results were obtained in a further series of 4 cases of kidney disease, each exhibiting uræmic symptoms, which all terminated fatally. The residual N, urea N, uric acid, and creatinin were determined simultaneously and daily up to the time of death. A great and rapid accumulation of blood urea was demonstrated, which could not be explained simply by diminished excretion, and must be in part due to accelerated protein katabolism. The concentration of residual N, urea N, and creatinin was increased up to the time of death, but the most constant feature was the marked ante-agonal increase of creatinin. It appears probable that there is a causal relation between the retention of the N products and the development of the symptom-complex known as uræmia.—J. M. H. Campbell: Some Aspects of Exophthalmic Goitre. The author has endeavoured to trace all the cases of exophthamic goitre treated in the wards of Guy's Hospital between 1908 and 1917. The article is thus an extension of the investigations of Hale White on similar cases treated at the same institution during the years 1888 to 1907 and previously published (*Q. J. of M.*, 1910-11, iv., 89). Of the 127 cases treated 89 were traced by letter up to the time of death, or for periods varying from 4 to 16 years. The author works out the figures for prognosis as approximately 40 per cent. almost cured, 30 per cent. very much improved, 15 per cent. worse or only slightly improved, and 15 per cent. died. The question of treatment is also considered, and it is stated that the final results from thyroidectomy do not appear greatly superior to those of medical treatment, although there is usually a great immediate improvement. Those who received X ray treatment in hospital did not appear to recover more rapidly than those who received only rest and medicine.—E. O'Connor: Critical Review—The Results of Gonorrhœal Infection of the Nervous System. The author, after an exhaustive review of the literature, and an investigation of the records of special and general hospitals in London, is of the usually accepted opinion that nervous complications in gonorrhœa are exteremely rare. Even when they are present it is difficult to prove that they are due to the gonococcus or the gonotoxin. Gonorrhœal cerebro-spinal meningitis has been clinically established, and similarly a gonococcal meningo-myelitis probably occurs. The evidence for the existence of psychoses, neuritis, neuralgia, and trophoneurosis as direct results of gonorrhœal infection is as yet inconclusive.

JOURNAL OF INDUSTRIAL HYGIENE.—An article by C. K. Drinker and K. M. Thomson appears in the August issue entitled "Does the Magnetic Field Constitute an Industrial Hazard?" The research upon which the paper is based is of interest for the scientific way in which it was conducted, even though the conclusions arrived at are negative. Blood and nerve-muscle preparations were exposed to the greatest field strengths obtainable, up to 18,725 c.g.s. lines per square centimetre; and dancing mice were exposed for three months to fields of approximately 2800 c.g.s. lines per square centimetre for an average of 15 hours daily. The methods used and the records obtained are illustrated. None of these experiments gave the slightest evidence of physiological effects from the magnetic field. The experiments utilised *field strengths far greater than those to which workmen are subjected, and, since the tissues employed were those most likely to show vulnerability, it would seem certain that the magnetic field has no significance as a health hazard.*—J. P. Baumberger contributes an article in the September number on Fatigue and Error in a Mental Occupation. The process observed was that of preparing pay-checks which was performed by clerks for a few hours at irregular times on each day; the clerks for the remainder of the time were employed on routine work in the auditing department. The process studied thus provided a ready-made test of fatigue produced by auditing, interposed in the normal course of work. When the rapidity of output was measured at different hours on different days, curves were obtained typical of those observed in studies of industrial fatigue; if the output of the first hour, which exceeded that of the second, be omitted, the curves both for morning and afternoon were of the saddle-back shape; and the output of the morning was greater than that of the afternoon. Errors in preparing the pay-checks were enumerated, when the curve of errors was found to be converse to that of output; and the average of morning errors to be below that of afternoon errors. The results obtained may advantageously be compared with those of Muscio,[1] who has obtained, from medical students and typists, curves with striking resemblance to those of industrial output by charting subjective "feelings of fatigue," as stated by the individuals observed. The conclusions to be drawn from these two pieces of research are that diurnal variations in activity exist which are influenced by meal-times; and that, although we can feel fatigued without being physically tired, "feelings of fatigue" are a close measure of actual physical tiredness.—Headache, which is the most important among "feelings of fatigue," is dealt with in the October number by S. Cobb and D. C. Parmenter. The occurrence of this symptom among a number of employees was carefully investigated, and the conclusion is reached that it is a common complaint among industrial workers, causing in some units as much as 23 per cent. of the cases of lost time, and an average of 10 to 15 per cent. in the mercantile establishments specially studied. The commonest causes of headache

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[1] "Feeling-tone in Industry," B. Muscio, British Journal of Psychology, October, 1921.

Annotations.

"Ne quid nimis."

NOTIFIED INFECTIOUS DISEASE IN 1920.

A report on the Incidence of Notifiable Infectious Diseases, just issued[1] by the Ministry of Health, gives the figures for each sanitary district in England and Wales during the year 1920. The total numbers, along with the rate per 1000 of population, are thus stated:—

	Number of cases notified.	Rate per 1000 of population.
Scarlet fever	119,490	3·19
Diphtheria	69,481	1·86
Tuberculosis: Pulmonary	61,665	1·65
Tuberculosis: Other forms	15,851	0·42
Small-pox	263	0·01
Typhoid	3,109	0·08
Continued fever	35	—
Relapsing fever	7	—
Pneumonia	38,859	1·04
Cerebro-spinal fever	583	0·02
Encephalitis lethargica	890	0·02
Polio-myelitis	293	0·01
Polio-encephalitis	36	—
Dysentery	1,353	0·04
Trench fever	39	—
Malaria (contracted in England)	32	—
Erysipelas	16,051	0·43
Puerperal fever	2,898	0·08
Ophthalmia neonatorum	10,304	—

No cases of cholera were notified during 1920. There were three cases of plague, two of which occurred in the Port of London and one in the county borough of Liverpool. Two cases of typhus were notified from the port of Weymouth. Of the diseases with marked seasonal frequency the maximum of scarlet fever occurred in the week ending Nov. 13th, of diphtheria Jan. 24th, of typhoid Sept. 18th, of cerebro-spinal fever March 13th and 27th, of polio-myelitis Oct. 9th, and of encephalitis lethargica in the week ending Jan. 1st, 1921. Scarlet fever and diphtheria were each more plentiful by about a third than in the preceding year, encephalitis lethargica by more than one-half. Of ophthalmia 1656 more cases were notified than in 1919 and 3772 more than in 1918. The 1920 rate for ophthalmia was 10·76 per 1000 births. Most of the notifications of dysentery and trench fever related to recurrent attacks in men who had contracted the disease abroad. Similar figures for diseases notified during 1920 in the smaller American cities have just been issued.[2] But in this case the totals are not given, as the returns are admittedly incomplete.

STREET TRADING IN LONDON.

A Departmental Committee is shortly to deal with street trading, and evidence on the following points could with advantage be obtained. In streets used as markets standpipes for the supply of water should be erected. A supply of clean water would be of special value to the vendors of fish, vegetables, and ice-creams, as well as to coffee-stalls. In London a convenient form of standpipe is in Holborn, where it has replaced the use of watering troughs. The free supply of galvanised iron bins to stall-holders has been found to be an advantage in the case of London street markets; very few complaints of nuisance in connexion with such refuse as cabbage leaves, fish offal, &c., have occurred after their issue. Vendors of food should be required to give the address of premises where their unsold food is stored; too often it is in an open yard. To prevent contamination by street dust or domestic animals, food for sale should be placed at not less than 2 ft. 0 in. or 3 ft. from the ground. Articles such as butter, margarine, and cheese, which are not generally cooked or washed before consumption, should be kept covered. Although the same requirement should in equity be made in the case of these articles in shops, yet the same likelihood of contamination does not, in fact, occur as when they are exposed in the open street. Experience shows that sanitary conveniences which are chiefly used by vendors in street markets are a fertile source of complaint unless supervised by an attendant. In streets of tenement houses stall-holders are apt to use the sanitary conveniences and the backyards of the ground-floor tenements, and in consequence nuisances arise. In view of the fact that street stalls can only be run at a profit when placed in streets of a different description—viz., streets with shops where customers are attracted and accustomed to shop—the forbidding of the use of streets containing a large proportion of "houses let in lodgings" would be no hardship to the stall-holders. Women should not be allowed to hawk articles in the streets when accompanied by babies or other young children. In some instances the mother brings her baby with her because the child is ill and requires her attention. Some, at least, of these women actually undertake a daily journey from a distant suburb to the central parts of London to secure a larger sympathetic clientèle. Street musicians are often accompanied by young children, who act as collectors of money; the baby in the cradle on an organ necessarily risks exposure to inclement weather. But it is at least doubtful whether the section of the Children Act prohibiting the exposure of a child in a manner likely to cause him unnecessary suffering or injury to his health, was intended to include exposure of this kind. The duty of dealing with abuses might well be laid on the police who are on the spot. Though we have had the metropolis in our mind during these comments, the abuses to be guarded against may make their appearance in any urban centre.

SCLEROSING NON-SUPPURATIVE OSTEOMYELITIS.

At the recent meeting of the American Medical Association Dr. S. Fosdick Jones,[1] of Denver, read a paper before the Section on Orthopædic Surgery on the rare condition known as sclerosing non-suppurative osteomyelitis, the classical description of which was given by Garrè in 1891, based on his observations in the Tubingen Clinic of Prof. Bruns, although an isolated case had been reported by Kluppel in 1879. In the great majority of cases the onset of the disease is acute, accompanied by a high fever, swelling of the affected limb, pain at the site of the bone lesion, and considerable infiltration of the soft parts; but the skin over the affected bone is not reddened, and there is no formation of pus. As the temperature subsides the swelling of the soft parts disappears, and only the permanent enlargement of the bone remains. The condition must be distinguished from sarcoma of bone, bone syphilis, and solid osteitis fibrosa. Although nocturnal pains in the bone are common to both diseases, the absence of other syphilitic manifestations, the gradual disappearance of the pain, and the negative Wassermann reaction in the blood and cerebro-spinal fluid should serve to distinguish Garrè's disease from bone syphilis. Malignant diseases of bone can be excluded by the initial rise of temperature: absence of glandular enlargement, the infiltration of the soft parts, and the absence of cachexia and rapid loss of weight. In osteitis fibrosa, with or without formation of cysts, spontaneous fracture is the predominant symptom, the temperature is normal, and swelling and pain are not symptoms of which the patient complains. Dr. Fosdick Jones recommends that in addition to a careful X ray examination in doubtful

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[1] H.M. Stationery Office. Price 2s.

[2] P. H. Reports. Sept. 30th. Washington: Government Printing Office.

[1] Journal of the American Medical Association, Sept. 24th, 1921.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 12, 1921.

Rural Medical Service in U.S.A.

IN this country we are certainly not sufficiently grateful to the rural practitioner, on whom the medical welfare of scattered populations in many shires is dependent. He has not within easy reach facilities for consultation with specialist physicians or surgeons, or for the hospital treatment of complicated cases; and the nursing on which he can call is still too often exiguous and defective. It is the resourcefulness and competence of a high proportion of rural practitioners which oft-times has averted calamity and safeguarded the health of rural communities. A great ideal of the Ministry of Health is to strengthen the position of the general practitioner by placing him in close organic relation with specialists in the various branches of medicine. We hope that this service is now in the making, though the difficulties which lie ahead are many and various.

There are two forces tending to modify the problem of rural medical attendance: the increasing facilities for easy travel of doctors and patients by road and train, and, on the other hand, the growing dislike of medical practitioners to settle in the remote rural districts where they are most urgently required. The rural practitioner has not available laboratory and consultant facilities, or hospital beds, or skilled nursing, for the large proportion of his patients for whom these are required. That provision of exactly these things formed a great part of the scheme outlined in the Dawson Report is well known; but for the time being the country doctor's disabilities in many directions remain. Much can be learnt from a comparison with American experience, which is one of greater difficulties and scantier and less efficient service than in this country; and a report printed in the October issue of the *American Journal of Public Health* of a Committee on Medical Service contains information directly to the point. The indicated problems have been studied especially in New York State, but the difficulties in other States are even more acute. In New York State there are 83 places containing a population varying from four or five hundred to several thousands which have applied to the State Department of Health to assist them in securing a physician. There are stated to be in the whole country thousands of communities, even in the most populous States, which are similarly situated. The reasons given for this rural lack of doctors in the United States include the physical hardships of rural practice, and the fact that doctors share the psychological trend of many men towards city life. A more potent reason is the realisation by recent medical graduates in the States of the complexity and difficulties of modern medical diagnosis and treatment; and in America as in this country, while it is agreed that consultative facilities must be made available in rural as in city practice, the question is being asked whether our medical schools are not tending to exaggerate the dependence of medical practice on various branches of laboratory work, and whether the powers of personal observation are failing to be educated in these schools. All reflections of this sort have to be carefully scrutinised—in the guise of common-sense they often advocate scientific retrogression. Specialists, some with most limited and unbalanced knowledge, are multiplying in the States, and it is becoming seriously difficult for the American public to obtain well-informed and skilful medical attendance in ordinary cases of illness. Here are the words of the report referred to above:—

> "In his passion for arriving at an exact diagnosis the modern physician too often *seems to overlook, or has not been taught to value, the little niceties of medical practice, the simple remedies, attention to details, however trivial, the personal touch which made the physician of a bygone day such a welcome visitor to the sick-room.*"

The menace of undue specialisation is regarded so seriously by this Committee as to lead them to ask the question whether the time has not arrived when, for the protection of the public and the good name of the medical profession, the licensing boards should require medical graduates to engage for a period of years in general practice before being permitted to take up a specialty, including that of general surgery, and then only after a minimum period of special study under stipulated conditions. This is a more reasonable proposition than the one which used to be put forward in this country to return to the old apprenticeship system, under which the student was supposed to learn how to conduct a practice while laying in some haphazard way the foundations of a scientific training. But each suggestion appears to regard the work of the laboratory as something separate from clinical work, while the whole spirit of modern education is to make of scientific training a living and growing whole. To institute special examinations would do little to prevent the chances of bad specialism; to restrain the recently qualified man from following his bent while inspired with keenness, and while in close touch with his educational centre and its facilities, would certainly not increase the chances of good specialism.

The public health department of the State of New York, of which Dr. HERMANN BIGGS is the Chief Commissioner, has boldly proposed by means of a State subsidy to place in all districts of the State where they are needed, and when consent to this is given by the county and city governments, the following provisions—viz., hospitals with adequate medical service, laboratories, nursing service, and occasional clinic and consultation services, provided by the State Department of Health. The Bills for initiating these services, called "Health Center Bills," have twice failed to pass the two legislatures of the State, largely owing to the opposition of the medical profession. That they will be further pressed is certain, as also that in some form or other this essential means of assisting rural medical practitioners in their arduous and difficult work will eventually be provided. It will be noted that the proposed service leaves the local service of private medical practice untouched, supplementing it by providing what otherwise would be almost entirely lacking.

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The Health of the School Children.[1]

IN the annual report of the Chief Medical Officer of the Board of Education we have been accustomed to find a detailed study of the defaults from the normal in the health of our school population, with valuable comments upon their causes and the preferable methods of their prevention. The document which appeared last week is as interesting as any of its predecessors, and no citizen, medical or lay, can read it without

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[1] Annual Report of the Chief Medical Officer of the Board of Education, 1920. Published by His Majesty's Stationery Office. 1921. 6s.

But if the London hospitals are to earn this grant they must themselves raise a similar amount. In view, however, of the fact that a number of hospitals have already, or shortly will have, exhausted their realisable assets, the Commission have decided in certain cases to make emergency grants in anticipation of the new money which will have to be raised. The total amount of the present emergency grant is £77,900, which is to be distributed as follows:—

Canning Town	£700
East London Hospital for Children	3,000
Elizabeth Garrett Anderson Hospital for Women ..	600
Great Northern Central Hospital	11,000
Hampstead General Hospital	3,400
Hospital for Epilepsy	850
Hospital for Sick Children	4,000
Infants' Hospital	1,000
King's College Hospital	9,000
London Temperance Hospital	2,000
Metropolitan Hospital	750
Middlesex Hospital	3,000
Mildmay Mission Hospital	400
National Hospital for the Paralysed	800
Prince of Wales's General Hospital	2,200
Queen Charlotte's Lying-in Hospital	3,000
Queen Mary's Hospital for the East End	1,000
Queen's Hospital for Children	2,100
Royal Free Hospital	12,000
Royal National Orthopædic Hospital	3,000
Royal Waterloo Hospital for Women and Children ..	500
Samaritan Free Hospital for Women	800
South London Hospital for Women	800
University College Hospital	12,000

These grants are in no case more than half the amount of the estimated deficits for 1921; and the Commission have not felt justified at this stage in making emergency grants to any hospitals whose realisable assets exceed their liabilities, as such hospitals, not having exhausted their credit, are not compelled to close beds immediately, but can continue their activities at any rate for the present. It will, therefore, be understood that the receipt of a substantial grant does not mean that a hospital is relieved of the necessity of appealing to the generosity of the public. On the contrary, as the grant is in no case more than half the estimated deficit, it will be seen that those hospitals which receive the largest share are precisely those which are most in need of additional revenue.

A PORTABLE DISINFECTOR.

MEDICAL officers of health in general, but particularly those in districts of large area, small population, and slender purse, will welcome any new appliance providing efficient disinfection with increased mobility and diminished cost. In rural areas in particular the types of steam disinfector at present generally available are such as to render any general scheme of disinfection for the district difficult in application. Even those forms of disinfector which are mobile to the extent of moving on wheels are often not readily capable of negotiating the small by-roads leading to the more remote farms and cottages; while the cost of moving the apparatus, or in the alternative of carrying the infected articles to the apparatus, may at the present time be a material part of the cost of disinfection. Medical officers of health faced with this problem will do well to refer to an account[1] by Dr. F. E. Wynne, M.O.H. for Sheffield, of an adaptation for municipal work of the "sack steam disinfector" used during the war by the Egyptian Expeditionary Force. The apparatus is not described in that paper in sufficient detail to be readily understood by those not familiar with its prototype, while Dr. Wynne's light-hearted reference to its principle as the "ingenious utilisation of the lightness and latent heat of steam" may be somewhat tantalising to the uninformed. The results obtained by use of the apparatus, however, appear to be sufficiently extraordinary to invite careful consideration. In the first place, it is so light and readily packed that a light model can readily be carried on a pedal-bicycle, while a heavier model can be conveyed on the back-carrier of a motor-bicycle. Then its disinfecting capacity, in view of its size, appears to be phenomenal. It is stated to be capable of effectively disinfecting 1½ tons of textile in six hours; 120 single blankets in an hour; 150 lb. of underclothing in 15 minutes; or ten suits of outer clothing in five minutes. A single suit of clothing can be disinfected, dried, and put into use again within ten minutes. This extraordinarily active disinfecting capacity is produced at a very small expenditure of oil from an oil-stove. One pint of oil, costing *3d.* (now even less), lasts ten minutes. The cost of the oil for disinfecting one set of clothing would be *3d.*; 30 blankets, *7½d.*; a ton of textiles, *7s.*—these are the figures as given by Dr. Wynne. The capital cost of the whole apparatus is stated to be very small in comparison with that of the most modest of the ordinary steam disinfectors now in general use. It is clear that if this apparatus makes good—and the tenor of the article in question suggests that it can already be considered as having done so—then Dr. Wynne will be fully justified in referring to it as an invention revolutionising the practice of disinfection. We commend his article to the consideration of all concerned with the practical problems of disinfection.

A CASE OF DEATH AFTER VACCINATION.

A CASE of death following vaccination was before Dr. S. Ingleby Oddie, coroner for Westminster City and Liberty, on Oct. 28th. The deceased was a female child aged 4 months, daughter of a corporal in the R.A.M.C. She was vaccinated on Sept. 27th, at the Rochester Row Military Hospital, where the medical officer cleaned the skin thoroughly, smeared on Government vaccine, and scratched through it with a sterile needle. The vaccination was done on the leg and the place was protected by a shield. The child, however, kicked off the shield on the second day. The leg becoming troublesome, the child was taken daily to the Military Hospital, and on Oct. 11th was admitted to St. George's Hospital, where she died on Oct. 27th. The lymph came from the Government establishment and at least a dozen other children were vaccinated from the batch, no other case going wrong. A fresh tube was used for this child. The house surgeon at St. George's Hospital reported that on admission the child was suffering from cellulitis of the right leg, apparently originating from three vaccination wounds in the calf. The cellulitis steadily spread up the thigh and buttock and by the fourth day had assumed definite characteristics of erysipelas with a well-defined red edge to the inflammatory area. The inflammation spread to the other leg, the back, chest, abdomen, and arm. The patient's general condition was comparatively good until the 25th, when signs of toxæmia became more evident. There was a little diarrhœa on the 23rd. Anti-streptococcal serum was given, 70 c.cm. in all, along with stimulants and subcutaneous saline injections. The cause of death was stated to be toxæmia following erysipelas associated with a vaccination wound, and Dr. Oddie recorded a verdict to that effect, adding that the vaccination had been properly carried out and that death was due to misadventure.

REFLEX MECHANISM OF LUMBAGO AND SCIATICA.

THE theory that lumbago and certain other forms of backache, as well as such a closely allied condition as sciatica, are to be regarded as reflex neuralgias, like the trigeminal neuralgia due to dental caries, finds considerable support in recent investigations carried out by Dr. Folke Lindstedt[1] of Stockholm. He argues that if this group of diseases is to be regarded as the result of various reflexes, painful and otherwise, and not as strictly local phenomena, then they should be far more common in persons with a neurotic constitution and with morbid conditions of the bones and soft tissues, than in healthy persons. To put this including those also in which union does take place, but the zygote is incapable of full development. For it may perish, as Prof. ARTHUR ROBINSON has pointed out,[1] in the morula or blastula stage, or even *after it has become attached to the decidua,* when an abortion results. These faulty characteristics may be developmental in origin; they may even, according to Prof. ROBINSON's suggestive view, be a manifestation of the variations which occur normally in the reproductive process. On the other hand, they may be due to faulty parental metabolism, which in turn may depend on the absence of particular foodstuffs in the diet. The influence of diet on reproduction has long been known, especially as it concerns the lower forms of animal life. But relatively little has been done in the exploration of this influence in higher types. REYNOLDS and MACOMBER[2] have experimented on the influence of diet in causing sterility in a group of the mammalia—namely, rats. They constructed four "deficiency diets," the first being low in fat-soluble vitamin, the second low in proteins, the third low in salts, especially calcium; the fourth was low in all three, but had an excess of carbohydrates, and is called by the authors a "double-deficiency" or war diet. On a stock diet, 65 per cent. of the matings of these rats proved fertile; when they were fed on deficiency diets, which were given in unlimited quantity, the percentage of fertile matings fell to 55 when the deficiency was in fat-soluble vitamin, 31 when the deficiency was in calcium, and 14 when the deficiency was in proteins. The fertility of rats raised on these diets was also delayed. The fertilities of individual rats were ascertained by repeated matings, and some striking results were obtained, for it was found that the expectation of fertility of a given mating could be approximately ascertained by multiplying the individual fertilities. Thus two individuals with a calculated fertility of 0·8 each would yield a product of 0·64, which represents the standard fertility of these rats, as mentioned above; and the union of two such individuals would almost certainly be fertile. When the product of the fertilities falls below 0·45, the mating is infertile; thus, if a rat with a fertility of 0·8, were mated with one of 0·5 (product 0·40) the mating would be sterile. When the ovaries of rats on deficiency diets were examined microscopically, they showed no anatomical changes to distinguish them from the ovaries of normal animals, except those of rats fed on the double-deficiency diet, which did exhibit certain changes which the authors could not interpret. The American authors remark that "the work of ROBINSON on prenatal death makes it probable that certain ova contain within themselves conditions which make complete development impossible; but these conditions may or may not be morphologically visible." One further observation is noteworthy. Among rats fed on stock diet, macerated fœtuses appear to be unknown; at least the authors have been unable to find any mention of such in the literature. But in matings on the single-deficiency diets four such deliveries occurred, and there were two more in eight deliveries of young rats who had been reared on the war diet and were subsequently placed on ample diet and mated with normal rats.

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[1] The Medical Officer, Oct. 8th.

[1] Acta. Med. Scand., 1921, vol. lv., Nr. 3.

REYNOLDS and MACOMBER properly point out that it is unsafe to reason from one species to another. But they cite some most instructive cases. In one a married couple had had no living children, each pregnancy resulting in miscarriage; a careful inquiry brought out the fact that the diet of the mother was obviously deficient in calcium, for after this was remedied, she produced a living child. In another case the husband had been a well-known sportsman, eating a large protein diet. He took up professional work and a sedentary life, and then married; one miscarriage was the only result. He went in for three months' athletic training, with only moderate intellectual work, and shortly after his wife conceived, and later was delivered at term. In a third case the normal assimilation of food by the wife was interfered with by an enormously over-loaded sigmoid. Attention to the bowels was followed by pregnancy and the delivery of a living child. In a fourth case the husband was thoroughly fertile but the wife had an anteflexion and an undeveloped cervix, with a cystic right ovary. She was treated by operation, but though dysmenorrhœa was relieved, and the general condition improved, no pregnancy followed. She was 20 pounds under the insurance weight, tired easily, and was pale and nervous. She was put on a regulated diet designed to increase weight, and under this regimen she gained 10 pounds in weight in two months. A year later she reported that she was six months pregnant, and she was subsequently delivered at term.

These results may mean only that the chances of fertility are improved when both parents are in good condition, but it would appear that there is anyhow room for further research along these lines. In consideration of cases of sterility, attention is too often limited to the anatomical and pathological conditions, whereas in some cases at least the physiological conditions may not be conducive to fertility.

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THE SCOPE OF UROLOGY

ACCEPTING the dictionary definition of urology—the sum of what is known regarding the urine—the specialty covers a very wide field of medicine; and in this sense it has long been construed by the American Urological Association, and by continental writers such as FRISCH and ZUCKERKANDL. A recent volume of transactions of the former contains articles on renal tuberculosis and on the specific gravity of the blood. The standard text-book by the latter includes an exhaustive section on the chemical examination of the urine. The Section of Urology of the Royal Society of Medicine was travelling in the same direction when it appointed a physician to fill the presidential chair this year; and Sir THOMAS HORDER, whose address we print in full at the front of this issue, after paying a tribute to the work of his predecessor, Sir PETER FREYER, expressed the hope that surgeons, physicians, bacteriologists, and biochemists should be numbered among the members of the Section. That was the desire of those to whose efforts the Section owed its being.

NATIONAL HEALTH INSURANCE: GOVERNMENT OF IRELAND ACT.—The National Health Insurance Joint Committee has appointed a committee, under the chairmanship of Sir Alfred Watson, K.C.B., the Government Actuary, *to consider the steps necessary to carry out the provisions* of the Government of Ireland Act in respect of National Health Insurance. The membership of the committee is as follows: Sir Alfred W. Watson, K.C.B., chairman; Mr. J. A. Dale, Permanent Secretary of the Ministry of Labour (Northern Ireland); Sir Joseph Glynn, chairman of the *National Health Insurance Commission* (Ireland); Mr. M. L. Gwyer, C.B., solicitor to the Ministry of Health; Sir Walter S. Kinnear, K.B.E., deputy chairman of the National Health Insurance Joint Committee; Mr. E. J. Strohmenger, C.B., financial adviser to the National Health *Insurance Joint Committee.* Inquiries should be addressed to the Secretary of the Committee, Mr. G. S. W. Epps, Government Actuary's Department, Buckingham Gate, London, S.W. 1.

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[1] THE LANCET, May 14th, 1921.

[2] Jour. of Amer. Med. Assoc., July 16th, 1921.

tration of carbon monoxide in parts per 10,000 of air equals three, there is no perceptible physiological effect. When it equals six there is just a perceptible effect. When it equals nine headache and nausea are induced. When it equals 15 or more the conditions are dangerous to life.

INTRAVENOUS COPPER IN TUBERCLE.

MANY investigators, especially in Japan, have, in the treatment of human and animal tuberculosis, found advantage in using cyanides and copper salts, copper salts apparently stimulating the growth of fibrous tissue, while cyanides are better tolerated than other copper salts and do not coagulate albumin. In the *Annali di Medicina Navale* for August, Prof. E. Trocello, of the Royal Italian Navy, reports experiments he has made on the cure of tuberculosis in guinea-pigs by the intravenous injection of "cuprocian," a double cyanide of copper and potassium. Prof. Trocello inoculated guinea-pigs with virulent tubercle bacilli in the thigh, and, two or three weeks later, when it was clear that infection had occurred, he began to administer the salt. Its lethal dose is 3 milligrammes per kilo of guinea-pig: his curative dose was 1 or 2 mgm. per kilo every three or four days. Of eight animals, five died of general tuberculosis, three others survived four, seven, and seven and a half months. The weight of those which survived so long increased for a month or more after the injections (subcutaneous) were begun, and the ulcer or sinus which had formed at the seat of inoculation healed in two cases. No tubercle bacilli could be found after death in the bodies of these three, either by histological examination or by inoculation. The inguinal glands were always enlarged before the treatment was begun, and only in these glands could giant cells be found (nowhere else in the body), and even here there was no caseation. Tubercle formation was not observed in any other organ or tissue. There was greatly increased formation of fibrous tissue, particularly noticeable in the other lymph glands; and the spleen, which, in the tuberculosis of guinea-pigs, usually increased to two or three times the normal weight, was here reduced in size by a half and was cirrhosed and hard. Some small areas in the lungs that might have been taken for tubercles contained no lymphoid cells, but only epithelial cells with deeply staining nuclei and no caseation. These appearances are not due to the cuprocyanate itself but to its influence on the tuberculous infective process, whose noxa, the living tubercle bacillus, is killed, and the life of the infected guinea-pig is thereby prolonged. Prof. Trocello is proceeding with further researches on the precise meaning of these observations, in the hope of eliciting information of value in the treatment of tuberculosis in man.

RUDOLF VIRCHOW.

PROFESSORS of pathology are not in the list of professors of medicine and the allied sciences who are allowed by law to sign certificates under the Cruelty to Animals Act, 39 and 40 Vict. c. 77, for the exemption from its provisions of experiments made on living animals for the discovery of new knowledge. It is often supposed that their exclusion was due to a suspicion that they were too deeply involved and interested to be trusted; in fact, they were left out because in 1877 they did not exist. And now we are reminded that it is only 100 years since the father of modern pathology was born, and many will remember that it is but 19 years since that he died. It was Virchow's great achievement in biology to conceive—and his still greater achievement to convince the world—that the cells of the body are one thing and the intercellular substances another, that cells arise from cells and not from unorganised fluids, and that the processes of pathology are fundamentally cellular processes. It is difficult for us to grasp clearly what this must have meant, because we cannot really visualise a time when cells and lymph were thought to be interchangeable and when the histological arrangements of the body were not much clearer than the Yorkshireman's summary of the anatomy of slugs, "just moosh." The fertility of the Cellularpathologie has been of something like the same order as that of the Origin of Species, published a year later. The ideas of both have become so incorporated in our common daily thought that we are apt to forget that they were ever found out as something new. And if in recent years Virchow's concept of the body as a congeries of cells has to some extent receded, it has done so only by forming a sure foundation for a superstructure in which organs and organisms are the effective units rather than their component bricks. Virchow began to teach us how to understand the "body as a whole" by taking it to pieces; may the synthesis which is now reared on his analysis prove as well grounded and enduring.

STILLBIRTH, ITS PREVENTION.

THE importance of adequate antenatal supervision is now well recognised by all those concerned in the administration of large lying-in clinics. Unfortunately, the means available for carrying out such supervision are largely inadequate. Most of the accidents and toxæmias of pregnancy and childbirth can be prevented if only the pregnant woman is properly safeguarded during her pregnancy, and such care is even more important than that actually exercised at the time of her confinement. At the present day, when so much attention is being paid to the welfare of the new-born child, there is some danger of the even greater necessity for the care of the child before it is born being overlooked. Antenatal clinics are still few and far between, and it is probable that a very small percentage only of pregnant women consult their medical attendant before the birth of their child, and even when they do so, only too often no steps are taken to watch and supervise their health during the whole of this important period. In a well-conducted lying-in clinic every woman who applies for admission to the clinic for her confinement is seen and examined during her pregnancy, but even in these favourable circumstances many women will not attend as they ought, or only do so when they feel ill. Such neglect is the main cause not only of most of the accidents of childbirth, but even to a greater extent of the toxæmias of pregnancy and parturition with their attendant dangers. If we must confess that even in properly conducted clinics many women escape the care and attention which they should all receive during their pregnancy, how much greater is the failure in this respect in ordinary practice. In a paper which is published in the current issue of the *Edinburgh Medical Journal*, on stillbirth its causes and prevention, Dr. F. J. Browne has shown clearly that a very large percentage of stillbirths and neonatal deaths could be prevented by adequate antenatal supervision. Deaths, for example, from such causes as craniotomy, asphyxia, and cerebral hæmorrhage as a result of difficult breech and forceps deliveries are all preventable, and the conditions giving rise to them are readily recognisable by the medical attendant, if the patient is only properly examined before her confinement. It must be remembered that in many of these cases the fatal result is due to disproportion between the fœtus and the pelvic canal, and that the child is often particularly well nourished and before birth quite healthy; it is precisely the fact that the child is large and well developed that leads to the extra danger to its life. In the same way the recognition and treatment of syphilis, so potent a cause of stillbirth, is easily carried out if the patient comes under observation during her pregnancy, and the results that have been obtained show that healthy children may certainly be born if treatment is carried out on modern lines. The real danger to the child's life arises from the fact that only too often the women do not come under observation until the time of their delivery, when prevention is impossible and treatment is too late. To remedy this Dr. Browne pleads for the compulsory, or better, the voluntary notification of the pregnancy of every expectant mother. With cases of bone diseases, an exploratory incision should be made, and a frozen section examined at the time of the operation in order to determine the exact pathological process and to prevent unnecessary amputation. Treatment should consist in free incision of the periosteum and opening of the medullary canal.

QUALIFICATION AND COMPETENCY.

As will be seen by reference to our Parliamentary Report last week (p. 983) Sir Samuel Hoare asked the Home Secretary whether a wardress with no nursing experience had recently been placed in charge of the convicted hospital at Holloway over the heads of five trained nurses; whether this appointment was made on the advice of the Advisory Nursing Board; and the names of the personnel of that Board. To this question the Home Secretary truly replied that it was "not the case that a wardress with no nursing experience had been placed in charge of the convicted hospital at Holloway." He went on to say that the officer in question had had much nursing experience extending over a period of 17 years. He added the names of the Advisory Nursing Board, a strong body, but admitted that it had not been consulted. Probably what Sir Samuel Hoare meant to ask was whether the officer appointed was a trained and qualified nurse. The Home Secretary said: "She (the officer in question) is reported by the medical officers to be fully qualified and very capable." Had he been a doctor he would not have used the term "fully qualified," for that is generally understood as meaning that the individual in question has had full professional training and has been found qualified on examination, and not that he or she is competent. It may well be that in this case the officer is quite competent, but that does not necessarily mean that she has had full hospital training and has passed a qualifying examination. There are at Holloway five fully-trained nurses, and the hardship appears to be that an officer has been placed over them who, whatever her personal attainments may be, has not the guinea stamp conferred by examination after full training. What is the Advisory Nursing Board for, if it is not invited to advise?

LIVING SUTURES IN OPERATIVE SURGERY.

W. E. Gallie and A. B. LeMesurier have recently described[1] a most interesting series of experiments on the transplantation of fascia, aponeurosis, and tendon. The work on animals and the clinical operative procedures that have been developed have extended over a period of eight years and appear to be very conclusive. Repeating the earlier experiments of Lewis of Chicago, it was first shown that if a strip of fascia is excised completely and sewn back into position it continues to live, and after a short period of inflammatory œdema there is nothing to indicate histologically that cells or fibres are in any way changed, and their physiological value seems unaltered; this experiment gave the same result with muscle-aponeurosis and tendon, but in the tendon transplants the central part degenerated unless the transplants had been split longitudinally or freely incised to allow lymph to permeate. There is, however, no proliferation of the essential cells of the grafts, and if sutured in place by catgut they unite to their surroundings by ordinary scar tissue. The fibres of scar tissue are irregular and loosely arranged, and when subjected to strain show a constant tendency to stretch, so that the cut edges of the fascia separate widely; especially is this the case with tendon grafts. This fact explains the failure of many of the operations for cure of large herniæ by fixing fascial transplants by ordinary methods of suture, and for bridging gaps in tendons by similar means. Further experiments showed that this separation of the graft could be prevented by carefully scraping it free of all areolar tissue, scarifying it, and placing the graft in actual contact with its bed over a considerable distance by means of weaving the transplant into the edges of the gap to be filled. From this observation was developed the idea of using long strips of fascia threaded on large-eyed needles, thus converting the transplants into living sutures. The results of this method have been uniformly successful, provided the living suture at each point of puncture is firmly fixed by knotting, gaps in fascia being firmly closed by a trellis-work of living sutures and examined microscopically at intervals; at the end of six weeks the transplants were shown to be living and firm, and the condition was unchanged after 12 months, there being no widening of the gap that had been filled. The authors showed cases in sufficient numbers to prove conclusively the great clinical value of their experiments, the cases including a rupture of the ligamentum patellæ of a year's standing cured by a graft of the tendo Achillis sutured in position with the plantaris tendon, anchoring of the patella for lateral dislocation, suspension of the foot for paralytic foot-drop, closure of the gap in the capsule of the shoulder for recurrent dislocation, fixation of the trapezius to the humerus by fascial suture for deltoid paralysis, repair of injured tendons of the forearm, cure of congenital ptosis, and most important of all, the cure of 30 specially difficult cases of hernia. There were no failures; in herniæ no attempt was made to drag structures into abnormal positions, the gap being closed in each case by weaving sutures of fascia lata into the edges of the surrounding muscles and aponeuroses, stretching the living sutures across the gap just tightly enough to make them lie flat. A further paper[2] deals particularly with the implantation of tendons, and shows that wounds of tendons heal by ordinary scar tissue which, when subjected to strain, is liable to stretch or break unless it is present in considerable quantities; to unite tendon to bone it is necessary to remove all areolar membranes from the surface, and to place the tendon in contact with raw bone over a considerable distance, preferably after splitting the tendon to procure an extensive raw area; to unite tendon to tendon it is necessary to place raw surfaces in contact over a sufficient distance to ensure the required strength in the scar, and this may be done by splicing one tendon into the other. The work described has a wide practical application in large classes of cases difficult or impossible to treat with success by older methods, and it is likely therefore to prove of great value.

VOLUNTARY HOSPITALS COMMISSION: EMERGENCY GRANTS TO LONDON HOSPITALS.

THE King Edward's Hospital Fund, as the Local Voluntary Hospital Committee for London, have now reported to the Hospitals Commission in regard to the situation of the London hospitals. They estimate that the aggregate deficit on the maintenance account for the year ending Dec. 31st, 1921, will amount to at least £360,000. Commenting upon this situation, the Commission states: This is less than the corresponding figure for 1920, but the gravity of the situation is shown by the fact that without exception all the larger general hospitals, including all the medical schools, will show heavy deficits. Moreover, a number of hospitals have now exhausted all their realisable assets, and without immediate assistance will have no alternative but to close beds. It is a condition of the Government grant of £500,000, which has to meet the needs not of London only but of the whole of Great Britain, that a corresponding amount must be raised by the hospitals themselves. As the total deficits for the year were estimated by Lord Cave's Committee at £1,000,000, the importance of the pound for pound rule is manifest. The Hospitals Commission have provisionally appropriated £180,000 for London, which is half the total deficits for the year as estimated by the King's Fund.

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[1] Canadian Medical Association Journal, July, 1921.

[2] American Journal of Surgery, September, 1921.

In healthy feet the higher the internal malleolus is naturally from the ground the easier it is for the internal malleolar group of muscles to do their work, getting as they do a straighter pull than when the malleolus is low down; and, conversely, the nearer it is to the ground the greater is the work required of these muscles. Artificially raised heels might, therefore, be expected to make the work easier, and this would doubtless be so were it not that the centre of gravity is thus thrown forwards, giving the muscles too much *constant* work. Even with a moderate—e.g., a three-quarter inch—heel a plumb line falls not opposite the sustentaculum tali, but opposite the head of the astragalus, throwing a constant strain upon the inferior calcaneo-clavicular ligament and the tendon of tibialis posticus; to relieve this strain the feet are usually instinctively splayed. Correct alignment is as necessary in a walking machine as in any other mechanism if one is to secure efficiency and durability, and the nearer the toes are kept to the middle line (the line of progression) the greater is the economy of power. When the habit of walking with splayed feet becomes established, propulsion in walking is done by the outer half of the gastrocnemius and by the peronei, dorsiflexion (if any) being effected by the extensors of the four smaller toes and the peroneus brevis and tertius. The tibiales and the flexors of the big toe then get practically no exercise and become relatively longer and weaker than the evertors, propulsion thus being effected by the muscles which raise the outer side of the foot and tend to flatten the arch. Teachers of dancing, gymnastics, and physical culture to this day almost invariably teach their pupils to stand with their feet splayed, quite oblivious of the evil effects. In the army also men are trained to stand "at ease" with the feet at an angle of 45°, the weight of their bodies and equipment being equally divided between their heels and toes—that is, resting on the arch. No wonder then that at least 90 per cent. of the temporary army were more or less flat-footed. The mere act of separating the big toes from each other tends to lower the arch of a weak foot, as the invertors of the foot are idle and the evertors in a favourable position for contracting. Also, the weight is thrown relatively further inward and forward on the arch than when the big toes are kept parallel. Abduction of the big toe from the other toes helps to raise the arch, but in most boots this is prevented by the snow-plough shape of the front of the boot pushing the big toe outwards. No appliance can cure hallux valgus whilst such boots are worn. Training, raised heels, and badly shaped toes of boots thus encourage men to stand with feet splayed and in course of time to walk in the same way, with the result that the muscles capable of making the arch strong and elastic are prevented or discouraged from acting effectively.

Strain Resulting from Wearing Heeled Boots.

A man wearing heeled boots stands on a slope, the gradient of which depends on the height of the boot heel and the length of the arch. If the body and legs were not furnished with joints he would resemble the tower of Pisa, but up till old age muscular action to some extent corrects the tilting, and enables strong persons to preserve a fairly erect carriage, the back muscles, and the extensors of thigh, leg, and foot unconsciously coming into action. When a soldier stands at "attention" all these muscles are in contraction to an extreme degree. The civilian is content with a milder effort, and although these muscles are contracted, there is a perceptible bending of the knees, the joint never being completely extended, and the capsule and lateral ligaments constantly stretched, accounting possibly for the frequent complaints of weak knees and easily displaced cartilages; there is a forward bending of the head; the lumbar curve is somewhat flattened; the feet generally splayed; and there is a slight stoop of the shoulders and a corresponding partial contraction of his chest. These faults disappear while exercising in a gymnasium, returning as soon as boots are resumed. The compensatory flexion of the knees is concealed by the clothing, but may be observed in the bare knees of schoolboys and of men wearing kilts, and in theatrical women wearing tights. The tibia is then inclined slightly forwards, and the leg cannot be maintained in this position without wasting neuro-muscular energy. The exhaustion and even pain caused by the continuous contraction of the calf muscles and peroneus longus when heeled boots are worn may be relieved by discarding boot heels, thus relaxing the muscles, the operation of excising part of the peroneus longus tendon being quite unnecessary. That white men's calf muscles are "muscle-bound" is shown by the fact that if a soldier's feet be examined when he is lying on his side his toes are invariably pointing downwards, the foot being at an obtuse angle to the leg, instead of at right angles as it would be if all the leg muscles were relaxed, and as it is seen in an infant. Gray and Cunningham both state that in the erect position the foot is at right angles to the leg. This, I contend, is the natural angle of the foot also when resting, the extension of the foot being caused by the tone of the calf muscles being greater than that of the dorsiflexors. Boot heels, by causing the calf muscles to be "muscle-bound," are responsible for the belief that extension is the normal position of the foot when at rest, the point being of some practical importance in fracture of the tibia, where the unrelaxed calf muscles tend to cause over-riding of the broken ends of the bone.

The average height of the heel of a man's boot is three-quarters of an inch, and this is sufficient to throw a man's head 9 in. off the vertical if he is 5 ft. 7 in. in height. If he weighs 11 stone, the weight required to pull him back to the vertical position is 56 lb. This may be verified roughly by using a log of wood of this height and weight with a base of the same width as the arch of the foot (6 in.), tilting it by a block three-quarters of an inch thick and attaching a rope and weight led over a pulley. A soldier has also his equipment (say 60 lb.) to support, in addition to the 56 lb. mentioned above, thus doubling the weight he is supposed to carry. No matter how he distributes the equipment around his body, he has to exert a constant effort to resist the 116 lb. pulling him downwards and forwards which would not be the case if his boots were heelless. This is doubtless one factor in the ætiology of soldier's heart, as even a healthy heart is not always equal to the strain. Indeed, without suggesting that boot heels cause all the troubles that flesh is heir to, it is quite possible that they are a factor in the causation of many conditions due to fatigue and nervous exhaustion. Much of the physical incapacity in persons over 50 years of age which is attributed to "old age," rheumatism, and sciatica arises from the strain on their musculature caused by the constant wearing of heeled boots.

It is obvious that the higher the heel the greater is the muscular effort necessary for the maintenance of the erect position. The head of a woman of 5 ft. 6 in. with an arch 6 in. wide is thrown 2 ft. off the perpendicular when she wears a 2 in. heel, thus entailing a great strain on the muscles of the back and necessitating the use of corsets. A person wearing very high heels becomes practically digitigrade, the weight being transmitted from the tibia vertically down the tarsus and metatarsus, falling not on the crown of the arch but vertically down the anterior pier. Although in this position there may appear to be quite a good arch, the feet are in many cases quite flat from weakness of the invertors and plantar flexors, and persons accustomed to the wearing of such heels are useless at long-distance walking, quick walking, or at any test of strength of the arch, such as leaping. The average woman gets no spring from the arch of the foot, being content with a lateral wobble of the ankle and rotation of the foot around its long axis instead of the natural springy heel-and-toe action. Any elasticity she gets is from flexion and extension at the knee, her feet being no more springy than blocks of wood. Using the knees in this way involves a much greater expenditure of energy than when the spring is derived from theory to the test of figures, he examined 1578 recruits, and he classified them according as they were perfectly healthy or subject to serious or slight morbid conditions. By "serious morbid conditions" he means practically every disease which may affect the lower half of the body, and his long list includes marked deformities of the spine, appendicitis, hernia, varicocele, traumatic and other diseases of the hip and knee, genu valgum, varum and recurvatum, severe flat-foot, hallux valgus, persistent or relapsing polyarthritis, varicose veins, and general static weakness. By "slight morbid conditions" he means similar but less serious divergences from the normal. He inquired of each recruit as to the occurrence, past or present, of sciatica, lumbago, and other forms of backache, and found that in 117 cases, or 7·4 per cent., the object of the inquiry had suffered from lumbago. But while this was the case in as high a proportion as 24·5 per cent. of the recruits in the category "serious morbid conditions," only 1·7 per cent. of the healthy recruits had suffered from lumbago. In other words, lumbago was 14 times more common among recruits suffering from one or more of the diseases referred to than in perfectly healthy recruits. The incidence of lumbago among recruits in the intermediate category suffering from minor ailments was 6·1 per cent. Similar figures were obtained in the case of sciatica, the incidence of which was as high as 3·46 per cent. in recruits subject to "a serious morbid condition," and only 0·12 per cent. in healthy recruits. Dr. Lindstedt is so impressed by the importance of this reflex mechanism in the provocation of lumbago that he suspects this mechanism to have played a part even in the 15 cases of lumbago found among healthy recruits. Their freedom from any morbid process capable of exciting a reflex lumbago was, he thinks, probably more apparent than real, and such a condition as spina bifida occulta is apt to be overlooked, although its capacity for exciting reflex disturbances cannot be ignored. If Dr. Lindstedt's conclusions are correct, a valuable clue to the successful treatment of lumbago and allied diseases is indicated, and in attempting to cure them the physician will extend his activities to comparatively distant parts of the body.

LIFE INSURANCE IN THE TROPICS.

At the first sessional meeting of the Royal Society of Tropical Medicine and Hygiene, which we briefly reported in our issue of Oct. 29th, Sir James Cantlie and others discussed the subject of life insurance in the tropics. It was pointed out that conditions of life in hot climates had recently greatly improved, that it was unjust in many cases for insurance companies to add a substantial percentage to the ordinary premiums simply because the party insuring resided within certain zones. That life in tropical and hitherto unhealthy countries has greatly improved both in comfort and freedom from risks is certain, and for this many factors are responsible. The most important, it would appear to us, is the greater knowledge of how the maladies peculiar to the warm countries are spread, an outcome of the advance in medical knowledge during the last quarter of a century. Apart from this, the motor-car and the electric fan exert an influence that it is hard to estimate in percentages, but is none the less real. A medical officer of a large town in India, who had some 20 years to his credit, once remarked that the hot weather had no terrors for him now as, thanks to the fan, he could always sleep at night and could go about in comfort in his car during the day. It is impossible for anybody who does not remember India in the pre-fan and pre-motor days fully to appreciate the force of this remark. As was pointed out by the speakers during the discussion, insurance companies are in the hands of their actuaries, and actuaries deal with figures, which are presumably founded on facts. Those responsible for fixing premiums have, in most cases, never been to the tropics and are not medical men. In the annual Government reports vital statistics affecting Europeans are necessarily brief and perfunctory; the native returns are more fully discussed and these reports are much too long as it is. Hence, owing to lack of exact data and the need of insurance companies to play for safety, an addition of 2, 3, or 5 per cent. is made to the ordinary premium, which in many instances is quite unjustifiable. Insurance companies who wish to deal fairly by the European resident abroad would do well to appoint expert advisers in tropical conditions, even if the numbers insured would hardly for the moment justify the expense incurred. American companies appear to be better informed as to health conditions in hot climates, and have a much more flexible system of working. During the discussion it came out that the first five years of the colonist's residence were still regarded as the danger period, Sir Leonard Rogers remarking that even this assumption was now largely untrue owing to the effect of antityphoid inoculation. Apart from the enteric fevers, the risk of death is not greater at this period than at any other. The European's power of resistance is never so high as when he has just left England.

MOTOR EXHAUST GAS IN CONFINED SPACES.

A report of considerable interest to the users of motor-cars appears in recent issues of the *Journal of Industrial Hygiene*, based upon an investigation made by Y. Henderson, H. W. Haggard, M. C. Teague, A. L. Prince, and R. M. Wunderlich, undertaken to determine the limits of safety of ventilation in the projected tunnel under the Hudson river between New York and Jersey City. The tunnel is to be 1100 yards long between ventilating shafts on the two sides of the river, and 2830 yards from portal to portal; it is to be used for motor traffic, and danger arises from carbon monoxide given off in exhaust gas. Exhaust gas contains on an average 6 per cent.—i.e., 600 parts per 10,000, of carbon monoxide. This gas is stated to be the only considerable toxic constituent from gasoline, but exhaust gas from coal distillate (benzol) contains accessory toxic substances. The problem of the research was to ascertain what percentage of carbon monoxide could be permitted for an exposure of 45 minutes, the maximum period likely to be occupied by the slowest vehicle in traversing the tunnel, a period during which no energetic exercise would be taken. Incidentally attention is drawn to the danger from which fatalities have resulted arising in small garages, or to a man crawling under a car when its engine is running, or when the engine of a car standing ahead is "idling." Under such conditions slight headaches are frequent, while severe headaches, nausea, and emotional disturbances up to hysterical mirth, anger, or grief, or even maniacal manifestations, are not very unusual. Several cases of severe poisoning from exhaust gas have been recorded [1] in our own columns. In the American investigation a large number of experiments, in which individuals were exposed in a chamber to atmospheres containing varying amounts of carbon monoxide, were carried out to determine the rates at which this gas, at different concentrations, is absorbed and subsequently eliminated. The results showed that after one hour's exposure at rest, the concentration of carbon monoxide in the blood reached approximately half what would be reached by indefinite exposure, but that by doubling the volume of breathing through exercise this concentration might be reached in half an hour. Elimination in fresh air was found to take place at the rate of 30 to 50 per cent. per hour. The conclusion is arrived at, for passengers with an exposure of 45 minutes in the tunnel, that complete safety and an assurance of freedom from disagreeable effects can be obtained if the carbon monoxide content does not exceed four parts per 10,000. General standards are also given. When the time in hours multiplied by the concen-

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[1] THE LANCET, 1920, i., 1331.

On first dispensing with boot heels walking is not quite pleasant owing to the spastic or muscle-bound condition of the calf muscles and the relative weakness of tibialis anticus, but as the latter recovers tone and peroneus longus and the calf muscles relax, the muscular balance is gradually restored. (Fig. 4.) Soon the legs get straighter at the knees, the figure becomes more erect, the shoulders and head resume their natural position, the chest measurement gets larger and breathing easier, the back muscles get less spastic and the abdomen flatter, the foot gets shorter and more shapely from raising of the arch, the tendency to eversion disappears, walking becomes a pleasure, and health, strength, and stamina improve. Immediate good results from discarding heels should not, however, be expected, muscles which have been in more or less continuous contraction for years being, of course, incapable of relaxing the instant the strain is removed.

Nurses suffering from flat-foot are usually advised to abandon high heels, but changing to lower heels does them no good, what is required being no heels. A person wearing a heelless boot can tolerate a much thicker sole than he would in an ordinary boot, the movement in walking in the former being quite different from the modern artificial walk.

Remedies for Flat-foot.

Many of the remedies hitherto employed are useless, among them being (*a*) arch supports in heeled boots, which are usually either too strong to be flexible or not strong enough for the constant weight of the body; (*b*) raising the inner side of the sole and heel, which is only a palliative and not a cure; (*c*) standing tip-toe exercises and cycling, both of which are injurious as they develop the calf muscles and peronei longi which are invariably relatively too well-developed already, and do not sufficiently exercise tibialis anticus. In cycling, dorsiflexion of the ankle being done chiefly by the descent of the opposite pedal, tibialis anticus does not require to contract actively. Tip-toe exercises with the heels separated and big toes touching also fail, as abducting the heels is not equivalent to inverting completely the feet (abduction of the heels being done from the hip-joint), and rising on the toes in this position does not exercise the tibialis anticus, which is relaxed instead of contracted during the movement. In standing tip-toe exercises most of the work is done by the gastrocnemius and soleus, the other muscles of the leg unaided being incapable of raising the body to the tip-toe position as they act round corners (the malleoli). After the calf muscles have initiated the movement, the tendons passing under the malleoli come into play, and, when on tip-toe, help to preserve this posture. The exercise is unnecessary, as the same movement takes place in spurning the ground in walking, with the advantage in the latter case that during the contraction of the muscles of the propelling leg the weight is for the moment on the other foot. In heelless boots the movement starts from the ground, and the calf muscles have therefore a greater range of contraction, so that the tibialis posticus group have a longer time to get into action. Also in walking the flexor longus hallucis gets a chance of complete contraction, whereas in tip-toe exercise the sole of the big toe is on the ground and remains more extended than flexed.

What is required then is to exercise the arch supporters independently of the peronei and calf muscles, the three essential exercises in addition to correct walking as already described being (1) dorsiflexion, (2) plantar flexion, (3) inversion. Unless, however, boot heels are permanently discarded, perfect feet cannot be expected from these or any other exercises.

1. Dorsiflex the inverted foot, helping with hand if necessary, and getting someone to pull down the heel if the calf muscles cannot relax voluntarily.

2. Plantar flexion should be performed with the inverted foot (*a*) flexed and (*b*) extended, an attempt being made to close the foot like a fist. After thorough traction, relax all the plantar flexors completely, repeat contraction and relaxation alternately, concentrating the attention on the process. This exercise should be done with the foot in the extended position only when the patient has intelligence and power enough to keep the gastrocnemius and soleus relaxed.

3. Invert the foot completely, with foot extended and flexed respectively. Relax. Repeat.

Other useful exercises are: 4. Walking on the outer side of the feet and lifting each foot to cross the other at each step. 5. Lifting gradually increased weights with the inverted foot. 6. Circumduction of the foot from without inwards—i.e., invert, dorsiflex, extend. Relax always after each completed movement in every exercise. 7. Separate big toe from the others. Adduct it. Relax. Repeat. 8. Sitting on chair extend knees to the utmost, dorsiflexing the feet at the same time. Relax. Repeat. 9. Standing on heels and outer sides of feet, toes off the ground, lean back as far as possible. 10. Walking in boots the soles of which are thicker than the heels. Old boots with heels removed and soles thickened are useful for this exercise. Passive movements, massage, and electricity are all useful adjuncts, but none is essential. Where, however, adhesions or ankyloses exist, they should be broken down before starting treatment.

MEDICINE AND THE LAW.

The Legal Aspects of the Case of Harold Jones.

AT the Monmouthshire Assizes on Nov. 1st Harold Jones, a boy 15 years of age, pleaded guilty to the murder of a little girl named Florence Little at Abertillery on July 18th. The information given to Mr. Justice Roche before sentence was passed included the reading of two confessions by Harold Jones, one containing details of the killing of Florence Little, the other admitting the murder of another child, Freda Burnell, on Feb. 5th. Jones had been tried and acquitted of the murder of Freda Burnell, his defence having been publicly subscribed for, and he had been welcomed back to his home by applauding crowds of neighbours. To this the judge referred as having probably fostered the boy's vanity and made him more ready to commit his second crime. The case has many features of medical interest, while the details have appeared so recently in the press that they need no repetition. The plea of guilty followed by a sentence of detention during His Majesty's pleasure calls attention to Section 103 of the Children Act, 1908, which provides that "Sentence of death shall not be pronounced against a child" (under 14) "or young person" (between 14 and 16), but that he shall be sentenced as above and detained "in such place and under such conditions as the Secretary of State may direct and whilst so detained shall be deemed to be in legal custody." It is remarkable that the section makes no reference to the age of the young person at the time of the commission of his crime. Counsel for the defence alluded to this in urging the acceptance of the plea of guilty. His argument that Harold Jones might have had to be tried as an adult murderer, if through his pleading not guilty his trial had taken place next January, when he would have been 16 years of age, is liable to the comment that such postponement would hardly have been necessary, even if a later date had been fixed for the trial, owing to the defence not being ready. It points, however, to what is sufficiently obvious, that if Harold Jones had been brought to trial after his sixteenth birthday, it would have been the duty of those defending him to do what they could to prove an abnormal mental condition affecting him, and to obtain a verdict of "guilty but insane." It is almost equally clear that this defence could not have succeeded under the rules of law governing such verdicts. A boy of 15 who has killed in close succession two young girls must be regarded by most people as suffering from "disease of the mind." There was, in addition, a statement that in one of his pockets seven women's handkerchiefs were found, an indication pointing to a sexual element this view we substantially agree if it is necessary to safeguard the health of the child from its birth up to and during its school age; it is equally important to ensure that it shall not be handicapped at birth or even lose its life for want of proper supervision of its mother during her pregnancy. Child welfare centres are undoubtedly doing a very good work, but their utility would be increased, and a large number of lives of new-born infants would be saved, if proper antenatal centres were established in close association with them all over the country, and if some means were devised, such as the notification of pregnancy, to ensure that no expectant mother should lack careful supervision and treatment during the whole of her pregnancy.

THE BRUSSELS MEDICAL DEGREE.

FOR the last 40 years the University of Brussels has granted an M.D. degree to those already holding British and Colonial medical diplomas. For this degree, which did not entitle its possessor to practise medicine in Belgium, no course of study or residence was required, and only a single examination in final medical subjects, largely of an oral nature, was demanded. The degree was popular in the eighties and nineties with those who, for one reason or another, were on the British Medical Register without obtaining a university degree in medicine. This examination, in abeyance during the war, was formally discontinued after the armistice under the circumstances narrated in THE LANCET of July 23rd by Dr. Arthur Haydon as Hon. Sec. of the Brussels Medical Graduates' Association. Dr. Haydon now sends us for publication a copy of a letter received by him from the Foreign Office.

Foreign Office, S.W. 1, 10th October, 1921.

SIR,—With reference to the letter from this Department No. W7278/4161/4 of the 9th of July last, I am directed by the Marquess Curzon of Kedleston to inform you that His Majesty's Ambassador at Brussels has received a note from the Minister for Foreign Affairs stating that no privilege has been withdrawn from British and Colonial students who have obtained a degree of M.D. at the Free University of Brussels.

As regards the future, the University authorities have decided, in order to promote the relations of the University with foreign countries, that all foreign students should be called upon to fulfil the same regulations; and that they therefore cannot concede special privileges to British and Colonial students.

The latter may still enter their names at the University under the conditions laid down on page 13 of the *Réglement Organique* and on page 2 of the *Réglement pour la Collation des Grades Scientifiques*, both of which documents are enclosed herewith.—I am, Sir, your obedient servant,

R. H. CAMPBELL.

Quite apart from the granting of this Brussels M.D. to foreigners, owing to the special circumstances of the war reciprocity was set up in 1915 between Belgium and this country whereby, under Part II. of the Medical Act, 1886, Belgian medical graduates were entitled to a place in the foreign section of the British Medical Register, and 60 or more Belgian medical graduates actually availed themselves of this privilege. Similarly, an English medical graduate became entitled to practise medicine in Belgium without other formality than registration. As was pointed out in the Students' Number of THE LANCET, this reciprocity came to an end in December, 1920, and from the wording of the letter cited above it appears that the holders of British medical diplomas will no longer be entitled to any preferential treatment in regard to Belgian medical qualification or registration.

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M., on Tuesday, Nov. 22nd, when Sir Donald MacAlister, the President, will take the chair.

Sir George Joseph Hamilton Evatt, K.C.B., who founded the R.A.M.C. Volunteers in conjunction with Sir James Cantlie, and who had done much for reform and efficiency in the medical organisation of the army, died in London on Nov. 5th, aged 77.

MODERN FOOTWEAR AS A CAUSE OF FATIGUE, MUSCULAR RHEUMATISM, AND FLAT-FOOT.

WITH NOTES ON AN IMPROVED TYPE OF BOOT.

BY S. D. FAIRWEATHER, M.B., CH.B. ABERD.

THE arch of the normal human foot may be compared to the semi-elliptical spring employed in motor-chassis construction; the body-weight, however, does not rest constantly upon the crown of the arch or spring, but is thrown on it only when the resistance of the arch is required to deaden any jar or shock thrown on the foot. The arch, which rests on three points, the heel, the ball of the foot, and the fifth metatarsal bone, is supported by the plantar ligaments and fascia, assisted by the ligamentous action of the various muscles—tibiales anticus and posticus, the long and short flexors of the toes, abductor hallucis, and the small muscles of the sole of the foot. Of these muscles, tibialis anticus acts on the whole arch from above, lifting it as one lifts a bunch of keys by a ring, ensuring that the antero-posterior arch will act in the proper plane, and preventing rotation of the arch around its long axis. The peroneus longus braces up the transverse arch diagonally, but if unopposed by a properly developed tibialis anticus it tends to pull down the antero-posterior arch. Flat-foot accompanied by spasm of the peroneus longus corroborates this point.

The *spring* of the human foot does not depend so much on the curvature and thickness of the arch as on the quality (strength, contractibility, and relaxability) of the muscles which support it, just as the efficiency of a metal spring depends not on the curvature and section alone, but on its flexibility and strength. While, however, the height of the arch is no true criterion of efficiency—otherwise pes cavus would be the ideal foot—and a long foot with a comparatively low arch *may* be quite efficient, the ideal arch should be fairly high in order to obviate the necessity for the excessive contraction of the supporting muscles, which must take place before they can resist any strain thrown upon the foot, and which is unnecessary if the muscles and tendons are of the proper length. The height of the arch should be measured from the head of the astragalus to the ground whilst the subject is standing erect on one foot. A great muscular development under the arch partly fills up the concavity and makes the bony framework appear lower than it really is. The present method of testing for flat-foot—i.e., asking the patient to stand on tip-toe—is no criterion of the efficiency of the arch except in cases in which the bones are ankylosed. Most of the work of rising on tip-toe is done by the gastrocnemius and soleus, the tibialis posticus and peroneus longus helping the calf muscles to maintain this posture. The efficiency of the arch can best be gauged by marking the tubercle of the scaphoid while the subject stands on one foot, the tubercle being then allowed to sink as near the ground as possible and then elevated by contracting the tibiales and all the plantar flexors. Measuring the distance the scaphoid has moved and multiplying by the weight of the person will give the efficiency of the arch.

Modern Footwear.

In a normal barefooted white man the body-weight when standing falls opposite the heel—i.e., on the posterior pier of the arch which is more vertical, more rigid, and shorter than the anterior—and not on the crown of the arch; the balance of the body being so perfect that only a minimum of effort is required to keep erect. When the heels are raised even a quarter of an inch from the ground the centre of gravity is thrown forward, the plumb-line falling opposite the crown of the arch or even farther forward, according to the height of the heel from the ground. (Figs. 1 and 2.)

of the Conseil Départemental d'Hygiène. He suggests that medical school inspectors should be appointed for a period of six years and should still be allowed to devote most of their time to private practice. As so far no definite scale of remuneration has been established, he proposes to standardise the annual salary at Fr.1500 which, under the present system, corresponds approximately to the average sum offered. Another proposal made at a recent congress—the "Congrès d'Hygiène Scolaire de Langue Française"—was that the post should be held by medical officers of health at a salary of Fr.15,000, who would act as school medical officers under the supervision of the Ministry of Health and would be debarred from private practice. According to this last scheme a school medical officer would be in charge of approximately eight of the circumscriptions of Dr. Gilbert Laurent's scheme. Amongst other reforms suggested is the establishment of more open-air classes; at present there are only three in Paris. It has also been urged that the school medical officer should be compelled to get in touch with the parents when a child shows signs of any morbid condition, such as anæmia, enlarged glands or tonsils, adenoids, ringworm, dental caries, &c., and give advice as to which hospital or dispensary the children should be taken for treatment; so far this is the custom only of certain individual school medical inspectors. On the whole, it would seem that there are also strong reasons in favour of revising the present system of medical inspection of schools in France.

Antivenereal Prophylaxis.

There seems to be at the moment a revival of interest in the antivenereal prophylactic measures by means of a calomel ointment first formulated over here by Dr. Roux, director of the Pasteur Institute of Paris, and also strongly recommended by Metchnikoff, when the latter was subdirector of the same Institute. Dr. A Gaudncheau has recently reported to the Société de Médecine Publique the results obtained after adding cyanide of mercury and thymol to the formula of MM. Roux and Metchnikoff. He mentioned that 68 men of the crew of a French cruiser were supplied with tubes of the ointment as prescribed by Dr. Gaudncheau and were told to apply it to the external genital organs, including the fossa navicularis, before sexual intercourse. In the course of a six months' voyage, during which the cruiser put in at several ports where venereal diseases are most prevalent, none of these 68 men contracted syphilis or gonorrhœa. Dr. Gaudncheau pointed out that of 181 men who only applied the ointment after sexual intercourses, five were contaminated; he also recalled previously reported statistics of 624 cases in which the ointment was applied before intercourse without a single failure of its effect. Convinced as he was of the value of such prophylaxis, he could only deplore the campaign waged against such measures by those who from a moral point of view objected to the procedure, preferring to use venereal diseases as a scarecrow. These views were warmly seconded by the President of the Society, Dr. E. Marchoux, of the Pasteur Institute, and by Dr. P. Boudin. Dr. Gaudncheau, in collaboration with Mr. P. Levaditi, of the Pasteur Institute of Paris, has also carried out a series of experiments, in which the value of calomel, cyanide of mercury, and thymol ointment was satisfactorily controlled by a series of tests in vitro, and by successful applications at the site of inoculation in the case of rabbits an hour after the insertion of the syphilitic virus. These experiments, as well as Dr. Gaudncheau's formula and the method of preparation of the corresponding ointment, have recently been described in a review[1] published under the scientific direction of Mr. A. Calmette, subdirector of the Pasteur Institute, and of Mr. Léon Bernard, professor of hygiene at the Faculté de Médecine de Paris.

Nov. 4th.

Correspondence.

"Audi alteram partem."

THE EDUCATIONAL TREATMENT OF RESIDUAL HEARING IN DEAF CHILDREN.

To the Editor of THE LANCET.

SIR,—Teachers of the deaf are naturally interested in every effort made to improve the condition of the children they teach. Generally speaking, all that medical skill can do to prevent or improve deafness has been tried and exhausted before the children come under the teachers' care, so that deafness, whatever its degree, is almost always a settled condition in the children of our schools. Deafness, however, in children is rarely absolute. The large majority are capable of audible impression to some extent or other, and it is almost certain that between 30 and 40 per cent. of the pupils now in our schools have some power of hearing the voice, more or less loudly produced. The schools accept the duty of enlisting into the service of the individual child whatever advantage, however small, he may possess in the way of natural faculty, but there is a minimum below which for practical purposes it becomes valueless in his training. That minimum is reached at the point of appreciating the more audibly apparent vowel sounds. There are two main hopes that arise from the exercise of even this small degree of vowel hearing. The first is the improvement of the voice and speech of the child, and the other, the possibility, which is extremely remote, of the increase of the hearing power itself. Every teacher is aware of the favourable effects of even vowel hearing on the speech of deaf children, and every teacher would welcome any discovery that would lead to the improvement of the actual power of hearing in his pupils.

Dr. James Kerr Love, the well-known aurist of Glasgow, recently wrote in a note to the parents of deaf children:—

> "If your child has been born deaf, or if illness has caused deafness and loss of speech, his hearing will never return. The exceptions to this statement are so few that they are not worth considering in thinking of the future of your child."

My own experience of 34 years in schools for the deaf entirely confirms Dr. Love's statement. I have never known a single deaf child in schools to recover hearing power. It is very easy for either the teacher or the doctor to be completely misled into attributing to improved hearing power that which actually belongs to lip or speech reading. Excluding this, there is a further possibility of erroneous assumption in the matter from mistaking psychic phenomena for improvement in hearing. Each one of these vowel-hearing children hears an indefinite blur of sound which conveys no meaning to him, although it may be sufficient to enable him mechanically to produce some or other of the stronger vowel elements, and, as I have already said, with marked effect on the quality of voice and speech. Constant repetition of these realised sounds gives them a definite character, and they are more readily appreciated by the ear. Those sounds are united in simple words such as "father" (AR—ER), "good boy" (OO—OY), and even into simple sentences, as "What's your name?" (O—AW—AY), "How old are you?" (OW—O—AR—OO). The child hears only the vowel sounds and becomes used to their particular sequence and distance in specially practised forms, as above, associates the full form generally acquired by lip-reading or writing, and therefore gives the idea of increased hearing power, whereas, actually there is no real improvement at all in this direction, but only an improved recognition and association in the action of the arch of the foot, and the movement produces a much less graceful effect as the muscles employed are larger and less capable of fine movements.

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[1] Revue d'Hygiène et de Police Sanitaire, October, 1921, tome xliii., No. 10.

It is noteworthy that an exceptional proportion of the prize-winners in jumping competitions at Highland games are tailors, the reason being that these men when at work sit in a squatting position with the feet well inverted. In spite of indoor life and lack of exercise the average tailor is more agile than other men, as the arch is spared the work of supporting his weight all day, and his muscles, being idle, remain elastic. *Sedentary people in general—e.g., clerks and students—are more agile than men who stand much, such as policemen and tram-drivers.*

FIG. 1.

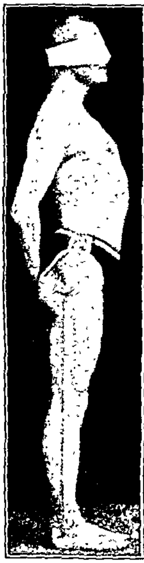


FIG. 2.

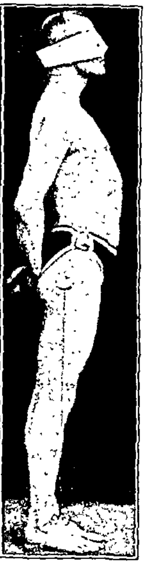


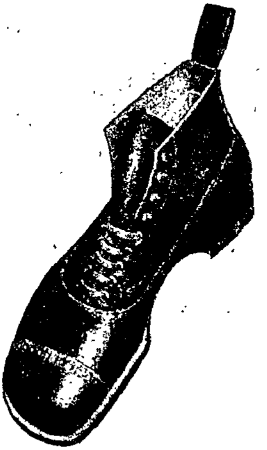
FIG. 1.—The muscles are equally relaxed and a *minimum of energy is required to stand erect with* the heels on the ground. The photograph was taken after wearing heelless boots for two years. The foot *is quite altered in shape, the heel not projecting* behind the leg as it formerly did. The plumb-line *falls from a point vertically below the centre of* gravity—*i.e.*, the last lumbar vertebra, as nearly as could be judged.

FIG. 2.—The back muscles, quadriceps, glutei, and calf *muscles are contracted by conscious effort to retain* the erect posture; even then the latter is not so good as in Fig. 1. The weight of the body is thrown on the spring ligament and internal malleolar group of muscles, to relieve which, when these muscles are weak or tired, people separate their feet in front. They then tend to walk with the feet everted, and the peronei do more of the work in walking than they should: there is thus a dragging down of the arch. Moreover, the tibialis anticus is elongated and weakened.

*The Heelless Boot.**

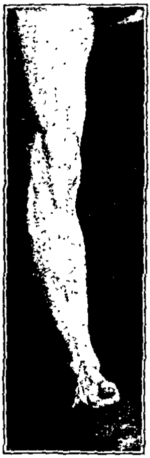
To prevent and cure flat-foot and the other evil effects of heels, *the boots should be so constructed* that the metatarso-phalangeal joint of the big toe, *all the toes, the outer side of the sole, and the heel shall rest on one place parallel to the ground.* Under the arch of the foot the sole should be curved with the convexity upwards and should be fairly flexible. The leather sole, which could be reinforced by spring steel from the heel to the ball of the big toe, should conform to the natural shape of the foot, and the heel and sole must be of the same thickness. The inner edge of the boot should be straight, as in American boots. Ample room should be allowed for flexion of the toes. The arching of the sole is not essential to cure flat-foot, but it looks better and allows the boot to be laced more firmly, thus *compensating for the* loss of muscular sense that *occurs in a foot* when any sort of footwear is used. Lacing the ordinary boot tightly pulls down the crown of the arch towards the flat sole which, being rigid, cannot fit into the arch. *The ideal boot as described is practically a* close-fitting, pliable *covering of leather, supporting without immobilising or hampering* the structures in the arch and ankle, the waist of the boot acting like an artificial annular ligament, bracing up the strained fascia and ligaments under the arch. (Fig. 3.)

FIG. 3.



"Heelless boot," showing heel and sole of same thickness, arched sole, and no curling up of toe.

FIG. 4.



To show development of tibialis anticus. When heels are worn this muscle is rarely as well developed as the calf muscles and peronei.

With heelless boots the carriage is erect and easy, and the improvement in balance is very marked when turning round, golfing, *waltzing, &c. It is noticeable* that footwear used for boxing, wrestling, tennis, athletics, and gymnastics, all of which exercises call *for a maximum of strength, speed, and accuracy of* footwork, is generally made with little or no heel. Owing to the os calcis resuming its natural relation to the ground, the calf muscles have a greater range of contraction, and this is shown by increase of power in high jumping and walking uphill. There is also a greater sense of firmness in the knees and ankles when standing, as also greater agility and quickness of foot work. In walking the feet should be kept parallel and a gliding movement of legs and feet adopted, the "steam-hammer" method of putting the feet to the ground being abandoned. The knee should scarcely be flexed and must not be raised, each foot being dorsiflexed in passing the other. Walking from the hip-joint and ankle should be cultivated, knee-joint action being *only slightly required in correct walking.*

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* Very satisfactory boots and shoes of this type are supplied by Messrs. James Lorimer and Son, Aberdeen.

Association expects to receive early in 1922 a report embodying all the results of treatment up to that date), though some data are necessarily incomplete, there appears every prospect of these figures entirely justifying the claim that this serum method is giving better results than any other in use up to the present, especially when cases of trypanosomiasis *from the same countries* are compared.

The opinion, based on a clinical observation that "although the administration of one dose of salvarsan, neosalvarsan, or atoxyl is sufficient to sterilise the blood stream, symptoms reappear within a variable period averaging about four months and the disease progresses to a fatal termination" comes in for adverse criticism, although in the main it corresponds with the results revealed by an analysis of the figures put forward by Prof. Yorke and certainly agrees with the results of animal experiments detailed by Colonel Wenyon in his article in the *British Medical Journal* of Nov. 5th, wherein he states, "in experimentally inoculated small animals, such as mice, it is usually possible, by means of a single dose of a drug, to bring about the disappearance of trypanosomes from the peripheral blood, but almost invariably relapses occur in a comparatively short time and the animals die of the infection."

Finally, the Tropical Disease Prevention Association is not prejudiced in favour of any one method of treatment, but it does consider that fair play should be given to any method which has shown promise of success. This attitude is not conspicuous in Prof. Yorke's review. On the other hand, far from condemning the value of "Bayer 205," in spite of the fact that to the best of its knowledge this secret remedy has been used on only one human patient, the Association is, the more readily after Colonel Wenyon's experiments, prepared to investigate its importance. A German expedition under the auspices of our Colonial Office is now on its way to Rhodesia to test this treatment with the aid of our medical officers in the colony. The expedition, which I am assured by the Colonial Office is disinterested, is financed entirely by German commercial firms who, in view of the present value of the mark and the non-existence of German colonial interests, may or may not be disinterested also. Further, I am informed that the composition of "Bayer 205" will be revealed later. Past experience of German descriptions of the method of manufacture of "606" leads one to anticipate that this revelation may not enable others to reproduce the remedy in question.

It is, perhaps, not fully recognised by tropical experts working at home that treatment of such a disease as sleeping sickness must be administratively and economically practicable on a large scale as well as scientifically effective in a hospital at home. It cannot be stated too emphatically that the object of the Association is to try serum *and* other methods in the field in order to gauge their respective values for stamping out sleeping sickness.

I am, Sir, yours faithfully,

E. T. Jensen,

Hon. Secretary, Tropical Disease Prevention Association.

Harley-street, W., Nov. 7th, 1921.

BELLADONNA POISONING:

AN OVERDOSE OF ATROPINE.

To the Editor of The Lancet.

Sir,—In connexion with several cases of belladonna poisoning reported lately the following note may be of interest.

A boy of 19, of not a very high intellectual standard, on being discharged from hospital was given a prescription containing some citrate of potash. This prescription he ignored, and did not even take to the dispensary, but he abstracted from my consulting room a small 2 oz. glass stoppered bottle containing about an ounce of the "B.P." solution of atropine sulphate. This he took home with him, and about 2.30 P.M. took, on an empty stomach, a teaspoonful of the solution. Fortunately he did not take a tablespoonful, as he had been ordered to take of the citrate of potash mixture. About 4 P.M. he felt "queer" and his panel doctor was sent for, who gave him an emetic, and about 8.30 P.M. he was sent to the hospital, where I saw him on admission. He was restless and delirious, trying to get off the stretcher, though he could not stand. His pupils were widely dilated, and his mouth and throat very dry, but at no time was there noticed any scarlatiniform rash. A note from his doctor explained the circumstances of the case. No further emetic was given, but morphia (gr. ¼) and nitrate of pilocarpine (gr. ½) were injected, the urine drawn off to prevent any reabsorption, and 2 or 3 pints of strong hot coffee administered. At 11 he was no worse—a smaller dose of morphia and pilocarpine was administered—the urine again drawn off and more hot coffee given. At midnight he recognised the night sister and myself, and at 8 A.M. the next morning he was practically all right—the pupils were, however, still dilated. At noon he ate the usual hospital dinner, and the next day he was discharged.

I obtained the actual teaspoon used to measure the dose: "brimming full" it contains 90 minims, ordinarily "full" about 60 to 70 minims, so that with 1 gr. in 110 minims he must have taken at least ½ gr., and possibly more, of sulphate of atropia on an empty stomach.

I am, Sir, yours faithfully,

H. Neville Taylor, M.A. Camb., M.D. Dub., F.R.C.S. Edin.,

Surgeon, Ebbw Vale Hospital; Consulting Medical Officer, Ebbw Vale Medical Society.

Ebbw Vale, Nov. 1st, 1921.

OCCIPITO-POSTERIOR PRESENTATIONS.

To the Editor of The Lancet.

Sir,—May I call attention to a feature of modern obstetrics? It appears to me that persistent occipito-posterior presentations are not only commoner than text-books would lead us to believe, but tend yearly to become more frequent. In a recent British Medical Association lecture,[1] Prof. W. Blair Bell said that, "Owing to the fact that this presentation, if left alone, almost invariably rotates into the occipito-anterior position, the frequency of the occipito-posterior position as a primary presentation has probably been much underestimated." My experience does not teach me that "almost invariably" patience will resolve the awkward presentation into something simpler. Rather am I impressed by the multiplicity of cases in which labour proceeds until the persistence of this presentation leads to exhaustion of the maternal resources and constitutes a menace to mother and infant. Conversation with fellow practitioners and maternity nurses strengthens my conviction that such cases are on the increase. From rough notes of cases within my own limited experience, I find that in the year 1909 (out of 116 full-time labours attended) 8 were persistent occipito-posterior presentations; in 1918 (of 163) 22; in 1919 (of 115) 24; and in 1920 (of 126) 31. Reduced to percentages, these figures work out as 6·8 in 1909, and 13·1, 20·8, and 24·6 respectively for the last three years.

For various reasons I do not pause to discuss what evolutionary processes contribute to bring about this development. But I see that, if its reality be conceded, it is time that those who instruct potential obstetricians were agreed upon the method best calculated to meet this contingency in labour. Because, in a majority of cases, delay or faulty manipulation means damage to maternal structures—and the tale of injury may not end there. Quarter of a century ago, as a student, I heard of the method which I still deem best—application of forceps, rotation of the fœtal head, and traction—but my professor never himself practised the trick, and, indeed, towards the end of his life showed pride in that fact. Such an attitude, or at best a little bending, is still widely prevalent. Yet the manœuvre is simplicity itself. Chloroform anæsthesia is desirable but not imperative for its performance. Essential to success are (*a*) correct diagnosis of the "lie" of the head and accurate adjustment of the forceps; (*b*) secure maintenance of the "lock" until deliverance of the head, or its deposition within manual control in his abnormality. Before, however, a person indicted for murder can be found to have been insane at the time of the action it must be proved that at that time he was "labouring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or if he did know it, that he did not know he was doing what was wrong." Whatever modifications of what is known as the rule in McNaughton's case may have been at times suggested by the summing up of judges, or brought about by the verdicts of juries, they have been slight, and the law stands as stated above. If it were to be applied to the case of Harold Jones, it would be difficult to contend that a man or boy did not know the nature and quality of his act, who killed his victim as he did, or that he did not know that it was wrong when he concealed the body and washed away the bloodstains with careful cunning. It seems, therefore, that a verdict of guilty of murder followed by sentence of death would have been inevitable if, owing to the later incidence of an assize, he had passed his sixteenth birthday when brought to trial. It is almost inconceivable, however, that a lad of such an age, even with such a record, would have been hanged. His candid and callous confession of two murders would have told both ways. It would have been taken into account as evidence of defective mentality. The usual form of petitions in his favour would have been gone through, invoking the mercy of the Crown. The Home Secretary would have advised a reprieve, and after his sentence had been formally commuted for one of penal servitude, and after further consideration by the medical advisers of the Home Office, Harold Jones in all probability would have found himself in approximately the same situation that he now occupies. It would, however, have been a lengthy and clumsy process; but failure of the defence of insanity in the assize court would have called attention once again to the rule in McNaughton's case and to the law under which judges direct juries. If Jones had been convicted, reprieved, and eventually dealt with as a person suffering from a defect of reason, it would have added weight to the arguments of those, many of whom are distinguished members of the medical profession, who assert that the rule in McNaughton's case does not meet modern requirements. These are of the opinion that there are some persons who know the nature and quality of a criminal act and know that it is wrong, but to treat whom as responsible criminals, punishable as such, is neither reasonable nor humane.

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[1] Delivered before the Bradford Division, May, 1921.

An Inquest without Post-mortem Examination.

At Chester County Court recently his Honour Judge Parsons was called on to decide whether a blacksmith had died as the result of an accident and in the course of his employment, so as to entitle his widow to an award under the Workmen's Compensation Act. The man had fallen dead on July 1st of this year after putting a tyre on a wheel; he had never complained of ill-health and was stated never to have received medical attention during his life. A medical man, who was called as a witness in the county court, was summoned after death had taken place, and as the result of what he then saw was of the opinion that the cause of death was syncope accelerated by the strain of laborious work and the extreme heat. There had been no post-mortem examination. The case for the employers in these circumstances was naturally that there was no evidence of any unusual strain or of anything amounting to an accident to account for the death of a blacksmith doing his usual work. Dr. William Lees, called on their behalf, gave an opinion, from what had been reported to him, that the deceased was suffering from high blood pressure due to thickened arteries and a dilated heart, but he pointed out with emphasis that as there had been no post-mortem examination it was not possible for anyone to state the cause of death with certainty. He could say what was the likely cause of death, but "most coroners' inquests were valueless because post mortems were refused to the doctor, especially in Chester." His Honour made an award in favour of the employers, having no evidence to support any other finding, and expressed himself as inclined to the opinion that a serious injustice might thereby be done, because no post-mortem examination had been held. He hoped that those directly or indirectly responsible for the conduct of coroners' inquests in that district would bear in mind the grave importance of post-mortem examination where the cause of death was not obvious from surface indications, and where serious interests might be involved. The public, and particularly the citizens of Chester, should be grateful to Dr. Lees for calling attention to this serious matter and to the county court judge for adding the weight of his authority to the representation made to him. The coroner's duty is to inquire and certify regarding a sudden death of which the cause is unknown; and there are few such cases, if any, in which a right conclusion can be arrived at with certainty without post-mortem examination. Certainty is important in all cases for the sake of accurate statistics in the interest of the public health, but doubly so where an issue may arise as to the right of survivors to compensation. A majority of the jury may require a coroner to order a post-mortem examination, but probably few jurors are aware of their power in this respect, or sufficiently alive to its importance to exercise it spontaneously.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Medical Inspection of Schools.

IN both medical and political circles here there is a growing movement in favour of the reorganisation of the system of medical inspection of schools. At present school medical officers are recruited by competitive examinations amongst practitioners who in due time express their wish to be admitted as candidates to the competition: "Concours pour le Recrutement de Médecins-inspecteurs des Écoles," which is held in various counties when there are vacancies. Under the present system candidates must be over 32 years of age, of French nationality, and must have been registered under the French Medical Act for at least five years. In the first part of the competition candidates are given two hours to write two papers, one in answer to a question on a children's disease, the other to one on hygiene in schools. A certain number of the candidates, in this instance 175, are selected and admitted to the second part of the examination which consists in the medical inspection of a school and in the oral answer to a question on school hygiene. School medical inspectors carry out their duties for a period of three years. These duties consist in giving at least one consultation a week in each school; the medical inspector has to meet the parents of any new scholar in order to fill in a card on which any morbid condition should be noted, and should also see the parents of any child who has been away from school for more than three days. No treatment is given at the schools, and private practice is permitted to school medical inspectors.

Various suggestions have been made concerning the reorganisation of this system, and it is probable that the Bill dealing with the revision of the French Medical Act, February, 1902, will incorporate some of the modifications which have been suggested. One criticism that has been made is that the number of school children to be under the superintendence of any one inspector has not been officially determined. Dr. Gilbert Laurent makes a suggestion, which carries the approval of the Commission of Hygiene of the Chamber, that this number should be limited to from 500 to 1000, each group forming a "circonscription." He also asked that the school medical inspector of every group should be selected from practitioners in the corresponding district by an election committee at Great Malvern, in the same year taking the degree of M.D. Brux. with honours. For 30 years Dr. Brockatt practised at Malvern, his strong personality, sound judgment, and exceptional medical skill causing his services to be sought after over a wide area in Worcester, Hereford, and adjoining counties. Much of his time and thought was given to the welfare of the boys at Malvern College, where he was medical officer for 18 years. His rule was to be informed of every case of illness or injury, however trivial it might seem to be, and the observance of this regulation did much to prevent the outbreak of epidemics in the school. He took much interest in Freemasonry, and was a past Master of the Malvern Lodge. He was also one of the founders of the Cheseldon Lodge attached to St. Thomas's Hospital. On retiring from practice he was presented by his old patients with a silver cup and a substantial cheque. Dr. Brockatt, who was unmarried, died after a long and painful illness borne with much fortitude.

EDGAR BEAUMONT, M.D. Durh.

Dr. Edgar Beaumont was born in 1860, and was the son of Josiah Beaumont, of Huddersfield. Entering the medical school of St. George's Hospital in 1881, and having previously begun his medical study in Yorkshire, he qualified M.R.C.S. in 1883 and L.R.C.P. and L.S.A. in the following year. In 1907 he took the M.D. at Durham. After a hard struggle in his early years he built up a good general practice in the neighbourhood of the Crystal Palace. His ability and happy disposition brought him success, for he had in a high degree the gift of becoming the friend as well as the medical guide of his patients. He touched life at many points; as surgeon to the Norwood Cottage Hospital he kept well abreast of modern developments and never spared himself. He was a keen horseman and sportsman and enjoyed his holidays like a boy. Some 20 years ago he collaborated, under the pseudonym of Clifford Halifax, with the late Mrs. L. T. Meade in a series of detective stories which appeared in the *Strand Magazine* and had a medical flavour, the investigator having a busy practice in Harley-street. The plots were mainly supplied by Beaumont, who, though urged to continue the series, never found time to do so.

A large number of St. George's men, as well as many patients and friends, will learn of Beaumont's death with sincere sorrow. He was highly popular for the excellent reasons that he was a good, generous, and charitable man, as well as a very competent practitioner. His health had long been unsatisfactory, and he had had several short attacks of acute illness since 1914. He was, however, spared the trials of a prolonged invalidism and incapacity for the life and work he loved, for he died in Charing Cross Hospital 12 hours after the onset of cerebral hæmorrhage. He leaves a widow and a married daughter.

DAVID DRYBROUGH GOLD, M.D.Edin.,
M.O.H. FOR HEREFORDSHIRE.

Dr. D. D. Gold died very suddenly at his residence, Rydal Mount, Hereford, on Friday, Nov. 4th, on returning from a performance at the Kemble theatre. He was found lying dead on the floor of his bedroom, and at the inquest, held on Saturday night, evidence was given that Dr. Gold had recently remarked to a medical friend that he suffered from pains in the chest, but he had not received medical treatment. To his wife and friends he appeared in his usual health, and had spent a very active week. A verdict of death from heart disease was recorded by the coroner, who sat without a jury.

Dr. Gold, who graduated M.B., C.M.Edin. in 1896 and obtained his M.D. in 1901, was formerly assistant M.O.H. for the county of Essex. A Scotsman by birth, he was nearly 50 years of age; in 1918 he married Mrs. Margaret Ward, youngest daughter of the late Mr. James Duffas, of Cupar, Fife. He had held the office of County M.O.H. for Herefordshire ever since January, 1909, and he was deservedly popular with all who came in contact with him. He took a prominent part in the work of the County Insurance Committee and, during the war, in Red Cross work. The news of his death was heard with great regret in the city and county of Hereford.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgn. Comdr. E. T. P. Eames is placed on the retd. list at his own request, with rank of Surgn. Capt.

ARMY MEDICAL SERVICE.

Maj. and Bt. Lt.-Col. R. B. Ainsworth, R.A.M.C., to be Dep. Asst. Dir.-Gen., and to relinquish the temp. rank of Lt.-Col.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt.-Col. E. E. Powell is placed on ret. pay, and is granted the rank of Col.

Maj. and Bt. Lt.-Col. G. F. Sheehan is placed on the h.p. list on account of ill-health.

Maj. J. M. Cuthbert retires on ret. pay.

Lt. (temp. Capt.) M. C. Paterson to be Capt.

Temp. Lt. J. W. H. Steil to be temp. Capt.

J. D. Leahy to be temp. Lt.

The undermentioned temp Capts. relinquish their commns. and retain the rank of Capt.: G. D. K. Waldron, D. Finlayson, and A. A. Watson.

ARMY DENTAL CORPS.

Temp. Capt. C. V. Walker, Dental Surg., from Spec. List, to be Lt., and to be temp. Capt.

Lt. (temp. Capt.) L. S. Woodiwis to be Capt.

ARMY RESERVE OF OFFICERS.

Capt. H. W. Vaughan-Williams, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

The undermentioned officers, having attained the age limit, are retired and retain their rank, with permission to wear the prescribed uniform: Lt.-Cols. J. H. G. Whiteford, A. C. Miller, D. Durran, and A. Butler. Majs. G. S. Ward, J. N. Macmullan, and W. Dyson.

Capt. (now Maj.) H. W. Read is restored to the estbt.

Maj. F. Philip resigns his commn. and retains the rank of Maj., with permission to wear the prescribed uniform.

Capts. B. T. J. Glover, J. M. Johnstone, and J. S. Ranson resign their commns. and retain the rank of Capt.

Capt. A. S. Hooper, having attained the age limit, is retired and retains the rank of Capt.

1st S. Genl. Hosp.—Lt.-Col. (Bt.-Col.) F. Marsh, having attained the age limit, is retired and retains his rank.

4th Lond. Genl. Hosp.—Capt. H. S. Pendlebury, having attained the age limit, is retired and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Maj. T. D. Laird, having attained the age limit, is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

ROYAL AIR FORCE.

Flight-Lt. A. F. Wright relinquishes his temporary commn. on ceasing to be employed.

J. R. Crolius is granted a short service commn. as a Flight-Lt.

DEATHS IN THE SERVICES.

Major-General Sir George Joseph Hamilton Evatt, K.C.B., A.M.S. (retd.), died in London on Nov. 5th, aged 77. Educated at the Royal College of Surgeons and Trinity College, Dublin, he entered the army in 1866 and ten years later served in India with Sir H. Ross. He afterwards served in the Afghan War of 1878-80, and in the second campaign commanded a field hospital and took part in the advance to Kabul under Sir Charles Gough. He also served in the Suakin Expedition. He had held the posts of medical officer at the Royal Military Academy, Woolwich, sanitary officer at the Garrison, secretary to the Royal Victoria Hospital, Netley, and surgeon-general to the Second Army Corps at Salisbury. He was co-founder with Sir James Cantlie of the R.A.M.C. Volunteers in 1883. During the war he was president of the travelling medical board in the Western Command. We hope to publish a fuller notice of Sir George Evatt's career in an early issue of The Lancet.

known words and sentences of those elements of speech he has already indefinitely heard. These sounds, therefore, become mnemonics, calling up words and sentences acquired by means other than hearing for the unvoiced or semi-voiced sounds are not heard. No other conclusion is possible for the consonantal elements of speech generally make insufficient audible appeal to be recognised by actual hearing in these extremely hard of hearing cases. Moreover, if this were not so, apart from any psychic question whatever, there should be no difficulty in inducing children of this description to mechanically reproduce any word they "hear." I have tested cases of this sort by substituting such words as "rather" and "lather" for the known word, "father," and found them reproduced as the latter—a clear evidence that it was not actual hearing power, but rather the association and sequence of the heard vowels, a mnemonic phonetic memory, that accounted for the wrong reproduction. Unless, therefore, "results" in these cases are carefully analysed and traced to their source, even the very elect, whether teachers or doctors, may easily be deceived. And this frequently happens.

Over 30 years since I had charge of a class formed entirely of children with varying degrees of hearing, and 18 months' experience of this class, using the voice unaided or assisted as necessary by the double speaking tube, led me to the conviction that actual hearing power was in no way improved, but rather that the appreciation of what had been already heard was made greater—a qualitative rather than a quantitative improvement. Experience with cases of this nature continuously during the past 30 years entirely confirms my earlier judgment. Teachers do not exclude any scientific possibility, but they do say that these frequent promises for the physical relief of deafness, promises which they have never seen to materialise in any real amelioration of the condition of the deafness of children in our schools, unsettle the minds of parents of deaf children, and prevent them, in many cases, from giving such children the only hope they have—namely, suitable training and education. There is evidence, too, that medical men, including aurists, do not properly appreciate the extreme remoteness of restoring a serviceable degree of hearing power such as would make the child independent of visual means of understanding, and that the best place for such children is one which would not only conserve existing hearing power, but further carry on their oral and general education. In many cases parents and medical men do not understand the present condition of schools for the deaf. There is no doubt that many associate such schools with an atmosphere of perpetual silence, whereas in actual truth the modern school for the deaf is vocally noisier than the school for hearing children often is.

The attitude of teachers of the deaf towards this question is perfectly clear. They would welcome with open arms anything that would give to their pupils even a serviceable modicum of hearing ability, but so far as present knowledge is concerned they know that for the training of residual hearing power in deaf children, whether for increased appreciation or "sorting out" of already hazily heard speech or for the very remote possibility of developing existing hearing power, their methods, based as they are upon a scientific study of phonetics and the practical knowledge of the physical and psychic conditions of the deaf child, promise more effectually than anything yet known the fullest amelioration of the lot of the deaf. Teachers of the deaf have for many years advocated the scientific classification of deaf children according to the history and degree of deafness and their mental condition. If this were done it would be to the great advantage of the different types, but in present circumstances, and even when classification is achieved, teachers of the deaf claim that their special knowledge and experience mark them as more qualified than any other class of teacher or trainer for those children who suffer from deafness, whether complete or partial.

I am, Sir, yours faithfully,
A. J. STORY,
Chairman of the National College of
Stoke-on-Trent, Nov. 4th. Teachers of the Deaf.

To the Editor of THE LANCET.

SIR,—In Dr. Arthur F. Hurst's letter in your issue of Oct. 22nd he appears to claim that in any case of deaf-mutism, in which the vestibular reactions are normal, the deafness is functional. It would be interesting to know if Dr. Hurst is aware of the numerous cases now on record in which microscopic examinations of the labyrinths of deaf-mutes have shown a perfectly normal vestibular apparatus (including the cristæ of the semicircular canals, the macula of the utricle, with their associated nerves and ganglia), but a more or less completely degenerated cochlear apparatus. In the majority of cases the saccule was also affected. Functional examination of these patients showed a normal vestibular response. Some of them were completely deaf, while others showed remains of hearing, and it is these hearing remnants which Prof. Urbantschitsch was anxious to utilise by means of his harmonica and acoustic exercises.

For many years otologists have been in the habit of advising the parents of deaf-mutes with slight remains of hearing to speak to their children in a loud voice and to give the children noisy toys to play with. Dr. Hurst's patient efforts to educate these extremely deaf children are to be commended, but his assumption that the deafness is functional can hardly be accepted. Had the deafness been entirely of this nature, one would have expected sudden and complete restoration of hearing. Further, it is extremely difficult, if not impossible, to believe in a functional disorder of hearing arising in infancy.

I am, Sir, yours faithfully,
J. S. FRASER, M.B., F.R.C.S. Edin.
Edinburgh, Nov. 1st, 1921.

TRYPANOCIDE.

To the Editor of THE LANCET.

SIR,—With reference to the annotation on the Treatment of Sleeping Sickness, which appeared under this heading in your issue of Nov. 5th, I should like to correct a misapprehension in the last paragraph under which apparently Prof. Warrington Yorke laboured when he published his recent critical review in a medium which precluded the possibility of a reply.

The expressed object of the mission as endorsed by the Colonial Office is to test out and compare various methods of treatment already in vogue, or which may be put forward in the near future (the new German preparation "Bayer 205" having been specified) and further to place the Commission under the general direction of an independent scientist. As clinical and laboratory experience is a necessity, the Association has approached Prof. J. W. H. Eyre, of Guy's Hospital, who was in 1906 chairman of the working party of the Malta Fever Committee and he has signified his willingness to accept the post of director.

With reference to Prof. Yorke's criticism as to absence of controls I would point out that the work done by Marshall and Vassallo has been performed by them as Uganda medical officers in the field and in their spare time, without the great advantage of having their patients constantly in hospital and completely under their control, so that they have been unable to carry out all the controls and examinations which would have been possible in a well-equipped laboratory attached to a hospital in England. Further, they have carried out a method of treatment which they have found highly successful in practice and have offered several theories to explain these results. Taking their actual results as compared with other methods of treatment (the Tropical Disease Prevention

Public Health Services.

Scarlet Fever and Diphtheria in London.

A report presented on Nov. 5th to the Metropolitan Asylums Board by its Infectious Hospitals Committee, in considering the special measures required for dealing with the present abnormal seasonal rise of infectious disease, adds: "It is thought that the necessity for these special measures will only last for a few weeks." The report, which is dated Oct. 27th, runs as follows:—

The minimum number of patients in the Board's fever hospitals during 1921 was 5123 at midnight on Sept. 3rd. This *minimum* exceeds the *maximum* number of cases under treatment on any one day in 17 of the last 22 years. From Sept. 4th, when the present seasonal rise began, to midnight on Oct. 24th, 9501 fever cases were admitted and the number under treatment increased between those dates by 3586—viz., from 5123 to 9009. The latter number is 1530 more than on the corresponding date last year, and 340 more than the maximum number of patients under treatment on any one day last year (8669 on Nov. 23rd, 1920), when the seasonal rise was the highest in the Board's history. Since Sept. 3rd the daily admissions of fever cases have exceeded 200 on 21 occasions, the maximum having been 271 on Oct. 4th. The highest on any one day in previous years was 244 on Nov. 5th, 1920.

It may be taken that the Board have beds for about 9500 cases in all—i.e., approximately 900 more than the highest number under treatment last year. At the beginning of the week ended Oct. 22nd the acute hospitals were almost full, practically the whole of the beds then vacant being at the Southern and Orchard Hospitals, Dartford, and not available for direct admissions, but only for cases transferred, as soon as they become convalescent, from the acute hospitals, and it appeared unlikely, having regard to the altogether unprecedented rate at which applications for admission were being received, that the Board would be able to admit all the cases.

In these circumstances, in company with the deputy clerk to the Board and Dr. Caiger, medical superintendent of the South Western Hospital (acting in connexion with infectious fevers in place of the principal medical officer), our chairman saw Sir George Newman, K.C.B., chief medical officer of the Ministry of Health, on Oct. 18th, and discussed the position with him, and as a result a conference took place on Oct. 21st between the representatives of the Board appointed last year and of the medical officers of health—at which the Ministry of Health were also represented—and the following proposals were agreed to—viz.:

(i.) *Scarlet Fever.*—(*a*) On and from Tuesday, Oct. 25th, all applications for the admission of cases of scarlet fever to the Board's hospitals to be made, in the first instance, to the medical officer of health, who will select the most necessitous cases and advise the Board thereon. (*b*) Preference in admitting cases to be given to the poorer and more crowded districts, especially to cases coming from homes where there is unemployment.

(ii.) *Diphtheria.*—It is anticipated that there will be no delay in admitting all cases of diphtheria.

A supplementary statement issued by Mr. W. Eickhoff, chairman of the Infectious Hospitals Committee, brings the figures up to date, Nov. 4th:—

Number in hospital, Nov. 3rd, 1921	9146	Scarlet fever	6239
		Diphtheria	2901
Number a year ago	8041	Scarlet fever	5245
		Diphtheria	2363
Maximum last year, Nov. 23rd, 1920	8669	Scarlet fever	5664
		Diphtheria	2594

	Excess over this time last year.	Excess over maximum last year.
Scarlet fever	994	575
Diphtheria	538	307
All diseases	1105	777

From Sept. 4th to midnight on Nov. 3rd, 1921, 11,545 fever cases were admitted.

The number under treatment between midnight on Sept. 3rd and midnight on Nov. 3rd rose by 4023.

The report concludes by stating that a certain proportion of the patients now admitted show little or no clinical signs of the disease, but are merely bacteriological cases. It was agreed that the medical officers of health should impress upon the medical practitioners in their districts the great desirability of not making application for the admission to hospital of such cases.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Mental Treatment of Ex-Service Men.

Some confusion seems to have arisen as to the allowances payable by the Ministry of Pensions to ex-Service men undergoing treatment for mental disorder. In reply to a question in the House of Commons, Mr. Macpherson explained that men suffering from certifiable insanity due to war service were eligible for treatment and allowances at the expense of the Ministry in any institution approved by the Board of Control, which, in the opinion of his medical advisers, afforded the most appropriate treatment. Treatment allowances in respect of these patients were made on substantially the same basis as in other cases of in-patient treatment and did not vary with the institution. The officers, whose mental condition was due to service, at present in Chartfield were receiving maximum retired pay, but after consultation with the Board of Control the Ministry had not placed this home on the approved list for the reception of such patients and had refused to accept responsibility for the charges made there for medical treatment. This decision is in accordance with the general policy of the Ministry of Pensions, which is to separate persons suffering from certifiable insanity from other patients. Mr. Macpherson pointed out that he was bound to send certified patients to a place approved by the Board of Control. Chartfield had now been inspected and a report of the work done at this institution would be impartially considered when it was received.

HOUSE OF COMMONS.

Wednesday, Nov. 2nd.

National Health Insurance Bill.

The House went into Committee on the National Health Insurance (Prolongation of Insurance) Bill, Mr. James Hope in the chair.

Sir A. Mond (Minister of Health), answering questions with regard to the Bill, said that the additional benefits which would be paid under the measure would be paid by the approved societies. It was difficult to state exactly what those amounts would be, but there was every reason to believe that the figure might be taken as being between £500,000 and £750,000. The approved societies had, he said, a surplus of £5,000,000. In addition, every society had got a contingency fund, and in that there was no less than £2,000,000. Those societies who had a deficiency on valuation could fall back upon this £2,000,000. Therefore he thought they need not be alarmed in regard to finance. As to what benefits the people would receive who were going, so to speak, to have the extra contributions paid for them, obviously it was not proposed to pay the entire full benefit which was to be paid to those who had not fallen into arrears. It was proposed to pay (*a*) medical benefit to June, 1923; (*b*) full maternity benefit; (*c*) full additional benefit; (*d*) sickness benefit of 8*s.* for men and 7*s.* 6*d.* for women, compared with the full benefit. If the Bill was not passed very large numbers of people would fall out, and the whole National Insurance scheme would become endangered.

The Committee stage having been concluded, the Bill was considered on report.

On the motion for the third reading,

Sir G. Collins asked the Minister if he did not think that the time had arrived when all the Insurance Acts should be consolidated into one Act, and when there should be an inquiry into the whole working of National Insurance. He was aware that the Minister had held out hope that he might set up a Committee or Royal Commission to inquire into the working of the Act. He hoped that before the Bill passed its Third Reading, in view of the pressing need for economy in all matters, they might have some assurance from the Minister on that point.

Sir A. Mond agreed that a Consolidation Bill to consolidate all previous legislation on this subject would undoubtedly be of considerable value. Such a Bill was practically prepared, and it was a question only of finding Parliamentary time. He hoped that they would be able to pass such a Bill next session. He had been giving considerable attention to the matter of setting up some form of inquiry into the working of the National Health Insurance. He thought those who wished for an inquiry would be well advised not to press for it immediately, but to allow a more normal state of things to come about in which they could see more clearly where they were, and then to appoint an important commission to deal not merely with one aspect of the cost of administration but with a number of other aspects of the working of the scheme now brought forward.

The Bill was read a third time and passed.

upon the perineum, has been effected; *(c)* a gentle thrusting of head in instrument towards the uterine cavity to secure a sense of freedom before rotation is attempted; *(d)* the simple mechanical revolution of instrument with head as one turns a key to open a door; and *(e)* traction in the routine way, without any other preparation, once the occipito-anterior position has been attained.

Most authorities who commend the method consider that, when rotation has been managed, the forceps should be withdrawn and reapplied in the orthodox position (in conformity with the vaginal curve) but in practice neither embarrassment nor difficulty attends delivery without this precautionary manœuvre. Contrary to expectation, the instrument does not slip or prove awkward. And, always, the minimum of manipulation consistent with efficiency should be our ideal.

An objection raised by Dr. Robert Jardine before the Glasgow Obstetrical Society in March last, that "rotation of the head by forceps . . . . twisted the head on the neck while the shoulders are not turned," is theoretical only. The method offers no practical difficulties; but constitutes, in my experience, the readiest, safest, speediest solution of what is nowadays a common problem in obstetrics.

I am, Sir, yours faithfully,

Belfast, Oct. 31st, 1921. ROBERT WATSON.

BRITISH SPA FEDERATION.

To the Editor of THE LANCET.

SIR,—At the biennial meeting of this Federation, held recently, it was decided that for the future the British spas in the Federation—i.e., Bath, Buxton, Cheltenham, Droitwich, Harrogate, Leamington, Llandrindod Wells, and Woodhall—will require their patients to have medical prescriptions of not more than 12 months old for all treatments except a few generally recognised to be obtainable at any "hydro" or treatment establishment.

I am, Sir, yours faithfully,

F. J. C. BROOME,
Hon. Secretary.

Nov. 2nd, 1921.

⁂ The dangers of self-drugging are largely removed by any regulations which prevent the use of old prescriptions; these are often used by others than those for whom they were intended originally.—ED. L.

PEOPLE'S LEAGUE OF HEALTH.—Under the patronage of Her Majesty the Queen, a ball will take place at Devonshire House (lent by the owners, Messrs. Holland and Hannen and Cubitts) on Friday, Nov. 25th, in aid of the League. At the first issue ball tickets are priced at £2 2s.; they may be obtained, and boxes booked, at the box offices, from the members of the Ball and Fête Committee, and from G. Sherwood Foster, 7, Hanover-square, W. 1.

MEMORIAL TO LIEUT.-COL. E. F. HARRISON.—On Nov. 2nd, the Secretary of State for War unveiled the memorial erected in the Examination Hall of the Pharmaceutical Society, 17, Bloomsbury-square, in honour of the late Lieut.-Colonel E. F. Harrison, Controller of Chemical Warfare, and one of the most distinguished graduates of the Society's school. Colonel Harrison, it may be recalled, joined the army as a private in 1915, when he was 47 years of age. He was transferred as a corporal to the Special Anti-Gas Branch of the Royal Engineers after the first German gas offensive, and at once became identified as the leading spirit in the department organised to fight the menace of poison-gas warfare. He was closely associated with the evolution of the small box respirator, the most perfect of all anti-gas appliances, 20 million of which were manufactured before the end of the war. As a scientific pharmacist, Harrison had made a great reputation for himself before the war, and on his death, in November, 1918, from pneumonia probably aggravated by the effects of the gases to which he was exposed during his researches, his confrères organised a fund to perpetuate his memory. The memorial consists of an alabaster tablet, inlaid with mosaic, in which is set a circular bronze relief portrait. A biographical notice of Colonel Harrison by Prof. E. H. Starling appeared in THE LANCET, 1918, ii., 681.

Obituary.

JOHN WICKHAM LEGG, F.R.C.P. LOND., M.D. LOND., F.S.A.

Dr. J. Wickham Legg died at his home in Oxford on Oct. 28th at the age of 78. Although his chief work lay outside medicine he was at one time a notable figure in London medical circles. He qualified M.R.C.S. Eng. in 1866, becoming M.D. Lond. in 1868, M.R.C.P. Lond. in 1869, and F.R.C.P. Lond. in 1876. Soon after qualification Dr. Legg was chosen by Queen Victoria to act as tutor and medical attendant to her delicate son, Prince Leopold, Duke of Albany, and he continued to act in the latter capacity throughout the life of the prince. Dr. Legg became assistant physician to St. Bartholomew's Hospital in 1878; he remained on the staff for only nine years, retiring owing to ill-health in 1887. He was specially interested in the cardio-vascular system, published a treatise on Hæmophilia, and gave the Bradshaw lecture in 1883 on Cardiac Aneurysms. For the last 30 years of his life Dr. Legg devoted himself to archæological research in general and especially to the study of ancient documents relating to the churches, and was generally accepted as a liturgical expert. Dr. Legg's wife predeceased him; his only son is fellow and tutor of New College, Oxford.

Dr. Arthur Maude writes:—

I knew Wickham Legg well, and was his clinical assistant in the skin department at St. Bartholomew's. It was a pleasure which I can well recall to dine with him at his charming little house in Green-street. He was an excellent host, appreciated his own good fare, and was an interesting and stimulating talker and raconteur. Dr. Legg was appointed casualty physician in January, 1870, on the first institution of that office. He succeeded Dr. Norman Moore as demonstrator of morbid anatomy and was made lecturer on pathology in 1879. Legg was a very handsome man, always well dressed; he had undemocratic prejudices, and occasionally caused amusement among the students by airing them, but those who knew Legg knew their signification. He was a poor lecturer and seemed incapable of arranging a consecutive discourse, but he was a good clinical teacher and could illuminate his ideas with valuable medical anecdotes culled from history and from bygone medical writers. He was, moreover, a careful observer and a humble student when dealing with a subject new to him. Legg succeeded Mr. Morant Baker as dermatologist at Bart.'s, a difficult position since Baker was one of the best skin specialists in London at that time and Legg knew little about the subject when he got his appointment—a very usual position in all medical schools at that date. But he soon learned his subject. I was his first clinical assistant and we worked most agreeably together for six months in 1882, in a large and interesting clinique. In 1880 I saw a great deal of him in Dr. Gee's wards where I was then clerking, when he became the assistant physician corresponding to Dr. Gee. I owe much to his careful and learned instruction, especially in diseases of the liver and pancreas, a branch of pathology in which he took an interest secondary only to his interest in cardiology. He was even then a fine historian and had seen a good deal of British diplomacy abroad, being especially intimate with Sir Augustus Paget, when he was Minister at the Quirinal. I remember that in his library at Green-street he would take down book after book of eighteenth century memoirs to illustrate his wide knowledge of the intrigues of the bygone century.

Though Wickham Legg leaves his mark as historian and archæologist, he was for many years a learned and wise physician.

ANDREW ALEXANDER BROCKATT, M.D. BRUX., M.R.C.S.

Dr. Brockatt, of Great Malvern, who died in London on Oct. 24th, was in his fifty-eighth year. He entered St. Thomas's Hospital as a student in 1881, qualified in 1885, and then held house appointments there and at the Brompton Hospital for Consumption. Before settling down to practice he made several voyages as ship's doctor to India and China, and acted for a time as medical registrar at his own hospital. In 1889 he joined the late Dr. Thelwall Pike in practice basis of all infant foods; whether, if the article was imported for making milk-stout, it was exempt from duty; if so, would he state the reason for this discrimination; and whether the advisability of removing this article from the list altogether would be considered.—Mr. **BALDWIN** replied: Crude lactose, which is used in the manufacture of milk-stout, is not dutiable under any heading of the schedule to Part I. of the Safeguarding of Industries Act; the pure quality, which is used for the preparation of certain special foods, is dutiable as a fine chemical. As I have repeatedly stated, I have no power to exclude on any ground from the operation of the Act any commodity properly included within the general headings of the schedule, but the question whether lactose is properly so included can be referred to the Referee under Section 1 (5), and this, I understand, is being done.—Mr. **LAMBERT** asked whether the right hon. gentleman on May 12th last did not specifically state that food in the widest sense would be excluded from the schedule, and if so, why did he include it by administrative order?—Mr. **BALDWIN** said it was not correct to say that he had included food in the schedule by administrative order. The question whether refined lactose should come within the definition of food would be decided by the Referee.—Mr. **LAMBERT**: Is it not a fact that pure lactose is used in the preparation of infant food and surely it is a key industry?—Mr. **BALDWIN**: That is a matter for the Referee.

Medically Unfit Civil Servants.

Lieut.-Col. Sir **SAMUEL HOARE** asked the Secretary to the Treasury how many ex-Service temporary civil servants had been marked medically unfit for the permanent service.—Mr. **HILTON YOUNG** replied: The number of ex-Service candidates at the recent limited examinations who have been disqualified on medical grounds for permanent appointment is eight.

TUESDAY, NOV. 8TH.

Medical Stores for Russia.

On the report stage of a Supplementary Vote for the Foreign Office of £100,000 in respect of miscellaneous war services,

Lord **R. CECIL** said that the vote included a quantity of medical stores that were being sent to Russia. He wished to know a little more about the policy of the Government in this matter, and whether the Government still adhered to the view about the Russian famine expressed by the Prime Minister on August 15th, when he referred to it as an appalling catastrophe, and said that an international organisation ought to be set up to provide relief for Russia. Now the Government came to the House with a proposal not to send food to Russia, but medical supplies. He did not wish to underestimate the value of medical supplies, but the case was one of starvation, and if it was to be dealt with effectively, food should be sent.

Mr. **CECIL HARMSWORTH** (Under Secretary for Foreign Affairs), replying to the debate, said that the vote was something in the nature of a book-keeping arrangement, so that a quantity of medical stores, clothing, tinned meats, and other foodstuffs, in the possession of the Disposals Board, might be allocated for the purpose of relief in Russia in accordance with the decision of the Government. The value of these stores at present prices was perhaps something like £250,000. They were to be handed over, or have already been handed over, to the British Red Cross Society, to be allocated as they thought right, without any conditions whatever. He understood that the Red Cross Society was establishing bases at Riga and Novarissisk for the distribution of these stores. The Government were informed that these stores were perhaps the most useful they could contribute, but obviously they were by no means an adequate provision for the need represented by the large number of people who were now suffering from famine in Russia.

Approved Lunatic Asylums for Ex-Service Men.

Captain **LOSEBY** asked the Minister of Pensions the total number of lunatic asylums approved of by the Ministry of Pensions for ex-Service men and the number of such approved institutions which were run for private gain.—Mr. **MACPHERSON** replied: Approximately 240 institutions are under the control of, or have been approved by the Board of Control and the Ministry, and of these more than 60 are private establishments.

AT UNIVERSITY COLLEGE, LONDON, and the Medical School of University College Hospital the celebration of the anniversary of the Armistice will be held to-day, Friday, Nov. 11th, at 10.15 A.M. precisely. The roll of honour will be read and the "Last Post" will be sounded, when after two minutes' silence the chairman of the War Memorial Committee will present the medical memorial tablet to the Dean of the Medical School, and the Slade Memorial Tablet to the chairman of the Slade Committee. The tablets will be open to inspection during the day.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Board, held from Oct. 4th to 21st, the following candidates were approved in the undermentioned subjects, but are *not* eligible for diplomas:—

Medicine.—A. R. Abdel Razik, Cairo; M. Bienenstock, Budapest; A. M. F. Browne, St. Mary's; T. H. Cathrall, Oxford and London; Dorothy J. Collier, Oxford and Univ. Coll.; Dorothy A. D. Cropper, King's Coll.; J. G. Drew, Cambridge and St. Thomas's; A. C. D'Souza, Manchester; M. A. El Biblawi, Guy's; Mary C. Elliot, Univ. Coll.; Ena D. Foster, St. Mary's; Dora J. Fox, London; J. E. Gaze, Charing Cross; Nancy K. Gibbs, Univ. Coll.; T. J. E. Gittins, Birmingham; Alice M. F. Goldman, Univ. Coll.; B. O. Hancock, Birmingham; T. H. J. Hargreaves, Charing Cross; M. C. Hartley, London; Hilda M. Haythornthwait, Royal Free; G. H. Hogben and B. D. Hughes, St. Bart.'s; A. O. Jones, Liverpool; E. M. Jones and J. N. Kerr, St. Bart.'s; Lorna Susan King, St. Mary's; H. D. Lawson, London; K. W. Leon, St. Bart.'s; F. H. Mather, Cambridge and London; C. O. Minasian, St. Mary's; W. H. Nettelfield, St. Bart.'s; G. B. Oliva, Liverpool; Hilda W. Page, Univ. Coll.; Edith C. Phelps, Royal Free; Ruth E. Pilgrim, London; Sybil M. Rees and H. R. Rishworth, Charing Cross; R. Salib, Manchester; Olive M. Salmon, St. Mary's; T. A. S. Samuel, London; Gladys M. Sandes, Royal Free; S. Sandler, London; Norah B. A. Sankey, St. Mary's; Ena M. Sansom, Royal Free; Patricia H. S. Shaw, St. Mary's; K. E. Shellshear, St. Bart.'s; Eleanor C. E. Stone, St. Mary's; H. J. V. Sutton, Middlesex; R. S. Swindell, London; and E. H. Weatherall, St. Bart.'s.

Midwifery.—Janet K. Aitken, Royal Free; Ruth M. Arkwright, St. Mary's; C. W. C. Bain, Oxford and St. Thomas's; G. W. Ballance, Birmingham; F. Bentham and H. C. Berlie, St. Mary's; M. Bienenstock, Budapest; Gwendolen M. Brown, Charing Cross; Margaret M. Brownstone, Univ. Coll.; Grace D. Chambers, St. Mary's; Anaple Frances M. Christie, Royal Free; F. S. Coleman, St. Bart.'s; Dorothy J. Collier, Oxford and Univ. Coll.; Florence E. Cowlin, Charing Cross; M. Critchley, Bristol; B. B. Dalal, London; D. B. D'Alwis, Ceylon and Middlesex; Nancy B. Daniell, King's Coll.; F. J. Darbyshire, Westminster; S. Dewar, London; B. Dous, St. Bart.'s; J. G. Drew, Cambridge and St. Thomas's; Beatrice E. Ebden, London; W. C. Faull, St. Mary's; W. W. J. Fernando and G. Fraser-Smith, Middlesex; R. M. Fry, St. Mary's; Hilda M. Garlick, Royal Free; F. A. Gaydon, St. Thomas's; Nancy K. Gibbs, Univ. Coll.; Janet V. Good, London; S. Gordon, St. Bart.'s; J. H. H. Gough, Cambridge and St. Thomas's; Elsie C. Griffin, Dublin and Charing Cross; F. J. S. Hall, St. Mary's; A. G. Hammond, Middlesex; Kathleen M. D. Harding, St. Mary's; T. I. Hardy, Moscow and Royal Free; Doris J. Harston and M. C. Hartley, London; J. K. Hasler, Middlesex; Hilda M. Haythornthwait, Royal Free; M. M. Hegab, Guy's; Edith W. W. Hind, Univ. Coll; W. E. Howell, St. Bart.'s; F. C. Hunt, London; Winifred M. Jenkins, Royal Free; A. Jephcott, Cambridge and St. Bart.'s; R. Jones, Birmingham; Hilda M. Kennedy, Univ. Coll.; J. N. Kerr, St. Bart.'s; D. Krestin, London; Gladys M. Lambourne, St. Mary's; B. L. Laver, Guy's; B. J. Leggett, London; A. Q. Logan and J. N. Loring, St. Thomas's; G. S. Lund, Cambridge and St. Thomas's; Mary C. Lynch, St. Mary's; A. N. Macbeth, Univ. Coll.; Caroline G. L. McHardy, Royal Free; M. Mackenzie, Guy's; Gladys H. Marchant, Calcutta; P. de R. Mason, St. Mary's; J. K. Milward, Guy's; N. R. Mucadam, Bombay and Royal Free; R. W. Nichol and C. P. Oliver, Cambridge and St. Thomas's; G. E. Peacock, King's Coll.; J. H. Piddock, Birmingham; L. E. Pimm, King's Coll.; I. N. O. Price, London; A. B. Rao, Middlesex; Sybil M. Rees, Charing Cross; Hilda E. Reynolds, Bristol; Z. Salama, Birmingham; Olive Metcalfe Salmon, St. Mary's; J. S. Salt, Charing Cross; E. F. Smith, St. Thomas's; N. R. Smith, Sydney; Emma M. Store, Royal Free; M. H. Summers, Middlesex; Mary I. Symons, London; H. W. Taylor, Cambridge and Guy's; W. J. Verheyden, Univ. Coll.; W. J. Vickers, Birmingham; A. J. Vickery, St. Mary's; Hygeia L. J. Wallace, Charing Cross; W. R. Ward, St. Bart.'s; F. W. Widgery, Guy's; Cordelia I. Williamson, Charing Cross; C. P. Wilson, Middlesex; and W. A. Young, St. Thomas's.

Surgery.—A. R. Abdel Razik, Cairo; S. Ackroyd, Leeds; W. F. Attwater, Cambridge and Guy's; Mary H. Y. Blakeston, Royal Free; W. R. Carling, Cambridge and Guy's; A. J. Chiappa, Middlesex; K. A. Darukhanawala, Bombay and St. Thomas's; Sheila Dewar, N. Gallant, and J. H. Gann, London; W. Girgis, St. Mary's; S. Gordon, St. Bart.'s; E. F. Griffith, St. Mary's; B. Kessel, Guy's; H. D. Llewellyn, Cardiff and St. Bart.'s; Caroline G. L. McHardy, London; G. G. Michell and R. E. Overton, Univ. Coll.; G. E. Peacock, King's Coll.; Evelyn V. Pillers, St. Mary's; L. E. Pimm, King's Coll.; A. E. Roche, Cambridge and St. Bart.'s; Gladys Rutherford, Liverpool; C. Satyaraju, Madras and London; Y. S. Soliman, St. Thomas's; E. C. A. Wilson, London; and A. D. Wright, St. Mary's.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The thirty-fourth annual general meeting of Fellows and Members will take place at the College, Lincoln's Inn-fields, W.C., on Thursday, Nov. 17th, at 3 P.M. The following resolutions

INTERNATIONAL LABOUR CONFERENCE AT GENEVA.

(FROM A MEDICAL CORRESPONDENT.)

THE real significance of the appearance of medical items in the programme of the Third International Labour Conference lay not so much in the particular subjects under discussion as in the precedent which is created by the consideration of problems of industrial medicine in the public forum of what may be regarded as a form of international parliament. At the time of writing it is doubtful whether any convention will be agreed upon as regards the use of white lead in paint, and it is almost certain that no convention will be passed at this session for the disinfection of anthrax-infected wool. On the other hand, the attention of employers and governments the world over has been drawn to these two problems and from this fact alone much profit will certainly accrue. But the future of these conferences is pregnant with possibilities much greater than that of the elimination of anthrax from the wool trade. Supposing that merchant seamen should demand an investigation into the prevention of ship-borne plague, or some grinders' union obtain from the Labour Bureau the preparation of a draft convention concerning the use of the old-fashioned sandstone wheel which is responsible for preventable silicosis, measures of capital importance to the health of workers in almost every land might at once be inaugurated.

The Debate on Anthrax.

The measures taken by the British Home Office have been continually referred to in the special anthrax commission now sitting. It may be recalled that the departmental committee appointed to inquire as to the precautions to be taken for prevention of danger from anthrax in the manipulation of wool, goat hair, and camel hair, reported that " precautionary measures are insufficient and that complete protection can only be afforded by disinfection of the raw material before it enters the factories " ; and that subsequently a government disinfecting station was established at Liverpool. The draft convention of the Labour Office, drawn up after consideration of the replies of various governments to a questionnaire, contains provisions for the establishment of an international anthrax commission which would prepare a schedule of suspected wools—" wool " for the purposes of the convention being defined as " sheep's wool, camel hair, and goat hair." Article 7 contains the gist of the proposed convention and runs as follows :—

> Each member which ratifies this convention engages to prohibit the importation of wools included in the " Schedule of Suspected Wools " unless it is satisfied that such wool has been efficiently disinfected at the exporting port, or unless it has made arrangements to secure its efficient disinfection at the importing port.

The administrative difficulties of such a measure are recognised. The Indian representatives made it clear that it is impossible to control the importation of infected wool over 1600 miles of frontier, while to disinfect at the export stations would be an extremely difficult and costly undertaking. Great Britain, it would seem from the discussion, is the only country which uses infected wool to any considerable extent, though as a British delegate remarked, if Great Britain takes effective measures to keep infected wool out of the country the problem will soon affect other nations. The effect of disinfection on the wool itself was a subject of much controversy. While Colonel Foster claims from experience that the disinfected wool is improved in quality, others were disposed to believe that it is sold at a higher price merely because the cost of disinfection has to be added. It seemed to be generally agreed that disinfected wool cannot be " sorted " ; at the same time, it was stated that small risk from " wool-sorters' disease " attends the sorting of better quality wools. More than one delegate pointed out the desirability of attempting to stamp out anthrax at its source, though again the practical difficulties of doing this, especially in the more dangerous eastern countries, appear to be almost insuperable. At the time of writing it seems probable that a permanent commission, representing at least Great Britain, France, and Germany as manufacturing countries, Australia, India, and South Africa as producers, and possibly also Italy and the United States of America with an office in London, will be constituted to inquire into all these problems with instructions to report to the next Conference in 1923.

White Lead in Paint.

On the agenda paper discussion is to be taken in the following order—viz., medical, economic, technical, operative painters. As to the necessity and technical possibility of replacing white lead by zinc oxide in paint, agreement is unlikely at the present Conference. The diagnosis of plumbism was discussed for several hours, almost entirely by medical experts, among them Sir KENNETH GOADBY and Dr. T. M. LEGGE (Great Britain), Dr. LEYMANN and Dr. K. P. LEHMANN (Germany), and Dr. GILBERT (Belgium). The last-named laid much emphasis on the diagnostic importance of the discovery of basophilia. He considered that if large numbers of men in a given industry were found to have basophilic granulation that would prove that industry to be extremely dangerous. Prof. LEHMANN agreed with this significance of the blood observations. Sir KENNETH GOADBY brought forward some evidence of the fallibility of the test and the difficulty of differentiating between the basophilia of lead absorption and that due to malaria. Classifying cases of lead poisoning into two groups, an " explosive " type with classical symptoms and lead absorption accompanied by elimination, he argued that the granulations might well result from the passage of lead through the system in the second type. A medical subcommittee was then appointed to report on the capability of medical science at the present time to recognise plumbism. After sitting in camera this subcommittee reported as follows :—

> Medical science has been able for a long time to diagnose satisfactorily typical and severe cases of plumbism. Modern methods of diagnosis in the hands of specially trained medical men enable them (1) to recognise plumbism in most doubtful cases ; (2) to exclude cases of wrongly alleged plumbism ; (3) to recognise lead absorption and lead poisoning at an earlier stage than heretofore.

There is little, if any, dissent from Sir Kenneth Goadby's attempt to prove that while lead poisoning is an occupational disease it takes a relatively unimportant place among occupational diseases in general and the diseases to which painters in particular are liable. The fate of the draft convention to prohibit the use of white lead in paint is still in doubt.

Congress of Working Women.

The discussions of this international congress, held in Geneva from Oct. 19th–25th, were largely concerned with the subjects to be dealt with subsequently at the Labour Conference. The following extracts from their resolutions may be of interest :—

> *Children on Board Ship.*—All children should be subject to a medical inspection before being accepted in industry or commerce, but no child should be employed on board ship without the most rigorous medical examination. Since they are obliged to leave their families for an indefinite time, from a humanitarian standpoint it is necessary that they should be in perfect health during this period of separation.
>
> *White Lead in Painting.*—This Congress demands the immediate prohibition of the use of white lead in painting and for manufacturing uses. To require periodical medical examinations, public reports, and as wide publicity as possible to make known the extent of the ravages caused by this industrial poison.
>
> *Anthrax.*—It is desirable that wool should be subject to efficient disinfection as near the source of origin as possible : (*a*) while in the hands of the grower, (*b*) or when accumulated by the exporter, (*c*) and certainly prior to embarkation.
>
> *Agriculture.*—Agricultural workers must not sleep in barns and stables. Each worker must be provided with a bed. Every facility for medical assistance for women and children must be provided in rural districts.

Geneva, Nov. 5th.

St. Bartholomew's Hospital was represented by a series of tableaux in the Lord Mayor's Show on Nov. 9th.

SOCIETY OF M.O.H.'S: TUBERCULOSIS MIDLAND SUB-GROUP.—The second general meeting of this sub-group will be held at the Anti-Tuberculosis Centre, 44A, Broad-street, Birmingham, on Dec. 3rd, at 3 P.M. All members of the society are invited to attend. The agenda will include the presidential address: Some Remarks on the Differential Diagnosis of Pulmonary Tuberculosis; confirmation of the committee's selection of two representatives to the central council; and arrangements of dates and places for future meetings.

MALTHUSIAN LEAGUE.—On Nov. 9th a pre-maternity, maternity, and child welfare centre will be opened at 153A, East-street, Walworth, London, S.E., by the League. Two doctors and a doubly certificated nurse will be available at this clinic, where medical advice will include instructions on matters of restriction and spacing of births whenever the circumstances clearly indicate that on medical, hygienic, eugenic, or economic grounds such instruction is necessary.

LADIES' MEDICAL GOLFING SOCIETY.—A successful meeting was held at Oxhey Golf Club on Nov. 8th. In the morning a medal round was played. Mrs. V. Hetherington won the scratch prize with a score of 94; the prize presented by Mrs. Lewis Smith for the best net score was won by Mrs. E. H. Kettle with a score of 83, and Lady Rigby's prize for the best net score in the senior division was won by Miss Edith Adams with a score of 85. In the afternoon a nine-hole foursomes competition against bogey resulted in a tie between Mrs. Grainger Harrison and Miss M. Marshall (1 down) and Lady Goadby and Mrs. W. F. Peller (1 down).

CHELSEA CLINICAL SOCIETY.—The annual dinner was held at the Café Royal, Piccadilly, on Oct. 25th. Sixty-five members and guests were present. In proposing the health of the society, Mr. James Berry, the President of the Medical Society of London, congratulated the Society on its attaining its majority on that evening and on the good work done at its meetings. Dr. D. M. Barcroft, the President, replied, and later proposed the health of the guests, to which toast Sir Lenthal Cheatle, the President of the West London Medico-Chirurgical Society, Mr. Russell Howard, and the President of the Hunterian Society replied. Dr. G. de Bec Turtle, President of the Harveian Society, proposed the health of the President of the Chelsea Clinical Society, and Dr. Barcroft responded.

ULSTER MEDICAL SOCIETY.—The opening meeting of the session was held on Nov. 3rd. Dr. T. Houston, the outgoing president, took the chair at the beginning of the proceedings, and introduced his successor, Dr. Robert Hall, who proceeded to deliver his inaugural address on "Unusual Cases of Pulmonary Disease." The address contained a digest of the speaker's experience. The President subsequently unveiled a tablet containing the names of the members of the Society who had served in the late war, the gift of Dr. H. L. McKisack. A vote of thanks to the donor was cordially passed on the motion of Prof. J. A. Lindsay, seconded by Prof. R. J. Johnstone.

LITERARY INTELLIGENCE.—A new series of volumes to be published by Messrs. George Routledge and Sons, under the title Twentieth Century Chemistry, is in preparation under the editorship of Sir William Tilden, D.Sc., F.R.S., Emeritus Professor in the Imperial College of Science and Technology, South Kensington, and Dr. J. C. Philip, F.R.S., Senior Secretary of the Chemical Society and Professor of Physical Chemistry in the Imperial College. The intention is to provide works of moderate size and price, which, without being exhaustive monographs, will furnish advanced students with a complete survey of the present state of knowledge and opinion in each branch of the science. Several distinguished British and foreign chemists have promised to contribute volumes to the series.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS. The usual quarterly committee meeting was held on Oct. 28th, at 11, Chandos-street, London, W. Six grants were made to cases in the benevolent branch for the orphans of officers, amounting to £158, and 46 grants in the relief branch for widows and orphans of the rank and file, amounting to £1366. These funds exist for the relief of widows and orphans of commissioned officers, non-commissioned officers, and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and New Armies, and also for the relief of those who have been so severely damaged in the late war that they need help for the education of children. Requests for relief should be addressed to the hon. secretary at the offices of the funds, 11, Chandos-street, Cavendish-square, London, W. 1.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held in the board-room of the Miller General Hospital, Greenwich, to-day, Friday, at 8.45 P.M. Dr. C. T. T. Comber, the president, will occupy the chair and Mr. P. B. Roth will deliver an address on Treatment of Fractures.

DUBLIN UNIVERSITY BIOLOGICAL ASSOCIATION.—The opening meeting of the Dublin University Biological Association was held last Saturday evening, when Dr. J. Speares, President, read a paper on Some Experiences of Vaccine Therapy. The paper was discussed by Drs. A. C. O'Sullivan, J. T. Wigham, H. S. Sugars, and Mr. K. L. G. Gunn.

SAFEGUARDING OF INDUSTRIES ACT.—The Board of Trade have received a formal notice of complaint from the Eastern and Russian Trading Company, of 8, Drapers-gardens, Throgmorton-avenue, London, E.C. 2, that santonine has been improperly included in the lists of articles chargeable with duty under Part I. of the Act.

NATIONAL PROVIDENT SCHEME.—A meeting, open to all members of the medical profession and specially to the medical staffs of hospitals, arranged by the Marylebone Division of the British Medical Association, will be held at 8.30 P.M., on Nov. 16th, at 11, Chandos-street, London, W., when Mr. W. McAdam Eccles will move: "That this meeting of medical practitioners in the Marylebone Division of the British Medical Association approves in general of the National Provident Scheme for Hospital and Additional Medical Services," and Dr. C. O. Hawthorne will oppose. Thereafter discussion will be open.

HONOUR TO A MEDICAL MAN.—The town council of Oldham has resolved unanimously to confer the honour of the freedom of the borough upon Dr. Thomas Fawsitt, who for over half a century has rendered service to the citizens of Oldham as a surgeon in the Royal Infirmary, for some time chairman of its governors, and in his extensive private practice before his retirement. Dr. Fawsitt still continues to take a lively interest in the infirmary. A public subscription is being set on foot to raise funds to endow a bed in the infirmary to commemorate his name.

THE LATE DR. R. P. WOODROOFE.—Richard Percy Woodroofe, who died at Eccleshill, Bradford, on Oct. 24th, aged 58, came of a family of doctors and was born at Dublin, where he received his early education. He also studied at Yorkshire College, and in 1884 qualified with the L.A.H. Dub. and the L.M. of the Coombe Hospital. Ten years later he obtained the L.R.C.S.I. and L.M. Starting his medical career as surgeon and medical assistant at the Mercers Hospital, Dublin, he settled in Yorkshire, becoming medical officer at Eccleshill, and taking a full share in local medical politics.

N.C.C.V.D. SCOTTISH COMMITTEE.—A Conference of representatives of the local authorities of Scotland is to be held in the City Chambers, Glasgow, on Friday, Dec. 2nd, to discuss various aspects of the venereal diseases problem preparatory to the undertaking of an active educational campaign throughout the country. The Conference is being organised by the Scottish Committee of the National Council, of which Dr. McGregor-Robertson is chairman and Mr. W. E. Whyte secretary. Sir Malcolm Morris, a vice-president of the Council, Sir Leslie Mackenzie, medical member of the Scottish Board of Health, and other prominent representatives of Local Government activities in Scotland, will take part in the proceedings, over which Lord Provost Paxton presides.

HARROGATE MEDICAL SOCIETY.—The second meeting of the session was held at the clinical laboratory, by permission of Dr. Sinclair Miller and Dr. F. B. Smith, on Oct. 20th. Dr. A. Mantle presided and there was a large attendance of members. Part of the evening was devoted to the examination and discussion of pathological specimens from recent cases of clinical interest. Dr. Miller read a paper on Basal Metabolism, and this was followed by a demonstration of the Portable Benedict Apparatus by Mr. Kendrick, of the Sanborn Company, London. Dr. W. Bain, Dr. W. Edgecombe, Dr. G. W. S. Saberton, Dr. Bertram Watson, and others discussed the paper and the value of the apparatus as applied to clinical work.—At a meeting on Nov. 3rd a paper was read by Mr. A. B. Pavey-Smith, F.R.C.S., entitled Some Remote Effects of Tonsillitis. The evidence, experimental and clinical, pointing to the tonsil as an important focus of infection in systemic disease was reviewed, and the diagnosis of latent chronic tonsillitis described. A discussion followed, concerned especially with arthritis and its connexion with tonsillar infection.

The Supply of Milk for Mothers and Children.

Sir **ROBERT NEWMAN** asked the Minister of Health whether in consequence of Circular No. 185, issued by the Ministry of Health on March 31st, 1921, the powers of local authorities to supply milk to mothers and children had been considerably curtailed, with the result that this winter, when great distress and suffering was likely to be experienced owing to unemployment, the local authorities would not be allowed to supply as much milk to mothers and children as last year when conditions were more favourable; and whether, in view of the importance of protecting child life, he would consider the advisability of restoring to the local authorities the discretionary powers they possessed under the Milk (Mothers and Children) Order, 1919, before those powers were curtailed by the circular issued last March.—Sir A. **MOND** replied: The conditions imposed by Circular 185 were designed mainly to ensure that milk should be supplied only to necessitous cases, and it is not anticipated that they will result in any appreciable reduction of the amount supplied in each case. Recent estimates indicate that the expenditure of local authorities on milk has increased under the new conditions. The Milk (Mothers and Children) Orders, 1919, extended the supply to other than necessitous cases. These orders were made under powers conferred by the Defence of the Realm Regulations, which have now lapsed, and in any case their restoration would not assist the persons whom my hon. friend has in mind.

Medical Officers of Bradford Corporation.

Mr. **RATCLIFFE** asked the Minister of Health if he was aware that the Bradford corporation employed 33 full-time medical officers; what their annual salaries amounted to; how did this number compare with other towns of a similar size and population; how did the amount of their salaries affect the taxpayer; and could he take any steps to reduce this number.—Sir A. **MOND** replied: I have not full information as to the total number of medical officers employed by the corporation of Bradford. I am concerned only with those whose salaries are a charge on grants administered by my department, and I am now in communication with the Bradford corporation as to this portion of the staff.

Summer Time and School-children.

Major **KELLEY** asked the President of the Board of Education whether his department had obtained the opinion of education authorities with regard to the effect of summer time on school-children; and whether their opinion was in favour of its continuance.—Mr. J. **PARKER** replied: The Board have not yet received replies to their circular of May 24th from all the local education authorities, but of the 272 authorities who have replied a majority (158) are in favour of the continuance of the Summer Time Act, 29 expressed no definite opinion, and while 85 attribute some ill-effects to the operation of the Act, the great majority of those authorities take the view that they would be obviated if the parents would send the children to bed at a reasonable hour.

Approved Societies and Medical Benefit.

Mr. **TREVELYAN THOMSON** asked the Minister of Health what reduction he proposed to make in the levy of 9*s.* per member required from approved societies on account of medical benefits, seeing that doctors' fees had now been reduced from 11*s.* to 9*s.* 6*d.* per member.—Sir A. **MOND** replied: The present cost of medical benefit is 13*s.* 9*d.* per head. Nine shillings and sixpence is charged to Insurance Funds, to which the Exchequer contributes the statutory two-ninths. The excess cost of 4*s.* 3*d.* per head is met by a special Exchequer grant. The saving due to a reduction in doctor's fees must clearly go in relief of the excess cost charged to the Exchequer.

Testing of Clinical Thermometers.

Mr. **JESSON** asked the President of the Board of Trade whether clinical thermometers of foreign manufacture would be accepted for testing at the National Physical Laboratory; and whether the Government would insist that such thermometers be marked with the country of origin, as well as the letters N.P.L., in order to prevent the assumption that they were of British manufacture, with a view to safeguarding the British industry.—Sir **WILLIAM MITCHELL-THOMSON** replied: The answer to the first part of the question is in the affirmative. I am advised that the standardisation mark of the National Physical Laboratory, which is registered under the Trade Marks Act, is and has always been intended to convey a certificate of the accuracy of the articles marked. The Laboratory are not in a position to determine or certify the origin of thermometers presented to them for marking. The question of the requirement of an indication of origin in the case of clinical thermometers is part of the large question of the compulsory marking of foreign goods generally which will be dealt with in the Bill to amend the Merchandise Marks Act which His Majesty's Government have undertaken to introduce.

THURSDAY, NOV. 3RD.

Bellahouston Hospital Report.

Mr. **DUNCAN GRAHAM** asked the Minister of Pensions whether it was his intention to circulate the report of the committee who inquired into the conditions obtaining in Bellahouston Hospital; and, if so, when it would be circulated.—Mr. **MACPHERSON** replied: The report will be published and placed on sale at the earliest possible date. I will arrange to supply my hon. friend with a copy if he so desires.

Institutional Treatment of Tuberculous Ex-soldiers.

Mr. **TREVELYAN THOMSON** asked the Minister of Pensions what steps had been taken and were being taken by his department to indemnify local insurance authorities for the expenses incurred by them for the institutional treatment of ex-Service men whose appeals for pensions on account of tuberculosis had been upheld after the Ministry had declined liability, and ceased payments for institutional treatment.—Mr. **MACPHERSON** replied: The expenses of residential treatment for ex-Service men suffering from tuberculosis are settled directly between my department and the Ministry of Health, in accordance with preferential arrangements applicable to ex-Service men, and subject to a mutual arrangement entered into between the two departments. I am not aware that there has been any failure to deal with the claims referred to in the question in accordance with the agreement reached.

Small-pox in Glasgow.

Mr. **ROBERT YOUNG** asked the Secretary for Scotland if he would ascertain from the medical officer of health for Glasgow how many of the children under 10 years of age who were attacked by small-pox in the outbreak in 1920 belonged to families living in one room, two rooms, three rooms, and four rooms and upwards, respectively; and whether any, and, if so, how many, of the fatal cases came from such families.—Mr. **PRATT** replied: The figures in reply to the first part of the question are respectively 13, 66, 13, and 2. Of these, 5, 18, 6, and 2 respectively were fatal cases. These figures exclude 4 cases from beyond the city boundary.

Soldiers and Venereal Disease.

Major **COLFOX** asked the Secretary of State for War what number of soldiers suffering from venereal disease were treated in barracks or auxiliary hospitals, and were not calculated in the official returns.—Sir L. **WORTHINGTON-EVANS** replied: All soldiers suffering from venereal disease are admitted to hospital and are treated in hospital till active signs of the disease have disappeared and they are fit to return to duty. All such cases are included in the official statistical returns. Cases of syphilis have subsequently to undergo a prolonged course of out-patient treatment in barracks, but they are not included in statistical returns after their discharge from hospital unlsss readmission is necessary, when they are again included in the returns.

Major **COLFOX** asked the Secretary of State for War what had been the incidence in rates per 1000 per annum of venereal disease amongst British troops in the United Kingdom, in the Army of the Rhine, and in the Army of the Black Sea, for 1919, 1920, and the first half of 1921.—Sir L. **WORTHINGTON-EVANS** replied: In the subjoined table the figures shown between brackets for 1919 are those which were given under reserve on May 18th in reply to Capt. Elliott. It is now clear, however, that, owing to the rapidity of demobilisation and to other circumstances, they are quite unreliable. No figures for 1919 are available for the Black Sea.

Area.	Annual rate per 1000 of strength.		
	1919.	1920.	January to June, 1921.
United Kingdom	[59]	48·30	38·03
Army of Rhine	[46]	188·61	148·90
Army of Black Sea ..	—	213·73	238·94

MONDAY, NOV. 7th.

Import of Pure Milk Sugar.

Mr. **LAMBERT** asked the President of the Board of Trade if he was aware that one firm in this country uses from 25,000 to 30,000 gallons of milk per week in the preparation of infants' food and that pure milk sugar, an essential ingredient not produced in this country, was subjected to a 33⅓ import duty; and whether, seeing that such a duty would discourage milk production and increase the price of infants' food, he would at once cancel the duty.—Mr. **MYERS** asked the President of the Board of Trade whether sugar-milk, British Pharmacopœia, had been entered as liable for duty under Part I. of the Safeguarding of Industries Act; whether he was aware that this article was an essential

WEDNESDAY.—10 A.M., Dr. Parkinson, and 2 P.M., Dr. Moon: Out-patients.

THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.

FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Goodall: In-patients.

SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 17th.—4 P.M., Lecture:—Dr. F. J. Poynton: Medical Calamities in Childhood.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Nov. 17th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: Electrical Treatments, Ionisation, &c.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Nov. 15th.—4.30 P.M., Dr. C. H. Melland: Prognosis and Treatment of Pernicious Anæmia.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURES, at Whitworth-street, West Branch, Manchester.

FRIDAY, Nov. 18th.—4.30 P.M., Mr. Morley: Abdominal Tuberculosis.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

THURSDAY, Nov. 17th.—4.15 P.M., Dr. A. C. Magian: Sexual Debility.

SALFORD ROYAL HOSPITAL.

THURSDAY, Nov. 17th.—4.30 P.M., Mr. R. Ollerenshaw: Demonstration of Orthopædic Cases.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE. Post-Graduate Lectures and Demonstrations.

TUESDAY, Nov. 15th. (At the Royal Infirmary).—3.30 P.M., Prof. A. M. Connell: Fractures. 4.15 P.M., Dr. A. G. Yates: Asthma.

FRIDAY. (At the Royal Infirmary).—3.30 P.M., Dr. A. E. Barnes: Demonstration of Cases. 4.15 P.M., Mr. W. S. Kerr: Demonstration of Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.

A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.

WEDNESDAY, Nov. 16th.—4 P.M., Lecture V.:—Prof. S. Lyle Cummins: Tuberculosis in Relation to Industry.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF SCOTLAND.

FRIDAY, Nov. 18th, at the Royal College of Physicians of Edinburgh, Queen-street, Edinburgh.—3 P.M., Dr. Haydn Brown on Neuroinduction.

Appointments

BANKS, C., M.B., B.S. Lond., has been appointed Medical Officer of Health for Halifax.

WHITEHOUSE, BECKWITH, M.S. Lond., F.R.C.S., Assistant to the Chair of Midwifery and Diseases of Women, University of Birmingham.

Manchester Royal Infirmary: STAFFORD, H., M.B., Ch.B. (Vict.) and PHILBIN, E., M.B., Ch.B. (Vict.), House Physicians; FISHER, T. N., M.B., Ch.B. (Vict.), COOPE, J. E., M.B., Ch.B. (Vict.), and ASHCROFT, G. V., M.B., Ch.B. (Vict.), House Surgeons; POWELL, W. E., M.B., Ch.B. (Vict.) and WILLIAMSON, R., M.B., Ch.B. (Vict.), House Surgeons for Specials Department: RYRIE, B. J., M.B., Ch.B. (Edin.), Assistant Pathologist.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen, Royal Hospital for Sick Children.—Hon. S.

Ashford, Kent, West Ashford Union.—Dist. M.O., &c. £350.

Aylesford, Kent, Preston Hall Training Colony.—Asst. M.O. £600.

Bedford County Hospital.—Asst. H.S. £150.

Bridge of Weir, Consumption Sanatoria of Scotland.—Res. Asst. M.O. £200.

Brighton Education Committee.—Female Asst. Sch. Doctor. £500.

Brighton, Royal Sussex County Hospital.—H.S. £140.

Bristol General Hospital.—Cas. H.S. £175.

Burslem Haywood Hospital.—Res. M.O. £200.

Bury Infirmary.—Junior H.S. £150.

Cambridge, John Bonnett Clinical Laboratory.—Clin. Path. £300.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Cardiff, University of South Wales and Monmouthshire.—Lecturer in Path. and Bact. £750.

Carlisle, Cumberland Infirmary.—Res. M.O. £180.

City of Westminster Union Infirmary, 369, Fulham-road, S.W.—Second Asst. M.O. £300.

Devizes, Wilts County Asylum.—Asst. M.O. £350.

Durham County Council.—Asst. Welfare M.O. £600.

East London Hospital for Children, &c., Shadwell, E.—H.S. £125.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.

Northern Central Hospital, Holloway, N.—H.S. £150.

Greenwich, Dreadnought Hospital.—H.S. £150.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hampstead General and North-West London Hospital, Haverstock-hill.—H.P., H.S., Cas. M.O. and Cas. Surg. O. Each £150. Also Dermatologist.

Hull Royal Infirmary.—Hon. Pathologist.

Leamington Spa, Warneford, &c., General Hospital.—Res. H.P. £150.

Leeds, Ministry of Pensions Hospital, Becketts Park.—Jun. M.O £350.

Lincoln County Hospital.—Jun. H.S. £150.

Manchester, County Asylum, Prestwich.—Asst. M.O. £528 18s.

Manchester, St. John's Hospital for the Ear.—Anæsthetist. £50.

Manchester, St. Mary's Hospitals for Women, &c.—Two H.S.'s. Each £100.

Margate, Royal Sea Bathing Hospital.—S. £200.

Metropolitan Ear, Nose and Throat Hospital, 2, Fitzroy-square.—Two Sen. Clin. Assts.

Middlesbrough, North Riding Infirmary.—Sen. H.S. and Jun. H.S. £200 and £150.

Mothers' Hospital, Lower Clapton-road, E.—Res. M.O.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Norfolk County Council.—Asst. Tuberc. O. £550.

Nottingham General Hospital.—H.S. £200.

Perth Royal Infirmary.—Jun. Res. M.O. £150.

Portsmouth Royal Hospital.—Third H.S. £150.

Prince of Wales's General Hospital, Tottenham.—Hon. Surg. Reg.

Royal London Ophthalmic Hospital.—Refraction Asst. £100.

Royal Naval Medical Service.—Surg. Lieuts.

St. Peter's Hospital, Henrietta-street.—Two Hon. Asst. Surgs.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. £100.

Shanghai Municipal Council.—Asst. Health Officer. £1540.

Sheffield Royal Infirmary.—H.P. and Asst. Cas. O. £150.

Staffordshire General Infirmary, Stafford.—H.S. £250.

Sunderland, Royal Infirmary. H.P. £200.

Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.

Virginia Water, Surrey, Holloway Sanatorium.—Jun. Asst. M.O. £400.

West London Hospital, Hammersmith-road, W.—Hon. Surg. Registrar.

Western Ophthalmic Hospital, Marylebone-road.—Two Hon. Asst. Surgs.

Wokingham, Berks, Pinewood.—Med. Supt. £600.

York County Hospital.—H.P. £150.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments: Broughty Ferry (Forfar), Inverary (Argyll), and Peterhead (Aberdeen).

Births, Marriages, and Deaths.

BIRTHS.

LAWRY.—On Nov 3rd, at "The Red House," Falmouth, the wife of J. Littleton Lawry, M.D., B.S. (Lond.), of a daughter.

MARRIAGES.

HODGSON—GREIG.—On Nov. 5th, at the Parish Church, Pyrford, Surrey, R. G. Keith Hodgson, M.B., B.S., to Dorothy Margaret Greig, second daughter of Mr. and Mrs. H F. Greig, of Haverstock Hill, N.W.

DEATHS.

EVATT.—On Nov. 5th, at Earl's Court-square, S.W., Major-General Sir George Joseph Hamilton Evatt, K.C.B., late R.A.M.C., aged 77.

GOLD.—On Nov. 4th, suddenly, at Rydal Mount, Hereford, David Drybrough Gold, M.D., M.O.H. for Herefordshire, aged 48.

SMART.—On Nov. 5th, after an operation, at Birmingham, William Herbert Smart, M.A., M.B., aged 59.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

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	Three Months	0	12	6

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will be sent in to the President and Council on behalf of the Society of Members of the College :—

(1) "That this thirty-fourth annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation on the Council of the College, which (as now constituted) only represents those Members who also hold the Fellowship; and that it does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation."

(2) "That as the Royal College of Surgeons is composed of about 18,000 persons, of whom over 16,000 are engaged in general practice, this annual meeting requests the President and Council to nominate *at least* two Members in general practice to represent the interests of general practitioners in the management of College affairs."

(3) "That this meeting of Fellows and Members earnestly requests the President of the College to make a detailed statement *here and now* as to all the reasons, legal and otherwise, for the Council persisting with a refusal to allow representation on the Council of the Members in general practice; and to state definitely whether legal advice has been taken as to any possible means of overcoming any difficulties in the way of carrying out our wishes; and, if so, to declare what that advice was."

THE sum realised at the Manchester University bazaar is stated to be likely to reach £15,000.

UNIVERSITY OF EDINBURGH.—On Nov. 4th the fourteenth annual dinner of Edinburgh University Graduates' Club was held at Tilley's Rooms, Newcastle. Dr. D. W. Inglis (Hebburn), president of the club, occupied the chair. The guest of the evening was Sir J. Alfred Ewing, F.R.S., Principal of the Edinburgh University. Amongst others present were Dr. David Drummond (Vice-Chancellor of the University of Durham and President of the British Medical Association), Dr. Harold Kerr (Medical Officer of Health for Newcastle and hon. treasurer of the club). The President proposed the toast of Alma Mater; in his reply Sir J. Alfred Ewing stated that a very satisfactory feature of university life was the keenness and energy with which men returned from the war had resumed their studies. The presence of women in the university, he thought, had done no harm. At Edinburgh they were now engaged in building what he considered would be the finest chemical laboratory in the country. Alluding to the expense of training, he remarked that the cost of education at Edinburgh had recently been found to be slightly lower than any other, and its efficiency was second to none. Last year the total Government grant to universities was increased to one and a half million sterling, but they had been told that the grant was to be diminished by £200,000 next year. Moreover, they had to do all they could themselves, and he urged the necessity for voluntary financial support. The toast of Sister Universities was given by Dr. J. Wilkie Smith, who said it was a great pity that two such colleges as Armstrong College and the College of Medicine in Newcastle should be hampered by want of funds. Responding, Dr. David Drummond paid a tribute to the "city of their adoption," and emphasised the need for men of sound common sense at the head of the universities.

UNIVERSITY OF BRISTOL.—An unusual means of awakening public interest in the necessity for increased monetary support of the universities has been utilised by the Appeal Director of the University of Bristol Appeal Fund, in the form of a 48-page pamphlet containing about 150 excellent sepia reproductions of photographs of the university, of its associate colleges and surroundings, and of scenes representing practically every side of university life. The claim is made in a footnote that "at no university in the world do students secure greater facilities for being brought into touch with the practical affairs of life." A sum of £10,000 has been received in support of this appeal from the Imperial Tobacco Co. (of Great Britain and Ireland), Ltd., Bristol, also a sum of £1000 from the Directors of the National Provincial and Union Bank of England, Ltd.

PAYMENTS BY HOSPITAL PATIENTS IN BRISTOL.—The two large general hospitals of Bristol have now had some little experience of the system inaugurated this year of collecting payments from patients to meet excessive financial strain. Speaking at the General Hospital the other day the chairman, Mr. Herbert M. Baker, explained that the sums collected from patients represented only a fraction of the total cost. The average cost per bed per week was over £3, while the sum asked from each patient is but one guinea per week. He was able to report the gratifying fact that contributions from workpeople had increased instead of falling off as had been expected. At the Royal Infirmary, whose president, Mr. Henry Wills, has just resigned owing to ill-health, the almoner reported that only one in five of the patients admitted is able to pay the small contribution asked for. It is therefore clear that some other form of collection of income must be devised if these institutions are to be established on a sound financial basis.

PHYLLIS SIEPMANN MEMORIAL PRIZE.—Miss Phyllis Siepmann, a daughter of a Clifton College master and a student in the Faculty of Medicine of Bristol University, recently died of septicæmia while acting as a surgical dresser at the Royal Infirmary. In her memory her brother, Mr. Henry Arthur Siepmann, has established an annual prize of the value of £50 for the third-year student at the infirmary who shall secure first place in an examination in medicine and surgery, with special reference to diseases of children.

DIPHTHERIA IN BRISTOL.—A memorandum issued by Dr. D. S. Davies (M.O.H. Bristol) and Dr. B. A. Peters (resident medical officer, Bristol City Fever Hospital, Ham Green) to medical practitioners in Bristol, calls attention to the occurrence within the city of cases of diphtheria of an unusually virulent type. The formation of membrane is much delayed, often till two or three days after the onset of œdema of the fauces and neck. Occasionally the fauces escape almost wholly, the infection attacking the naso-pharynx and provoking a sanious or purulent rhinorrhœa. The memorandum urges practitioners to give large doses of antitoxin as soon as symptoms are manifest. Few of the patients survive if this is delayed beyond the first 48 hours; early treatment is rendered the more necessary by the deceptive mildness of the initial symptoms. There is often no local pain, the child complaining only of headache or sickness, and pyrexia is usually slight and of brief duration. Cases of primary conjunctival and vulvar infection have been seen. A circular has also been issued to the local profession announcing that a demonstration of the disease will be given by Dr. Peters, who is also the university lecturer on Fevers, to any practitioners who apply for tickets to the Director of Post-Graduate Studies, Faculty of Medicine, University of Bristol.

THE ROYAL MEDICAL BENEVOLENT FUND GUILD.—A sale of Paris millinery, fancy articles, garden produce, and other useful and attractive commodities will be held at 9, Wetherby-gardens, London, S.W. 5, on Thursday next, Nov. 17th, from 10 A.M. to 6 P.M., in aid of the Royal Medical Benevolent Fund. It is hoped that readers of THE LANCET will bring this sale to the notice of their patients.

The Guild is a branch of the Fund, formed to assist distressed members of the medical profession, their wives, widows, or families by: (1) Personal service; (2) providing clothing; (3) giving educational or other help as recommended by the General Purposes Committee of the Guild; (4) promoting any other work which may seem desirable, or may be approved by the Executive Committee of the Fund; (5) by gifts of money. Clothing is urgently required for men, children, and ladies, both old and young—especially the latter; and there are numerous directions in which any money realised by the sale can be expended usefully. The visiting secretary of the Fund investigates all cases and reports to headquarters, who, on being satisfied, allocate the suitable form of aid. Communications may be addressed to Mrs. Violet L. C. Cotton, at 9, Wetherby-gardens, S.W.

POOR-LAW REFORM IN IRELAND.—During the past six months an extensive and far-reaching reform of Poor-law administration has been going on in the greater part of Ireland. The county councils and other local authorities in nearly all southern Ireland had repudiated the authority of the Local Government Board and had been deprived of the Treasury grants ordinarily paid for health services. Acting on the advice of the Local Government Department of Dail Earann, the several authorities in each county came together and in conference decided on a scheme of Poor-law and health reform for their county. Most of the counties in the three southern provinces of Ireland have now constructed their schemes, and are gradually getting them into working order. Much local opposition has been avoided owing to the poverty of the local authorities consequent on the diversion of the Treasury grants, and Dail Earann has taken skilful advantage of this poverty to press forward its schemes of reform. Although the schemes in the different counties vary somewhat in detail, they are in general conformity to one model. All workhouses as such are abolished, and one county home is established to house the aged or infirm inmates of the workhouses. Boarding-out of children is encouraged, but in some counties there is provision for a children's home. The hospital system of the county is to be organised on the basis of one county hospital in each county, with, in large counties, one or more district hospitals. The Poor-law medical relief system is not altered. The administrative area is to be the county. Our Irish Correspondent adds: On the whole, the reforms appear to be on sound lines, and are very similar to those proposed last year by the Irish Public Health Council and 15 years ago by the Vice-Regal Commission. The chief drawback in the present reforms is that they are on a county, not on a national basis.

"LA FRANCE."

UNDER this title a review of the French press is appearing weekly, published by Messrs. Evans Brothers, Ltd., at Montague House, Russell-square, London, W.C. The paper consists partly of extracts from the best French newspapers, and partly of short articles designed to interest English readers in an intimate manner with French life and manners. Parents whose children are studying French will be glad to know of a paper which they can obtain each week for their children and which they can place fearlessly in their hands; while the pages will form an excellent and interesting way by which a general public can keep up its knowledge of French.

THE USES OF DOG (CYNOTHERAPY).

To the Editor of THE LANCET.

SIR,—Interesting details with regard to what may be termed cynotherapy have appeared in recent issues of THE LANCET (Oct. 8th, p. 786, and 22nd, p. 884), information being gleaned from France of the eighteenth century and from Mesopotamia of the tenth. It is not, however, necessary to go so far afield either in time or place to find this sort of thing in folk-medicine. Apparently in the 1763 edition of the "Pharmacopée Universelle" there were directions as to ointment, oil, and liniment prepared from dogs, the liniment being made use of for sciatica and rheumatism. In the present year I have heard more than once in Manchester of some stuff called dog oil. One man, crippled by rheumatoid arthritis, has even obtained a supply of this material for local use from one of his friends—I have not seen it, however. In South Yorkshire, too, I hear of its employment in Ecclesfield and in Sheffield.

Inquiries fail to reveal how this dog oil is prepared nowadays; if it is really an oil it can hardly be the natural fat of the dog, as this, like mutton fat, solidifies after death of the animal in temperate climates. A herbalist from whom I asked information, knows nothing of this dog oil, though stocking mandrake and dragon's blood (or should one write it as dragons' blood?) on her shelves, but suggests that as oil of swallows does not come from swallows, this dog oil may perhaps have nothing to do with dogs, but may really be some vegetable product, instancing dog roses, dogwood, and dog violets in support of this notion. Whatever its real nature, it would appear to have a wonderful reputation in the folk-treatment of joint affections of various kinds, and as proof of its efficacy they say that "it's so strong that it will even go through iron!"

With regard to the lick of the dog as a healing agent (which I suspect to have arisen owing to the misunderstanding of a scriptural incident, Lazarus succumbing under the treatment), I heard a couple of years ago in County Durham of a whole family ascribing their recovery from scabies to their sores being licked by a pet dog.

I am, Sir, yours faithfully,

Manchester, Nov. 6th, 1921. W. J. RUTHERFURD.

To the Editor of THE LANCET.

SIR,—Allow me to add to what has been published in THE LANCET of Oct. 8th and 22nd concerning the uses of dogs in medicine, that Hippocrates, speaking of phthisis, says that consumptives must eat *σκυλακίσιον κρέας* or dog's meat.

I am, Sir, yours faithfully,

S. C. ZAVITZIANOS.

CANINE DISTEMPER.

IN regard to an epidemic disease recently fatal in South Wales, there seems no reason to doubt that it was a specially virulent brand of distemper, concerning which we know about as much or as little as we know of measles in the human subject and its ætiology. Although the causative organism of distemper in the dog has not been isolated, evidence is growing that the disease is due to a filtrable virus analogous to that of equine influenza, swine fever, and fowl plague. Associated in some way with the disease, whether as mixed infection or as predisposing factor, are the *Bacillus bronchisepticus* (Ferry) and various strains of staphylococci and streptococci. Subcutaneous injection of the serous discharge from the nose of affected dogs kills young animals in six to seven days. Natural infection occurs through direct or indirect contact with affected animals. Young dogs in the second half-year of life are chiefly affected, but dogs of any age may contract the disease and one attack does not confer complete immunity.

The respiratory system bears the chief brunt of the attack. The mucosa of the air passages is bright red, swollen, and covered with sero-purulent secretion. The lymph glands are enlarged. In most cases there is catarrhal pneumonia. In fatal cases the pleura is often found covered with fibrinous exudation; there may be fluid in the pericardial cavity and fatty degeneration of the heart. Liver and kidneys show fatty or parenchymatous degeneration, and there may be myelitis. Intense catarrh of the conjunctiva may lead on to ulcerative keratitis. The familiar symptoms are lassitude, loss of appetite, shivering, a dry nose, scanty urine, thin watery discharge from nose and eyes, dry husky cough, and sneezing. Discharge from nose and eyes becomes purulent, obstructing the nostrils and gluing the eyelids together. There is rapid emaciation and loss of strength. The initial exanthem may recur in severer form along with diarrhœa and icterus. When broncho-pneumonia sets in there is the characteristic offensive odour from the body.

Treatment consists in catching the disease in its early stages and raising the patient's resistance to invading organisms. To eliminate toxins, evacuants and diuretics are generally given. Intestinal antiseptics, such as hyposulphite of soda in full doses, have been found useful. The efficacy of canine distemper vaccine is in doubt; if used it must be given early. Many veterinary surgeons consider it useless except as a prophylactic. Apart from this, warmth, quiet, and frequent small easily-digested meals are the chief means of preventing chorea and the other troublesome nervous sequelæ. Donovan's solution has some reputation as a tonic in convalescence. Isolation should be strictly enforced, with sterilisation of feeding utensils and precautions against carrying infection on the part of the attendant.

FRAUDULENT "CURES."

A TRIAL held recently in the department of the Seine, as a result of which a chemist and a pharmacist were condemned to a month's imprisonment and a fine of Fr.5000, has aroused interest afresh in the subject of fraudulent remedies. In this case the tribunal considered the advertisement and sale of "toxicurol," a tuberculosis "cure," as illegal practice of medicine, and though the defendants' action was described as bordering on swindling, they could not be punished as swindlers, it seems, because no third party was associated in the enterprise. If one or more medical men had been found associated in this fraud, as was the case in the MacLaughlin belt trial in Paris (June 7th, 1912) that would have constituted a third party and made the case one of fraud. Mr. A. Peytel, writing in the *Paris Médical* for August 20th, suggests that the crime should be made one of fraud even without the intervention of a medical accomplice. This seems a logical conclusion and would provide the law with a powerful weapon for good. Reference of vaunted cures to an expert commission should then be made obligatory whenever a complaint is placed by responsible people—by the medical associations, for example.

Every country suffers from the curse of secret remedies. In the *Scalpel* for Oct. 15th Dr. Van Langendonck has accumulated evidence of some shocking examples from advertisements in the Belgian press. Remedies for "disorders in women," discovered by ecclesiastical worthies in the seventeenth century, are bad enough, but one may share fully the writer's indignation at an advertisement (from *Le Soir*) which runs, "*Le cancer.* Le cancer guéri rapidement et radicalement par le remède célèbre du curé Daury, ..." and at a pharmacist who promises to cure gonorrhœa in a fortnight with a dry remedy or to send the complete treatment of syphilis in return for Fr.10.60. Such advertisements offend against society and should be severely punishable.

PUBLIC HEALTH IN NYASALAND.

ON March 31st, 1920, the estimated European population of this Protectorate, including Government officials, was 729 males and 286 females—a total of 1015, as compared with 724 in the previous year. The Asiatic population increased by 108 to 515 during the year. The native population, which is estimated on the number of huts, was put down at 545,000 males and 658,000 females—total 1,203,000. During the year 170 European officials received medical treatment; 20 were invalided, but there were no deaths. A total of 313 non-official Europeans came under treatment, of whom seven died. The shortage of medical staff rendered it impossible to carry out any special investigations in connexion with communicable diseases, except that investigations were continued in the North Nyasa district in the matter of plague. The only recorded cases occurred in August. As statistics have shown that infection with this disease reaches its height in the rainy season, it is a matter for congratulation that no cases at all occurred from August, 1919, to the end of March, 1920—i.e., throughout a whole wet season. From April to December the preventive measures were continually enforced, and during that period a total of 1,247,068 rats were killed. The year 1910–20 may be regarded (says the writer of the annual report) as confirming the belief that the prosperity which awaited the future progress of this Protectorate at the conclusion of hostilities is likely to be maintained. It is now apparent that the war has had no permanent ill-effect on the prospects of the country; and when once the native character reverts to its normal condition, and the general conditions of trade recover from their present stagnant state, it is confidently to be expected that Nyasaland will take an ever increasingly important place in the Empire.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 15th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

Wednesday, Nov. 23rd.

OCCASIONAL LECTURE: at 5 P.M.
Dr. Gustave Monod: Syphilis of the Stomach. A Discussion will follow in which it is hoped the following will take part: Dr. Charles Bolton, Dr. A. F. Hurst, Dr. J. W. McNee, Sir Berkeley Moynihan, Mr. Herbert Paterson, Mr. J. Sherren, and Mr. A. J. Walton. There will also be an Exhibition of Rare Specimens.

MEETINGS OF SECTIONS.

Monday, Nov. 14th.

WAR: at 5.30 P.M.
Dr. W. Wallace: *An Epidiascopic Demonstration of War Injuries on the Fundus of the Eye.*

Tuesday, Nov. 15th.

PATHOLOGY: at 8.30 P.M.
Dr. W. E. Gye and Dr. W. J. Purdey: The Poisonous Properties of *Colloidal Silica*.
Mr. A. T. Glenny and Miss Allen: A Guinea-pig Epizootic Associated with Dietary "Deficiency."
Professor F. Hobday: Cleft Palate in Animals, with Specimens and Illustrations.
Mr. J. B. Buxton and Mr. A. T. Glenny: Active Immunisation against Tetanus in Horses with Toxin-antitoxin Mixtures.
Dr. H. J. Sudmersen and Dr. Eagleton: Standardisation of Dysentery Serum, Protective and Agglutinating Antibodies.

Wednesday, Nov. 16th.

HISTORY OF MEDICINE: at 5 P.M.
At the Historical Medical Museum, 51a, Wigmore-street, W.
Papers: Dr. Charles Singer (President): Demonstration of Museum Specimens, illustrating Ancient Greek Medicine.
Dr. M. B. Ray: Egyptian Deities associated with Healing.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
(1) A description of the Oöcysts of *Eimeria Oxyspora* Dobell, 1919, with clinical notes of a new case: *Embadomonas intestinalis* (Wenyon and O'Connor) 1917; description of the cysts and *free forms* with clinical notes of a new case: by Dr. W. Broughton Alcock and Dr. J. Gordon Thomson.
(2) *A demonstration and notes on Helminth*: by Prof. R. T. Leiper, Dr. M. Khalil, and Mrs. Philpots, M.Sc.

Thursday, Nov. 17th.

DERMATOLOGY: *at 5 P.M. (Cases at 4.30 P.M.)*
Cases will be shown.

Friday, Nov. 18th.

OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Cases will be shown by Dr. Dan McKenzie, Mr. Sydney Scott, and others.
Communications by Mr. Sydney Scott and Mr. E. D. D. Davis.
Short Papers by Dr. A. A. Gray (with Lantern-slide Demonstration) and by Mr. A. R. Tweedie.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Dr. Frans Daels (of Ghent): (1) Histological Pictures of the Curing of Uterine Baso-cellular Epithelioma (with micro-photos). (2) The Irradiation of the True Pelvis with the Help of Drainage Tubes (with Diagrams).
Dr. G. Fildes: Further Remarks on the Potter-Bucky Diaphragm.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 14th.—8 P.M. Clinical Evening. Cases will be exhibited by the following:—Mr. James Berry, *Sir John Broadbent, Sir William Willcox*, Dr. F. J. Poynton, Mr. Donald Armour, Mr. T. P. Legg, Mr. Herbert W. Carson, Dr. C. E. Lakin, Mr. Z. Cope, *Dr. T. Izod Bennett.* Cases will be exhibited from 8 to 9 P.M., after which a Discussion will take place.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-sq.
TUESDAY, Nov. 15th.—4.30 P.M., Agenda: Pathological Specimens, and Cases sent for Consultation. Clinical Cases. Dr. J. L. Bunch: Lupus Erythematosus, Syphilis. Dr. W. Griffith: Diffuse *Scleroderma*, Acute Cutaneous Syphilide. Dr. M. G. Hannay: Granuloma Annulare. Dr. E. J. D. Mitchell: Syphilis. Dr. S. R. Kapoor: Pityriasis Rubra Pilaris. Dr. W. K. Sibley: Lupus Erythematosus.

MEDICO-LEGAL SOCIETY, 11, *Chandos-st.*, Cavendish-sq., W.
TUESDAY, Nov. 15th.—8.30 P.M. Paper:—Dr. T. Good: Nature *versus* Law, with special reference to the Development of Psychotherapy and its Problematical Use in the Treatment of Feeble-minded Persons and Criminals *(followed by Discussion)*.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Nov. 17th.—8.15 P.M. *A Laboratory Meeting will be held at the London School of Tropical Medicine. Endsleigh-gardens, N.W.* Dr. Broughton-Alcock, Dr. J. G. Thomson, Colonel A. Alcock, Dr. P. Manson-Bahr, Prof. R. Leiper, Major H. C. Brown, Dr. A. C. Stevenson, Dr. S. H. Daukes, Dr. C. Morley Wenyon, *and others will give Demonstrations.*

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
The Annual General Meeting of the Fellows and Members *will take place at the College on* Thursday, Nov. 17th, at 3 P.M.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Nov. 14th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Mr. *Addison*: Visit to Surgical Wards. Dr. Scott Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. 2.30 P.M., Dr. Arthur Saunders: Visit to Medical Wards. 5 P.M., Mr. Donald Armour: *Practical Surgery* (Lecture V.).
TUESDAY.—11 A.M., Dr. McDougal: Electrical Department. 12 noon: Mr. Sinclair: Appendicitis (Lecture). 2 P.M., Dr. Burrell: Medical Out-patients. Dr. Pernet: Skin Department. *Dr. Morton*: X Ray Department. 2.30 P.M., Mr. Tyrrell Gray: Demonstration of Cases (Surgical Wards). 5 P.M., Mr. Banks Davis: Nasal Catarrh (Lecture).
WEDNESDAY.—11 A.M., Mr. MacDonald: *Demonstration* of Cystoscopy. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Tyrrell Gray: *Operations*. Mr. Gibb: *Eye Department*. *Dr. Burnford*: Visit to Medical Wards. 5 P.M., Mr. Donald Armour: Practical Surgery (Lecture VI.).
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Dr. Scott Pinchin: Diseases of the Heart (Lecture). 2 P.M., Mr. MacDonald: Surgical Out-patients. 5 P.M., Dr. Simson: Modern Developments in the Management of Labour (Lecture I.).
FRIDAY.—10 A.M., Dr. Robinson: *Gynæcological* Operations and Visit to Wards. Mr. Dudley Buxton: Dental Department. 2 P.M., Mr. Sinclair: Surgical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose and Ear. Mr. Addison: *Operations*. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Medical Wards). 5 P.M., Dr. Burrell: Sanatorium Treatment.
SATURDAY.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children. Mr. Simmonds: Orthopædic Department. 2 P.M., Dr. Owen: Medical Out-patients.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 14th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2.30 P.M., Dr. A. J. Whiting: *Demonstration* in Medical Wards. Mr. E. Gillespie: Surgical Operations. Dr. J. B. Alexander: Medical Out-patient. Mr. *J. Bright Banister*: *Gynæcological* Out-patients. Dr. Shanks: X Ray Department. 4.30 P.M., Mr. J. Bright Banister: The Toxæmias of Pregnancy. 7 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.
TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Cases and Operations. 2 P.M., Mr. J. Howell Evans: Surgical Out-patients. 2.30 P.M., Mr. H. W. Carson: Surgical *Operations*. Mr. C. H. Hayton: Throat, Nose and Ear Out-patients. Dr. J. Metcalfe: X Ray Department. Dr. L. Yealland: Medical In-patients. 3 P.M., Mr. J. Howell Evans: *Surgical In-patients.*
WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. J. B. Alexander: Medical Out-patients. Dr. W. Jenkins Oliver: Skin Cases. 6 P.M., *Dr. F. L. Provis and Mr. T. H. C. Benians*: Venereal Department.
THURSDAY.—2.30 P.M., Mr. J. Bright Banister: Gynæcological Operations. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Dr. J. Metcalfe: X Ray Department. Mr. N. F. Fleming: Eye Out-patients.
FRIDAY.—2 P.M., Mr. J. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. Dr. Shanks: X Ray Department. 4.30 P.M., Mr. E. Gillespie: *The Treatment of Paralysis by* Orthopædic Methods. 5 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.
SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Surgical *Operations*. 3 P.M., *Mr. H. W. Carson*: Visit to Surgical Wards.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Nov. 14th.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., Dr. Moon: In-patients. 5.30 P.M., Lecture:—Dr. Price: Depressed Conductivity: Heart Block.
TUESDAY.—10 A.M., Dr. Parsons-Smith: *Out-patients*. 10 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.

could hardly be accepted. It was more plausible that the salt solutions used caused a swelling which a number of the blood corpuscles could not withstand without losing their colouring matter. If this assumption were true, then it would follow that the serum of blood could also be diluted with water without the occurrence of hæmolysis. This, indeed, proved to be the case. The serum of animals could be diluted with percentages of water up to multiples of ten, that of man with 50 per cent. and more before colouring matter was discharged, and the conclusion was that a diluted serum which just caused hæmolysis to set in was isotonic with a salt solution which could do the same. A simple calculation now showed that the blood serum of the majority of warm-blooded animals, including man, was isotonic with a NaCl solution of 0·9 per cent., and not of 0·6 per cent., as was generally thought at the time, and which had always been called the physiological NaCl solution. In connexion with this I therefore introduced the terms *hyperisotonic* and *hypoisotonic*, according as the solutions had respectively a stronger or weaker power of attracting water than normal serum. All this was proved by determination first of the corpuscular volume[6] and afterwards of the freezing-point. I, and after me Hedin[7] and others, found that the blood corpuscles shrink in hypertonic and swell in hypotonic solutions. I considered, and so did they, that the blood corpuscles, like the plant cells of de Vries, were semi-permeable, and thus allowed only water to pass through.

II. PERMEABILITY OF RED CORPUSCLES TO ELECTROLYTES (ANIONS AND KATIONS).

Experiments by quantitative chemical methods in 1889[1] convinced me quite unexpectedly, however, that this was not the case—in other words, the blood corpuscles were not semi-permeable. For when they were mixed with a salt solution which was isotonic with the serum their volume, it is true, remained unchanged, but they lost chlorine, and, as I was able to demonstrate afterwards, an interchange took place between the contents of the red corpuscles and their environment. The elimination of chlorine was especially studied. Through these researches the question of permeability was introduced for the first time, and since then permeability has been a prominent item on the programme of large numbers of physiological inquiries. When we come to think of it, it is somewhat remarkable that it had not been earlier realised that permeability to dissolved substances is necessary for the life of cells, whether for the assimilation of nutritive substances or for the elimination of waste products. Yet it was only with difficulty that we succeeded even in recent times in getting the idea of permeability, to inorganic substances for instance, universally accepted.*

After the permeability of blood corpuscles to chlorine was established in 1889 I was able in 1892[9] to offer additional proofs. I inquired whether, seeing that the hæmolysis of the red corpuscles is so sensible to slight modifications in the concentration of the surrounding fluid, the erythrocytes of the arterial and venous blood of the same animal would show any difference in respect to the salt concentration at which colouring matter was discharged. Such a difference proved to exist; the carotid blood of a horse showed commencement of hæmolysis in a NaCl solution of 0·61 per cent., the jugular blood, on the other hand, had already hæmolysed in a NaCl solution of 0·62 per cent. This fact was the starting-point of a new series of investigations on permeability. On the assumption that this phenomenon was in some way connected with the carbon dioxide concentration, we investigated the influence of CO_2 on the loss of colouring matter. This influence proved to be very great, and led to the study of the influence of carbon dioxide on the distribution of the constituents of the blood between corpuscles and serum. In the first place, it appeared that when blood was treated with a quantity of carbon dioxide, which was well within physiological limits, an interchange of constituents took place between blood corpuscles and blood serum. If the carbon dioxide was driven out the original partition was fully restored; the phenomenon was a reversible one, and the conclusion was drawn that it must be of importance to life. For while the blood flows through the capillaries of the tissues it is acted upon by carbon dioxide, and when it reaches the lungs the carbon dioxide is expelled again. Of the changes which carbon dioxide brings about in the distribution of the blood constituents between the blood corpuscles and serum the most important was a transit of chlorine into the corpuscles and an increase of alkalinity—that is, in the amount of diffusible alkali of the blood serum.† There was also a considerable swelling of the blood corpuscles. With every act of respiration, therefore, rhythmical changes take place; while the blood circulates through the tissues the blood serum becomes more alkaline, poorer in chlorine and phosphoric acid, and poorer in water. Owing to the latter the concentration of albumin and other organic substances in the plasma increases. When the blood reaches the lungs again the carbon dioxide is expelled and the partition of the constituents is as before. These results can be confirmed by comparative experiments on normal carotid and jugular blood. It would carry me too far if I were to enter upon the significance of these phenomena in metabolism. It is obvious that in venous congestion the interchange between blood corpuscles and plasma is much more pronounced than in the normal circulation.

These various facts about CO_2 were useful to British and American investigators during the war. It may be observed that they have also formed the basis for the well-known researches of Korányi on the diagnosis and treatment of heart diseases.[11] This investigator has shown how an uncompensated heart disease can be differentiated from renal insufficiency. In both cases the lowering of the freezing-point of the blood serum is increased, in the case of the heart disease through the accumulation of carbon dioxide, and in the case of renal insufficiency through the accumulation of waste products. In both cases a decrease in the amount of chlorine in the blood plasma is observed. To distinguish between these two diseases Korányi suggested that oxygen should be passed through the blood drawn from the patient. If it is a case of uncompensated heart disease, then there is an increase of chlorine, and also the freezing-point of the serum becomes normal again. If these phenomena are absent then the diagnosis is renal insufficiency. Korányi also worked on the same lines in the therapeutic direction. In cases of uncompensated heart disease he administers oxygen: the surplus of carbon dioxide disappears, and with it the cyanosis. The blood undergoes the same changes which are observed in vitro when oxygen is passed through; thus the blood corpuscles surrender water to the plasma, with the result that the percentage of chlorine increases. It is obvious that in consequence of this dilution of the plasma with water the viscosity of the blood will diminish and the circulation be improved. This improvement of the circulation serves a double purpose: firstly, the blood of the coronary system will feed the heart better than when the flow of blood is slow on account of the great viscosity of the plasma. The improvement in the circulation is shown by the kidney function. The diuresis increases, and this is further facilitated by the increased amount of chlorides in the plasma. The special value of the oxygen inhalation is seen in the fact that through the improved action of the

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* It may be remarked en passant that in the literature one repeatedly comes across the idea that the question of permeability originated in the lipoid-theory of Meyer-Overton.[8] This theory, however, only appeared in 1899, ten years later, and its sole object was the study of the conditions under which organic substances could penetrate the wall of the cell. According to that theory, as you know, this penetration is considered be subject to the solubility of the substance which is experi-ated with in the lipoid cell-surface.

† An increase of the amount of alkali in the serum had been already seen by Zuntz[12] in *saturating* blood with CO_2.

Notes, Short Comments, and Answers to Correspondents.

GASTRIC RESPONSE TO FOODS.

The subject of gastric response to foods is being investigated in the Jefferson College of Philadelphia jointly by several observers, including R. J. Miller, O. Berheim, R. E. Martin, and P. B. Hawk, and their results are published in the *American Journal of Physiology*, Vols. LII. and LIII. The psychic secretion of gastric juice in normal men forms part of the series. It is easy to make the mouth water, and no one who has ever read Elia's "Dissertation Upon Roast Pig" can ever forget Lamb's inimitable description of the first accident of the kind that befel Bo-bo, son of the swineherd Ho-ti, when he smelt the smell of roast pig—when an odour assailed his nostrils, unlike any scent which he had before experienced. A premonitory moistening at the same time overflowed his nether lip. He did not know what to think. He ate crackling for the first time, discovered that roast pig tasted delicious, and surrendered himself up to the new-born pleasure. Nor must we forget to record the tickling pleasure which the graceless whelp Bo-bo experienced in his lower regions. But there are other psychic secretions besides those of the salivary and lachrymal glands. A well-set-out table, bedecked for dinner with properly and tastily cooked viands, causes a secretion of gastric juice, whilst unappetising food excites no response. Tasting or chewing alone is not effective without the scent or sight of food. Even the thought of a luscious grilled beefsteak excites marked secretion of gastric juice, which may be arrested by disagreeable odours. Chinese-preserved eggs with their, to us, repulsive and disagreeable smell and taste, delay the acid-formation and prolong the time of emptying of the stomach. Reading a newspaper at a meal does not seem to change the gastric secretion, but, on the other hand, mental irritation and worry have a distinct influence thereon. The effect of water, tea, coffee, and cocoa on the digestion of a meal consisting of beefsteak, mashed potatoes, toast and butter was studied, the acidity and the time the food remained in the stomach being noted. The latter was scarcely altered after drinking a litre of cold water, cold or hot tea, hot coffee, pure, with cream, or with cream and sugar. Much sugar added to coffee delays the emptying of the stomach. Water, tea (hot or cold), hot coffee with or without milk, or cocoa in quantities of about a litre diminish the acid formation as compared with a meal without the addition of fluid, while a litre of tea or coffee increases the heart beat and pulse considerably, causes a fall of blood pressure and certain nervous symptoms. Cocoa does not cause these symptoms, but leads to a feeling of distension or fullness of the stomach. The amount of urine excreted 90 minutes after taking tea or coffee was 550–860 c.cm. and after cocoa 125–372 c.cm.

The response of the human stomach to pies, cakes, and 50 different varieties of puddings was also studied. The stomach is emptied on the average 2 hours 18 minutes after partaking of pudding, 2 hours 27 minutes after pies, and 3 hours 2 minutes after cakes. Meat pies leave the stomach after 2¾–3¼ hours, the fruit variety after a shorter period. The crust of the pie lingers longer in the stomach than do the contents of the pie, but the mode of preparation of the crust plays an important part. Puddings to which gelatin is added leave the stomach very quickly, exciting a small acid-formation, while puddings rich in proteins (bread pudding) give a higher acid value. As to sugar, candies, and other sweetmeats, large doses (100 g.) of cane or grape sugar in concentrated solution diminish considerably the gastric secretion and delay emptying of the stomach, whilst small doses (10 g.) seem to have no action. Sweetmeats diminish the secretion and delay the emptying of the stomach, and this to a greater or less extent according to their sugar content. The result is affected by the presence of aromatic substances, and especially by the addition of milk, eggs, or chocolate, which excite the gastric secretion. Sweetmeats should thus never be eaten before a meal.

BABY MANAGEMENT.

A NEW book on the management of the baby during its first year needs to be exceptionally good to justify its appearance in the present day when such books abound. The small pamphlet by Mrs. J. Langton Hewer, which has just been published,[1] entitled "The Baby of To-day," may fairly claim a place among these on the score of merit, the teaching being throughout consistently sound and practical. The 24 pages contain most of the essential points in the management of infants, including hints on nursing, food, clothing, cleanliness, sleep, exercise, the formation of good habits, and general training, the whole forming a useful guide to nurses and baby-minders in general, while its moderate price brings it within the reach of all. The pamphlet deserves a wide circulation.

A REGISTER OF MASSEUSES AND MASSEURS.

The Chartered Society of Massage and Medical Gymnastics has issued a register (St. Clement's Press, Ltd., price 3*s.* 6*d.*) of its members which will appeal to medical men who wish to prescribe massage, medical gymnastics, or medical electricity for their patients and have no personal knowledge of persons competent to administer such treatment. The register consists of an alphabetical list (91 pages) of masseuses, with addresses and any additional qualifications registered, followed by a similar list (7 pages) of masseurs. The concluding 31 pages are devoted to a place-index which will be found extremely useful.

FOOD VALUE OF WHITE FLOUR.

A MEMORIAL is being organised by the Bread and Food Reform League to the Minister of Health suggesting that the food leaflet to be published by the Ministry should make direct reference to the mineral content of oatmeal and whole-wheatmeal, the necessity of grinding them in a digestible form, and the importance of the germ being retained in household bread. The memorial has already been signed by a number of influential members of the medical profession and scientific societies.

SEVEN AT A BIRTH.

Some notes on Lagos in a recent issue of *Man*, the journal of the Royal Anthropological Institute of Great Britain and Ireland, by Mr. N. W. Thomas, state that the first born of twins is called *Taiwo* (see the world), the second *Koindi* (come behind), because it is supposed to send the other on in front to see the world. The *Koindi*, it is said, usually dies, and in that case an image of it must be made or the mother will not bear any more children. In the case of triplets, the third one is called *Idowu* (the servant of twins). The next child is called *Alaba*, and is the servant of *Idowu*, and the next is *Idogbe*, who watches the house while others come, and is very precious. Seven are said to have been born at once in Ibadan in 1907; an eyewitness certified this fact to Mr. Thomas, who comments: "In view of the case of six at a birth on the Gold Coast, attested by an English medical man, there seems no reason to doubt the story."

THE DISTRIBUTION OF MOSQUITOES IN ENGLAND.

The Mosquito Investigation Committee of the South-Eastern Union of Scientific Societies have issued another circular (No. 5) in connexion with their inquiry into the distribution, habits, and breeding places of *A. plumbeus*. Two reports have been submitted to the Ministry of Health since the issue of circular No. 4 in September, 1920. The researches following this circular established the fact that *A. plumbeus* is found extensively distributed throughout the South-Eastern area of England. In some districts all stages have been found; in others only larvæ and imagines. The species hibernates as partly grown larvæ, mainly in beech, birch, chestnut, and holly tree-holes, and imagines have been found in every season of the year except winter. The Minister of Health, in acknowledging the committee's second report for the half year ending June 30th, 1921, desired the inquiry to be continued and a further report to be submitted with special reference to any curtailment of distribution or decrease in numbers of the species that may have been caused by the severe drought of the past summer. A questionnaire designed to elicit further information forms the substance of circular No. 5. Further information on the important work done by this committee may be obtained from the hon. secretary, Rev. T. W. Oswald Hicks, "Lesware," Linden-road, West Green, London, N.

Those who are interested in but have as yet no knowledge of entomology will find a popular introduction to this subject in *British Insect Life*,[1] by Edward Step, F.L.S., a book written with the object of interesting non-scientific readers in the several types of insect life commonly met with in this country. It is illustrated with reproductions of photographs which give a fairly clear idea of the appearance of the insects; a good coloured frontispiece shows the meadow brown butterfly. It is, of course, impossible in a book of this scope to deal with all the species of known British insects, of which there are some 12,000, but the author has described typical examples with a minimum of technical language. Members of the public who learn to identify some of the disease-causing agents, and are prepared to make observations on their habits and breeding-places, are taking an active and useful part in forwarding the preventive side of medicine.

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[1] Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co. Price 4*d.* net.

[1] London: T. Werner Laurie, Ltd. 1921. Pp. 261. 10*s.* 6*d.*

injection of foreign blood corpuscles, of complement-fixation, hæmolysis, agglutination, and so many other things? But also vice versa, and this is worth repeating, the study of the osmotic relationship of the erythrocytes was indispensable for the correct application of red corpuscles in the researches on immunity. It is owing to the above-mentioned advantages of the red corpuscles that the results obtained with them have repeatedly been the guides to important researches on cells and tissues which can only with difficulty be examined. We can also mention other cells which have the same advantages as the red corpuscles—namely, the white corpuscles; for these also are cells which can be easily examined in an isolated condition in their natural environment. But outside my laboratory they have, unfortunately, scarcely been examined as to their permeability. This is the more unfortunate because in the phagocytic power one has an excellent means of making accurate quantitative observations on life, or rather on one of the vital attributes of life, after the equilibrium has been disturbed by the addition of definite substances to the medium. I have outlined in a monograph (1912) some of the interesting results which can be obtained from a study of these cells.[21]

Of the isolated cells, which have been examined by me in a manner similar to that used for the red corpuscles on their osmotic behaviour towards salt solutions, can be mentioned spermatozoa, lymph gland and epithelial cells, the parenchymous cells of the liver, spleen and kidney, and also the nuclei of all these cells, but I cannot expatiate here on these.

I will now go over the question as to whether the permeability is constant for one and the same kind of cell.

V. THE PERMEABILITY CHANGES (VITAL PERMEABILITY).

It is now some 20 years since I pointed out for the first time that the permeability of one and the same kind of cell has no constant value, but is dependent on the physiological conditions of these cells.[1]

1. *Influence of CO_2, Acids, and Alkalies on Red Corpuscles.*—As already mentioned, I stated in 1892 that the permeability of red and white corpuscles changes quantitatively in a rhythmic way with every act of respiration. Snapper also demonstrated (1912)[25] in my laboratory by purely chemical experiments that the permeability of red corpuscles is changed by the influence of traces of sulphuric acid, and also in diseases, accompanied by fever, especially in pneumonia.

2. *Influence of $MgSO_4$ on Intestinal Epithelium.*—Further, in 1898,[26] I was able to show that intestinal epithelium with great difficulty allowed of the passage of common salt after it had been in contact with a solution of magnesium sulphate.

3. *Experiments on Permeability of Glomerular Membrane to Glucose.*—These experiments demonstrated the variable permeability to inorganic substances. Of late years, however, experiments have been performed in my laboratory with organic substances, more especially with glucose and its isomers and stereo-isomers. These experiments chiefly dealt with the permeability of the glomerular epithelium to these substances and the profound influence which is exercised on it by very minute physiological changes in the liquid flowing through the glomerular capillaries. I shall try to deal with the subject in a chronological order.[27] Since the time of Claude Bernard it has been known that though sugar is never absent from the blood it rarely appears in the urine of normal individuals. What is the cause of this, and why does sugar not appear in the urine until its amount in the blood exceeds a certain limit? Several possibilities have been considered. I shall not dwell on these; I only wish to point out that discussions on these possibilities have not reckoned with the fundamental question whether the kidney allows free glucose to pass through or not. Experiments were made with perfused kidneys; to ensure that the perfusing liquid contained sugar exclusively free and not as a colloidal compound a Ringer's solution containing sugar was taken. If the concentration of sugar in the artificial urine formed was the same as that of the original perfusing liquid the conclusion could be drawn that the kidney is permeable to glucose. After this it could be determined whether addition of serum causes a retention of sugar. Should this be the case, it would be practically certain that there is present in the serum a substance which binds the sugar in a form that the glomerular epithelium does not allow to pass through, and eventually it could be investigated what the substance in the serum is. With these investigations Dr. R. Brinkman and I have kept ourselves busy for more than two years; through them we have come to the most unexpected results, which now and then led us into side-tracks which were important in themselves.

Frogs were exclusively used for the experiments; the kidneys were perfused through the aorta at a pressure up to 60 cm. with Ringer's solution ($NaCl$ 0·6 per cent., KCl 0·01 per cent., $NaHCO_3$ 0·02 per cent., and $CaCl_2$ 0·02 per cent.) containing 0·05 per cent. of glucose. Approximately 150 c.cm. passed through the kidneys per hour.

The urine is formed in the glomeruli. To grasp this a knowledge of the circulation in the frog is needed; in contrast to what we find in warm-blooded animals, the renal arteries supply the glomeruli, and to a very small extent the tubules, which get their blood-supply almost wholly from the renal portal vein which carries off the greater part of the blood from the hindquarters. It now appears that if a liquid is made to flow through this latter vessel under a pressure of 60 cm. not a drop of urine is excreted. Excretion takes place only under a much higher pressure, and even then very slowly. It is therefore clear that in our experiments, where the liquid flows through the renal arteries, the urine is derived from the glomeruli.

The fact that it is possible thus functionally to separate the contents of the glomeruli and the tubes so well from each other makes the frog an admirable object for the study of the formation of the urine, and British authors are very well acquainted with this fact. In our earlier experiments the percentage of glucose in the urine and the perfusion liquid was always the same. These results were also obtained after ligature of the renal portal vein. It was therefore obvious that the urine obtained was a purely glomerular filtrate so far as glucose was concerned, and that the glomerular membrane was permeable to glucose.

But further experiments made it doubtful whether the usual Ringer's fluid was the physiological one for the perfusion of the kidneys. Systematic changes in the fluid taught us that for the permeability of the glomerular membrane the concentration of the free calcium-ions and of $NaHCO_3$ are factors of preponderant importance, and that in using the right concentrations the urine was free from sugar; in other words, the glomerular membrane now showed itself impermeable to physiological quantities of glucose. As regards the concentration of the $NaHCO_3$, its proportion in the usual Ringer's solution is too low. No glucose was retained in the absence of $NaHCO_3$. It is known that one function of $NaHCO_3$ is to preserve a certain alkalinity in the body fluids. The sodium phosphate and sodium protein also take part in this. In this connexion these substances are consequently called tampons, buffers, regulators, or moderators. Most investigators in their perfusion liquids use 0·02 per cent. $NaHCO_3$, but it appears to us that this concentration is too weak for perfusion through the frog's kidney, for if to the solution made up of $NaCl$ 0·6 per cent., $NaHCO_3$ 0·02 per cent., KCl 0·01 per cent., and $CaCl_2$ 0.0075 per cent. a little neutral red is added, then although the perfusion liquid is alkaline the urine becomes acid. The normal urine of the frog shows a weak alkaline reaction with neutral red. The buffer concentration of 0·02 per cent. was thus too weak to keep the urine reaction a weak alkaline one. But what is still more important, the retentive powers of the kidneys for sugar grow considerably weaker and finally disappear altogether. Clinicians will immediately think of the relation existing between acidosis and glycosuria.

We then determined the alkalinity of the frog's serum by titration with neutral red paper as indicator (Snapper). This corresponded to a $NaHCO_3$ solution of 0·285 per cent., and consequently a Ringer's solution was made with the following composition: $NaCl$ 0·5, KCl 0·01, $NaHCO_3$ 0·285, $CaCl_2$ 0·015 per cent. The urine now was perfectly free from sugar and was no longer acid. These results have been fully confirmed by Bahlmann (1920).[28] Hence the glomerular membrane has the power of retaining free glucose, and this power is governed by the chemical composition of the perfusion liquid, which cannot be that of

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A Discourse

ON

PERMEABILITY IN PHYSIOLOGY AND PATHOLOGY.

Delivered at the University of London, under a Scheme for Exchange of Lectures in Medicine between England and Holland,

BY H. J. HAMBURGER, Sc.D., M.D., LL.D., F.R.S.,
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I. INTRODUCTION: SOME HISTORICAL REMARKS.

THE problem of permeability plays a fundamental rôle in physiology as well as in pathology and pharmacology. For permeability means a power of admitting certain substances into the cell and of excluding others, and thus in physiology and pathology we endeavour to substitute for the mysterious principle of "conscious selection" of cells towards some substances, and for the so-called "vital activity," simple physical and chemical factors, no matter how complicated the coöperation of these factors may ultimately prove to be. This means also in pharmacology the finding of those forms of drugs which by penetrating into the interior of the cell are able to be of use there.

As an example, let us consider the acinus of the salivary gland. From the outside the epithelial cells are supplied with nutritive materials from the blood, while from the side next the lumen the saliva is secreted. The neo-vitalist has a simple explanation for this. According to him, the cells of the salivary glands take up, actively and selectively, substances from the blood, and secrete saliva through the so-called physiological motive force. If he introduces a salt solution into the alimentary canal, it is again the physiological vital force, an attribute of the living cell alone, that brings about the absorption. For, if the epithelium be injured by a poison, the process of absorption is entirely altered; this, he says, is because the dead epithelium lacks the physiological motive force. The same line of argument is sufficient for him to explain secretion and absorption in any part of the body. The neo-vitalist, it is true, freely acknowledges that physical factors also play a part in secretion and absorption, but the fundamental principle of these processes is a specific attribute of the living cell alone.

But what does this term "physiological motive force," so often used by Heidenhain, and by many after him, imply? Only this: we do not know and have to abide by that. It appears to me, however, that it is the duty of the biologist to endeavour at least to explain the phenomena along physical and chemical lines. Is it not probable that in the formation of saliva the cells by virtue of their properties of permeability allow the permeation of certain foodstuffs from the blood? That they convert these by chemical action and allow the products—namely, the saliva—to pass out at the other end, aided probably during this process by electrical currents, the cataphoresis? Such lines of thought appeal more to the modern physiologist than the idea that the cell, according to its needs, takes up actively, by virtue of a vital power, the necessary elements from the blood and discharge these into the lumen of the acinus. Some think that this physico-chemical explanation is much too simple and that the delicateness of the processes of life are thereby ignored. Yet upon more thorough investigation this proves not to be so, and one becomes more and more impressed by the marvellous intricacy and efficiency of these physico-chemical processes, while the number of unsolved questions continually increases.

I could add to these two examples, where permeability must play an important part, a great many others; but a detailed discussion would practically involve the whole of physiology. I shall be obliged, therefore, to limit my discussion to a few illustrative examples. In the choice of these I shall, while regardful of the *suum cuique*, also refer to my own work which, alas, has of late been too often overlooked. Who is there, however, of the senior among us who has no reason to complain of neglect? Moreover, these lectures are, I think, expected to have a personal flavour, and it is better so.

The study of the permeability of the animal cell may be said to have been introduced by researches which I carried out in 1889.[1] These investigations arose from my work in 1883 on the influence of salt solutions on the escape of colouring matter from the red blood corpuscles.[2] A year previously[3] (1882) the well-known botanist Hugo de Vries had conducted experiments upon the force with which plant cells attract water. He employed three biological methods, of which the plasmolytic gave the most reliable results. This method consisted in using a salt solution strong enough to bring about a slight separation of the contents of the plant cell from the cell membrane—in other words, to induce plasmolysis in the cell. This separation of the protoplast from the membrane (plasmolysis) was due to the fact that the water-attracting power of the surrounding fluid was something greater than that of the cell-contents. Hence de Vries concluded that solutions of any salts which caused the same degree of shrinkage when acting upon the same cell must have identical water-attracting powers. He called such solutions, having identical water-attracting powers, *isotonic* solutions; and the simple relations which appeared to exist between the concentrations of such solutions of different salts he named their isotonic coefficients. De Vries thus regarded the protoplast as semi-permeable—in other words, perfectly permeable to water but impermeable to substances dissolved in it. In the following year now (1883) I investigated the question whether the same phenomena which de Vries had observed in the plant cell applied also to the animal cell.[2]

I chose the red blood corpuscle as my material. The first step was to try to find a concentration capable of inducing plasmolysis in these cells. But I failed to find it. No plasmolysis could be observed in my experiments. Then I turned to the study of the escape of coloured matter from the red corpuscles. And so it was found that the red blood corpuscles were also subject to the law of isotonic coefficients. Between the concentration of salt solutions causing the escape of coloured matter from the same blood corpuscles the same numerical relation appeared to exist as between the concentration of salt solutions inducing plasmolysis in the same plant cell. These investigations on the blood corpuscles, as you no doubt recollect, marked the beginning of modern physico-chemical research in the medical sciences.

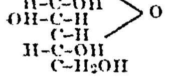
It may be observed in passing that it has repeatedly been stated that Van't Hoff's theory of osmotic pressure laid the foundation for these investigations on the blood corpuscles, but this is decidedly a mistake. The real basis for my work was given in de Vries's researches in plant physiology of 1882. These investigations and my own hæmatological researches furnished important data for an experimental proof of Van't Hoff's theory, which was based principally on thermodynamic considerations and on Pfeiffer's researches. Besides, Van't Hoff's theory was published for the first time two years later, in 1885,[4] and absolutely needed Arrhenius's theory of electrolytic dissociation (1887)[5] as a supplementary one to be accepted.

As already mentioned, I found that for every salt a concentration could be obtained in which the least resistant blood corpuscles lost their colouring matter, and in these concentrations the salts had the same power of attracting water. How could this phenomenon be explained? Could it be possible that these salt solutions, which had the same power of attracting water, brought about a slight shrinkage as in the case of the plasmolysis of plant cells? This

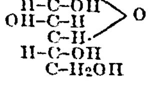
And it was found that the fructose passed through completely, likewise the mannose, while only part of the galactose was retained. You will notice how slight is the difference between the configurations of these five sugars, especially between d-glucose and its stereo-isomers galactose and mannose. Glucose, therefore, occupies a very peculiar place amongst the isomeric monosaccharides with regard to the glomerular membrane—that is to say, the glomerular epithelium distinguishes glucose from other sugars in a way which suggests the relation of sugars to ferments, like a lock and key. If we apply this to our case we would say that the key (glucose) does not fit the lock (glomerular membrane), and that the other sugars experimented with do fit and pass through. The power of the glomerular membrane to distinguish d-glucose from other sugars goes so far—and this is not without importance from a clinical point of view—that when d-glucose (dextrose) and lævulose are dissolved in the perfusion liquid the dextrose is still retained by the glomerular membrane, but the lævulose passes through. From this it is evident that the power of retention for dextrose is not quantitatively altered. The two sugars are separated from each other as by a filter. What is true for a mixture of dextrose and lævulose also applies to a mixture of glucose and lactose. The lactose passes completely into the urine and the glucose is retained just as when there is no lactose present.

These investigations form a new illustration for the law of stereo-isomerism, but here it is not of a chemical but of a physiological nature as they occur in the domain of permeability. We may repeat, therefore, that it is the configuration of the glucose molecule that imparts to this substance the peculiarity that causes it to be retained by the glomerular epithelium.

In order to know to what group of atoms the retention of glucose was due, we have examined other stereo-isomeric sugars, amongst which were pentoses, such as xylose, arabinose, &c., and some hexoses like galactose. Of these some passed through the glomerular membrane, others could only partially do so. Of those showing partial retention, we have examined especially d-galactose and l-xylose; the former has special importance as it is a constituent of the central nervous system. The partial retention, which was always of about 50 per cent. of the d-galactose and 25 per cent. of l-xylose, is very remarkable, because it appears to disagree with the idea of permeability. A mean between the two extremes of permeability and impermeability can hardly be conceived when we have to do with only a single substance. The reason for it lies in the fact that there are two modifications of d-galactose when dissolved in water—namely, the α and the β variety, which only differ in the attachment of the H and OH groups to the asymmetrical carbon atom, as shown by the graphic formula given below. The α variety is retained and the β variety allowed to pass through. The same is the case with l-xylose.



α-Galactose held back.

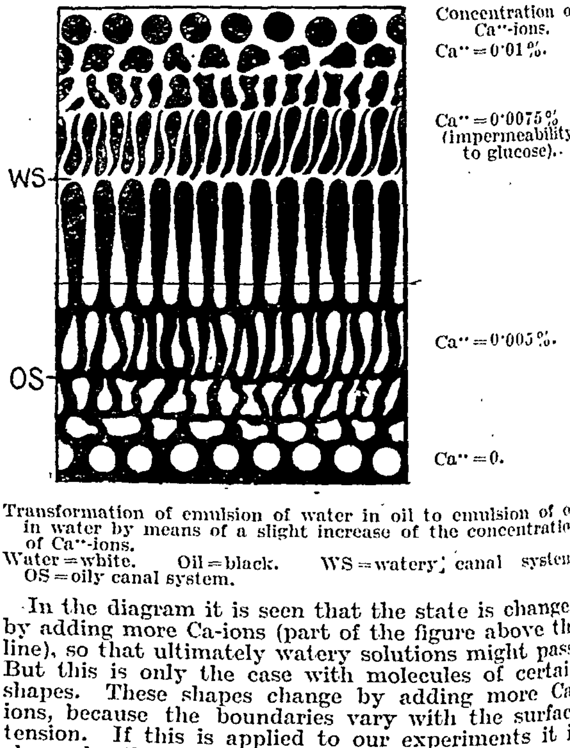


β-Galactose not held back.

To summarise, we may say that the cells, with hardly any exceptions, are permeable to ions of electrolytes and often to organic substances; further, that the physiological, or more generally the vital condition of the cell, or better the composition of the surrounding fluid, exerts a great influence on the permeability.

VI. Mechanism of Permeability.

There are two theories which can be used to explain permeability; the one is based on the polarised [illegible]tion of the surface of the cell, and this may be called the electrical theory; the other is the sieve theory. The first is embodied to a certain extent in Girard's scheme, which we have previously mentioned in connexion with the influence of acidity or alkalinity on the movement of ions. The second (sieve theory) is embodied in the views of Clowes.[38] It would take me too far to consider both these in detail, but I would like to make some remarks on Clowes's theory. This originated in an observation by Bancroft (1913),[39] that a mixture of oil and water can be emulsified permanently in two ways; the one emulsion consists of oildrops suspended in a continuous watery phase as in cream; the other consists of drops of water suspended in a continuous phase of oil as in butter. Clowes was able to convert an emulsion of the first kind into one of the second kind by simply shaking an emulsion of oil in sodium soap with a solution of calcium chloride. The reverse took place when shaking with sodium hydroxide. If this is applied to the protoplasm of cells one will obtain two different states of permeability on the addition of Na or of Ca; Ca causes an oily canal system and Na a watery canal system. From this it follows that Ca will create an impermeability to watery substances. In other words, as regards their effects on permeability Na and Ca are antagonistic to each other. The following somewhat modified scheme of Clowes illustrates the experiment very well.


Concentration of Ca··-ions.
Ca·· = 0·01 %.
Ca·· = 0·0075 % (impermeability to glucose).
WS
Ca·· = 0·005 %.
OS
Ca·· = 0.

Transformation of emulsion of water in oil to emulsion of oil in water by means of a slight increase of the concentration of Ca··-ions.
Water = white. Oil = black. WS = watery canal system. OS = oily canal system.

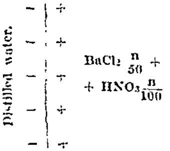
In the diagram it is seen that the state is changed by adding more Ca-ions (part of the figure above the line), so that ultimately watery solutions might pass. But this is only the case with molecules of certain shapes. These shapes change by adding more Ca-ions, because the boundaries vary with the surface tension. If this is applied to our experiments it is clear why the glomerular membrane becomes impermeable to glucose with an efficient concentration of Ca-ions in the perfusion liquid. It may be stated here that something very similar is obtained in the hæmolysis of red corpuscles. Dr. Brinkman and Miss Van Dam have also observed a decided influence of the concentration of calcium-ions on gastric movements and gastric secretion when the vagus nerve is stimulated. We are not astonished at this when we come to think that, on stimulating a nerve, one has probably to do with the influence of the calcium-ions on the neuro-muscular junction, which is formed at the place where the nerve and the muscle meet.

Why the impermeability in the presence of a definite amount of Ca-ions in the fluid should be replaced by permeability again when there is a superabundance of Ca in the liquid we cannot now discuss. An analogue of such a contrast is seen in the recent heart and the increased diuresis the œdema disappears; *what is especially remarkable is that the beneficent after-effects of oxygen inhalation last for so long a time.* The recent researches of Yandell Henderson[12] on shock, acapnia, ether-anæsthesia, are also based upon my experiments on the interchange of substances between red corpuscles and the environment.

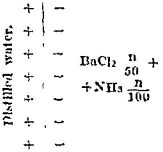
My experiments *on the effect of carbon dioxide on permeability* gave rise to the question whether the carbon dioxide as such or as an acid caused the interchange of constituents. The latter was *the case, because other acids also brought about the* same interchange, while addition of alkali to the blood had the reverse effect. Afterwards, in 1901, it appeared to me that we have here a general principle, for not only red corpuscles but also white blood corpuscles and other isolated cells suspended in their natural media showed a swelling in carbon dioxide and other acids and shrinking in traces of alkali;[13] also organs as a whole showed the same phenomenon. In this way a considerable swelling of the kidneys was demonstrated with the plethysmograph when a *trace of acid was added to the blood* and a shrinkage when the blood was treated with a little alkali.[14] In 1906 the Belgian physiologist Demoor obtained the same results.[15]

Although stress has been laid upon the permeability of the blood corpuscles to chlorine they appear to be permeable also to other acid radicals, as, for instance, to SO_4,[16] NO_3, and phosphoric acid. This can be demonstrated by quantitative chemical methods more clearly with blood corpuscles which have been treated with CO_2 than with arterial blood. I shall not dwell now upon the explanation of this fact. Only one remark. The objection has been made that the CO_2 had harmed the blood corpuscles so that they were no longer normal. This is not justified, however, because the amount of CO_2 which was added to the arterial blood was not necessarily beyond the physiological quantity, and, moreover, because the process was totally reversible.

Up till now we have considered the permeability of blood cells to Cl and other anions. Are they also permeable to kations—i.e., to metals? Investiga*tions made in our laboratory*[17] *afterwards proved* that, when a little water or a little salt is added to the serum there is also an interchange between the kations of the corpuscles and those of the surrounding fluid. Or, to put it generally, we observed that every disturbance of the osmotic chemical equilibrium causes an interchange of kations, as well as of anions between the blood corpuscles and their environment. The metals experimented with were Na, K and Ca. All these interchanges are intensified when CO_2 or other acids are added. Kœppe[18] and *myself*[19] *gave an explanation for these facts*, which has been almost universally accepted. I shall not dwell upon this question, but I only wish to draw attention here on the experiments of Girard[20] with simple membranes, which are very instructive.



Here 6 gr. ion Cl against 1 gr. ion Ba are diffused into the distilled water in 20 minutes.



Here only ½ gr. ion Cl against 1 gr. ion Ba are diffused into the distilled water in 20 minutes.

When a solution of barium chloride, mixed with a little *ammonia* or HNO_3, is subjected to diffusion against distilled water, the relative *quantities Cl and* Ba which pass through the polarised membrane during the same length of time are very different, as the above scheme shows.

Without polarisation of the membrane there had *to be a diffusion of 1 Ba against 2 Cl. Hence the* conclusion may be drawn how considerable must be the effect of hydrogen-ion concentration on the partition of the constituents of corpuscles and serum.

In cells the circumstances are more complicated than in the schema of Girard. I think here of the interchange in tissues between fixed cells and fluids which are in motion—e.g., here the principle of the initial rate of osmosis, studied by Lazarus Barlow[21]—is to be taken into account.

So far we have considered especially the perme*ability to salts and their components, the electrolytes.* Very likely the question may be put whether this can be justified and whether the electrolytes have indeed such a great significance. My answer to this is that, in the first place, the salts or their ions, by virtue of their water-attracting properties (osmotic pressure), exert an important effect on the passage of fluid between the cell and its surroundings; secondly, they strongly influence the state of colloid dispersion, and therefore the viscosity of fluids and cells. We recall here inter alia the influence of the *motility of the cell-contents on cell division* and fertilisation.

III. PERMEABILITY TO NON-ELECTROLYTES (ORGANIC SUBSTANCES).

Let me now direct attention to the organic substances. Gryns has divided organic substances into those that can enter blood corpuscles and those to which the blood corpuscles are impermeable.[22] According to him, they pass through if they cause hæmolysis when in isotonic concentration; if not they are held back. Such a representation of the matter was much too schematic, because several substances which thus appeared unable to pass through as a matter of fact did so, but only slowly. The permeability to organic substances has been investigated also by a method employed by Hedin to study the red corpuscles, and by Overton to study the cells of plants. On the whole there appears grosso mòdo to exist a correspondence between the permeability relationships of red corpuscles and those of plant cells; but Overton's idea, as stated in 1907,[23] *that all the known permeability relations of plant* cells can be applied equally well to animal cells and even to all animal cells is certainly wrong. To whom, in fact, will it be surprising, that, for example, a great number of organic substances which are able to pass through the intestinal epithelium are held back by the epithelium of the bladder? Indeed, the intestinal epithelium would poorly answer its purpose as an organ of absorption if it were impermeable, and the bladder epithelium would be a bad lining for a reservoir for metabolic waste products if it were to allow substances to pass through it. It is not at all immaterial for which kind of cell the permeability is determined, neither is it immaterial which substance is concerned in the investigations of the permeability of one and the same cell.

We shall now briefly consider the permeability of cells other than red corpuscles.

IV. PERMEABILITY OF CELLS OTHER THAN RED CORPUSCLES.

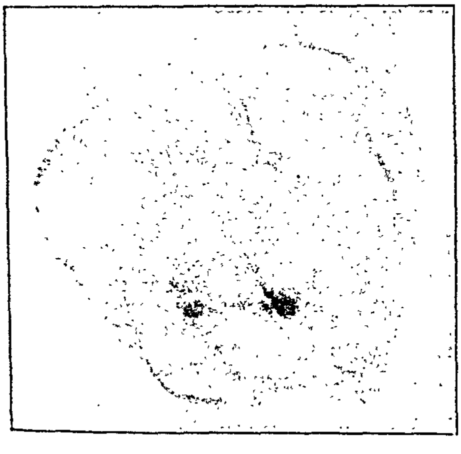
A glance at the history of the study of permeability *reveals the fact that blood corpuscles were mostly* employed. This is, firstly, because it is possible to obtain the blood corpuscles in an isolated and undamaged condition in contradistinction to most other cells. Secondly, the influence of reagents on volume and shape and on their chemical and physicochemical composition can be investigated. Thirdly, one is able, by the addition of definite substances—the amount of these substances being within physiological limits to the natural medium—to make accurate quantitative observations on the inter*change of constituents between the corpuscles and* the serum. Bacteriology has contributed much to this interest in blood corpuscles. Who does not in this connexion think of what happens after the together, sometimes, with attempts at repair; in the second, merely an evenly progressive ossifying process in an incomplete stage. Moreover—and this was my main object—mistakes can seldom arise in palpating these bones. The normal parietal at the period in question is rigid, and the only spot where localised yielding due to immaturity is liable to occur is a small symmetrical area about the parietal foramina. These foramina, or the "sagittal foramen" replacing them, lie about 1 to 1½ inches from the posterior fontanelle. The sense of weakness at this point is due to irregular spacing of the spiculæ near the margin. Except for this, which is easily excluded, the parietal at about term presents no feature due to absolute immaturity which could simulate craniotabes. Yielding of large portions of the periphery like that normal at the seventh month, and due to relative immaturity, is rare enough to be a curiosity, and in any case could not well be mistaken for anything else. In examining many of these bones, a degree of weakness sufficient to cause doubt is occasionally met with along the anterior half of the inner margin. This I at first thought to mean immaturity also, but the X ray reveals an early stage of diffuse atrophy. Such cases, in fact, occupy an intermediate position towards clinically obvious craniotabes, but need not be taken stock of in compiling morbid series.

There is thus no practical source of fallacy in diagnosing craniotabes in the newborn by clinical means.

Craniotabes in the Fœtus.

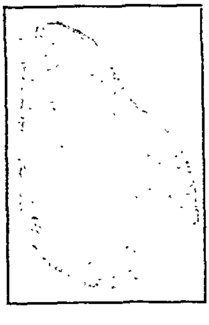
I shall throughout use the term craniotabes to denote a craniatrophy which has reached a clinically recognisable degree, and which is discovered by gentle palpation of the bone in situ. The term "infantile craniotabes" will be used to denote a craniotabes which first appears at some time after birth.

FIG. 1.



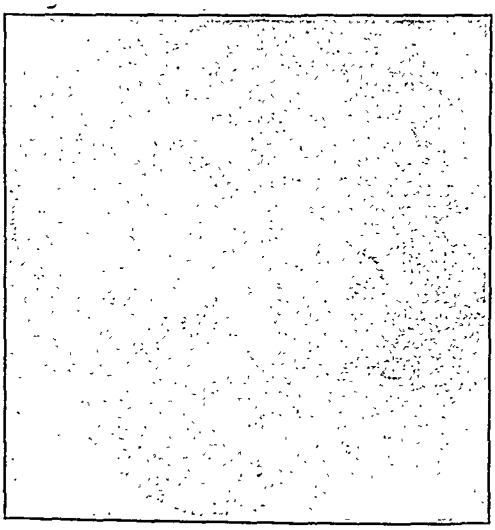
Parietal bone of subject at term with craniotabes. Note predominance of atrophy in anterior two-thirds of internal segment.

FIG. 2.



Repair proceeding in a large circular area at birth.

FIG. 3.



A normal parietal at term (vertex presentation).

The prevailing opinion, as reflected in text-books, &c., is that craniotabes is a condition developing in infancy, and it is so described. Some have remarked on the occurrence of bony defects at birth, and ascribed them to bone-immaturity. The existence also of a condition at birth deemed to be craniotabes has been recognised by some authors, but, so far as I am aware, as a rarity. Having found this latter condition congenitally with some frequency, and excluded immaturity, my wish was to ascertain whether its analogy with the infantile form was anything more than a superficial resemblance. Evidence was then gradually obtained which collectively affords a sufficient proof of the identity of the fœtal with the infantile form, and this will now be considered seriatim.

Physical Characters.

The atrophy occurs as depressions found on the inner aspect of the bone. The atrophic areas show both lacunar and diffuse formations, both being frequently present in the same bone. The lacunar areas occur as membranous spots isolated in the bone, or it may be abutting on its margins here and there. Their edges show a thinning down of the bone to the membranous or semi-membranous centre, which centre varies in my specimens from about 0·5 to 2·5 cm. in greatest width. The diffused areas may be membranous in part or wholly, or merely so far atrophied as to yield with ease. Where the bone is reduced to a thin shell, but not entirely lost, and is palpated in situ through its integuments, it is apt to feel "leathery," though still resilient; areas of total atrophy feel flaccid or "parchmenty," according to their state of tension. Any part of the parietal may be involved, but in all cases I have recorded the site of election has been the inner half, and especially its anterior two-thirds. In 76 instances (66 in vivo) the parietal was affected in all, the right alone in 27, the left alone in 13, both bones in 36. In 2 the upper portion of the frontal was also involved. The squamo-temporal and squamo-occipital were not found implicated in any.

Palpation is sufficient to settle the fact of atrophy, and to determine its main features; but in detail it is inaccurate, and this must apply also to palpation of infantile craniotabes. Parts bridged by bone are apt to yield like one, and adjacent bone, especially on the peripheral side, through loss of its normal support, sometimes seems to belong to the atrophied area. For this reason my previous illustrations, based on results of palpation, represent very imperfectly the true state of things. The radiograph now shown is sufficiently illustrative, though the definition might perhaps be improved. (The low density of these bones entails the use of a very "soft" tube.) For comparison, a normal parietal at term is included, and one showing infantile craniotabes taken as figured from Carpenter's book on syphilis in children, and given by the author to illustrate that form.

Macroscopic Details.

In parietals at birth showing normal ossification the vascularity of the bone may appear uniformly distributed, or show a degree of irregularity in this respect. In those showing craniotabes, however, there is sometimes, not always, definite hyperæmia the usual Ringer's fluid, but must be NaCl 0·5 per cent., $CaCl_2$ 0·02–0·01 per cent., KCl 0·01 per cent., $NaHCO_3$ 0·285 per cent.

As to the amount of calcium chloride, it may be emphasised that the percentage of this salt may be much greater than 0·02 per cent., provided the concentration of the Ca-ions be the right one. And this concentration is fixed *by the following formula (Rona and Takahashi*[29]*)*:

$$\sqrt{[Ca^{\cdot\cdot}]}=K\cdot\frac{[H^{\cdot}]}{[HCO_3']},\ \text{where } K=350.$$

The [H·] can be kept constant in the artificial perfusing liquid by the addition of a small quantity of CO_2 and a little neutral red. The colour to be obtained in this way must be the same as in a definite mixture of primary and secondary phosphates, as was pointed out by Sörensen.[30] The concentration of [HCO_3'] depends on the amount of $NaHCO_3$, and this amount can be determined by titration of the normal serum. It is obvious that in this way an increase of the *concentration of the calcium salt does not* affect the concentration of the free [Ca··], and, as already stated, the latter is of predominant importance.

The significance of the concentration of free Ca-ions for the permeability of cells other than the epithelium cells of the glomeruli is also evident from experiments conducted in our laboratory on the red corpuscles of man and other warm-blooded animals (Brinkman and Van Dam[31]). When red corpuscles are washed in 0·9 per cent. solution of NaCl they lose some of their colouring matter after again adding a 0·9 per cent. solution of NaCl. But this can be prevented if a definite amount of calcium-ions are present in the solution of NaCl. *The amount of $CaCl_2$ needed for this* purpose may be between 0·015 and 0·020 per cent. On increasing or diminishing the calcium hæmolysis occurs. It is not necessary in this case to use a buffer, for no acids *are formed here as in the perfusion of the kidneys.*

Experiments similar to those on the kidney were performed on the automatic movements of the rectum (Brinkman and Van Creveld[32]) and stomach,[33] and even on the secretion of the gastric mucous membrane when the vagus is stimulated (Brinkman and Van Dam[33]). The concentration of the Ca-ions must always be confined within very narrow limits, and this is effected by using the modified *Ringer's solution as well as in the normal serum.*

The fact that in normal serum the concentration of the Ca-ions is kept fairly constant may be the reason why the therapeutic application of Ca-salts is so often of no value. When acidosis exists, however, the concentration of Ca-ions is altered.

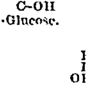
SOME REMARKS.

(*a*) *Tolerance.*—There are four other points in connexion with the permeability of the glomerular epithelium to glucose. In the first place, when the amount of glucose added to a suitable Ringer's solution is greater than that which is normally present in the blood plasma of the frog all the glucose is not held back. The amount of glucose let through increases with the amount added. It is even possible to add so much glucose that it all passes through the glomerular membrane. Is this phenomenon to be ascribed to damage done to the glomerular membrane by the increased amount of glucose? In any case the glomerular membrane becomes more and more permeable; *in other words, the tolerance of the* glomerular membrane decreases and even becomes nil. I shall not discuss this question here, only I wish to remark that the same phenomenon is observed with red corpuscles, which are also made more permeable by and to glucose.

(*b*) *Hyperglycoplasmia.*—The second point is connected in a natural way with the first. We all know that one is accustomed to speak about hyperglycæmia when the total amount of blood-sugar is greater than normal; but when investigating the relation between hyperglycæmia and glycosuria the important point is not the total amount of sugar in the blood as a whole but *the amount of sugar present in the plasma*; one must know the degree of hyperglycoplasmia. Of late years a number of investigators have studied the partition of sugar between corpuscles and plasma; most of them agree that there may be a considerable amount of sugar in the corpuscles, but only in the case of man and the dog. The experiments of van Creveld and Brinkman recently conducted in my laboratory have established in a direct manner that in circulating blood glucose is exclusively present in the plasma, and that the transit of sugar from plasma to corpuscles takes place when the blood is defibrinated;[35] the migration occurs as soon as coagulation commences, and for this reason is to be observed *even in hirudinised blood.*[36] *If, however, the blood is collected in a tube coated with paraffin and at once* centrifuged it is found that all the sugar is present in the plasma. This is of great importance for the quantitative determination of hyperglycoplasmia, which is the only matter of real importance in the clinical determination of blood-sugar. From a theoretical *point of view it is interesting to add that the* change which takes place even in the beginning of coagulation of the plasma surrounding the superficial layer of red corpuscles is sufficient to alter the permeability of the red corpuscles to sugar.

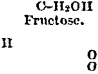
(*c*) *Phloridzin.*—A third direction in which our work on the permeability of the glomerular membrane to glucose was extended was in connexion with the influence of traces of phloridzin on the passage of glucose into the urine. Brinkman[37] found that when only 0·0004 per cent. of phloridzin is added to the perfusion liquid no trace of sugar is held back by the glomerular membrane; the renal portal vein was ligatured, so that the renal tubules could not have exerted any influence. Thus we may conclude that the glomerular membrane has been rendered wholly permeable to glucose through the phloridzin added. This permeability is perfectly reversible, so that if a Ringer's solution free from phloridzin and sugar is passed through, and then a Ringer's solution containing the physiological quantity of sugar, all the sugar is once more retained. We have therefore before us an additional example of the alteration of the permeability of the glomerular membrane to glucose, and in this case it is caused not by an excess of glucose itself, but by the foreign substance phloridzin.

(*d*) *The Reason why the Glomerular Epithelium is Normally Impermeable to Glucose; Size of the Molecule of Glucose; its Configuration; Isomeric and Stereo-isomeric Sugars.*—The fourth remark has reference to the question why the physiological amount of glucose is normally held back by the glomerular membrane. It is, indeed, remarkable that glucose is retained by the glomerular membrane, whereas other crystalline bodies, like NaCl, sulphates, and phosphates, pass through. We might imagine that the molecule of the monosaccharide glucose ($C_6H_{12}O_6$) *is so large that its passage through the glomerular membrane is hindered. We thought that if this* notion were correct disaccharides, like sucrose (saccharose), maltose, and lactose, which have a still larger molecule ($C_{12}H_{22}O_{11}$), would certainly be retained as well. Experiments proved, however, that *the glomerular epithelium is highly permeable* to these three disaccharides. It is even perfectly permeable to raffinose, which has a still larger molecule ($C_{18}H_{26}O_{14}$). Thus the size of the molecule alone cannot be the determining factor.



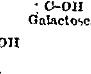
$$\begin{array}{c}\text{C–H}_2\text{OH}\\ \text{H–C–OH}\\ \text{H–C–OH}\\ \text{OH–C–H}\\ \text{H–C–OH}\\ \text{C–OH}\end{array}$$

d-Glucose.



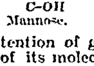
$$\begin{array}{c}\text{C–H}_2\text{OH}\\ \text{H–C–OH}\\ \text{H–C–OH}\\ \text{OH–C–H}\\ \text{C=O}\\ \text{C–H}_2\text{OH}\end{array}$$

Fructose.



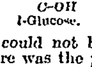
$$\begin{array}{c}\text{C–H}_2\text{OH}\\ \text{H–C–OH}\\ \text{OH–C–H}\\ \text{OH–C–H}\\ \text{H–C–OH}\\ \text{C–OH}\end{array}$$

Galactose.



$$\begin{array}{c}\text{C–H}_2\text{OH}\\ \text{H–C–OH}\\ \text{H–C–OH}\\ \text{OH–C–H}\\ \text{OH–C–H}\\ \text{C–OH}\end{array}$$

Mannose.



$$\begin{array}{c}\text{C–H}_2\text{OH}\\ \text{OH–C–H}\\ \text{OH–C–H}\\ \text{H–C–OH}\\ \text{OH–C–H}\\ \text{C–OH}\end{array}$$

l-Glucose.

If the retention of glucose *could not be ascribed* to the size of its molecule there was the probability that a characteristic structure or configuration of the glucose molecule had something to do with it. For this reason some sugars which were either isomeric or stereo-isomeric with glucose were experimented with. For the sake of convenience I give above the formulæ of a few of these sugars.

recognisable craniatrophies at birth. This is well explained for many by supposing the skull at birth already prepared for further craniotabes by a degree of atrophy in the posterior segment as yet unrecognisable to palpation, and *not to be detected* by any but radiographic means. It is, moreover, in this *quadrant, part of the segment most prone to atrophy in fœtal life, that I find* infantile craniotabes to more commonly begin. It may also be observed to start from the *thinned margins of small atrophic* areas found in the posterior segment at birth. Such con*siderations may explain why most infants escape* post-natal craniotabes, though subject to like con*ditions. But it may be also plausibly argued* that the organic causes of decalcification present in the fœtal state are carried on into infancy.

Enough has now been said to indicate that the *inception of craniotabes* as a pathological event must be relegated to fœtal life, if not always, then very *often.* In connexion with the whole argument the absolute frequency of pre- and post-natal forms needs to be worked out. My own *figures* (industrial population of Liverpool) give so far for all grades of the fœtal form 21·6 per cent. (60 out of 277 unselected vertex births). A series of still-births furnished ten examples in about 63 (in a few of these the presentation was uncertain). For the infantile form a recent probable estimate by Wieland[4] gives about 20 per cent. of *all* infants, presumably studied in a city district. These figures, so far as they go, tend rather *to support the thesis just advanced.*

Infantile Craniotabes.

My material here is 100 cases, but any deficiency in point of numbers has been, as I venture to think, more than compensated for by the method of continuous and intensive study given to individuals. *Results as to localisation* agree closely with those of Carpenter, who found the occipital seldom affected *in comparison with the parietal. In all my cases* where the occipital was affected, there was at some *time more pronounced or extensive atrophy in the* parietal, and there was evidence or proof that the former was *involved secondarily in point* of time. The occipital, however, may be the last to heal. The statement of Stoeltzner[5] that craniotabes is only found after the first three months is *contradicted by* my results, numbers developing during the second month. The earliest began in the fourth week, the latest at the end of the fourth month. Most, however, reach a maximum by this latter age, and thereafter begin to regenerate. The mechanical conditions furnish the key to the period of incidence. Relief of pressure is brought about earlier in some than others, *but in most is sufficiently accomplished by* or before the end of the fifth month. Accordingly we find craniotabes disappearing after this time, *given relief* of pressure, whatever the child's state of health may be. Difficulty has been felt by some[6] in assigning the same pathology to diffused and lacunar formations. This I do *not* share, since the same case may represent the lacunar form when it begins, the diffuse form at its full development, and the lacunar form again as it heals. In areas widely atrophied, remnants of partially calcified tissue are often left, and regeneration occurs from these as well as by irregular invasions of bone from the centre of ossification. The result is that a broadening trabecular arrangement of new bone is apt to be formed, enclosing ever-dwindling atrophied spaces. If the case *is first seen in this last* phase, it may appear sui generis, especially since manifest rickets may be present at these ages. The variations in contour of the back of the skull may be held responsible for some of the varieties in form and position met with.

Organic Causation.

The mechanical causation of this curious condition is clearly only a part of a causal nexus. Though the great majority of individuals are subject to closely similar mechanical conditions, only a minority—say one-fifth—develops craniatrophy to the clinically recognisable degree. In this minority, therefore, decalcification must be promoted by some morbid agency. Here I shall deal with syphilis and rickets (or rather, the as yet unknown causes of rickets) † as possible morbid agencies, in the light of such data as the present inquiry can contribute. I find it possible for a child to have fœtal followed by infantile cranio*tabes, and to pass through infancy and earlier child*hood without showing any sign of either disease; but this observation has little real weight. Rickets may be arrested before it is clinically demonstrable, and syphilis may remain clinically latent. Most craniotabetics show either one or both; and by different schools of opinion the causality of both, *separately or combined,* has been asserted, though as a rule with little serious attempt at proof. The problem is by no means an academic one, seeing the therapeutic needs of child and mother on either assumption, and the importance to the theory of rickets of a decision on the matter.

Regarding syphilis first, its relation is beyond dispute, for it is consistently present in series, including my own, to as much as 50 per cent. or more. These findings, moreover, are based on clinical *evidence, and a positive residuum over and above* this must be allowed. From historical analogies, the argument, therefore, seems *a fairly strong one* for the necessary antecedence of syphilis; but the connexion needs examining further. Carpenter, who devoted long attention to this subject, estimated that about 50 per cent. of congenital syphilitics show craniotabes. If the above estimate of about 20 per cent. of all infants is also near the mark, we should then be required to assume that some 40 per cent. of infants, in our city populations, are born with syphilis —an estimate very widely in excess of any yet made on other grounds, clinical or pathological.

The same observer prepared charts showing the coincidence of craniotabes with the manifest syphilis *of the earlier months.*[7] *Granting the coincidence en masse,* we have yet a very good mechanical reason for the predominance of craniotabes at these ages, quite apart from the activity of an accompanying syphilis; moreover, the coincidence largely disappears on going into detail. The maximum of each is generally reached at different times, and if individuals are studied in continuity, their craniotabes is found to have an independent career, determined by the pressure conditions. Moreover, craniotabes shows indifference to an otherwise successful course of mercury. This rule has been uniform in my experience when cases are chosen at the right time, say those starting in the second month, which nearly always will spread in natural course. It is useless to select cases at the period of natural healing, since this goes on at differing rates. It is also noteworthy that extensive cases *sometimes run their whole* course without any sign of syphilis. In 10 stillborn instances examined, *S. pallida* was not found in liver, spleen, and lung, and the Wassermann reaction, taken in 9, was negative.‡

While such considerations, together with other points not now enumerated, all go to discredit the causal agency of syphilis, its more remote causality could not well be excluded so long as we are largely ignorant of its power of injuring the fœto-infantile mechanism of calcification, and while it seems possible that some cases of low virulence and latency escape our present methods. I find it, however, more rational to regard its action in that kind as nonspecific, and its association with craniotabes as having the same meaning *as its association with* rickets, which in the human subject is deceptively close, the action in both conditions being to promote resorption of bone. In other words, were it not for the presence of syphilis, many of these craniatrophies would not have time to reach a degree where they can be clinically recognised.

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† All that is up to now determined is *the agent, or one of the* agents, preventing rickets. The causes producing it come into play after the preventing *agents are* removed. These causes are unknown.

‡ I have Prof. Beattie's permission to mention these results, which were obtained in his laboratory.

experiments of Neuschlosz,[40] who found that an emulsion of lecithin in water possesses a surface tension dependent on the amount of Ca present. Too much or too little Ca had the same effect. In the therapeutic application of lime salts one also often notices opposite effects according to the amount used.

To return for a moment to what Prof. Bayliss has called the "Clowes's effect," it would seem that the view of the American author is strongly supported by our experiments on the stereo-isomeric sugars. We have seen that pores are left between the oil-drops, and it is obvious that these pores, because they are subjected to the surface tension at the boundary, assume varying shapes. Now pores of a definite shape could allow sugars of a definite configuration—e.g., lævulose—to pass through, while holding back sugars—e.g., glucose—of another configuration. One might be inclined to explain this phenomenon by the aid of differences in viscosity or surface tension. But we have found with Miss S. C. Hamburger that these physical constants are the same for lævulose and for glucose. How can one explain this separation of glucose from lævulose, therefore, other than by supposing that the shape of the ultra-microscopic pores in the sieve plays a decisive part? Our experiments thus lend support to Clowes's theory, and vice versa the mechanism of specific permeability has become clearer.

Finally, it may be said that the conditions shown in our sketch by the portion below the line do not, as a rule, occur in physiological circumstances. In fact we know that, as a rule, all the cells of the body are permeable to water. But there are exceptions. When blood is diluted with a great deal of water most of the red corpuscles in absorbing water loose their colouring matter and the mixture has become transparent. But after centrifugalising I often saw a deposit which examined by the microscope proved to consist of red corpuscles. These cells must have been impermeable to water. Red corpuscles treated with cobra venom are also impermeable to water, and the same is true of the eggs of sea-urchins.[41] When put in distilled water the latter does not enter the eggs, as Ralph Lillie has pointed out, but on adding some Ca-ions their impermeability to water is lost.

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CRANIOTABES OF THE FŒTUS AND INFANT.

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IN a previous paper[1] I recorded some results of a clinical inquiry into this subject. The account then given was composed under the combined disadvantages of military service and paper shortage; and this was unfortunate, because the contentious nature of certain of the findings called for their rather full presentment. I shall therefore make no apology for re-stating these findings in somewhat more adequate form.

Broadly, the position then reached was that the recognised "craniotabes" arising during the first few months of infancy is in many, and probably in most, cases only a fresh manifestation of a state of craniatrophy already existing in later fœtal life. This fœtal craniatrophy, having no physical differences from the later form, and occurring predominantly in the same individuals, was therefore held to deserve the same title. Verification of this finding would entail a re-scrutiny of the common belief that craniotabes is a sign of rickets. A simpler solution of the difficulty would be to infer the causality of syphilis. But the only definite contribution to the problem of causality I was able to make consisted of some fresh evidence tending to rule out syphilis as an acting or proximate cause. The evidence given was, I think, sufficient for that purpose; and it must be remembered that observation alone, though powerless to decide what is causal, can often determine what is not.

I will now go over the previous findings, incorporating such fresh material as has since been obtained. The total case-material is 154.

Immaturity of the Skull.

In connexion with yielding areas in the skull at birth, the problem was early raised in course of this inquiry as to what characters of this kind in the newborn skull can be legitimately ascribed to immaturity. To determine this point, a parallel study was made on some hundreds of living neo-natal crania at various stages of development, and of stillborn and non-viable crania, in situ and detached.* Seeing that in all my cases of fœtal craniotabes the parietal bones were attacked, and that all were born at or near term, interest here centres on the condition of the parietal at and near the end of the fœtal period. The result of study makes it clear that the condition I call fœtal craniotabes and the condition of the parietal due to immaturity are entirely distinct. In the first there is discontinuity of the bone-forming spicules—a true atrophy in some part of their course—

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* For the great majority (about 130) of these latter my thanks are due to Prof. J. M. Beattie, who kindly placed at my disposal the stillborn material brought to the Liverpool City Laboratory. This material has also furnished several morbid specimens.

would have escaped through the bladder wall without reaching the general circulation.

Various Preparations of Antimony.

As a rule the sodium salt of antimony can be given in larger doses than the potassium salt; but I have had patients under treatment with the sodium salt who manifested rather severe toxic effects, such as one sees only with the larger doses of the potassium salt, and I do not find it as effective as tartar emetic. I have treated a number of cases with a preparation of antimony, acetyl paraphenylendiamine antimonyl tartrate, which Messrs. Allen and Hanburys had prepared, and hoped would prove less toxic than tartar emetic. I did not find it appreciably less toxic than an equivalent dose of tartar emetic, though I was able to effect permanent cures by its aid. In several cases I employed Oppenheimer, Son and Co.'s colloidal preparation of antimony, oscol stibium, and a patient of 14 could tolerate up to 7 c.cm. given intravenously without the slightest toxic effect. However, to produce a permanent cure with this preparation alone I found it necessary to press the doses until such toxic effects as diarrhœa and a rise in temperature show themselves. In using this colloidal preparation of antimony in the intramuscular treatment of several leper patients, I also found that the best results were obtained when the patient was well under the influence of the drug, and from what I saw of the lepers on Robben Island, who at my request were being treated with antimony in April of this year, I have no doubt that the non-toxic doses that were being given were responsible for the smallness of the results obtained. By treating a number of bilharzia cases with Crookes's collosol antimonium I have shown that this preparation of antimony also produces a like process of degeneration in the ova that escape in the urine. Much caution must, however, be made in regard to the supposed value of colloidal preparations unless we can be sure that the supplies we receive are stable, as I believe both these products now are.

Treatment with Manganese and Arsenic.

I have had good results in the treatment of cloudy and offensive urines with intramuscular injections of colloidal manganese, but neither manganese nor arsenic appears to have any effect on the bilharzia worms in these cases. One patient of 19 received 11¼ gr. cacodylate of soda intramuscularly or subcutaneously in August, 1920, and 76 c.cm. of diemenal in October without any appreciable change in the ova, though the urine itself was much clearer. However, the condition soon cleared up with a few doses of emetine, the largest dose given in this case being 2½ gr. intramuscularly.

Successful Treatment Indicated by Black Ova.

It is not at all uncommon to see black ova in the blood-stained urine of patients who have received no treatment, and during an attack of colic ova are often seen in all stages of degeneration. It is the gradual increase in the signs of degeneration and the gradual disappearance of the ova until none but black ones are seen that warrants the assertion that a remedy is proving successful. It has been suggested that the adult worms are destroyed by only a few doses of antimony and that the subsequent doses are required only for the ova; but I have had under me patients who discontinued treatment after two or three weeks with a gradual return of their symptoms, whilst the number of degenerated ova have gradually been replaced by perfectly normal ones, suggesting that some of the adult bilharzia worms that escaped destruction had entirely recovered from the effects of the drug.

Infusion of Berkheya.

I heard that a kaffir root was very effective when given as an infusion. It proved to be berkheya (*Stobœa speciosa*), but a fresh infusion in rapidly increasing doses had no effect on two cases. There is the possibility of a local unknown specific plant, but in view of the presence of *Schistosoma bovis* infestation in South Africa it is also possible that the relative [illegible]ity of some persons is due to the ingestion of [illegible]fested meat.

Emetine Hydrochloride.

As emetine hydrochloride has been recommended in the treatment of bilharzia disease, I determined to give it a thorough trial in Natal. I was fortunate in having the clinical condition confirmed in all the cases by the results of microscopic study, and in several of them by the complement-fixation test as well. One of the drawbacks to this method of treatment is the cardiac depression which may develop in some patients during the second or third week if emetine is used without any other drug to counteract this effect. The cardiac depression which is indicated by a small rapid pulse readily responds to treatment with small doses of digitalis, but can generally be avoided if the dose of emetine is skilfully regulated and the following tonic prescribed:—

Ferri et amon. cit.	gr. v.
Liq. ars.	♏︎. iii.

Inf. gent., ad half ounce in water t.d.s.a.c.

Even with the larger doses of emetine which are required and can be given on alternate days, I find that local reaction causes only very slight inconvenience to the patient if the emetine is dissolved in 20 mm. of a 1 per cent. solution of carbolic acid, which can be boiled along with the hypodermic syringe and needle. It is best not to use the same site for an intramuscular injection more than once. Should the muscle become sore, a hot sea-water bath on one of the days when no injection is given is very gratifying. Intravenous injections of emetine may cause immediate cardiac depression and are better avoided. I was surprised to find intravenous injections no more effective than intramuscular injections.

I have obtained the best results by giving an intramuscular injection daily for three days and then three times a week for three weeks. I generally commence with an initial dose of ½ gr. for an adult and ⅓ gr. for a child. A dose of 1 gr. is a sufficiently large one to work up to in a child of 12. Vomiting may occur if the injection is given shortly after a meal. The maximum regular dose for an adult may be regarded as 2 gr., but larger doses appear to cause toxic effects and to cure more rapidly. The accumulative action of emetine is almost as marked as the acquired tolerance for antimony, and the dose should be lessened or given less frequently towards the close of treatment. Our aim should be to keep the patient well under the influence of ipecacuanha without producing undesirable toxic effects. A slight return of albuminuria after the urine has cleared sometimes indicates toxæmia, and—as with the antimony treatment—suggests that the injections must be given less frequently or the dose lessened. It is generally necessary to continue treatment for about 25 days.

A. H. Harkness has reported[2] that 14 gr. in two weeks and 20 gr. in three weeks proved ineffectual in an adult; but Diamantis, of Cairo,[3] reported that 0·85 to 1·05 g. (from about 13½ to 15½ gr.) was generally sufficient to cure a case if 10 to 12 injections are given at intervals of from three to five days.

Conclusion.

My experience in Natal shows that the emetine treatment carried out along the lines I have described is undoubtedly a better way of treating children and young persons than that which involves intravenous injections of antimony. The progress of a case can be determined with certainty only by the microscopic examination of the centrafugalised deposit of urine passed, and it is the last portion which contains most of the ova. By examining the urine in this way I have observed the same degenerative changes taking place in the ova of *Schistosoma hæmatobium*, *S. mansoni*, and *S. bovis* whilst patients were being treated with emetine as those which are commonly associated with the antimony treatment.

Towards the expenses involved in this research a grant was received from the British Medical Association.

Durban.

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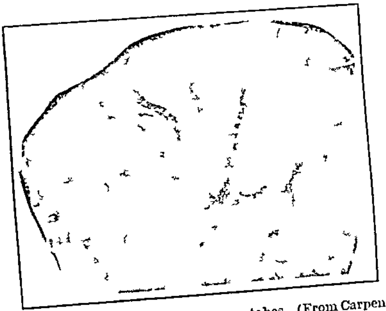
[2] Brit. Med. Jour., 1920, ii., p. 890. [3] Ibid., 1921, i., p. 70.

with an irregular distribution This is best seen in more advanced examples, and after hardening, when their dark colour is in sharp contrast with the appearance of normal specimens The hyperæmia is seen to be more pronounced in a broad zone round the atrophied parts The pericranium is not noticeably thickened This structure is often ill developed at birth, and may not strip very easily off a normal bone It usually strips off an atrophied site, though the presence of old blood may cause partial adhesion and pigmentation The same description applies to the dura, which, moreover is thinned over membranous sites One naturally thinks of intra partum damage in these cases but in my confinement series only one stillbirth occurred probably from unrelated causes, the others seemed none the worse, then or afterwards Though numbers have been re observed at later ages no evidence of cortical injury has been met with The following shows, however, the intra partum possibilities in a rather extreme case—a still born female infant in my laboratory series —

FIG 4



Part of parietal showing infantile craniotabes (From Carpenter)

There was much inner segment atrophy of both parietals, chiefly diffuse and partial The left showed a fracture 1¾ inches in length, parallel with the sagittal edge and involving the thinned bone near its junction with normal bone The pericranium here was torn through, and a layer of recent blood extended beneath it as far as the eminence The underlying dura otherwise uninjured, was separated from the bone by blood and serum (commencing internal cephal hæmatoma) Further forward both dura and pericranium were partially adherent to the atrophic bone up to the fontanelle, the adhesion being due to a thin deposit of old (ante partum) blood The subjacent cortex was apparently undamaged

One would expect sub pericranial hæmatoma after the birth of severely tabetic skulls especially where the margins were diffusely atrophied Of 11 examined post mortem, three showed atrophies of this type, and in all three there was commencing hæmatoma Till recently, the significance of this point had unfortunately escaped me so that the absence of record of it among those that survived may mean a fact or an omission As this accident, however, probably occurs in under 1 per cent of all births, it is unlikely to complicate these cases with any frequency, at any rate to a clinically obvious degree But when present, especially on both bones, the possibility of underlying craniotabes may be borne in mind The histology of these bones will be given in a later note

Mechanical Causation

This is the only certain element in the causal nexus of craniotabes in general Yet that it has sometimes been disregarded is shown in the statement of Carpenter[*] that craniotabes (infantile) cannot be a sign of rickets because it is getting better while rickets is developing, and by an argument quoted from Wieland[3] that the imperfectly ossified areas occurring in the newborn do not mean craniotabes because they occupy a different part of the bone. This latter is also an error of fact, as they may be found in the same part, but the observed differences of position at the two periods is exactly what would be expected if the two conditions were identical At both periods they occupy the most dependent regions of the skull, the regions of maximum strain Again, it is a mark of a true cause (in action) that when removed its effect (if impermanent) always begins to cease from that time forward Events were followed in some fifty or more of my cases, and in all progressive repair was observed to take place where (as is usually the case) the fœtal area was situated outside the new regions of pressure after birth

The physical characters tell the same tale In the normal majority of skulls at term, the indentations accommodating the cortex are as yet ill marked and scanty Craniotabes (in general) implies a morbid exaggeration of these in dependent parts For the fœtus, and in head positions, one must infer a double force of compression tension for both inner and outer strata The design of the parietal bone bears out this inference, at any rate for the outer stratum There is, of course, no diploeic space at this age The inner layer is thin and compact the outer layer, in contact with the inner, and about two to three times its thickness I find to show partial interlacement of the radiate fibres together with a general tendency to slant from the inner towards the outer surface from centre towards periphery This latter arrangement, so far as it exists, would tend to equalise strains from external pressure, and to transfer them towards the stronger interior bone Owing to the general structure, external compression strain would tend to be transferred to the apex of a wedge of strain whose base is on or faces the margin and this so far as there is need to assume it, would help to explain the frequent occurrence of atrophic holes in the interior Internal compression by the semi diffluent brain mass of the fœtus should be moderately uniform but with a gravitational stress concentrated on the inner segment The greater tendency to diffused and other atrophy in this segment is, no doubt thus accounted for One can only postulate the main features of so irregular a mechanical system as the whose complexity is increased by the various fœtal movements and by such developmental variations as may occur in the bones themselves There is further to be included the inconstant lie of the head in relation with the uterine wall, the obliquity of the uterine axis &c The greater implication of the right parietal is of interest in connexion with the lower lie of that bone so far as gravitation is concerned, in first positions, while the general anterior position of these atrophies together with other points should help in determining the normal stresses on the fœtal head prior to labour I have only found craniotabes in births by the vertex Its occurrence in other than head presentations would indicate that the fœtus had recently changed its position

Clinical Course

Rigidity of the fœtal area removed from stress is generally accomplished, clinically speaking by the end of five weeks, but repair may be much more gradual and prolonged to three months The finding of areas far forward during infancy, if this is not far advanced would mean their origin in the fœtus During the first four months of infancy fresh areas in the posterior segment are very liable to develop and the case then becomes one of infantile craniotabes which subsequently runs its usual course This sequence occurred in 33 out of the 38 which I was able to follow up Of 117 born without recognisable craniotabe , and followed to some part of the fourth month 10 afterwards showed it Allowing for modification by larger figures the discrepancy found (about 86 as against 8 per cent) is still great enough to justify my inference that the bulk of infantile cases are recruited from those showing

Source of Infection.

From the slow spread of the disease from one boy to another, and the fact that there was no generalised outbreak involving a number of the boys at one time, it was considered that the food, drinking supplies, &c., could be excluded, and that the infection was probably coming from a "carrier." The persons most likely to occupy this rôle were two assistant masters and two boys who had spent a great part of their lives in Baghdad.

The history of these cases was as follows: Mr. X., assistant master, an ex-soldier who had been in France for a short time, and Mr. Y., assistant master, in France for two years; A. S., a boy, aged 14, who came to England from Baghdad on July 23rd, 1920, and entered the school in September, 1920. There was no history of enteritis in any of these three. The other boy, A. H. S., aged 14, also came from Baghdad on July 23rd, 1920, and entered the school in September, 1920. He had had an attack of slight diarrhœa two years previously while at Baghdad.

The examination of fæces of the two boys from Baghdad gave the bacteriological findings as shown in Table IV.:—

TABLE IV.

Cases.	MacConkey plates.		Glucose.*	Mannite.	Litmus milk.		Indol.	Motility.	Macroscopic agglutinations.		
	L.F.	N.L.F.			1st day	3rd day			Flexner	Shiga	Y
A. H. S.	+ +	1 col.	A	A	Acid	Alk.	—	—	1/1600	0	1/800
A. S. ...	+	Nil	—	—	—	—	—	—	—	—	—

* Lactose, dulcite, saccharose, maltose = Negative results in each case.

The blood serum from suspected carriers and one control gave the results when agglutinated against *B. dysenteriæ* Flexner-Y stock culture, and the Southport organism, as shown in Table V.:—

TABLE V.

Cases.	Flexner-Y stock culture.	Southport organism.
A. H. S. ..	1 in 100	1 in 20
A. S.	1 „ 300	1 „ 100
Mr. X.	Negative.	Negative.
Mr. Y.	„	„
Control	„	„

Conclusions.

The details given above show that an infection with *B. dysenteriæ* (Flexner) had occurred in the school and that it was highly probable that the source of infection was a carrier, the evidence being strongly in favour of the boy A. H. S. With regard to this boy, the first two specimens of his fæces to be examined were negative, and the third specimen yielded but one colony of *B. dysenteriæ*. The infection commencing in a mild form assumed increasing virulence, the last case, G., being acutely ill. The seven mild cases, and two boys under suspicion of being carriers, still carried agglutinins to the isolated strains from the acute clinical cases, and also to Stock *B. dysenteriæ*, Flexner and Y strains; it is therefore strongly suggested that although the organisms were not isolated in six instances the infection had been present previously. Two of these, C. M. and A. C., from whose fæces the organisms had been isolated, were among the three highest agglutination reactions obtained.

The bacteriological examinations were made by Dr. Cronin Lowe, pathologist and bacteriologist to the Southport Infirmary.

WELWYN HOSPITAL EXTENSION.—The rebuilding of the Queen Victoria Memorial Cottage Hospital at Welwyn has now been completed at a total cost of £4000. In addition to a new operating theatre and anæsthetic room, three new private wards have been added. These will be available at 4 guineas a week for private patients attended by their own doctors, or in the case of operations by surgeons not necessarily on the staff of the hospital.

A CASE OF MORAL IMBECILITY.

BY W. NORWOOD EAST, M.D. LOND., M.R.C.S.,
SENIOR MEDICAL OFFICER, H.M. PRISON, BRIXTON.

(*With the Permission of the Prison Commissioners.*)

THE subject of this sketch, a woman at one time under the prolonged observation of the writer, and then approaching middle age, presents in the ascertained incidents of her career features so distinctive of moral imbecility lasting over a period of many years, and doubtless not yet concluded, that some record may be of interest. Many of the facts now related were obtained from an excellent report which cannot here be extensively quoted. In the abbreviated account which follows places and personalities are disguised.

Of the many aliases assumed by the prisoner, the simplest known was that of "Jane," by which name she will be known in this account. Jane was possessed of an intellectual capacity considerably above the average for her station in life; had her ability been associated with normal moral development a happy and honourable career could have resulted. Her parents were humble and honest, and Jane, their eldest child, was born in wedlock during the second year of their marriage. The remaining members of the family are said to be of irreproachable character. There is no record in the family of insanity, epilepsy, nervous disease, intemperance, or criminality, and Jane herself, whom I questioned closely on this point, denied any such history; perhaps on this occasion she may have spoken the truth.

After attending various schools, from the last of which she was dismissed for pilfering, Jane was described as having a good but superficial education, as being a singer and pianist of more than ordinary merit, with attractive conversational powers.

Early Sexual Delinquencies.

It is clear that from an early age she possessed a personality which fascinated those men she elected to attract; and this fascination apparently remained with her in later years. It is still conceivable that, suitably gowned, her appearance, manner, and address could command attention, but whilst under observation none of the wiles of the courtesan was noted; her attitude and demeanour at that period suggested frigid chastity. At about her puberty her father died. At the age of 15 Jane became intimate with her mother's lodger, a man considerably her senior, who married her when she was 17, the baby being born shortly after. Quarrels due to her reckless extravagance, involving her husband in debt, soon caused this ill-assorted couple to separate. When re-united husband and wife went from one lodging to another; in five different houses in which they stayed money saved by the landladies for rent was stolen, and mysterious fires broke out. At this period of Jane's life a second child, a cripple, was born; Jane neglected home and children for a gay life, and money saved by her husband to obtain medical treatment for the cripple was spent in dress. Ultimately, as she constantly came home late—often accompanied by men—her husband revolted, and when she admitted immorality they parted and did not come together again.

Before their final rupture Jane made the acquaintance of a lady, Mrs. X, to whom she posed as an heiress having a guardian, Mr. Y. This romance, with variations, has been frequently repeated during her career. On leaving her husband she found employment with a City firm, and occupied rooms in a boarding-house, but her stay was short, for the landlord turned her out on account of the number of men she brought home. From there she went to the seaside, and for the first time in her life, early in her third decade, came into the hands of the police and was convicted for stealing from her lodgings. She was bound over on promising to go into a home, but absconded, demonstrating her lack of a sense of honour.

Regarding rickets, my observations suggest that it is clinically associated with much the same frequency as syphilis. Though the severity of craniotabes and a subsequent rickets often varies directly, this ratio is quite inconstant. The feeding in 105 cases when first found with infantile craniotabes (extreme ages 1 and 9 months) was: exclusive breast-feeding, 62; mixed feeding, 14; exclusive hand-feeding, 29. In the breast-fed the atrophies were not less extensive, but usually partial in degree. That so many were breast-fed is against expectation, but it may be argued that, ceteris paribus, if the maternal blood cannot prevent craniotabes the maternal milk will not be able to prevent it afterwards.

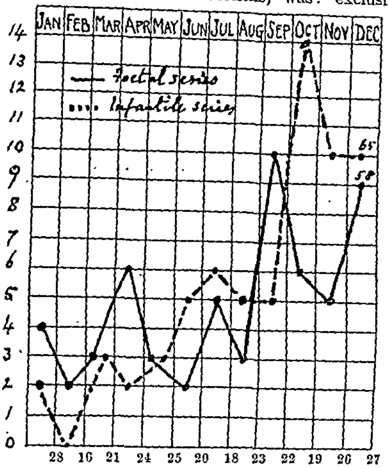


FIG. 5.—Chart showing the months of birth of 123 craniotabetics.

The point on which observation can best help theory appears to me that of seasonal incidence. This is now being worked out. The results so far are shown herewith, though their inadequacy as yet is patent. The month of birth is stated for 123 in which it is known. The infantile series includes cases only observed with that form. In the fœtal cases (58) an error involved in such estimates can be checked by knowing the number of births per month among which they occurred (see foot of chart).

It seems, therefore, that a seasonal curve may exist. Thus *51 per cent. of the fœtal series, and 60 per* cent. of the infantile, were born in the last four months of the year. Supposing the bulk of fœtal cases to show infantile recurrence, it would follow that infantile craniotabes will be chiefly met with, at any rate in its worst degrees, in the first few months of each year.

If a marked winter aggravation is confirmed by larger figures, it will serve to that extent to ally craniotabes with rachitic phenomena in general. But the chief difficulty remains. We have seen that the early disappearance of craniotabes is no obstacle to its acceptance as a true sign of rickets; but its early appearance constitutes a difficulty which has already existed for the earlier infantile examples, and is only somewhat increased by bringing in the last few weeks of pre-natal life. A partial solution may be attempted, however, by recognising the influence of stress on the individual bones in determining the order of rachitic bone changes in general. Such knowledge as we have indicates that the stresses on the fœtal long bones are generally less intense than those obtaining in the outer world. But the stress on the dependent cranium must be considerable, both by its position in the relatively rigid lower *uterine segment*, and by the interior brain-mass for some 16 hours out of each 24, the total stress being probably greater then than after birth. Add to these considerations the partial immunity of the fœtus against adverse maternal influences, and the possibility, by analogy, that any such effects might be shown in a modified form at these early periods, and the difficulty becomes, perhaps, less formidable.

With this particular problem, however, observation can do little, and one awaits the results of the experimentalist, especially on such subjects as the effects on the fœtus of ill-balanced maternal diets involving deprivation of vitamin A, and the causes of osteomalacia.

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ANTIMONY AND EMETINE IN BILHARZIA DISEASE.

BY F. G. CAWSTON, M.D. CAMB.

IN 1917 Dr. J. B. Christopherson established tartar emetic as the routine treatment for bilharzia disease in Egypt, and no equally effective but less toxic preparation of antimony is at present available. Undesirable results of unskilful administration of the drug are still being experienced in various parts of South Africa, the solution causing necrosis through being injected under the skin instead of into the blood stream. Sometimes large doses are given before the usual tolerance for the drug has been acquired, and occasionally the doses given are too small to produce any appreciable effect on the parasites.

During 1920 I recorded[1] my results obtained by treating a number of cases of bilharzia disease by intravenous injections of a freshly prepared solution of tartar emetic, the injections being given on alternate days shortly after a light breakfast, the dose varying from ½ gr. to 1½ gr. The doses were gradually increased until the largest dose that the patient could comfortably tolerate was reached. The subsequent history of these and other cases show that, where the *injections are given regularly over a period of 28 days*, there is little possibility of a return of the symptoms. A dose of more than two grains is unnecessary; larger doses do not appear to effect a cure any more rapidly. It is always risky to discontinue treatment before the 28th day or to give the injections less frequently than three times a week. I have seen recurrences when 15 gr. have been administered over a period of 24 days and others where four days have been missed in the middle of treatment, but none where treatment has been continued without interruption for 28 days, even though no greater total dose has been given.

The powder was dissolved in from 4 to 12 c.cm. of boiling distilled water just before being drawn up out of a wide-mouthed test-tube into an all-glass serum syringe which had already been sterilised and had a suitable needle attached. *It has always been my* practice to boil both needle and syringe before use, and to paint the skin with rectified spirit before injecting the needle, and I see no reason to alter this procedure. Without discolouring the skin, spirit rapidly produces a clot which helps to arrest bleeding and assists in rendering the seat of injection both aseptic and anæsthetic. Incompletely cured cases of bilharzia disease are especially liable to attacks of renal colic, and when the general health does not rapidly improve after treatment it is generally because all the parasites have not been destroyed. These attacks of colic which sometimes occur during the course of treatment are probably due to an accumulation of incompletely destroyed ova in the kidney substance, which, under ordinary circumstances, becoming null and void; the proceedings were reported in the press, and so the facts became known to the superintendent, who washed his hands of her. Jane then returned to the home of the rescue-worker, who had previously befriended her; she was then pregnant. As before, soon after her arrival money mysteriously disappeared, until outside Jane's bedroom window was found a bunch of keys which opened almost every lock in the house. One night the telephone wire to the house was accidentally found to be cut; the house was searched, and behind the curtains in Jane's bedroom was found a pile of inflammable material saturated with petrol ready to be fired, together with a bottle of chloroform. It is not clear for what purpose this drug was obtained, but the chance discovery of the cut wire probably averted a crime and perhaps a tragedy.

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[1] THE LANCET 1920, ii., 392.

On the birth of her child in a maternity home the Roman Catholic priest who ministered to Jane, apparently apprehending the possibility of injury to the infant, urged its baptism at the earliest opportunity. Jane, who was brought up in this faith, ultimately consented; the Roman Catholic sisters received the child, and the baptism took place in their chapel. On their return they discovered Jane had substituted the infant of a Protestant girl for her own. Eventually her own child was baptised. When she recovered from her confinement, the child—admittedly Mr. Z's—was put in the care of a woman, next door to whom Jane took private lodgings. One of her landlady's children was ill about this time, and Jane informed the mother she was going to consult a professor, with whom she was on terms of intimacy, about the child. On her return she reported the professor was coming next day to operate, and much fuss and elaborate preparations resulted; but as the doctor did not arrive the child's father, after waiting some time, prepared to go out. At this moment Jane raised an alarm of fire. The dining-room sofa, well away from the fire, was burning; much damage was done to the room, and the husband did not go out. A day or two later his gold watch and chain, only worn on special occasions, were missing.

Posing as a Nurse.

The next episode shows Jane in an even more sinister light. In the same city a gentleman advertised for a nurse to take care of his wife dying of cancer. Jane, calling herself a nurse, was engaged, and money was handed to her to obtain comforts for the patient. No comforts were provided and the money was not seen again. A night or two afterwards Jane was discovered bringing men to the house, and instead of being with the patient during the night was frequently absent. A few days later a maid entering the sick-room found a rubber tube connected to the gas burner lying with its open end on the invalid's pillow. The following day Jane was discovered bending over the patient with a bottle of chloroform in her hand. When asked to explain her behaviour she alleged she was carrying out the doctor's instructions in the matter of the gas and the chloroform, which statement he, of course, at once repudiated. It was also observed that the patient seemed worse after her medicine had been administered, and on the day of her death Jane had neglected to supply her with hot-water bottles as directed, saying the doctor had told her not to do so, as the patient would die that day. Jane was turned out of the house, indignantly protesting at her treatment. After the funeral it was ascertained that much of the deceased's clothing was missing; some was found in Jane's box, but the police were not informed and she was not prosecuted.

Another Marriage.

Once, when short of cash and borrowing money from her landlady, she invited her to a meal in a fashionable restaurant. The invitation was accepted, and Jane paid the bill with a sovereign; on returning home the landlady found a sovereign missing from her purse. At another time Jane made the acquaintance of two students—friends. One immediately fell in love with her and they lived together, Jane alleging she had sufficient means to support them both. Within a week she had cast this one aside, and told him she loved his friend. A fight between them ensued, Jane was wounded with a knife, and two days later married the second student, by whom in due course she had a child. On leaving him she entered a lady's employment as nurse; three days later a bed was found to be on fire. A few days later a valuable diamond ring was missing and found in Jane's bed; shortly afterwards again, another mysterious fire broke out, and further thefts of money and jewellery occurred.

Again Posing as a Nurse.

Soon after leaving here she became nurse to an aged and infirm lady, securing the appointment by recommending herself for the post by telephone. She then attempted to obtain money from the patient's acquaintances under the pretence that the invalid was in financial straits, which was untrue. In this she failed, but it was found that large sums of money and jewellery belonging to the patient disappeared, and a bed in the servants' bedroom mysteriously caught fire. Two days before the patient's death Jane was summarily dismissed, the reason not being made public. She was watched, arrested, and charged with being in possession of clothing and jewellery belonging to her late patient; these Jane said had been given her by the deceased, and as no one was in a position to contradict this she was not proceeded against.

By this time sufficient evidence had accumulated to show she had committed bigamy with Mr. Z and the student; she was convicted and sentenced. Shortly after her release from prison, she was discovered disguised as a hospital nurse collecting subscriptions on behalf of an imaginary nurse supposed to be in trouble. In another district she incurred a hotel bill by fraud, was again convicted and sentenced. On the day of her release she telegraphed from a hotel to a gentleman in another city impersonating a lady friend of his resident elsewhere, saying she was in trouble in the city in which Jane was. The gentleman sent one of his family there, but the lady friend could not be found, and it was afterwards learnt she had never left her far distant home.

Fourth and Fifth Marriages and More Adventures.

Her next known adventure was to pose as a ward in Chancery who was to come into a large sum of money in a few months. A young gentleman who came to stay in the same hotel was told this by her; six days later they were married and returned to live with the youth's parents, with whom she became very popular. Whilst with them some wearing apparel which Jane obtained on approval was suddenly discovered to be on fire, but Jane was not suspected. By a fortuitous chance her whereabouts became known to the police, and she was arrested on a charge of bigamy with the youth, convicted, and sentenced to imprisonment. During this sentence she was temporarily transferred to a civil hospital for operation, and there became acquainted with the names of various nurses and medical men. On her release from prison at the expiration of the sentence she garbed herself in nurse's uniform and assumed the name of one of the hospital nurses who had left. She telephoned to the hospital for a character, and received an excellent one. She went to a boarding house in nurse's uniform, but owing to her conduct and conversation the boarding-house keeper, believing her to be an adventuress, ordered her to leave. During her short stay in this house several sums of money were missed; she was suspected, but sufficient evidence to prove her guilt could not be obtained. She then went to another town and, impersonating a certain lady, put up at a hotel and made herself, as usual, generally agreeable. She called upon a philanthropic lady, alleging she was greatly interested in a poor widow and her children, and asked for the lady's assistance; she was left alone in the room a few minutes and when she had

AN OUTBREAK OF BACILLARY DYSENTERY IN A BOYS' SCHOOL.

BY W. E. FITZ-GERALD, M.B., CH.B. EDIN.,
DEPUTY M.O.H., SOUTHPORT.

THIS outbreak of bacillary dysentery was brought to notice by the notification of an acute case which occurred in a boarder at the school. In consequence of this the school was visited, and the following facts were obtained.

The School.—A boys' school containing 40 boarders, and having an attendance of about 150 day-boys. It consists of two large houses joined together; one house, where the classrooms are situated, is used almost entirely as a school-house, but has at the top a dormitory for six boys. The other is the headmaster's house, and in addition to the headmaster and his wife, the kitchen staff, &c., accommodates 36 boarders. Six rooms—three on the second storey and two on the third—are set apart as dormitories for the boarders. There is one w.c. on the second storey, with a bathroom adjoining. The towels used by the boys are hung up in the bathroom on numbered pegs.

Intercommunication between Day-boys and Boarders.—During the day both day-boys and boarders use a block of offices in the playground; and if a day-boy remains for meals, he attends at the dining-room in the headmaster's house with the boarders.

The outbreak began with a series of cases of mild diarrhœa lasting for a day or two, and only in one case was the boy ill enough to be confined to bed for more than two days. This case was the first to occur, and lasted for seven days, but was of a mild type. All cases amongst the boarders occurred in three dormitories, two on the second storey, on opposite sides of the central landing, and one on the third storey.

Sequence of Cases.

(1) *Amongst Boarders.*—The first case occurred on March 1st, the second and third on the 6th, the fourth on the 7th, and the fifth on the 9th. The first acute case giving a typical clinical picture of bacillary dysentery occurred on the 9th, another acute case commencing on the 11th. Two boys were already isolated in two dormitories on the top storey, one suffering from measles and the other a measles contact. There was an indefinite history of both having had slight diarrhœa, so they were included in the investigation.

(2) *Amongst Day-boys.*—On the 14th, a day-boy became ill with symptoms of acute dysentery. Daily lists of absentees were asked for from the headmaster, and in each case of absence the home of the boy concerned was visited in order to exclude the possibility of mild cases being undiscovered; as a result of this one boy was found to be suffering from diarrhœa which lasted for one night. Specimens were asked for from the doctor in attendance, but were not obtained in a form suitable for laboratory work. This boy has not been included in the laboratory report.

The order in which the cases occurred is shown in Table I.

TABLE I.

March 1st.	6th.	7th.	9th.	11th.	14th.
R. T.	H. C.	E. L. S.	R. F.	E.*	G.*
—	C. M.	P. S.	T.*	—	—
—	A. C.	—	—	—	—

* Acute cases with typical clinical symptoms.

Southport Organisms.—The strain isolated from the first acute case proved to be of the Flexner type, although it was also agglutinated by type Y serum; and this strain was recovered from the second and third acute cases.

The examination of fæces of the three clinical cases gave the bacteriological findings as shown in Table II. (A). Cases T. and E. showed very definite clinical dysenteric conditions, were seriously ill for a few days, but cleared up satisfactorily, while Case G., who was the last of the three clinical cases to develop the disease, was by far the most serious clinically; and several doses of anti-dysenteric serum were administered during the initial days of the illness. The examination of fæces from seven boys with a history of mild diarrhœa gave the bacteriological findings as shown in Table II. (B).

TABLE II.—*Results of Bacteriological Examination of Fæces from* (A) *Three Clinical Cases.*

Cases.	MacConkey plates.		Lactose.	Glucose.	Mannite.	Dulcite.	Saccharose.	Maltose.	Litmus milk.		Indol.	Motility.	Macroscopic agglutination.		
	L.F.	N.L.F.							1st day.	3rd day.			Flexner.	Shiga.	Y.
T.	Very few	+ + +	—	A	A	—	—	—	Acid	Alk.	—	—	1/800	0	1/1600
E.	Very few	+ + +	—	A	A	—	—	A	Acid	Alk.	—	—	1/2000	0	1/2000
G.	+	Few	—	A	A	—	—	—	Acid	Alk.	—	—	1/3000	0	1/2000
(B) *Seven Boys with History of Mild Diarrhœa.*															
R. F.	+ +	Nil													
E. L. S.	+ +	Very few	—	AG	AG	AG	—	AG	Acid	Acid	+	Slight	0	0	0
H. C.	+ +	Nil													
C. M.	+ + +	Very few	—	A	A	—	—	—	Acid	Alk.	+	—	1/400	0	1/800
R. T.	+ + +	Nil													
A. C.	+ + +	Few	—	A	A	—	—	—	Acid	Alk.	+	—	1/3000	0	1/2000
P. S.	+ + +	Few	—	AG	—	—	—	—	Acid	Alk.	+	—	0	0	0

L.F. = Lactose-fermenting colonies. N.L.F. = Non-lactose-fermenting colonies.
A = Acid. — = Negative. AG = Acid and gas.

These two tables show that in this series of fæcal examinations of 10 cases, non-lactose-fermenting colonies were isolated in 7; of these, 2 proved in subsequent carbohydrate reactions and type-serum agglutinations to be non-dysenteric, leaving 5 strains which conformed in the sugar reactions, and also showed fairly constant agglutination results. In the agglutination tests the macroscopic method was used; and it was found that all the isolated strains of dysentery organisms agglutinated the Flexner type serum to a rather higher titre than the Y-strain serum, and that Shiga serum was consistently negative in all cases. These cases had all at some time recently, and previous to the development of the acute clinical cases, suffered from more or less transient diarrhœa.

TABLE III.

Cases.	Flexner-Y stock culture.	Southport organism.
R. F.	1 in 400	1 in 200
E. L. S.	1 „ 100	1 „ 80
H. C.	1 „ 80	1 „ 80
C. M.	1 „ 500	1 „ 400
R. T.	1 „ 500	1 „ 600
A. C.	1 „ 400	1 „ 300
P. S.	1 „ 300	1 „ 200

The blood serum from the seven mild cases gave results when agglutinated against *B. dysenteriæ*, Flexner-Y stock culture, and the "Southport organisms" as shown in Table III.

A Good Example of Moral Imbecility.

Unlike many a recidivist, Jane has, I believe, never excused her repeated offences by alleging they were the result of the severity of the initial sentences of imprisonment passed upon her; her early sentences, in fact, were conspicuous for their moderation. Her career is not the result of an indolent nature drifting more or less passively into crime as the easiest way of getting a living, nor is it the outcome of the gambler's prompting, which so frequently causes crime; it is the inevitable result of active criminal desires constantly urging and seeking opportunity for the commission of crime, and constitutes, I believe, a good example of moral imbecility. Jane is a "luckless pot marr'd in the making," and well might she say:—

> "They sneer at me for leaning all awry;
> What! did the Hand then of the Potter shake?"

She complies with the four requirements of moral imbecility as laid down in the Mental Deficiency Act, 1913. "A person who from an early age displays some permanent mental defect coupled with strong vicious or criminal propensities on which punishment has had little or no deterrent effect." From childhood she has displayed, as shown in this narrative, strong criminal and also vicious propensities upon which repeated punishment has had no deterrent effect, and it can be safely predicted never will have any deterrent effect. Her delinquencies have lasted for a period approaching 25 years, and no one would hesitate to say they will persist. If we accept Mercier's doctrine that crime is due to temptation or opportunity, the environmental factor or stress, acting upon the inherent or constitutional factor, temperament, then Jane's incorrigibility appears evident. The constitutional factor is chiefly at fault, the environmental factor being insufficient to cause habitual crime in a person of normal or approximately normal temperament, and there can now be no prospect of change in her inherent mental constitution. That she is a woman of some talent, ability, and cleverness cannot be gainsaid, but she lacks discretion and fails in the higher mental level—viz., wisdom "which enables a man to regulate the more important modes of conduct in the more important affairs of life so as to achieve success in his career" (Mercier). By her intelligence she is able to gain a certain position, which through her lack of wisdom she is unable to retain. The instincts of sex, acquisition, and exhibition are uncontrolled, and result in sex immorality, fraud, and theft, in the wearing of her hair in a long false plait, and in her exalted impersonations. The maternal instinct is defective, the social instinct which should express itself in a desire for companionship, in consideration for and duty towards other members of the community, is undeveloped, the praise or blame of others, their approval or disapproval disregarded, altruism absent, the moral sense lacking. In these and in her failure in life are seen Jane's permanent mental defects, to these are due her anti-social career. That certain markedly anti-social lives are due to grudge formation or other mental conflict at an early age appears to be generally admitted, and one has known persistent criminal careers due to this cause. I was unable, however, to trace any such in my interviews with Jane. This was not surprising considering her ability for deception, and bearing in mind also the years which would have elapsed since such formation could have arisen; but I have been prompted to record her history, even at a time when the interpretation rather than the description of mental conditions is sought after, in view of the importance of moral imbecility and its admitted medico-legal difficulties. Some witnesses in court appear to rest their diagnosis on the turpitude of the particular offence with which the prisoner is charged, others to consider that all criminals are moral imbeciles, others again seem to hold the opposite view and to deny its existence apart from co-existing intelligence defect. The pitfalls are, however, lessened that witness who only forms a diagnosis in con- ity with the statutory definition.

It is usually only in such flagrant well-established cases as Jane's that the medico-legal witness is likely to obtain a sympathetic audience at the trial. It is when the unfolding of the case shows that the risk repeatedly run is out of proportion to the sought-for prize—the latter being neglected when obtained—that the jury are likely to be persuaded that the crime is due to a mental defect.

A CASE OF MELANOMA OF THE CHOROID

By A. E. KEOWN, M.B. Belf.

SARCOMATA, such as described in the following case, usually originate near the optic disc and grow forward pushing the retina before them. I cannot find any account of choroidal melanomata not covered by retina or retinal vessels. This particular tumour was seen in the first instance by Mr. Parry Morton, of Dowlais, an optician, who has supplied me with the following note:—

> "W. T., an engine-driver, aged 62, came to me complaining of discomfort in the left eye. On the nasal side behind the iris was an orange-coloured mass of the size of a lentil seed as seen by oblique focal illumination. It appeared to arise from the ciliary body or thereabouts. The fundus oculi and disc were normal. I warned the man that he had a most dangerous growth, that he must go at once to an ophthalmic surgeon, and refused to supply him with glasses."

This was in mid-August. Four weeks later he was seen by the present writer.

The whole pupil area was then occupied by a pale orange-coloured mass except a small space on the temporal side. There appeared to be a minute perforation of the sclerotic close to the corneal margin on the nasal side, evidently corresponding to the point of origin. The previous day he had seen Mr. Tudor Thomas, of Cardiff, who wrote that the tumour was a melanoma. Next day Mr. R. S. McClelland removed the eyeball in the Merthyr General Hospital, the patient at last consenting to the procedure as the sight of the eye was destroyed. All the conjunctiva and tissue near the perforation was removed, but the socket was not completely cleared as it was considered that the origin of the growth so far forward rendered so radical a procedure unnecessary.

The Clinical Research Association reported as follows:—

> "The section shows a choroidal malignant growth which is a melanoma. The origin of the pigmented cells from one original pigmented layer of cuboidal cells is very well seen."

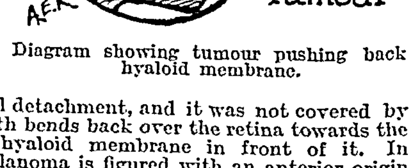

Diagram showing tumour pushing back hyaloid membrane.

The division of the eyeball into two nearly equal halves shows beautifully the origin of the tumour by a narrow base from the retina-free choroid between the ora serrata and the ciliary body. It did not therefore necessarily cause retinal detachment, and it was not covered by retina. The growth bends back over the retina towards the disc pushing the hyaloid membrane in front of it. In Haab's Atlas a melanoma is figured with an anterior origin but lifting the retina. In our hemispheres the retina can be seen in normal position. The microscopic slide shows typical cells, many of which contain much melanin.

The patient works with a powerful electric arc light suspended on his left and he has complained very much of the glare. He believes that the light had something to do with the causation of this trouble. The patient's opinion is of interest when one remembers the known effect of ultra-violet rays on the crystalline lens among men working in front of bright furnaces. The man is driving his stationary engine again. The stump is painless and can be rolled under the fingers. There is no enlargement of any abdominal viscus.

Dowlais, Glam.

Various Impersonations.

Shortly afterwards she obtained a situation in a hotel as bookkeeper, but being unsuitable was soon discharged; it was then found that she had obtained goods from local tradesmen, representing they were for the hotel proprietor's wife. She was arrested and sentenced to a short term of imprisonment on three separate charges. She then came under the notice of a social worker, and on discharge from prison went to a rescue home. From there she wrote to Mrs. X, representing the home as being the mansion of her guardian, Mr. Y, whom she alleged was pressing her to marry him, and as she only had £50 at hand—her fortune being tied up till she was 23—she felt at his mercy, but was determined to resist his attentions, and asked Mrs. X to take her as a paying guest. This arrangement, however, for some reason did not mature, and the rescue-worker, knowing nothing of this, and believing Jane to have been wrongfully convicted, recommended her to another lady. To this lady's distant rescue-home Jane went, and soon became popular with the inmates on account of her social talents and engaging personality. She told them she was about to be married to a young gentleman, who eventually arrived for the ceremony. He believed Jane to be single, and left abruptly on discovering her to be a married woman with children. It is noteworthy that whilst Jane was in this home money and other articles disappeared in an unexplained manner.

Arson and Theft.

Not long afterwards Jane arrived at a seaport, and stayed at a local hotel; a few days later fire broke out in one of the bedrooms and the place was gutted. The next day it was discovered that the cash-box and a sum of money were missing, and the police were informed. Jane, who had left the town, was traced, pleaded guilty to the theft, and received a short sentence of imprisonment. She was not charged with arson, but the events after Jane's arrival at the hotel, compared with previous episodes in her career, leave little doubt that the arson and theft were closely connected.

Bigamy and Various Other Deceptions.

On her release from this sentence of imprisonment she went to reside in the leading hotel of an important city, posing as a rich ward in Chancery; at this time she had plenty of money. She applied to the manager of a certain business, informing him she was a ward in Chancery who had run away from her guardian, and asked to be admitted into the business as a learner. She was employed at a small wage, and allowed the freedom of the place to learn what she could of its various branches. From the very commencement she showed a strong desire to introduce herself into the manager's home circle, eventually succeeding in so doing. In this gentleman's house she met a merchant, Mr. Z, who on first hearing of Jane warned the manager of the possibility of her being an adventuress, but within a few days of first meeting her he proposed marriage and was accepted. After about a fortnight's trial at the business she was dismissed, having shown herself incapable of steady application, and being a source of annoyance to the whole establishment. She would carry on prolonged conversations on the telephone with her alleged guardian, whom she stated was living at one of the hotels in the City. Ultimately she and Mr. Z married and lived together. Jane gave out to the neighbours that she was a Frenchwoman recently arrived in this country; to support this pose she spoke in broken English.

Her life with Mr. Z soon became unhappy; she involved him in debt with her reckless extravagance, and at one time he was paying rent simultaneously for three different houses she had taken in his name. One night while Mr. Z was lying awake he heard Jane talking in her sleep; she appeared to be holding a conversation through the telephone with Mr. Z's solicitor, inviting him to the house when Mr. Z would be out. The next day Mr. Z called upon his solicitor for an explanation, and was informed that that gentleman had not seen or heard of Jane for some months; Mr. Z was eventually satisfied that the whole thing was a hoax committed for some ulterior purpose. To those who know Jane there can be little doubt that her love of causing discord would be sufficient motive for this conduct. At one time when living with Mr. Z she sent for a doctor alleging ill-treatment by him. The doctor found no signs of this, but she appears to have threatened suicide. She was attended by a mental nurse and seen by an eminent authority on mental diseases; the latter said she was insane, and a danger to others, being devoid of any sense of right or wrong. She later called in another doctor, alleging serious illness; he found no physical ailment, but considered her hysterical. To this doctor she wove a romance that she was the illegitimate daughter of a lady, an admiral's wife, who had erred during the absence of her husband at sea, and that she was under guardianship. The doctor carefully observed her and considered her to be morally insane and wholly incapable of distinguishing between right and wrong. He also observed that she had already borne children, and on Mr. Z hearing of this they separated.

More Theft and Arson.

Soon afterwards Jane wore her hair in public as a long plait reaching below her knees, alleging so much hair was a cause of trouble and annoyance, but one day a lady taking hold of the plait to examine it found it came away in her hands; it had been merely pinned on to Jane's own hair. No reason at the time was assigned for this deception, and Jane, whilst admitting the facts, would give me none. Presently she applied for and obtained a situation in a business where customers' garments were sent. The day after her arrival she was detected cutting out the owners' names, replacing them by her own; she was dismissed, and later stolen clothing was found in her box at her lodgings. She next obtained a situation as companion to a lady under treatment for inebriety. The patient became worse, Jane apparently supplying her with intoxicants, and she soon had to be removed to an institution. Jane then set fire to the bedroom, stole a large quantity of the lady's clothing, saturated some of the other beds with water, lighted a large fire on the kitchen floor, and so terrorised the other servants that they all left the house together. She was arrested, charged with theft, and also of theft connected with the business aforementioned, and sentenced to a short term of imprisonment. She was not charged with arson, and although this is not the last reference that will be made to Jane's efforts at fire raising, I may here relate a somewhat parallel incident, when she was under the writer's care. For the purpose of better observation Jane was located in an association ward with other female prisoners. A dispute arose between them, and Jane seizing some papers set light to them and walked about the ward brandishing them and threatening meanwhile to set the ward on fire. The purpose of this seemed clearly to be to frighten the other patients into giving way to her.

Further Impersonations.

After her release from the sentence she applied for a post as probationer nurse at an institution, saying she was a married woman deserted by her husband. The superintendent and matron of the institution interviewed her and decided to help her. A few days later she wrote from a distance that she could not accept the post, as a doctor had seen her and informed her she was pregnant. Her appealing letter induced the kindly matron to travel and see her, secure lodgings for her, and inform her that a post would be kept open for her. Jane then notified her landlady that the superintendent was her guardian, and on the strength of this obtained credit for her lodging. Mr. Z at this time had obtained evidence of Jane's first marriage, his own marriage with her thereby cases had been cured. Alcohol injection was perhaps more successful, but occasionally failed, and then posterior rhizotomy was the only available treatment. He had been very disappointed with the results in this disease. Of 47 cases who survived and could be subsequently traced, only 20 were cured, and the remainder had either no or only very slight relief. This again, he thought, was due to the fact that the neuritis had spread into the cord before operation. In one case he had seen definite evidence of this at operation for causalgia following avulsion of the brachial plexus. Cicatrices of the scalp sometimes caused pain long afterwards. Sir William Thorburn had cured many such cases by reflecting the painful area as a flap and interposing Cargile membrane between the flap and the skull. For trigeminal neuralgia two methods of treatment were available: (1) injection into the ganglion, and (2) Hutchinson's operation of resection of the portion of the ganglion attached to the second and third divisions. The first method in his opinion imperilled the eye, whereas Hutchinson's operation did not, and he had not known any recurrence after that operation. Post-herpetic pain in the spinal nerves could not, in Sir William Thorburn's experience, be successfully treated by posterior rhizotomy. For tabetic pain he had now performed posterior rhizotomy on 70 occasions with a mortality of seven, which he thought was too high. Of the 63 patients who survived, 50 were cured or much improved, while in the remainder the improvement was very slight. In the treatment of sciaticas and brachial neuralgias Sir William Thorburn said it was his practice to expose the nerve from end to end, and he had thus been able to discover and remove the cause in a large number of cases. On the whole, however, he regarded these cases as unsatisfactory, since most of them had already been treated by hydro-, electro- and other therapies, and only came to the surgeon when these had failed. In conclusion, he said that quite a considerable number of persistent neuralgias were due to spinal tumours, which were overlooked in the operable stage.

Discussion.

Dr. GORDON HOLMES said it was commonly taught that lesions of the central nervous system did not cause pain, but this was abundantly disproved by war experience. Injury to the tracts in the spinal cord undoubtedly caused pain. He had seen a case of tuberculous sclerosis with intense pain; the man was operated on by Mr. Sargent and section of the tract was curative, although the man subsequently died of generalised tuberculosis. Again the posterior inferior cerebellar syndrome was associated with pain in the opposite fifth-nerve distribution. Pain was common in pontine and mid-brain lesions and even in lesions as high as the thalamus. Pain in syringobulbia was often confused with that of ordinary trigeminal neuralgia, and cases of this disease had been needlessly submitted to alcohol injection and gasserectomy.

Dr. S. A. KINNIER WILSON said he was sorry that no reference had been made to metatarsalgia. He had successfully treated three of these cases by alcohol injection. He asked Dr. Harris whether he had found the spasmodic movements associated with "tic douloureux" disappeared after alcohol injection, and Sir William Thorburn whether he recommended posterior rhizotomy for the generalised lightning pains of tabes.

The PRESIDENT said that his experience of posterior rhizotomy had been disappointing, especially where it was performed for causalgia. The only hope for these cases was to deal with the nerve at a high level at an early stage. He quoted one case of causalgia in a phantom hand. The man was wounded in 1918, and came to him in 1920, after numerous operations had been performed, for intense pain in a phantom index finger and thumb. The brachial plexus was exposed by operation and 80 per cent. alcohol injected into the nerve trunks. On the assumption that the pathetic nerves were involved he had dissected coats off the subclavian artery and also resected the ramus communicans from the first dorsal nerve to the sympathetic trunk. On the next day a contracted pupil and enophthalmos proved that the sympathetic nerves had been sectioned, but the pain was no better. He then performed posterior rhizotomy with division of the postero-lateral tract on the opposite side to a depth of 1 mm., and this was curative.

Reply.

In reply, Dr. WILFRED HARRIS said that the movements in "tic douloureux" were of two sorts—those brought on reflexly by the pain and a chronic facial spasm. The former was cured by alcohol injections of the ganglion, whereas the second was unaffected but could be abolished by alcohol injection of the facial nerve.

Sir WILLIAM THORBURN said that his posterior rhizotomies were performed for definite gastric crises and not for generalised tabetic pains.

SECTION OF LARYNGOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 4th, under the presidency of Sir WILLIAM MILLIGAN.

Laryngo-Fissure for Epithelioma of a Vocal Cord.

Among a numerous series of interesting cases the chief discussion took place on one presented by Mr. E. D. D. DAVIS, the patient being a comedian, aged 46, on whom the exhibitor performed laryngo-fissure for an early epithelioma of the right vocal cord, but without removing the ala of the thyroid cartilage, and the right vocal cord excised. The patient had a rise of temperature for three or four days following the operation, but within three weeks he had left the hospital with a normal temperature and the wound completely healed. Five weeks after operation, however, a superficial abscess developed over the right thyroid ala as a result of perichondritis.

Sir STCLAIR THOMSON agreed that the man had been left with a satisfactory roomy glottis. The speaker favoured removal of the thyroid ala in every case of this type. He had done so systematically since 1917, since when he had carried it out in 15 cases, 14 of whom were still alive. One had had a recurrence, and had had partial laryngectomy done, from which he had recovered well. In two patients out of 50 there was a little stenosis, with stridor on hurrying or going upstairs, and in those the thyroid ala was not removed. Taking away this ala had the advantages that, instead of leaving a bare cartilaginous surface, with only perichondrium on its outer side—a cartilage which might necrose—a fleshy inner surface was left on the larynx, which healed up quicker than did the thyroid cartilage. Before he started to remove the thyroid ala he had an old gentleman patient who developed bronchitis almost at the same time as the laryngo-fissure was done, and the wound broke open. A tumour the size of a cherry appeared in the anterior commissure which was found to be an enchondroma. He was, however, still well five years afterwards. That was a trouble which might occur from leaving the thyroid ala.

Mr. W. ROSE said it had been his practice to remove the thyroid ala ever since it was recommended by Dr. Lambert Lack, and his experience had been entirely favourable; the ala could be removed at the same time as the growth.

Mr. DAVIS, in reply, said it had been his original intention to remove the ala, but it was such an easy operation and the airway was so good that he thought it was unnecessary. He had since regretted that he did not remove the ala, as the patient developed perichondritis five weeks after the operation.

Mr. HERBERT TILLEY related a remarkable case in which Dr. E. R. Morton's treatment of cross-fire X rays was successfully employed. A year ago a man had been operated upon for extensive malignant growth of the larynx, therefore the question to be decided was whether partial laryngotomy or laryngo-fissure should be done. There was very distressing stridor. It departed from the house the contents of a missionary box which was in the room were missing.

Somewhat later Jane telephoned to a gentleman holding an important position, claiming to have known him previously and mentioning many of his relations by name. He met her, and found her well-informed concerning his people. Subsequently she lunched with him and had rides in his motor-car. One evening when dining with him she feigned sudden illness and was conveyed to her hotel in his car. On inquiring as to her condition the following day he found Jane up, and she informed him she had to return to London at once to see a specialist. Instead she called up the widow of a well-known man on the telephone, and with a false story of being pestered with the attentions of an officer obtained a visit at her hotel from the lady. Jane in conversation, as proof of her genuineness, mentioned the names of people known to her visitor, eventually obtaining money from her sufficient to pay her hotel bill and buy a ticket for a long railway journey. A gold watch, alleged to have been her mother's but actually stolen from a hotel, she pressed upon the lady as security. After a short absence from this city, during which she obtained money by false pretences elsewhere, she returned; being arrested for stealing articles from the hotel she was sentenced to imprisonment. On her release she married a gentleman, who eventually left her after settling up various debts she had incurred as his wife. Still later she was convicted for unlawfully wearing a military decoration, and since then has served other sentences of imprisonment for fraud and stealing. In connexion with the latter charge it may be mentioned that she obtained a situation as matron in an institution and when dismissed for dishonesty a considerable quantity of the property belonging to the institution was found in her boxes.

Characteristics Noted when a Prisoner under Observation.

I may now add a few of Jane's characteristics whilst under observation. Prison regulations to a certain extent limited her literary output, but in her letters to acquaintances, to myself, or to the officers, an elaborate style and consequential phraseology were used which she evidently considered were the necessary accompaniments of a superior education; the writing itself was good, neat, and legible. Throughout her career Jane has been fond of introducing French words and phrases in her letters, usually inappropriate and mis-spelt, and although she would have had one believe her to be a linguist, in reality she was not so. She showed such artistic ability that it was not unreasonable to suppose that with little effort a market might have been found for her work. She was described by an observant officer as being able to do anything with her hands. She was an excellent needle-woman when she liked, she could make artistic trifles from nothing more elaborate than paper and ink. She was capable of earning a good living had her abilities been coördinated with moral sense and stability of character. She did not impress one as being unduly vain, but she wrote letters concerning her extensive wardrobe and valuable jewellery, apparently hoping the officials would consider her a person of importance.

I have already said that Jane showed none of the artifices of the courtesan; indeed, she was at times rather untidy, but there was once a suggestion—which may have been erroneous—that her cheeks were tinted with the red dye from a book cover, a not infrequent method of decoration amongst female prisoners. Her affected airs of refinement and a somewhat exaggerated modesty were regarded as posing. She lied constantly and with much plausibility, for no adequate purpose. She could make mischief quietly, keeping herself in the background; she made efforts to play off one official against another—not always to gain anything herself thereby, but merely to create ill-feeling between them. On one occasion, in an attempt to cause trouble, she alleged that her wedding-ring was lost and seemed much put out about it, but some days later it was found in the book she was reading. I never saw her lose her temper—to have done so would have been out of keeping with her superior air—but she permitted herself to show some petulance at times. With other prisoners she would quarrel, subduing hardened offenders with her threats. She really preferred to be alone. As a hospital patient she would obtain medical extras, and then give them to other patients—not out of goodwill, but to create jealousy and discord amongst them. After being granted extra diet she would surreptitiously throw it away. She was apologetic when complaining of illness, but as her complaints were usually groundless her apologies lacked sincerity. As a matter of fact, she had enjoyed a fair measure of good health, had never been in an asylum, had never had any fits, and was not addicted to alcohol or drugs. She always considered herself the injured party in every dispute, but I have no reason to suppose she was revengeful.

I have before me some of her writing, which shows, perhaps unconsciously, the impression Jane wished to give others—i.e., that she was a brilliant and vivacious woman. I believe, however, that she has no clear insight into her own mental condition; she realises that her ability is largely responsible for her crimes, but does not appreciate that she is lacking in moral sense. She is an extremely painstaking and industrious woman when employed at work she fancies, but the ordinary routine work of everyday life, whether in prison or at liberty, she scorns. Even should she so desire, she can make no permanent friends, the regard of her fellows is soon destroyed by her conduct and deceit; indeed, she never seems to have made any effort towards true companionship. She told me that as a child she was not interested in her fellows, did not care for games, nor concern herself with dolls, but spent much time in reading. There is nothing in her history to suggest, nor could I detect, any genuine affection for any individual. That she desired sexual relations must be deduced from the frequency with which she sought men's society, which Jane herself stated was forced upon her by economic conditions, but this contention is not supported by her history. She attributes her criminal career to perverse sexual practices with her husband, in which she was made to take a part some considerable time after their marriage. This might be interesting were it true, but her delinquencies had already begun some years before the alleged occurrences took place.

Jane never seems to have had any genuine maternal affection, nor to have taken thought for her children's welfare, but to have left them to the care of others at the earliest opportunity. I have no evidence that she was at any time actively and directly cruel. Real gratitude was unknown to her, kindness she repaid with deceit; she was always unreliable. That she understood something of human nature is clear from her history and also from episodes in her prison life. That she could exercise a patient ingenuity and much industry in formulating and carrying out her schemes was also evident. That she could easily deceive people ignorant of her career is not remarkable, but I have reason to know she was successful in deceiving even when her full history was known. She has been described as an adventuress, and as is usual with this type she "worked" alone. That she loved adventure, change, excitement, was reckless as to the risks she ran, and regardless of consequences is clear; that the temporary success her audacity achieved was as heedlessly cast aside is also evident. She informed me she commenced stealing when at a convent school, taking fruit from the orchard trees, and was quite definite that she indulged in this in a more open and persistent manner than the other children. She also admitted that at this time she committed other trivial thefts, and it has already been related that she was dismissed from her last school for pilfering. Her sex delinquencies commenced at or about puberty; it is therefore possible to say that this and the acquisitive instinct were uncontrollable or uncontrolled from an early age.

together with other evidence of advanced arterial disease, in his opinion, contra-indicated operation. Mr. Sinclair also showed a man with an extensive syphilitic ulcer involving both sides of the neck. The Wassermann reaction was strongly positive. A similar but smaller ulcer was also present under the right axilla.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

The Use of Anti-Gonococcal Serum.

AT a meeting of this Society held at Liverpool on Oct. 21st, Mr. CARLTON OLDFIELD (Leeds), the President, being in the chair, Miss F. IVENS (Liverpool) read a paper on the use of anti-gonococcal serum as an adjunct to conservative surgery in gonococcal infections, basing her remarks on the results of its administration in 40 cases, in the majority of which salpingitis had been the prevailing feature. Nicolle's serum from the Pasteur Institute had been employed, administered: (1) by intraperitoneal injection during laparotomy; (2) by subcutaneous injection after dilution with normal saline; and (3) by vaginal serum packs alternating with packs of 10 per cent. salt solution mixed with 5 per cent. carbolic lotion. It was pointed out that the administration of salt solution at the time of serum injection diminished the incidence of anaphylactic phenomena. In the majority of cases the pus tubes were opened up and 20 c.cm. of serum injected into them or left in the pelvis. The tubes were not removed unless extensively damaged and the abdomen was closed without drainage. All the patients had made an immediate recovery and the results in cases of salpingo-oöphoritis, endocervicitis, and arthritis, and more especially in puerperal gonococcal infections, were excellent. A large number of cases followed up were found to be in good health, presenting a marked contrast to cases treated without serum. Three cases required further operation, but the possibility of re-infection was present. Miss Ivens considered that the results obtained warranted extended study with a reliable serum.

SOUTH-WEST LONDON MEDICAL SOCIETY.

THE first meeting of the session was held at the Bolingbroke Hospital, Wandsworth Common, on Nov. 9th, when Dr. Strickland Goodall gave a demonstration on the Rôle of the Electrocardiograph in Practical Medicine. He gave a brief account of the discovery of the heart currents, and then described rapidly the evolution of the electrocardiograph to the present time. After explaining the modern instrument and describing the various leads, he passed on to consider the physiological electrocardiogram, associated its different waves with activity in definite parts of the heart, and explained how these waves became modified in structural changes of the myocardium. Dr. Goodall illustrated this point with special reference to mitral stenosis, showing how the electrocardiogram gave an accurate picture of the pathology of the disease in any stage. He next demonstrated the analyses of some of the more important arrhythmias—auricular fibrillation, flutter, sinus arrhythmia, heart-block, extra-systoles, and so forth. After detailing the chief features of these, he described in detail the diagnoses of defects in the conducting system, demonstrating how lesions could be located in any part of the bundle system. Dr. Goodall concluded by pointing out a series of conditions which could only be diagnosed by aid of the electrocardiograph, and indicated how this instrument could be used for judging of the effects of drug and other treatment and of the general progress of a case.

ROYAL INSTITUTION.—The ninety-sixth Christmas course of juvenile lectures, founded at the Royal Institution in 1826 by Michael Faraday, will be delivered this year by Professor J. A. Fleming, F.R.S., on "Electric Waves and Wireless Telephony," and will be given on the following days at 3 o'clock: Dec. 29th, "Surface Waves on Liquids"; Dec. 31st, "Waves in Air"; Jan. 3rd, "The Telephone"; [illegible] 5th, "Electric Oscillations"; Jan. 7th, "Electric [illegible]"; Jan. 10th, "Wireless Telephony."

Reviews and Notices of Books.

THERAPEUTIC IMMUNISATION IN ASYLUM AND GENERAL PRACTICE.

By W. FORD ROBERTSON, M.D., Pathologist to the Scottish Asylums. Edinburgh: E. and S. Livingstone. 1921. Pp. 278. 15s.

IN the first part of this book a series of brief chapters deal with bacterial infection as the cause of disease, with the facts regarding immunity that bear upon therapeutic immunisation, and with the bacteriological methods to be employed. Clear description of the apparatus is given and the preparation of culture and test media is well described. Only an outline of the facts which bear upon therapeutic immunisation is essayed, the reader being referred for full information to the well-known works of Muir and Ritchie, of Hewlett and of d'Este Emery. There follows a presentation, systematically arranged, of the differential characters of bacteria which must be identified in investigations designed to apply therapeutic immunisation in particular cases. Under this system the author points out that important pathogenic bacteria have been excluded from the list because therapeutic immunisation would have little or no application to the treatment of the conditions with which they are associated. It is frankly admitted that the system of classification is provisional. A brief description is added of the methods to be employed in the clinical investigation of infections, and, in dealing with the practice of therapeutic immunisation, a useful warning is issued against the random use of stock vaccines. While allowing that these have their rational use, Dr. Ford Robertson points out that even autogenous vaccines, in the hands of those who do not know how to use them, often do harm. More than the last half of the book is taken up with two long chapters dealing with bacterial infections amenable to treatment by therapeutic immunisation and with the circumstances of such treatment.

It is difficult to review a book whose suitability for any particular class of readers must be in question. The ground covered by the first part of the treatise has been covered by many text-books. Generous reference to some of these is profuse in the volume, but if the author's intention has been to appeal to students, we feel that such a class of readers would do better to consult the works to which Dr. Ford Robertson refers. The latter part of the work advances views which in many directions will not receive general support. It is quite well that the views should be set down for discussion, but they must be considered tentative. Under the heading of diphtheroid bacilli, for example, Dr. Ford Robertson prints a paper which he had prepared seven years ago pointing to the pathological importance of these bacilli, which he associated ætiologically with conditions which are not usually considered to bear that relation. Chronic infection by diphtheroid bacilli, he says, occurs especially in diseases of the nervous system, including certain types of neurasthenia, acute toxic insanities, dementia præcox, general paralysis, and tabes dorsalis. In the latter two he admits that the infection is perhaps always associated with syphilis. We may grant that we have no proof that infection of the brain by the *Spirochæta pallida* is a complete explanation of all the characteristic phenomena of general paralysis, but we must still require a good deal more evidence than Dr. Ford Robertson produces before his conclusions can be adopted.

He is aware, however, that his work is in the nature of a challenge to other workers, for in a prefatory statement he says that "numerous facts new to science are recorded and many heterodox opinions are expressed which are not likely to be accepted without a fight." We think that the fight which he anticipates is sure to come, and in certain places he

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 10th, Mr. PERCY SARGENT, the President, being in the chair. Members of the Section of Surgery had been invited to attend. A discussion on

The Treatment of Persistent Pain due to Lesions of the Central and Peripheral Nervous Systems

was opened by Dr. WILFRED HARRIS, who said that persistent deep-seated pain, if accompanied by failing health, would always suggest malignant disease. He considered the causes of pain in the peripheral nerve-endings, and rapidly sketched the various forms of disease of the nerve trunks, posterior roots and their ganglia, the fillet or thalamus which gave rise to pain.

1. *Peripheral Causes.*—Dr. Harris said that neuro-fibrositis might be traumatic or rheumatic. The former had not been sufficiently recognised. He had once been consulted by a farmer for pain across the lumbar region, which had persisted with occasional acute exacerbations for 10 years, after a fall. Examination revealed a tender spot, and the patient was cured by the injection of a few drops of strong alcohol into this region. Lateral scoliosis might be associated with similar tender spots. Such neuro-fibrositis appeared to be due to inclusion of sensory nerve-endings in areas of slight scarring resulting from rupture of muscle or tendon fibres, or as the result of a chill; pain thus produced might occasionally persist for years until the nerve-ending was destroyed by strong alcohol. Trigeminal neuralgia was, he thought, probably due to septic neuritis of dental nerve filaments in the jaw. It was commoner in women than in men, on the right side than on the left, and in the upper jaw than in the lower. It was occasionally bilateral. In the early stages remissions commonly took place, but they became less frequent as the disease progressed. For the relief of this complaint drugs were useless, and the choice lay between alcohol injection of the Gasserian ganglion or of one of the main trunks, and operation (either gasserectomy or division of the sensory root of the fifth nerve behind the ganglion). Dr. Harris believed that alcohol injection of the ganglion produced as permanent a cure as the operation of gasserectomy. It had the advantage of being available for bilateral cases for which double gasserectomy was not permissible owing to the jaw-drop that would follow. Chronic non-paroxysmal neuralgia of either the upper or the lower jaw appeared to be limited to women usually of 15–35 years of age. It might persist for years and differed from true "tic douloureux" in not being relieved unless total anæsthesia was produced, either by injection, neurectomy, or gasserectomy; whereas a light anæsthesia from partial injection of the nerve trunk was often sufficient in the latter complaint. Geniculate neuralgia sometimes followed facial palsy when accompanied by herpes of the auricle. Severe spasmodic pain in the neighbourhood of the auricle, the angle of the lower jaw, and the upper part of the neck might persist for weeks or months. American authors had described the cure of such cases by section of the "pars intermedia." Glossopharyngeal neuralgia was very rare, but might simulate "tic douloureux" in the character and persistency of the spasms and pain. Sicard had reported section of the nerve behind the mandible as curing three cases.

2. *Diseases of the Nerve Trunks.*—Dr. Harris said that tumours at the base of the brain or naso-pharyngeal growths might simulate trigeminal neuralgia for a time, by irritation of the nerve, but the development of anæsthesia or motor palsy of the fifth nerve, or pressure symptoms such as diplopia or Eustachian deafness, would clear up the diagnosis. Gummatous neuritis of the fifth nerve might be recognised by persistent non-paroxysmal pain with the development of anæsthesia, a positive Wassermann reaction, and rapid improvement under active anti-syphilitic treatment. The symptoms of cervical rib pressure, also far commoner in women, were often produced by a first thoracic rib, so that a negative skiagram would not exclude rib pressure. This was suggested by varying though persistent pain in the neck and along the inner side of the forearm with perhaps anæsthesia of the ulnar border of the forearm and wasting of the hand muscles. Causalgia was a common occurrence during the war, but very rare in civil practice. It was often due to very slight lesions of the nerve trunks, and could usually be relieved by free alcohol injection of the nerve trunk well above the site of injury.

3. *Lesions of the Posterior Roots or their Ganglia.*—Post-herpetic neuralgia occurred mainly in patients over 50 years of age, and was confined to the region which had been involved in the herpes. Dr. Harris had recently had some success from alcohol injection in the Gasserian ganglion where the pain involved the first division of the trigeminal nerve. For post-herpetic neuralgia of spinal nerves posterior rhizotomy was not always successful. Hæmatorrhachis was an occasional cause of pain in the spinal nerve distribution. As regards the pain of tabetic crises he invited the experience of surgeons.

4. *Central Sclerosis of the Fillet of Thalamus.*—Intramedullary growths and syringomyelia and syringobulbia occasionally caused pain; the posterior inferior cerebellar syndrome caused persistent trigeminal neuralgia.

5. *Psychalgias.*—These were legion. In many cases they might be recognised by their lack of anatomical distribution, but in some cases they were only recognised when treatment had failed to cure the supposed lesion. Dr. Harris gave two instances of this sort of pain.

A Different Classification.

Sir WILLIAM THORBURN referred to the difficulty in judging the effects of treatment of pain. There is no accurate means by which the degree of pain could be measured. The mental effect of prolonged pain often caused the recurrence of pain sometimes in another part, after the original pain had been cured. Thus Sir William Thorburn had recently seen two cases of pain due to cervical rib which had been cured by operation; the patients returned later complaining bitterly of abdominal pain associated wit floating kidney. Sir William Thorburn divided case into three classes: (1) those in which there was definite lesion, such as pressure on the brachia plexus; (2) cases where the lesion was less definit and was possibly situated in the posterior roo ganglia; (3) those in which there was no definit lesion and which he called neuralgia. In the fir class the only question was diagnosis, and earl diagnosis followed by prompt and adequate trea ment was curative. In certain cases, however, whe pressure had existed for a long time, a neuritis migh be set up which caused pain even after remov of the original cause. This explained the failure some cases of operation for cervical rib which h been too long postponed. In the second class case Sir William Thorburn included certain cases painful amputation stump. Some of these we cured by removal of end-bulbs, but a percentage cases remained where pain persisted after removal the bulb and several inches of apparently normal ner These cases were, he thought, due to an ascend neuritis, and in some of them posterior rhizotomy the only resort. In his opinion these bulbs were to sepsis, and did not occur if the nerves were sufficiently short.

As regards causalgia, resection and suture of nerve was not always curative. Sixteen of hi approval. The results he quotes are certainly striking; he has collected 12 cases in which this procedure was adopted with only four deaths, whereas of 52 women in whom marsupialisation was practised 22 died. The conclusion is also arrived at from a study of Beck's statistics that the best time to operate is the thirty-eighth week.

Dr. Schumann's book contains a clear and interesting account of the present views with regard to ectopic gestation and will well repay reading.

Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases.

By Boris Sidis, A.M., Ph.D., M.D., Medical Director of the Sidis Psychotherapeutic Institute. Edinburgh: E. and S. Livingstone. 1921. Pp. 448. 21*s.*

Dr. Sidis was one of the first workers in America to use as a therapeutic measure the revival of lost memories, chiefly by means of hypnosis or hypnoidal states; this he calls psychognosis and he speaks with authority concerning the method. When he discusses other topics he arouses doubts as to how far his authority carries. He divides insanities into those of organic origin (organopathies) and those due to poisons or toxic products affecting the neuron (neuropathies). Having ruled out any psychological cause of insanity he classifies psychopathies (i.e., neuroses and psycho-neuroses) also in terms of neurons, speaking of "functions of which the personal consciousness is found on examination to have lost control by reason of neuron disaggregation and dissociation" (p. 100). *Mental* dissociation is a theory, useful in description or discussion; *neuron* dissociation, here presented as an anatomical fact, is a misleading speculation. Later on, when Dr. Sidis discusses aphasia and speaks of "the number and function of the systems of neurons involved" (p. 260), we cannot tell, even from the context, whether he is talking of pathological findings or purely imaginary processes.

On p. 319 he emphasises views which would be regarded by most psychotherapists as retrograde: "I must say once for all that they who try their ingenuity and fanciful symbolisation and mental conflicts in order to squeeze out some important meaning out of psychopathic symptoms in the present life adjustments of the patient miss the essential point of psychopathic states. Psychopathic symptoms are essentially meaningless." In many hysterias the present meaning and aim are so obvious that the casual observer tends to ascribe the symptoms to malingering, and one of the chief difficulties in treatment, which Dr. Sidis must surely recognise, is to bring about the patient's adjustment to present life.

In an appendix is reproduced a paper by Dr. T. W. Mitchell, from the Transactions of the Psycho-Medical Society, in which appear certain notes of interrogation which are not in the original; if they are interpolations by Dr. Sidis their origin should be made clear. An allusion to "medical dignitaries taking a regular bath in sexual filth" seems obsolete; the introduction in which it occurs is dated July, 1914, so that this is presumably not the first appearance of the book. The views presented in it were possibly worth consideration seven years ago, but psychopathology has advanced since then.

Diagnosis.

Diagnostik innerer Krankheiten in Tabellenform. Third edition. By Dr. A. J. Cemach. Munich: J. F. Lehmanns. 1920. With 53 tables and plates. M.15.

As the author points out in the preface to the first edition, the symptomatology of disease of the internal organs is so complex that the accurate diagnosis of a case requires not only a knowledge of the clinical aspects of a malady but also of the signs and symptoms of the diseases with which it may be confused. There is a very general feeling of need for a concise expression of the principal signs and symptoms of internal disease. Dr. Cemach has made an interesting attempt to achieve this object by setting out the signs and symptoms of the commoner diseases in tabular form. The book consists of 53 tables, each table being devoted to the enumeration and comparison of the classical signs and symptoms of the more important diseases affecting a particular organ. Thus Table VI. deals chiefly with affections of the stomach, which are divided into diseases and neuroses of the stomach. The symptoms, findings on physical examination of the epigastrium, condition of the tongue, motor activity of the stomach, its contents, vomiting, appetite, description of the fæces, other symptoms, and the general condition, are set down in columns as they occur in acute gastritis (simple and toxic), chronic gastritis, atony of the stomach, simple and malignant ulcer and stenosis; then follow the neuroses—namely, gastralgia, gastric neurasthenia, secretory neuroses, and nervous vomiting. In the last column of the table the most important fact or facts in diagnosis are stated for each complaint.

The author's method is to choose a type symptom-group for the diseases of each organ and to give a bird's-eye view of the variations in the components of the symptom-group that are characteristic of the more important diseases of that organ. Separate tables deal with certain important single symptoms, such as dyspnœa, hæmaturia, and ascites. Infectious diseases are dealt with separately. Within the limits that the author sets himself he succeeds in presenting his subject in a concise and useful form.

The Stages of Human Life.

By J. Lionel Taylor, M.R.C.S. London: John Murray. 1921. Pp. 377. 18*s.*

This book appears to have been written with the amiable design of helping other people to lead happier and more efficient lives by persuading them to study what they ought to do in order to keep healthy. But what the author has to say is so common-place and is set out with such obscure prolixity that we doubt whether he will achieve his purpose. He might well reconsider his intention to publish further volumes on the same topics.

JOURNALS.

Journal of Laryngology and Otology, September and October, 1921. Vol. XXXVI., Nos. 9 and 10.—In the September number Mr. W. G. Howarth discusses operations on the frontal sinus; he finds the intranasal operation useful in recent cases but unsatisfactory in those of chronic suppuration, and prefers to remove the floor of the sinus, together with the anterior ethmoidal cells, through an external incision, thus establishing free drainage into the nose; the anterior wall and the mucous membrane are left intact, and the wound is sutured.—Prof. F. Hobday describes the operation of stripping the ventricles as performed for vocal cord paresis in the horse.—Dr. W. S. Syme mentions a method of treating asthma by application of 10 per cent. silver nitrate to the bronchi through the bronchoscope; Mr. J. L. Aymard describes the use of a small electric torch placed inside the mouth to detect bleeding-points after dissection of the tonsil; and Dr. C. McNeil reviews the present state of the theory of asthma as an anaphylactic phenomenon.

The October issue contains an article by Mr. T. M. Hovell, in which he claims that the majority of enlarged tonsils in children are not diseased, and that in these cases the proper treatment is the removal of the projecting portion with the guillotine.—Sir StClair Thomson gives a short account of the usual site of origin of intrinsic laryngeal cancer.—Drs. P. and E. Watson-Williams describe a method of exploring the posterior ethmoidal cells; Mr. F. Holt Diggle and Mr. F. B. Gilhespy contribute an analysis of 20 consecutive cases of acute mastoiditis treated by B.I.P. and primary suture with very good results: and Dr. Neil MacLay relates a case of osteomyelitis following an intranasal operation for sinus-suppuration with eventual recovery.

seemed that all which could be done for him was to tracheotomise and leave him alone, but it occurred to him that Dr. Morton's cross-fire method might give some hope. Dr. Morton agreed to treat the case, and three months after the applications the whole trouble had disappeared from the larynx, the patient had easy breathing, and the skin over the front of the neck was as soft as could be wished.

SECTION OF ANÆSTHETICS.

THE opening meeting of this section of the Royal Society of Medicine took place on Nov. 4th under the presidency of Dr. H. J. SHIRLEY. It was devoted to hearing and discussing a report by Dr. H. E. G. BOYLE on his recent visit, as the representative of the section, to the first meeting of the Canadian Society of Anæsthetists at Niagara, and to the meeting of the American Society of Anæsthetists at Boston in June last.

Trans-Atlantic Methods.

A practice followed to a considerable extent was to give the patient, some time before the operation was to commence, ¼ gr. of morphine, 1/100 gr. atropine, and 300 c.cm. of a 4 per cent. solution of magnesium sulphate subcutaneously into axilla or groin. Very successful anæsthesias were witnessed with gas and oxygen. Some passed the gas and oxygen over paraldehyde. The idea underlying this preliminary preparation seemed to be that the effect of the actual anæsthetic was intensified, and less of the drugs was required. Patients undergoing operations under local analgesia assured Dr. Boyle that under operation they felt no pain. Should distress appear, the method was to pass, by means of a motor, ether into the post-nasal space.

At the Harlem Hospital, New York, Dr. Lombard gave ethyl chloride for tonsil and adenoid cases. He sprayed the substance on to layers of gauze until the child became "muzzy"; he then poured more on, and covered the area with a sheet of rubber in which is a hole the size of a shilling, thus converting the open into a partially closed method. During the actual operation a suction pump draws all the blood away into a bottle, thus preventing it being swallowed. At Niagara the Congress was a great success, owing largely to the untiring efforts of Dr. McMechan, and those of Dr. Johnston, of Toronto. Great importance was attached, said Dr. Boyle, in Canada to taking blood-pressure readings of cases, as giving very valuable indications as to the patient's condition. If the blood pressure remained persistently low for half an hour, the patient usually died in a few days.

In this connexion considerable interest attached to Dr. McKesson's three degrees of circulatory depression. The first degree is that in which there is a 15 per cent. increase in the pulse-rate without a change in the blood pressure: or a 10 per cent. decrease in blood pressure without any diminution in pulse-rate. The second degree is that of an increase of 25 per cent. pulse-rate, with a 10 to 25 per cent. decrease of blood pressure. The third degree, which is recognised as that of definite shock, is that in which the pulse-rate is 100 or more and is ascending, accompanied by a falling blood pressure, reaching as low as 80 mm. of mercury systolic, and a pulse pressure of 20 or less. By these readings the anæsthetist can warn the surgeon of oncoming shock with greater certainty than if he had only the quality of pulse to guide him as indicated by the sense of touch. If the third degree lasted more than 20 minutes, said the demonstrator, the patient was practically sure to succumb. The method was demonstrated on a case in Boston City Hospital. At Boston the tonsillar operations he saw were done with the patient in the sitting posture.

Dr. Boyle praised the hospitals he visited, their equipment and organisation, particularly those at Montreal, Toronto, and Boston. At Toronto he found Dr. Johnston at the head of a most efficient staff of administrators of anæsthetics, and the representative described many of the operations and methods he witnessed. There seemed a likelihood that Toronto would lead the world in establishing a Chair in Anæsthetics; should that be so, it would be a great satisfaction to find Dr. Johnston as its first occupant.

The report was followed by a discussion, at the end of which the meeting approved a message of fraternal greeting and gratitude to both the societies in the Western Hemisphere which were concerned in the cordial reception of Dr. Boyle.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this Society was held at the West London Hospital on Nov. 4th with Sir G. LENTHAL CHEATLE, the President, in the chair.

Mr. OSWALD ADDISON showed a case of Periosteal Sarcoma of the Femur in a young man under treatment with X rays. After three applications the tumour had markedly decreased in size. Mr. Addison referred to the notoriously bad results of amputation in these cases, and though he did not think X rays would prevent metastases, he thought this treatment preferable to operation.—Dr. LEONARD DOBSON cited a similar case under his care in which radium had been buried in the tumour in 1914. The patient had remained well since.

Mr. HOWARD STRATFORD showed a case of Myxœdema following X ray treatment after amputation of the breast for carcinoma. After a year's radiation of the scar and supraclavicular region signs of myxœdema had developed. The condition had been kept under control by administration of thyroid extract.—Dr. ARTHUR SAUNDERS thought that the X rays had in this case undoubtedly destroyed the secreting tissue of the thyroid.—Mr. ADDISON agreed and suggested that screening had not been efficient.

Dr. SAUNDERS showed an interesting series of cases illustrating thyroid insufficiency in children, the cases showing gradations from the mildest to the most severe types. He spoke of the almost miraculous results that could be obtained by the administration of thyroid in many cases of this kind.—Dr. SEYMOUR TAYLOR thought that the best method of administering thyroid was in the form of sandwiches of fresh sheep's thyroid. He thought that if tabloids were used the patients were apt to increase the dose without consulting their doctors, sometimes with harmful results.—In reply to Dr. VAUGHAN PENDRED, Dr. SAUNDERS said he thought that thyroid insufficiency was probably more common in children than was generally recognised, and that many fat dull infants were benefited by small doses of thyroid.

Mr. GILBERT CHUBB showed a series of cases of gunshot injuries of the face and head to illustrate the results of plastic operations for their relief. He pointed out in the case of reconstructive operations on the lips how rapidly a graft of ordinary skin would take on the red colour of the mucous membrane. He thought this might be explained by the great vascularity of the part. In dealing with defects of the cranium he favoured the use of the iliac crest for grafts.

Dr. J. BURNFORD showed a specimen of Streptotrichosis of the Lung in a man who died after nine months' treatment. Bronchiectasis had developed, but had improved under treatment with large doses of potassium iodide. The bases of the lungs were solid. The disease began with colitis, and Dr. Burnford thought the infection had probably been gastro-intestinal in origin. He alluded to the fact that streptotrichosis was more common than generally supposed. Dr. Burnford also showed a girl with Aplastic Anæmia. The blood picture was of the chlorotic type, and though the spleen was enlarged he did not consider the case one of true splenic anæmia. Infective endocarditis had been carefully excluded.

Mr. SANGSTER SIMMONDS showed a man with gunshot wound through the hip-joint in which ankylosis had occurred between the neck of the femur and the ilium above the acetabulum. The limb was adducted and progression difficult. Mr. Simmonds had removed the head of the femur and placed the neck in the acetabulum after division of the adductors. The limb was placed in the fully abducted position and firm ankylosis had resulted. The man could now get about with comparative ease.

Dr. L. S. BURRELL showed four cases to illustrate the results of artificial pneumothorax. The apparatus which was used in this operation was demonstrated.

Mr. NEIL SINCLAIR showed an Aneurysm of the Right Common Carotid Artery at its Lower End in a woman aged 61. No pressure symptoms were present, nor was there any indication of involvement of the innominate. X ray examination showed marked dilatation of the aortic arch; this fact, payments made by the class which uses hospitals. Whether the wage-earning and lower salaried classes prefer to pay for their treatment in advance when they are well or to wait until they require it, that remains to be determined. The present month witnesses a crucial experiment in medical providence. But the problem of voluntary hospital finance in London can be solved and the solution is brought one stage nearer by this admirable report.

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The Treatment of Persistent Pain.

Discussions on the subject of pain and its treatment will always command the attention of the medical profession. For one person who may stoically endure suffering there are a hundred others in whom the slightest twinge is enough to upset equanimity and to lead to the seeking of medical advice; and should the pain become persistent nothing calls for greater fertility of resource than its successful treatment. Cure, as always, depends on recognition of the underlying pathogenic process, and this in turn is based on ætiological knowledge and on ability to assess the temperamental or constitutional element in the individual concerned. For pain, being essentially a subjective phenomenon, can be gauged objectively only by its accompaniments, and if these are wanting we have no criterion to aid us, no touchstone to indicate unfailingly its unseen and intangible existence; we must either believe or distrust our patient. At the interesting and helpful discussion on the treatment of persistent pain, held at the Section of Neurology of the Royal Society of Medicine (see p. 1057), Sir William Thorburn emphasised the disadvantage under which the practitioner labours in having no objective measure for pain, but it is not clear that with it the task would be lightened. As the sufferer of old declared that "whereas I was blind, now I see," and cared nought for either pathological or therapeutic process, so the patient with symptoms of pain asks for no more than its relief or removal; in the absence of evidence to the contrary we must accept the actuality of his suffering, and if he says that with our treatment it has vanished we must just accept that too.

The contribution to the discussion provided by the opener, Dr. Wilfred Harris, who speaks with authority, was probably not intended to furnish a complete précis of the causes of persistent pain in diseases affecting the nervous system directly, yet it contained a sufficiently appalling number of conditions, each one of which is essentially painful, and for the relief of which skilful devotion on the part of the practitioner of medicine or surgery is required. Dr. Harris avowed himself an enthusiastic exponent of the method of alcoholic injection for many of these, ranging from the local points douloureux of neuro-fibrositis to the massive neuralgias of the trigeminal or the sciatic nerves. Through his hands some two or three hundred cases of trigeminal neuralgia have passed, and the failures constitute apparently only an insignificant minority. Sir William Thorburn, too, reported numerous cases of the same condition cured either by this method or by the surgical procedure advocated by Jonathan Hutchinson. From these two communications it may be gathered that the radical cure by gasserectomy is rather falling into desuetude; apart from its seriousness, it presents several disadvantages, one of which is its inapplicability to bilateral cases, at ast if the motor branch of the fifth is to be avulsed h removal of the ganglion. Be this as it may, tic douloureux has lost its terrors, and no one need ever again be driven to suicidal extremities, as has regrettably been the case on occasion in days gone by. Causalgia, another variety of persistent pain, largely the aftermath of the war, also received a considerable amount of attention. Here the record was possibly not quite so satisfactory, but on the whole we may learn that it, too, can be cured. Failure to realise the importance of the conception of ascending neuritis in this connexion probably accounts for a certain number of non-successful interventions. If alcoholic injection is utilised it should be made at several points well on the central side of the lesion, and if neurectomy is practised the proximal end of the divided nerve should be treated with alcohol injection also. There remain, however, forms of persistent pain in nervous disease that are unfortunately much less amenable to therapeutic procedures, notably the variety described as central pain, of which at the discussion Dr. Gordon Holmes gave a diagnostic description. He alluded to the kind that sometimes occurs in cord lesions, an account of which he contributed to the Osler *Festschrift*; in certain types of thalamic lesion, also, central pain is an only too conspicuous feature in the clinical picture. No really scientific method of treatment has as yet been evolved for such distressing cases, due as they are, if a recent theory of their origin be accepted, to release of function; in this respect they are akin to certain cases of release-phenomena on the efferent side, which similarly have proved to be peculiarly difficult to modify therapeutically.

For persistent pain originating in the proximity of dorsal root ganglia and not to be reached by alcoholic injection, the operation of dorsal rhizotomy received considerable support from Sir William Thorburn; in other, even more inveterate, cases, the President of the Section counselled the adoption of the operation of intramedullary section of the spino-thalamic tracts in the ventrolateral column of the cord, a procedure which can only be resorted to when other methods fail and when the outlook is in any event grave. Should this be unsuccessful, we suppose the neurological surgeon, daring though he be, will not advise destruction of the thalamus by electrolysis, or excision of the sensory cortex, nor need he, for as far as the latter is concerned the representation of pain in a cortical sensory area is somewhat doubtful. If pain is to be chased in this fashion from periphery to centre, inability to effect a cure can in the last resort be set down to the elusive nature of the sensation; the residual group of the topoalgias, or psychalgias, as Dr. Harris called them, can be made the receptacle of the failures. As useful as a discussion on treatment would be one devoted to the differential diagnosis of psychical from somatic algias. Various criteria and tests notwithstanding it is often a matter of great difficulty to distinguis the psychical from the physical, and accurate dia nosis demands considerable nicety and acumen. No contributor to the discussion at the Section of Neurology spoke of the treatment of psychalgia, from which one would not like to infer that neurology ignores painful mental cicatrices altogether. None the less the omission is noteworthy if it is to be taken as signifying indifference to a very large class of case of a really curable sort. Inability to ameliorate or relieve pain of organic central origin casts no discredit on neurological methods, for there is a limit to their applicability, but once diagnosis is satisfied with the non-organic nature of a particular pain its cure should be a matter of course. The lines to follow in such instances are doubtless familiar to the expert, but the practitioner would be grateful for help in this respect.

will be required to marshal the results of many years of industrious research very carefully if he is to emerge victorious.

FRACTURES IN GENERAL, INDUSTRIAL, AND MILITARY PRACTICE.

Second edition. By JOHN B. ROBERTS, A.M., M.D., F.A.C.S., Emeritus Professor of Surgery in the University of Pennsylvania Graduate School of Medicine; and JAMES A. KELLY, A.M., M.D., Associate Professor of Surgery in the University of Pennsylvania Graduate School of Medicine. London and Philadelphia: J. B. Lippincott Company. 1921. Pp. 755. £2 2*s.*

PROF. Roberts and his collaborator have produced a commendable work on fractures, achieving a judicious blending of the old and new. For example, whilst quite a number of the classical type of illustration showing the displacement of bony fragments due to muscle pull have been retained, these are effectively overshadowed by many excellent radiograms of actual fractures. The authors are in no doubt as to the efficiency of certain technical methods which they themselves follow, but they have generously quoted from others, and have illustrated and described at length many different methods of treating individual fractures.

In a preface they emphasise 26 "cardinal points," all of which are sound except perhaps the uncompromising statement that "joint fractures should not be kept immobile longer than one or two days." However, the bare dogmatism of this rule which would seem to imply a negation of the doctrine of rest, is modified in the section of the text where individual joint fractures are dealt with. The efficiency of what are termed "contour splints," moulded to the actual region, and made of plaster of Paris, is stressed. The writers, in common with other modern fracture surgeons, have little use for the conventional wooden splint. It is interesting to note that certain well-known wooden splints, such as the Carr splint for Colles's fracture, are condemned wholeheartedly.

One of the best sections is that dealing with fractures of the lower end of the radius; here the importance of efficient primary reduction, and the maintenance of the normal curvature of the radius, are emphasised. The chapter on fractures of the shaft of the femur is less happily conceived, although the various technical additions which have resulted from recent war experiences are discussed. Two useful chapters are those on Obstetrical Fractures and on Industrial and Warfare Fractures. In the latter, there is an excellent résumé of the modern early treatment of the co-existing soft part injuries with reference to the eradication of wound infection. The treatise as a whole is well planned and readable.

ZOOLOGY.

Outlines of Zoology. By J. ARTHUR THOMSON, M.A., LL.D. London: Henry Frowde, Hodder and Stoughton. Pp. 867. 18*s.*

Zoology for Medical Students. By J. GRAHAM KERR, F.R.S., Regius Professor of Zoology in University of Glasgow. London: Macmillan and Co. Pp. 485. 25*s.*

An Introduction to Zoology. By C. H. O'DONOGHUE, D.Sc., F.Z.S. London: G. Bell and Sons. Pp. 501. 16*s.*

OF these three elementary text-books that of Prof. Thomson has attained to the position of a seventh edition, which renders criticism somewhat superfluous, and also justifies the method of arrangement adopted by its author. In this there is no change; Dr. Thomson still gives a large mass of information, but a judicious use of small type draws attention from the less to the more important sections, and thus saves the elementary student from confusion.

Prof. Kerr, as the title of his book states, writes definitely for the medical student, and, therefore, perhaps lays more stress upon parasitic forms than he would have done in a book designed for a less specialised audience. The distinction is by no means overdone and other groups are treated quite adequately. A feature of this work is the large number of original illustrations drawn specially for Prof. Kerr, and certain of these, such as the nephridial organs (p. 309), renal tubule of vertebrate (p. 310), lung of fishes (p. 367), are usefully diagrammatic. In contrast with these, and excellent in their way, are elaborate drawings of the bird's feather (p. 428) and larval stages of Lepidosiren (p. 391), that South American dipnoid particularly associated with Prof. Kerr's important investigations.

While Prof. Kerr's text-book is written perhaps chiefly to meet the needs of the medical student, Dr. O'Donoghue's Introduction to Zoology is designed in the first place for the use of the science student of the University of London, though the author, who is a professor in the Canadian University of Manitoba, hopes that it will prove useful also to others. The greater part of the book is devoted to the anatomy and development of the frog, the dogfish, and the rabbit. The invertebrates (protozoa, hydra, obelia, lumbricus, and tænia) occupy only three of the 17 chapters. Dr. O'Donoghue does not ignore the general problems of zoology, such as variation, heredity, and so forth, but his manual differs from those of his colleagues in that he gives no bibliography to guide the student in extending his knowledge.

EXTRA-UTERINE GESTATION.

By EDWARD SCHUMANN, Lecturer on Obstetrics, Jefferson Medical College, &c. London and New York: D. Appleton and Co. 1921. With 71 illustrations. Pp. 189. Price 21*s.*

THIS book has been written to present modern views regarding this complication of pregnancy, with special reference to the opinions prevailing among American gynæcologists and obstetricians on the subject. After a short historical summary of our knowledge of ectopic gestation, Dr. Schumann discusses its frequency and ætiology, and registers his opinion that in the majority of cases the condition is predisposed to by the end-results of tubal inflammation or by the pressure on the tubes of neighbouring neoplasms. He calls attention to the discrepancies in the statistics relating to the relative frequency of tubal rupture and abortion, and regards rupture as occurring nearly twice as frequently as abortion. The situation of the tubal pregnancy is regarded as being the most certain factor in determining the mode of termination of the pregnancy; the chapter on the pathology of the condition is well written and there is an interesting account of three cases of interstitial pregnancy which the author has had the good fortune to observe.

The succeeding chapter is devoted to recurrent and abnormal forms of ectopic gestation and conditions simulating it. The author doubts whether an ectopic gestation has ever been diagnosed by palpation before any hæmorrhage has occurred into it, and with this statement we are inclined to agree. In the diagnosis of the condition he lays most stress upon some degree of metrorrhagia, together with pelvic pain. Operation is strongly advocated in every case, since it is difficult to be certain that the hæmorrhage has ceased in any given case and will not recur. There is, however, a good deal to be said for the opposite policy of not operating in all cases, for instance, of peritubal hæmatocele; and it is unfortunate that this side of the question is not presented in sufficient detail to enable readers of this monograph to form their own opinion. There is no doubt that many patients recover from a tubal abortion without operation, and there is no evidence that in such cases early operation presents any ultimate advantages to the patient as compared with expectant treatment.

In the treatment of cases of advanced extra-uterine gestation, in which it is impossible to remove the placenta, Beck's plan of leaving the placenta in situ and allowing it to become absorbed is quoted with the exudate. Where there is much lymph, drainage is unlikely to be of benefit for more than a few hours; where the infection appears virulent and there are few adhesions it would be dangerous to close the abdomen entirely. It is likely that in the future the surgeon will be guided by the naked-eye estimate of the clotting process and a microscopical examination of the fluid to determine the resistance offered to bacterial invasion. D. P. D. Wilkie has shown[1] that it is possible by a rapid microscopical examination of the peritoneal exudate performed in the theatre, to form an estimate of the resistance offered to infection, and thereby to judge the proper course to pursue. Such a proceeding might lead to a further advance in abdominal drainage, comparable to that achieved by a study of the mechanical factor of gravity which resulted in the adoption of the Fowler position. It is time for a collation of available experience.

MURDER BY MEANS OF BACTERIA.

THE rôle of bacteria as friends and enemies has not yet been fully estimated. Lempp, in a recent issue of the *Archiv für Kriminologie* (Vol. lxxiii., Parts 3/4), has an interesting article on the homicidal employment of bacteria, which is at present topical in view of certain proposals for the scientific development of warfare. Glancing at ancient literature, for instance Thucydides's account of the Athenian plague, and mediæval history, he pronounces, naturally enough, that these reports of pestilence spread through the action of enemies are in the great majority of cases merely fanciful. Just as baseless are the tales of aviators dropping bon-bons containing pathogenic cultures, or of laboratory workers contaminating water-supplies, which were recently given currency by, and perhaps often originated in, the sensational press. He states that on the German side such reports received for the most part immediate official investigation and discountenance. Probably the only authenticated instance of the use of pathogenic bacteria in warfare is, curiously enough, the practice of the warriors of the New Hebrides, of dipping the points of their weapons in marsh mud, which contains many tetanus spores. Equally scanty is indubitable evidence of murder by the means under notice; for probably there are but two properly recorded cases; and the second of these, that of the druggist and artist Hopf, did not go beyond an attempt. In 1914 Hopf was convicted of poisoning his first wife with arsenic, and of attempting to murder his third one by means of typhoid and of cholera germs. The latter infection was quite abortive, and examination of the culture in his possession showed it to have lost all virulence. The typhoid bacilli, on the contrary, were extremely pathogenic, having particularly high agglutination, a quality evident also in a strain isolated from the blood of an attendant, who also sickened, upon the wife. It was suspected that Hopf infected some of the entourage in order to give the impression of an ordinary small epidemic. Five days after poisoning his wife's food he began to take her temperature regularly: it duly rose two days later, but she recovered. He had caused her to make a will directing that her body should be cremated. The cultures—to the number of 30 within nine months—he had obtained from a private laboratory, asking particularly for the most virulent strains.

Accounts have appeared in American newspapers of murders, or attempted murders, in the United States by means of bacteria, the only specified kind being again typhoid bacilli; the statement even being made that it had been proposed to erect in Chicago—a city with one of the worst records for murder in the world—an institute expressly for combating this particular crime. However, the only documented example of a fellow to Hopf is that of a Dr. Pantschenko, who, bribed by a relative (by marriage) of the victim, murdered a rich young Russian by injecting, not bacteria, but a bacterial product—namely, diphtheria toxin. The injection was pretended to be of spermin, for therapeutic purposes, and the defence was an admission that the syringe might have been not properly clean, thus causing fatal septicæmia. Septicæmia was, indeed, the diagnosis first arrived at, by an independent medical man, while a second one took the condition for septic gangrene. The site of injection became bluish-black, the temperature rose to 40° C., and death followed in a week. There were two autopsies, the second only revealing the truth, by means of the discovery of a detachable grey membrane in the pharynx, of cardiac dilatation, and of peculiar thinning of the skin at the site of injection, appearances closely paralleled in ad hoc experiments on animals—namely, guinea-pigs—which also died on the seventh day. It was proved that Pantschenko had obtained diphtheria toxin from a laboratory, and also, on a previous occasion, cholera endotoxin and cholera bacilli, a poison suggested by the instigator aforesaid. Pantschenko was sentenced to 15 years' forced labour. The paper concludes with a review of current legal precautions against such crime, which seem in many countries to be altogether lacking, a state of things which its apparent great rarity does not wholly excuse.

THE WHITE LEAD QUESTION.

THE appearance at the present moment of a book[1] dealing with white lead is opportune, since the question is being keenly debated as to whether the use of this material in paints should be interdicted by civilised nations (see THE LANCET, Nov. 12th, a Report of the International Labour Conference at Geneva). The author, Mr. F. L. Cantineau, who is frankly and wholeheartedly a prohibitionist, presents his case as an advocate rather than as a judge; moreover, when dealing with the clinical aspect of the case, he suffers from not being a medical man. But we find here a useful summary based for the most part upon government inquiries and investigations carried out in many countries. All lead compounds, whether soluble or insoluble, are held to be poisonous; while, of them, white lead—i.e., carbonate of lead—is considered to be the most poisonous, and to claim most of its victims from among painters. Indeed, the number of deaths due to lead poisoning among painters is found to exceed that occurring in all other industries put together; nor does the damage cease there, since lead absorption, even to a slight degree, predisposes the victim to other diseases. We regret to find the skin placed in the forefront as a portal of entry for lead, the digestive system placed second, with the inhalation of lead dust third, since Dr. T. M. Legge has incontestably demonstrated that the order should be exactly reversed. Similarly, the author is at fault in speaking not unfavourably of the so-called electrolytic treatment of plumbism, which appears to possess no value. Mr. Cantineau is at his best when pointing out the almost insurmountable difficulties attending efforts to protect painters while working, for example, in private houses, from risk of lead poisoning, so long as paints continue to contain lead. The question as to whether illness among painters arises from breathing the vapour of turpentine and whether such illness may not have been ascribed to lead poisoning (an opinion recently put forward in this country by Sir Kenneth Goadby) is discussed by Mr. Cantineau at some length. Manufacturers of white lead, wishful to preserve their industry from destruction, have certainly attempted to make turpentine a scapegoat; the position is, however, difficult to accept when lead poisoning disappears, while paints containing no lead, but turpentine as before, are employed. The painter may be exposed to two risks; is that a reason for not abolishing one? If turpentine is toxic, we can turn our atten-

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[1] Internal Clinics, vol. iv., Twenty-second Series.

[1] "La Céruse." F. L. Cantineau. 1921. Pp. 480. Paris et Liége: Librairie Polytechnique.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 19, 1921.

Hospital Finance.

A STATISTICAL report of the ordinary expenditure of 112 London hospitals for the year 1920 has been issued during the week by King Edward's Hospital Fund for London, and can be bought[1] for 1s. 6d. This report is the latest of a series initiated in 1903, but first made public in 1908, and in it may be found, by anyone with eyes to read figures, a plain record of the cost of the voluntary hospital system as it exists to-day in the metropolis, and, incidentally, of the work done by the voluntary hospitals. The time is propitious for a comparison between pre-war and post-war conditions, and Mr. H. R. MAYNARD's crisp and lucid prefatory note sets out the total work and expenditure in 1920 alongside that in 1913; 1913 *being the last year when peaceful conditions* prevailed, and 1920 being the first year in which the fluctuations due to admission of naval and military patients have ceased to disturb civil hospital life. In brief, the position is this: Just over 1000 *more* beds are available in 1920, and of these nearly 700 are continuously occupied; there are 20,000 more in-patients and 50,000 more new out-patients; but while the increase in work inside and outside the wards amounts respectively to 7 and 30 per cent., the ordinary expenditure of the hospitals has leaped up in the seven years by 135 per cent. In other words, the metropolitan hospitals cost for about the same work two and a third times as much in 1920 as in 1913. It would be convenient still to regard this tremendous situation as an emergency, but it would be foolish and cowardly to do so. The situation must now be faced with a view to its long continuance, and faced straightly and squarely; and with this in view, we set down as shortly as possible in tabular form the main facts of work done and cost incurred in the ten different groups into which the voluntary hospital work in London naturally divides.

Group of hospitals.*	Average number of beds in daily occupation.	Average annual cost per bed.	Average number of days each patient was resident.	Total out-patient attendances (in thousands).	Average cost per attendance.
Larger General— With Medical Schools..	3867	£199	19	2661	*19d.*
Without Medical Schools	1079	£163	24	962	*14d.*
Smaller General ..	724	£156	23	561	*14d.*
Consumption	545	£143	55	126	*35d.*
Women's	258	£158	20	95	*19d.*
Children's	604	£152	24	467	*16d.*
Ophthalmic	220	£115	14	269	*14d.*
Epilepsy	321	£141	64	124	*19d.*
Cottage	304	£133	23	59	*9d.*
Lying-in	337	£119	15	133	*19d.*

* St. Bartholomew's Hospital and the Cancer Hospital are *not* included in this table.

It will be seen that the average annual cost per occupied bed at a large general hospital is in the neighbourhood of £160 when there is no medical school, or £200 when the hospital is also a teaching centre. The average cost per out-patient attendance is similarly in the neighbourhood of 1s. 2d. or 1s. 7d. We hasten to add that certain variable charges are not included in these figures, which are strictly accurate for comparison and only substantially accurate as totals. The cost naturally varies as between general and special hospitals of various kinds; in ophthalmic and lying-in hospitals, at which the usual stay is about a fortnight, the average cost is materially less; but within the several groups the variation in cost is very noticeable, and in the case of general hospitals with teaching schools varies from the norm of £200 to the extent of nearly £50 above and below. The report does not suggest that the lowest expenditure is intended to be taken as a model. It is not always that the lowest contractor's tender is accepted by the architect. But a primary object of publishing the comparative tables is that each hospital committee may reduce as far as possible *that part of the increase in cost which is not* represented by an increase in the quantity or quality of the work done. The Cave Committee, commenting on the striking differences in the expenditure between hospitals of like size and character, admitted that cost per occupied bed is at best an unsatisfactory criterion of value. The average period of in-patient treatment differs strangely from institution to institution, one teaching hospital in London keeping its patients on an average twice as long as another; and there is a very cogent plea entered by one hospital that its average weekly cost has increased for the reason that patients are transferred by motor ambulance to a continuation hospital in the country as soon as they can be moved, this transfer implying increase of cases at the hospital at their expensive stage. Granting the plea, added expense is just so much evidence of added efficiency and economical use of available hospital accommodation. Other allowances must be made in individual cases. At some hospitals articles are manufactured by direct labour, which at others are put out to contract; a number of London hospitals require patients who are not poor to provide certain articles of food; one hospital is staffed by a nursing sisterhood; paying beds at many hospitals bring up the expenditure.

But when all these sporadic differences have been given their due weight, we come back once more to the central and incontrovertible fact that the increased cost of living has hit the hospitals precisely in the same way as it has hit the private citizen, and for the public as well as the private consumer the reduced cost of living, of which so much has been heard and so little seen, had not taken effect at all during the year 1920. The largest London hospital speaks of reduction in the price of milk, but of *increased* cost in every other particular. Economy in the true sense is as urgent for the hospital committee as for the private citizen, but we doubt whether the average figure of £160 a year per occupied bed can ever again be substantially reduced. Outside London even that figure has in fact nowhere been reached. In some hospitals a more frugal regime may level down what a greater efficiency in others will level up; for efficiency will often imply more special departments, whatever their expense. Let this figure be accepted as the norm of expense and the solution of hospital finance be looked for where the Cave Committee indicated that it was to be found—namely, in indicated is of high value, and illustrates how, under enlightened management, insurance against disease may be made the means of curtailing the duration of illness and in many instances of preventing its occurrence. That this work is nationally important is self-evident; and we hope that the example thus shown will be widely followed.

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[1] From Messrs. Spottiswoode, Ballantyne and Co., Ltd., 1, New Street Square, London, E.C.4.

In the September *Statistical Bulletin* it is stated that in 1910 the Metropolitan Insurance Company put into operation its measures of health propaganda, which were gradually extended, and now embrace over 13 million men, women, and children of the wage-earning population who are policy-holders; and it is added that at the end of ten years the death-rate has been reduced by more than one-fifth. Stated in added duration of life as measured by life-tables, this means a clear gain of nearly four years for every insured white male at age 10. The improvement in life prospects shown by these striking figures is remarkable, and there can be no reasonable doubt that the efforts made by the insurance company to protect and instruct insured persons have contributed materially to the result. It may be doubted, however, whether the effect of these efforts can be accurately measured, or whether they have borne a predominant part in securing the increased duration of life which has been experienced. In forming a final judgment on this point, it would be necessary to compare the life-table experience of the insured with that of the general population for the same period, to ascertain whether any change likely to affect results had taken place in the racial constitution of the insured, and to what extent sanitary and social amelioration had been shared by insured and non-insured. But although these considerations need to be weighed when an attempt is made to measure exactly the results of educational and nursing work, the value of the work itself is beyond doubt; and our judgment of its value must rest not solely on the imperfect indications furnished by such statistics as are forthcoming. In Sir Arthur Newsholme's words it is safer to rest our inferences and our administrative action, as guardians of the public health, on a careful balance of all available evidence, giving chief place to exact physiological and pathological evidence.

OVARIAN GRAFTING.

A COMMUNICATION by Prof. Th. Tuffier to the French Academy of Medicine on this subject, which was annotated in these columns last week, provides material for further thought. It is now generally conceded that the degree of menopausal reaction—that is to say, the severity of the symptoms accompanying the cessation of the periods—depends mainly upon individual factors, and in all cases of removal of the ovaries some portion of ovarian tissue should be conserved to ward off as far as possible the unpleasant symptoms which may attend the artificial menopause produced by complete removal of both ovaries. It is probably not true that in all such cases the artificial menopause is likely to be associated with more severe symptoms than those occurring naturally, nor does their severity appear to depend upon the age of the individual at the time the ovaries are removed. It was at one time imagined that the unpleasant results were due to some effect upon the nervous system, but that they are really due to the withdrawal of the ovarian secretion or hormone is now fully recognised. In order to prevent or to ameliorate the symptoms attending the complete removal of both ovaries, attempts have been made to transplant a portion of the ovary of the individual to some other part of the body—autotransplantation; or if a portion of the patient's own ovary is not available, a part of the ovary of another person is used—homotransplantation; and where this is impossible ovarian tissue has been transplanted from an animal of another species—heterotransplantation.

The results so far obtained have been very disappointing in most cases; the grafts either fail to take and quickly die, or if they survive for the time being they do not delay the onset of the menopause nor do they alleviate the symptoms. In a few cases, however, success seems to have been attained. Thus, in a case recorded by R. T. Morris,[1] in a young woman of 21 years of age both ovaries were completely removed by the angiotribe and two grafts from the ovaries of another woman were implantated in the posterior layer of either broad ligament; four months after the operation the patient menstruated again, and four years later she was delivered of a healthy child. In the discussion upon the case which took place, the interesting question was raised as to who was really the mother of the child. Tuffier, who has written largely on this subject, found a homograft to be of no effect, and further found that if an autograft—that is to say, a portion of the patient's own ovary—did not take, it usually disappeared in from six months to two years. In any case, his observations confirm those of other observers—namely, that after a period of some one to two years the transplantated portion of ovarian tissue appears to undergo a precocious senescence. The fact that homografts and heterografts are usually failures would seem to lead to the conclusion that there is some unknown antagonism between the tissues even of the same species as well as between the tissues of different species, and until this is in some way overcome success is very improbable. As a rule, the graft is implanted into the subcutaneous tissues, the subperitoneal tissue, or, as in some of Tuffier's cases, into the mammary gland. It would seem rather a dangerous practice to implant a portion of foreign tissue such as an ovarian graft into so active a gland as the mamma—a gland which is so peculiarly liable to the development of chronic inflammatory changes and malignant disease, and it will be interesting to see whether this site for a graft stands the test of time. Tuffier has obtained very striking results, and there can be no doubt that in all cases where it is found necessary to remove totally the ovaries in a young woman an attempt should be made to practise transplantation preferably with an autograft.

BACTERIOLOGY OF A SMALL FRENCH EPIDEMIC OF INFLUENZA.

A RECRUDESCENCE of epidemic influenza occurred in the Department of the Nord during the late spring of the present year and the *Revue d'Hygiène et de Police Sanitaire* for September contains an article by Breton and Grysez, from the Pasteur Institute of Lille, dealing with small epidemic foci in schools and barracks. In the case of the latter, it was the younger persons who were especially attacked, 80 per cent. of the cases coming from the 1921 class. The incidence rate was low, being only 1·85 per cent. in a total strength of 12,798 men. The clinical course of the disease was typical, the duration being on an average 5–8 days, and the chief complication bronchopneumonia; the temperature chart frequently showed a fall, after the first febrile period, succeeded by a second rise which was not attributable to any complication. The disease was benign in type, only one death being observed, due to a double bronchopneumonia. The writers contend that influenza is a clinical rather than a bacteriological entity, and that a variety of organisms may, at different times, be responsible for this syndrome. They base their opinion upon the different results which have been reported as to the presence or absence of Pfeiffer's bacillus in different epidemics. In the present series of cases they failed to find this bacillus either in films of sputum or in cultures. The predominating organism was a diplococcus or short streptococcus, the characters of which were considered by the authors to bring it within the enterococcus group. Blood cultures were negative. From complement-fixation experiments and the result of precipitation tests, which were positive, the authors finally concluded that this organism was of ætiological significance. [In criticism of this view it may be remarked that while the possibility of more than one infection producing

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[1] Medical Record, New York, May 5th, 1906.

Nightshade.

THE series of cases of belladonna poisoning, notes of which have been appearing in our correspondence columns, brings before us two striking points in the toxic action of this drug. First, the capricious way in which it selects its victim; and, secondly, the way it spares its victim when it has brought him to death's door. Many of us have had experience at any rate of minor cases of poisoning such as that of a patient who, after the application of a belladonna plaster or of the liniment, has a widespread erythematous rash, or loses the power of accommodation so completely that he or she—it is generally, of course, a female patient—avers blindness. Dr. D. FIRTH and Dr. J. R. BENTLEY, in the case related in THE LANCET of Oct. 29th (p. 901), gave a more unusual method of absorption, a method which may well have been the cause of some of the unclassified cases of rabbit poisoning in the past. Atropine is rapidly absorbed and rapidly secreted, mainly by the urine, so that in this case the rabbit had probably taken the herb recently. On the other hand, patients, delirious from atropine, and even those who have reached the stage of the somnolence which follows delirium, frequently recover. The poison works itself off in sleep, and the patient who has seemed in danger wakes as from a dream. While the opium case frequently does badly, the patient who seems to have a corresponding depth of poisoning from belladonna does better than the medical attendant might expect. Of course, there are a certain number of deaths. In the Registrar-General's causes of death in England and Wales for the nine years 1911-19 102 deaths are recorded (accidental and suicidal) in which belladonna and hyoscyamus apparently played some part. Of recent years pharmacology has cleared up the active principles of the belladonna series, so that now we have little to consider but the isomers atropine and hyoscyamine, and the closely allied hyoscine or scopolamine. The two first stimulate the brain centres and paralyse nerve terminals, the last depresses both centres and terminals. The various species of datura are now recognised to owe their active properties to these alkaloids. Poisoning by any species of datura must be very rare in Britain, but ISHMAEL states, in the *Practitioner* of July, 1915, that in Cairo datura poisoning is so common that it occurs in frequency next only to acute alcoholism, and the symptoms are those of belladonna poisoning as regards the dilated pupil, the joking delirium, and the rapid recovery. He further writes, "I have not seen a fatal case, though many on admission were and remained for some hours on the verge of death."

BRITISH ORTHOPÆDIC ASSOCIATION.—The annual meeting will be held on Dec. 2nd and 3rd, at Liverpool, under the presidency of Sir Robert Jones. On Dec. 2nd, the morning session will be held at the Liverpool Medical Institution, where, at 10.30 A.M., a discussion on "The Late Results of the Treatment of Congenital Dislocation of the Hip" will be opened by Mr. H. A. T. Fairbank, followed by Mr. E. Laming Evans. Mr. C. Thurstan Holland will give a demonstration of radiograms of bone and joint affections. The afternoon session will be held at the Royal Southern Hospital, where Mr. T. R. W. Armour will give a demonstration of operations and cases at 2 P.M. On Dec. 3rd, at 9.30 A.M., a short paper on a series of endosteal tumours will be read by Mr. Harry Platt. A demonstration of endosteal tumours and bone cysts will be given by Mr. R. C. Elmslie, and a paper on Function in Relation to Repair in Bone will be read by Mr. D. McCrae Aitken. In the afternoon visits will be paid to Heswall and Leasowe Hospitals.

Annotations.

"*Ne quid nimis.*"

SURGICAL DRAINAGE.

THOSE who have followed surgical practice during the last 20 years have observed varying fashions in the methods of drainage, and even now there is no fixed rule of teaching. In our issue of Oct. 29th Mr. F. D. Saner judiciously discussed the first principles involved in the treatment of acute suppuration and recalled the fact that drainage benefits largely by relieving tension. On the general question of drainage Mr. Saner suggested that the prominence given to several very attractive but accessory lines of treatment such as antiseptics, tissue solvents, serums, artificial hyperæmia, has tended to divert us from consideration of the main principles. All surgeons of wide clinical experience will agree that rest and relief of tension are the most important points to attend to in a case of spreading inflammation. In dealing with large serous cavities, such as the peritoneum and pleura, other factors intervene. The main principles must be fulfilled, yet opinions as to the technique of abdominal drainage still differ greatly. It is not so long since any patient suffering from spreading peritonitis would leave the theatre with many rubber tubes projecting from the abdomen, like quills upon the fretful porpentine. This was the time when futile attempts were made to flush the peritoneal cavity free from infection by copious streams of saline solution.

Such methods, since they involved the neglect of the natural reparative processes of the peritoneum, were scientifically unsound and practically unsatisfactory. Later there arose the school which taught that the peritoneum could take care of itself in the presence of infection, so long as the main part of the gross exudate was removed by operation; this assertion was backed by experimental proof, which showed that drainage-tubes inserted into the abdominal cavity did not drain the main cavity for more than 12 to 24 hours owing to the formation of adhesions. Clinically it was found that the peritoneum could cause absorption of large masses of blood-clot in cases of ruptured tubal gestation. L. S. Dudgeon and P. W. Sargent showed that such clot was frequently infected by staphylococci. Further it was shown that even gross contamination of the peritoneal cavity, as evidenced by turbid fluid or lymph or even pus, could sometimes be successfully absorbed without drainage. But the question of closing the abdomen in the presence of infection is still *sub judice*. Mr. Saner voices a common view when he regards it as largely a matter of judgment whether the abdomen should be closed and the patient asked to deal with the remainder of the inflammatory process. If tubes are inserted, he says, it must be on the understanding that their purpose is not drainage, but an attempt to create a temporary track or line of least resistance. Possibly it is too great an assumption that the insertion of a tube merely relieves tension. There are cases of peritonitis in which much fluid is secreted and few adhesions form. Following perforation of a gastric ulcer there is often such free drainage from a pelvic tube for several days that no one can believe the fluid to come merely from the track of the tube. Experiments upon the formation of adhesions made upon normal dogs need to be checked from the experience of disease and surgery upon human beings. Peritoneal exudates vary greatly in their lymph-forming powers; ascitic fluid and some forms of inflammatory exudate do not tend to form limiting adhesions so quickly, and will continue to drain through a tube for a longer period than the prescribed 48 hours.

In judging how and when to drain the abdomen one must therefore consider the intensity of the infection, and the fibrin-forming or clotting power of indicated is of high value, and illustrates how, under enlightened management, insurance against disease may be made the means of curtailing the duration of illness and in many instances of preventing its occurrence. That this work is nationally important is self-evident: and we hope that the example thus shown will be widely followed.

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[1] Medical Record, New York, May 5th, 1906.

The second part of the book is an excellent historical account of the fight to abolish lead poisoning among painters. France has led the way, for there the campaign started at the end of the eighteenth century, was active throughout the nineteenth, and became acute at the commencement of the present century. It finally culminated in France in 1909 in a law prohibiting the use of white lead, linseed oil containing lead, or of any material containing white lead for painting the inside or outside of buildings. A period of five years was given before the law should become operative, and the war intervened. The law was not enforced, and even now that the war has been over nearly three years, the difficulties of enforcing it have not been overcome. The difficulties arise from the fact that the manufacture of paint containing lead compounds is not abolished; such paints can still be used in the coachbuilding trade; meanwhile, inspectors cannot adequately control the use of such paints in private houses and other places. Clearly, if France intends to abolish the use of lead in paints employed on buildings, the law will have to be materially strengthened. No other country has yet proceeded so far. Regulations more or less stringent have been tried in Austria and in Germany, but they have failed to abolish the evil. The movement in Belgium, where regulations have also been tried, is discussed by Mr. Cantineau at some length, and the successful result of abolishing the use of lead paints on the State railways is quoted. The case with regard to Great Britain, where up to the present no action has been taken, is presented by relating the findings of the committees appointed to consider the matter; indeed, throughout this book the evidence presented to, and the conclusions arrived at, by these important committees are frequently quoted at length.

The remedy recommended is considered in the last part of the book. Here the conclusions of the author, who is an engineer, are of particular value. He maintains that substitutes such as zinc white and lithopone have been proved the equal, if not superiors, of white lead; and that supposed difficulties in their use are entirely imaginary. He shows, by quoting market prices, that both these materials to-day cost less than white lead. The sources of supply are looked into and declared to be adequate, so that increased demand should not inflate prices, but rather by calling more manufacturers into the field, tend to lower them. "If to-day white lead were suppressed," he asserts that "our houses would be painted as well as they are now and that we should not suffer in any way; and that very probably, after a period of 20 years, we should almost have forgotten the very existence of white lead."

PEDUNCULATED PERITONEAL TUBERCULOSIS.

THERE is a rare type of peritoneal tuberculosis, pathologically identical with that commonly found in cattle and known as Perlsucht, which is characterised by the formation of caseous or calcareous masses, surrounded by a fibrous capsule. In cattle these masses occasionally reach a considerable size and may become pedunculated by dragging on the underlying connective tissue. In a recent paper Dr. Henry M. Ray[1] reports a case of this condition in man in the belief that only two such cases have previously been recorded in medical literature, the first by Bizzozero in 1867, and the second by McCallum in 1901. Dr. Ray's case is that of a Polish labourer of 25, admitted to hospital with a five years' history of constipation, anorexia, and severe intermittent colicky pains, his later symptoms being a hacking cough, pain in the chest and abdomen, general weakness, and loss of weight. On admission the patient was acutely ill, the abdomen tender and rigid, and the ankles œdematous, auscultation showing numerous moist râles all over the chest. Thirty-six hours after admission he died, the post-mortem disclosing a mass consisting of a diffusely thickened and fused peritoneum and omentum, closely adherent to the recti muscles and fusing with the capsules of liver and spleen. The intestines were found to be thickly covered with subserous pedunculated firm nodules, varying in size from a pea to a large hazel-nut, with pedicles averaging 3 or 4 mm. reflected on to the nodules and merging into the serous coat of the intestine. The cortex of the kidneys contained multiple tubercles of the size of a pin's head, the cut surfaces of spleen and lungs being peppered with small nodules. Microscopical sections of nodules from the intestines showed typical tuberculous granulation tissue, with a distinct demarcation between the tuberculous process in the nodule and the underlying structure of the intestine. The parietal peritoneum also showed tuberculous granulation tissue with large areas of caseation, while perfectly typical tubercles with areas of caseous necrosis were found in lungs, liver, spleen, and kidneys. Although virulence tests were not carried out with emulsions prepared from the nodules owing to the fact that the tuberculous nature of the lesions was not suspected until the hardened specimens were subjected to routine histological examination, Dr. Ray suggests that the type of lesion found in his case and in the two described by Bizzozero and McCallum can best be explained on the basis of a specific reaction of the host to an infection with a tubercle bacillus, probably of bovine type, of a low degree of virulence. If this view of the pathology of the condition be correct, the nodules may perhaps be looked upon as representing the intestinal equivalent of the multiple benign so-called "sarcoid growths" of the skin, or nodular cutaneous tuberculomata, described by Darier and others.

ON THE MEASUREMENT OF RESULTS.

THE prudent rate-payer likes to see the goods delivered. For this and other reasons the fall in the general death-rate has been claimed by many different workers in the field of public health as evidence of their particular activity, and a salutary warning in this respect was given by Sir Arthur Newsholme in one of his American addresses.[1] He was himself once taken to task by Prof. Karl Pearson for associating as cause and effect the fall in the phthisis death-rate and the decrease in pauperism; Prof. Pearson alleged a similar correlation between cancer death-rate and expenditure per head on apples. Sir Arthur Newsholme rightly deprecated the quantitative assignment of credit for a given effort in public health work, when the circumstances leading to the desired result were multiform and complex. A recent issue of the monthly bulletins published by the Metropolitan Life Insurance Company of New York supplies an illustration of the need for such precaution. This company has, with perhaps one or two exceptions, a larger number of insured persons on its lists belonging to the wage-earning classes than any other society. Its work is carried out in a manner which is worthy of great praise. Not only is its experience carefully collated and the results from month to month and year to year made the subject of careful study by its extremely competent statistician, Dr. Louis Dublin, but the occasion is taken in each monthly bulletin issued to members and to the general public to give scientific information and instruction of high value on health matters. Not only this, but the company have issued leaflets and pamphlets on various health problems, prepared by experts on their respective subjects, and they have furthermore established an elaborate and almost nation-wide service of nurses, who are prepared, without cost to insured persons, to undertake nursing when acute illness occurs in the insured, and who also perform many of the functions of English health visitors in this country. The work thus briefly them to civil employment, where they would be self-supporting and not an additional burden on the public purse. We agree with Dr. Dickie in his regret that oto-laryngology was not officially recognised in the British army as a specialty during the war. It was not until the later stages of the war that special centres for ear cases were created and put in charge of recognised otologists, and then only after great insistence by the various consultants to the armies, equipment and organisation remaining highly inadequate. Neurological and eye cases could be referred to special hospitals at the base or in England, where expert service was available. Serious ear cases, on the other hand, were often sent to some small country hospital where they received no treatment by specialists. This should not happen again, and in order to secure an efficient organisation for the future a scheme should be worked out now, so that in war any patient requiring special treatment should be able to obtain it.

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[1] American Journal of the Medical Sciences, August, 1921.

[1] THE LANCET, Oct. 15th, p. 833.

But, now that the war is over, the problem of chronic aural suppuration among the civil population is insistent. It is generally agreed that the large majority of cases of suppurative otitis recover completely if treated from the onset; the great cause of chronic otorrhœa, therefore, is neglect of the early acute stage, and the chief hope of improvement lies in the education of all concerned—parents, school-teachers, and medical practitioners.

EXPERIMENTS ON DOGS IN THE U.S.A.

A PAMPHLET printed in the Government Printing Office at Washington for the use of the Committee of the Judiciary contains a report of a section of the evidence before a subcommittee of that body given by Dr. W. R. Hadwen on the subject of experiments on animals. The subcommittee has been inquiring with regard to a Bill before the Senate, known shortly as S. 758, to prohibit experiments upon living dogs in the district of Columbia or in any of the territorial or insular possessions of the United States, and providing a penalty for violation thereof. The subcommittee consisted of two members only, Senator S. M. Shortridge, chairman, and Senator H. F. Ashurst, Senator Myers, the introducer of the Bill, being present at the inquiry, which appears to have been open to the public. Since apart from Dr. Hadwen's testimony the pamphlet contains only a number of letters from American medical men, deans of medical schools and the like, it is not evident whether any members of the medical profession from Great Britain are likely to lay views divergent from his before the subcommittee, but it should be said at once that Dr. Hadwen made no claim to represent his profession, or to give the views of British physicians or surgeons on the value of experiments on dogs or other animals. He described himself as president of the "British Union for the Abolition of Vivisection, which he believed to be the largest society of the kind in the world," and he frankly admitted that he had "eaten neither fish, flesh, fowl, nor good red herring for 40 years past," when questioned on his views as to the justifiability of killing animals for food.

Those familiar with Dr. Hadwen's expressed opinions will find nothing very novel in his version of them laid before the subcommittee. There is a familiar ring about a statement that "there is no Act of Parliament that a person cannot drive a team of horses through," or "I have no faith in and no sympathy with a government inspector whose whole vested interest lies in the practice of vivisection." This related, of course, to restrictions imposed in England. In criticising experiments attributed to American physiologists he travelled outside his country, and the subcommittee asked some pertinent questions as to the application of experiments upon animals to conditions peculiar to the United States. They were particularly inquisitive with regard to Dr. Hadwen's opinions on the desirability of experimenting on animals for the relief of the sufferings of animals. As to this Dr. Hadwen submitted that it should be sufficient to experiment on an animal when suffering in the ordinary course of things, not to seek a cure by infecting a healthy animal. His questioners referred especially to the bites of rattlesnakes and skunks, and as to the former, Senator Ashurst closed the discussion by saying, "Doctor, you live in England where there are no rattlesnakes, except in museums. I am not surprised at your answer; and I am not surprised that your friends applauded, because you know nothing about rattlesnakes." The incisiveness of some of Senator Ashurst's observations and the pertinent nature of his interrogations of the witness were evidently the result of professional experience. He observed with regard to the value of experiments on animals: "I am not a physician; I am a jack-leg lawyer, who knows when you are experimenting you would better experiment upon the pine than upon your mahogany. In this case I liken the pine to the dog and the mahogany to the human being." On the whole it appears unlikely that Dr. Hadwen has converted the American legislature to his views.

RETIREMENT OF SIR PHILIP MAGNUS, M.P.

WE understand that Sir Philip Magnus has decided not to offer himself for re-election as Parliamentary representative of the University of London. His letter of intended resignation has been received by the Unionist Association, but the opportunity thus given for the prompt selection of a candidate of this party should be equally convenient to those of other political thinking. Sir Philip Magnus has represented the University of London for upwards of 16 years, and has never forgotten that he was sitting for a constituency which has the largest percentage of medical voters in the Kingdom. He has been, throughout his period of service in the legislature, a consistent friend of what he believed to be the best interests of medicine, and his farewell letter to his political organisation includes a suggestion that is of universal application. He states that in the selection of a candidate to represent the University of London in Parliament regard should be had not only to his party views, "but also to his wide educational experience and to his detailed acquaintance with the requirements of members of the medical and teaching professions." All our readers know that to-day the interests of the medical profession require insistent attention in the House of Commons, and, having regard to the strength of the medical vote, it seems reasonable to suppose that Sir Philip Magnus, who has acted for so many years as a medical man for legislative purposes, will be succeeded by a Member of Parliament who is a qualified practitioner.

PERMEABILITY IN PHYSIOLOGY AND PATHOLOGY.

SOME five months ago an appreciative audience assembled under the auspices of the University of London to welcome Prof. H. J. Hamburger at the Royal Society of Medicine, and to hear him lecture on this subject. The address was of great intrinsic interest and was delivered in fluent and scholarly English; for Prof. Hamburger, like so many of his countrymen, speaks our tongue well, and his impromptu remarks were as apt as the more formal parts of his address. Further interest attached to the fact that Prof. Hamburger has himself taken such a large share in forming our modern theories on this subject of permeability. For a large part of his active life has been devoted to the study of this and allied subjects; his work began at a time when many of his hearers' parents were as yet unacquainted with one another, and when many of the remainder were yet at school; it is still in progress. We publish in this issue an almost verbatim copy of the address, which will be of especial interest to those who for various reasons were not able to hear his lecture.

The subject of permeability is of the greatest significance from both the theoretical and practical the clinical picture of influenza has every right to serious consideration at the present stage of our knowledge of the disease, it should constantly be borne in mind that the conditions essential for the isolation of Pfeiffer's bacillus are very precise, and that even in the 1918–19 epidemic some observers failed to find this organism, although its prevalence was a well-established fact. The organism found by the authors of the present paper would appear to be one of the streptococci so commonly noted in the pulmonary complications of influenza. Its characters do not completely correspond to those of the enterococcus of the fæces, although the possibility that this organism may become somewhat modified by a period of parasitism may well be granted.

DIPLOMAS IN OPHTHALMOLOGY.

ATTENTION is called in our news columns to the additional qualification in ophthalmology open to those who have obtained the F.R.C.S. Eng. Apart from this new distinction, there are already two diplomas in ophthalmology obtainable in England by examination. The first was instituted by the University of Oxford in 1910, the second by the Royal Colleges of Physicians and Surgeons in 1920, in response, as we are reminded in the current number of the *British Journal of Ophthalmology*, to a representation from the Ministry of Health, which desired to be able to select suitable medical practitioners to carry out ophthalmic work. For both diplomas candidates must be registered medical practitioners who have put in a year's attendance at a recognised ophthalmic clinic. For the Oxford diploma a term's attendance at a course of instruction at Oxford is essential. The London examination is divided into two parts, each being held twice a year, the first dealing with anatomy, embryology, physiology, and elementary optics, the second with ophthalmic medicine, surgery, and pathology. That the institution of this diploma meets a want is shown by the fact that for Part I. of the examination there were in July, 1920, 25 candidates, in January, 1921, 34, and in July, 1921, 31. For Part II. the corresponding figures were 11, 9, and 25. Of the 90 candidates who, so far, have presented themselves for Part I. 27 were referred; of the 45 who presented themselves for Part II. 6 were referred. As the *Journal* remarks, an indirect benefit to ophthalmology arising out of the establishment of the diploma has been the stimulus it has given to the study of the preliminary scientific subjects upon which the practice of ophthalmology ought always to be based. Special courses on these subjects are now being held at the Royal London Ophthalmic Hospital (Moorfields), at the Royal Westminster, and at the Central London Ophthalmic Hospitals.

FACTORS AFFECTING THE CONDITION OF THE TEETH IN CHILDREN.

THE Galton Laboratory for National Eugenics has issued a memoir (No. 7) by Mr. E. C. Rhodes on the Relationship of Condition of the Teeth in Children to Factors of Health and Home Environment. The memoir owes its inception to a report of a county school medical officer for 1912, and is an exhaustive statistical analysis of the dental records made in school medical inspections by the school medical officers of the county in question. The association of a number of factors with dental caries was examined and the personal equation of the medical officers who furnished the data received careful consideration. The author concludes that the data available as the result of inspections by school medical officers are inadequate for any useful statistical purposes, mainly on account of the lack of proper standardisation without which reliable comparisons cannot be made. It is, of course, realised that these data were not originally collected with a view to statistical treatment; if satisfactory statistical results are to be obtained standardised data collected under proper control would be necessary.

From the data actually examined, which form the subject of the memoir, it would appear that the degrees of association between the state of caries in the teeth of children of ages 12 to 14 years and their general health and home environment, are very slight, being roughly about 0·1 in the scale of the correlation coefficient where the range is from 0 to 1, zero being equivalent to absolute independence and 1 being equivalent to perfect association, between the two characters. This is an extremely small degree of correlation when compared with other relationships such as exist in the case of many physical characters between parent and child for which the numerical value is commonly 0·5. It would be of interest to ascertain whether any association exists between the state of the parents' teeth and those of the children, and if such an examination gave a result of the same order as those obtained for other physical characters—i.e., about 0·5—it would be a strong indication that the average bad teeth in a child are due more to bad teeth in the stock than to ill attention during growth. In connexion with this problem a certain amount of material has already been collected and it is hoped to pursue this part of the inquiry when further reliable data have been obtained. It is probable that much valuable information could be derived from the statistical examination of standardised data collected under proper control, and this aspect of the subject is one which will doubtless receive attention from the recently appointed Committee for Investigating the Causes of Dental Decay.

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CHRONIC AURAL SUPPURATION.

IT is becoming increasingly recognised that the great prevalence of chronic middle-ear suppuration is accountable for an enormous amount of inefficiency among the population. This was, of course, particularly noticeable during the war, and Dr. J. K. Milne Dickie has some interesting observations to make on the subject in an article which appears in the current number of the *Journal of Laryngology and Otology*, entitled "Experiences of An Otologist in France, 1915–1919." He says that the wastage from this cause was enormous; numbers of soldiers running into thousands were constantly going from hospital to convalescent camp and back to hospital again, it might be for months at a time, receiving little or no treatment, and performing no useful work. He considers that it would have been much wiser to have discharged many of these men and to have put them to munition making, or even to have returned

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[1] American Journal of Diseases of Children, October, 1921.

NOTIFICATION OF TUBERCULOSIS, COMPARED WITH THE REPORTED DEATHS FROM THIS DISEASE.

By G. Lissant Cox, M.D. Camb.,
CENTRAL TUBERCULOSIS OFFICER, COUNTY OF LANCASTER.

At the present time considerable attention is being drawn to the unknown infective cases of tuberculosis which exist in all areas. It is generally agreed that the "known" consumptive is a much less dangerous person than the unknown, and also that, during the later stages of tuberculosis of the lungs, the largest number of the infective agent—the tubercle bacilli—is set free, so that each advanced case is more dangerous as a source of infection than an early one. If, therefore, as is the case at present, persons suffering from pulmonary tuberculosis are never notified, and die from the disease; and if, as is also often the case, notification is only made in the last stages of the disease, the attempts to combat the disease can only be partial and incomplete.

In the administrative county of Lancaster during the five years 1916–20 a very careful scrutiny has been made of all deaths from tuberculosis not notified under the Tuberculosis Regulations, and further, during a part of 1920 and 1921, a special inquiry was made into the reasons for non-notification in 163 consecutive cases. A summary of the results of this inquiry is given later in this article.

The total number of deaths from tuberculosis in the year ended Dec. 31st, 1920, and during the four preceding years, of persons *not notified* is given in Table I.

Table I.—*Deaths from Tuberculosis of Cases not Notified.*

	Pulmonary.	Non-pulmonary.	Total.
1920	177	122	299
1919	221	104	325
1918	303	137	440
1917	256	141	397
1916	270	147	417

The particulars of each death from tuberculosis have been carefully scrutinised in the public health department, so that, as far as possible, all deaths that do not properly belong to the administrative county have been excluded from these figures. Further, by arrangement, local registrars of deaths forward details of all deaths from tuberculosis, and these have been compared with the case notifications, enabling the particulars following to be obtained.

Three objects are served by a notification of a case of tuberculosis. First, the local public health authority is made aware of what may be, or will be, a case of infectious disease, and through the information received, will be in a position to deal with the same. Second, the person comes under the county special organisation dealing with the disease, and can then receive the advice and assistance of the tuberculosis officer, and such treatment as may be recommended will be given under the county scheme. Third, the examination of "contacts" is made possible, whereby early or other cases are discovered and may receive appropriate treatment. The 1920 figures are analysed in Table II.

As the total deaths in the administrative county in 1920 from pulmonary tuberculosis numbered 1323, the 177 *non-notified* fatal cases amounted to 13 per cent., as compared with 16 per cent. last year, 18 per cent. in 1918, and 16 per cent. in each of the years 1917 and 1916. It is satisfactory to note a decline in 1920 in the number of these non-notified fatal cases in the aggregate and in the percentage to the total pulmonary deaths.

There were also 375 deaths recorded in 1920 of persons notified as suffering from pulmonary tuberculosis which took place within three months of the date of notification.

Table II.—*Deaths from Tuberculosis in 1920 of Cases not Previously Notified.*

—	Cause of death.			Total.
	Pulmonary.		Non-pulmonary.	
	Primary.	Secondary.		
Deaths of persons with private addresses	130	13	108	251
Deaths of persons belonging to county area—				
In county asylums	15	—	2	17
In workhouses	11	—	4	15
In other public institutions..	7	1	8	16
—	163	14	122	299
	177			

Special Inquiry into 105 Deaths from Tuberculosis of Cases not Previously Notified.

As under the Public Health (Tuberculosis) Regulations, 1912, a medical practitioner is required to notify every case of tuberculosis to the local medical officer of health within 48 hours of diagnosis, it is important to ascertain the circumstances under which notification comes to be omitted. A period was taken extending from Oct. 11th, 1920, to June 30th, 1921, and during this time 163 of such deaths were recorded—80 pulmonary and 83 non-pulmonary. Of this number 58 occurred in public institutions, leaving for inquiry 105 deaths—45 pulmonary and 60 non-pulmonary. The result of the inquiries into the reasons for the non-notification of these 105 cases is shown in the following table:—

Table III.—*Circumstances of Non-Notification of Fatal Cases.*

—	Cause of death.		Total deaths.
	Pulmonary.	Non-pulmonary.	
Doctor in attendance shortly before death—			
1 week or less	3	8	24
1 to 2 weeks	2	8	
2 to 3 weeks	—	3	
Misinterpretation of Tuberculosis Regulations and notification believed unnecessary—			
Cases previously notified in another area..	5	1	16
Disease of long duration prior to compulsory notification..	1	—	
Temporary resident	—	1	
Cases known to tuberculosis officers*	7	1	
Attended by more than one doctor and notification believed to have been made by first practitioner..	9	8	17
Complicated cases presenting difficulty in diagnosis	6	19	25
Accidental omission to notify ..	5	7	12
No apparent reason for non-notification	4	4	8
Information not ascertained† ..	3	—	3
—	45	60	105

* Considerable doubt as to diagnosis in some of these cases.
† No reply received to inquiries.

Summary and Conclusions.

1. Amongst an estimated population of 1,730,929 in the administrative county of Lancaster, the number of deaths from tuberculosis in 1920 was 1710—pulmonary 1323, non-pulmonary 396.

2. The notifications of pulmonary tuberculosis numbered 2084, and non-pulmonary tuberculosis 968. About 70 per cent. of all new cases in 1920 were examined by the county tuberculosis officers *prior to notification*, these patients being sent for an opinion as to diagnosis and treatment.

3. The deaths from pulmonary tuberculosis not notified were, in 1920, 177, and non-pulmonary 122.

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[1] American Journal of Diseases of Children, October, 1921.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Reappearance of Influenza.

ACCORDING to the October reports of the Board of Health a new wave of influenza threatens the city. Hitherto cases have been few and the course of the disease is mild, with a prevalence of intestinal symptoms, but with the recent sudden change of weather catarrhal manifestations appeared; cerebral cases have also been reported and practitioners have been warned. This time the younger part of the population is more affected, perhaps because older people have been immunised by almost universal epidemics during recent years.

The Rat Plague.

For some months the difficulties of everyday life in Vienna have been complicated by the appearance of swarms of rats and mice, apparently imported in consignments of wheat and grain from abroad. The considerable trade carried on with the Balkan States, and Eastern Europe generally, gives rise to danger of diseases communicable by these animals, and stringent precautions have been taken to avert disaster. Sanitary authorities have been instructed to pay special attention to the conditions of drains and sewers. It may be mentioned that the spread of influenza has also been attributed by some investigators to the spread of mice and rats.

The Problem of Doctors' Fees.

Owing to constant depreciation of the currency the medical profession is faced by a serious and hitherto unsolved problem. In a very instructive leaflet, published by the Medical Organisation, it is pointed out that the daily wages of carpenters, bricklayers, engineers, and shoemakers have increased from 100 to 120 times as compared with 1913, whilst their daily working hours have been cut down to eight. A number of other workers earn between 70 and 90 times their pre-war wages, whilst the prices of food and other necessaries have risen 120 to 200 times. These people can therefore obtain from 50 to 90 per cent. of the commodities they were accustomed to buy before the war. Doctors' fees, however, have not increased *pari passu*, and only quite lately have the public been asked to pay as much as 50 times the pre-war fee for medical attention. The Medical Organisation has now demanded a hundredfold increase of the original fees, and also stipulates that foreign patients shall be charged fees in their native currency. An English, Swiss, or Dutch patient charged 1000 kronen for each visit from a doctor would still only pay a fraction of the fees to which he is accustomed at home—1000 kronen being at present worth about two-thirds of a Dutch florin, 1¼ Swiss francs, or about 1*s.* 3*d.* But medical fees are considerably higher in their own countries, and such patients are expected to pay accordingly. For the country practitioners in Austria conditions are quite different; their payments are mostly made in "kind." For a consultation at the doctor's office the charge is 5 kilos of grain, or a kilo of meat, or half a kilo of butter or lard, or the equivalent in money. This arrangement satisfies both parties, as the conditions of peasant life are not much altered, but it is, of course, inapplicable to the towns. Panel doctors, and those holding appointments under private corporations, have also demanded an adjustment of salaries to meet the new monetary conditions. The result of all such increases is, however, only transitory; a man now earning 100,000 kronen a month is fairly well paid, but that is really equivalent to no more than a monthly salary of six or seven pounds sterling.

Statistical Data of Vienna Medical Students.

During the last university term 3228 ordinary students (including 450 women) and 127 extraordinary students appeared on the register of the medical faculty, being 35 per cent. of the total number of students at the university. For the present semester the number of first-year students to be admitted is fixed at 400. Last term very many nationalities were represented; the youngest students registered were 17½ years of age, and the number of ordinary students above 30 was 17. Students usually obtain their diploma of M.D. at the age of 25 or 26; over 600 qualified during the past semester. Foreign students can obtain diplomas only if they bind themselves not to practise in this country, but otherwise they are eligible to all house appointments or vacancies as internes and second assistants. About 28 per cent. of students were regular users of the cheap meal kitchen, chiefly supported by grants from the Anglo-American Relief Mission and the Red Cross Society.

Synchronous Combined Treatment of Metrorrhagia by Radium and X Rays.

At a recent meeting of the Vienna Gynæcological Society, Prof. Weibel reported the results of treatment of hæmorrhagic conditions of the uterus, including myomatous hæmorrhage, by a single (castrating) X ray dose, combined with radium application. The patient's abdomen is exposed for three to four hours to X rays, with a 3 mm. platinum or aluminium filter; meanwhile a quantity of 40–50 mg. radium is inserted into the posterior fornix vaginæ and left therein—well filtered—for 36 to 40 hours. Of the 160 cases so treated, amenorrhœa was at once induced in 33, 35 had only one more hæmorrhage, 47 ceased to menstruate after two months, and 8 after three or four months; the remainder had oligomenorrhœa, and 6 were altogether refractory. In younger patients oligomenorrhœa is produced by a dose which in older women is followed by amenorrhœa. As the latter often has disagreeable sequelæ (e.g., castration) it is advisable to aim at reducing the bleeding rather than causing it to disappear. A radium injury was only once noted—an extensive necrosis in the posterior fornix in a case of a patient with pernicious anæmia. In a series of 1510 women exposed for the same purpose to X rays during the years 1911–19, only 17 again became pregnant, with 24 fœtuses. Thirteen full-term children were born, and in nine cases abortion took place; the living children seemed to suffer no ill-effects from X ray treatment of the mother.

Nov. 3rd.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A SPECIAL meeting of the President and General Council of King Edward's Hospital Fund for London was held at St. James's Palace on Nov. 9th, when the EARL OF DONOUGHMORE, member of the President's Power Committee, presided. He read a letter from the Prince of Wales, in which his Royal Highness pointed out that under the Hospitals Commission the King's Fund had been constituted the central authority for London, and that this would involve certain duties which could only be properly carried out by reconstructing the committees of the Fund.

Lord STUART OF WORTLEY, the Chairman of the King's Fund Policy Committee, in presenting a report of that committee on the question of the reorganisation of the King's Fund, said that the proposals would involve no change in the Act of Incorporation. A resolution approving of the need for certain changes having been adopted, he presented a report of the Executive Committee on the conditions attached to Government grants to voluntary hospitals. This included the following resolutions:—

(1) That the President and General Council of King Edward's Hospital Fund for London have considered the conditions attached by the Treasury to the temporary assistance voted by Parliament to voluntary hospitals requiring that fresh money shall be raised pound for pound with the Government grants, and are of opinion that the application of this condition, which was not recommended in the report of Lord Cave's Committee, nor separately considered (much less expressly enjoined) by Parliament, will lead to great difficulties and probably to great

standpoints. Theoretically, because no problems of physiology, pharmacology, or pathology can afford to ignore it; practically because of its intimate contact with therapeutic problems. As examples of the former we may quote the theories of excitation and inhibition, conduction, fatigue, secretion and excretion, lymph formation and absorption, neutrality regulation, and many others; of the latter the fact that the problem of the treatment of spirochætal and trypanosome disorders is largely one of finding a means of successfully reaching the organisms by a curative agent after they have taken refuge inside the cells. Practical questions in connexion with sugar tolerance are also mentioned in the address. In the early days Prof. Hamburger did not find it at all easy to convince other investigators of the importance of permeability problems. It is different now. We want now to know more about them. The prominent place now given to the ionic interchange between corpuscles and plasma, known to many British physiologists as "the Hamburger interchange" or secondary buffering, in the regulation of the neutrality of the blood, is an example of the general acceptance of the far-reaching importance of cell permeability.

THE TOBACCO HABIT.

IN the evening lecture on Nov. 9th inaugurating the winter session of the Pharmaceutical Society of Great Britain, Prof. W. E. Dixon dealt with the subject of Drug Habits, beginning with the nearly universal habit of tobacco smoking. He gave a comparative analysis of the smoke from tobacco and opium burned under conditions similar to those which occur in smoking. The first column is the product of 100 g. of tobacco burned as cigarettes, the second of 100 g. of dross opium containing 7·35 per cent. of morphine.

Percentage product.	Cigarette smoke.	Opium pipe.
HCN	0·080	0·010
Pyridine	0·146	0·147
Nicotine	1·165	—
NH_3	0·360	0·395
CO	410 c.cm.	0
Morphine	—	0·016*

* Chandoo opium smoke contains 0·1 per cent.

Prof. Dixon continued :—

"Ordinary Virginian tobacco, from which cigarettes are made, contains, weight for weight, nearly twice as much nicotine as Manilla cigar tobacco. But when these two are burnt during smoking, the smoke from the cigar contains more than twice the amount of nicotine than that from the cigarette. During the slow combustion of a cigar, as in ordinary smoking, immediately behind the lit end is an area in which the water and other volatile substances in the tobacco condense; during the act of smoking a large portion of the nicotine at the seat of combustion is destroyed (50 per cent.), and the nicotine which finds its way into the mouth of the smoker is derived from the hot gases passing through this hot moist area in which the rest of the nicotine has condensed. The smaller the moist area behind the point of combustion the less likely is the smoke to contain volatile toxic bodies. A thin cigar or a cigarette will yield fewer of these products than a thick cigar, for the thin cigar or cigarette obviously permits a relatively greater cooling.

"The nicotine from the smoke of one cigar should correspond with the nicotine from that of 12 to 18 cigarettes. In practice it seems as if even less nicotine than this reached the circulation unless the cigarette is smoked to the very end. Experiments made (by Prof. Dixon) some years ago on boys showed that the Manilla cigar caused a considerable rise in blood pressure in five or six minutes, followed by collapse, representing respectively the stimulation and depression of nicotine on nerve-cells. No such effect could be obtained with cigarettes. The blood of cigarette inhalers, however, contains carbonic oxide, perhaps 5 per cent. for a man who smokes 20 cigarettes a day, and the vertigo, tremors, nausea, anæmia, and loss of memory for recent events are all symptoms which occur in chronic CO-poisoning. The cigar-smoker, on the contrary, absorbs a considerable amount of nicotine, and true nicotine poisoning may follow from excess.

"Some tolerance can be acquired to both nicotine and CO. Nicotine tolerance is brought about by destruction of the alkaloid in the body of the addict; since the alkaloid reaches the circulation slowly and in minute quantities the tissues are able to deal with it. CO-tolerance is known in animals, and is due to an increase in the number of red blood-cells and percentage of hæmoglobin."

Prof. Dixon attributed the pleasure of smoking partly to the stimulating and later narcotic properties of nicotine, though there are other factors like rhythm and sight to consider. Sir Arthur Pearson's experience regarding smoking by the blind (see p. 1088) has some bearing on this point. The influence of habit is rarely very strong, as most of the nicotine is destroyed during combustion. A smoker seldom forms a very strong craving and can usually stop or modify his addiction by the exercise of some little self-control; but were he to inject his nicotine the tale might be different.

POST-GRADUATE ACTIVITY IN LONDON.

THE Fellowship of Medicine and Post-Graduate Medical Association, with the coöperation of various special hospitals, is arranging to hold a series of special courses in general and special subjects during the forthcoming year, and the first of these, a six weeks' post-graduate course in General Medicine, will be held from Jan. 9th to Feb. 18th, 1922. The course will consist of a morning and an afternoon session, and the ground covered will include Pulmonary Affections, Heart Disease, Disease of the Nervous System, Fevers, Lunacy, &c., and the programme will be so arranged as to entail a minimum amount of travelling each day. The numbers attending the course will be limited, and early application for further particulars as to syllabus, fees, &c., should be made to the Secretary to the Fellowship, 1, Wimpole-street, W. 1.

OWING to pressure of space we have been compelled to hold over our Parliamentary Report till next week.

Dr. Gustave Monod will lecture on Syphilis of the Stomach at the Royal Society of Medicine on Wednesday, Nov. 23rd, at 5 P.M. Specimens will be shown, and it is hoped that the following, among others, will take part in the discussion: Dr. A. F. Hurst, Dr. J. W. McNee, Mr. Herbert Paterson, and Mr. A. J. Walton.

ACCORDING to statistical returns, which have been at the disposal of the Lettish Information Bureau (24, Gledhow-gardens, London, S.W.), there are 614 doctors in Latvia—that is, one doctor to every 2813 inhabitants. The following table will show how Latvia is situated in comparison with other countries.

Lithuania	180 doctors	i.e., one doctor to every	10,000 people.
Esthonia	382 "		3,077 "
Finland	1185 "		2,814 "
Sweden	—		3,656 "
Poland	—		5,750 "
England	—		1,000 "

LITERARY INTELLIGENCE.—Messrs. Baillière, Tindall and Cox announce the publication of the following books by Mr. G. Mayall, M.R.C.V.S.: Sheep and Goats; Cows, Cowhouses, and Milk (second edition); and Pigs, Pigstics, and Pork (second edition).

INFANT MORTALITY IN ABERDEEN.—At the distribution of attendance certificates in the Castlegate Mother and Child Welfare Centre on Oct. 31st, Dr. J. A. Stephen, the city M.O. for mother and child welfare, gave some important statistics regarding infantile mortality in Aberdeen. During the year 1920 there occurred in Aberdeen 170 stillbirths and many premature births, 133 children so born dying soon after birth; while of the 611 children who died before reaching the age of 1 year, about 120, or one-fifth, died during the first week of life. In addition, 38 mothers lost their lives within the first month after confinement. A large proportion of these deaths was preventable, and he appealed to the married women of Aberdeen to take the opportunity of learning what every woman ought to know. Dr. Matthew Hay said that in Aberdeen t were between 1200 and 1300 marriages every year, an women could easily attend the lectures. This y 200 women were attending the courses.

Correspondence.

"Audi alteram partem."

GENERALIA ON THE LOUSE PROBLEM ON THE WESTERN FRONT.

To the Editor of THE LANCET.

SIR,—I trust you will allow me, even at this late date, an opportunity of apologising to you and Dr. M. Coplans for an apparent lack of courtesy in not replying to Dr. Coplans's letter in your issue of April 30th. After my article of March 26th I watched for comment, but by mischance never saw the issue of April 30th and not till a short time ago was my attention called to it. I therefore take the earliest opportunity of sending this rejoinder.

I regret that the renewal of my acquaintance with Dr. Coplans begins in an atmosphere of misunderstanding—hardly controversy—as my former association with him in France was so pleasant, and I trust this letter will clear the air a little. Firstly, I fear I must hold to my own opinion as to the relative value of my manner of collecting data on lousiness compared with the official method cited by Dr. Coplans. I can conceive of no better way than mine—i.e., by doing the job personally and thoroughly from the front line backwards; living it, not reading it. Certain of my previous writings on the louse problem had such a curious war history that Dr. Coplans may be unaware of their existence, and perhaps I ought to have made it plainer that my "Generalia" should be read as complementary to them. Dr. Coplans will find that I dealt with many of his points in these writings, which concern the results of disinfestation work in England during June to September, 1917, after I had been recalled home for a commission from the Second Army, of which Dr. Coplans was D.A.D.M.S.(San.). The results of this work, carried on in collaboration with Captain J. T. Grant, R.A.M.C., and Mr. Bacot, which involved experiments with hot-air disinfestors—both of my own design and those of others—steam disinfestors, and the Clayton apparatus, were forwarded to the War Office in the form of reports. These, as well as those of others, with our consent were placed by the War Office in the hands of Prof. Nuttall, who was, and is, monographing the louse, in order to complete his presentation of "Combating Lousiness among Soldiers and Civilians,"[1] and also to secure their early publication and distribution. In this publication the reports are summarised or quoted and Prof. Nuttall makes all due acknowledgments. Here Dr. Coplans will find the detailed data on the relative capacities, &c., of various disinfestors upon which I base my individual judgment of their relative values. Here, also, are summarised the reports of Captain Gair, R.A.M.C., and Mr. Bacot, and that of Captain Grant, Mr. Bacot, and myself on the Clayton apparatus. He will also see that my work was essentially of a practical wholesale nature, carried on under service conditions, and this being so, I take strong exception to his inapposite remark "experimental work on disinfestation carried out under laboratory conditions may be highly successful given certain desiderata . . . ."

For reasons which I shall presently discover I confess to having deliberately ignored the Clayton apparatus in my article. It would have been better for me to have dismissed it with a few words. Dr. Coplans's opinion, "no type of disinfestor approaches the efficiency of the Clayton machine in dealing with verminous dwellings and their contents in situ," is like "the flowers that bloom in the spring" because I look at the question of the *disinfestation of lousy soldiers during a campaign*. If reference be made to "Combating lousiness, &c.," it will be noted that our experiments prove conclusively (to my mind) that in expense and general efficiency it is not to be placed, as a louse disinfestor under campaigning conditions, in the same category as the other types I mention in my article; I know that I am not alone in this opinion. I am open to correction, but I believe that the Clayton plants were bought before convincing tests showed their serious limitations in the field. Anyone who has personally wrestled wholeheartedly with the plant as an expert mechanic and I did on many a day, will understand why, far from having "no interest in the Clayton apparatus except its utility" (Dr. Coplans), I have, in fact, rather less. To prevent misunderstanding I express no opinion of the value of the plant as a house and ship disinfestor.

Concerning my report in the winter of 1916–17 on hot-air disinfestation, which Dr. Coplans quotes, it should be explained that my experiments never got beyond the preliminary; I was only beginning to discover the underlying principles. The work was then interrupted by my being detailed for experimental work at the new Laiterie disinfestor at Poperinghe. This was succeeded by six weeks' trench fever in hospital and then by experimentation with chemically impregnated clothing at the request of the War Office. About this same winter Captain R. Orr, C.A.M.C., in England, had been able to solve much of the problem.[1] I admit my judgment of 1916–17 was somewhat premature on certain points, but the seriously impairing effect of wet and muddy garments upon hot-air disinfestors still remains a fact. The modification of my views I owe largely to the work of Captain Orr.

I am afraid I cannot deal with certain passages of Dr. Coplans's letter, except by the following somewhat long personal statement.

Entomological Work during the War.

As a N.C.O.

1.	July – Sept., 1915	Work and lectures on flies and mosquitoes.
2.	Sept., 1915–Feb., 1916	Initial research on louse problem.
3.	Mar.–Sept. ..	Work on disinfestors and divisional bath routine.
4.	Oct.–Nov. ..	Investigation as to possible connexion of louse with Weil's disease; study of louse mouth-parts.
5.	Dec., 1916 – Mar., 1917	Initial work on hot-air disinfestation; lectures at Second Army school of sanitation for officers; work at Laiterie disinfestor; six weeks trench fever; experiments with impregnated clothing at War Office request (party and I segregated).

As an Officer.

6.	May–Sept. ..	Experiments in England on disinfestation methods.
7.	Oct.–Dec. ..	Trench fever work in England.
8.	Jan.–July, 1918	Attached to American Red Cross Trench Fever Commission in France.
9.	July–Sept. ..	Investigation of anopheline conditions in Flanders.
10.	Oct., 1918 – Mar., 1919	Attached No. 20 Gen. Hosp. for trench fever work.

I cite this in order to prove what little time I really had for instructional work or, to quote Dr. Coplans, "a free hand to conduct the necessary propaganda both at organised schools and elsewhere." I feel sure that Dr. Coplans will be surprised at this résumé. The most useful period of instructional work by lecturing was during the régime of Dr. Coplans when, as D.A.D.M.S. (San.), he gave me the best opportunity I ever had—that of meeting the medical officers of the Second Army. At other times my instructional work consisted mainly of interviews with all ranks interested in the business of disinfestation and in lectures given voluntarily and unofficially to such as cared to listen. Space does not permit me to make more than passing reference to all the provoking and unnecessary interruptions to which my work was subjected. I do not include in this the misfortunes due to campaigning. At the same time I acknowledge gladly the many facilities I did have granted and recall with pleasure the sympathy of the many charming fellows of all ranks whom I met. My "grouse," which is tempered by the cheerful fact that I was on the side that did win the war, is against a system. This by way of showing that I am not lacking in a sense of proportion. My experiences were only those of many a scientist

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[1] Parasitology, vol. x.

The deaths from pulmonary tuberculosis within three months of notification were 357.

4. A special inquiry into 163 consecutive deaths not notified under the Regulations has shown: (*a*) That a large proportion (58) occurred in public institutions; (*b*) that many of the non-pulmonary cases were those of meningitis or specially complicated cases; (*c*) that in the 45 pulmonary cases, 22 (practically half) were not notified owing to a misunderstanding of the Tuberculosis Regulations, or to a belief that the case had already been notified. The Regulations direct in Article V. that a practitioner "shall not notify a case . . . if he has reasonable grounds for believing that the case has already been notified . . . to the medical officer of health for the district within which the place of residence of the person is situate"; and with the continuance of this clause—which at the most presents a rather unsatisfactory qualification as to notification—misunderstandings are almost certain to arise. No doubt the clause was inserted in an endeavour to avoid duplicate notifications in the same sanitary district, but in view of the liability of error, it would appear much more satisfactory to eliminate the qualification quoted above from the Regulations.

MEDICINE AND THE LAW.

The Definition of Live Birth.

AT the opening meeting of the Sheffield Medico-Chirurgical Society on Oct. 13th Dr. Godfrey Carter delivered the presidential address, taking as his subject an analysis of his last 100 post-mortem examinations. One of the topics dealt with in the address was the definition of live birth as laid down in courts of law when a mother is tried for the murder of her newly-born child. The point criticised was the necessity of proof that every portion of the child had been extruded when the act causing the death was performed, independently of whether breathing, movements, or other sign of life had occurred. The opinion of those present was that the birth should be treated as a live birth where, in other respects than that of complete delivery, the live birth of a full-term child has taken place, and where there is only evidence of an act of violence to which death can be attributed. A suggestion was made that an Act of Parliament should provide that "a child delivered at full-term and found upon medical examination to be healthy and free from any ascertainable cause of natural death, should be deemed to have been born alive, failing proof to the contrary." This, of course, would take part of the onus of proof from any prosecution for murder, and would lay it upon the accused person, and in other respects could not be carried out by the authority of any judge or judges. The principle of making the prosecution prove the case against the prisoner is too firmly established in our criminal law for it to be likely that Parliament would sanction departure from it in such a case. Apart from this, however, the test of complete extrusion from the mother might be considered and dealt with. If this test were abolished, and the result advocated by the Sheffield Medico-Chirurgical Society were attained, it would follow that many women and girls who are now convicted of concealment of birth would be convicted of murder or manslaughter. This, in short, is what was desired at the meeting referred to. To medical men who have examined the bodies of infants killed in the usual circumstances of such cases, it is clear, as a rule, when one of those felonies has been committed. It equally appears to them that such destruction of life ought to be punished severely and that punishment might check a certain wastage of human life, a result desirable in the interest of the nation. On the other hand, a verdict of murder entails the passing of the death sentence, and it is undesirable that this should be otherwise. A death sentence, however, in the case of nine out of ten of the mothers whose case is under consideration would never be carried out and would be a futile formality. A verdict of manslaughter would impose almost necessarily on the judge the obligation to pass a severe sentence. Either of these verdicts and their consequences would be contrary to public feeling, and would tend to rouse even more sympathy for the criminal than is now exhibited, whenever such trials take place. Moreover, the jury must find a prisoner guilty before sentence is passed, and modern experience agrees with that of bygone generations that where the sentence entailed is heavier than public opinion approves, juries refuse to convict. In these circumstances, whatever may be the strictly logical inference to be drawn from the conditions provable by medical men in the cases referred to it, it appears unlikely that the law will be altered, or that if altered, very different verdicts from those "merciful verdicts" now returned would ensue. The points suggested should always be weighed in connexion with this subject.

Action for Damages against a Medical Man.

A case of considerable importance to general practitioners has just been decided at the Suffolk County Assizes, where a patient brought an action for negligence against Dr. H. G. Wood-Hill, a well-known medical man of Beccles, and obtained heavy damages. The patient, while driving a dog-cart was thrown out and sustained an injury to her right leg. Dr. Wood-Hill was sent for and diagnosed a fracture of the upper third of the femur. He treated her by a Thomas splint and extension, and had her removed to the Beccles Hospital, where she was also examined by his partner, Dr. G. R. Fox, who agreed both as to the diagnosis and treatment, and did not consider that an anæsthetic was advisable. No radiograph was taken, and it came out that the X ray apparatus at the Beccles Hospital was out of order. The splint was removed and the weight taken away about five weeks after the accident, and Dr. Wood-Hill stated that he then found union to have taken place with only half an inch of shortening. He warned the patient against putting any weight on the leg for some time, and allowed her to go home to Hertfordshire about a fortnight later. Ten days after her return home she suddenly felt her leg give way. Dr. Cooper, her family doctor, was called in and he stated in his evidence that he found the right leg one and three-quarter inches shorter than the other, with pain, swelling of the buttock, and inability to raise the leg. He diagnosed the fracture to be in the neck of the femur, and advised an X ray examination, which confirmed his opinion. The patient was subsequently removed to the Freemasons' Hospital in London, where an operation was performed.

There was a marked divergence of opinion among the surgeons examined. While Dr. Cooper stated that the fracture was in the neck of the femur, and gave it as his opinion that an anæsthetic should have been employed at first, Sir Hamilton Ballance said that he thought an anæsthetic was not indicated, as any struggling would have increased the damage round the fracture. He believed that a re-fracture of the bone had occurred, owing to the patient putting too much weight on it, and expressed himself as satisfied with Dr. Wood-Hill's treatment. Mr. Hugh Ernest Griffiths and Mr. Harold William Wilson, assistant surgeons at St. Bartholomew's Hospital, confirmed Sir Hamilton Ballance's opinion.

The verdict of the jury was largely influenced by Dr. Wood-Hill's omission to have an X ray photograph taken of the injury, and the lesson of the case is that in such positions this aid to diagnosis should not be omitted.

UNIVERSITY OF MANCHESTER.—Mr. Stanley Wyatt, M.Sc., investigator to the Industrial Fatigue Research Board, has been appointed Special Lecturer in Psychology; Dr. D. E. Core, Lecturer in Neurology; Dr. A. E. Barclay, Lecturer in Radiology; and Mr. H. H. Rayner, Lecturer in the Surgical Diseases of Children. The following awards have been made: Leech Fellowships in Medicine, Dr. F. R. Ferguson and Dr. Eugenia R. A. Cooper. Graduate Scholarship in Medicine, Dr. G. V. Ashcroft; Tom Jones Memorial Surgical Scholarship, A. H. Southam.

immediately washed out with several quarts of hot water and solution of potassium permanganate, and more hot water, until the fluid returned clear. A wedge and gag were required to open the mouth. A pint of strong hot coffee was left in the stomach, and 0·50 caffein (Maison Clin ampoules) was injected intramuscularly. This caused a distinct improvement. I next saw him at 11 P.M., with Dr. Carruthers, who injected strychnine gr. 1/20. The boy's condition was then very grave—respirations 4 per minute, shallow and rattling; lips and ears deeply cyanotic, face pale. Pulse 124, running in type.

All the usual methods of reflex stimulation of the respiratory centre having been tried and failed, artificial respiration was started and oxygen administered—with the collaboration of Mr. E. W. Gandy—under pressure in a Clover's inhaler, for periods of a quarter of an hour, until 2 A.M. on the 25th. The effect of the oxygen was remarkable; the capillary venous stasis and cyanosis immediately disappeared, and the pulse improved in tone and rate (from 120 to under 100) at the end of each 15 minutes administration. At 2 A.M. he vomited lumps of undigested meat and vegetables, but no fluid, and by 5 A.M. he had recovered sufficiently under the standard methods of treatment to go for a walk in the garden. No after-effects were observed.

Afterwards, the boy stated that as he was troubled with insomnia—due probably to overwork and worry over some approaching examinations—he had taken the contents (half an ounce) of a bottle of morphia and atropine solution containing 24 gr. of morphia sulphate and 2 gr. of atropine sulphate to the ounce, which he had found in his father's surgery. There was no suggestion of suicidal intent. This was at about 4.15 P.M., some two and a half hours after a heavy mid-day dinner. The stomach washings revealed on analysis 1 gr. of morphia, but no atropine.

I am, Sir, yours faithfully,

J. G. WILLMORE.

Ministry of Pensions Hospital, Orpington, Nov. 12th, 1921.

THE STATUS OF MEDICAL EDUCATION.

To the Editor of THE LANCET.

SIR,—The whole medical profession owes a debt of gratitude to Sir Clifford Allbutt and others who, like him, are earnestly striving to improve the status of medical education in this country. One of the crying needs of the day in our profession is the breaking down of the artificially-created barriers between anatomy, physiology, medicine, and surgery. Fortunately, the type is now rare of professor or lecturer in anatomy or physiology who shuts himself up in his department, wilfully closing his eyes to the fact that his students will be the practitioners of the future, carefully avoiding any reference to the practical importance of the subject he lectures upon, and rarely associating in joint researches with his hospital colleagues. There is still, however, much room for improvement. It is surely a very extraordinary thing that with the example of John Hunter's life and work to point the way, so many of us close our minds to the rich harvest of knowledge which must accrue from the intimate coöperation of all branches of science.

May I be allowed to give an example of the unhappy state of affairs that results from this divorce that has been brought of late very forcibly to my notice. In the course of my researches into joint problems under the ægis of the Medical Research Council and with the kind help and collaboration of Prof. Shattock, I have been astonished at the prevailing lack of accurate knowledge of even the most elementary problems of the anatomy and physiology of the joints; the latter, in particular, may be regarded as a practically unopened book. Take the articular cartilages—our knowledge of their structure and nutrition and of their mode of repair cannot yet be said to be placed upon a firmly established basis. Again, what are the functions and essential microscopic structure of the synovial membranes? No two observers agree upon this point. Do they contain lymphatics and nerves? What is the composition of normal synovial fluid? I am unable to satisfy myself that anyone has ever analysed it, although fluids from pathological joints have been analysed by various observers. What is the effect of rest and movement upon the secretion of synovial fluid? Many other still unsolved problems might be quoted. Joint affections are extremely common in the community, yet we cannot hope to treat them rationally unless our treatment is based upon a sound knowledge of physiology and anatomy. Turning next to the large variety of conditions grouped together under the name "arthritis deformans" or "rheumatoid arthritis," we find that everything, including nomenclature, pathology, diagnosis, and treatment, is in a condition of chaos. There is a loss of public confidence in the profession in this matter which is, unfortunately, quite justified; many of the thinking and more highly educated members of the public are amazed that we are neglectful of these vital problems, and that we should rest content with an almost mediæval superstition and ignorance when in the realms of physics and chemistry and other sciences such marvellous discoveries have been made. Of writing of books upon arthritis there is no end; but most of them consist very largely of theory, and the most significant fact about all of them is that they contain no word about the normal physiology or intrinsic anatomy of the joint. We often rail at the unprofessional bone-setter, forgetting that, as Sir Arthur Keith has pointed out, the most powerful weapon in his armamentarium is our own ignorance of anatomy and physiology.

What is the remedy for this state of affairs? First, there must be the active coöperation to which we have already alluded. Secondly, the teaching of anatomy and physiology should be profoundly modified. Sir Clifford Allbutt holds that the time given to these preliminary subjects should not be cut down or diminished; I believe that Sir Charters Symonds argues that anatomy and physiology should be pruned and unimportant details of no practical significance omitted, the actual time devoted to these subjects being also shortened. This argument Sir Clifford Allbutt calls "utilitarianism." This is neither the place nor time to enter into an argument upon the *pros* and *cons* of "utilitarianism," but my impression is that the word has something to do with usefulness or utility (surely nothing derogatory in that). Is there not room for a course to be set midway between the views of these two distinguished men? Surely anatomy and physiology should be taught not as pure sciences but as applied sciences. Why? Because the average student is not learning these subjects in order some day to occupy a professorial chair, but to make himself more efficient in the alleviation of human suffering. The argument in favour of preliminary subjects such as anatomy being taught as pure sciences seems to be that they act as a "peculiar discipline" and "develop close observation and accuracy in a unique manner." It might well be asked, "Is it fair, to the public and to the budding doctor himself, when there is so much to be learnt in a short period to devote so much time and labour to details which are of no practical use to him in his after career, if the mental training can be equally well given in a way that does not diminish his power as a scientific and thinking physician or surgeon, and at the same time makes him a better handicraftsman?

How can this object be achieved without cutting down the time given to preliminary subjects? First, at least one weekly demonstration in anatomy and one in physiology should be held in the wards or out-patient departments of the hospital. It is almost impossible to exaggerate the interest and enthusiasm this procedure would arouse in the student's mind. Let us imagine, for example, that the lymphatics of the breast had been a subject of demonstration in the anatomical department. Let the class next see and examine in the hospital a case of cancer of the breast with lymphatic gland involvement. Let each examine the tumour and note its size, shape, consistency, &c. The dry anatomical facts will be infused with life, and the mind admirably prepared for the more serious clinical work to follow. Who will deny that the student's powers of close observation and accuracy will thus be increased far more than injustices as between different hospitals in the distribution of the grants; and they trust, therefore, that the condition will not be pressed.

(2) That copies of this resolution should be forwarded to the Prime Minister, the Chancellor of the Exchequer, and the Minister of Health, and the Voluntary Hospitals Commission.

These resolutions having been seconded by Sir ARTHUR STANLEY and supported by Mr. HOPKINSON, were, after discussion, put and carried.

The meeting closed with the usual votes of thanks.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF LEEDS.

Dr. J. J. Jervis tells us that the year has been one of progress in every direction, as the vital statistics and other records embodied in the report show. The population was estimated by the Registrar-General at 448,913 for death-rate and 449,410 for birth-rate. The most important figures were as follows: Birth-rate, 25·01; death-rate, 14·68; infant mortality rate, 110; death-rate from pulmonary tuberculosis, 1·23; and from other forms of tuberculosis, 0·33. The death-rate from diarrhœa and enteritis under two years per 1000 births was 12·47. The figure of 8·3 represents the death-rate for England and Wales, and the table given on p. 16 shows that Leeds does not come out well in comparison with the 10 large English cities. Dr. Jervis has much to say on the smoke problem, pointing out that respiratory diseases as a group (including phthisis and influenza) were responsible for 31·3 per cent. of the total deaths. He believes that "prevention can only be achieved by tackling the smoke nuisance resolutely and compelling manufacturers to adopt cleaner and more rational methods of extracting heat from coal fuel and at the same time by extending the system of central heating for domestic purposes." Dr. Jervis shows that infant mortality from respiratory diseases was highest in those wards in which the atmospheric pollution is most marked, and suggests that where plant life fails to exist, it is impossible for the delicate human organism to escape some damage. From the paragraphs on smoke inspection we gather that the limit adopted is three minutes of dense smoke in the hour, and that although in 544 cases this limit was exceeded there were no prosecutions. We trust that public opinion will support the health committee of Leeds if it acts on Dr. Jervis's advice and institutes a really vigorous campaign.

Dr. Jervis wants more hospital accommodation for pneumonia, and suggests that some of the beds in the Poor-law infirmaries should be used to supplement the deficiency of the general hospitals in this respect. The pooling of the hospital accommodation of the Poor-law and sanitary authorities for the general interests of the community would appear to be a possible solution of many problems now confronting medical officers of health. Dr. Jervis does not believe in the grading of milk; he contends that those who suffer most from the drinking of impure milk are the working classes, many of whom are finding it hard enough even now to purchase sufficient milk and could not afford the higher price demanded for graded milk. Dr. Jervis reports that the quality of cattle arriving in Leeds for slaughter has shown a marked improvement since control was removed. He would like to see the closing of the private slaughter-houses and the provision of adequate accommodation at the public abattoir.

Seven beds are reserved at the Maternity Hospital for mothers and babies in case of ophthalmia neonatorum. Of 141 cases of this disease notified, five made an imperfect recovery, eight died, two were still under treatment, and six were lost sight of owing to removal. The work done by the V.D. clinics has increased; 2607 new cases of syphilis and gonorrhœa attended, 820 patients discontinued treatment before being pronounced cured, of which a very large proportion were still capable of transmitting the disease to others. "There is urgent need," continues Dr. Jervis, "for Parliamentary powers to compel infected individuals to continue treatment until cure is effected." The death-rate from pulmonary tuberculosis in Leeds showed an increase during the war years and has now again reached pre-war levels. The Ministry of Health have withheld approval of a scheme for the dental treatment of the tuberculous on the score of expense, and the provision of a new sanatorium at Moortown with beds for 320 cases has been postponed for the same reason. The corporation have taken over the two tuberculosis hospitals (Armley House and Gateforth) belonging to the Voluntary Tuberculosis Association. There is a comprehensive scheme for maternity and child welfare. The ante-natal work is growing, but, as elsewhere, the reduction in infant mortality does not extend to the neo-natal mortality. The deaths from puerperal fever have risen from six in 1919 to 29 in 1920. Dr. Jervis emphasises the need for the establishment of small maternity homes in the congested working-class areas.

Dr. Jervis is strongly in favour of public health propaganda by sanitary authorities and says that in Leeds this policy has been adopted with the best results. The housing problem is rendered specially difficult in Leeds by the large number of back-to-back houses. Of the total 113,310 houses in the city, 34,904 are "through" houses and 78,406 are back-to-back. Dr. Jervis divides the back-to-back houses into three groups. The first or oldest group, numbering 35,100, built in long unbroken rows, "is frankly bad and unhealthy, and must be got rid of as soon as practicable." The second group, numbering 29,082, and built in blocks of eight, "is better, but requires drastic improvement to bring it up to standard." The third group, the erection of which was approved up to 1909, numbers 14,224, and "consists of a good type of house which, while not quite up to the standard of the modern through house, does not fall very far short of it." Apart from the question of the back-to-back houses, there is an estimated shortage of 5800 houses owing to house-building being in abeyance during the war. The progress of the housing schemes has been very slow—only 309 have been completed; but there are now some signs of speeding up and it is hoped about 1000 will be completed before the end of the current year. A strenuous effort is being made to overtake the arrears of sanitary work and repairs left by the war.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt. (temp. Capt.) E. H. W. Elkington to be Capt.

TERRITORIAL ARMY.

Lt.-Col. F. W. Gibbon, having attained the age limit, is retired and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. J. O. Summerhayes resigns his commn. and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Capt. J. J. E. Biggs to be Maj.

Capt. W. A. Jackman (late R.A.M.C., Spec. Res.) to be Capt.

1st N. Gen. Hosp.—Maj. D. W. Patterson, having attained the age limit, is retired, and is granted the rank of Lt.-Col.

TERRITORIAL ARMY RESERVE.

Lt.-Col. J. B. Jamieson, from General List, to be Lt.-Col.

Maj. M. A. Archdale, having attained the age limit, is retired and retains the rank of Maj.

WESTMINSTER HOSPITAL.—A dance in aid of this hospital and medical school will be held at King Edward VII. Rooms, Hotel Victoria, Northumberland-avenue, London, W.C., *on Friday, Dec. 2nd. Tickets (£1 1s.)* may be obtained from the hon. secs., Mr. A. D. Hepburn and Mr. J. Wilson, at the hospital.

Obituary.

SHERIDAN DELÉPINE, B.Sc. LAUSANNE, M.B., C.M. EDIN., M.Sc. MANCH.,

PROFESSOR OF PUBLIC HEALTH AND BACTERIOLOGY AND DIRECTOR OF THE PUBLIC HEALTH LABORATORY, UNIVERSITY OF MANCHESTER.

WE *much regret to announce the death of Prof.* Delépine, professor of public health and bacteriology in the University of Manchester, which occurred on Sunday last at his home in Withington.

Auguste Sheridan Delépine was 66 years of age at the time of his death. He was the son of a French father and a Swiss mother, and was educated in Paris, Geneva, and Lausanne, graduating in science at the last place with distinction, *and while still quite a boy.* Thence he proceeded to the University of Edinburgh, where he pursued medical studies, *and in* 1882 *graduated* as M.B., C.M. with first-class honours. He was interested from the first in pathological anatomy and in the developments of the then new science of bacteriology, and after *acting at Edinburgh* as demonstrator in these subjects, came to London and shortly afterwards was appointed demonstrator of pathology and curator to the museum at St. George's Hospital. The St. George's Hospital *medical school* was at that time a large one, and Delépine did excellent work both in assistance to the clinical routine of the hospital and in the instruction of a long series of pupils, many of whom had ample *reason* later to be grateful for his painstaking and lucid demonstrations.

Some eight years later—namely, in 1891—*he* proceeded to Manchester, where he was appointed the first Procter professor of pathology and morbid anatomy. All the arrangements for a new pathological department at Manchester, with a bacteriological laboratory in attachment, were carried out under Delépine's instructions, and when later the connexion between the University Medical School and the Royal Infirmary became the close one that it now is, Delépine, as professor of pathology in the University, became official pathologist to the institution. Our columns and those of the scientific press generally have borne frequent witness to the good work that he did there, and that was done under his ægis by assistants and pupils. His investigations, for example, into the source of tubercle bacilli in cows' milk, into the bearing of the outbreaks of food poisons upon the ætiology of summer diarrhœa, and into the general conditions necessary to obtain a clean milk-supply, form good examples of thoroughly scientific work directed towards practical ends. At the same time Delépine was the originator of two mechanical appliances valuable in physical and bacteriological technique—namely, a gas-sphygmoscope and a convenient modification of the microtome.

After 20 years as professor of pathology, during which time great practical assistance was afforded to the sanitary authorities of Manchester and Salford by the scientific researches carried on in the laboratory, a public health department was instituted in the University of Manchester, and Delépine, having resigned the *chair of* pathology, was appointed professor of public health and bacteriology and director of the public health laboratory. From this laboratory an admirable series of researches emerged connected with the immediate sanitary needs of Manchester, Salford, and the surrounding districts. At the laboratory Prof. Delépine *gave instruction* to a large number of graduates intending to take the diploma in public health of the University, and while some of these assisted in conducting research work, others were employed in maintaining the public health of the locality by making careful reports upon the incidence and spread of preventable disease. No more sound course in practical hygiene was given at any medical school than at Manchester under Delépine.

During the war Delépine did good work in an advisory capacity as sanitarian and bacteriologist, and in particular his researches were found extremely pertinent in the treatment of trench foot. A brief article on frost-bite, published in THE LANCET in February, 1915, at the close of the first winter of war, pointed the way to the prevention of a condition that was costing the allied armies many lives, as well as causing enormous inefficiency, pain, and crippling.

Delépine had been in delicate health for some time, and there seems no doubt that his life was shortened by the tragedy that overtook him when he lost his only son in the war. By his friends he will be remembered warmly for his geniality and courtesy, and by all who came into relations with him for his simplicity and firmness.

SIR GEORGE JOSEPH HAMILTON EVATT, K.C.B.,

MAJOR-GENERAL A.M.S. (RETD.).

Major-General Evatt who, *during his life, played* a prominent part in the reform of the medical and nursing services of the army, *died in London on* Nov. 5th. We have briefly chronicled the event. He was within *a few days of his seventy-ninth* year at the time of his death.

The son of Captain G. Evatt, he was *educated at the* Royal College of Surgeons in Ireland, won a gold medal at Trinity College, Dublin, and qualified in 1863 as L.R.C.S.I., and M.D.R.U.I. Three years later he entered the Army Medical Service, *being attached* to the 25th King's Own Scottish Borderers. He first saw service with the Perak Expedition with Sir H. Ross's Bengal column in 1876, for which he obtained the medal and clasp; *he was promoted to* Surgeon-Major in the following year. In the Afghan War of 1878-80 he was at the *capture* of *Ali Masjid* and was mentioned in despatches, as he was also in the advance on Gundermak, *and in the return in the* "Death March" of 1879, when he was specially thanked in General Orders by the Viceroy *in Council and by* the Commander-in-Chief in India. He also commanded a field hospital in the second campaign which included the advance to Cabul under General Sir Charles Gough, the action on the Ghuzni Road, and the return to India. In 1885 he became a Lieut.-Colonel in the R.A.M.C., in which year he served in the Suakin Expedition, including the actions of Handub, Tamai, and the removal of the *wounded from* MacNeill's zareba, being again mentioned in despatches and receiving for his services the *medal and clasp* and Khedive's Star. He was also in the Zhob Valley Expedition of 1890 and *commanded a field hospital,* when he again received mention in official records.

Evatt had now reached *the rank of Surgeon-General* and from 1880 to 1886 he held the post of medical officer to the Royal Military Academy, Woolwich; from 1887 to 1891 he was senior medical officer at the Quetta Garrison, Baluchistan; *from* 1892 *to* 1894 sanitary officer to the Woolwich Garrison; from 1894 to 1896 secretary of the Royal Victoria Hospital, Netley. He again served abroad and for three years was principal medical officer in China, *holding a* similar office in the Western District of England from 1899 to 1902, after which he became Surgeon-General to the Second Army Corps at Salisbury. In conjunction with Mr. (now Sir James) Cantlie, Evatt organised the Volunteer R.A.M.C. in 1883, and a few years later drew up a scheme for the Army Nursing Service Reserve. He also founded the Medical Officers of Schools Association. An indefatigable worker, he associated himself with many activities which had a bearing upon the health of the nation, and was a member of the committee of the International Health Exhibition of 1884, a vice-president of the British Medical Temperance Association, a member of the Council of the Royal Army Temperance Association, and President of the Poor Law Medical Officers Association. In 1886 he contested unsuccessfully Woolwich as a Liberal, in 1906 the Fareham Division of Hampshire, and in 1910 Brighton. During the war, 1915–16, he was *president* of the Travelling Medical Board, Western Command. He contributed largely in khaki who, if they were wise, cultivated in those strenuous times what all Tommies did—a sardonic philosophy and a sense of humour.

Touching the matter of responsibility for the conduct of a louse campaign, I should be sorry indeed if the rank and file of medical and sanitary officers thought I disparaged their feelings and efforts. Perhaps certain of your readers, erstwhile campaigners, may remember that I fought and taught that the regimental and front area medical officers had not the time and opportunity for disinfestation work on the necessary large scale. Neither is it hidden in my writings that such is even beyond an army D.A.D.M.S. (San.), subject as he is to all manner of official limitations. Even more than Dr. Coplans's assistance in those days I acknowledge his appreciation and understanding, but even he himself will admit how little realised, through no fault of one's own, may be the bright ideas of a D.A.D.M.S. So what chance for a louse campaign in the grand manner had a lance-sergeant. I must therefore emphatically decline to be saddled with any responsibility for the conduct of the strategy of the louse campaign. A field-marshal's baton is no good in a lance-sergeant's knapsack.

In conclusion, Dr. Coplans's quotation of Mr. Dan Jenkins, "The Labour Party desires for the working man and his family, at home, the same standard of medical organisation, skill, and care as was shown for the British armies in France, &c.," is somewhat loose. I take it to mean rather a testimony to the nationalisation of medical effort, because no soldier, let alone a member of the Labour Party in khaki, would ever subscribe to the idea that the problem of his war-time lousiness was ever tackled with complete success.

I am, Sir, yours faithfully,

A. D. PEACOCK.

Armstrong College, Newcastle-on-Tyne, Nov. 12th, 1921.

TRYPANOCIDE.

To the Editor of THE LANCET.

SIR,—In August last it fell to my lot as sectional editor of the *Tropical Diseases Bulletin* to write a critical review of recent work on sleeping sickness. For reasons which are clearly stated at the commencement of my review I decided to deal mainly with the work of Marshall and Vassallo. Judging from Dr. E. T. Jensen's letter, published in your issue of Nov. 12th, this review has caused considerable distress to him, and to a recently self-constituted body, the Tropical Diseases Prevention Association, of which he is the hon. secretary.

I may say at once that until I read an annotation in THE LANCET of Sept. 10th—the day on which my critique was forwarded to the Tropical Diseases Bureau for publication—I was ignorant of the fact that Dr. Jensen's Association was acting as sponsor to Marshall and Vassallo. My object in writing the review was simply to present to the readers of the *Bulletin* a critical analysis of the work on which Marshall and Vassallo based their sweeping claims; and as the result of a most careful consideration of their papers I reached the following conclusions:—

1. The work is based on two fundamental assumptions, both of which are incorrect, or at least can only be accepted with very considerable qualification.

2. The treatment is not new, even for trypanosomiasis, but is substantially the same as that tried by Reichenow in 1914, and abandoned by him as useless in that it failed to sterilise the cerebro-spinal fluid.

3. Marshall and Vassallo produce no satisfactory evidence that intrathecal injections of salvarsanised serum sterilise infected cerebro-spinal fluids.

4. The results, so far published, fail to substantiate the claim that the treatment gives better results than any hitherto obtained by other methods.

Scientifically Dr. Jensen's letter is of no value, as he does not attempt (probably because he is unable) to controvert the arguments on which I based these conclusions. He points out that the work done by Marshall and Vassallo was performed by them as Uganda medical officers, and in their spare time. This may account for the unsatisfactory nature of Marshall and Vassallo's observations, but it certainly does not invalidate my conclusions, nor is it likely to inspire belief in Marshall and Vassallo's claims, or respect for the judgment of Dr. Jensen and his Association.

Dr. Jensen, however, is mainly concerned in defending the position of the Tropical Diseases Prevention Association, and in view of the youth of this body it would, naturally, resent anything which might suggest that it had been guilty of a gross error of judgment. Even though willing to make full allowance for his sensitiveness on this point, I cannot refrain from pointing out to Dr. Jensen that he has descended to somewhat questionable tactics. In the first place, he states that I published my critical view "in a medium which precluded the possibility of a reply." This is an unpleasant suggestion, and in view of the publication of his lengthy letters in *The Lancet* and in the *British Medical Journal*, the complaint seems unjustifiable. I do not know whether he has communicated with the editor of the *Tropical Diseases Bulletin*, but although I can well believe that a letter of the kind in question might be refused publication, I do not believe that anything of scientific value would be rejected. In the second place, Dr. Jensen loudly protests that his Association "is not prejudiced in favour of any one method of treatment, but it does consider that fair play should be given to any method which has shown promise of success." Such platitudes may satisfy Dr. Jensen, and certainly they do nobody any harm, but it is rather amusing to read in the next line that one who has had the temerity to differ from the Association on a matter of the value of evidence is accused of lacking a sense of fair play. In fact there is a delicate insinuation that I have purposely belittled Marshall and Vassallo's work in order to promote the interests of a certain German chemical firm.

Dr. Jensen's letter closes with a remarkable homily, which runs as follows: "It is, perhaps, not fully recognised by tropical experts working at home that treatment of such a disease as sleeping sickness must be administratively and economically practicable on a large scale as well as scientifically effective in a hospital at home." Possibly this is the case, but how it touches the question at issue is obscure, unless it is intended to have a personal application. If so, I can only point out that it comes strangely from the pen of one who, so far as I am aware, has contributed nothing to our knowledge of the disease, and deplore the fact that one who is so little conversant with the literature of the subject should have attempted the task which Dr. Jensen has undertaken.

I am, Sir, yours faithfully,

WARRINGTON YORKE.

Liverpool School of Tropical Medicine, Nov. 14th, 1921.

BELLADONNA POISONING.

To the Editor of THE LANCET.

SIR,—In connexion with the case of belladonna poisoning reported in your last issue by Dr. H. Neville Taylor, the following may be deemed worthy of record. It illustrates (1) recovery after ingestion, by a schoolboy of 15, of 12 gr. of morphia, and 1 gr. of atropine in solution three hours previously; (2) the effect of delayed absorption due to food; (3) the response to remedial measures, especially oxygen under pressure, in an apparently hopeless case.

At 7.20 P.M. on July 24th, 1920, I first saw the patient in the absence of Dr. S. W. Carruthers, of Upper Norwood, who was his family physician. The boy had been found completely unconscious in a deck chair in the garden by his father, a veterinary surgeon; he could not be roused by any of the usual means. His condition was as follows: *Pupils widely dilated, not reacting to light*; conjunctival and corneal reflexes absent; temp. subnormal, P. 120, respiration stertorous (14 per minute); jaws clenched; knee-jerks increased; plantar reflexes brisk, extensor response; legs spastic, no head retraction or Kernig's sign; lips and ears cyanosed; face flushed, skin dry; lungs, a few rhonchi and bubbling râles; other organs, nothing noteworthy.

In the absence of any history of previous illness, or data bearing on the patient's condition, the stomach was

F. C. O. Valentine, Cambridge and London; G. T. Verry, St. Bart.'s; A. S. H. Walford, Cambridge and St. Thomas's; A. L. Walker, Cambridge and Middlesex; G. C. Wellish, Sydney and Middlesex; D. R. Wheeler, Belfast and Middlesex; J. G. Whitaker, Melbourne and Middlesex; P. B. Wilkinson, King's Coll.; V. Wilkinson, Cambridge and Middlesex; and A. L. Yates, St. Bart.'s.

University of Glasgow.—The following degrees were conferred on Nov. 12th:—

Doctors of Medicine (M.D.).

1. *With Honours.*—Douglas Kinchin Adams, M.A., B.Sc., M.B., Ch.B.; Thomas Jones Mackie, M.B., Ch.B.; Noah Morris, B.Sc., M.B., Ch.B.
2. *With High Commendation.*—William Taylor, M.B., Ch.B.
3. *With Commendation.*—Charles Cameron, M.A., M.B., Ch.B.; Ronald Thomson Grant, M.B., Ch.B.; Robert Cecil Robertson, M.B., Ch.B.; Herbert Watt Torrance, M.B., Ch.B.
4. *Ordinary Degree.*—John Broadfoot, M.B., Ch.B.; Ethel Crawford, M.B., Ch.B.; James Paterson Crawford, M.B., Ch.B.; Andrew Garvie, M.B., Ch.B.; William Hogarth Kerr, M.A., M.B., Ch.B.; Duncan Mackenzie MacRae, M.A., M.B., Ch.B.; George Taylor, M.A., M.B., Ch.B.

Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.).

With Commendation.—Andrew Allan Bell.

Royal Faculty of Physicians and Surgeons of Glasgow.—At the annual meeting of Fellows, held on Nov. 7th, the following office-bearers were elected:—President: Dr. W. G. Dun; Visitor: Dr. W. R. Jack; Treasurer: Mr. George McIntyre; Hon. Librarian: Dr. E. H. L. Oliphant; Councillors: President, Visitor, Treasurer, Hon. Librarian (all ex officio), Dr. James A. Adams, as representative to the General Medical Council (ex officio), Mr. R. M. Buchanan, Dr. Ebenezer Duncan, Mr. Henry Rutherfurd, Dr. A. K. Chalmers, Sir Kennedy Dalziel, and Mr. J. Mason Noble.

Royal College of Physicians of Ireland.—At a meeting of the President and Fellows of the Royal College of Physicians of Ireland held on Nov. 4th, Dr. Robert Marshall, of Belfast, and Dr. Victor M. Synge, of Dublin, were sworn in as Fellows of the College, and Dr. Patrick Ley, of Dublin, was admitted a Member.

University of Sheffield.—The University Council has made the following appointments:—Dr. W. W. King to the post of Lecturer in Gynæcology, and Mr. G. H. Froggatt, L.D.S. Eng., to the post of Lecturer in Dental Mechanics.

London School of Tropical Medicine: Annual Dinner.—The annual gathering which took place at the Trocadero Restaurant on Nov. 9th was a good example of the *ola tuta*, which is the motto of the school. Prof. A. Alcock, who presided, made a learned survey of the achievements of tropical medicine and the share taken in them by the London School. Its two chief remaining needs—a chair of biochemistry and a department of tropical hygiene—he hoped would soon be met. Col. R. H. Elliot, in proposing the "Guests," paid admiring tribute to the rival school at Liverpool, and Col. J. J. Pratt's graceful speech did no more than justice to the chairman's own services in the region of medical entomology. The point was usefully brought out that the time has now gone past for expeditionary forces, the hope of the future lying rather in local centres, permanently staffed and equipped but still in close touch with a central school. The dinner was again noteworthy in the support that it received from the present students of the school, many of them drawn from distant parts of the world.

National Council for Combating Venereal Diseases.—At a meeting of the Council held at the House of the Royal Society of Medicine on Nov. 11th the following resolution was proposed by Mr. E. B. Turner, chairman of the Medical Committee, and seconded by Mr. Kenneth Walker, joint honorary medical secretary.

> That the Executive Committee be directed to appoint a Committee of Enquiry with instructions to prepare a full and detailed report on the working of ablution centres and that this report be laid before the Council at its next meeting.

The resolution was carried unanimously, as was the following rider, proposed by Miss Alison Neilans, of the Association for Moral and Social Hygiene, and seconded by Mr. Kent, of the Alliance of Honour:—

> The Committee so appointed shall include men and women representatives and shall take into consideration the social and moral effects as well as the medical results of providing and advertising the ablution centres.

A vigorous address was delivered by Lord Gorell, the President of the Council, protesting against the misrepresentations of the work of the Council in certain quarters.

Dr. A. J. Rice-Oxley, J.P., has been elected Mayor of the Royal Borough of Kensington for the third time.

National Hospital for the Paralysed and Epileptic.—A sum of over £500 was raised in connexion with the bazaar held on Founders' Day, Nov. 2nd.

Royal Sanitary Institute.—The next Congress is being arranged to be held at Bournemouth from July 24th to 29th, 1922.

Glasgow University Club, London.—The autumn dinner will be held in the Holborn Restaurant, London, on Friday, Nov. 25th, at 7.30 P.M., Prof. J. Millar Thomson, F.R.S., presiding.

19th C.C.S. Annual Dinner.—The third annual dinner will take place in London on Friday, Nov. 25th. Tickets and further particulars may be obtained from the Dinner Secretary, Rev. E. C. Doddrell, 6, Alexandra House, Regent's Park-road, Finchley, London, N. 3.

Middlesex Hospital Medical School.—An emeritus lecture will be delivered on Feb. 7th, 1922, at 3 P.M., by Sir John Bland-Sutton, the subject of the lecture being the Choroid Plexuses of the Brain and Psammoma.

University College Hospital Medical Society.—The annual dinner of the Society will be held at the Restaurant Frascati on Monday, Dec. 12th, at 7.15 for 7.30 P.M. Tickets, price 10*s.*, may be obtained from the hon. sec. or the resident medical officer at the hospital.

Medical Officers of Schools Association.—The annual general meeting of the Association will be held at 11, Chandos-street, London, W., on Tuesday, Nov. 29th, at 5 P.M., when the President, Mr. R. C. Elmslie, will deliver an address on the Status of Physical Instructors in Schools, to be followed by discussion.

Classes for Stammerers.—The Board of Education has decided that the classes for stammering children shall in future be regarded as "arrangements for attending to the health and physical condition of children educated in public elementary schools." This has enabled the London County Council, which is at present responsible for six such classes, to regard them as forming part of the school medical service.

Medical Women's Federation.—The Council of the Federation held its autumn meeting in Edinburgh on Nov. 11th and 12th. Twenty-two members, representing the ten different associations of the Federation in Great Britain, were present. A long discussion took place on the situation raised by the recent dismissal by the Glasgow Corporation of three married medical women, who for some years had been employed in its child welfare and tuberculosis departments. When appointed they were already married; now they were dismissed at the instance of the Labour members of the corporation, who object to the employment of all women whose husbands are earning a regular income. The recent dismissal of Dr. G. Miall-Smith by the St. Pancras Borough Council, on account of her marriage since her appointment, nothing precluding marriage having been inserted in the terms of her contract, also came under consideration. It was felt strongly by the Council that it is not the function of the State or of any public authority to inquire into the private and economic affairs of men or women who apply for medical appointments. It was agreed that persons should be allowed to hold office because of their individual capability to perform the assigned duties. If inquiries were uniformly pressed, it would mean the exclusion from public service of many men who by inheritance or marriage have sufficient money to maintain a small home. The following resolution was carried unanimously:—

> That this Council records its opinion that marriage should be no bar to the holding of posts by medical women, and considers their exclusion is entirely contrary to the spirit of the Sex Disqualification (Removal) Act, 1919, and against public policy.

The need for maintaining the standard advocated by the British Medical Association of equal pay for equal work in the case of medical men and women was once more emphasised by the Council, in view of the danger of women being invited by public health authorities to accept a lower salary than is deemed essential for men. The Council considered that the infringement of this principle would be to the detriment of the profession as a whole, and is doing everything in its power to discountenance "underselling" on the part of medical women. Amongst other subjects raised, that of birth control was prominent. A subcommittee was appointed to study the subject from all points of view, in order to ascertain the ultimate effects of birth control upon imperial health and welfare. Attention was drawn to the desirability, already recognised by many superintendents, of the employment of medical women in large mental hospitals in the interests of women patients.

if, for example, he had carefully dissected the relationships and connexions of the otic ganglion or the origin and insertion of the various individual elements of the erector spinæ muscle. There will, of course, be minor difficulties to be overcome—such as, for example, those connected with the arrangement and selection of the clinical cases—arrangements would be necessary between the demonstrators of anatomy, physiology, and the surgical and medical registrars—a most welcome and healthy fusion of ideas and research work would follow almost as a matter of course. The second manner in which this object may be achieved lies with the teacher of anatomy and physiology himself. It is desirable, if possible, that the teacher of anatomy should hold the Fellowship of the College of Surgeons or other high surgical degree or diploma, and should conscientiously keep himself in touch with modern advances in surgery and pathology. In the same way it is eminently desirable (and this fortunately is often the case) that the teacher of physiology should have distinguished himself in medicine, and should likewise have kept in touch with the progress of medicine.

How few there are who wander round the Hunterian collection at the Royal College of Surgeons—the admiration of the scientific world—who grasp the real message of its serried ranks of silent yet eloquent preparations. John Hunter—his body tortured with suffering, his mind burdened with the cares of one of the largest private practices in London—gave his fortune and every moment of his spare time to the formation of this magnificent collection, because his genius knew that the appeal to the eye is greater than written or spoken word. There is a crying need at the present time for us in our researches humbly to follow in Hunter's footsteps, and to break down the absurd barriers built by narrow-mindedness between the divisions of a science which in reality is one and undivisible.

I am, Sir, yours faithfully,
A. G. TIMBRELL FISHER,
Hunterian Professor of the Royal College of Surgeons of England, 1920–21, 1921–22, &c.
Harley-street, W., Nov. 7th, 1921.

ADENOIDS AND RICKETS.

To the Editor of THE LANCET.

SIR,—In his article in your last issue on the essential causes of adenoids and their association with rickets, Dr. H. Merrall hardly does justice to my exposition of the causation of adenoids in stating that "Cautley, whilst attaching some importance to the vicious circle of adenoids and catarrh, believes bottle-feeding and rickets mostly to blame." It is true that I ascribed to rickets many of the ill-effects which are thought due to adenoids, and that I pointed out the increased frequency of adenoids and rickets since the introduction of bottle-feeding. But I summed up by saying that the prevention of adenoids is mainly concerned with the prevention of rickets and nasal catarrh, guarding the child against exposure to infection, and treating nasal catarrh seriously; and that if you guard a child against infection you will probably guard it against hyperplasia of the adenoid tissue.

Obviously I agree with Dr. Merrall that frequently recurring colds are the chief cause, but I regard rickets as an important concomitant factor, inasmuch as catarrh of the mucous membrane is the most common early sign of this disease. Throughout my introductory remarks the importance of nasal catarrh was strongly emphasised, rickets being regarded as a cause of catarrh. The association of adenoids and deformity of the jaws was insisted on, but did not receive much attention in the subsequent discussion. Almost all children with adenoids are rachitic. Probably the deformity is the result of the association of nasal obstruction with rickets rather than due to either cause acting independently.

I am, Sir, yours faithfully,
Park-street, W., Nov. 12th, 1921. EDMUND CAUTLEY.

THE ÆTIOLOGY OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—In view of the alarming prevalence of "adenoids" in this country it is greatly to be regretted that the pathology of this disease has not yet been definitely settled. In his paper on the subject, published in THE LANCET of Nov. 12th, Dr. H. Merrall emphasises the part played by oft-repeated colds in the ætiology of adenoids. Doubtless he is right here. But this is not the beginning of the story. Why these oft-recurring colds? Are they not the result of the *status catarrhalis*, so ably described by Dr. H. C. Cameron, a condition which is, in large measure at least, the result of improper food? Unfortunately in a large proportion of the medical problems which confront us the data at our disposal do not admit of a logical conclusion; we have to be content with hypotheses: but I venture to suggest that, as regards the ætiology of adenoids, a logical conclusion *can* be arrived at. Thus:—

Adenoid disease is more common among the British than among any other people. Wherever the British settle, be it in Australia, New Zealand, South Africa, or Canada, there adenoid disease is rampant among the British children. This cannot be because the British are hereditarily more liable to adenoid disease than other peoples, since there is evidence that the British of not many generations back did not greatly suffer from this disease. The one material environmental factor common to the British settlers in various parts of the world, but not shared by other peoples, is the food: the British take their dietetic customs with them wherever they go.

Ergo, a cause of adenoids is to be sought for in the nature of the British dietary.

If there is a flaw in this argument I should be glad to have it pointed out.

Cease to feed children on an excess of sugar and soft starchy foods and I venture to predict a pronounced diminution in the present disastrous prevalence of adenoids among us.

I am Sir, yours faithfully,
HARRY CAMPBELL.
Wimpole-street, W., Nov. 12th, 1921.

THE STAFF OF HOLLOWAY HOSPITAL.

To the Editor of THE LANCET.

SIR,—It will interest your readers to hear that the Voluntary Nursing Advisory Board for Holloway Gaol went to the Prison Commissioners' Office on Monday, Nov. 7th, and were most kindly received.

After considerable discussion, the following points were agreed on:—The Holloway Hospital is to be staffed entirely by certificated nurses, reasonable time being allowed for the absorption of the existing officers where not certificated. In this way it is hoped that all difficulties may be overcome, and that the matron, with the assistance of a trained and certificated staff, may be in a position to secure the good nursing of the patients confided to her care. The Voluntary Nursing Advisory Board expressed their appreciation of the good services rendered by the unqualified officers who have prison training only, and announced their intention of sending a special message of thanks to one of these, who is likely to be taking up work elsewhere.

I am, Sir, yours faithfully,
MARY SCHARLIEB.
Harley-street, W., Nov. 12th, 1921.

DONATIONS AND BEQUESTS.—The late Mr. John Ward Cousins left property of the gross value of £14,138, of which £12,278 is net personalty. Subject to certain life interests the testator gives, among other bequests, £3000 each to the Portsmouth, Portsea, and Gosport Hospitals; £300 to the Portsmouth and South Hants Eye and Ear Hospital; and £200 each to Dr. Barnardo's Homes, the Shaftesbury Society and Ragged School Union, and the Young Men's Christian Association.

FRIDAY.—12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. Dr. Pernet: Skin Department. Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 5 P.M., Mr. Steadman: The Ætiology and Pathology of Dental Sepsis (Lecture).

SATURDAY.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children. Dr. Burnford: Visit to Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Simmonds: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Nov. 21st.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2.30 P.M., Dr. A. J. Whiting: Demonstration in Medical Wards. Mr. E. Gillespie: Surgical Operations. Dr. J. B. Alexander: Medical Out-patients. Mr. J. Bright Banister: Gynæcological Out-patients. Dr. Shanks: X Ray Department. 4.30 P.M., Mr. J. Bright Banister: The Relation of Heart Disease to Pregnancy, Labour, and the Puerperium. 7 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Cases and Operations. 2 P.M., Mr. J. Howell Evans: Surgical Out-patients. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Throat, Nose and Ear Out-patients. Dr. J. Metcalfe: X Ray Department. Dr. L. Yealland: Medical In-patients. 3 P.M., Mr. J. Howell Evans: Surgical In-patients. 3.30 P.M., Dr. F. G. Crookshank: Physical Examination of the Chest.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. J. B. Alexander: Medical Out-patients. Dr. W. Jenkins Oliver: Skin Cases. 5 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

THURSDAY.—2.30 P.M., Mr. J. Bright Banister: Gynæcological Operations. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Dr. J. Metcalfe: X Ray Department. Mr. N. F. Fleming: Eye Out-patients.

FRIDAY.—2 P.M., Mr. J. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. Dr. Shanks: X Ray Department. 4.30 P.M., Mr. E. Gillespie: The Treatment of Paralytic Deformities by Orthopædic Methods. 5 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

SATURDAY.—10.30 A.M., Mr. W. E Tanner: Surgical Operations. 3 P.M., Mr. H. W. Carson: Visit to Surgical Wards.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.

MONDAY, Nov. 21st.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., Dr. Moon: In-patients. 5.30 P.M., Lecture:—Dr. Goodall: Auricular Fibrillation and Auricular Flutter.

TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 10 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.

WEDNESDAY.—10 A.M., Dr. Parkinson, and 2 P.M., Dr. Moon: Out-patients.

THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.

FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Goodall: In-patients.

SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 24th.—4 P.M., Lecture:—Mr. H. Tyrrell Gray: Congenital Hypertrophic Stenosis of Pylorus.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 19, Leicester-square, W.C.

THURSDAY, Nov. 24th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Common Forms of Dermatitis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Nov. 22nd.—4.30 P.M., Mr. F. H. Westmacott: Laryngeal Neuroses.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

THURSDAY, Nov. 24th.—Dr. A. C. Magian: Pelvic Inflammation.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE at Whitworth-street West Branch, Manchester.

FRIDAY, Nov. 25th.—4.30 P.M., Dr. Dougal: Ectopic Pregnancy.

ANCOATS HOSPITAL.

THURSDAY, Nov. 24th.—4.30 P.M., Dr. A. H. Holmes: "D.A.H." (Tachycardia, Its Ætiology, Treatment, and Prognosis).

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE. Post-Graduate Lectures and Demonstrations.

TUESDAY, Nov. 22nd. (At the Royal Infirmary).—3.30 P.M., Mr. E. F. Finch: Demonstration of Cases. 4.15 P.M., Dr. A. R. Hallam: X Rays in the Diagnosis of Diseases of the Chest.

FRIDAY. (At the Royal Hospital).—3.30 P.M., Dr. J. G. Wilkinson: Ear Emergencies. 4.15 P.M., Prof. J. S. C. Douglas: Serums and Vaccines.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND, 11, Chandos-street, Cavendish-square, W.

TUESDAY, Nov. 22nd.—3.15 P.M., Quarterly Meeting:—Dr. M. Hamblin Smith: The Medical Examination of Delinquents. Dr. H. Davies Jones: Forgetting.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.

A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.

WEDNESDAY, Nov. 23rd.—4 P.M., Lecture VI.:—Dr. R. Prosser White: Do We Neglect the Industrial Skin Sufferer? (With Lantern Demonstration.)

Appointments.

BARRON, H. T., M.D. Lond., has been appointed Clinical Assistant to the Skin Department at Westminster Hospital.

GEBBIE, N., M.D. Glasg., D.P.H., Medical Officer of Health for the Borough of Hyde, Cheshire.

HOOD, D. W. C., M.D. Cantab., Honorary Consulting Physician to the Royal Earlswood Institution for Mental Defectives.

St. Thomas's Hospital: **SLAUGHTER, H. L.**, M.R.C.S., L.R.C.P. Lond.; **McCLEAN, D.**, M.R.C.S., L.R.C.P. Lond; **WILLEY, H. L.**, M.R.C.S., L.R.C.P. Lond.; **TALLERMAN, K. H.**, M.R.C.S., L.R.C.P. Lond; **PHILLIPPS, F. A.**, M.B., B.Ch., Cantab; **BURRELL, E. M.**, M.R.C.S., L.R.C.P. Lond.; **HARTLEY, S.**, M.C., M.R.C.S., L.R.C.P. Lond.; **SPIRA, J.**, M.R.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anæsthetists. **HAMILTON, C. K. J.**, M.B., B.Ch. Oxon.; **GRANGER, E. D.**, M.B., B.S. Lond.; **WHITELAW, A. D.**, M.R.C.S., L.R.C.P. Lond.; **BACK, G. A.**, M.R.C.S., L.R.C.P. Lond., Resident House Physicians. **KENDALL, G. M.**, M.D. Cantab., Resident House Physician for Children. **TRACY, G. D. C.**, M.R.C.S., L.R.C.P. Lond.; **LIANG, P. T.**, B.Ch. Cantab., D.T.M.; **HUMFREY, S. H. G.**, M.R.C.S., L.R.C.P. Lond.; **SQUIRES, F. V.**, M.B., B.Ch. Cantab., Resident House Surgeons. **BROCKMAN, E. P.**, M.B., B.Ch. Cantab., Resident Orthopædic House Surgeon. **CHURCHER, J. C.**, M.R.C.S., L.R.C.P. Lond., Resident House Surgeon for Ear, Nose and Throat. **MAXWELL, L. B.**, M.B., B.Ch. Cantab., Senior Obstetric House Physician. **CARDELL, J. D. M.**, M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician. **LOW, W. A.**, M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon. **SHAW, J. A. P.**, M.R.C.S., L.R.C.P. Lond., Junior Ophthalmic House Surgeon. **CAVENAGH, J. B.**, M.B., Ch.B. Oxon.; **WILLIAMS, B. W.**, M.R.C.S., L.R.C.P. Lond.; **HACKWOOD, J. F.**, M.R.C.S., L.R.C.P. Lond.; **WHITTING, C. E.**, M.R.C.S., L.R.C.P. Lond.; **SHIRES, B.**, M.B., Ch.B. Edin.; **PARSONS-SMITH, B. T.**, M.D. Lond., Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital.—H.S. £175.

Bradford City.—Asst. Bacteriologist. £600.

Bradford City Municipal General Hospital.—H.P. and H.S. Each £350.

Bridgend, Glamorgan County Asylum.—Jun. Asst. M.O. £415.

Bridge of Weir, Consumption Sanatoria of Scotland.—Res. Asst. M.O. £200.

Brighton Education Committee.—Female Asst. Sch. Doctor. £500.

Brighton, Hove Hospital.—Res. M.O. £250.

Burslem Haywood Hospital.—Res. M.O. £200.

Bury Infirmary.—Jun. H.S. £150.

Cambridge, Addenbrooke's Hospital.—H.P. £130.

Canterbury, Kent and Canterbury Hospital.—Hon. Ophth. Surg.

City Dispensary, College-street, E.C.—Vistg. M.O. £52 10s.

Derbyshire County Council.—Asst. Sch. M.O. and Asst. Tuberc. O. £600.

Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.

Durham, Richard Murray Hospital, Blackhill.—Res. M.O. £400.

Elizabeth Garrett Anderson Hospital, Euston-road.—Female Radiologist. H.P. Two H.S.'s. and Obstet. Asst. Each £50.

Frimley, Burrow Hill Sanatorium, &c.—Res. Med. Supt. £600.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.

Greenwich, Dreadnought Hospital.—H.S. £150.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hampstead General and North-West London Hospital, Haverstock Hill.—H.P., H.S., Cas. M.O. and Cas. Surg. O. Each £150. Also Dermatologist.

Ilford Urban District Council.—Asst. M.O.H. £650.

India, Countess of Dufferin's Fund.—Three Medical Women. Rs. 450 per month.

Ipswich, East Suffolk and Ipswich Hospital.—Res. M.O.

Iraq.—Two M.O.'s. 600 to 1000 rupees per mensem.

Lincoln County Hospital.—Jun. H.S. £150.

Liverpool Eye and Ear Infirmary.—H.S. £150.

Manchester, County Asylum, Prestwich.—Asst. M.O. £528 18s.

Manchester Royal Infirmary.—Asst. M.O. and Asst. Surg. O. Each £35. H.S. £50.

Margate, Royal Sea Bathing Hospital.—S. £200.

Middlesbrough, North Ormesby Hospital.—Hon. S.

Nottingham Children's Hospital.—Female Res. H.S. £180.

to medical and military literature, and was the author of "The Medico-Military Topography of the Persian Gulf and Euphrates and Tigris Valley," "The Causes and Cure of Army Drunkenness," "The Death March through the Khyber Pass," and several manuals relating to army medical organisation and service.

One of his fellow officers writes of General Evatt:

"Perhaps his most fruitful work was done in 1881, when he read a paper to the Royal United Service Institution on Army Medical Organisation in War, appealing for militia volunteer bearer companies, for larger staffs of field hospitals, for an army medical corps, officers and men together, for a central military medical school in London, so that military medical officers might be in touch with the leaders of the civil medical profession and hear from them of the advances they were making, for an army medical journal, for proper organisation of the medical corps for war. All these have since come. The more the autonomy of the medical corps is fostered, said Evatt, the more we shall rise to efficiency. I met him first when he was P.M.O. of the army in Hong Kong. In his first year there Kowloon got a good water supply. In his second, the army took over an hotel at the Peak, 1700 feet above the sea, as a convalescent barracks, to give the women, children, and men of the army change in the hot season from the oppressiveness of quarters at the sea level. In his third year the soldier got a third shirt. How, he said, can a man change his sweaty shirt at night unless he has three; one will be at the wash. It is difficult nowadays to realise how different he was from other senior medical officers, how helpful to junior officers who wished to work. Primarily, perhaps, he was a philanthropist, but his education and employment made him seek the benefit of the nation by improvement in the training and position of the medical profession, which owes him gratitude."

Sir George Evatt married in 1877 Sophie Mary Frances, daughter of W. W. Raleigh Kerr. The loss of their only son at Mons clouded the end of his life, otherwise rendered happy by the way in which the Royal Army Medical Corps made good during its great ordeal.

Medical News.

UNIVERSITY OF CAMBRIDGE.—Dr. G. B. Batten, Dr. I. S. Hirsch, Dr. E. R. Morton, and Dr. C. W. S. Saberton have been approved for the Diploma in Medical Radiology and Electrology.

UNIVERSITY OF OXFORD.—Mr. E. G. T. Liddell, B.M., B.Ch., Trinity College, formerly senior demy of Magdalen College, has been elected to a Fellowship at Trinity College. Mr. M. H. Mackeith, B.M., B.Ch., of Queen's College, has been elected to a Fellowship at Magdalen College, and has been appointed demonstrator in human anatomy. Dr. E. W. Ainley Walker has been elected a member of the General Board of the Faculties, as a representative of the Faculty of Natural Science.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians on Oct. 27th, and of the Council of the Royal College of Surgeons on Nov. 10th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 77 candidates who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the by-laws. The following are the names (including 20 women) and medical schools of the successful candidates:—

M. T. Ahmed and S. Annecke, Guy's; Helen R. Ashton, London; T. J. D. Atteridge, St. Bart.'s; Mary J. Ayrton, Cambridge and Charing Cross; A. H. Bean, Univ. Coll.; J. H. Blair, Kingston (Ont.); J. G. B. Brass, St. Louis and London; *H. F. Brice-Smith, Cambridge and Middlesex; E. E. L. Burnier, Lausanne; Linda Catmur, London; W. E. R. Coad, Toronto and Univ. Coll.; W. E. Cody, Bombay and St. Bart.'s; Nancy M. Coutts, Royal Free; P. G. Cumming, Manchester; E. C. Curwen, Cambridge and St. Thomas's; P. T. Davidson, Middlesex; Edith M. P. Davies, Royal Free; Muriel A. M. Davies, St. George's; A. H. Douthwaite, Guy's; H. S. Drabble, Sheffield; C. T. J. N. Drobig, St. Thomas's; H. O. Eksteen, Guy's; A. H. El Ramli, Cairo and Liverpool; E. W. Evans, Birmingham; V. Feldman, Univ. Coll.; L. R. Fifield, London; E. C. H. Foreman, Univ. Coll.; E. Gallop, J. E. Gardner, and C. M. Gwillim, St. Bart.'s; C. B. Hawthorne, Cambridge and Birmingham; Margaret Haywood, Royal Free; Marjorie B. Hubert, St. Mary's; *J. W. Hunt, Toronto and London; E. R. Jagger, Manchester; A. V. Johnson, Cambridge and Birmingham; Eva M. Johnson, Univ. Coll.; David John Jones, Cardiff and Westminster; Dilys Menai Jones, Cardiff and Univ. Coll.; Gladys H. E. H. J. Jones, London; R. O. Jones, Liverpool; E. J. L. Jones-Evans, St. Thomas's; G. Kinneir, St. Bart.'s; F. C. Lewis, Liverpool; W. E. Lloyd, St. Bart.'s; I. B. McCann, Guy's; Elisabeth E. McCulloch, Liverpool; A. Maude, Manchester; E. O. Morrison, Cambridge and St. Mary's; J. B. G. Muir, Middlesex; H. W. L. Nichols, London; F. A. Pickworth, Charing Cross; †Ruth W. Plimsoll, Royal Free and St. Mary's; Enid Mary Powell, Cardiff and Charing Cross; F. W. M. Pratt, Durham and St. George's; J. A. Prichard, Bristol; Philippa P. Pughe, Univ. Coll.; W. G. Roberts, Liverpool; A. T. Rogers and I. Rosenberg, Guy's; J. J. Rowlands, London; A. R. Rutnam, Middlesex; Elaine M. K. Salmond, Royal Free; L. Segal, Charing Cross; A. I. Solberg, Leeds; A. E. Strawbaum, Cape and Guy's; R. O. Swaine, Middlesex; D. R. Thompson, London; Helen C. Tompson, Royal Free; Nellie Vaus, Westminster; C. E. Whitting, Cambridge and St. Thomas's; A. B. Whytock, Kingston; B. W. Williams, St. Thomas's; W. H. Williams, Charing Cross; Beryl Wischam, Calcutta and London; J. R. Wright, Manchester; and Greta I. Yeoman, St. Mary's.

* Diploma of M.R.C.S. previously conferred.
† Diploma of M.R.C.S. alone conferred.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary council meeting, held on Nov. 10th, Sir Anthony Bowlby being in the chair, diplomas of membership were granted to 70 candidates.—Regulations for the F.R.C.S. with Ophthalmology were approved and adopted. The examination, which will be held in June and December, comprises anatomy, physiology, and optics in their relation to ophthalmology; clinical and pathological ophthalmology, and ophthalmic operations. It consists of (*a*) two written papers, (*b*) a written and viva voce examination on patients, (*c*) operations, (*d*) viva voce examination upon pathological and anatomical specimens and upon ophthalmology in general. Candidates must be Fellows or have passed the second professional examination for the diploma of Fellow. They must produce evidence of having held the office of clinical assistant, house surgeon, or registrar for a period of two years at a recognised ophthalmic hospital or in the ophthalmic department of a recognised general hospital. The last-named conditions may be modified in the case of a candidate (*a*) who holds, or has held, the appointment of (assistant) ophthalmic surgeon, (*b*) who has carried out original investigations, (*c*) who has written a thesis or published work, (*d*) whose studies or practice have extended over a prolonged period. The fee for readmission is £10 10*s*. A candidate who passes the examination will receive a certificate entitling him to describe himself as "F.R.C.S. (with Ophthalmology)."—The President reported that he had signed and attached the College seal to the agreement between the War Department and the College relating to the custody by the College of the Army Medical War Collection of pathological, orthopædic, and other specimens.—A letter was read from the clerk to the London County Council calling attention to a scheme for the welfare of blind persons in London and the setting up under the scheme of a central council for the London blind, for advisory and other purposes. Mr. J. Herbert Fisher, F.R.C.S., was appointed as the representative of the College on this central council.—The President reported that the Thomas Vicary lecture on a Glimpse into the History of the Surgery of the Brain would be delivered by Sir Charles Ballance on Thursday, Dec. 8th, at 5 P.M., and that the Bradshaw lecture on the Operative Treatment of Malignant Disease, its Possibilities and Limitations, would be delivered by Mr. H. J. Waring on Wednesday, Dec. 11th, at 5 P.M.

At the Primary Examination in Anatomy and Physiology for the Fellowship, held from Nov. 1st to 11th, 151 candidates presented themselves, of whom 35 per cent. were approved (including four women) and 65 per cent. were referred. The following are the names and medical schools of the successful candidates:—

W. C. Abell, Leeds; N. F. Adeney, Cambridge and St. Mary's; J. C. Ainsworth-Davis, Cambridge and St. Bart.'s; Annie Anderson, Aberdeen and St. Mary's; J. B. Barnett, Birmingham and Middlesex; A. P. Bertwistle, Leeds and St. Mary's; D. P. Bhargave, Lucknow and London; H. C. Brayshaw, Edinburgh and St. Mary's; L. G. Brown, Oxford, London, and Middlesex; W. G. S. Brown, Cambridge; H. Bruce, Leeds; W. K. Connell, Glasgow; J. A. Currie, Guy's; V. W. Dix, Cambridge and London; J. Elgood, St. Bart.'s; F. N. Foster, Leeds; F. P. Fouche, Edinburgh; A. J. Gardham, Univ. Coll. and Middlesex; W. H. George, Cardiff and London; C. S. Gideon and Katharine A. C. Gillie, St. Mary's; J. D. Grierson, Edinburgh; K. W. Heritage, London; E. Holmes, Leeds; G. H. G. Jackson, Cambridge and London; J. A. James and Gwladys R. Llewelyn, Bristol; N. P. L Lumb, St. Thomas's and Middlesex; A. G. Lumsden, Aberdeen; A. C. McAllister, King's Coll., Middlesex, and St. Mary's; J. McCormack, Belfast and St. Mary's; J. R. McDonald, Edinburgh and London; N. Makar, St. Mary's; W. A. Mill, Guy's; C. I. N. Morgan, St. Bart.'s; J. D. R. Murray, Cambridge and Middlesex; J. R. Nicholson-Lailey, Bristol; Constance M. Ottley, Oxford and London; K. O. Parsons, Guy's; A. A. F. Peel, Oxford; R. S. Scott, St. Bart's.; H. W. Symons, Leeds and London; G. L. Thompson and instincts to do). However, that may be, if we take song, fiction, drama, art, &c., as play exercise of emotion there is no doubt that the sex motif is always well represented.

These considerations seem to me to point to the conclusion that the energy of the non-sexual impulses is occupied ab origine in the proper functions, while sexuality is the only important source of a surplus of free adaptable psychic energy. This has equal importance for the psychopathologist and the anthropologist, and I cannot see any inherent improbability in Freud's empirical findings. For the same reason, and because of the characteristics pointed out above, the sexual instincts appear to be much more significant for psycho-pathology than the relatively stereotyped and canalised impulses that are vital to the individual.

Sex in Social Life.

One of the biological values of the social habit is that it ensures the meeting of mates at mating season, and thereby makes less demand upon the sexual impulse. There are two psychic pre-conditions of social life: (*a*) That individualistic instincts should be adjusted harmoniously—sex rivalry is the usual determinant of cleavage—and (*b*) that members of the community should possess a margin of interest beyond that fixed in the service of their individual vital needs. This adaptable surplus may theoretically proceed from any of the instincts, or may be unspecialised ab origine. It seems more probable, however, that it attains its functional employment via the natural (instinctive) channels by a play adaptation. One aspect of the problem is, what proportion makes use of sexual channels, and how?

That sex is in some way the crucial factor in communal life might be suspected from the remarkably clear-cut way in which existing societies may be classified on a sexual basis, and from the definite divergence of type and tendency shown by the groups so discriminated. Of course, the factors of original endowment and adaptability of instinct are of overwhelming importance when comparing the habits and mode of life of insect and mammal; but the point to which I wish to draw attention appears quite clearly within the group of mammal societies. All I desire is to call attention to three types of gregariousness and to show a coincidence between their "culture tendency" and their sexual organisation. (1) Many species form temporary associations, as, e.g., during migrations, which have a unity beyond that of similar reaction to similar circumstances, which may even group members of different species. Such associations achieve none of the permanent constructive purposes of social life; their integration usually gives way on the return of the interests of the mating season. They are asexual communities. (2) The most conspicuous type of community is the sexual unit, the family, where one sex is represented by only one active member. (3) Societies proper, where several families live permanently together with common interests pursued in common.

The first type is not important except as a possible origin for more elaborate forms. From the contrast between the next two we can form some idea of the significance of sex for society. Especially is this apparent when we observe that man is the only species that has truly created a society of the latter type, and that even yet he cannot be said to have established any form whose harmony with his own nature guarantees its permanence. Of the second (familial) type of community there are two distinct forms: the "hive" centring round one functional female, and the "herd" centring round one male. Only insect fecundity can render the former possible; in mammals the reproductive function claims most of the energy of most of the females. Both types of community waste the male sex, by killing, or expelling to live solitarily, most or all of their males. The "herd" consists of sexual individuals, although (after elimination of males and owing to female fecundity and to the power of organic specialisation) the insects can still set aside for social purposes a class deprived of the impulse leading to sex rivalry, while yet retaining the constructive and unselfish "maternal" instincts. This (familial) type of social organisation does not require or achieve (in any phylum) any control of jealousy, any harmonisation of sex rivalry; queens and bulls alike fight to the death or split the community. The stereotypy of insect instinct of course forbids progress here, but the herd has shown an equal incapacity.

For both of these forms of "family" community, then, the unifying biological purpose and the social organisation is sexual. In this respect and in the absence from the "herd" of sexually functional but underfunctioning individuals, they differ from human society, a circumstance agreeing with Freud's Theory of Culture.

Imperfect Specialisation of Mammals.

To obtain services similar to those rendered to their communities by insect "workers," mammals (owing to limited fecundity and long infancy) must utilise their males. In one sense this is an economy, but the material seems to be refractory, perhaps owing to lack of maternal instinct. Again, in default of the unique insect capacity for organic specialisation, this must take the form of an adaptation of interest, which at best can only be gradually and partially accomplished by upbringing. The work or culture interests must be imposed, artificial, and always making headway against the counter-attraction of primitive sex interest and the temptations of play and repose. For the same reason (imperfect specialisation) mammalian communities cannot transcend the "family" organisation without overcoming and perpetually resisting the disruptive tendency of sex rivalry.

Survival Value of Social Habit.

Both of the psychic preconditions of society-building—the securing of harmony and of surplus adaptable energy and interest—are thus bound up with the assimilation and utilisation of the reproductively irresponsible male sex, and the harmonious direction of their surplus energies into socially useful channels—i.e., the main problems of society are sexual problems. It cannot be argued that man's pre-eminence is solely due to his organic endowment, for without his social habits these would have little survival value. We must rather conceive that structural variations and social development have facilitated mutual growth by a process of organic selection.

Development of Intellectual Intercourse.

Though lacking the unity and stability of the "family" organisation, human society has gained the potentiality of variation and progress, and has, in addition, the advantage of utilising the entire species without mutilation or stereotypy of the individual. The combination of "family" or sexual units into a "social" unit, besides permitting an increase in the size of the community unhampered by reproductive considerations, introduces an important modification into the affective relationships of its component members. It substitutes for reciprocity of interest, based on complement of function, a parity or identity of interest that is, to my mind, the basis of intellectual development. For the development of language, and hence of conceptual intellect, intercourse is necessary between individuals with the same interest in the same objects, who have an identical, not a reciprocal affective world outlook. Language and thought are strictly coöperative activities; they can only be developed between companions with the same objective interest. Complementary interest reduces intercourse to a minimum, indeed it is a specialisation of interest that divides, that prohibits understanding. Of course, the mutual interest of the sexes in each other carries no possibility of thought or language development.[1] The conditions of the origin of language and thought are the intercourse and coöperative activity of a number of individuals with objective interests, which interests are at once adaptable and similar in tendency. These conditions are only fulfilled in a society as here defined and studied.

We conclude, then, that the social habit has a sexual value, that its evolution has been through the sexual to the polysexual unit-organisation, that its fundamental condition has been the limitation and adjustment of the sex interest and claims. If we still cannot allow that the impulses of sociability have a sexual origin, and that diverted sex interest is the motive of culture, we must still recognise that the development of society in all its diverging lines centres round the sex instinct, which, if not its stimulus, plays a no less significant part as its opponent. In opposition, if not in conjunction, sex is the basis of society. As environment, without directly influencing organisms, can yet by selection ensure their adaptation to itself, so sexuality even without acting as a creative interest, may impress itself upon every institution of every society. Sex regulation is the prime necessity of social life; what wonder that surviving forms of society should bear such traces of this adaptation that it is difficult to say whether they have been moulded by or moulded upon the sex instinct? In either case sex is the crucial factor for sociology, and institutions such as exogamy attest the difficulties overcome.

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[1] Though there is reason to believe sex interest to be highly adaptable, yet it is, emphatically, only highly adaptable under conditions of obstructed functioning. In its simple form, with the "vital series" unimpeded, no transformation or deviation is conceivable from the stereotyped instinctive channels. The tension of sex interest (potential stimulus to thought and activity) is then inconstant, and even when high, unfavourable to indirect and elaborate expression as in thought activities, since it tends essentially to emotional expression. Furthermore, sex has no variety of common external objects and sequences which serve as the bases for general ideas and require intellectual understanding rather than practical mastery: its practice requires no elaborately devised technique and certainly no coöperative labour. These circumstances, which are lacking in the sphere of simple sexuality, are the conditions of the development of intellect, and it is probably appreciation of this fact which makes Freud's attribution of culture to a sexual energy-source seem so incredible. It should be understood, however, that the recognition of the above-mentioned considerations is not incompatible with the psycho-analytic position.

The Long Fox Lecture.—The tenth Long Fox Lecture will be delivered on Monday, Nov. 28th, at 5 P.M., in the Physiological Theatre of the University of Bristol, by Mr. E. W. Hey Groves, who will take as his subject the Repair of Bone Injuries. The chair will be taken by Sir Henry Gray.

Bristol Medical School: Annual Dinner.—This dinner will be held on Monday, Nov. 28th, at the Grand Hotel, Bristol, at 7 for 7.30. Sir Henry Gray will be the guest of the evening, and Mr. W. R. Ackland will preside. It is hoped that old students will make a special effort to be present. The speech list is to be shortened, so as to allow old friends time to talk to each other. Tables of six or eight can be arranged on application to the Secretaries, Messrs. R. S. Statham and J. A. Pritchard at the Medical School.

Scalp Ringworm in Bristol Schools.—The Bristol Medical Committee has organised a series of meetings at which it has been addressed by the medical officers in charge of the various public services. At a recent meeting Dr. R. A. Askins, principal school medical officer, spoke of the urgent need for routine microscopic examination of children convalescent from scalp ringworm, prior to their readmission to school. The committee has therefore decided to inform every medical practitioner within the city that Dr. Askins has made arrangements for a microscopic examination of these cases on the completion of treatment.

Infirmary Training for Nurses.—The Steyning board of guardians, at a meeting on Oct. 25th, discussed the desirability of the separation of the infirmary from the workhouse proper. The union, under the care of the board, includes the town of Hove, with a population of 46,519, and controls an area with a total population of some 111,000. One reason for the proposed separation is that in order to comply with the curriculum approved by the General Nursing Council the guardians will have to provide the means for improved training for nurses. The present training received by probationers is regarded as inadequate for the after-treatment of acute medical and surgical cases. A year ago a theatre was fitted up for minor operations, and arrangements were made for the reception of paying patients requiring such operations. A subcommittee has now been appointed to prepare a tentative scheme for ensuring the adequate training of nurses.

Certification Fees in Ireland.—The Irish Medical Committee has been informed by the Irish Insurance Commission that it will be necessary in the immediate future to reduce materially the fees paid for certification under the National Health Insurance Act. At the beginning of 1920 the remuneration was increased by 40 per cent., as a temporary bonus, and as panel fees in Great Britain have now been reduced from the temporary figure awarded two years ago, the Treasury thinks fit to reduce similarly the remuneration in Ireland. It is not considered likely that the Irish Medical Committee will, on behalf of the profession, give its consent to reduction, and for any disturbance of work arising therefrom the Treasury will be responsible. If a reduction is made it will press particularly heavily on country doctors, many of whom have been deprived of a large proportion of their salaries by the diversion of the State health grants to extraneous purposes.

Public Health in Aberdeenshire.—Conferences have recently taken place regarding the coöperation of the medical services in Aberdeenshire between representatives of Aberdeen County Council, Aberdeenshire education authority, the various district committees, the town councils, managers of joint hospitals, and the County Nursing Association, along with the various medical officers of these bodies. The representatives were of the opinion that a scheme of coördination of the public health services was highly desirable with a view to the prevention of overlapping and waste. The medical officers of health in the county and the burghs were asked to consider the question and submit a draft scheme to the committee. At a meeting of the medical officers there was some difference of opinion, less as to the desirability of coördination than as to the means of bringing it about. Dr. N. Davidson (M.O.H., Peterhead), who was appointed to consider the memoranda drawn up by the two parties, stated that both views submitted were laudable, but that the medical services of the county should be placed upon a broader basis with a view to obtaining progressive unification. At another meeting the committee decided to send a communication to all the district nursing associations, intimating the amount of the grants available for the services of nurses under the several county schemes. It was also decided that the education authority should endeavour to come to an arrangement with local authorities for provision of facilities at their hospitals for the cleansing of verminous children, clothing and bedding.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, W.

Thursday, Nov. 10th.—At 4 P.M. a Special General Meeting will be held to consider the Annual Report of Council.

List of probable papers:—K. Sassa: (1) Observations on Reflex Responses to the Rhythmical Stimulation in the Frog. (2) On the Effects of Constant Galvanic Currents upon the Mammalian Nerve-muscle and Reflex Preparations (communicated by Prof. C. S. Sherrington, P.R.S.). E. Ponder: The Hæmolytic Action of Sodium Glycholate (communicated by Sir E. Sharpey Schafer). Dorothy J. Lloyd and C. Mayes: The Titration Curve of Gelatine (communicated by Prof. F. C. Hopkins). D. H. de Souza and J. A. Hewitt: Idio-Ventricular Periodicity (communicated by Prof. W. D. Halliburton).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Nov. 23rd.

OCCASIONAL LECTURE: at 5 P.M.

Dr. Gustave Monod: Syphilis of the Stomach. A Discussion will follow in which Dr. A. F. Hurst, Dr. McNee, Mr. Herbert Paterson, and Mr. A. J. Walton will take part. There will also be an Exhibition of Specimens.

MEETINGS OF SECTIONS.

Tuesday, Nov. 22nd.

MEDICINE: at St. Thomas's Hospital, S.E. 1.

Tea at 4.15 P.M. Meeting at 4.45 P.M.

Clinical cases will be shown. Demonstration of Estimation of Basal Metabolism. Demonstrations of Methods of Estimating Liver Insufficiency and of Estimation of Blood-sugar.

Thursday, Nov. 24th.

UROLOGY: at the Cancer Hospital, Fulham-road, S.W. 3, at 2.30 P.M.

Operations by Sir Charles Ryall and Mr. Jocelyn Swan at No. 1, Wimpole-street, at 8.30 P.M.

Discussion on "Renal Function Tests."

Short Opening Papers will be read by: Mr. John J. Everidge, Mr. J. Swift Joly, Mr. J. B. Macalpine, Dr. MacLean and Mr. Cyril Nitch, Dr. Mackenzie Wallis and Mr. Girling Ball.

Sir Cuthbert Wallace, Dr. Langdon Brown, Mr. Frank Kidd, Dr. Marrack, Mr. G. E. Neligan, Mr. A. E. Webb-Johnson, Mr. A. Clifford Morson, and others will take part in the Discussion.

Friday, Nov. 25th.

STUDY OF DISEASE IN CHILDREN, at 5 P.M. (Cases at 4.30 P.M.)

Exhibition of Cases, &c.:—Miss Eva Morton: Report on a Fatal Case of Bullous Eruption. Other cases will be shown.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.

Paper: Dr. J. P. Kinloch: Metabolism in Fevers.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Nov. 21st.—8.30 P.M.: Discussion on "The Arseno-Benzo Treatment of Syphilis." Introduced by Lieut.-Col. L. W. Harrison, followed by Prof. H. Maclean, Dr. J. W. McNee, Dr. R. L. Mackenzie Wallis, Dr. Henry MacCormac, and Mr. C. H. Mills.

ROYAL SOCIETY OF ARTS, John-street, Adelphi. W.C.

Wednesday, Nov. 23rd.—8 P.M., Prof. J. A. Fleming: The Coming of Age of Long-Distance Wireless Telegraphy and Some of its Scientific Problems.

Friday.—4.30 P.M., Mr. A. H. Ashbolt: An Imperial Airship Service.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Nov. 21st.—2 P.M., Mr. Addison: Demonstration of Cases (Surgical Wards). Dr. Scott Pinchin: Medical Out-Patients. Dr. Morton: X Ray Department. Dr. Simson: Diseases of Women. 5 P.M., Dr. Arthur Saunders: *Functional Dyspepsia* (Lecture).

Tuesday.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations and Visit to Wards. 11 A.M., Dr. McDougal: Electrical Department. 12 noon: Mr. Sinclair: Appendicitis (Lecture). 2 P.M., Dr. Burrell: Medical Out-patients. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Medical Wards). Mr. Tyrrell Gray: Visit to Surgical Wards. 5 P.M., Dr. Scott Pinchin: Differential Diagnosis of Pulmonary Tuberculosis (Lecture).

Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Demonstration of Fractures, &c. 2 P.M., Mr. Gibb: Eye Department. Mr. Donald Armour: Visit to Surgical Wards. 5 P.M., Dr. Owen: Diagnosis and Treatment of Renal Disease (Lecture).

Thursday.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Donald Armour: Operations. 2.30 P.M., Dr. Arthur Saunders: Visit to Medical Wards. 5 P.M., Dr. Simson: Modern Developments in the Management of Labour (Lecture).

1000 births. The birth-rate is lower than in either of the three preceding years 1916–18, in which the ratios were 32·30, 33·46, and 31·02 respectively. The death-rate (24·16) is higher than in either of the same three years (20·44, 21·25, and 21·70), as is the infantile mortality ratio. Enteric fever (729 cases and 203 deaths) was less prevalent than in 1918 (1011 cases and 248 deaths), the mortality ratio being 5·2 per 10,000, as compared with 6·5 in 1918; nearly half the cases occurred at Port of Spain, where the disease was endemic throughout the year. Tuberculosis mortality (13·11 per 10,000) was less than in the three years preceding (15·4, 13·5, and 14·4 per 10,000); nearly half of these deaths (240 out of a total of 504) occurred in Port of Spain. Malaria was prevalent throughout the year, and the resulting mortality, 26·21 per 10,000, exceeded that of either of the three years preceding (17·35, 19·78, and 22·00). Anti-malarial measures were carried out in various districts, and a spleen census taken of 18,145 children in elementary schools: this showed a percentage of 7·60 enlarged spleens, a considerable improvement on the findings in 1913–15, when the respective percentages had been 17·91, 14·11, and 11·20. Ankylostomiasis (7·86 deaths per 10,000) was more prevalent than in either of the three preceding years (6·82, 6·39, and 5·56 per 10,000). The Central Board of Health recommended that it should be made a punishable offence "to deposit human excreta or to defæcate anywhere except in a properly constructed privy in any district within a quarter of a mile of any occupied building." Influenza caused 332 deaths, compared with 46 deaths in 1918 (8·6 per 10,000 compared with 1·1 per 10,000); there were also 1031 deaths from bronchitis and pneumonia (20·9 per 10,000) in 1919, compared with 738 (19·2 per 10,000) in 1918, due to the same epidemic. Dr. Lassalle concludes his report by emphasising the importance of (1) the elimination of mosquito-breeding grounds; (2) the provision of pure water and food-supplies; (3) the provision of proper sanitary conveniences; and (4) the prevention of soil pollution in the vicinity of houses.

LADY HENRY SOMERSET MEMORIAL.

IT has been proposed that the most fitting memorial for the late Lady Henry Somerset would be to place the Homes which she established, and to which she devoted her life, on a firm financial basis, free from every encumbrance that might fetter their usefulness. The work done in the Babies' Haven and Industrial Farm Village, at Duxhurst, near Reigate, is of the greatest national importance, but funds and accommodation are so badly wanted that those in charge are obliged to refuse a great many applications for admission per month. The Homes for Inebriate Women have proved equally invaluable; Lady Henry Somerset's perseverance, in the face of much pessimism concerning the possibility of reclaiming women drunkards, has resulted in the cure of 70 per cent. of victims received at the colony. The Duchess of Leeds, Lady Clarendon, and Lady St. Cyres point out in their appeal for funds that the expense of work done at Duxhurst would, but for the existence of these institutions, fall on the rate-payer in the shape of upkeep of workhouses, prisons, and reformatories. There are no endowments, and subscribers are urgently needed. H.M. Queen Alexandra takes a very personal interest in Duxhurst and has expressed the wish that this special appeal may meet with the highest success.

Donations and subscriptions should be forwarded to the Hon. Treasurer, Mr. Ernest J. Wythes, Industrial Farm Village, Duxhurst, near Reigate, Surrey.

JANE HALL MURRAY BED.

AN invalid's convertible bed, couch, chair, and bath-chair, invented and patented by Mrs. Jane L. W. Murray, was exhibited for demonstration at the College of Ambulance, 56, Queen Anne-street, London, W., on Oct. 26th before an interested audience. The combination is designed to allow invalids to have many changes of position without exertion on their part, and to enable them to be moved from their rooms or to be taken outside without requiring to leave their beds. The bed-chair rests on four wheels. It is convertible at will from a bed to a couch, from a couch to a chair, and from a chair to a bath-chair, and back again. The means for effecting these conversion movements are ingenious but simple, and the operations can be performed by an attendant from either side of the bed. The bed is fitted with other appliances for giving ease and comfort. The patient may be raised from the prone position to that of sitting up, by the elevation of a section. An attachment for holding a tray also forms a reading or writing desk. The legs and feet of the patient can be raised. Bearer handles enable the patient to be carried. A canopy with celluloid windows and a waterproof apron and sheet form part of the equipment.

The Murray bed appears to us to be a valuable addition to the means of transport of invalids; and especially of those who suffer from ailments forbidding movement. These patients can be wheeled into the open, conveyed from house to house, from home to hospital, whether the weather is wet or fine, or taken for a journey in a railway van without being moved from their bed. Applications for the apparatus may be made to Mrs. Murray, at Dundarach, Craiglockhart, Midlothian, Scotland.

THE BLIND AND SMOKING.

To the Editor of THE LANCET.

SIR,—There is a very general idea that blind people are quite incapable of enjoying tobacco. I always imagine this idea arises from the fact that when a smoker who can see is smoking in a train which plunges into a tunnel he quite loses his sense of appreciation for the brief period during which he is in darkness. Some years ago I used to travel very frequently through the long Merstham tunnel, and I remember having, over and over again, looked at the end of my cigar to make sure it was alight.

The failure to appreciate tobacco in the dark undoubtedly arises from the fact that sight is not only the most useful of the senses, but is the dominating sense, asserting itself over all the others. Once this dominating influence is lost the other senses assert their individuality and carry on their functions independently of their former master. I smoked a great deal before my sight left me. I smoke a great deal still, and I am pretty sure that I enjoy my pipe or cigar more than I used to. Though it is, of course, true that a blind man misses the delightful sight of the curling smoke, his increased appreciation of the flavour of tobacco in my opinion more than makes up for this. The men of St. Dunstan's who smoke—that is to say, the vast majority of St. Dunstaners—would, I am certain, almost unanimously agree with me, and so would many blind civilian smokers whom I know. A pipe-smoker keeps his pipe going very largely by the sense of sight, and at first pipe-smoking without the aid of this sense is apt to result in the constant letting out of the pipe or the smoking of it so furiously that the bowl gets almost red-hot. But this is only a phase, as are many other things which people do clumsily when their sight first leaves them, but in the case of which practice makes perfect.

With regard to the popularity of various kinds of smoking among blind people, I should say that the pipe is the least popular, probably for the reason that I have just given. Cigarettes, of course, are the most popular form of smoking among the blind, as they are among the rest of the population. Those who care for cigars, and can afford them, find just as much pleasure in them as others do in the pipe or cigarette.

I am, Sir, yours faithfully,
St. Dunstan's, Nov. 11th, 1921. ARTHUR PEARSON.

THE PATIENT'S STANDPOINT.

THE following account of a hospital, by a 32-months' patient, appears in the October number of the *King's College Hospital Gazette*:—

"A hospital is a collection of corridors and stairs supported by slippery floors and contributions. A ward is a room attached to a corridor. It contains nurses, beds, patients, and fresh air in large quantities. A bed has longitude but no latitude. Its real duty is to beautify the ward. To disarrange a bed is a criminal offence. It is a far, far better thing to have a tidy bed than to be comfortable. A patient is the victim of circumstances—a conspiracy between the doctors and hospital authorities. After he has bided awhile he realises why he is called a patient. A nurse is essential for the proper running of the ward. Her chief duty is to watch patients in order to wake them when asleep. . . . . A clinical thermometer is a morbid cold-blooded instrument which requires a hot-air bath twice daily. The radiant heat necessary is provided by the patient. A chart is a piece of paper clipped to a board hanging on your bed. It is provided so that specialists can play noughts and crosses with the students. Has often been mistaken for an underground railway map, but is really the life story of a thermometer set to music. . . . The medicine cupboard contains brandy and castor oil. Tremendous quantities of each are used. The brandy is used to camouflage the castor oil and is also used as a restorative when patients feel faint. No patient is ever allowed to feel faint! Screens are used by the nurses instead of Sandow's Developer and are considered part of their uniform when on duty. No nurse is allowed to take a screen with her out of the ward when off duty. Most screens do not screen. Night commences when the blinds are pulled down—day commences when the night nurses have finished their midnight meal. Old patients sleep in the daytime—it is quieter. Lockers are a hospital version of dining-room sideboards. Always placed so that a patient cannot get at them, and really provided to gratify the nurses' curiosity. Lockers do not lock!"

The comment, if caustic, is not wounding to any particular institution, for the picture is wilfully drawn out of perspective, and hospitals can be made homely without diminution of efficiency.

W. *R.* is thanked for his communication which will be brought to the attention of the writer of the note in question.

Nottingham General Hospital.—H.S. £200.
Oldham Royal Infirmary.—Three H.S.'s. Each £200.
Prince of Wales's General Hospital, Tottenham.—Hon. Surg. Reg.
Rhondda Urban District Council.—Asst. M.O.H. £600.
Royal National Orthopædic Hospital, Great Portland-street.—H.S. £150.
Royal Naval Medical Service.—Surg. Lieuts.
St. Mary's Hospital, Paddington, W.—Med. Supt. £350.
St. Peter's Hospital, Henrietta-street.—Two Hon. Asst. Surgs.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. £100.
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York County Hospital.—H.P. £150.

Births, Marriages, and Deaths.

BIRTHS.

DIXON.—On Sept. 28th, at Trong, Federated Malay States, the wife of William John Dixon, M.B., M.R.C.S., L.R.C.P., of a son.

UPCOTT.—On Nov. 3rd, at Cheriton House, Hull, the wife of Harold Upcott, F.R.C.S., of a son.

VERNON.—On Nov. 12th, at Wordsworth Lodge, Shirley, Southampton, the wife of Dr. R. J. Vernon, of a son.

MARRIAGES.

DAVIS—BLACKWELL.—On Nov. 5th, P. G. Stevenson Davis, M.R.C.S., L.R.C.P., to Amy E. Read Blackwell, second daughter of the late Alfred R. Read Blackwell and of Mrs. Blackwell.

WISE—DIXON.—On Nov. 11th, C. E. Wise, M.D., M.R.C.S., L.R.C.P., to Phyllis D. Dixon, M.B., B.S. Lond.

DEATHS.

COOKE.—On Nov. 9th, at Hampden House, Town Walls, Shrewsbury, from pneumonia, Ernest Wilfrid Cooke, M.R.C.S., L.R.C.P., aged 51.

DELÉPINE.—On Nov. 13th, at 41, Palatine-road, Withington, Manchester, Prof. Sheridan Delépine, Director of the Public Health Laboratory, Manchester, aged 66.

FENWICK.—On Nov. 10th, at Long Framlington, John Charles James Fenwick, M.D., J.P., aged 76 years.

HORSLEY.—On Nov. 8th, at Poplar-walk, Croydon, Henry Horsley, M.R.C.S., aged 83.

ROTH.—On Nov. 11th (suddenly), at Villa Elise, Boulevard d'Italie, Monte Carlo, Felix Norman Roth, F.R.C.S. and L.R.C.P., aged 65.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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THE town of Halle has presented Prof. Emil Abderhalden with the sum of Mk.100,000 for carrying out scientific studies in recognition of his refusal to accept a professorial *chair at Basle.*

Dr. James Bates Wilkinson has been appointed a Knight of Grace, and Surgeon Commander Edward Aubrey Guy Wilkinson, R.N., an Esquire of the Order of the Hospital of St. John of Jerusalem in England.

Notes, Short Comments, and Answers to Correspondents.

THE SIGNIFICANCE OF THE SEXUAL INSTINCT FOR ANTHROPOLOGY AND PSYCHO-PATHOLOGY.

BY IAN D. SUTTIE, M.B., B.CH. GLASG.

IT is still objected that Freud attaches undue importance to the sex instinct in his ætiologies and theories of "culture." A mere conflict of observation on this point would resolve itself in time, but since disagreement extends to the very method of study, it seems worth while to seek a point of view independent of either position. These considerations, therefore, though a priori, have the advantage of impartiality, and do not involve the imputation of motive to either of the disputing parties. As regards ætiology, the charge of exaggerating the pathogenic potentiality of sex seems to me to imply also that of ignoring the significance of other motives, such, for example, as fear. I find no basis for this charge; as Freud's psycho-pathology allots to fear the dominant rôle. This does not seem to be generally realised, even by Freud in defending himself, but it is so. Fear (of punishment, reproach, &c.) is at the root of every repression, an essential factor in the endopsychic censor, and of greater power than the material it ejects. Indeed, from an altered point of view—a standpoint intellectually, if not ethically, truer—it is possible to regard the censor as the disease, and fear, disgust, &c., as the pathological reactions. Psychoanalysis may, then, have misconstrued the signficance of sex, but it certainly has not ignored the self-preservative motives.

"Instinct of Self-Preservation" Strictly a Misnomer.

It is apt to be forgotten that sex is by far the most powerful single instinct, and this oversight is, perhaps, partially due to the misapplication of the term, "the instinct of self-preservation," which is frequently taken to mean an instinct in the strict sense, as, for example, the sexual instinct. It is obvious that there is no such thing as an instinct of self-preservation—that the term applies only to a biological category of behaviour, a descriptive abstraction, and not to any organised psycho-physical disposition capable of exerting all the energy of its many powerful components as one unified motive. On the contrary, the manifold interests and activities, which happen to subserve at certain times and in certain circumstances the general purpose of the preservation of the organism, have nothing in common beyond this ultimate result. For example, the defensive emotions fear, anger, and disgust are as essential to life as the nutritional impulses, yet are independent of and even incompatible with them.

Even McDougal apparently lends support to the fallacious method of classifying behaviour according to the biological function it seems to fulfil, and then seeking to substantiate that classification in the psychic and physiological spheres—to discover psychological mechanisms corresponding to these utilities. Simple impulses, appetites, and the reflexes are activities probably equally definite subjectively and objectively—as conduct and as psycho-physical dispositions—but that is because we have no chance of making an abstract and irrelevant (teleological) classification. There is no a priori reason for supposing the emotion of disgust, and its physical basis, for example, to be more closely associated with other defensive reactions than with the sex impulses which protect the race.

The Sex Instinct.

The sex instinct is itself complex, but relatively synthetised, and should be compared only with equally organised impulses. If this is done it will be found: (1) That it is an appetite, therefore, to some extent, independent of external stimulation, and at the same time positive, not avertive; (2) that it is late in appearing and later still in attaining fixation by function, being unique in its period of non-functional activity; and (3) that, unlike the vital activities which must be efficiently performed from birth (on penalty of extinction) the sex instinct seems dependent more on mind and less on automatic impulse, and to undergo a long and elaborate psychogenesis rendered possible by this circumstance. It is obvious that the impulses of vital functions can never be diverted from their goal (perverted or sublimated—the difference is one of value) while natural selection might permit the development of a considerable uncertainty in the sexual, or other spheres of activity, unessential to individual existence. (4) It appears to me to be true that of all powerful instincts the sexual is most extensively applied in play. Perhaps it may owe most to a development under this exercise (as Groos supposes other

LYMPHATIC PATHOLOGY.

A few points in general lymphatic pathology must next claim our attention as bearing directly on the subject in hand. Perhaps the most constant and striking result of obstruction of the cutaneous lymphatic system is papillary hypertrophy. It may occur from increased transudation without lymphatic obstruction, but, broadly speaking, it must be regarded whenever it is found as strong prima facie evidence of the presence of lymphatic obstruction. In my opinion, lymphatic obstruction is the primary cause of papillomata of all varieties. It is seen at its maximum in elephantiasis. In artificially produced lymphatic œdema of the rabbit's ear, as studied by S. C. Shaw and myself, it is the salient feature of the cutaneous changes. In Paget's disease of the nipple, which as I have shown is due to permeation of the skin lymphatics of the nipple, considerable papillary hypertrophy takes place. Another evidence of lymphatic obstruction is lymphangiectasis—dilatation of the lymphatic vessels in connexion with the obstructed part of the system.

Generally speaking, lymphatic obstruction is incompetent to produce papillary hypertrophy unless it is associated with increased transudation from the blood-vessels. In the classical experiment of Starling, when a cannula was introduced into a lymphatic trunk of the limb of an animal, no lymph flowed until the muscles were put into action or the veins also were obstructed. Then a copious flow occurred. Apparently the lymphatic conduits are idle luxuries except in an emergency. It would appear that if lupus is a lymphangitis, and especially if to the lymphatic obstruction thus created there is superadded a certain degree of venous obstruction, papillary hypertrophy will be produced. I shall be able to show you that it is a characteristic feature of the disease. A presumption is thus raised that venous obstruction with increased transudation is present in lupus. This proves to be the case, and I shall later discuss the mechanism of its production.

The intimacy of the relations between lupus and the lymphatic system attracted the attention of Leloir, who in 1888 published an important paper entitled "Le Lupus Vulgaire et le Système Lymphatique,"[1] of which it will be necessary to give a brief summary. He expressly states that he regards the alterations of the lymphatic system as secondary complications of the lupus. He first draws attention to the areas of local lymphatic œdema and pachydermatous skin which may be found near areas of lupus. He next describes, in the skin near lupus patches—especially of the ulcerative variety—acute or subacute attacks of lymphangitic œdema, or of reticular lymphangitis presenting the characters of erysipelas. Sometimes these attacks coincide with necrobiotic softening, or rapid interstitial absorption of lupus nodules. These attacks vary in acuteness and extent, and in the closeness of their resemblance to erysipelas. Most often on the face they assume the characters of the so-called strumous or white erysipelas. They may be afebrile or accompanied by pyrexia up to 38° to 40° C., with more or less definite febrile symptoms. Leloir distinguishes them from true erysipelas which may also attack the subjects of lupus. The lupoid pseudo-erysipelas is less acute in its course, and does not invade the hairy scalp. Its edge is less defined, and the swelling is as it were flattened out. It is often white.

In some cases after such attacks, crops of fresh tubercles appear in continuity with the original patch or in its neighbourhood, or even at a certain distance away from it. These secondary or metastatic eruptions may be either ulcerative or not. In other cases, as may be seen most clearly in the limbs, the tuberculous virus of the lupoid patch in the dermis extends by means of the lymphatic vessels, ascending thus towards the root of the limb. Thus are produced cord-like lymphangitic thickenings along the lymphatics presenting in their course tuberculous gummata and tuberculous enlargements of the glands. Ultimately the lung on the affected side may become tuberculous, an event signalised by the onset about a week after an erysipelatoid attack of a fresh febrile attack and the appearance of physical signs of apical tubercle. I shall later refer to the treatment of these interesting cases, which appear to have been first described by Leloir.

Leloir next deals with enlargement of the lymphatic glands as seen in lupus. These enlargements are, he states, a stage in the centripetal march of the tuberculous virus. He admits that non-tuberculous glandular enlargements may occur in lupus, from local irritation and secondary infections of the lupoid patch, but maintains that many of the enlarged glands bear to the lupus patch the same relation that the glands in secondary syphilis bear to the primary chancre, and that they are due to infection by bacilli from the lupoid patch. Leloir proved his point by experimentally producing tubercle in animals with material taken from enlarged glands in lupus patients. He showed that tuberculous secondary glands may occur both in the ulcerative and the non-ulcerative forms of lupus. He pointed out that the glands were not necessarily caseous, or much increased in size, that they might present only miliary tubercles, and hence often escape observation. On the contrary, especially in ulcerative lupus, the glands may become very large, may soften, and burst, leaving open sinuses.

Secondary glands may disappear by interstitial absorption or by sclerosis. The glands which remain small, indolent, and elastic (resembling secondary syphilitic glands) are more likely than the large suppurating glands to lead to pulmonary or general tuberculosis. Leloir believes that, to arrest the march of the disease, enlarged tuberculous glands observed in a lymphatic area where a lupoid patch is situated should be eradicated. He has several times seen phthisis begin a few days after fugitive enlargements of the lymphatic glands had appeared and subsided.

SPREAD OF LUPUS.

The absence of anastomotic communication, except by way of the fascial plexus, between the adjoining primary lymphatic areas of the skin prevents the direct spread of pathological processes along the skin by way of the lymphatic vessels. They can only spread by first descending along the lymphatics tributary to the fascial plexus, by then spreading in the plane of the plexus, and by re-ascending to the skin to invade adjoining primary lymphatic areas. It results that though the general trend of such processes is centrifugal, it takes place not by continuity, but by the appearance near the primary lesion of punctate skin nodules which may subsequently merge into it. This is the characteristic mode of spread of carcinoma and melanotic sarcoma. (Fig. 2.)

It is highly significant that the same peculiar mode of spread is seen in lupus. Treves (System of Surgery) distinguishes between the spread of the primary focus of lupus at its edge and the formation of fresh spots in the vicinity. Stelwagon also draws attention emphatically to this peculiarity of the disease. It is, I submit, determined in lupus, as in malignant disease, by the anatomical peculiarities of the lymphatic system. There is a further point of similarity between lupus and malignant disease. It is a peculiarity of the malignant growths which disseminate by permeation of the lymphatic system that the secondary deposits are nodular. I have shown that in carcinoma the secondary nodule is often formed by the extension of permeation from a permeated lymphatic into the arborescence of minute lymphatics which unite to form it. I think I shall be able to convince you that the nodules of lupus originate in the same way by the extension of lymphangitis into the initial arborescence of an infected lymphatic vessel. I believe I can answer the question "Why is lupus nodular?"

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[1] Le Lupus Vulgaire et le Système Lymphatique (Radicules, Vaisseaux, Ganglions), by Prof. H. Leloir.

I have had no occasion to make use of the concept, "herd instinct," and have no space to deal adequately with it, though, as in some sense an alternative explanation, it must be noticed. As Trotter uses it (i.e., to correlate sociable feelings with social conduct) the notion may have some heuristic value, but the term certainly does not refer to any true or possible instinct in the accepted usage. As an induction in the phenomenal sphere of behaviour it is merely a descriptive abstraction, if not an essential proposition, which has been arrived at by a process similar to that responsible for the equally mythical "instinct of self-preservation." Here, as in this latter case, the economic ideal of induction demands a single psychological explanation for all social behaviour, for all communal organisations; and the uncritical imagination proceeds forthwith to supply a verbal one. Herd conduct is due to herd instinct, what more does one want to know? Nevertheless, a proper analysis of communal organisations throughout the animal kingdom displaying differences of sex relationships, organic desexualisation and other phenomena, bespeaks so radical a difference in the instinctive bond of union that we shall no longer feel justified in postulating a single instinct to supply an identical motive for modes of conduct really so dissimilar. Reasoning from these correlated divergencies of sex-relationship and social achievement, one should rather attempt to display the varying characters of societies as due to the varying constraints and adaptations they impose upon this fundamental and universal instinct, or upon those others of whose universal existence and power we have independent knowledge. In this way we can refer an indefinitely large proportion of social phenomena to the interplay of known motives, and refuse to allow any field to be pre-empted by such an hypothesis as that of herd instinct. The matter requires special discussion.

If my presentation appears dogmatic, disconnected, and one-sided I must plead considerations of space. My object is merely to advance certain considerations displaying the social and psychopathological significance of sex from a standpoint outside that of clinical (empirical) psychology.

INDUSTRIAL MICRO-BIOLOGY.

THE Cantor Lectures to the Royal Society of Arts, delivered at the end of last year by Mr. A. C. Chapman, F.R.S., on *Micro-organisms and Some of their Industrial Uses*, have now been reprinted as a small pamphlet (F. J. Parsons, Ltd., 329, High Holborn, London, W.C. Price 2s.). While there is little that is actually new in the lectures, the author has done considerable service by once more drawing attention to the vital dependence of industry upon science and the application of scientific facts and to the fact that this scientific study has lagged in this country. His essential thesis is that "as chemists we shall—for a long time at least—become more and not less dependent on the powers (both synthetical and analytical) of living cells, and that it behoves us to study carefully the conditions which affect the activities of these cells, and which may even induce them to function in one direction or another at will." He illustrates this and other points by a lucid discussion of the mechanism of alcoholic fermentation, the production of glycerine on a large scale by the fermentation of sugar, the use of moulds to convert starch into sugar, the biochemical production of citric, lactic, and other acids, the manufacture of vinegar, the bacterial production of acetone and butyl alcohol, and in a number of other processes described in less detail.

Production of Acetone.

The national importance of the correct interpretation and use of scientific facts is very well illustrated by the production of acetone. Prior to the war the acetone required was manufactured from the acetic acid derived from the destructive distillation of wood and was nearly all imported. The greatly increased demand (for cordite and aeroplane dope), and the restriction of outside supplies stimulated the practical development of a scientific fact known for many years. By means of the fermentative action of a special bacillus, which under suitable conditions can produce butyl alcohol and acetone from starch, it was possible to develop the production of acetone by this biochemical action on a commercial scale.

A subject of considerable interest to medical readers is the utilisation of yeast for human food. The author states that from 50,000 to 60,000 tons of pressed yeast are produced per annum in the breweries of the United Kingdom, the great bulk of which is in the nature of a waste product. He discusses the use of this dried yeast as a food product both for man as well as animals and some of the scientific difficulties which have been overcome. He points out the superiority of yeast extract over meat extract as regards the presence of accessory growth-promoting substances.

Potential Activities of Yeasts.

Very considerable emphasis is laid upon the extremely important scientific fact that the chemical activities of micro-organisms may be made to vary widely according to the conditions under which they are compelled to function. For a good many years the production of alcohol, carbon dioxide, glycerine, and succinic acid in roughly definite proportions has been regarded as a fixed and characteristic property of yeasts. This is due to the fact that yeast has always been studied under a certain set of conditions. By varying these conditions it has been found possible to increase the percentage of glycerine produced from the normal 3 to 7 or 8 per cent., and later, by further developments to as much as 36 per cent. In other words, by varying the environment the response of the yeast cell was so altered that the products of its action upon sugar was entirely varied and it was made to produce glycerine upon a commercial scale. The German army authorities organised a company which at one time was making by this process as much as a million kilogrammes a month.

Need for a National Institute.

Mr. Chapman concludes his lectures by pleading for the establishment of a National Institute of Industrial Micro-biology. Such an institution would serve for the systematic prosecution of original research, as a centre for the specialised training of men intending to devote themselves to the teaching of micro-biology and biochemistry, for the practical instruction of factory managers and technical employees, and as a source of supply to the technical industries of the necessary organisms in pure culture. It is difficult to think of any institution likely to be of more benefit to British industry, and, taking the long view, its establishment would be a real contribution to the prevention of unemployment.

PUBLIC HEALTH IN TRINIDAD AND TOBAGO, 1919.

THE report on medical affairs in Trinidad and Tobago during 1919, recently published, is submitted by Surgeon-General K. S. Wise, who took over the duties from Dr. F. A. de Verteuil in August. It is satisfactory to learn that difficulties such as have been encountered in regard to understaffing of the Colonial Hospital at Port of Spain are not likely to recur, as the staff has been strengthened on a liberal basis and in conformity with modern views. Accommodation is afforded for 310 patients, but during the year this number was almost constantly exceeded, the most numerous diseases treated being venereal affections (412), enteric fever (311), pulmonary tuberculosis (257), malaria (250), acute and chronic nephritis (240), and ankylostomiasis (208). Dr. R. Seheult, the resident surgeon, draws attention to the increase in cases of malignant disease during recent years, the admissions having risen from 38 in 1910–11 to 83 in 1919. The cancer deaths in the colony per 100,000 living have risen from 6·9 in 1898 to 33 in 1918. In a very large proportion of the cases admitted the disease was so far advanced as to render operation hopeless. It is suggested that there should be a wide distribution of leaflets giving a concise outline of the facts in connexion with the disease, and explaining the need for early treatment. At St. Ann's Lunatic Asylum the average number under treatment was 654; the percentage of recoveries was 30·76; of the 169 admissions 87 were male and 82 female, 73 were "labourers" (male or female), 32 were "of no occupation," 11 were housewives, and 11 servants. At the Leper Asylum the average number in hospital was 543, and the total number treated 686, the deaths numbering 57, or 8·3 per cent. of the number treated. Hypodermic injections of gynocardate of soda have been carried out by Dr. S. D. Stewart and others. Dr. Charles Howatson, the medical superintendent, considers that "although the general health of those thus treated appears to be much improved, any real improvement resulting therefrom cannot at present be said to be marked. In some cases stains and anæsthetic areas have been favourably affected. One patient who had great difficulty in using her fingers can now work with them as she had never done before. The treatment seems to be of more benefit to anæsthetic cases." At the St. Augustine Yaws Hospital there were 1455 admissions, an increase of 156 on the number for 1918; the number of individual *cases* was 857 (compared with 870 in 1918); the average duration of stay in hospital was 42 days, and the daily average number present 166. Arsenobillon, diarsenol, and neodiarsenol were used by intramuscular injection. Dr. J. A. Perez, medical superintendent, considers that the results on the whole have been very satisfactory. Out of 10,045 cases treated since salvarsan and its substitutes have been in use the percentage of recurrence has been only 4·8. Dr. E. Hamel Smith, reporting on the Yaws Hospital at Tobago, states that "the arsenobillon treatment gives good results."

Report on Health Conditions, 1919.

From a further report by Dr. C. F. Lassalle, Assistant Medical Inspector of Health, we learn that the population of Trinidad and Tobago in the middle of the year 1919 was estimated at 381,247, that the birth-rate was 30·1 per 1000, the death-rate 24·46, and the infant mortality ratio 155 per

These appearances leave no doubt that the giant cells arise from the proliferated endothelium of a lymphatic vessel.

We have not yet considered the appearances found in the subcutaneous tissue beneath the skin. They are scanty, but very significant. In the perivascular tissue accompanying a small artery and vein may here and there be seen linear collections of granulation tissue containing an occasional giant cell. From their situation we infer that these appearances result from the tuberculous infection and subsequent destruction of a comitant lymphatic. *Infection of* the subcutaneous lymphatics in lupus is not a rare phenomenon, and has been frequently recorded by Leloir and others. Here is evidence that lupus is not confined to the skin, and is not, properly speaking, a skin disease at all. The skin provides a portal of infection and a rich lymphatic plexus in which the initial stages of the disease are located, but the subcutaneous lymphatics are soon infected.

Infection of Fascial Plexus.—Their infection certainly implies infection of the fascial plexuses into which they run. Though in this case I cannot demonstrate it histologically, it was sufficiently shown by the clinical presence of lymphangitis of the trunk lymphatics. If, as I maintain, infection of the fascial plexuses is constant in lupus, the intractability of lupus to treatment aimed at the diseased skin is easy to understand. The scraping or even the excision of the diseased area of skin is merely the equivalent of mowing a bed of nettles, for the roots of the disease—the infected lymphatics of the subcutaneous tissue and the deep fascia—remain untouched to reproduce it.

CASE 2.—The second specimen was a small patch of lupus, about half an inch in diameter, on the upper arm of a little girl. It had apparently been ulcerated, but when excised it presented a central scarred area surrounded by a collarette of slightly raised, reddish, sub-epithelial nodules. I shall only describe the appearances found in the visible patch of lupus by saying that the papillæ were much hypertrophied, and that from the centre of some of the papillæ lines of granulation tissue representing destroyed lymphatics passed down to fuse with the subjacent lupus nodules composed of similar tissue. Some of the nodules tailed off below into stalks of granulation tissue running with the blood-vessels. Both these facts point to the origin of the nodules by proliferation of the related group of lymphatic capillaries.

We now pass to the conditions found at the growing edge beneath apparently sound skin beyond the furthest lupus nodule. From the granulation tissue "stalk" of this nodule a side branch of granulation tissue passes out obliquely and can be traced right up to a papilla of the adjoining skin, into which it is prolonged. Thus a Y-shaped arrangement is seen, the left limb thick and formed of typical lupus tissue, the right limb slender and represented by a chronically inflamed lymphatic. The whole arrangement is a diagram showing how a lupus nodule arises. The left half is completed, the right half is an outline drawing. The process is evidently spreading from the depth to the surface, for several of the skin papillæ within the area of the Y are normal and show as yet no lymphangitis. Further away from the edge, V- or Y-shaped cords of granulation tissue occur at fairly regular intervals in the superficial dermis over a distance of about one-tenth of an inch. Some of the skin papillæ are healthy, others show lymphangitis. This would not be the case if the disease were spreading in the plane of the papillæ. A fortunate section in this region shows one of the infected dermal lymphatics opening out like a stag's antler into about half a dozen infected lymphatics of origin which can be traced right into the centre of the papillæ, and their character of lymphatics thus proved. This particular section is a complete demonstration that in its early stages, before the picture has become blurred and confused by unlimited proliferation and nodule formation, lupus is a lymphangitis. We have before us not a complication of lupus, but lupus itself in the initial stage. Beyond this point the evidences of infection become indistinct, but they can be traced in skin papillæ situated one-eighth of an inch from the visible edge, and possibly a little further. Hypertrophy of the papillæ could be traced about the same distance.

Evidence of Subcutaneous Infection.—The condition of the deep fascia could not be directly investigated, but its lymphatics were certainly infected, for tuberculous lymphangitis of the trunk lymphatics was present.

CASE 3.—The third specimen investigated was a strip of tissue excised beyond the growing edge of a case of lupus erythematosus. I shall not detain you with the histology of this specimen. Papillary hypertrophy is absent. It showed upon the deep fascia a quarter of an inch beyond the furthest point of disease in the skin, a cord of round cells accompanying a blood-vessel. This case provides distinct microscopic evidence that the disease spreads in the fascial lymphatic plexus. I found similar evidence in another specimen of lupus of the forearm, but the evidence of disease in the deep fascia is scanty and difficult to get, for excised specimens rarely include this layer. The evidence justifies the conception of the nature and spread of lupus embodied in the diagram. (Fig. 2.)

Growing Edge of Breast Cancer.

There is a great similarity between the spread of carcinoma in the parietes and the spread of lupus, in its clinical as well as in its histological aspects. Let me briefly recall that a patch of lupus arising on the hand may give rise to a ring of satellite nodules, and may infect the trunk lymphatics, may cause enlargement of the bicipital, the axillary, and the supraclavicular glands, and may finally attack the corresponding lung, a sequence of events which is also seen in an epithelioma arising in the same situation. On the contrary, either lesion may remain purely local. The clinical evidence thus bears out my microscopic conclusions as to the general similarity between the spread of lupus and the dissemination of carcinoma. How should it be otherwise if both diseases spread—mainly by continuity though partly by embolism—in the lymph-vascular system? The anatomy of that system is the same whether the patient suffers from carcinoma or from lupus. It determines the direction of spread in spite of the fundamental difference between the pathological processes involved—permeation in carcinoma, proliferative lymphangitis in lupus. If my conclusions are accepted the similarities between lupus and carcinoma are seen to be neither superficial nor fundamental; they result from the simple fact that the two diseases use the same highways.

Causation of Vascular Congestion and Necrobiosis.

The destruction of the lymphatic vessels and their replacement by cords of tuberculous granulation tissue involves results of great moment for the blood-vessels. When the lymphatic vessels have been destroyed, the relatively thick and diffuse cord of granulation tissue which replaces them envelops and ensheaths the accompanying blood-vessels. Like all granulation tissue it tends to contract, and pressure is thus exerted upon the blood-vessels. At first the vein is chiefly affected, and a venous stasis is produced which reddens the affected area of skin. Increased transudation of blood fluid follows, and if this stage is sufficiently prolonged hypertrophy of the papillæ of the skin results from the combination of increased transudation with lymphatic obstruction. Thus the more chronic forms of lupus tend to assume a warty form. If, however, the tuberculous process is more rapid, venous obstruction, with its accompaniment of increased transudation, is only a fleeting phase. The pressure of the contracting granulation tissue soon affects the arterioles, restricts the blood-supply, and diminishes transudation. Under these circumstances we find, instead of warty hypertrophy of the skin, a failure of nutrition in the overlying skin and in the tuberculous tissue itself. Ulceration and caseous changes follow. The particular form which lupus assumes thus depends on the degree of pressure exerted on the blood-vessels by the contracting granulation tissue which forms around them as a result of the tuberculous lymphangitis of their comitant lymphatics.

TREATMENT.

It is in the surgical treatment of lupus that my observations seem for the present to find their practical application. It is very necessary to recognise the existence around the apparent area of lupus of a zone of apparently normal but really infected skin. Even in the chronic forms of lupus, this zone appears to be present. The knife of the surgeon must if possible circumscribe this area if he wishes to avoid recurrence. Even more important is it to recognise the fact that excision of the skin alone is an irrational procedure. It is almost certain that the underlying area of subcutaneous tissue is riddled with microscopic tubercle in the form of tuberculous lymphatics, and that a corresponding area of the lymphatic plexus upon the deep fascia is infected. Whenever possible, therefore —and it can be done in all cases of lupus of the trunk and extremities—an area of deep fascia at least as

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Hunterian Lecture

ON THE

PATHOLOGY AND TREATMENT OF LUPUS

(LUPUS A LYMPHATIC DISEASE.)

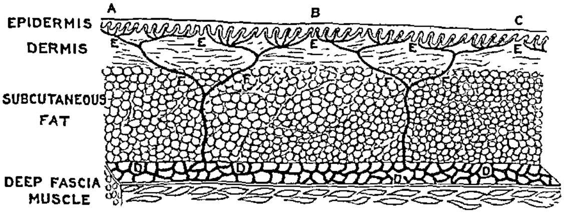
Delivered before the Royal College of Surgeons of England

BY W. SAMPSON HANDLEY, M.S., M.D. LOND., F.R.C.S. ENG ,

HUNTERIAN PROFESSOR; SURGEON TO MIDDLESEX HOSPITAL.

THE subject of my lecture lies on the border-line between surgery and dermatology, and my interest in it was first excited by a case referred to me for operation by my colleague, Dr. J. J. Pringle. I shall here deal only with the surgical pathology of lupus—that is to say, with those aspects of its pathology which have a direct bearing upon its operative treatment. It is no bad test of a lecture or paper to ask the author to write a précis of it on a visiting card. If to-night I had to submit to this test, my summary would run as follows: Tuberculous lupus is not a skin disease. It is essentially and primarily a disease of the lymphatics, a destructive lymphangitis of the parietal lymphatic system. I hope to show you that this conception is not a sterile one—that it has importance both immediate and prospective with regard to the treatment of this obstinate disease. Concerning the nature of the pathological process by which lupus spreads, various hypotheses have been held. It has long been admitted that a lupoid focus, wherever it is situated, may sooner or later infect the lymphatic system; but the phenomenon has always been regarded as secondary, *and no conclusion* has been drawn from it as to the essential nature of the morbid process at the primary focus of inoculation. From my point of view the essential event for the establishment of lupus is the inoculation of the bacillus into a cutaneous lymphatic vessel. The primary lesion is from the beginning a tuberculous lymphangitis, *at first of the dermal* lymphatics, but soon, of anatomical necessity, the process spreads to the subcutaneous lymphatics and to those of the deep fascial plexus. I shall try to show firstly, that upon the hypothesis that lupus is a destructive capillary lymphangitis, many hitherto unexplained phenomena of the disease become easy to understand; secondly, to place before you the direct histological proofs; and thirdly, to consider the bearings upon operative treatment of the knowledge thus acquired. Lastly, I may venture with all reserve to offer my dermatological colleagues a few suggestions in non-operative therapeutics.

FIG. 1.



To show the lymphatic arrangements of the skin. A schematic vertical section *of the skin and subcutaneous fat, with a small horizontal shelf of deep fascia* projecting forward from it. *Below this is muscle in vertical section.* AB and BC are two of the primary lymphatic areas of the skin. These areas measure one-third to half an inch in diameter, and the only lymph-vascular communication between them appears to be by way of the subjacent fascial lymphatic plexus DDDD which is seen on the flat. The lymphatic end-sacs of the skin-papillæ unite by groups of five or six to form small lymphatic vessels, which again unite in the superficial third of the dermis (plane of primary confluence *EEE) to form other lymphatic vessels, which pierce the dermis vertically and* unite just beneath it (plane of secondary confluence FFF) into a smaller number of vessels which run down through the subcutaneous fat to discharge into the fascial lymphatic plexus DDD.

LYMPHATIC ARRANGEMENTS OF THE SKIN.

The descriptions of the lymphatic arrangements of the human skin found in the text-books are meagre, and I have had to rely mainly upon my own observations, derived partly from lymphatic injections, but chiefly from the perfect natural injections of the cutaneous lymphatics which are sometimes seen in *melanotic sarcoma and in Paget's disease of the* nipple. The lymphatic vessels take their origin in the papillæ of the skin as blind finger-like end-sacs lined by endothelium. It is of importance for my present purpose to note that just as a lacteal is the central structure of an intestinal villus, so a lymphatic end-sac is the central structure of a skin-papilla. This fact permits of the identification of lymphatic vessels in sections of skin, no longer with probability, but with absolute certainty. As in a villus, the blood capillaries surround the central lymphatic. Just as the fingers of a glove unite in the palmar region, so *these lymphatic end-sacs join by small groups to* form primary lymphatic vessels. The analogy of the hand is imperfect, in that these primary lymphatic vessels are actually of smaller diameter than the end-sacs which unite to form them. The region where the end-sacs are uniting by groups may be called the *plane of primary confluence. I ask you to note particularly that it occupies the superficial third of* the thickness of the dermis, and produces in this region the false appearance of a plexus, the so-called sub-papillary lymphatic plexus. (Fig. 1.)

The deeper two-thirds of the dermis appear poor *in lymphatic vessels. Those which are seen run* more or less vertically downwards. Just beneath the dermis, in the superficial layer of the subcutaneous fat, these vessels unite by *groups to form* secondary lymphatic vessels which run along the fibrous septa of the skin and empty themselves *into the fascial* lymphatic plexus. Accordingly, just beneath the dermis, where this zone of secondary confluence is found, a pseudo-plexiform arrangement of the lymphatic vessels is seen. This false plexus was described by Arnold as the deep cutaneous plexus. The *fascial plexus into which the* cutaneous lymphatics discharge is a true plexus. It is a unity investing the whole body, offering no barrier to the unrestricted spread of infection, and lying upon or in the deep fascia. It discharges by trunk lymphatics into the cervical, axillary, and inguinal glands.

It will be noted that, according to the foregoing *account, the skin would appear to be divided into* independent lymphatic areas, whose only lymphatic communication with each other is by way of the fascial lymphatic plexus. The communications resemble those in a ship with water-tight compartments closed, but the plane in which they take place horizontally is a deep one—the bilge and not the deck. Judging by the size of the primary lesions in certain skin eruptions due to lymphatic obstruction, *confirmed by observations upon areas of skin* permeated by cancer, the primary lymphatic areas of the skin appear to be about one-third to half an inch in diameter. There is one other fact of lymphatic anatomy upon which I must insist—namely, that in close company with each small artery and vein, one or more often two comitant lymphatics are seen. Both in cancer and in lupus serious consequences to the blood-vessels arise from this close association.

deep fascia, not merely the skin, and to this end gamma radiation from screened appliances must be employed. Treatment must be guided by microscopic conceptions, not by clinical appearances, and *must be mainly directed to the invisible growing edge, to the neglect at first of the visible lesion.* A rationally planned course of radium treatment on these lines should be more effective than the purely empirical treatment hitherto employed.

CONCLUSION.

The facts I have here discussed are fundamental for the treatment of lupus. The most profound study of bacteriology and chemical physiology could not have revealed them. They are the product of morbid anatomy, a branch of medical science temporarily out of fashion and by many wrongly supposed to be dead. I venture to urge that a revival of interest in morbid anatomy is necessary to the balanced progress of medical science. Those who depreciate it have failed to realise the recent advances in its methods. Its former cheese-tasting methods are out of date. The awakening of geology came with the realisation of the fact that the strata of the earth are frozen history. Similarly the dead tissue with which the morbid anatomist deals, if systematically examined, provides him with biograph films of the morbid processes which took place during life.

In conclusion, I must express my thanks to the present and past directors of the Bland-Sutton Laboratories of the Middlesex Hospital, Prof. J. McIntosh and Prof. C. H. Browning, for the facilities they have afforded me.

The Relation OF CRIME AND DELINQUENCY TO HEREDITY, ENVIRONMENT, AND DISEASE.

A Lecture given to Teachers at the London Day Training College on Oct. 27th, 1921,

BY W. A. POTTS, M.A. CAMB., M.D. EDIN.,

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FIFTY years ago a remarkable theory relating to criminals was put forward by Lombroso—namely, that criminals constituted a distinct class, who could be recognised as conforming to a particular type, shown more particularly by the shape and size of their heads. Moral character was to be measured with a foot rule. Indeed, the science of criminology was to be even more simple, for not only could criminals be recognised, but also the nature of their misdeeds; after careful inspection the murderer, the thief, and the prostitute could be determined. Although discredited at first, Lombroso's theory gradually won much support. It derived credit from Lombroso's previous sound work, and also from the fact that it contains a germ of truth. Intelligence and good conduct do bear some relation to the size and shape of the head. It is impossible to have normal intelligence in heads below a particular size. It is an advantage to have a big head up to a point, but a skull of unduly large circumference is almost sure to contain a large brain of inferior quality. Some facts of that nature have been established, and are useful, but they only help us to diagnose a few of our abnormal cases and do not lead to the fine and universal distinctions Lombroso claimed. This method of diagnosis of criminals is now discredited. The death blow was given by the late Dr. Charles Goring, who examined an enormous number of prisoners and published the result in his famous work, "The English Convict." He established the fact that the criminal belongs to no particular type, though he is usually inferior to his fellows in stature, physique, and intelligence—a fact very different from that which Lombroso claimed to have established.

HEREDITY.

There is no criminal type. Numbers of criminals are often found in the same family, but so far as heredity is concerned, that only means they have inherited poor intelligence, weak physique, and so on. Well-marked criminal types show nothing more nor less than the abnormal cranial configurations we are accustomed to associate with a small percentage of mental defectives, such as the microcephalic and scaphocephalic. These particular configurations do not occur in more than 10 per cent. of defectives. But recent investigations have even thrown doubts on the inheritance of mental defect, as such, in many cases where it appears in a direct line. In one sense mental defect is essentially an hereditary character, but sometimes what is inherited is not a bad brain, but an inferior development of the thyroid and other so-called endocrine glands to which great importance is now attached. A function of some of these glands is the stimulation of normal development, particularly of the brain in fœtal life. This, however, is a controversial subject on which I cannot enlarge here; it does, however, make us think more of environment, because some of these glands are very sensitive to environment, particularly to infection of all kinds. The endocrine glands are of special importance during pregnancy, so that if we would diminish delinquency, some of our energy must be devoted to the ante-natal clinic.

In confirmation of Goring's findings I would quote from Dr. Healy, the great American authority on delinquency: "There are many kinds of criminals with all sorts of traits, and one would urge great caution in speaking of them in any way as a single group."[1] Then he quotes approvingly from Goring: "The physical and mental constitution of both criminal and law-abiding persons of the same age, stature, class, and intelligence, are identical. There is no such thing as an anthropological criminal type." Reflection will show that in a criminal family the environment and training, or lack of training, must affect the issue. Although Lombroso's theory has been disproved, there is a school who would explain delinquency in almost as definite and precise a manner —looking upon crime as largely indicative of mental defect. They start with the statement, which is true, that mental defect is more common among the prison population than the ordinary population, but even if they go on to the extravagant statement that 10 per cent. of all prisoners are defective (a fact not proved if the standard of intelligence indicated in the Mental Deficiency Act, 1913, is taken) it is hard to establish their point. For a large percentage have ordinary intelligence, grading as ordinary that exhibited by an average person brought up in similar surroundings with a similar education. The extremist would seem to beg the question by saying that only a small amount of mental defect is necessary to constitute a criminal, or that criminal conduct is a proof of mental defect. In the last resort it can be called moral imbecility. But the term moral imbecile often seems to me a cloak for ignorance. Nearly all the so-called moral imbeciles I have examined were mental defectives; the remainder suffered from some defect in physique, training, or environment, or—more usually—a combination of such abnormal conditions. This does not mean that the term "moral imbecile" is not a useful classification, provided it is only put forward on rare occasions; nor does it mean that the moral imbecile must at the present time be treated otherwise than by letting him meet the usual fate of his criminal acts. He is sometimes too dangerous to society to be at large, and we are sometimes too ignorant to deal with him in any other way than by punitive detention. But this diagnosis and treatment should be reserved for a small number only.

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[1] The Individual Delinquent. William Healy, A.B., M.D. London: William Heinemann. 1914. P. 161.

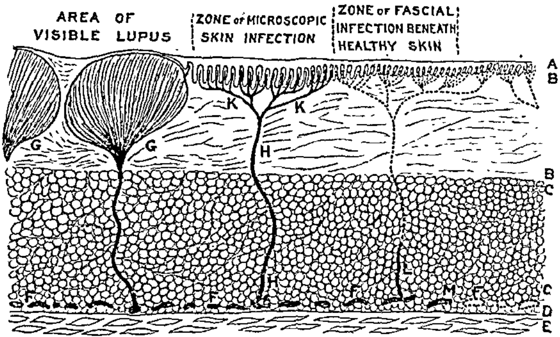
Histological Evidence.

There is much histological evidence of the intimate relations of lupus to the lymphatic system, and some histologists have maintained, though they could not prove, that the disease spreads by the lymphatics. It is commonly stated that in lupus there is a downgrowth of the interpapillary cell columns of epithelium. This fallacious observation is a testimony to the occurrence of papillary hypertrophy. The interpapillary cell columns are passively stretched and then laterally compressed by lymphœdema of the intervening papillæ. Dilated lymphatics—the result, evidently, of lymphatic obstruction elsewhere—are frequently described. Time forbids me to linger on this subject, or to summarise the mass of literature connected with it.

Failure of Lupus Carcinoma to Disseminate.

I have at present under my care two cases of lupus carcinoma. In neither case had there been any radiological treatment prior to the onset of malignant disease. In both cases, although the disease is very advanced, there is no indication whatever of any enlargement of the lymphatic glands. Now this is exactly what might be expected if a carcinoma arises in a region where the lymph vascular system has been previously destroyed. On referring to the literature, with the kind assistance of the librarian of the Royal Society of Medicine, I found that in a collection of 122 cases Ashihara[2] found only 16 cases in which the glands were involved. In these 16 cases it may be assumed with great probability that either the disease had infiltrated into regions of intact lymphatics beyond the lupoid area or that the glands were tuberculous and not malignant. Here, then, is a striking fact which receives an easy and natural explanation upon the view that lupus is essentially a destructive lymphangitis. In one of the earlier editions of Sir John Bland-Sutton's book on "Tumours" there is a comment upon the failure of lupus carcinoma to disseminate. To Wild is attributed the explanation that dissemination is prevented by destruction of the lymphatic channels, but upon what evidence I do not know, since I have not found a reference to Wild's paper.

FIG. 2.


AREA OF VISIBLE LUPUS
ZONE of MICROSCOPIC SKIN INFECTION
ZONE of FASCIAL INFECTION BENEATH HEALTHY SKIN
A
B
K
K
G
G
H
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C
H
L
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M
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C
D
E

Schematic vertical section of the growing edge of an area of lupus. From above downwards the epidermis A, dermis BB, subcutaneous fat CC, deep fascia D, and muscle E are seen. The disease is spreading from left to right. At the right edge the normal lymphatic system of the skin is represented by dotted lines. *Just under the epidermis are the papillary end-sacs, uniting in the superficial dermis (plane of primary confluence) into small lymphatic vessels, which again unite to form vessels piercing the dermis and emptying into FFFF,* the fascial lymphatic plexus. At the left edge of the figure are two primary lupus nodules, each formed by the destruction of an arborisation of lymphatic vessels. The lymphangitis has spread along FF, the fascial lymphatic plexus towards the right, and has re-ascended the vessel HH to produce early infection of its arborisation KK. It is also beginning to ascend the remoter vessel L. In the deep fascial plexus it has spread beneath healthy skin to the point M. *The secondary confluence of the lymphatic vessels just deep to the skin is* omitted for the sake of simplicity.

MICROSCOPIC CHARACTERS OF THE GROWING EDGE.

The great labour which has been devoted to the histology of lupus has hitherto failed to explain why lupus is nodular, why it affects the superficial third of the dermis, why it apparently spreads discontinuously, and why the disease is so obstinately recurrent, although due to an avirulent form of the tubercle bacillus. The fact is that histologists have not based their investigations upon lymphatic anatomy, and have concentrated their attention upon the confused pictures of the later stages of the disease instead of studying the early changes seen at its microscopic growing edge. I must now describe three cases in which I investigated the microscopy of the growing edge of lupus beyond the visible area of disease.

CASE 1.—A patch of warty lupus at the base of the index finger. The most striking feature of the section is *the great papillary hypertrophy seen in its central diseased* portion. Measurement shows that at one end of the section in healthy skin the papillæ measure two units on the micro*meter scale. Passing across it they increase in length to* 10, 12, and, as a maximum, to 20 units of the scale. Then a decrease begins, and at the other edge of the section the *length averages only three units. At the edge* of the affected area, where there is no papillary hypertrophy, the first change noted is that the centre of each *papilla is occupied by a more or less solid column of* endothelial cells irregularly arranged. There is here no round-celled infiltration. From the central situation of these endothelial cell-columns it may be inferred with certainty that they are derived from the proliferation of the lining endothelium of a lymphatic vessel. We see, then, that an endo-lymphangitis is present in areas shortly to be invaded by the centrifugal spread of obvious lupus. In the superficial layers of the subjacent dermis *lines of similar endo*thelioid cells, often solid, but sometimes *presenting a central lumen, can be seen.* These lines show Y-shaped *junctions* and are arranged in a retiform manner. The appearances are just like those seen in an injected specimen of the skin lymphatics, and there can be no doubt that they represent an endolymphangitis of the dermal lymphatics, for their continuity *with the undoubted* central lymphatics of the papillæ can sometimes be traced.

Passing on, we note that the papillæ begin to show hypertrophy, *and that around the retiform columns of endothelial* cells collections of inflammatory round cells begin to appear. They form a definite band in the superficial layer of the dermis just like that seen in Paget's disease and in elephantiasis. This plane of the dermis is the plane of primary confluence of the lymphatic capillaries, and the concentration of the round-celled infiltration in this layer and in the papillæ is an additional proof that the disease is a lymphangitis. The round-celled infiltration appears to arise from the inability of the leucocytes brought by the blood-stream to pass away along the blocked lymphatics. In the deeper *dermis accompanying the blood-vessels are lines of round*celled infiltration and epithelioid cells. Since lymphatics are comitant to blood-vessels the nature of these appear*ances is clear. They represent lymphatics blocked by* lymphangitis and surrounded by round-cells which find their natural way of return cut off. We now reach a region of great papillary hypertrophy where the papillæ and the superficial third of the dermis are converted into granulation tissue containing giant cells. These giant cells tend to follow the line of the lymphatics in a very definite way. Sometimes a line of giant cells can be seen occupying the situation of a lymphatic in the centre of a papilla. At other times a vessel with proliferating endothelium but with a lumen still distinct can be seen to tail off into a line *of giant cells which follow the line of the original lymphatic.*

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[2] Ueber das Lupus-Carcinom, by Dr. N. Ashihara (*Archiv für Dermatologie und Syphilis, 1901, p. 193*).

im as mentally defective. His attitude, demeanour, nd record are quite different from my idea of a oral imbecile. On the contrary, with the exception f this and one other act of stealing when he took ot money, but two articles he did not want and ever used, his conduct has been exemplary; it has een that of the boy who is almost too good, except hat at the present time he will not go to work. He may be suffering from incipient mental disease; in any case, we can only explain his conduct by studying his mental attitude. We have difficulty in classing him as mentally defective, because his intelligence is as good as that of large numbers of others of the same social class and education who are able to carry on quite well. We are, however, justified in regarding his limited intelligence as one factor in precipitating the present crisis. There must be other factors; those are to be found in the unconscious mind. This has not been thoroughly investigated, but help is gained by realising that he has a kind and indulgent mother, whose inclination is to shield her children in every possible way. The mother is not robust; the father is of similar temperament, with a record of serious ill-health, as he is a victim of consumption. He has struggled hard to bring up his family well, but is now breaking down under the strain; he has no longer a business of his own. We can easily imagine in such a home circle the growth and spread of a sense of inferiority and hopelessness of outlook; Providence seems to be against them. The boy himself is not strong, and when he feels a bit slack may have a suspicion that he will have just as bad luck as his father. The loving care that has shielded him has not promoted the development of grit. At the back of his unconscious mind may lurk the idea: "What's the good of my going to work? I can never hope to win through; at the best it is only postponing the evil day."

THE DELINQUENT'S SENSE OF INFERIORITY.

Developed in one way or another, the sense of inferiority is often found in the delinquent. The boy who cannot see the blackboard at school, and who does badly because his defect is not recognised and dealt with, feels he is inferior and cannot compete on equal terms with his fellows; let the temptation or the bad example come, and it is a short step to crime. Yet if you ask him why he did it, he cannot tell you either of his eye defect, or of the idea that comes welling up from the unconscious to influence his conduct. Often the sense of inferiority is developed because the child is awkward or slow, and then his stupid parents tell him that he will never be any good, and are always dinning into him that the only suitable head-dress for him is the dunce's cap. One of the most satisfactory cases I ever had was a man who went to the university rather late in life, because whenever as a boy he spoke of visions of a degree and a profession he was always told, "What's the good of your thinking of a university; you would never pass the entrance examination. far less get a degree." He was told he was so stupid he must go into business, a vocation which to my mind requires ability, and in which he failed because he had neither interest not aptitude.

These cases are closely allied to the so-called father or mother complex, where the authority exercised by one or both parents is so absolute that the child has no opportunity of developing his individuality and coming into his kingdom. Sometimes excessive authority develops the rebel type, that type who is openly hostile to all authority and looks upon rules and regulations as only made to be broken. Do not think I am advocating spoiling children; far from it, for a spoilt child has the worst chance of all in life. There must be firm and wise direction of the growing life. but the weight of authority must be steadily diminished till it reaches the vanishing point as the young person ends his teens. We must have discipline from without at first, but we want to develop later on internal discipline, mastery over self.

THE SEX COMPLEX: UNWISE ADULTS.

I must remind you that those who have to do with delinquents often find a sexual complex. Something of this sort is the explanation of many cases of stealing or other impulsive acts. Here again the mischief is in the environment, and in the home in particular. There has been no simple dealing with the problems of sex and development by the mother as the children begin to wonder and ask innocent questions. How can they help thinking of the wonderful mystery of life? Later on, instead of learning gradually, their ignorant minds are flooded with a mass of false teaching, imparted in the wrong way by bad companions. Teachers ought to know how much sexual irregularity there often is in and around a school. Wise supervision and a few frank words with the individual can do much good; but you can never put matters right by formal teaching in class. It is always an individual problem to be dealt with privately. Nor must you ever speak to the individual unless you feel you can help him.

I have dwelt rather long on environment; that is because, putting aside the limited number of cases of mental defect and of gross disease, the environment seems to me the most important matter. A short time ago I was told about a child of known bad parentage who was adopted by a good and kind couple; the girl went hopelessly wrong. It was suggested that this must be due to heredity. I should be glad to have particulars of similar cases, because one case proves nothing, but in such a case there is a possible fallacy. In the first place the girl was brought up as an only child, which is not desirable. Then I should like to know why the foster parents had no children of their own. Was there any fault on their part, or did nature realise that they were not suitable to be parents? A short time ago I saw an orphan delinquent girl whose case threw some light on this matter. When I asked her why she was so unhappy, she burst into tears and said, "Aunties are not mothers." The child must have discipline, but discipline in the early years at least must be tempered by love. This girl gave me an instance of the bad influence unwise guardians may have. On one occasion, when she was in a room alone with a boy cousin, her puritanical uncle came in, and finding them together, at once accused them of misconduct. This unjust accusation permanently estranged the boy from his father, and might have produced the situation the father wanted to prevent.

DISEASE.

A few words will suffice for the subject of disease, which, like mental defect, must always be considered in connexion with delinquency. As already suggested, eye and other defects may be very important; there must be a thorough physical examination, not only for definite disease, but also for slight disabilities, which may be the basis of a mental conflict. The constitutional diseases, especially tuberculous disease and syphilis, are not uncommon in criminals, and may partly explain their abnormal conduct. Both call for appropriate treatment. Syphilis may be inherited, but as we see it, it is more often acquired and therefore due to the environment, where we may blame either injudicious home training or abnormal social conditions. Tuberculous disease is due to both heredity and environment; there is the inherited predisposition, or rather lack of resistance, and later on the faulty hygiene. Epilepsy is extraordinarily important; it is the explanation of some criminal acts. but is often overlooked, especially when of a mild type or in the incipient stage. I know one boy, who had several severe fits when under my care, who was subsequently ordered to be birched by a bench of magistrates. Fortunately the sentence was not carried out, although its remission was not due to recognition of his disease.

CONCLUSION.

I can best sum up the problem of crime by quoting from Goring. "The crusade against crime may be large should be taken away in one piece with the area of skin excised. The test of the completeness of the removal is that muscular tissue should be seen in the floor of the resulting wound.

Excision.

Leloir, writing in 1891, condemned the excision of lupus, though he admitted that in certain exceptional cases excision followed by skin-grafting might be the only means of cure. English surgeons have not shared Leloir's dislike for the method. Thus Cheyne and Burghard (1903) consider that an early patch of lupus should be removed by an oval incision followed by suture. For such cases they consider the method ideal; in more extensive cases they advocate, wherever possible, excision followed by a plastic operation or by skin-grafting. The excision must be carried freely (at least a quarter of an inch) beyond the edge of the disease and well into the fat beneath, or it will not be successful. Dr. Arthur Whitfield—who, as dermatologist to King's College Hospital, no doubt had the opportunity of watching cases so operated upon—formed a high opinion of excision in early cases and found relapse "extremely rare." On the other hand, after excision of extensive lupus followed by skin-grafting, relapse occurred within the grafts in the great majority of cases. There is here a clear indication of the defects of the present method of excision. Although the plane of excision traverses the deep subcutaneous fat it leaves intact the subjacent infected lymphatic plexus of the deep fascia. The failure of excision conducted on these lines is an experimental proof of my contention that the deep fascial lymphatic plexus is the lurking place and the main channel of spread of the disease. This contention is not vitiated by the almost uniformly favourable results of the superficial excision of very early lupus, in which presumably either the deep fascial plexus is not yet infected, or the inflammatory reaction of the operation suffices to strangle fascial infection in an incipient stage.

Is it possible to devise a method of excision which shall accord with the conception of the disease as a capillary lymphangitis? The answer to this question will vary with the site and extent of the disease, but for certain cases, as on the limbs and trunk, it is in the affirmative. I have space only to describe the ideal method; I must leave it to you to judge of its limitations for any given case. In any operation those pathological facts must be taken into account of which I have offered proof: (1) That lupus is a destructive proliferative lymphangitis, only confined to the skin in its earliest stage. If the area affected exceeds half an inch in diameter it must be assumed for reasons of lymphatic anatomy that the subcutaneous tissue and the deep fascia are also infected. (2) That the disease is spreading in the deep fascia, not in the plane of the skin, and that accordingly the infected area of deep fascia is slightly larger than the infected area of skin. (3) That the visibly diseased area of skin is surrounded by a zone about a quarter of an inch wide in which microscopically tuberculous lymphangitis is already present.

Method of Operation.—The visibly infected skin must be circumscribed by a ring incision. In order to allow for the area of early microscopic infection, this incision must not come within a quarter of an inch of the visible edge of the disease. The skin edges must now be reflected back for a further quarter of an inch. The exposed area of deeper subcutaneous fat is then surrounded by a ring incision which marks out the area of deep fascia requiring removal. This area is raised from its edges towards its centre until the diseased deep fascia is removed. The surface of the muscles is exposed in the floor of the wound, which is sutured or skin-grafted.

Such an operation is obviously impracticable for extensive lupus of the face. In lupus of the limbs or trunk it should be the method of choice, unless the disease is very extensive. Superficial excisions, not including the deep fascia, are only allowable where removal of the latter layer is impossible on cosmetic or other grounds. They should always be supplemented by cauterising agents, which it may be hoped will excite sufficient reaction to destroy the foci of disease in the deep fascia. Skin-grafting should be deferred until the cauterised surface has produced healthy granulations. In such cases it may be doubted whether imperfect excision has any advantage over the older method of scraping combined with cauterisation. If the disease has spread to the trunk-lymphatics and the glands, the infected vessels and glands must be excised in one piece with the area of lupus (monobloc method of operation). A case which I described in the *British Journal of Surgery*[3] illustrates the successful application of this method. The patient remains well more than three years later.

Bier's Hyperæmia.

We have seen that a passive hyperæmia with increased transudation is normally present in lupus. It seems improbable that the artificial exaggeration of this characteristic feature of the disease should exert a curative effect. It might, indeed, be argued that the repair seen in the older central area of a patch of lupus is due to hyperæmia. But the presence of hypertrophied papillæ beyond the visible edge of the disease makes it probable that slight venous obstruction is present in the earliest stage of infection and obviously it does not interfere with the evolution of the disease. The conclusion seems justified that artificial passive hyperæmia is most unlikely to arrest the spread of lupus, and it is worthy of note that Bier has ceased to employ this method. He states: "With congestion hyperæmia by bandage I have seen no results or only transitory improvement of ulcerative lupus of the extremities."

Finsen Light Treatment.

Since sunlight is a notorious enemy of tubercle it is not surprising that the Finsen arc lamp, which supplies light rays deprived of their heat, has a curative effect on the cutaneous manifestations of lupus. It is instructive to note that the method is ineffective unless the surface acted upon is blanched and made transparent by the pressure of a quartz disc. Even when this is done the light rays can only be expected to penetrate to the superficial layers of the dermis. In other words, the action is a surface action. The superficial nodules disappear, leaving a good scar, but the results obtained are rarely permanent, though the treatment is prolonged, tedious, and expensive. If, as I have tried to prove, lupus is a capillary lymphangitis affecting the lymphatics of the subcutaneous tissue and the deep fascia as well as those of the skin, the failure of the Finsen light method to fulfil its early promise is easy to understand, for it cannot reach the deep fascia. It should be abandoned for methods more rational and effective.

Radium Treatment.

In the report of the Radium Institute for 1919, Dr. Hayward Pinch states regarding lupus vulgaris: "Cases of long standing which have proved non-amenable to Finsen light X rays, CO_2, snow, scarification, caustics, &c., are sometimes quickly and effectively cured by radium, and the treatment is well worthy of a trial when other methods have failed." It is advised that ulcerated areas should receive an unscreened exposure of one and a half hours, while indurated and non-ulcerative areas are best treated with long screened exposures. The screen should be 1 mm. silver or 2 mm. lead. It seems probable that the future will see an extension of radium therapy in lupus as the method of choice. Apart from its direct action on the tuberculous tissue, radium is known to have the power of exciting an aseptic lymphangitis, and in this way by obliterating the normal lymphatic vessels around the infected area it can probably stop the progress of the disease by an insuperable barrier. To those radiologists interested in the surface application of radium, I would suggest, as the best means of erecting such a barrier, an encirclement policy working from the sound tissues towards the diseased area. It must be recognised, too, that the layer to be effectively irradiated is the material, I have found the syndrome much more frequently incomplete (amongst cases at Harrogate).

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[3] Brit. Jour. of Surg., January, 1920.

Nearly thirty years ago, at the Bath Mineral Water Hospital, I was taught the diagnostic significance of the temporo-maxillary joint in rheumatoid arthritis, using that much abused term, not as synonymous with, but as absolutely distinctive from, osteo-arthritis. The accompanying neck symptom in this complaint was also noted. Further experience showed the syndrome to be practically invariable in poly-articular gonorrhœal arthritis. Then, as the importance of buccal and other infections became appreciated, the same rule was found to hold good; and later, in a veritable epidemic of post-dysenteric arthritis, consequent on the Gallipoli campaign, the syndrome was again unfailing. In 11 cases of arthritis occurring during or immediately after the acute specific fevers, the jaw and neck were always affected; and finally I found it in two cases which appeared to be caused by, or at any rate exacerbated by, some toxic action of the thyroid.

Two Main Divisions of Polyarthritis.

Not in a single instance could I discover it in a case of rheumatism or gout in which other infection could be excluded. Thus gradually but irresistibly the conclusion was arrived at that polyarthritic cases could be divided into two main groups, the jaw-neck syndrome cases, that were never gouty or rheumatic, but were always due to a definite infection or toxin, and might be classed broadly as the infective or toxic group, and the non-syndrome cases, that were due to gout, rheumatism, or traumatism.

It is true that acute rheumatism is also almost certainly due to an infection, so that it is perhaps hardly logical to call one the infective and the other the non-infective group, and a more precise term is certainly desirable for the gouty and rheumatic group; indeed, were it not for the fear of rendering the confusion of names worse confounded, I would suggest calling one the "rheumatic" group, and the other—the syndrome series—the "rheumatoid" group, for the latter name commits us to no theory. Whatever the nomenclature, however, the division is practically convenient, more especially from the point of view of treatment.

The Term "Rheumatism."

At present we are confronted with the fact that the word rheumatism is used in conjunction with such an adjective as gonorrhœal. It has always been the bane of discussion on the "rheumatic" diseases that there has been no accepted definition of the meaning of the term rheumatism, and further, that in speaking of the different members of the so-called rheumatic group different authorities have used the same term to signify different conditions; I refer especially to the use of the words "rheumatoid arthritis." This had led to a hopeless confusion of issues, and I would enter a plea for a fundamental clearing of our nomenclature, so that we may know exactly what we are talking about. Before venturing to suggest a comprehensive classification, therefore, I propose to submit a definition of the terms employed. The term "rheumatic" is so useful and so universal that we can hardly forgo it, indeed, there is no other adjective to fill its indispensable place; at the same time it is so vague, and used in such varying senses, as to be extremely misleading. This, perhaps, is due to the gradual evolution of our ideas from a humoral pathology, through a chemical and neural phase, to a bacteriological view, and at the back of our minds is there not still a hazy subconscious blending of these various outlooks? While invasion by micro-organisms is generally conceded as a cause of many of the "rheumatic" conditions, there is, as has been already mentioned, evidence that the influence of internal secretions may in some cases possibly prove a factor in the problem; and so the wheel goes round full circle to meet the old humoral point.

If we must use the word "rheumatic," and there seems at present no help for it, and if we are not going to confine it strictly to rheumatic fever, I would define it in its loose generic sense to cover all forms of arthritis that do not tend habitually to suppuration. Thus pneumococcal and syphilitic arthritis, for instance, would be excluded, for the former tends very frequently to suppuration,[3] [4] and the latter, though sometimes classed amongst the rheumatisms, would appear, in untreated cases,[5] very frequently to do the same, and it is only because we so seldom meet with absolutely untreated syphilis that we see the milder forms of arthritis. Probably it will be found that such a division would include nearly all cases of toxic arthritis and a minority of cases of actual joint invasion.

Again, the term might be stretched to cover the symptoms habitually associated with such arthritis, such as fibrositis and certain forms of neuritis and iritis. Further, to include the test of reaction to salicylates or to weather is hopeless, for nearly all pains react to weather and to acetyl-salicylic acid. Used in this loose form "rheumatism" is a useful word, whose place cannot be filled by the substitution of "arthritis," which, in names like gonorrhœal arthritis, does not by any means cover the whole ground. If, as well may be, such a use of the word rheumatism is objected to, a new and universally accepted term must be invented.

Definition of Terms.

The diseases usually considered as belonging to the "rheumatic" group are: gout, acute and chronic; rheumatism, acute and chronic, rheumatoid arthritis, including Still's disease[6]; gonorrhœal arthritis; various forms of infective and toxic arthritis; osteo-arthritis, including spondylitis deformans; and certain forms of neuritis, iritis, and affections of the skin. In addition, there are certain borderland and disputable conditions, such as chorea and erythema nodosum, which, as we are only concerned with the classification of *arthritis* by means of the syndrome, can be dismissed from present consideration.

Group A.

1. *Gout.*—Acute or chronic is an entity of which we hold, or think we hold, a fairly clear conception, and it needs no definition here.

2. *Acute rheumatism* or *rheumatic fever*, whether or no we agree as to its causation by the diplococcus of Poynton and Paine, is equally clearly-cut in our minds. *Chronic rheumatism*, if we admit the unofficial term, means (it is to be supposed) recurrent subacute attacks of arthritis or fibrositis in a person who has had rheumatic fever, or at least has a strong family history of it, and whose symptoms are not due to some other infection. These constitute the non-syndrome group.

Group B.

In this group the usual cause of the arthritis appears to be a toxin, though in some cases there may be an actual invasion of the joints by micro-organisms. The group as a whole is distinguished from Group A by the almost invariable presence of the jaw-neck syndrome. In rare cases the syndrome may be incomplete, especially as regards the jaw symptom.

3. *Gonorrhœal "rheumatism."*—This condition is interesting as, while it is a well-defined and well-recognised entity, it constitutes a prototype of the whole ensuing group. The disease may be a toxic arthritis, or the joints may be directly infected and show the gonococcus in pure culture, or again there may be a secondary infection with other organisms (cf. infra, Influenza).

The clinical picture is too familiar for comment, but I would draw attention to the following points: The jaw-neck syndrome is nearly always present at some stage of the disease; there is frequently, especially in the acute stages, a characteristic careworn facies; and there is sometimes a bony spur from the os calcis into the plantar fascia, which makes a striking X ray picture. Atrophic bone changes in the phalanges, as in rheumatoid arthritis, have been described but must certainly be comparatively rare. There is, however, frequently seen in a skiagram a curious appearance of obliteration of the interphalangal joint-space, suggesting a non-existent ankylosis. This is due presumably to atrophy of the articular cartilages, and, while by no means pathognomonic, is very suggestive of gonorrhœal infection. There is apt to be a good deal of constitutional disturbance, with a tendency to anæmia and debility. The joints are not much benefited by sodium salicylate, though they may be relieved

Heredity, then, seldom explains delinquency, though bad heredity is often associated with it, because we can accept Goring's statement that the criminal is an inferior man; and such inferiority, whether of intelligence, physique, or what not, tends to be inherited. But if we study all the facts of a criminal family, we often find that an irregular family life, a lack of proper training or a definite training in wrong-doing, a faulty attitude to life and society, play a more important part. At one end of the scale we may have the hereditary criminal; at the other the delinquent, whose fate is entirely due to bad companions. I have never seen either of the extreme cases, but I have seen many intermediate ones containing an element of both, the causation usually being highly complex. Dr. Healy, after examining nearly three thousand delinquents, prepared a table which showed that only in one-sixth was heredity a factor, and even then it was only a minor factor.[2] As Dr. Healy says, the facts must be carefully sifted—e.g., a woman may be a prostitute, and the daughter of a prostitute, but both she and her mother may be the victims of environment.

When speaking of heredity we must recognise there is a psychical inheritance as well as a physical. The child may inherit the tendency to evade, rather than face difficulties; if the parents do not deal with their mental conflicts it is harder still for the children to face reality; but usually such weakness "acts like an infection rather than a transmission."[3]

ENVIRONMENT.

Delinquency must really be the result of all the numerous factors in the make-up and environment of an individual; it is not due to a special biological organisation. Dr. Healy[4] says "there are a few well-differentiated classes, such as the definitely feeble-minded, or the insane, or the senile dements, who readily commit crime." But "human beings have many-sided natures, and the variabilities in the proportion of this or that characteristic are immense." There is, therefore, "no fitting into single pigeonholes." Environment, therefore, is of great importance, especially if we give it a wide interpretation. Social conditions have much influence; faulty hygiene tends to the development of the inferior man, and so predisposes to delinquency. No scheme for dealing with crime is complete that does not include social betterment. Healthy exercise and recreation must be possible for all. Training is important, especially that received at home during the earliest years of life. My experience of the habitual criminal is that he generally goes wrong very early. The so-called first offender is seldom really a first offender; it is his first appearance before the court, but some form of delinquency has usually been going on for years. Goring, when discussing habitual criminals, said that "the nodal, or commonest age, for recruiting, is between 15 and 20";[5] but then Goring only ascertained the age, at their first conviction, of convicts. Those of us who have had the opportunity of examining cases in the children's courts, and studying abnormal conduct in the young, know that the critical period must be placed much earlier. Nearly all the young delinquents I have examined were on the wrong path at 10 years of age, and often earlier than that. The first offence is not necessarily of the same kind as the first conviction; for instance, stealing is often preceded by lying, in consequence of which the offender gradually gets a false conception of reality, if indeed he ever had a true one. It would be to the public advantage if more magistrates realised that the so-called first offender is not usually an innocent little person to be dismissed with a caution, but an individual on the wrong lines whose case requires thorough expert examination.

This leads me on to our modern conceptions of the springs of conduct and of the term environment. Take environment first, for that is the simpler of the two. It means not only the house and street in which the individual lives, but also the climate, opportunities for play, exercise, and so on; it means not only the persons in the home, but their attitude to life, the way they meet its difficulties; it includes also all the experiences of life, in short, the whole content of the mind, including the emotions, instincts, and ideals. The psychic environment, developed and fostered by the conduct and attitude of the home circle, is the most important. This environment exists in the mind and is carried everywhere with him by the individual. It requires investigation in most cases of abnormal conduct. Dr. Healy says that if we want to determine the causal factors in delinquency the prime consideration is the mental life of the individual. "Not only is this shown by the undue proportion of feeblemindedness, epilepsy, and insanity among delinquents, but also by the mental disappointments, irritations, and conflicts which very frequently are at the roots of offending careers."[6]

How are we to study the mental life of the individual? The mind is very difficult to explore. In recent years we have accepted and extended the conception of the mind as consisting of two parts, the conscious and the unconscious. The content of the conscious mind is small and limited; the unconscious mind is bigger and more comprehensive. The whole mind has been compared to an iceberg of which the part above the water is only a small fraction of the whole; the visible portion corresponds to the conscious mind, the larger and unseen to the unconscious. In some cases of criminality the explanation is simple, because the motive is in the conscious mind, a region comparatively easily investigated; but in many cases the springs of conduct are hidden in the unconscious, and absolutely unknown to the individual himself. We may have a shrewd suspicion as to what some of them are, but we cannot be certain till he recognises them too. It is the unconscious motive which explains those criminal acts in which the culprit gains nothing, or at any rate makes no use of what he does gain. Such a delinquent will often say, truthfully, that he had an irresistible impulse and cannot understand why he did it.

AN ILLUSTRATIVE CASE.

I will give you an example, selected because it is connected with the problem of the so-called moral imbecile. A youth of 18, of previous exemplary conduct, when out in the street after dark, felt an irresistible impulse to break into a house he was passing. He opened a window, got in, and picked up a few shillings he found lying on the table. He then walked to the front door, unlocked it, took out the key, and having locked the door on the outside, put the key in his pocket. He went home to bed. He did not require the money, having as much as he wanted at the time. Next morning he felt upset and sorry for the unfortunate people who were locked in their house. Accordingly he went back and dropped the key in the letter-box. A woman ran out after him, and said he must be the person who had broken into the house and taken the money; he admitted that he was. When this young man is examined we find that he is not highly intelligent, as he has a mental age of only 13. With such a mental age, however, it would be very difficult, if indeed possible, to certify him under the Mental Deficiency Act, especially as he has a good school record and got into the highest standard. The suggestion then comes that as he is somewhat unintelligent and has committed criminal acts he must be a moral imbecile, and should be treated as such. I consider that here such a course is far less justifiable than certifying the syndrome test we can at once class our patient under group A or B, a classification that helps us to find the cause. In class A, the diagnosis lies between true gout and true rheumatism, and is, therefore, as a rule, comparatively easy, and the treatment is more or less specific. In class B the diagnosis will lie, in nine cases out of ten, between gonorrhœal, rheumatoid, and toxic arthritis; if it is the latter, we may perhaps be able to remove the cause—be it a tooth, an appendix, or an infected gall-bladder—without wasting time in attempting to relieve symptoms. But gonorrhœa as the primary cause is exceedingly common. To this infection I believed I was able to trace 10 per cent. of all my "rheumatic" cases admitted to the Mineral Water Hospital at Rotorua.

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[2] Healy: Op. cit., p. 130.

[3] The Psychology of Phantasy, by Dr. Constance E. Long. London: Baillière, Tindall and Cox. 1920. P. 65.

[4] Healy: Op. cit., p. 161.

[5] The English Convict, by Charles Goring, M.D., B.Sc. Abridged edition. London: H.M. Stationery Office. 1919. P. 123.

[6] Healy: Op. cit., p. 163.

The diagnosis of rheumatoid disease is unfortunately generally easier than the treatment, but it is a fairly safe rule that all affections coming under class B require a *tonic* line of treatment, or in other words, that the resistance of the patient to micro-organisms and toxins must be increased. The whole group would appear to offer a peculiarly appropriate field for the use of vaccines, success in the use of which will depend so largely on accuracy in diagnosis.

In classes C and D we can sometimes remove the cause, and sometimes mitigate the symptoms, but, as a general rule, once osteo-arthritis had developed, even removal of the cause will be but a palliative, for it is removed too late, and the mischief already done is permanent. In this condition we may lessen the disability and increase the range of movement by mechanical means, and we may relieve pain, but very often our chief efforts should be concentrated on muscle rather than on bone, on the recuperation of important and essential muscles showing trophic wasting as a consequence of the arthritis.

Suggested Classification of the "Rheumatic" Group of Arthritic Diseases.

A.—Jaw-neck syndrome absent.	1. Gout.	Acute. Chronic.	Ending all in D. 10. Osteo-arthritis.
	2. Rheumatism.	Acute. Chronic.	
B.—Jaw-neck syndrome present. The toxic and infective group.	3. Gonorrhœal. 4. Dysenteric. 5. Toxic. 6. Rheumatoid.	Arthritis or rheumatism.	
	7. Arthritis following acute specific fevers—e.g., Measles, Scarlet fever, Enteric, Mumps, Influenza.		
	8. Thyroid arthritis or rheumatism.		
	9. Traumatic arthritis.		
C.—Not rheumatic.			

References.—1. Nathan: Amer. Jour. of Medical Science, November, 1916. 2. Garrod: Trans. Med. Soc. Lond., 1906, vol. xxxix.: vide also Llewellyn Jones's Arthritis Deformans, and Bannatyne, G. A. 3. Cave, E. J.: Pneumococcic Arthritis, THE LANCET, 1901, i., 82. 4. Lansdown, R. G. P.: Pneumococcal Arthritis, Bristol M.-C. Jour., 1911. 5. Lacapère and Laurent: La Syphilis Articulaire, Paris Médical, September, 1919. 6. Still, G. F., noted the jaw symptom in only three out of 12 cases, the neck symptom "usually," Med.-Chir. Trans., lxxx. 7. Goldthwait: Boston Med. and Surg. Jour. 8. Amongst more recent notes cf. Poynton, F. J., Brit. Med. Jour., 1919, i., 371. 9. Llewellyn Jones's Arthritis Deformans, and Bannatyne, G. A. (full discussion). 10. Herbert, A. S.: Hot Springs of New Zealand. 11. A recent paper by T. S. P. Strangeways (Brit. Med. Jour., 1920, i., 661), opens up interesting suggestions in this connexion: for if the nutrition of cartilage is affected through the synovial fluid, any injury sufficient to cause a synovitis will affect the nutrition of articular cartilage, and may therefore be the forerunner of osteo-arthritis. 12. Cf. Lane, Sir W. Arbuthnot: Trans. Path. Soc., 1881. 13. Ibid.

BRISTOL MATERNITY HOSPITAL.—On Nov. 11th a hospital of 18 beds for the reception of maternity cases was formally opened by Dr. Janet Campbell. The premises, which have been used for this purpose since February, were purchased from the committee of the Homœopathic Hospital, which has removed its work to larger premises in another part of Bristol. The patients' fees cover about half the annual expense, the remainder being found by voluntary contribution and Government subsidy. In her speech Dr. Campbell said that the Ministry of Health was in favour of the establishment of a number of small maternity homes rather than of one large hospital.

A METHOD FOR DIMINISHING MORTALITY IN EMPYEMA

IN INFANCY AND CHILDHOOD.

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EMPYEMA is recognised as a serious and comparatively frequent event in childhood, and on this account we believe that the results of this investigation into its occurrence in infancy—that is, in the first two years of life—may be of general interest. As will be apparent, the mortality at this early age is high, and we venture to hope that the method employed by us, of which a detailed description, with illustrations, is given below, may be as helpful to others as it has been to us in diminishing that mortality. This method is not new in principle, as the literature clearly shows. In fact, the surgical principle is in itself as clear as daylight, and is maintained when the septic fluid is safely and completely withdrawn from the chest without recurrence. As a step forward in this direction the method has proved of practical service to us in dealing with children of all ages.

Present Position of the Subject.

Before we enter upon the analysis of the cases in infants, which we have collected, a short review of the present position of the subject of the treatment of empyema will assist us in presenting the particular points we desire to emphasise. Empyema is recognised as one of the most treacherous and puzzling conditions in pulmonary disease. Some cases are simple and straightforward, but others are almost beyond diagnosis, even with radiological assistance, and empyema must be classified with typhoid fever and with tuberculous meningitis as one of those conditions which may humble the most confident diagnostician. The difficulties, as this analysis shows, are many and diverse, and depend in part on the nature, but still more upon the virulence, of the infection. They also depend upon the age and strength of the child, the regional anatomy of the abscess, and the duration of its existence. Post-mortem studies explain how it is that some empyemata are easy to deal with, some difficult, and some almost impossible. So much is common knowledge, but the question is whether in infants, and still more in older children, we can get rid of the abscess by any method safer and no less satisfactory than the usual incision. resection of a piece of rib, and drainage. Hard things have been said of drainage-tubes in treatment, but a physician will tell a surgeon that if there is one thing likely to cause suffering and harm to a child it is the premature removal of a drainage-tube; and this fact has bearing on the whole surgical aspect of the subject. The slipping of these tubes into the pleura, though unfortunately not an impossible occurrence, does not enter into the present problem; for our purpose it may be classed under "regrettable incidents." Let us suppose, however, that the pleura is opened without resection, drained, cleansed, and closed at once. If the case is a favourable one, the result is excellent, but if some pus is left behind, or the infection is still active, more pus is formed and the position becomes difficult. Children cannot be operated upon with impunity, and it is hard to decide when and where to explore again, and adhesions, too, may lead to trouble. Except that the wound is not open, the position is then closely akin to premature removal of the drainage-tube. It is not to be supposed that use of the drainage-tube is ideal or cannot be improved upon, but our analysis does not support any reason for a fierce conducted in three directions. The effort may be made to modify inherited tendency by appropriate educational measures; or else to modify opportunity for crime by segregation and supervision of the unfit; or else—and this is attacking the evil at its very root—to regulate the reproduction of those degrees of constitutional qualities—feeblemindedness, inebriety, epilepsy, deficient social instinct, &c.—which conduce to the committing of crime."[7] Goring then went on to say that we must have facts, and suggested that the results he had obtained might serve as a stimulus to a more extended inquiry, including the homes and haunts of the offenders. We must go beyond this; the inquiry most necessary now is into the mental life of the delinquent, on the lines on which Dr. Healy is working in America.

In conclusion, I would refer briefly to the *Birmingham scheme for special medical examination* of mental defectives and other persons of unstable mentality brought before the courts. This scheme was inaugurated because it was realised that in spite of the working of the Mental Deficiency Act, 1913, there were still mental defectives coming before the courts, and in some cases actually being sent to prison. What was intended in the first place chiefly for the benefit of mental defectives should have far-reaching consequences for the benefit of the more normal. It has given those of us who are concerned in the work the opportunity of showing that in addition to mental defectives there are a large number of other persons who ought not to be looked upon as fully responsible, because there is some psychic abnormality resulting from an environment over which they had no control.

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[7] Goring: Op. cit., p. 274.

THE JAW-NECK SYNDROME:
ITS SIGNIFICANCE IN THE RHEUMATIC GROUP OF DISEASES.

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WHILE it is well-known that involvement of the temporo-maxillary joint is common in certain forms of arthritis and uncommon in others, the paramount importance of this point as a differentiating symptom in the diagnosis, and consequently in the treatment, of the so-called rheumatic diseases is not, I believe, sufficiently widely recognised. The whole heterogeneous medley of diseases generally and vaguely classed under the heading of "rheumatic" or gouty can be divided sharply into two groups, those in which the temporo-maxillary joint is involved, and those in which it is not.

Temporo-Maxillary Joint and Conditions due to Bacterial Toxins.

The importance of the division lies in the fact that if in any case of arthritis we find this joint affected, we can at once conclude that we are dealing with a condition due to some bacterial toxin, and can say definitely, confidently, and finally that it is *not* one of gout, however closely that disease may be simulated. Could we with any certainty define our conception of rheumatism and limit the application of the term to cover only rheumatic fever and those subacute and chronic cases which are its sequelæ or appear to be caused solely by climatic conditions, I would extend the axiom, and say that we can definitely exclude both gout and rheumatism. For while acute rheumatism is generally conceded to be due to microbic invasion, yet the toxin does not appear to select this particular joint.

A rheumatic or gouty person may, of course, have his jaws affected, for he is no more and no less immune than other people from the various toxins which affect the joints, but the jaw lesion is due to some secondary or superadded infection, and we may seek the underlying cause in gonorrhœa, rheumatoid arthritis, dysentery, oral sepsis, or in some other form of infective or toxic agency. One other and confirmatory symptom shares in this pathognomonic import—namely, pain, stiffness, and sometimes grating in the back of the neck just below the occiput. The cause of this pain is, perhaps, a little obscure, for the X ray appearances are variable, and post-mortem evidence in these cases is difficult to obtain. There would generally seem to be an arthritis more especially of the occipito-atlantoid or upper cervical intervertebral joints, but sometimes the symptoms seem to be caused rather by involvement of the spinous processes and of the periosteal and fibrous tissues in connexion with them, for in advanced cases there is often bony thickening of the cervical spines, with much fibrous matting about the back of the neck, while there may be no pain on vertical pressure, although this is, of course, inconclusive evidence.

Some light is thrown on the pathology of the condition by the experiments of Nathan,[1] who produced a polyarthritis in dogs by inoculation with streptococci, and showed that the vertebral changes were similar to those induced in the skeleton elsewhere—viz., endosteal and sub-periosteal inflammation, with a sterile intra-, peri-, and para-articular exudation. In the spine this exudate involved the epidural space and the vertebral notches, and caused root or spinal irritation or compression. This symptom is not met with in pure rheumatism or gout, it is nearly always coincident with the jaw symptom, and like it, is always a sign of some other form of arthritis.

Meaning of the Syndrome.

The syndrome has been spoken of as pathognomonic of rheumatoid arthritis. This, however, is only a half-truth. While it certainly is present in nearly every case of rheumatoid arthritis, it is pathognomonic, not of that disease, but of a whole group of infective and toxic diseases of which rheumatoid arthritis is but a member and a type. Garrod[2] maintained the diagnostic value of the jaw-neck syndrome in rheumatoid arthritis, pointing out its absence in gout and acute rheumatism and its "occasional" presence in gonorrhœal rheumatism, and several writers of monographs on rheumatoid arthritis have been equally emphatic, but the text-books on medicine as a rule, although they stress the involvement of the jaws in rheumatoid arthritis and mention that arthritis of the spine is common in this complaint, do not sufficiently emphasise the localised cervical arthritis; nor does any authority so far as I am aware hint at the broader significance of the syndrome as a sign pathognomonic of one great group of infective arthritic diseases.

I would put it as a definite law that in gout and true rheumatism the syndrome is always absent, and conversely, that in the toxic and infective group it is practically always present.

It must be admitted that the above statements may appear somewhat dogmatic and sweeping; there may be, indeed there must be, exceptions to this as to every other hard-and-fast convenient rule, but I think the exceptions are not numerous. Thus, while the syndrome is never present in gout, and I believe never in rheumatism, it is occasionally absent in the toxic group, and more especially it may be incomplete, the jaw symptom being the sign generally lacking. Again, the syndrome may be absent more frequently in some countries and climates than in others, a phenomenon quite explicable, for we know that variations in the strains of micro-organisms occur under such conditions.

Thus the rule was formulated from a careful analysis, extending over a period of 17 years, of a very large number of arthritic cases seen in hospital and private practice while I was in charge of the Government Baths and Sanatorium at Rotorua, New Zealand, and the exceptions to it appeared negligible. Yet, on my return to England, and with much less clinical

(B) *Method of procedure.*—After a preliminary exploratory puncture the site of operation, which will be referred to later, is anæsthetised with novocaine.

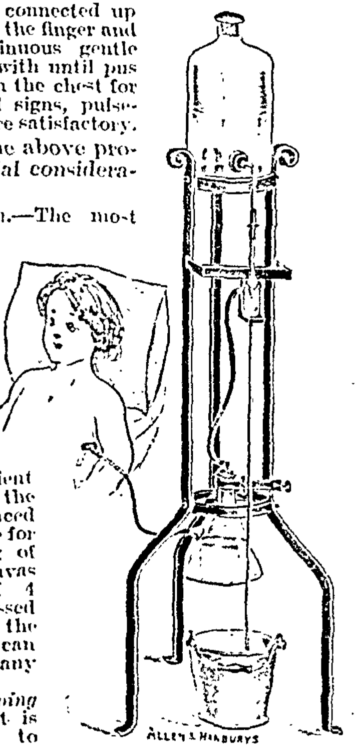
Tapes having been threaded through the shield of the cannula, the latter is introduced into the pleural cavity by means of the trocar, and the tapes are tied securely round the chest wall. The rubber tube is held by the open end, and the metal rod is passed down and pressed against the closed end until the tube is stretched sufficiently to allow it to pass easily through the cannula. The trocar is now withdrawn and a finger, wrapped in gauze, instantly placed over the opening. The tube is taken, stretched on the introducer, and carefully slipped under the finger and through the cannula, being introduced as far as may be thought necessary according to the size of the patient and extent of the empyema (the actual distance, in any particular case, can be ascertained by having marks on the tube at intervals of 1 inch). (Fig. 2.) The introducer is gradually withdrawn and the tube tightly pinched between finger and thumb close to the chest wall. The free end of the tube is connected up with White's pump, and the finger and thumb removed. Continuous gentle aspiration is persisted with until pus has ceased to come from the chest for 48 hours, and physical signs, pulse-rate, and temperature are satisfactory.

Certain points in the above procedure demand special consideration:—

1. *Site of operation.*—The most comfortable place for the patient, and at the same time the easiest for after-treatment, is a rib space as low as possible just anterior to the mid-axillary line. In this position the patient can lie on the affected side without interfering with the tube. If it is necessary or convenient to drain from behind, the patient can easily be placed against a bed-rest, made for the purpose, consisting of a wooden frame with canvas strips at intervals of 4 inches. The tube is passed through a space in the frame, and the patient can then be placed in any required position.

2. *Fixing and keeping cannula in position.*—It is advisable, in addition to the tapes, to place straps of adhesive plaster over and at right angles to the shield on either side of the cannula. A gauze dressing and a firm figure-of-8 bandage are then applied.

FIG. 2.



Showing the cannula in position and the tube connected up with White's pump.

3. *Escape of pus.*—In passing the rubber tube through the cannula, care must be taken to avoid any escape of pus whereby the puncture wound may become infected.

(C) *Advantages of the method.*—1. The period of illness is shortened. In cases treated by rib resection the average time before the wound is healed is six weeks; with the method described above the average time between insertion of the cannula and complete healing has been 15 days—a figure which would be much lower but for Case 3 (quoted below) which required four weeks. The explanation of this advantage is that: 2. There is no secondary infection of the pleural cavity. The rubber tube has a larger lumen than the cannula, so that, when released from the introducer, it expands and fits the cannula tightly, preventing any leakage of pus, soiling of the wound, and re-infection backwards to the pleural cavity. Another important point in the shortening of the illness is that osteomyelitis of the rib, so common after resection, does not occur. 3. No anæsthetic is required. The whole procedure can be carried out in a few minutes, causing very little disturbance and without removing the patient from bed; thus eliminating all the risks attendant upon moving a seriously ill child to the theatre and giving an anæsthetic. 4. Surgical trauma and its consequent shock are reduced to a minimum. The pain and discomfort of inserting the trocar are no more serious than exploration with a needle. 5. No daily dressing is required. Those who have seen what mental and physical suffering so many children endure for weeks after resection of rib will readily appreciate what a relief this method will be to all concerned. 6. The patient can assume any required position without fear that drainage will be interfered with. 7. The drainage is continuous and complete. Pus cannot collect in the bottom of the cavity and depend upon the position of the patient or upon expiratory efforts for its expulsion. 8. Expansion of the lung is assisted. The suction produces a negative pressure of 8 mm.Hg; this being more than the normal negative pressure of the pleural cavity, the lung tends to expand and assume its normal function more readily. 9. The removal of the pus is gradual. The continuous suction causes a steady slow outflow of pus, and it is some hours before the cavity is emptied; a displaced heart is thereby allowed to reassume its normal position quietly and gradually without the suddenness which is bound to occur if incision and drainage are employed. This fact is important when one recalls cases of syncope due to sudden withdrawal of pus and the replacement of a displaced heart.

(D) *Practical difficulties.*—1. Occasional blockage of the tube by masses of fibrinous lymph. It is remarkable how much solid matter will be sucked through, but should blockage occur, it can be remedied by increasing the suction by stretching the tube out between the fingers and expressing its contents into the flask by an action which may be compared with "milking." If this fails the plug of lymph can be washed away by injecting a few cubic centimetres of sterile saline into the tube. This difficulty has, in our opinion, been somewhat exaggerated by previous writers, for in none of our series of ten cases has there been failure to drain the chest by this method. 2. It is obvious that, as has been pointed out in the earlier part of this paper, there will be chronic or unusual cases in which this method will not be suitable.

(E) *Illustrative cases.*—Cases in which we have used this method, all of which recovered, varied in age between 15 months and 11 years. Among these were three under 2 years of age, which, therefore, come within the scope of this paper. The first and second of these show how simple and successful this method may be, while in the third we believe life would have been lost had incision and drainage, with or without resection, been undertaken.

CASE 1.—Fred G., aged 18 months. Admitted to the Children's Hospital, Great Ormond-street, on Jan. 12th, 1921, with an empyema at the right base following broncho-pneumonia. He was a pale wasted infant in very bad general condition. Exploratory puncture confirmed the presence of pneumococcal pus. The chest was drained by the method described for five days, and the child made an uninterrupted recovery.

CASE 2.—Louie B., aged 18 months. Admitted to hospital, May 7th, 1921, with broncho-pneumonia; seven days later empyema developed at the left base. The chest was drained for eight days by aspiration, and two weeks later the child was discharged, quite well.

CASE 3.—Lilian B. aged 18 months. Admitted to hospital, June 7th, 1921, with a large empyema on the left side. The heart was displaced to ½ inch outside the right nipple line. Patient was very ill, with a pulse-rate of over 160, respirations 80 per minute, temperature 100° F., and much cyanosis and dyspnœa. Drainage was commenced and proceeded satisfactorily. Ten days later the lung was expanding well, but there was a copious amount of pus still being aspirated. Unfortunately the tube was twice dislodged accidentally, and there was infection of the soft tissues round the cannula. Four weeks after admission, however, complete healing had taken place. Any serious operative treatment on admission would have been attended with very grave risk. The child made a good recovery, with the affected lung working well.

by aspirin. In view of the not infrequent secondary infections, it is important to remember that the condition may be waked by some other infection 20 years after a wholly forgotten and insignificant gonorrhœa followed by an equally mild and ignored " rheumatism."

4. *Post-dysenteric Arthritis or Rheumatism.*—The clinical picture is identical with that of the gonorrhœal variety except that there never appears to be a spur from the os calcis. This may be due, of course, to the relatively smaller number of patients that one sees. I examined, however, 50 cases for this condition with negative results.

5. *Toxic Arthritis or Rheumatism.*—In this condition the joint trouble is set up by the toxin evolved from an infected focus, and there is no invasion of the joints by micro-organisms. The toxin may act as a direct poison on the joint, or it is possible may act via the central nervous system; indeed, it is strongly held by some authorities that rheumatoid arthritis is a tropho-neurosis of this nature. Further, I would suggest that the toxin may act sometimes through the endocrine glands. (Vide infra, Thyroid.) The site of infection may be localised, as in the tonsil, a tooth, the nose, the ear, the gall-bladder, or the appendix, or there may be auto-intoxication from the bowel. The infecting organisms, and consequently the toxins, may be of varied nature, but the pathological changes in the joints, though they may vary thereby in intensity, do not vary in kind with the infection. The condition is sometimes wholly indistinguishable from rheumatoid arthritis, but as a rule the clinical picture is less complete, the arthritis less typical and severe, and there is less trophic disturbance of the bones and skin. Provided that no secondary nidus of infection has developed, it tends to clear up when the original cause—e.g., oral or nasal sepsis—is removed. In this respect it differs from those infective cases—e.g., some gonorrhœal ones—in which there is actual invasion of the joints by micro-organisms. According to Goldthwait,[7] however, the coexistence of toxic and infected joints may occur in the same individual.

6. *Rheumatoid Arthritis.*—This disease, possibly caused by a specific infection, is sometimes wholly indistinguishable from other members of the infective group. Whether it is a definite entity or whether it is merely a member of the group, a form of toxic arthritis caused by varying infections, is still a matter of dispute. The completeness of the clinical picture leads me personally to consider it a specific disease. Like the rest of the group, of course, it shows the jaw-neck syndrome, but is distinguished generally by the more pronounced symmetry of the articular and periarticular lesions, as evidenced especially in the first interphalangeal joints of the ring and middle fingers; by the more marked trophic changes of the bones, as evidenced in the X ray picture by the rarefaction of the phalanges in the neighbourhood of affected joints; by neurotrophic phenomena, such as sweating palms and bronzed skin; by persistent tachycardia; and by its predilection for women.

7. *Arthritis following the Acute Specific Fevers.*—Clinically these cases are quite indistinguishable from other members of the group. Except in its origin, there is nothing whatever to differentiate a case of post-measles arthritis from a post-dysenteric case, and I have seen during an epidemic of influenza an attack of that disease light up an old gonorrhœal arthritis. In recent years I have seen toxic arthritis consequent on measles, scarlet fever, enteric, mumps, and influenza—11 cases in all, and in each case there was observable the jaw-neck syndrome.

8. *Thyroid Arthritis.*—The name is introduced in all diffidence and with reservations, as it is doubtful whether the thyroid secretion should be regarded as a primary toxic influence directly causing the arthritis, or whether it may not be rather a secondary influence modifying a pre-existing joint infection. That it is the latter in some instances we have abundant evidence, but from time to time one meets cases which seem to suggest the possibility of the former theory. In the vast majority of recorded cases hyperthyroidism has been associated with the arthritis; in a very few cases only, hypothyroidism. Some connexion between thyroid activity and rheumatism has long been noted,[8] while Spender, I believe, first drew attention to an affinity between Graves's disease and rheumatoid arthritis.[9] Recently I have seen, and described elsewhere,[10] two cases exhibiting the jaw-neck syndrome, and clinically resembling ordinary toxic arthritis, which appeared to be caused by, or at any rate to be modified by, hyperthyroidism, and which cleared up under treatment direct to the thyroid. That they should resemble the toxic cases in exhibiting the syndrome is especially interesting in view of the possible toxic origin in Graves's disease of the thyroid condition itself. One extremely serious case in a middle-aged woman with " goitre and nerves," marked tachycardia but no exophthalmos, was treated by baths and medicines for three years with but slight benefit. The severe multiple arthritis cleared up rapidly with the application of oleate of iodine to the joints and ice poultices to the thyroid. The other case was that of a young girl of 18 with tachycardia and a slight soft goitre, and a condition of joints suggesting mild rheumatoid arthritis. Every conceivable treatment was tried without avail, until, on consideration of the occasional beneficial effect of suprarenal extract in exophthalmic goitre, despite the usually accepted view of the action of the adrenal secretion on the thyroid, she was finally given adrenalin by the mucous membrane of the lip, when the joints began immediately to improve, and the pulse-rate fell to normal.

Group C.

9. *Traumatic Arthritis.*—In the acute stage this is, of course, a surgical condition; in its final stage, unless complete recovery takes place, it is generally an osteo-arthritis. One variety of traumatic arthritis is occupational arthritis —in other words, arthritis due to repeated small injuries in one habitual direction, and is apt to be labelled chronic rheumatism. Closely allied is the secondary arthritis consequent on the abnormal stress of a distant deformity—e.g., the arthritis of a knee due to a flat-foot. It would seem rather absurd to call such cases rheumatic, and indeed they shade off inevitably and imperceptibly into Group D.

Group D.

10. *Osteo-arthritis.*—A condition wholly dissimilar from the rheumatoid arthritis defined in para. 6, and I would submit that in so far as the bony changes are concerned, it is not really a disease entity at all, but rather an end-process and final stage of many diseases, an effort of the system (not always too successful an effort) to limit and repair the ravages of disease or injury. It is characterised by osteophytic out-growth and by deposit of compact bony tissue, and would seem in some respects to afford a somewhat close analogy of function to callus. Just as callus acts as a splint to bone, so we may conceive osteophytic outgrowth as tending to limit the movement of damaged joints, thereby saving wear and tear of enfeebled tissues and giving essential rest in inflammation. Again, the deposit of compact resistant bony tissue would tend to limit the spread of infection. It occurs only in connexion with injured tissues[11] and under no circumstances will you find it arising *de novo* on an unimpaired surface. The face of the bone, or the articular cartilage covering it, may have been injured by any of the above forms of arthritis, or it may have suffered such gross injury as a fracture. In occupational arthritis the location and form of the resultant osteo-arthritis may at times be foretold with great accuracy by considering the nature of a man's employment; and conversely, the nature of a man's employment can sometimes readily be determined by the examination of the osteo-arthritic scars on his skeleton.[12]

Whether osteo-arthritis be monarticular or multiple, and whether the jaw-neck syndrome be exhibited, will depend on the number and nature of the antecedent lesions. Thus, in traumatic and occupational arthritis one joint, or a limited and definite group of joints, will be affected, while in osteo-arthritis secondary to gout or rheumatism, the lesions are likely to be multiple and the resultant osteo-arthritic deformity will be moulded by the antecedent disease. It was pointed out by Lane[13] that the amount of bone formation, represented by eburnation and bossing, bears a direct relation to the vitality of the osseous system. Thus in mollities ossium and Charcot's disease the arthritis is accompanied by little or no reparative changes. Hence, it may be remarked that, whereas in old gouty joints there is abundant bossing, in rheumatoid joints it is almost absent. It will be noted, too, that osteo-arthritis of the hip-joint is an exceedingly common result of the frequent small bruisings of the joint by the wear and tear of life, while rheumatoid arthritis of this joint is so rare that many observers have never seen a case.

Bearing of the Syndrome on Treatment.

I feel that some apology is due for the fact that the question of therapeutics has been kept somewhat in the background. In extenuation I would advance that, accurate diagnosis being a necessary preliminary to treatment, I have endeavoured, by suggesting a classification, at any rate to clear the ground for subsequent therapeutic measures. This provisional classification—and in the present state of our knowledge all classification must be provisional—is suggested, not for the sake of an appearance of logical completeness, nor from an academic splitting of hairs, but with a view to its practical utility in treatment.

The essence of treatment is first, if possible, to remove the cause, and then, if necessary, to mitigate its effects, to relieve the symptoms. By applying common habit of some of these animals to occupy the burrows of animals of different species and it was no uncommon matter to find the carnivorous mongoose and some of the smaller non-carnivorous rodents inhabiting the same series of burrows without detriment to the latter; it should be remarked, however, that in such instances the carnivore would be a day feeder while the non-carnivores would be night feeders.

The procedure devised in attempting to discover the presence or absence of sickness or mortality due to plague infection was to commence tracking and digging out operations close to the localities where human plague cases had resided or (what was subsequently found to be equally important) in the immediate vicinity of where the human cases had been engaged in agricultural occupations, such as ploughing, herding sheep, or camping for meal times. It was found important also to rapidly and widely extend the area of operations, because in the early investigations the burrows in the immediate vicinity of the residence or work place of the human cases had been found to be deserted by animals and fleas, or at most to contain only a few shrivelled remains of their former occupants from which it was impossible to determine the presence or absence of plague infection. As a result of very zealous and painstaking work, conducted on these lines, extensive sickness and mortality due to plague among some of the smaller species of rodents were at last discovered.

The procedure for verifying the nature of the infection and the safeguarding of the experts and their native labourers from the danger of flea-carried infection while engaged in laboriously exploring the ramifying burrows and the rodents' nests, presented some initial difficulties. Owing to transport difficulties it was considered impracticable to make use of a field laboratory. Arrangements were eventually made whereby a supply of ice and containers was kept constantly at hand for the transport without putrefaction of animals recently dead to a central laboratory for diagnosis, and as regards the danger from fleas, which were found in abundance, the use of insecticides, both personally and otherwise, was practised before the bodies or nests of rodents were handled.

The animals so far proved to be plague infected and to show a very heavy mortality over a wide area are, (*a*) Gerbille or *Tatera lobengulæ*, a rodent slightly larger and somewhat similar to the domestic brown rat. (*b*) Multimammate mouse or *Rattus coucha*, a rodent somewhat similar in size and appearance to one of the ordinary domestic mice. These two are thought to be perhaps the commonest of the animals contained in the above list, in the area of country under consideration, and they undoubtedly exist there in very large numbers. Burrows containing one or the other, and more often both species, extending in what may roughly be described as chain formation with occasional gaps, have been traced almost throughout the whole area. Both are animals which only venture out at night, and this fact and their habit of closing up the entrance passages of their burrows, may account for the failure of the earlier investigations and inquiries as to the presence of rodents in or near residences affected by plague. Both feed commonly on the young roots of vegetation, wild melons and the like, and both occasionally, and when pressed for food, eat grain. Neither lives in farm-houses or natives' huts, but the multimammate mouse is inclined to live in closer proximity to human habitations than the gerbille, and its burrows have occasionally been located by an expert in the backyards of farm-houses and close to the walls of native huts. Provisionally, then, this species may be accepted as being the common conveyer of infection to man in the area in question, but an instance has occurred where the evidence definitely points to human infection acquired from a gerbille burrow remote from human habitation. The person infected had been accustomed to sit daily for his midday meal on a spot honeycombed with gerbille burrows—from which subsequently definite evidence of gerbille infection was obtained. None of the other animals mentioned in the above list have been found so far to be plague infected, but the numbers of these captured and examined have been small and no experiments have been so far made to ascertain their susceptibility to plague.

Several means have been attempted to destroy these rodents, but the methods ordinarily applicable to "domestic" rodents are not generally practicable, owing to the vast areas involved, and to their habits of feeding and burrowing. Poisoning on a large scale appears to be inapplicable, having in view the nature and easy accessibility of their principal food. The use of sulphurous and arsenical vapours, either with or without special apparatus, met with scant success owing to the closing of burrow passages and the branching of the burrows. Where the entrances of burrows have been discovered and cleared some success was obtained by the use of carbon bisulphide in each opening, and the subsequent closing by turf. On subsequent excavation all occupants have been found dead, and the fleas, both on the rodents and in their nests, have been found in a more or less inactive state. The fatality to fleas is not so marked as the fatality to their hosts, and a dose of the vapour which destroys all rodents leaves a fair proportion of their fleas in a condition from which they recover. Trapping or systematic digging out in such an area is too vast a work to be seriously considered.

There remains for consideration the possibility of providing or increasing their natural enemies, or of discovering and spreading a disease among them which is not fatal to human beings. A careful collection of fleas and other ectoparasites found on each animal captured or found dead and in the underground nests was made. The results of their classification will be declared in due course. No experiments have hitherto been made to discover which of the varieties found are capable of transmitting the bacillus, but it may provisionally be assumed that the carriage of infection from rodent to rodent and from rodent to man has been effected in this area by one or other of the varieties found.

From the circumstances here described, and from the observations of experts on the spot, more especially from the discovery of large areas of rodent burrows entirely depopulated and containing only a few shrivelled remains, it appears probable that plague infection almost annihilates gerbilles and multimammate mice in any particular series of burrows infected, and that the epizoötic extends slowly across country in an irregular manner through chance visits of animals to burrows in the vicinity of their own dwellings, while a sufficient number may escape death to bring about a repopulation when the period necessary for the death of the ectoparasites in infected burrows has elapsed. Human infection from fleas which have deserted the dead rodents and their nests has been only an occasional occurrence, and has been commonest in those engaged in outdoor pursuits. As the area involved produces cereal foodstuffs and forage, which are sent in to the towns, and as long as wild rodent infection there exists, there must be faced the problems of preventing the transference of infected fleas or rodent remains from the collecting centres and railheads, the preventing of the extension of the town or domestic rat population to the area in question, as well as the general curtailment of the domestic rodent in the towns and ports.

The information obtained in these investigations appears to tally in some respects with the reports of infection of wild rodents by observers in other countries so well collected and set forth in Dr. Bruce Low's last report on the progress and diffusion of this and other diseases throughout the world 1914–17, and may further help to elucidate certain problems as to the existence of latent foci of infection, remaining perhaps almost unnoticed in remote rural areas, from which at intervals, and dependent on the extent and vulnerability of the domestic rat population, a serious epidemic affecting human life and trade may arise, traversing the routes of the transit of grain and other foodstuffs.

attack upon it, for infants of 6, 7, 8, 10, and 11 months have recovered under such treatment, and many children owe their lives to its careful use.

Resection of ribs is intimately bound up with the use of drainage-tubes, for it is well known that unless resection is done in the young the ribs will pinch the tube and bring about a condition analogous to premature removal of one tube, or too early closure of the wound.

It is clear from our analysis that, with all its disadvantages, resection and drainage is a valuable operation, and that any method chosen will, in some cases, meet with considerable and possibly unexpected *difficulties. It is also apparent that a method which* will diminish shock and suffering, and yet be effectual, will be a means of saving life.

Analysis of 71 Cases of Empyema in Infancy.

1. *Age and sex.*—Twenty-one cases were of 1 year and under, the youngest being 4 months of age, and 50 were between 1 *and 2 years. Forty-five were males and 26* females.

2. *Mortality.*—The death-rate in the first 12 months *was very high. Sixteen of the 21 succumbed, and of the* 50 over a year old 23 died. In percentages the death-rate in the first 12 months was 76, and between the first and second years, 46. The total number of deaths was 39, or 55 per cent. These figures closely approximate those given by Spence.[1]

3. *Clinical histories.*—It is remarkable, when the histories of these cases are examined, how long a time may elapse between the first signs of definite illness and the discovery of pus in the chest, and how frequently this happens. Allowing for errors and oversights, in many cases the early symptoms *are very indefinite, and we are left in doubt* as to when the actual development of the empyema occurred. For this reason we have empirically classified these cases into three groups: (1) Acute, with symptoms of under a week's duration, (2) Subacute, with a history of from one to three weeks' duration, (3) chronic, with a history of from three weeks' to eight months' duration. There were 13 acute cases (10 deaths); 13 subacute cases (7 deaths); and 45 chronic cases (22 deaths). From this analysis the importance of the virulence of the infection is apparent.

4. *Nature of infection.*—In 31 *of the 39 fatal cases* the *nature of infection was as follows:* 21 *pneumococcal*, 4 staphylococcal, 3 streptococcal, 3 tuberculous. In the remainder the causal agent was not stated. Taking all the cases: 43 were pneumococcal (21 deaths), 7 staphylococcal (4 deaths), 3 streptococcal (3 deaths), 3 tuberculous (3 deaths), and 1 sterile (recovery). In 14 cases the cause was not stated. From these figures it is apparent that the pneumococcal infection easily preponderates in the empyemata of infancy, and that the death-rate from this cause is close upon 50 per cent. In spite of this fact we would here repeat that the histories of many of these cases *as gathered from the case-books, often gave indeterminate* symptoms. The figures in which we have tried to express this point must not, however, be looked upon as of more than relative value. In 26 cases there was a clear history of pneumonia, in 7 of bronchopneumonia, in 7 of bronchitis; 6 were associated with measles and bronchitis; 1 with chicken-pox, and 3 with whooping-cough. In 20 cases, although respiratory symptoms and signs appeared, no *definite name had been given to the illnesses before admission.*

5. *Prominent symptoms in the histories.*—The prominent symptoms recorded in the pre-hospital histories were as *follows:* Cough in 38 cases, *vomiting in 24, dyspnœa in 23,* wasting in 23, pain in 8, cyanosis in 7, "fits" in 4. Of these the reiteration of vomiting, breathing trouble, and wasting, when coupled with cough, stands out as an indication in infancy for careful consideration of the possibility of the presence of an empyema. We believe that any group of symptoms in these difficult cases, which would help to remind us of empyema, would be of assistance, and we are led to this belief *from the record of the prominent signs* which were found in this series on admission to hospital.

6. *Signs on admission to hospital.*—In no less than 66 cases definite impairment or complete dullness was *discovered in* some part of the chest, and almost invariably at one or both bases. In 40 the breath sounds over these regions were absent or diminished. In 18 there was tubular breathing, and in 23 the heart was displaced. Crepitations were noted *in a few cases.* The well-known *fact may here be emphasised* that in infancy and childhood tubular breathing is frequently found over the site of an empyema—a fact apt to mislead those unacquainted with the occurrence. It is worthy of note that displacement of the heart is only recorded in 23 of the 71 cases, although it must be allowed that slight displacements in infancy are by no means easy to recognise decisively.

7. *Causes of death.*—The causative factors of death in the 39 fatal cases of our series constitute a question of great importance for prognosis and treatment. In 8 cases there was no post-mortem examination, and these must be *set aside, leaving 31, which we divide into three groups.*

Group 1.—Twelve cases, in which the empyema was either not detected, or, if it was detected, the child was moribund on admission. In 2 of these cases tuberculous meningitis was found, and in 3 suppurative pericarditis.

Group 2.—Eight cases, all of which were operated upon with resection of a piece of rib, but the necropsies showed the following complications: In 3 cases suppurative meningitis, in 3 suppurative pericarditis, in 1 lateral sinus thrombosis, and in 1 gangrene of the lung. In all these cases the lungs themselves contained either areas of pneumonic consolidation or some collapse. Both suppurative meningitis *and pericarditis occurred not only in cases with long histories,* but also in acute cases.

Group 3.—Eleven cases in children who either died rapidly from shock and collapse, or rallied for a day or two, and then—the wounds having become unhealthy and the temperature having again risen and persisted—they sank gradually, apparently from a lack of vital power to resist the infectious process. In this group we hoped to gain some success by the method described below, which minimises *shock and eliminates the open wound.*

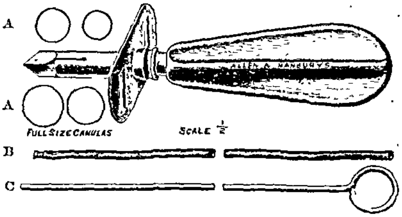
In a brief review of this analysis it becomes apparent that failure to detect an empyema is a factor in an adverse prognosis, but we do not presume to criticise this failure, realising well enough how deceptive the *symptoms may be and how difficult also the physical* signs. We would dwell upon cough, dyspnœa, vomiting and wasting as a combination of symptoms suggestive of an empyema. A certain proportion of *these cases demonstrate that a small empyema is only* one incident in a profound toxæmia, and is of no practical importance in the face of a virulent infection, damaging not only the lungs and pleuræ, but also the pericardium and meninges. It is, however, the cases that sink and die after operation that require special consideration, and have suggested the need of some method of treatment other than resection and drainage.

The Method of Continued Aspiration.

(A) *Apparatus.*—The apparatus and technique used by us have been devised with the special object of completely emptying the pleural cavity, and maintaining continuous drainage by aspiration without at any time exposing the cavity to the outside air and secondary infection. The apparatus consists of:—

(1) A straight round silver cannula, $\frac{5}{8}$ inch in length, provided with a shield through which tapes are threaded whereby it is kept *in position on the chest wall.* (Fig. 1A.)

FIG. 1.



Cannula and trocar. A A = Actual sizes of lumen of cannulas. B = Rubber tube. C = Introducer. *The trocar and cannulas* are made in four sizes by Messrs. Allen and Hanburys, Ltd.

(2) A trocar, with a short point, used for insertion of the cannula.

(3) A rubber tube (B) 10 inches long, having a slightly larger lumen than the cannula; one end of the tube is completely closed by tying it firmly with a silk ligature, and *immediately below this a hole* is cut in the tube, $\frac{1}{2}$ inch long, and involving half the diameter.

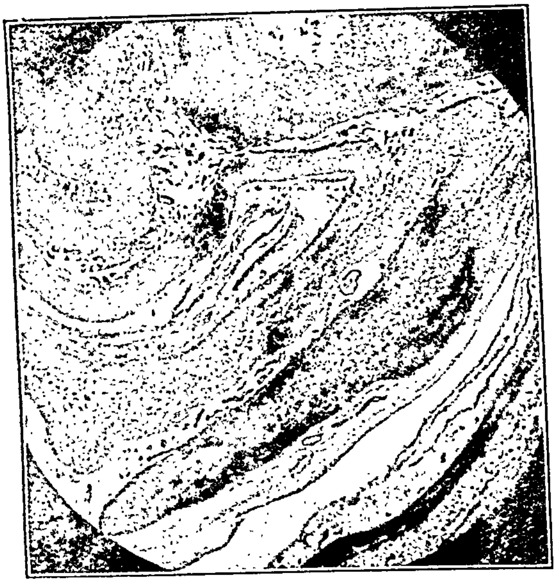
(4) An introducer (C) for the rubber tube, which consists of a metal rod that will easily pass into its lumen.

(5) A White's suction-pump, as used for suprapubic drainage.

the case of lesions in the mesencephalon, the respiratory irregularity is due to involvement of the mesencephalic respiratory tract described by Graham Brown. The purely cortical localisation of the lesions in the present case would explain the absence of this feature. There is no note of glycosuria occurring during the course of the illness, which is surprising in view of the statement that there is continued glycosuria in decerebrate animals (Mellanby[2]).

There is nothing to lead one to believe that the child suffered from any brain disease at birth or, in fact, before the onset of this fatal illness, and it would appear that the anatomical changes represent the effect of an inflammatory lesion of about two months' standing, the gross softening being due to occlusion of vessels. The peculiar distribution of the softening in the deeper layers of the cortex and adjacent white matter may possibly be explained by the arrangement of the cortical vessels, as described by Bignami and Nazari.[3] These authors state that the pia supplies two types of vessels, one short and one long, both of which penetrate the grey matter. The short vessels are purely cortical, whereas the long ones supply a narrow territory in the centrum ovale: anastomoses between these two types of vessels occur in the deeper laminæ of the cortex, and the richest capillary network is in the infra-granular layers. No spirochætes could be found in sections stained by Levaditi's method, and there was no real evidence of syphilis.

FIG. 2.



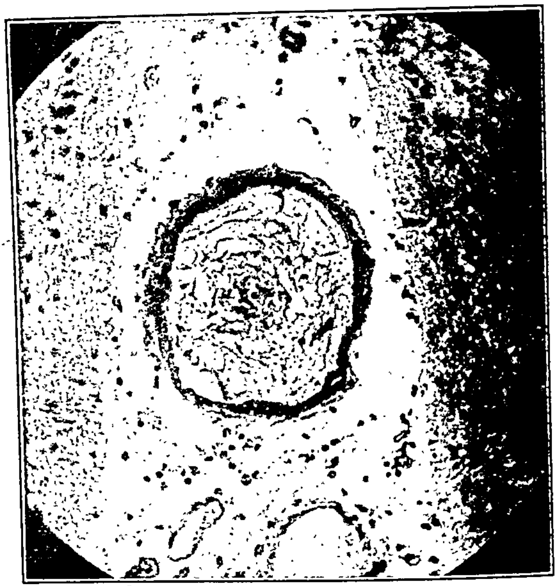
Showing the softening and absorption of the deeper layers of the cortex and adjacent white matter, and also the appearance of increased vascularisation. The swelling of the meninges is well seen. (× 10.)

We have been unable to discover any identical case in the literature of the last 20 years, and cases with even a slight similarity are rare. Sutherland and Paterson[7] have described two cases of "forebrain aplasia," in which the clinical picture appears to have been that of incomplete decerebrate rigidity. The macroscopic morbid anatomy appears to have been very like that of the present case, but the histological details are very meagre; it is stated that the vessels were "too numerous and too thick as regards their walls," but one cannot be sure whether the authors wish to imply that there was a new formation of vessels or that there was simply closer approximation of the vessels due to collapse of softened areas. No cause is assigned to the undue thickness of the vessel walls.

At the International Pathological Congress in 1911 Dürck[4] showed a case of almost complete calcification of the cerebral hemisphere and states that some of the vessels in the neighbourhood showed calcification of their walls. His case was that of an adult male idiot, and, as far as one can discover from his clinical description, there was no very definite rigidity throughout the course of the patient's life. Marchand,[5] in the discussion which followed the above-mentioned paper, brought forward a case of cerebral calcification associated with the presence of a racemose angioma, and emphasised the fact that calcification of the cerebral vessels is not uncommon in the neighbourhood of a chronic inflammatory focus.

Meier[6] reports a case of total softening of both cerebral hemispheres in an infant, aged 5 months. The clinical account is not complete, but he definitely states that there was opisthotonos and extension of the arms with flexion of all the joints of the hands; the legs were extended and the toes pointed downwards. The macroscopic findings at autopsy were very similar to those detailed above. Histologically there appears to have been separation of the cortex from the subcortical tissues by extensive softening. Apart from mention of excessive number, there is no note of the condition of the vessels. Here, apparently, was a case of the same type as that described in the present communication; the child was of approximately the same age, the illness commenced with vomiting and convulsions, and the duration was about two months. Whether the conditions seen in our case can be regarded as an early stage of the condition described by Dürck appears doubtful, but there seems no reason to doubt that had the patient survived, idiocy would have been the effect of lesions so extensive as those described above.

FIG. 3.



Showing the changes in a meningeal vessel. The lumen is almost occluded. The dark line internal to the adventitia corresponds to total calcification of the media. The somewhat excessive cellularity of the meninges can be well seen. (× 100.)

Throughout the examination we have been greatly indebted to Prof. Shaw Dunn for advice on details of histological and photo-micrographical technique, as well as for permission to make use of his notes of the condition found at necropsy. Our thanks are also due to Dr. Wynn for permission to make use of this case.

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(*Continued at foot of next page.*)

This last case illustrates a difficulty which may arise from not fixing the cannula securely; with increasing experience this has not occurred in any other case of our series. In this connexion the nurses should be warned of the importance of seeing that the tube leading from the chest to the pump is quite free, so that, should the child turn over in bed, there will be no pull on the tube, which may dislodge the cannula.

(F) *Some previous investigations into treatment of empyema by aspiration.*—We repeat that the principle of this method is by no means new, for as long ago as 1873 Playfair advised aspiration, and his technique was used and described by Dieulafoy.[2] In 1891 Bulau[3] devised a form of syphonage through a small rubber catheter introduced by means of a trocar, and Perthes[4] used this method with the addition of a water pump to provide continuous suction. Many modifications have been devised,[5] some of which are simple and useful up to a point, others too complicated for general use. They all have the disadvantage that they do not prevent secondary infection of the pleural cavity, and this we know, as has been specially pointed out by Holt[6] in a series of 145 cases, is generally the cause of death by exhaustion from prolonged suppuration. When we consider the high mortality of empyemata in infancy and their frequency at all ages in childhood, we believe that the method of treatment described here will be a real assistance in diminishing the dangers.

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SPORADIC OUTBREAKS OF PLAGUE IN THE UNION OF SOUTH AFRICA.[1]

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SINCE January of 1916 occasional cases or small groups of cases of plague have been discovered at irregular intervals in the Orange Free State and neighbouring districts, occurring under circumstances which did not, until recently, disclose the method of the spread of infection. The number of cases and the circumstances under which the outbreaks occurred have from time to time been officially declared. In previous years well-defined epidemics of the disease had occurred at the ports and larger towns in connexion with well proved epizoötics in the "domestic" rat population, and following the courses of transit of grain and other foodstuffs in the usual way. These epidemics were satisfactorily dealt with by campaigns against the "domestic" rodents and the other usually effective methods.

The occurrences since 1916 have differed in character from these well-defined epidemics in the following particulars:—

(1) The outbreaks were confined to persons or small groups of persons living in rural areas less densely populated than the bulk of South Africa, and remote from larger towns and villages.

(2) Investigation and the closest inquiries failed to elicit the existence of "domestic" rodents at or anywhere near the scene of the outbreaks. The nature and structure of the farm-houses and native huts in which many of the cases lived was such as not to favour the existence of domestic rodents.

(3) The time intervals between adjacent groups of cases was irregular, being in some instances a few weeks, and in other instances as much as many months. The distances between the scene of such outbreaks as would at first sight appear to have a common source of infection were in some instances as great as 50 miles, the intervening population remaining unaffected and the closest investigation failing to elicit any connexion, personal or through verminous fomites, between the groups of cases. Many of the cases occurred in persons living on isolated farms of several thousand acres, and having limited intercourse with their neighbours.

The Central Health Department was faced with the problem of discovering either the source of infection common to these outbreaks, or the means of transference of infection from one case or group of cases to the next, over varying intervals of time and space in the unusual circumstances stated. The theory tentatively held, that latent infection could remain in ambulatory human cases to reappear and be passed on in virulent form after a considerable interval, had under the circumstances to be revised, and as the series of small detached outbreaks continued to occur up to 1921, Dr. Mitchell, the Secretary for Public Health, decided to have close investigation made into the species, habits, and morbidity (if any) of the wild rodents of the affected area, and for that purpose enlisted the aid of experts trained in the capture and classification of African wild animals. The following results were arrived at in the early months of 1921:—

The area of country involved with a radius of about 150 miles may be roughly described as flat or gently undulating plains intersected by watercourses which only contain flowing water for a few months of the year, but in the valleys of which occasional pools may remain longer. These valleys are fringed with low scrub and vegetation, varying from a few to several hundred yards in width. The soil generally is a light sandy loam. The indigenous vegetation is grass, patches of low scrub, wild melons and cucumbers and the like, which usually grow in such latitudes in plains with scanty rainfall. The area is divided into farms of from 1000 to 5000 acres, and is mostly concerned with the raising of sheep and the production of maize and other cereals. The human population, both white and native, is very sparse and widely separated. The conditions generally favour the existence of the smaller wild animals, especially rodents, which find harbourage by burrowing under the roots of grass and the low scrub.

The animals captured were as set out in the following list:—

Common name.	Name as determined by an official of the Transvaal Government Museum.
Gerbille or gerbil	*Tatera lobengulæ.*
Large-eared mouse	*Malacothrix typicus.*
Fat mouse	*Steatomys pentonyx.*
White-tailed mouse	*Mystromys albicaudatus.*
Tree mouse	*Dendromys melanotis.*
Dwarf mouse	*Leggada deserti.*
Striped field mouse	*Rhabdomys pumilio.*
Multimammate mouse	*Rattus coucha.*
Namaqua rat	*Rattus namaquensis.*
Golden rat	*Rattus chrysophilus.*
Ground squirrel or meer kat	*Geosciurus capensis.*
Spring hare	*Pedetes caffer.*
Yellow hare	*Lepus ochropus.*
Kolhaas	*Lepus zuluensis.*
Red hare	*Pronolagus.*
Suricate	*Suricatta.*
Stender mongoose	*Galerella caaui.*
Yellow mongoose	*Cynictis penicillata.*
Muishond	*Ictonyx striatus.*

Considerable difficulties were encountered in their capture and in the investigation of their habits, owing to the fact that many of them are strictly night animals and burrowers, necessitating the careful tracking of small spoor in the early mornings to and from water-holes and feeding-places. The burrows are often of considerable depth and extent, branching in several directions, while the ordinary heap of earth which one looks for as indicating a burrow inlet may be absent, the earth removed in burrowing being used to block up the passage behind the burrower. Entrances and outlets may be numerous and carefully concealed under overhanging bunches of grass or bush. It was, moreover, found to be a

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[1] A paper presented at the Royal Society of Medicine, Section of Epidemiology and State Medicine, on Oct. 28th, 1921.

Formalin Results of Two Cases.

Specimen.	W.R.	Formalin.	Syphilitic history.	Clinical evidence of syphilis.
Case 3 ..	Negative.	Positive.	Admitted.	Suggestive.
Case 4 ..	+ + + +	Negative.*	Denied.	Very suggestive.

* Or ? very slightly positive.

In other words, it is highly probable that the formalin results of these two cases really agreed with the Wassermann test results, making the total agreements 10 out of 11, or over 90 per cent. Gaté and Pappacostas found 85 per cent. to agree, while Major J. Mackenzie[2] found 100 per cent. to agree in a series of 23 cases. On the other hand, A. Murray Stewart[3] in a series of 25 tests got 14 positive Wassermann reactions but no positive formalin reactions.

I am aware that a series of 11 cases is not of much value, and would have preferred to collect more. Unfortunately, I have not now the opportunity of continuing this research, so have decided to put together the little already done, especially in view of the fact that there is as yet little published evidence of the importance of this easily applicable test.

My thanks are due to Dr. D. Macmillan for coöperation in my tests.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 11th, Sir WILLIAM LISTER occupying the chair.

Exhibition of Cases.

Mr. HUMPHREY NEAME showed a case of cyst of Krause's gland, and also a lad, aged 16, with papular formations in the lid. A third case was that of a boy with tuberculosis of the conjunctiva. He cycled from London to Southend for a holiday, arriving very exhausted. After his return to work, while stooping down, he felt something give way in his left eye, and since then he noted a progressive failure of sight in that eye, and in six weeks he could only perceive with it fingers held fairly close. In September last year there were swellings in the neck, and in March this year a cough started, with watering of the right (the sounder) eye. At a hospital his condition was diagnosed as Hodgkin's disease; no signs of tuberculosis were elicited in the chest, and the sputum showed no tubercle bacilli. During the past year he had lost a stone in weight, but during the last three months his weight had remained constant. Four months ago the left eye was removed for irido-cyclitis. The cornea was hazy, and the anterior chamber was filled with a whitish substance. Mr. Neame exhibited sections of this eye on the screen, showing cellular and fibrous material in the anterior chamber, and destruction of iris and ciliary body. A small portion of conjunctiva excised from the right eye a month ago showed fairly typical tubercle formation.

Mr. LINDSAY REA showed a patient on whom he had successfully performed a Poulard operation for ptosis. He also showed a case of angeioma of the retina.

Mr. P. G. DOYNE presented a patient with congenital malformation of the iris and anterior chamber. There was an absence of anterior layers of the iris in many places, and a hole in each eye through which the red reflex could be seen. The angle of the anterior chamber was malformed and seemed to be filled by a whitish substance, while strands could be seen running from the posterior surface of the sclero-corneal junction to the anterior surface of the iris.

Sir WILLIAM LISTER recalled a case of a man who had nine pupils, one fairly central, the remaining eight being ranged peripherally round it. Eventually the man developed glaucoma, probably due to a developmental defect at the angle of the anterior chamber.

Mr. M. S. MAYOU and Mr. TREACHER COLLINS discussed the probable causation of coloboma with a bridge.

Mr. C. F. HARFORD read a paper on

The New Psychology in Relation to Problems of Vision,

demonstrating a number of schematic diagrams. He said that the attention of the psychologist had hitherto been mainly directed to the anatomical and physiological aspects of the problems associated with vision. Parsons, in his "Diseases of the Eye," after tracing the processes of vision from the impressions derived from external objects to the cortex, had used these words: "Here the nervous impulse is transformed into a psychic impulse, which is not, and probably never can be, understood." Mr. Harford contended that psychology could render important help in supplementing physiology, and that psycho-analysis had thrown new light on human thought. The mechanism of what Mr. Harford termed "The Psyche" he subdivided into cognition, affection (the emotional result of cognition) leading to action. One diagram represented the "store-chambers of the Psyche," which Mr. Harford classified as results of careful observation, results of casual observation, amnesia of common life, pathological repressions, infantile impressions, and instinctive and hereditary factors. He laid particular stress on the emotional factor of the Psyche—i.e., the activator of each mental concept, which Bergson had named the "énergie spirituelle." Mr. Harford went on to discuss repression, association, dissociation, and apperception. The vision of the infant was only gradually evolved, not because of any organic defect in the structures concerned with vision, but because the awakening of the intelligence was a gradual process.

Thrombosis of Retinal Vein, with Hole and Star at the Macula.

Mr. ARNOLD WILLIAMSON read a paper on Two Cases of Thrombosis of a Retinal Vein, one showing a Hole, the other a Star at the Macula. He first referred to the careful paper on holes in the macula published by the late G. Coats, in which were summarised the various theories of causation. Monteith Ogilvie considered there were two factors concerned: the fact that the retina is thinnest at the fovea, and thicker around it than elsewhere, and the fact that waves of disturbance passing through the eye meet at the posterior pole and tear the fovea by "contre-coup." Fuchs attributed the appearance in traumatic cases to mild traumatic retinitis, the slight serous exudate rupturing the membrana limitans externa, and so causing the appearance of a macular hole. Coats believed œdema was the underlying cause, stating that a hole had never appeared less than 60 hours after the injury; also that opacity in the retina had been observed after injury in a case in which a hole subsequently developed. In 1908, however, Kipp and Alt had published, in the *American Journal of Ophthalmology*, a case in which a shot passed through the orbit, tearing the optic nerve and its sheath and entering the skull. On the following day the retina was whitish and vessels narrow, except for a vein passing from macula to disc. At the macula was a red deep round spot, one-third D; two days later the retina was more opaque. Four days later the eye was excised, and there was a large hole at the macula, surrounded by swollen retinal tissue. There was evidence of œdema everywhere. Kipp and Alt considered that the retina at the macula could be torn by contre-coup. Mr. Williamson showed slides of his own case because they made clear the dependence of the formation of a hole in the macula on the occurrence of sub-retinal œdema, associated with thrombosis of the central retinal vein.

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[2] Brit. Med. Jour., 1921, i., 834. [3] Ibid., 1921, ii., 263.

A CASE OF DECEREBRATE RIGIDITY IN AN INFANT,

ASSOCIATED WITH DIFFUSE SOFTENING OF THE CEREBRAL CORTEX AND CALCIFICATION OF THE CEREBRAL VESSELS.

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AND

A. PINEY, M.R.C.S., M.R.C.P. LOND.,
ASSISTANT PATHOLOGIST, GENERAL HOSPITAL, BIRMINGHAM;
DEMONSTRATOR IN PATHOLOGY, UNIVERSITY OF BIRMINGHAM.

FROM the clinical aspect this case appears to be one of complete decerebrate rigidity of the type to be expected after ablation of the cerebral cortex.

M. J. M., a girl aged 4 months, was admitted to hospital on Oct. 3rd, 1920, under Dr. W. H. Wynn, with a history of three days' illness, during which she had vomited all her food and had had twitching affecting the right side of her face and legs. She was an only child, and had been breast-fed and bottle-fed; as far as can be ascertained she was quite healthy until the onset of this illness. There was nothing to suggest syphilis.

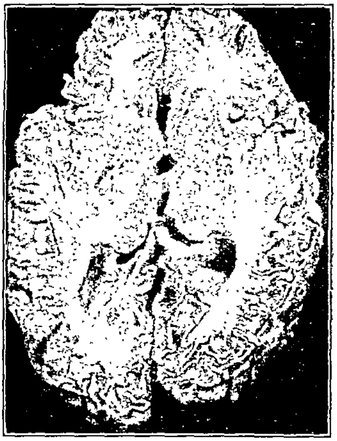
Condition on admission.—The infant was well developed and well nourished. She appeared unconscious, but occasionally rallied and seemed to take slight notice of her surroundings. The anterior fontanelle was distended, the conjunctival reflex was present, and the pupils reacted to light. The attitude of the child, when the bed-clothes were removed, was striking; she lay stretched out stiffly, with a slight degree of head retraction and opisthotonos. The arms were extended at the elbows, and held close to the sides, forearms pronated fully but not excessively, wrists strongly flexed, fingers strongly flexed at metacarpophalangeal joints, and interphalangeal joints extended. The knees were rigidly extended, thighs adducted, feet plantar-flexed, with the toes pointing downwards. The outstanding feature was the general rigidity, so marked that when the leg was raised in an endeavour to elicit Kernig's sign the whole body was raised, pivoting on the head on the pillow. The knee-jerks could not be elicited; the plantar responses were doubtfully extensor. Lumbar puncture was difficult to perform, as it was impossible to flex the spine. The child seemed entirely insensitive to the needle. The cerebro-spinal fluid was clear and under considerable pressure. Repeated examinations revealed no abnormality, with the exception of a doubtful increase of mononuclear cells. Cultures were uniformly sterile. The Wassermann reaction was not performed. Physical signs in the chest and abdomen were normal; the bowels were moved regularly.

Course of case.—The child's condition varied but little during the two remaining months of her life. She hardly ever appeared conscious and rarely cried; occasional twitching of the limbs was reported by the nurses, but it was always transient, and serious convulsions never occurred. The rigidity varied slightly; on some days the child would be slightly relaxed from the poker-like condition of admission, and she could then take feeds with difficulty. One remarkable change in the posture occurred about a week after admission: the feet, previously plantar-flexed, became dorsi-flexed, and at the same time the legs were rotated outwards, so that the feet came to lie heel to heel almost in a straight line across the body. After a few days the original position was resumed. The temperature was irregular; for no apparent reason it rose frequently to 101° or 102° F., and fell again within a few hours. There was no marked respiratory irregularity. The child died on Dec. 6th, 1920, after rather more than two months' illness.

The clinical features throughout the course of the illness appear to bear a close resemblance to the condition of decerebrate rigidity, as described by Kinnier Wilson, in man. The absence of gross respiratory irregularity in this case is explained by the peculiarity of the morbid anatomical findings described below.

Necropsy, performed on Dec. 8th by Prof. J. Shaw Dunn.—The body was that of an emaciated child; the calvarium was thinner than normal, and the medullary centres of the membrane bones of the skull were much congested. The dura mater was tense, and an excess of clear fluid escaped when it was opened. Inside the intact pia-arachnoid the brain presented a peculiar condition, in that large areas of the cerebral cortex had undergone an extreme degree of softening. A large area of this sort occupied the middle of the left temporo-sphenoidal lobe; similar but smaller areas were found in the other lobes of the cerebrum, no part of which presented normal appearances. On making a horizontal-transverse section of the cerebral hemispheres it was found that the softened areas contained much fluid, which ran out freely, so that the cerebral cortex with the pia-arachnoid collapsed, producing a shrivelled appearance of the surface of the cerebrum. This can be seen in Fig. 1, which is reproduced from a photograph of the preserved specimen. No lesions could be detected in the basal nuclei or in any other part of the brain, which had the ordinary appearances of infantile brain tissue. The right lung showed well-marked broncho-pneumonia in the posterior part of all three lobes. No evidence of tuberculosis could be found in the brain or in any other part of the body.

FIG. 1.



Cerebrum, showing the extensive softening of the deeper layers of the cortex and adjacent white matter. The most superficial part of the cortex is seen to be intact, and under this there is a continuous space; this can best be seen in the portion of the brain shown at the right-hand side of the figure. (Two-thirds natural size.)

Histological examination.—Examination of formalin-fixed material showed an almost complete destruction of the deeper layers of the cerebral cortex and adjacent white matter, the superficial cortex being thus severed from its connexions with the deeper parts of the brain. The softened areas had undergone almost complete absorption, and in the deeper part of the cortex and adjacent white matter there was only granular debris. This softening and subsequent absorption have brought the vessels into closer approximation, and so given rise to an appearance of excessive vascularisation. These appearances are well seen in Fig. 2. Many of the meningeal vessels lying in the sulci show a well-marked endarteritis obliterans which narrows, and in some cases obliterates, the lumina. The newly-formed tissue in the intima is loose and reticular in appearance, showing no formation of connective tissue of healthy type. Many of the vessels in which this type of endarteritis is present also show some degree of calcification in their walls; this process of calcification can also be seen in some of the vessels in which no endarteritis is present. In most of the affected vessels the calcification commences in the media, and in no case extends into the intimal thickening. The meninges in the sulci—and, to a less extent, over the gyri—show an ill-defined meningitis in that they exhibit newly-formed connective tissue and a small excess of mononuclear cells. These appearances are seen in Fig. 3. In the brain tissue there are a few foci of calcification which appear to bear no relation to the vessels.

Discussion.

There is one outstanding difference between the clinical picture of the case and the description given by Kinnier Wilson.[1] The present case showed no marked respiratory irregularity, which is described as part of the picture in cases due to transection of the mesencephalon. Kinnier Wilson suggests that, in campaign against them. Tuberculosis belonged to the latter group, and the recent campaign of notification and the dispensary and sanatorium had not yet had a fair opportunity of exhibiting its influence.

In considering the causes of the great reduction in tuberculosis, Prof. Collis remarked that the disease was a "*pestis pauperum*," being closely correlated with poverty. Underfeeding was probably the chief influence in this connexion, and this might be due to lack of vitamins as well as of calorific value in food. During the great war the lack of food and particularly of fat was accompanied by a marked rise in mortality from tuberculosis. In Prussia that mortality increased by 67 per cent. between 1913 and 1918, and rapidly fell later with the improvement in the food supply. It was found that in every country the disease rose amongst the civilian population with food stringency and fell when it ceased, while the armed forces, who were well fed, did not suffer in this way. Children of the breast-fed age also appeared to have escaped. The speaker then pointed out how the consumption per head of milk, butter, and sugar, but not of other foods, had risen in the past 50 years, while tuberculosis was declining. The increase in sugar was counterbalanced by the decrease in potatoes. This, and the figures for wheat, meat, bacon, and cheese, were against the idea that carbohydrate or protein foods were concerned, and pointed to the fat constituent of milk as being the important factor. The influence of milk had been explained (1) by the immunising effect of bovine tubercle bacilli, and (2) by its content of vitamins, particularly fat-soluble A. The latter appeared more probable. Prof. Collis then proceeded to discuss the opposite effects of increased infection and increased immunity due to infection, resulting from such conditions as the growth of population, its aggregation and industrialisation, and improved facilities for transport. He held that the greater resisting power of the white races as compared with the coloured did not show that white men had acquired a specific immunity. In conclusion, he referred to the inhalation of silica dust as presenting a case of definite sensitisation to tuberculosis, and gave an interesting summary of the case for regarding the presence of SiO_2 as a sine qua non in this connexion, the effect not being produced by silicates or by other forms of silicon nor by other kinds of dust.

Discussion.

Dr. F. E. Fremantle, M.P., remarked on the importance and difficulty of breadth of outlook, and said that it was unfortunate that historical studies usually did not go back more than 60 years. Undoubtedly tuberculosis was controlled by the question of wealth *versus* poverty, and vitamins might well be an important factor in this connexion. While vitamins were a subject of dispute amongst experts it was not advisable to make pronouncements to the general public. The forthcoming history of the war would deal with diet in relation to disease. He hoped that the society would soon form a Group for Industrial Diseases.

Prof. H. R. Kenwood (University of London) said that he considered that there was no evidence for Dr. J. Brownlee's view that the fall in tuberculosis was epidemiological and that a corresponding rise was to be anticipated in the future. No doubt tuberculosis was a deficiency disease, but he pointed out the difficulty of determining which particular factor included in the complex conditions of poverty was responsible for tuberculous mortality. In regard to food, deficiency of the food itself might be as important as that of its vitamin content.

Dr. R. J. Ewart (M.O.H., Barking) observed that the examination of recruits at Leeds had shown that at least 3 per cent. of the population had pulmonary tuberculosis without knowing it. He held that no system of examination of contacts would reach all these, and that complete segregation of cases was impracticable. He did not support Newsholme's view that the segregation of advanced cases in Poor-law institutions was an important cause of the decline of the disease. He agreed with Prof. Collis that food was a most important factor, but differed from other views he had put forward.

Dr. H. R. Wilson (T.O., Southwark) remarked that fatal cases were much more likely to produce secondary cases in the family than were mild cases. Mass infection was of great importance, and advanced cases ought to be segregated. If food was so important a factor the question arose whether good results might not be obtained by feeding up the patients at home instead of treating them in sanatoriums, which was so much more expensive.

Dr. F. G. Caley (T.O., Wandsworth) questioned whether good feeding was so efficacious from the point of view of cure as of prevention. He had been impressed by the number of people who were in the closest contact with infectious consumptives—e.g., bed-fellows—and yet did not contract the disease.

Dr. J. Sorley (T.O., Essex C.C.) said the more he knew of tuberculosis the less he understood it. No doubt the food question had considerable influence, but he doubted the conclusions drawn from the figures about food consumption put forward by Prof. Collis. A correlation ratio might be illustrative without being explanatory. He had seen many cases of tuberculosis in the affluent classes of society and they were often rapidly fatal.—Prof. Collis briefly replied.

MEDICAL WOMEN'S FEDERATION.

A meeting of the London Association of the Federation was held on Nov. 15th at the Elizabeth Garrett Anderson Hospital, the President of the London Association, Dr. Louisa Martindale, being in the chair. A discussion on

The Physician's Responsibility in respect of the Sex Life of the Patient

was opened by Dr. Constance Long and Dr. Sylvia Payne.

Dr. Long said that parents often brought children to the physician with complaints about masturbation or phases of lying or stealing or other marks of a neurotic disposition. These characteristics formed a well-known syndrome, originating in some psychic disturbance. In dealing with such a case she advocated that tactful inquiry should be made about the emotional atmosphere of the home. Investigation usually revealed some disharmony between the parents, and it was sometimes necessary to probe into the personal life of the forbears to obtain such an enlightened view as would secure an improved emotional environment for the child. She said that older children should never be allowed to share their parents' bedroom. Dr. Long dealt with the significance of masturbation in children. She defined masturbation as "self-generated eroticism" and said that it might arise from fantasy alone, without any friction, or from the contemplation of some representative object. The masturbation of puberty and adolescence was connected with tension both physical and psychical. At such a time, when the sex organs were developing fast, masturbation might be physiological and act as a safety-valve. Masturbation should not be punished; it would disappear with maturity, if the life led was normal. Dr. Long thought that medical students should have more definite teaching on the subject of sex relations before they encountered such problems in practice. Patients who asked advice on the subject of the frequency of coitus should be told that the mutual happiness and well-being of the two partners should be their guide.—Dr. Sylvia Payne said that the history of primitive races showed that the present-day attitude to sexual problems was largely the outcome of ancient taboos and customs. The advance in psycho-analytical investigation had shown us that the psychical side of sexuality was as important as the purely physical. Women in general practice were continually consulted by newly married women for dyspareunia. If no physical defect was found, the difficulty was usually due to ignorance or fear, and the treatment was psychical rather than gynæcological, combined with a few practical hints. Dr. Payne then dealt with the relation of self-control to repression, repression being primarily an unconscious process, while self-control was a conscious function associated with volition. In married life mutual understanding was the basis of self-control, and newly married people should be advised to discuss these matters freely together.

Dr. Mary Bell, Lady Barrett, Dr. Helen Boyle, Dr. Mary Gordon, and others also contributed to the debate.

NOTES ON THE FORMALIN BLOOD TEST FOR SYPHILIS.

BY C. SUFFERN, M.A. CAMB., M.R.C.S. ENG.,
A.M.O., NOTTINGHAM CITY ASYLUM; LATE H.P., DEVONSHIRE HOSPITAL, BUXTON.

THE value of this test lies in its simplicity. Blood is drawn in the usual manner as for a Wassermann test. In the following cases the blood was collected in a clean but not sterilised test-tube; the test-tube was stopped with cottonwool, and set in a rack for 24 hours at ordinary room temperature. The room used was not a heated laboratory, but either the consulting-room or the sitting-room. At the end of 24 hours the serum was decanted from the test-tube into another clean but not sterilised test-tube; a drop of ordinary commercial formalin was added, and the tube was plugged with cottonwool. (This, of course, could be done as soon as the serum had separated; 24 hours was merely a period dictated by convenience. Moreover, it is not absolutely necessary to decant the serum into another tube; the formalin can be added straight away to the supernatant serum.) The serum and formalin were then allowed to remain at ordinary room temperature as before for 24 hours, the period prescribed by Gaté and Pappacostas,[1] who discovered this method. At the end of this period observation was made as to the condition of the serum. Coagulated serum is a positive result; fluid serum is a negative result.

Part of the blood collected for the formalin test was received in a sterile test-tube and forwarded as a control to an independent well-recognised laboratory for the application of the Wassermann test. The following 11 cases were examined:—

CASE 1.—Female, aged about 30, of stunted growth, with no history of syphilis. X rays showed osteitis and periosteitis, and bowing of the tibiæ. Wassermann reaction (W.R.) negative. Formalin negative.

CASE 2.—Male, circ. 50, with no history of syphilis, but with symptoms suggestive of early G.P.I. and tabes. W.R. negative. Formalin negative.

CASE 3.—Male, 44, with a history of syphilis contracted 22 years ago. Was then treated for two months at St. Thomas's Hospital. Had now got rheumatoid arthritis, with two nodules (? gummata), one periosteal and one subcutaneous, on each elbow. Aching pains all over. Five depressed circular scars on glans penis. Tachycardia. Depression of bridge of nose, alleged to be due to trauma. Was put on pot. iod. gr. v. t.d.s., and five days later blood was collected. W.R. negative. Formalin positive. It is highly probable that a mistake was made with the formalin specimen by confusion of this with the following specimen collected at the same time.

CASE 4.—Male, 48, with unilateral pains in left arm and leg. History of "shell shock" three years ago, while patient was testing guns. There was an explosion and he was buried in a mound of ashes. At another time he was struck by the recoil and had the occipital part of his scalp cut open. Now he had a tumour (? osteophyte) on the right index. Frequent gastric crises in the last six months. No dyspepsia. Left spermatic cord thickened. Sleep bad, not due to pain. Ankle-jerks absent, plantar reflex flexor, knee-jerks and pupils normal. Alleged gradual failure of eyesight. Heart and lungs normal. Alleged dyspnœa on exertion. Patient very garrulous. Dental caries and gingivitis, buccal leukoplakia. No history of venereal disease. W.R. ++++. Formalin negative (or ? very slightly positive). See remarks under Case 3.

CASE 5.—Male, 57. No history of venereal disease. Two months' history of present complaint. "Influenza" at onset, followed by synovitis of both knees, feet painful and cold. In bed three weeks. Now both knees hot and swollen with synovitis, œdema of legs, nothing else objective in joints; sleep bad on account of pain; tachycardia, systolic murmur at apex not conducted to left, cardiac sounds blurred and weak. Teeth all recently extracted; appetite good, bowels normal. W.R. negative. Formalin negative.

CASE 6.—Female, 41, with no history of venereal disease (she was not asked). Two months' history of present complaint. Pain began in tibiæ, but now includes lumbar and right inguinal regions. Had "jumping pains" in legs for some weeks before pain in tibiæ. Pleurisy five years ago; looks ill and is dark below the eyes. Sclerotics bluish. General pigmentation. Chronic ulcer of scalp and cranium, alleged due to trauma. Pain and swelling in left sterno-clavicular joint. Liver reaches umbilicus; tympanites elsewhere. Appetite poor; losing weight; teeth bad. Had "floodings" in the last two months. Six children ("health good"). One miscarriage ten years ago. W.R. ++. Formalin positive.

CASE 7.—Female, 11. No history of venereal disease (not asked for directly). Eight months ago had sudden pain in hips, knees, and left elbow, which were red but not swollen. Was feverish four months; in bed six months. Now left hip shows dorsal dislocation; neck of left femur thickened, appreciable manually. Hard glands below left sterno-mastoid. No signs of congenital syphilis. X rays show periosteitis of left femur. W.R. negative. Formalin negative.

CASE 8.—Male, about 25. History of recent gonorrhœa. Now has a small papule (? gonorrhœal wart) on glans penis, thinks it may be syphilitic, and asks for a blood test. W.R. negative. Formalin negative.

CASE 9.—Male, 42. No history of venereal disease. Four or five years ago he had sudden pain in back, knees, and ankles, while doing army drill in England. In hospital six weeks, of which three were spent in bed; went back to full duty. Pains on and off ever since. Altogether nine months in hospital before being discharged from the army two years later, having much improved. Present attack began six months ago, and he has been in bed on and off, but not for more than five days at a time. Pain worst in shoulders and knees; has done no work (as clerk) for six months; has 30 per cent. pension. Nothing of importance elicited in past history and family history. Shoulders and right elbow crepitate; nothing else objective in joints; pain in neck, periosteal node on left tibial crest, left foot gives Babinski's reaction; right plantar reflex flexor. Knee-jerks very sluggish, ankle-jerks absent; Argyll Robertson pupils; no Rombergism. Sleep bad, but not on account of pain; teeth ground down, gums fair. Flatulent dyspepsia. Appetite poor, bowels normal, heart and lungs normal; no cough. W.R. ++++. Formalin negative.

CASE 10.—Male, 56. No history of venereal disease. Has had present complaint six years, much worse the last three years. "Shooting and stabbing" pains in both knees. Has not been confined to bed, and has not been off work; is now improving. Nothing of importance elicited in past history. Father had "chronic rheumatic gout." Nothing objective in joints. Sleeps badly on account of pain in knees. Knee-jerks and ankle-jerks absent; pupils inactive, right pupil "pin-point," left pupil larger; cardiac sounds impure, teeth poor; lingual leukoplakia. Appetite fair; dyspepsia and constipation; no cough. Pre-sternal seborrhœid rash. W.R. ++++. Formalin positive.

CASE 11.—Male, 47. History of venereal disease denied. Six months ago there was gradual onset of pain in knees, and from left knee to left hallux. In bed two weeks, off work 13 weeks, now improved. Had "influenza" more than once; last occasion was four years ago; nothing else in past history. Mother had sciatica and two sisters were phthisical. Patient's left knee now much limited in movement with chronic synovitis. Genua vara, and tibiæ curved outwards since the age of 16. Walks with a stick, sleeps badly on account of pain, which comes on just before midnight. Knee-jerks and pupils normal; cardiac sounds sharp; teeth foul; appetite very good and bowels regular; no cough, lungs normal. W.R. negative. Formalin negative.

Analysis of Results.

Out of 11 cases the blood tests agree in 8. Of the remaining 3 it is highly probable that two formalin tests were confused one with the other. These two gave results as shown in the following table.

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[1] C. R. Soc. Biologie, Nov. 20th, 1920.

(Continued from opposite page.)

4. Dürck, H.: Uber fast totale Verkalkung einer Grosshirnhemisphäre bei einem erwachsenen Individuum, Atti del 1° Congresso Internazionale dei Patologi, 1911.
5. Marchand, F.: Discussion following Dürck's paper.
6. Meier, E.: Ein Fall totaler Erweichung beider Grosshirnhemisphären bei einem 5 Monate alten Kinde. Zeitsch. fur Kinderheilk. und Phys. Erzieh., 1912, Bd. lxxvi., H. 5.
7. Sutherland and Paterson: Quart. Jour. of Med., vol. vii., 1913-14, p. 61.

Pathology of Fatal Cases.

Dr. J. W. McNee remarked on the unreliability of the statistics of fatality after arsenobenzol injection. Not all deaths from this cause were so reported. The vaso-motor effects were never fatal, so that little was known of their pathology. Dermatitis and encephalitis hæmorrhagica were due to the effects of the drug on the vascular endothelium. In fatal cases of exfoliative dermatitis hæmorrhages occurred in the lungs and these became infected by micro-organisms. Jaundice and acute yellow atrophy of the liver had recently been studied in Germany, and the view was held that the increased frequency of these complications in Germany since the war was due to the lowered standard of nutrition. Pathologically acute yellow atrophy appeared to be a toxic rather than infective condition.

Hepatic Efficiency Tests.

Dr. R. L. Mackenzie Wallis said that the observations on the toxicity of arsenobenzol compounds have been carried out with a view to determining, by means of certain functional tests of hepatic insufficiency, the effects of administration of these arsenical compounds. Where definite focal necrosis or acute yellow atrophy follows, the signs and symptoms are generally so obvious that confirmatory tests are seldom required. The aim has been to ascertain whether single or repeated doses of arsenobenzol derivatives can or do produce any changes in liver metabolism, and whether the effects are immediate or remote. For this purpose three tests have been applied—viz., the levulose tolerance test, already described, the lipase content of the serum, and the cholesterol content of the serum. Applying the levulose test to patients receiving treatment for syphilis it was found that one injection did not produce any rise of blood-sugar with one exception. The same result was obtained after six injections. When, however, the patients were tested 2–3 months after the last injection the levulose tolerance test showed a definite rise; further, the normal blood-sugar content was found to be raised, and in many cases accompanied by slight glycosuria. Six months after this disturbance of carbohydrate metabolism following arsenobenzol compounds, the liver appeared to have regained its normal function. The lipase content of the serum had proved a simple and reliable test for watching the effects of arsenobenzol compounds on the liver. There was a distinct and steady rise in the lipase content of the blood after six injections, and just as in the case of the levulose tolerance test, the maximum effect was observed three months afterwards. The test was applied to the serum obtained for the Wassermann reaction, and 2 to 4 c.cm. were required, the method used being that described by Whipple and others. The cholesterol content of the serum appeared to run in opposition to the lipase content, the amount decreasing with the corresponding increase in the lipolytic activity of the serum. This relationship between cholesterol and lipase was of particular interest and might provide a possible explanation of the changes in the Wassermann reaction following treatment. The results demonstrated the following points—viz., the toxic action of arsenobenzol compounds was exerted sometime after treatment was suspended, and it appeared inadvisable to recommend a second course of treatment within six months of the previous course. If such was necessary and unavoidable then these tests should be applied, and the nature and dosage of the drug regulated accordingly. Cases showing evidence of previous hepatic damage should also be treated along the same lines. Since arsenobenzol compounds produce changes in the liver with disturbance of carbohydrate metabolism, it is advisable to test the patients for glycosuria three months after the last injection. In order to avoid unfavourable results, it would appear advisable to regulate the diet so as to avoid any undue strain upon the liver, particularly towards the end of a course of treatment.

Scheme of Treatment.

Dr. H. MacCormac said that in treatment there were two points to be considered: (1) the patient, (2) the disease. It was not much advantage to the patient to be cured of the disease if he were severely poisoned by the treatment. Primary and secondary cases could be cured, but in tertiary and late cases he had yet to discover any form of treatment that would render the Wassermann reaction permanently negative. Salvarsan, he thought, merely reduced a raging fire of infection to a smoulder; he therefore relied on mercury to complete the cure. For early cases he pushed the treatment; for the first week he gave 0·6 g. of N.A.B. intravenously, combined with 1 gr. of mercury intramuscularly, and for each succeeding week up to ten weeks, 0·9 g. of N.A.B. with 1 gr. of mercury. This was followed by an intermittent course of mercury for two years. He maintained that mercury gave the only certainty of cure, and quoted cases treated in the early days of "606" by only two or three doses of "606" followed by two years of mercury treatment which still appeared cured. It was hardly probable that two or three doses of "606" had achieved this. For late cases he prescribed a short course, followed by occasional treatment as symptoms arose. He personally preferred the intravenous method of administration of arsenobenzol compound to the intramuscular.

Animal Experiments.

Dr. H. H. Dale did not agree with Colonel Harrison as to vaso-motor effects not occurring in animals. By animal experiments the vaso-motor effect of each batch of arsenobenzol could be accurately determined. Owing to toxic effects in animals manufacturers had, at one time, turned their attention to the reduction of toxicity, with the result that the therapeutic value of the drug was lowered. It was then established by further animal experiments that the vaso-motor effects and therapeutic value of any batch were parallel. Both effects were due, he thought, to the slow production of arsenious oxide in a colloidal state in the blood, and the vaso-motor effects were of an anaphylactoid nature. The toxic effect on the liver was due not to the arsenic, but to the organic portion of the arsenobenzol molecule; it very closely resembled that seen in tri-nitro-toluol poisoning. Animal experiments showed that silver salvarsan had the greatest therapeutic effect.

Arsenobenzol Poisoning.

Sir William Willcox had seen many fatal cases of arsenobenzol poisoning and agreed that cases were commoner than was supposed. The effects observed were very similar to those of tetrachlorethane, tri-nitro-toluol, and other organic poisons, and could therefore not be due to the arsenic portion of the molecule; indeed, inorganic arsenic in fatal doses had no effect on the liver. Death in toxic jaundice and acute yellow atrophy was due to auto-intoxication following liver insufficiency. When cases of acute yellow atrophy recovered, as a few had done, the enlargement of the liver gave place to a shrinkage, accompanied by ascites; this was due to replacement fibrosis of the degenerated area. In conclusion, he said he was staggered by the dosage of arsenobenzol recommended by one of the previous speakers.

Colonel Harrison, in reply, said he thought batches of arsenobenzol compounds which exhibited marked vaso-motor effects should be specially noted and given very dilute. As regards a scheme of treatment, he had found from experience that a rest for a week at the third and fifth weeks was advisable.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held on Nov. 9th, Mr. Cyril H. Walker, the President, being in the chair, when Dr. Cecil Clarke opened a discussion on

Renal Efficiency Tests.

His remarks were based on a series of 50 cases carefully investigated in association with Dr. J. O. Symes, at the

The first patient was a woman aged 62, whose sight began to fail 14 years ago. For two years, until excision of the eye in July last, she had continual pains in the head. The eye was excised because of absolute glaucoma. Thirty years ago she had a fall, blacking both eyes, but the sight was not impaired. The excised eye showed a corneal nebula, a cellular exudate adherent to the posterior surface of the cornea in places, hyaline exudate passing round the lens and causing some adhesion of the iris to it. There was no cupping of the disc. Sections were exhibited on the screen by means of the epidiascope, when there was an absence of the inner nuclear layer and inner reticular layer, and the retinal pigment layer was separated from the inner layer of the choroid. There was also some œdema in the outer molecular layer of the peri-macular region. The special point was that the cyst was formed not in the retina, but in the accumulation of œdematous material between the membrana limitans externa and the retinal pigment layer. In consequence of the presence of this cyst the outer layer of the retina appeared to undergo a degenerative process, so allowing of the formation of a hole.

Mr. Williamson also demonstrated a second case. In both cases there seemed to be a toxic influence, as shown by the irido-cyclitis, acting on the retinal veins and producing thrombosis, and acting on the delicate macular choroidal capillaries causing degeneration of their walls, increased permeability to fluid, and hence œdema. The fluid then osmosed through the potential space between the rods and cones and the pigment epithelium, preventing the access of nutrient materials from the choroido-capillaris, so that the superjacent retina degenerated and formed a hole.

Mr. **MAYOU** showed slides from a typical case of of albuminuric retinitis, showing exudation from two sites: inter-retinal and sub-retinal. The albuminous fluid in the layers of the retina was, he thought, derived from the retinal vessels, but the sub-retinal fluid from the choroidal vessels was of differing consistence, and responded differently to the stain.

SECTION OF PATHOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 15th, Prof. **LAZARUS BARLOW**, the President, being in the chair.

Dr. W. E. **GYE** communicated the results of work undertaken by him in association with Dr. W. J. **PURDEY** on the Poisonous Properties of Colloidal Silica.

Mr. A. T. **GLENNY** read a paper by himself and Miss K. **ALLEN** on

A Guinea-pig Epizoötic Associated with Dietary "Deficiency."

Owing to a failure in supplies no green food was available and guinea-pigs for a period of six weeks had mangolds only in addition to the basal diet of bran, oats, and hay. Immediately after the commencement of this diet a slight increase in death-rate occurred. Two to four weeks later the death-rate increased rapidly reaching to between 15 to 20 per cent. per week. The first animals to be affected were pregnant does, experimental and small animals. During the first four weeks the post-mortem and bacteriological examinations showed typical Gaertner infection, with a few cases of pneumonia during the third and fourth week. During the fifth and sixth week 76 per cent. of the deaths were due to bronchial pneumonia caused by *Bacillus fæcalis alkaligenes*. After the introduction of green food fresh cases of infection did not occur, and the death-rate reached the normal level of under 1 per cent. per week within two weeks. A series of experiments were performed showing that swedes were of more feeding value than mangolds, and that the presence of an efficient diet such as green food would entirely control the epizoötic. During these experiments no attempt was made at isolation; the animals used were all fed, cleaned, and handled by the same assistant, and the presence of deaths in the "deficient" cages and the absence of deaths in the "full diet" cages were sufficient to show that isolation was of little importance in the prevention of spread of infection.

Prof. F. **HOBDAY** discussed the Pathology of Cleft Palate in Animals, showing specimens and illustrations.

Mr. J. B. **BUXTON** and Mr. **GLENNY** described

The Active Immunisation of Horses against Tetanus

by means of mixtures of toxin and antitoxin. Five hundred horses tested had no normal tetanus antitoxin. An injection of 10 c.cm. of toxin containing in all 20 "test doses" and definitely over-neutralised with antitoxin was given three times at intervals of three days. A month later an immunised horse would tolerate a dose of toxin upwards of 2000 guinea-pig lethal doses, which was probably equal to several hundred horse minimum lethal doses. This method proved of great use in the large scale production of anti-tetanic sera during the war. In order to demonstrate to the War Office that it was possible to immunise army horses against tetanus arising from wounds, four horses were immunised with two or three injections of the mixture; about two months later they tolerated, without any symptoms of tetanus, 2 c.cm. of actively growing culture of the laboratory routine toxin-producing strain of tetanus, together with a suspension of sterile garden soil. A dose of 0·02 c.cm. killed rabbits and guinea-pigs. Smaller doses were not tested, though the toxicity probably went very much lower.

Dr. H. J. **SUDMERSEN** read a paper by himself and Dr. A. J. **EAGLETON** on the

Standardisation of Anti-Dysentery Serum.

The method had been in use at the Wellcome Physiological Research Laboratories for some 10 years. 1·0 mg. of dried dysentery (Shiga) bacilli, which was equal to 10 intravenous lethal doses for an 1800 g. rabbit, was mixed with dilutions of the serum to be tested, and after half an hour was injected intravenously into a rabbit. The rabbits that failed to survive died with the well-known syndrome of ascending paralysis and diarrhœa. The amount of serum necessary to neutralise the test dose of toxin was called one unit. Sera of some 400 units had been produced. The agglutinative did not run parallel to the real protective antibodies; it was therefore fallacious to accept the agglutinin titre as an indication of the therapeutic value of a serum. Charts of various horses showed that sera might have an agglutination titre of 2–4000 while possessing no protective antibody.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this Society was held at 1, Upper Montague-street, W.C., on Nov. 18th, Dr. W. J. **HOWARTH**, the President, being in the chair. Thirty-two new members and four associates were elected.

Prof. E. L. **COLLIS** (Welsh National School of Medicine) delivered an address, as president of the Tuberculosis Group, on

Tuberculosis—Infection, Immunisation, Sensitisation,

in which he considered the causes which had brought about the great fall in tuberculosis that had occurred since the early part of last century. The disease was indefinite both in its clinical course and in its epidemiology; thus contrasting with such diseases as scarlet fever, mumps, and influenza, which had a definite incubation period, and ran a definite and short course clinically in the individual and epidemiologically in the community. Unlike these diseases, tuberculosis was "positively correlated" with the general death-rate. In this respect it resembled pneumonia. Clinical and epidemiological evidence suggested that in the case of tuberculosis, immunity, such as occurred with other infectious diseases, existed (it definitely did in the case of pneumonia), but was difficult to establish. The speaker rejected the theory that tuberculous invasion in the adult was to be ascribed to infection in early life. While certain diseases, like small-pox and leprosy, had been brought under control by specific measures (vaccination and isolation), others, like malaria and typhus, in this country had been reduced without any definite

Reviews and Notices of Books.

AN INTRODUCTION TO BIOPHYSICS.

By DAVID BURNS, M.A., D.Sc., Grieve Lecturer on Physiological Chemistry in the University of Glasgow. With a Foreword by D. NOEL PATON, M.D., LL.D., F.R.S. London: J. and A. Churchill. 1921. With 85 illustrations. Pp. 435. 21s.

Prof. Noel Paton in a foreword to this splendid book points out that as long ago as 1878 physiology was defined as the application of physics and chemistry to the study of the body in action. At that time the application was limited, because ionic dissociation was scarcely recognised. Graham's work on colloids not appreciated, and surface-tension phenomena not yet applied to molecular physics. Phenomena were recorded rather than explained—that is, "what happens" instead of "why it happens." The incorporation of physics and chemistry into physiology has led to its division into biophysics and biochemistry. Dr. Burns, who is now professor of physiology at the University of Durham, discusses only the physical aspect and explains, as far as is at present possible, the various life processes in terms of physical laws. He divides his subject-matter into five sections: (1) energetics, (2) cellular mechanics, (3) cell communities, (4) transport, (5) the animal as a whole; excellent illustrative experiments are given in the last part of the book.

Energy is the underlying cause of all changes in matter; no change occurs without free energy. The laws and kinds of energy are explained by Dr. Burns, and a useful scheme is drawn up to show that the total energy of the universe is partly free kinetic energy, available for work, and partly energy not directly available, of which some is lost as heat (entropy) and the remainder converted into free energy on being started by kinetic energy. The author shows that a continuous supply of energy is demanded for life processes, and that this is derived from the kinetic energy of the sunlight, which is converted into potential energy by the chlorophyll of the plant and forms our foodstuffs. Energy is measured in terms of heat; every foodstuff is ultimately changed into heat, undergoing various changes in the process. It is erroneous, according to Dr. Burns, to consider the animal as a heat engine which works between wide ranges of temperature to convert potential into kinetic energy; it is a much more complicated system, deriving its kinetic energy from the products of digestion by physico-chemical processes in solution. Substances in solution exert an osmotic pressure (kinetic energy) comparable to gas pressure, which is due to the bombardment of the molecules on the walls of the containing vessel, and at the same time alters the surface-tension of the liquid, at the surface of which, in contact with air or any other medium, there exist electrical charges.

Dr. Burns goes on to describe the three classes of substances which may be present in solution—non-electrolytes, electrolytes, and colloids. The dissociation of electrolytes, with slight changes in hydrogen-ion concentration, governs the osmotic pressure and produces changes in the surface-tension. Colloids with their large surface function act as a storage medium of potential energy: adsorbed salts are rendered osmotically inactive and by their property of imbibition they can act as reservoirs of hydraulic pressure. Enzymes, which are probably colloidal in their nature, produce alterations and can act as contact agents, ionic catalysts, or carriers. The cell membrane is affected by these changes either by a change in itself from within or by materials presented from without, and its permeability is so altered that material can pass in or out. Dr. Burns shows that while originally all these changes took place in a single evolution has elaborated special groups of cells ecific purposes. The muscle cells convert al energy into kinetic energy and heat in three Surface energy is the form of energy associated with muscular contraction. As the researches of A. V. Hill have shown, lactic acid is set free and produces alterations in hydrogen-ion concentration and surface-tension; oxygen is not required at this stage, but is utilised in the second stage of restitution in which carbon dioxide is evolved and lactic acid returns to the muscle substance.

Several physical processes are concerned in the numerous functions of the blood. Clotting seems to consist in the liberation from blood cells or tissues of kephalin, peculiar in its colloidal properties; it forms a surface upon which the thigmocytes in presence of calcium spread themselves and rupture, to set free thrombin and the consequent formation of fibrin gel from fibrinogen sol. The crystalloid concentration is maintained largely by the colloidal properties of the globulins; the chief salt of the blood, sodium bicarbonate, is concerned as a buffer from its power of neutralising acid. Association of oxygen with hæmoglobin is a function of partial pressure of gases; the dissociation being helped by temperature and especially by acid. The gaseous exchange in the lungs is by diffusion, though in special circumstances secretion may occur. Gas exchange at high altitudes and at high pressures (diving) is also considered.

These are only the briefest summaries of the wonderfully succinct account of the functions of all parts of the body from the physical aspect given by Dr. Burns. A final chapter is contributed by Prof. E. P. Cathcart on the efficiency of the animal. The physics and physical chemistry of osmotic pressure, ionisation, colloids, hydrogen-ion concentration, partial pressure of gases, and other phenomena are all separately and carefully explained, so that the reader can easily follow their application to physiology. The book cannot be too highly recommended, for it gives in a concise and interesting form a description of most of the modern problems in physiology.

THE HOT SPRINGS OF NEW ZEALAND.

By ARTHUR STANLEY HERBERT, O.B.E., M.D., B.S. Lond. London: H. K. Lewis and Co., Ltd. 1921. Pp. 284. 15s.

NEW ZEALAND abounds in natural springs, both hot and cold, of high remedial value, and Dr. Herbert, who writes of them, has had intimate experience of them for many years as Government balneologist at Rotorua, the principal health resort in the North Island. His book is conveniently divided into three parts: the first part descriptive and containing numerous excellent full-page photographs of the thermal regions with geysers in action, and chapters of Maori life; the second part giving the composition of the various waters and their effects; the third part setting out the author's deductions on general principles.

Rotorua as the leading spa of New Zealand receives most attention. Here the Government has effectually assisted the natural development by building a fine sanatorium with modern baths and appliances, in which the famous Rachel-spring water is applied. Various other spas, such as Helensville, Te Aroha in the North and Hanmer in the South Island, are touched upon more lightly, and mention is made of potential spas such as Kamo, Waiwera, and the high bracing resorts of Wairakei and Taupo. It is quite obvious that these resources have not been utilised as yet to anything approaching their real extent, and that New Zealand has a great asset in her climate and medicinal spas, which if developed in the future will place her in the front rank of the world's health resorts. At Ohaewai, for instance, the hot water and steam have decomposed the cinnabar ore, so that mercury has been deposited in visible metallic globules in the hot mud, a combination which, as the author remarks, would excite the envy of the authorities at Aachen. Taupo offers a combination of hot sulphur and chalybeate waters with alpine climate, for which the only parallel can be found in the Engadine.

An interesting chapter in the second part of the book deals with the classification of "rheumatic"

MEDICAL SOCIETY OF LONDON.

A MEETING of this society was held on Nov. 21st, Mr. JAMES BERRY, the President, in the chair.

Colonel L. W. HARRISON opened a discussion on the

ARSENOBENZOL TREATMENT OF SYPHILIS.

He said that he proposed to confine his remarks to (1) a comparison of the different arsenobenzol compounds and methods of administration; (2) the toxic effects following administration of arsenobenzol; and (3) the extent to which arsenobenzol should be employed in the treatment of syphilis. Comparing the different compounds, Colonel Harrison considered that the modern "606" is not nearly so effective therapeutically as the preparation first given out in 1910. The latter was certainly more toxic, but elimination of toxicity seemed to be accompanied by some loss of therapeutic efficacy. The modern "606" was superior in efficacy to "914," and sodium salvarsan seemed to be between the two. Silver salvarsan seemed so far to have borne out the claims made for it—that it is about twice as effective as "914" in similar doses. Colonel Harrison had been pleased with its effect on the cerebrospinal fluid in syphilis of the central nervous system, even in general paresis. The method of administration influenced the therapeutic efficacy. In the early days "606" was given subcutaneously. Much of the dose was buried in necrosed tissue and lost, yet the effect was at least equal to that of a dose of 0·6 g. given intravenously. Subsequently Wechselmann claimed that the subcutaneous injection of neosalvarsan produced better results than the intravenous injection. This was confirmed by Harrison, White, and Mills in 1917. The disadvantage of the pain was overcome by the use of sulfarsenol, a similar preparation to "914," which caused no more pain than did an intramuscular injection of mercury. Colonel Harrison did not recommend sulfarsenol for intravenous injection, but its use subcutaneously had given him excellent results, especially in old cases with a strongly positive W.R. It offered a hope of treating syphilis for long periods without fear of toxic effects, because it was possible that smaller total amounts might effect our purpose.

Toxic Effects.

The various toxic effects fell into different categories. Those due to damage of vascular endothelium included (*a*) the vaso-motor symptoms; (*b*) the so-called encephalitis, hæmorrhagic nephritis, and cases of purpura hæmorrhagica; (*c*) dermatitis; and (*d*) damage to parenchyma of liver. Vaso-motor symptoms followed intravenous injections and seemed to depend on the physical state of the solution when injected. "606" was more prone to cause vaso-motor symptoms than "914," and silver salvarsan almost always upset a patient unless fairly well diluted, say to 10 c.cm. for each decig., and given fairly slowly. Of the "914" class of preparations those which dissolved with difficulty were more liable to upset the patient when given concentrated than the less soluble. It did not follow that a preparation which caused vaso-motor symptoms was necessarily bad. Sometimes it was therapeutically better than the preparation which caused no upset. It was unfortunate that animals were so insusceptible to vaso-motor effects, because a preparation might be issued to the public with an excellent record as judged by toxicity and therapeutic tests on animals, and then might have to be rejected because it upset patients when given rapidly in a concentrated form. Such a preparation could usually be given safely if well diluted, say to 10 c.cm. for each decig. In regard to vaso-motor symptoms and to reactions, such as severe diarrhœa and vomiting, it was a sound plan to inquire carefully into the technique and the quality of the reagents. The contents of the bottle labelled "Sterile distilled water" were not always so fair as the label implied, and mixing vessels and syringes might bear on their walls that which might upset a solution very badly. Dermatitis had become extraordinarily infrequent since the war, and this was possibly because the average patient was now less exposed to climatic vicissitudes. Dermatitis was very rarely associated with polyneuritis. One or two cases of aplastic anæmia had been recorded in cases of dermatitis, and Moore and Keidel had recently drawn attention to the destruction of leucocytes originating in bone marrow. The only reliable method of avoiding dermatitis was by taking warning from small signs of intolerance. The man who injected a dose of arsenobenzol week after week according to a set programme and without a careful scrutiny of the patient before each dose was subjecting his patient to an unnecessary risk. Jaundice seemed to be in a different category to the other toxic effects. Its likeness in many features to the liver disturbances caused by T.N.T. made it possible that we should ascribe it to arsenobenzol rather than to arsenic alone. Many features of jaundice made it probable that there was an adjuvant factor in its causation. Thus fatal jaundice had occurred at a certain period in a very few military hospitals, and in one of these it had happened in only one section. This occurrence of fatal jaundice in little groups resembling small epidemics had been experienced in other countries. There was much obscurity about the whole subject, and it was to be hoped that the biochemists would evolve a practical test of liver intolerance or even a preventive treatment, so that we could give as much arsenobenzol as was necessary to cure syphilis without fear of the hidden danger of serious hepatic disturbance supervening at a later date.

Arsenobenzol Compounds and Mercury.

With regard to the extent to which arsenobenzol should be used in the treatment of a case of syphilis, Colonel Harrison considered that the reliance now being placed in this country on mercury for continued treatment of syphilis after the W.R. had become negative was not justified by the past record of mercury. In 1913 he had shown in the case of over 400 soldiers that two years' treatment by mercury only left over 40 per cent. positive to the original, and over 70 per cent. positive to Stern's test. If mercury were our only remedy to-day we should be treating cases not for two years but for four or five. Nobody knew how much activity was hidden behind the veil of a negative W.R., but it might be considerable; we were not justified in thinking that, when the W.R. had been rendered negative, mercury would complete the cure. Colonel Harrison held that we should treat syphilis by the chronic intermittent method for many months after the W.R. had been rendered negative, and that arsenobenzol should be used in the continuation treatment as in the early stages. Otherwise we should require a longer period for the cure of syphilis than the patient was likely to allow us.

DISCUSSION.

Prof. H. MACLEAN said that a number of experiments had been performed with reference to the rôle of the liver in toxic jaundice due to arsenobenzol. It was found that after the ingestion of most sugars the blood-sugar rose rapidly from the normal figure of 0·10 per cent. to 0·17 per cent. in about an hour, but after this a rapid fall occurred below normal owing to the action of the liver in storing carbohydrate. When levulose was given, however, the blood-sugar remained remarkably constant at about the normal 0·10 per cent., unless the liver were inefficient when it rose to 0·15 or even 0·18 per cent. Such a rise was found to occur in arsenobenzol jaundice. Even a small dose of arsenobenzol was found to affect the blood-sugar curve. He thought this levulose test might be useful in prognosis, and in one case had given a truthful prophecy of a good result from treatment when the clinical outlook had been grave. The liver was less likely to be affected by arsenobenzol when it was in a healthy condition and carried its normal glycogen content; some of the disasters that had followed the use of arsenobenzol were due to its being given to ill-nourished and even starving patients. To such patients he advised giving 50 g. of glucose about an hour before the injection.

bag is surprising. In view of the uniformly good results given by the use of bougies, especially when several are introduced and care is taken to separate the membranes round the internal os, there would seem no advantage in the unnecessary repeated interference which manual dilatation entails. Some of the other articles would have been improved by being brought more fully up to date, for instance that on Cæsarean section, but the originals were so good that we can understand a disinclination for change. The article on the resection of the sacral promontory, an operation which we thought had long ago been entirely abandoned, might well have been omitted.

In spite of these criticisms the whole may be regarded as an excellent guide to a practical knowledge of the subject with which it deals.

JOURNALS.

BIOCHEMICAL JOURNAL. Vol. XV., No. 4. 1921.—Some Observations on the Hæmolytic Action of Certain Quinine Salts on the Erythrocytes of Different Individuals and on the Resistance of Newly-formed Red Corpuscles to Hæmolysis under the Influence of Distilled Water, by U. N. Brahmachari and P. Sen. (1) Quinine salts are less powerfully hæmolytic than equimolecular solutions of the acids they contain: glucose seems to inhibit the hæmolysis produced by quinine. (2) The resistance of the fowl's corpuscles to water hæmolysis is increased after repeated bleeding.—A Method of Estimating Phenylhydrazine Volumetrically and its Application to the Estimation of Pentosans and Pentoses, by A. R. Ling and D. R. Nanji.—On Carrageen (*Chondrus crispus*). II. On the Occurrence of Ethereal Sulphates in the Plant, by P. Haas.—"Fumed" Oak and Natural Brown Oak, by C. K. Tinkler.—A Method for the Preparation and Recrystallisation of Oxyhæmoglobin, by H. W. Dudley and C. L. Evans.—Pure oxyhæmoglobin, being less soluble than reduced hæmoglobin, is precipitated in crystals when a strong solution of reduced hæmoglobin is treated with oxygen.—Feeding experiments in connexion with Vitamins A and B: (1) The Value of Steam-distilled Palm Kernel Oil as a Control Fat. (2) Wheat Bran as a Source of Vitamins A and B, by A. D. Stammers. Steam-distilled palm-kernel oil forms a convenient vitamin-free fat for diet experiments. Bran is shown to contain vitamin A sufficient to produce growth as good as that obtained on a butter-fat diet, and there is no reason to believe that the antineuritic properties of bran are inadequate.—The Behaviour of Pectin towards Alkalis and Pectase, by F. Tutin.—Further Observations on the Digestion of Fibrin and Caseinogen by Trypsin, by E. S. Edie. Comparisons of the power of pancreatic extracts to clot milk and to digest caseinogen and fibrin under various conditions of acidity, age, &c., suggest that these actions are brought about by distinct enzymes or at least by different groups of one complex enzyme molecule.—A Note on the Question of the Identity of Gastric Rennin and Pepsin, by E. S. Edie. The gastric rennin appears to be a different enzyme from pepsin. The newly-born rabbit's stomach contains rennin but not pepsin, the adult stomach gives pepsin but not rennin.—The Estimation of Non-Protein Nitrogen in Blood by a Micro-Kjeldahl Method, by E. L. Kennaway. The technique is adapted for clinical work.—Denitrification as a Means of Sewage Purification, by E. A. Cooper. It is shown by experiment that considerable economy can be introduced in sewage purification by mixing part of the sedimentation tank liquor with the filter effluent, and thus employing the nitrate present in the latter for destruction of the more readily fermentable material in the former.—A Method of Protein Removal from Body Fluids for the Purpose of Simultaneous Determination of Many Constituents, by G. Mukai. The proteins are mainly precipitated by means of a hot aqueous sodium acetate-acetic acid mixture, any small residue being adsorbed by talcum powder. Chlorine, non-protein nitrogen, and sugar can be estimated in the filtrate.—The Anti-Scorbutic Properties of Concentrated Fruit Juices, Part IV., by A. Harden and R. Robison. By storing evaporated orange-juice at a temperature of 29° C. for 14 months 50 per cent. of its anti-scorbutic power was destroyed.—Studies on Gelatin, Part I.: The Dynamics of the Formation of Gelatin from Ossein, by A. B. Manning and S. B. Schryver.—The Formation of Vitamin A in Living Plant Tissues, by K. H. Coward and J. C. Drummond. Dried seeds in general contain but little vitamin A, and the amount does not increase during germination. The vitamin is synthesised in green leaves and chlorophyll-containing algæ, but not in etiolated seedlings and in plants devoid of chlorophyll. The active substance is not associated with proteins but is extracted with the fat.—Researches on Vitamin A. VII. Notes on the Factors Influencing the Value of Milk and Butter as Sources of Vitamin A, by J. C. Drummond, K. H. Coward, and A. F. Watson. The content of milk in vitamin A varies considerably as the result of variations in the diet of the cow. Colostrum is richer in the vitamin than milk, and milk is richer than the butter made from the milk. Processes in the manufacture of butter which involve exposure to air at high temperatures lead to destruction of the A factor. The vitamin is, however, not affected by storage unless oxidative changes take place. Production of free fatty acid does not destroy the vitamin if oxidation be prevented.—On the Theory of Gels, by S. C. Bradford.

BRITISH JOURNAL OF OPHTHALMOLOGY. October and November, 1921.—In the October number is a report of the lecture delivered to the Oxford Ophthalmological Congress last July by E. E. Maddox on Heterophoria.—S. Miyashita and Y. Nisyake, from the ophthalmic department of the Medical College of Osaka, contribute an article on a rare pathological condition — Retinal Degeneration with Multiple Aneurysms—of which only some 13 cases have been previously recorded.—A. S. Percival writes on Decentration and Oblique Cylinders.

In the November number the subject of Retinal Pulsation is discussed by Colonel R. H. Elliot in a paper of considerable interest. His explanation rests on the theory that the intra-ocular blood pressure varies directly with the amount of fluid in the eye, a theory contested by Thomson Henderson and others, who believe that the scleral envelope is not distensible, and that the amount of fluid in the eye is constant. According to Elliot the arterial pulse is seen whenever the intra-ocular pressure passes the pressure in the arteries during the period of diastole, but is lower than the latter during the systolic period. It is always of pathological significance but can be produced artificially by digital pressure. If, when an artificial pulse has been produced in this way the pressure of the finger is gradually increased, the pulsation ceases again as the intraocular pressure becomes greater than the systolic arterial pressure, but this experiment is justly criticised as being not without danger to the patient. The phenomenon of the venous pulse is of a totally different nature. It is physiological but only to be observed in a certain proportion of subjects, and the pulse is not nearly so marked as the arterial pulse when that exists. The cause of the venous pulse is that in the cardiac cycle the systolic arterial pressure coincides with the period of lowest pressure in the veins; assuming the time between the heart beats to be eight-tenths of a second, and that in the fifth tenth we have a maximum pressure within the veins owing to the auricular systole, in the seventh tenth the ventricular systole will cause a maximum pressure within the arteries at a moment when the venous pressure is at its minimum. Hence the pulse. Colonel Elliot goes on to discuss the varying effects of digital pressure on the venous pulse, its relation to glaucoma and kindred problems. He also contributes an article on the haloes of glaucoma.—An article by W. H. Simpson on Safety in Ophthalmic Operations gives the details of the precautions adopted at Moorfields (at which hospital he was senior house surgeon) before and during cataract operations.

Bristol General Hospital. Dr. Clarke pointed out that as the main function of the kidney was to excrete urea, tests of its efficiency should be tests of excretion of urea rather than of other bodies. Clinical experience, as well as experiment, had shown that the power to excrete urea was, like other vital functions, carried on in health with a large margin of reserve tissue not actually in use. It was the gradual destruction of this margin by disease that the diagnostician aimed to discover. The usual clinical symptoms were not produced till the kidney had lost two-thirds of its urea-excreting tissue, and the object of renal efficiency tests was to anticipate the symptoms in demonstrating the encroachments of disease. Dr. Clarke mentioned three methods of estimating the urea outflow: the two-hour renal test, the urea-concentration test, and the estimation of blood-urea. By means of charts Dr. Clarke demonstrated the close parallelism between the curve of fluid outflow, as demonstrated by the two-hour renal test, and the output of urea; so close was this relationship that he had learnt to regard the two-hour renal test as the most valuable of the simple means of watching the renal functions. Dr. Clarke said that it was possible by means of this test and particularly by noting the ratio between the diurnal and the nocturnal output of urine, to detect earlier phases of disease than by the urea-concentration test. He alluded to the phenolsulphonephthalein test, particularly in relation to the estimation of the efficiency of the "surgical" kidney, and said that though it was a rough index of efficiency in such cases, the estimation of blood-urea afforded more reliable data. With regard to blood-urea estimations in diffuse nephritis, Dr. Clarke had found that whereas in chronic nephritis there was usually evidence of considerable nitrogen retention, in the acute and subacute varieties this was usually less marked. A rising percentage of urea in the blood in any such case was, according to general agreement, of grave import. In circulatory failure, unaccompanied by primary renal disease, there might be a considerable rise in the percentage of urea in the blood.

Dr. J. O. Symes then gave an account of his experience of renal efficiency tests in five years' private and hospital practice. The blood-urea test was accurate and reliable, but too laborious and complex for routine use. The two-hourly renal test was the one he had found to be most useful in practice, because it combined simplicity with accuracy. The urea-concentration test was not ideal for private practice, because of the difficulty of controlling the dietetic and other conditions under which the test was made. Dr. Symes had found renal efficiency tests of value in diagnosis; for example, in cases of arterio-sclerotic kidney the grade of efficiency was relatively high, while in contracted granular kidney it was low. From a prognostic point of view Dr. Symes found the blood-urea estimation of most value; this was also useful in treatment, since a high blood-urea figure indicated a reduction of the nitrogenous elements in the diet.

The Laboratory Point of View.

Dr. Geoffrey Hadfield gave an account of the tests from the laboratory point of view, speaking of them from three aspects: the possibility of simplification, the correlation of test results with post-mortem findings, and the localisation of intra-renal disease (for example, the distinction between glomerular and tubal lesions). In particular he described means of controlling the hypobromite method of estimating the urea in urine, and the urease method of estimating urea in blood and in cerebro-spinal fluid. There were, he said, wide divergences between the results of these tests and the anatomical changes found post mortem, due in part to the element of circulatory failure, local as well as general, which entered into a majority of renal deaths, in part to the capacity for compensating changes, physiological and anatomical, which the diseased kidney displays; due also to the fact that in most diseased kidneys the changes are local and not evenly distributed. Some margin had also to be allowed for autolysis of the renal tubules ensuing after death. Dr. Hadfield's remarks were illustrated by a series of lantern-slides from microphotographs, among them specimens taken from a living kidney which had been treated surgically by decapsulation.

Dr. A. T. Todd alluded to the diastase test, also to certain French methods of estimating the chloride output and the diurnal variations in specific gravity.—Dr. J. R. Charles criticised the prognostic application of renal efficiency tests on the ground that at best they only foretold the approach of uræmia, a mode of breakdown responsible for only a small percentage of renal deaths.—Dr. O. C. M. Davis described certain inaccuracies of the hypobromite estimation of urea in urine.—Mr. J. Lacy Firth, speaking from the surgical point of view, supported the indigo-carmine and ureteral catheter methods, particularly for cases where it was desired to measure the relative efficiency of the two kidneys.—Dr. J. A. Nixon asked whether the tests did not tend to the formation of too favourable a prognosis.—Drs. Clarke, Symes, and Hadfield replied.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

At the opening meeting of this Society, held at the Norfolk and Norwich Hospital, the chair was taken by the newly-elected President, Dr. William Wyllys, of Great Yarmouth.

Dr. A. F. Hurst (London) delivered an address on

Psycho-therapy,

illustrated by kinematograph pictures. He emphasised the benefit derived by patients suffering from organic disease of the nervous system, through the relief and cure by psycho-therapy of the functional element always associated therewith. He laid great stress on the following methods: (1) Explanation, after due physical examination and questioning; (2) persuasion; and (3) re-education, which should be carried out in a short space of time, and not allowed to drift into a matter of weeks and months. By this system Dr. Hurst said he had cured ordinary fainting, vomiting of pregnancy, flatulence, chronic constipation, mucous colitis, and chronic rheumatoid arthritis. His address was followed by an interesting discussion.

A Clinical Meeting was held on Nov. 1st, when the following cases and specimens were shown:—

Dr. G. P. C. Claridge showed a woman and a child suffering from lupus of the face. Both had been treated by various ointments and other applications with indifferent results, but had greatly improved under injections of tuberculin. He used the old T.R. and thought it was most important to push it. He began with an initial dose of 1/50,000 mg. and the woman was now having a dosage of 1 mg. and the child 1/3000 mg.

Dr. A. J. Cleveland showed a case of a young woman with definite symptoms of disseminated sclerosis, following an attack of encephalitis lethargica. He thought there was a distinct connexion between the two diseases.—Dr. V. H. Blake recalled a very similar case which he had diagnosed as encephalitis lethargica, but which was considered by a consultant to be one of disseminated sclerosis. The patient, however, ultimately recovered—a point in favour of Dr. Blake's diagnosis.

Dr. Cleveland also showed a man, aged 38, with general tremors, and a boy, aged 13, with hysterical paraplegia following on an attack of tonsillitis and rheumatism. The boy firmly believed that he could not walk, although there was no real paralysis, and the reflexes were normal.

Mr. Cecil Muriel showed a case of total ophthalmoplegia of the left eye in a young woman who had been under his care at the Eye Infirmary. The attack began with headache, and two weeks later diplopia and ptosis developed. There was then complete paralysis of the third, fourth, and sixth cranial nerves—in Mr. Muriel's experience a very rare condition. There was a positive Wassermann reaction, but no history of syphilis could be obtained, although the patient had a child a few years ago who had congenital syphilis. She had been treated by injections of novarsenobillon, as well as by mercury and iodides. There was no appreciable improvement for six or seven weeks, but Mr. Muriel said that she could now raise the lid slightly and could turn the eyeball inwards, though unable to move it outwards at all.

Mr. T. W. Hancock brought forward two cases. The first was a boy of 14, suffering from fragilitas ossium. The history was that both arms and both legs were fractured at birth, whether in utero or during delivery was not clear. The bones were so brittle that the very slightest injury served to break them; the right thigh had been fractured eight times, the left thigh once, and the clavicle once. The fractures always united well. The boy was very stunted in growth, but his intelligence was excellent, and his pituitary functions normal. Radiograms of the fractures were exhibited. Mr. Hancock's second case was brought for diagnosis. It was a small girl with a new growth at the base of the skull, over the frontal bone, which pressed down on the eyeballs and seemed to be increasing in size. Quite recently swellings had developed in both wrists.—Various opinions were expressed by members as to the probable pathology of these tumours, but no definite conclusion was reached.

Dr. E. B. Hinde showed a case of hemianopia, with fits of the nature of Jacksonian epilepsy.

The following specimens were shown:—1. Mr. A. J. Blaxland: Volvulus of the sigmoid, removed from a man of 55. 2. Dr. Hinde: Three placentæ—(a) Placenta succenturiata; (b) velamentous insertion of cord; (c) twin pregnancy with hydramnios. 3. Dr. A. Crook: Microscopical section of a placenta in a case of toxæmic vomiting. 4. Dr. S. H. Long: Sarcoma of liver from an infant of nine weeks. 5. Mr. E. W. Everett: Enlarged gall-bladder, with hard thickened coats like tough leather.

print in full at the opening of this issue, Dr. W. A. POTTS, speaking from his experience as psychological expert to the Birmingham Justices, states that nearly all the so-called moral imbeciles he had examined were mentally defective. There is, he roundly asserts, no criminal type, and recent investigations have even thrown doubt on the inheritance of mental defect as such. He spoke of psychical as distinct from physical inheritance. A child may inherit the tendency to evade rather than face difficulties, and he placed the critical period in such a child's history very early indeed. Nearly all the young Birmingham delinquents were on the wrong path, he said, at ten years of age and even earlier. The alleged first offender is not, in Dr. POTTS's view, an innocent little person to be dismissed with a caution, but an individual on the wrong path whose case requires thorough expert examination.

We are unfortunately too ignorant at present to deal with many of these delinquents other than by punitive detention, but what is really most necessary now is an inquiry into their mental life. There will probably be no doubt in the minds of those who have experience of the class, that the case described in considerable detail by Dr. NORWOOD EAST in our last issue is truly a case of moral imbecility; indeed, in its features of persistent crime from an early age in spite of all refining and reforming influence and of repeated punishment, in the apparently complete absence of any sense of morality and social responsibility, and in the lack of wisdom to see the personal disadvantages resulting from such misconduct, it is a very characteristic case of this condition. With regard to the boy HAROLD JONES, who, on his own confession deliberately murdered two young girls in the most callous manner, we are, it is true, without any expert evidence as to his mental state, but this case also comes within the same category. The condition of moral imbecility is one of very great scientific interest, especially in regard to its psychology and ætiology. Sound authorities regard it as due to a definite defect of mind of such a nature that the sufferer is permanently incapable of controlling his conduct so as to conform to the legal and moral standards of society. Then there arises the interesting question of the cause of such defect. In many instances it is likely that this is the same as that of ordinary mental defect, the imperfection, however, being chiefly or entirely incident upon the inhibitory functions. But it is possible that some of these cases may stand upon a quite different footing, and that in them the defect may be analogous to the "sports" and "freaks" which occur in plants and animals, rather than due to a pathological condition of the germ plasm. However this may be, it is recognised that true moral imbecility is incurable, a thing which entails social consequences of such importance as completely to overshadow any academic considerations. Perhaps the fact which strikes us most forcibly is that serious, indeed alarming, danger to the general public must arise from the freedom of these persons, and in this connexion it is necessary to remember that neither HAROLD JONES, nor the persistent criminal, whose life Dr. EAST has sketched for us, are unique cases; they are merely representative of a not inconsiderable class. It is obvious that the public safety demands that the condition which makes such conduct possible should be diagnosed, and that persons suffering from it should be placed under suitable care at the earliest possible moment.

Diagnosis is a matter of great difficulty; there are several conditions closely resembling moral imbecility which are curable under appropriate treatment, and it is not impertinent to ask whether the practitioner invariably possesses the requisite knowledge of psychological medicine, and particularly of mental deficiency, to make such a diagnosis. We are of the opinion that he does not, and for this reason we welcome the increased facilities which are now being afforded in London and elsewhere for instruction in this subject. A further advance might be made. The subject of mental deficiency is one of such medical and social importance that the time has arrived when the establishment of university chairs might be considered. There seems to be a need for the mental examination not only of all young persons charged with serious crime, but also of all persons repeatedly coming before the courts. If adequate arrangements existed for such examinations, it should surely be possible to detect sufferers from moral and other forms of mental deficiency before they were able to commit an alarming series of crimes.

Pragmatism in Medicine.

ONE of the most significant features of the progress of medicine in recent years has been the enthusiasm with which laboratory methods have been brought into use in the investigation of sick people. That a large and expensive book like Prof. J. J. R. MACLEOD's "Physiology and Biochemistry in Modern Medicine" should quickly reach its third edition indicates a definite change of attitude among our clinicians. The University of Sheffield now detaches members of its physiological staff to work and give instruction at the hospitals with which it is associated. And it has lately been announced that the Clinical Society of Manchester will no longer devote its meetings to the discussion of unusual and difficult cases, but that the demonstration of new methods of laboratory investigation and diagnosis will now form part of the regular programme.

That all this and other changes along similar lines which are everywhere taking place is for good no one can doubt. The time has quite gone by when it can be argued, as it used to be, that it is bad education to teach a student to use agglutination tests in the diagnosis of obscure fevers because they deprive him of the improving gymnastic of nicely balancing the variable signs which he can sometimes ascertain by methods of more respectable antiquity. No one believes that clinical sense can be replaced by laboratory manœuvres, but neither does anyone of sense any longer look askance at the help to diagnosis which emerges from research. It has been said that a scientific thesis may be taken to be "true" if it is productive of fresh knowledge. And on this pragmatical basis the proposition that the secrets of medicine will be revealed along the lines of present activities, so diverse and so keen, will receive general assent. But those who are more reflective than enthusiastic may feel some certainty that there are a good many problems in clinical medicine that have to be solved by clinical methods. The attractiveness of all new procedures is obvious and the desire to see good in them is natural. Just as experimental work in the laboratory is of its essence simpler and easier than any kind of clinical inquiry of equal seriousness, so clinical investigation of a laboratory kind is simpler than that to which methods of precision cannot be applied. This must necessarily be so, because the whole object of the experimental method is so arbitrarily to restrict and simplify the diseases and is based on the author's own experience of the jaw-neck syndrome, the presence of which he regards as of cardinal importance. His views on this point are set forth in an original article on p. 1097. More might reasonably have been said on the influence of environment, climate, and suggestion in the last chapter, for, as the author points out, the spa physician undoubtedly finds that environment greatly facilitates the use of the suggestive treatment, which is consciously or unconsciously employed by every medical man every day of his life. Dr. Herbert's book appears at an opportune time and is a welcome addition to the literature of climatic therapy.

PHARMACY.

Pharmacopœia of the University College Hospital. Edited by CHARLES H. HAMPSHIRE, B.Sc. Lond., F.I.C., Ph.C., Pharmacist and Teacher of Pharmacy to the Hospital. London: John Bale, Sons and Danielsson, Ltd. 1921. Pp. 96. 4s.

THIS hospital pharmacopœia contains a list of the special pharmaceutical preparations used in the University College Hospital. Twenty-five new formulæ have been added, five have been deleted, and a children's section has been formed. The book includes much useful miscellaneous information upon diet, urine analysis, the blood, staining of bacteria, treatment of poisoning, &c.; many of these sections have been revised and partly rewritten by Dr. G. W. Goodhart, clinical pathologist to the hospital.

BLOOD DISEASES.

Polycythæmia, Erythrocytosis and Erythræmia (Vaquez-Osler Disease). By F. PARKES WEBER, M.A., M.D., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1921. Pp. 148. 21s.

IN this monograph Dr. Parkes Weber reviews the subject of polycythæmia in all its bearings. The author's experience of the numerous and somewhat uncommon clinical conditions which he describes, his extensive knowledge of the literature, and his personal acquaintance with many of the cases, both published and unpublished, of other observers make the work an important contribution to the knowledge of polycythæmia, and a valuable book of reference.

Polycythæmia is defined as a condition of the blood in which the number of red blood corpuscles is decidedly above the average. It occurs in two forms; in one the increase in red blood corpuscles is relative and due to a concentration of the blood, in the other it is absolute (true) and there is an actual increase in the total number of red corpuscles in the body. Two forms of absolute polycythæmia are recognised—namely, erythrocytosis and erythræmia. Erythrocytosis is analogous to leucocytosis and results from an increased activity of the erythroblastic tissues in response to the call made by such conditions as living at high altitudes, chronic cardiac and pulmonary disease. Erythræmia is analogous to leukæmia, and is described as due to an excessive erythroblastic activity of the bone-marrow, which appears to be the primary morbid factor in the condition.

The characters of the blood and the state of the bone-marrow in absolute polycythæmia, as also its ætiology, are described in Part 1. Erythræmia in all its aspects is described in Part 2, while a valuable appendix gives an account of the post-mortem findings in cases of erythræmia and splenomegalic polycythæmia; a second appendix contains a record of remarkable or obscure cases of polycythæmia. Part 3 contains a short account of a number of hitherto unpublished cases, and a considerable body of literature, mostly issued since 1908. Scattered through the several records in this chapter are many discriminating comments which throw light on the relation to polycythæmia of such conditions as polycythæmia hypertonica, "Ayerza's disease," syphilitic arteriosclerosis of the pulmonary arteries, described by Warthin, phlebitis spleno-portalis, and thromboangiitis obliterans of Leo Buerger. Taken as a whole, the cases detailed in this chapter emphasise the importance of chronic arterial disease in its relation to secondary polycythæmia; at the same time a careful study of its contents makes the reader realise that, though splenomegalic polycythæmia may be easily recognised as a clinical entity, the diagnosis of erythræmia requires uncommon knowledge and care. In a final chapter Dr. Parkes Weber discusses some aspects of his main thesis that erythræmia is a primary disease of the bone-marrow.

THE PROSPECTIVE MOTHER.

Second edition. By J. MORRIS SLEMONS, M.D., Associate Professor of Obstetrics, Johns Hopkins University. London and New York: D. Appleton and Co. 1921. Pp. 343. 9s.

THIS book, the first edition of which appeared in 1912, is described by the author as a "handbook for women during pregnancy," and appears admirably to fulfil this function. The 12 chapters cover most of the essential points in the intelligent care of the pregnant woman as regards general hygienic measures, both antenatal and postnatal, the author striking a happy medium between the very elementary teaching often to be found in similar handbooks, and the more technical instruction proper for the use of students and midwives. A glossary is provided for the explanation of the few technical words the use of which was unavoidable. The chapters on the anatomical and physiological changes involved in the development of ovum and embryo are adequate and clearly written, and should prove interesting to prospective mothers.

While there is nothing outstandingly new or original in the volume, the second edition is well abreast of the more modern teaching, especially as regards infant feeding. We note that the author is doubtful as to the value of "twilight sleep" anæsthesia which, in his opinion, has not stood the test of a fair trial. The book may cordially be recommended to young wives and mothers.

ENCYCLOPÆDIA MEDICA.

Second edition. Under the general editorship of J. W. BALLANTYNE, M.D., C.M., F.R.C.P. Edin. Vol. VII., Intestine to Labour. London and Edinburgh: W. Green and Son. 1921. Pp. 611.

THE most important section in this volume is that dealing with labour, occupying as it does some 260 pages. It consists of a series of sections contributed by different writers dealing with all the conditions of normal and abnormal labour. The articles contain a good account of the subject, and are of particular interest at the present time; they are largely conservative in their teaching and are representative of all that is best in the Edinburgh school of obstetrics. A great deal of the matter contributed by the original authors in the first edition has been left unaltered. For example, that dealing with Precipitate and Prolonged Labour by the late Dr. Herman has, it is true, been revised by Dr. R. W. Johnstone, but it still retains all the essentials of the original. We need hardly say that it is admirable in its conception and treatment of this important branch of midwifery, particularly that part dealing with primary and secondary uterine inertia and obstructed labour, the "very key-stone," as the late Dr. Braxton Hicks used to say, of sound practice in midwifery.

Dr. Haultain deals with the Physiology of Labour and the operation of Version; Dr. Ballantyne with the Stages of Labour, the Management of Labour, Postpartum Hæmorrhage, Accouchement Forcé, Symphysiotomy and Pubiotomy; Dr. W. E. Fothergill with Faults in the Passenger and the Induction of Premature Labour; while other articles are contributed by Dr. T. W. Eden, Dr. Amand Routh, Dr. W. R. Dakin, Dr. Murdoch Cameron, the late Dr. W. Stephenson, and the late Sir Alexander Simpson. The teaching, on the whole, is sound, as would be anticipated in view of the reputation of the contributors. The advice to induce premature labour by the old-fashioned manual dilatation rather than by bougies or a hydrostatic pounds. The fact implies a very generous measure of confidence in the voluntary hospital system on the part of the public of this country, and this confidence it will be the special concern of the County Committees to foster by judicious spending.

MALARIAL PREVALENCE IN TEMPERATE CLIMATES.

THE effect of meteorological conditions on the incidence and distribution of malaria was hard to interpret before the discovery of an intermediate host. Writing in 1889 on the Geographical Distribution of Some Tropical Diseases, Dr. R. W. Felkin remarked that the malarial poison was ponderable and was disseminated by wind and water with a special relation to mean annual temperature. The relation to subsoil water and the amount of organic matter in the soil were noted as unexplained. Much of the difficulty has been cleared up by a study of the natural history of the mosquito. but discrepancies remain.

Malaria is more frequent in Bulgaria since the war, because of the 400,000 infected soldiers who came home uncured after their malarial attacks. still *carrying gametes* in their blood. A severe epidemic was expected in 1919 to follow their return, but, on the contrary, the cases were unusually few; 1920, however, was the worst year for 20 years. In the spring of 1919, the Bulgarian Government, anticipating a large increase of cases. set up a malaria prevention inspectorate, on the work of which Dr. S. Konsuloff reports in a recent paper.[1] In the different districts of Bulgaria the prevalence of malaria in any year varies with the meteorology of the seasons, through their influence on the breeding of anophelidæ. In the plains the most numerous mosquito is *A. maculipennis;* in the N.E. and in the rice-fields *A. pseudopictus;* in *the* S.W. in *the hills*, *A. superpictus*, very plentiful around the Struma valley, especially in ravines and small streams, in small pools full of algæ, and in pools, however shallow, amongst the pebbles on either side of the streams, but it is not found in the muddy-bottomed pools of the plains; these maculipennis chiefly affects, though it is also found in the gravelly pools with superpictus, which, however, requires only very small pools to breed in. Superpictus does not shun houses altogether, neither does it crowd into them like maculipennis. Superpictus carries malaria to almost waterless villages to which all water has to be carried, as it can breed in the tiniest puddles left in ravines and broken ground; so in Crete, and in Greece too, the most malarious districts are not those with obvious marshes. It will be seen from the Bulgarian work, here summarised, that the personal details of the mosquito's life are a determining factor in the vagaries of malarial prevalence. The annual course of mosquito development begins about April when the females which have hibernated commence to lay their eggs. As the temperature is low these develop slowly (not at all below 53° F., only slowly up to 60° F.) and the mosquitoes of the first brood appear in the end of May or the beginning of June. Twenty days thereafter the new females begin to lay, and the second brood appears in July, the third arrives from the middle of August to the middle of September; there may be a fourth but the temperature is by this time too low to permit the development of the malarial parasite. The third brood often fails because the streams in July have dried up and there is no water for the larvæ—this, of course, does not apply to the rice-fields, where the water level is artificially maintained. It can now be explained why there was so little malaria in 1919. That spring was exceptionally cold, development was consequently slow; the females, when they did come out, were too chilled to begin feeding at once, so their eggs were laid, not in April but in June. Thus one brood was lost. The next brood was developing through the summer, which in this year was unusually hot, and the drought, drying up the pools, destroyed it. Everyone in Bulgaria noticed in 1919 how few mosquitoes there were and how few cases of malaria. Rain-storms affect superpictus in the higher ground. As there are no forests, the rains at once flood the ravines, wash the larvæ out of their small pools and destroy them, and if these spates are repeated within a month the next developing brood is wiped out. That is what happened in 1919. On April 25th came rain, so heavy that a bridge in the Struma valley was washed away, and another rain-storm followed on May 7th. Therefore in the superpictus area, too, there was little malaria that year.

As we now understand better, in the light of these observations, the natural history of the mosquito, it may be in some degree possible another time to forecast in June the extent of the epidemic that will come in the following summer. A cold spring delays development of all mosquitoes and lessens malaria. Heavy rains in spring decrease superpictus, but rains in summer increase maculipennis, decreasing, respectively, and increasing malaria in their districts. These observations confirm those of Dr. C. M. Wenyon for Salonika, recorded in THE LANCET of Oct. 1st (p. 710).

AVIRULENT TUBERCLE BACILLI.

THE variation in virulence of tubercle bacilli under changing environment is of the utmost practical importance. In the *Annales de l'Institut Pasteur* for September. Calmette, Boquet, and Nègre give an account of experiments conducted with bovine bacilli grown for a long period upon potato in the presence of ox bile. This medium produces a modification in the virulence of the bacilli, which in other respects remain unchanged. The loss of virulence seems somewhat selective, and it is rather surprising to find that it is most marked in the case of the guinea-pig, an animal which is normally extremely susceptible. The bacilli still retain the power of provoking sharp reactions, and of producing typical tuberculous lesions in the rabbit when inoculated in sufficiently large doses. The guinea-pig appears able to resist very large doses of these bacilli, whatever may be the route by which they are given. A local inflammatory lesion is produced by the larger doses, which may break down and become evacuated; subsequently, healing takes place and no generalised tuberculosis is produced. When introduced intravascularly, or into the alimentary tract, after a latent period of some 20 days general symptoms appear, with swelling of the lymphatic glands; but the illness is recovered from. When the animals are killed during the acute period of this illness—and this was the case in many experiments—the bacilli are found in various organs without the characteristic lesions of tuberculosis, phagocytosis of the organisms by large mononuclear cells instead being a prominent feature. The injection of the modified bacilli into an animal suffering from spontaneous chronic tuberculosis resulted in a reaction akin to that produced by tuberculin, but developing more slowly and persisting for a greater length of time.

Attempts were made to protect guinea-pigs from virulent bovine bacilli by inoculation with the modified strain. Where such immunising injections were given subcutaneously no apparent protection was conferred, but where a single dose of the modified organisms was injected intracardially, and infection with a virulent strain attempted a month later, the results were of considerable interest. Whereas control animals succumbed regularly, with large caseous glands and generalised tuberculosis, the immunised animals, at the end of three months and a half, were alive and apparently in good health. When killed and examined no generalised disease was found, but the glands in the region of the path of infection were found to be enlarged and, on section, showed a thickened capsule with a clear, serous, fluid content, containing but few leucocytes and only occasional bacilli. The authors are guarded about the interpretation of these results, which are too recent to be anything but provisional,

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[1] Arch. f. Schiffs- u. Tropen-Hygiene, xxv., 227.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 26, 1921.

Cancer Research.

THE seventh scientific report[1] of the Imperial Cancer Research Fund, which has just been published, contains seven papers, four of which are reprints while three appear now for the first time. Apart from their intrinsic value as positive contributions to our knowledge of cancer, these papers have a further interest as marking what are practically fresh lines of investigation in the experimental study of this disease. Modern cancer research may be said to date from the recognition of the fact that spontaneous tumours in animals can be successfully transplanted into other animals of the same species, and propagated indefinitely in successive generations. Previously it had only been possible to study sporadic tumours as they occurred in human beings or occasionally in animals, and histology was almost the only field for investigation; but with the advent of the transplantable tumour of the laboratory animal it became practicable to undertake purposeful investigations under properly controlled experimental conditions. At first, objections were raised to this experimental study of cancer on the grounds that tumours in animals were not true neoplasms and bore no real relationship to the malignant growths which occur in man. Much careful and laborious work was necessary, as may be seen from a glance at the first three or four reports of the Fund, before contemporary die-hards were convinced that cancer is ubiquitous in the animal kingdom. An echo of this dispute, at one time acute, is seen in the paper demonstrating lymphatic dissemination in spontaneous tumours of the mouse, which appears in the present report

Partly because the trend of scientific medicine was strongly towards the study of immunity, partly because of questions raised by some of the earliest experiments in transplantation, interest was focussed from the first on the natural and acquired resistance of animals to the inoculation of tumour tissue. This field has been thoroughly worked, almost exhausted, in fact, and a vast amount of information, much of it of real value to the student of human pathology, has been accumulated; nevertheless, the fundamental problems seem no nearer solution and it is clear that research must proceed in other directions. An important new method of investigation which is rich in promise has, indeed, been developed during the last few years. In 1915 two Japanese workers reported the production of cancer in the skin of rabbits in response to the application of tar. Similar results were obtained in mice by Japanese and Danish investigators, and there is no doubt that a method is now available of producing, with a considerable degree of certainty, malignant growths of epithelium under conditions which are ideal for purposes of observation and experiment. In the laboratories of the Imperial Cancer Research Fund the study of tar cancer in mice has been in progress for some 18 months, and in the current report the director publishes the results of his preliminary observations. 190 mice were painted on the back with coal tar once or twice a week, and of them 23 developed true cancer of the area painted. Inasmuch as the death-rate from intercurrent disease was considerable—the number of survivors was only about half after four months—and the first definitely malignant tumour developed only after about 17 weeks' tarring, the development of true cancer in 23 mice indicates a fairly high percentage of successful results. The malignancy of the tumours was established by their histology, by the fact that they continued to grow after the application of the tar was discontinued, and by successful autoplastic transplantation. This consists in the removal of a small fragment of the tumour and its inoculation into the subcutaneous tissues of the animal in some part well removed from the primary tumour. This method of autoplastic transplantation corresponds practically to an artificial metastasis, and successful autoplasts are by far the surest tests for malignancy; the test can be carried out long before local infiltration or spontaneous dissemination reveals the true nature of the growth, and it is valuable in differentiating tumours which, histologically, are indistinguishable from innocent forms. It has been demonstrated in these experiments that the malignant change occurs in small isolated groups of epithelial cells and not diffusely over the whole of the painted area. Further, some animals seem more susceptible to the tar than others, and develop tumours after a much shorter application. Thus, in this experiment the earliest carcinoma developed in the eighteenth week, and the latest only after 52 weeks' treatment; and it has also been noted that in the earlier tumours the histology closely approaches the normal, whereas in those developing later, loss of differentiation may be extreme.

Other papers in the report deal with investigations into the physiological processes of normal and malignant cells. These experiments are obviously of fundamental importance; it is too soon as yet to theorise on their application to neoplastic conditions, but this is without doubt a line of research from which much may be expected. Finally there is a long histological paper on the Golgi apparatus of transplantable tumour cells. This again amounts to a preliminary communication on a very laborious research, but it is the morphological counterpart to the physiological investigations to which we have referred. Structure and function are inseparable; the one must vary with the other, and it is by an extensive study of cellular physiology and morphology that we may best hope to discover those elusive properties of malignant cells which distinguish them from their innocent forbears. This is the first scientific report of the Imperial Cancer Research Fund published since 1912, if we except the sixth report, which dealt with the work of members of the staff and had more to do with war pathology than with cancer research. And it is encouraging to find the subject of all others in pathology which is regarded by the majority as almost insoluble being tackled with freshness of outlook and undiminished enthusiasm.

* * *

Moral Imbecility.

AT the first sessional meeting of the Oxford Medical Society Dr. J. M. MACPHAIL brought forward a case of moral imbecility in a stalwart-looking man who had served three and a half years in the army and showed little outward sign of defect, but in whom application of the point-scale method of examination was successful in demonstrating a level of intelligence below the normal standard. In his lecture to teachers, which we the sort of universal compliance which aims at popularity and, as a rule, misses it. It could have been no easy matter for a man of advancing middle age to enter into the ways of life and modes of thinking of a University to which he was himself a stranger, particularly when that University and its colleges possessed over 600 years of tradition. Marsh managed admirably. His birth made him a persona grata with the College tenants, especially as most of the property of Downing College is agricultural and lies in East Anglia. His familiarity with men and manners, acquired in the conduct of a first-class London practice, made him an acquisition in the social circles of the University. And his skill at his own métier was beyond question. Among his other duties he took a deep interest in the Boy Scout movement, being the first Commissioner of Scouts in Cambridge, and on the outbreak of war he threw himself vigorously into all the University movements to help his sorely tried country. He died from a heart attack at the age of 76, leaving behind him the memory of a man who always did his best; and he would have desired no more fulsome epitaph.

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[1] Published by Taylor and Francis, Red Lion-court, London, E.C. Price 15s.

PSEUDOXANTHOMA ELASTICUM.

ACCORDING to Dr. Binford Throne and Dr. Herman Goodman,[1] of the New York Skin and Cancer Hospital, who record an illustrative case with a histological report by Dr. D. S. D. Jessup, pseudoxanthoma elasticum, sometimes known as elastoma or nævus elasticus, is one of the rarest dermatoses known, only 15 other examples having been published. The condition was first described by Balzer in 1884, but it was not until 1896 that the name of pseudoxanthoma elasticum was given it by Darier. The ætiology is unknown. It has been variously regarded as a nævus, a form of tumour, and, from association with tuberculosis, as dependent on that disease for its causation. It appears in youthful persons and in adults of both sexes, and more than one member of the family may be affected. Its clinical features are yellowish small papules, individual and confluent or massed into plaques. The skin changes are usually symmetrical, the areas of predilection being the neck and axillæ. The site of the lesions is marked by exaggeration of the normal creases and reduplication of the normal folds. A case, communicated to us, was that of a woman, aged 39, who had had the eruption since the age of 4 years. One of her sisters had also had a similar condition since she was 4 years old and had died of pulmonary tuberculosis at the age of 31. The patient had had a lymph-node incised when she was 18 months old and at the present time showed enlarged mediastinal glands on X ray examination. The clinical diagnosis was confirmed by X ray examination, which showed characteristic clumps of swollen and degenerated elastic fibres with basic degeneration of the collagen fibres in the lower and middle derma. There was little change in the epidermis and pars papillaris of the derma, and there was no involvement of the sweat and sebaceous glands or hair follicles.

MAN-POWER.

THE Man-Power of Australia: its Dependence upon Education, Immigration, and Public Health, was the subject of an address delivered during August to the Millions Club of New South Wales, at Sydney, by Lieut.-Colonel Sir James Barrett, who took as his text the necessity of filling the Australian continent with inhabitants healthy, educated, and highly organised. Recalling his experiences during the war, Sir James Barrett pointed out that the occupation of the army medical officer was one-third treatment of disease, one-third the placing of the partially disabled in suitable occupations, and one-third prevention of disease. There might be established in civil life an analogous system of hospitals for acute cases, convalescent hospitals, and agencies for placing the partially disabled in occupations in which they can still pull their weight. Nothing had been more striking than the care taken in the Imperial army to have men examined by the most eminent British specialists to determine their fitness to fight, and it had occurred to thoughtful men to inquire why the rank and file were not similarly classified for civilian occupations in time of peace. A little more sympathy was required for the disabilities of those at the bottom of the ladder. The organisation and use of expert knowledge were needed for town-planning and provision of playgrounds, and for all the larger aspect of health and hospital problems; and on the mental side it was now recognised that the period from 14 to 18 years was the most important from an educational point of view. Half-time compulsory education was found to be valuable in Japan, France, and England; Australia might find it well to adopt a similar system of civic education with a back-bone of trade interest. Concepts of mental development were altering; in Canada and the U.S.A. forms of manual training were now regarded as an essential part of university education. But even when all the physical and mental wants of a people were attended to, the result might still be a race of healthy, clever scoundrels. Morality was necessary, and since morality was taught more by example than by lessons, every parent should bear continually in mind the motto *Noblesse oblige*. Crude and unformed ideals must be stimulated to develop clear aims in life. The speaker described himself as meeting professional men who said they would have nothing to do with politics or public affairs; to him such men had lost their souls. In a phrase attributed to Huxley: "Every man or woman should be a master in some one department of knowledge, but they should be interested in everything else that takes place in this interesting world."

THE CEREBRO-SPINAL FLUID IN CONGENITAL SYPHILIS.

DR. Otto Tenzer,[1] of the Carolina Children's Hospital in Vienna, remarks that in contrast with the numerous studies of the kind relating to the acquired disease, the literature on the condition of the cerebro-spinal fluid in congenital syphilis is comparatively scanty, while the results obtained by various observers are conflicting. His own investigations comprised the study of four reactions—namely, the Wassermann reaction in the blood serum, the Wassermann reaction in the spinal fluid, cerebrospinal lymphocytosis, and the Nonne-Apelt reaction. In a few instances Pandy's reaction was also performed. It was a remarkable fact that whereas in adults lumbar puncture not infrequently causes symptoms of meningeal irritation in spite of confinement to bed, the only symptoms observed by Dr. Tenzer among 62 lumbar punctures performed were temporary apnœa in an infant and headache and vomiting in an older child. The results of the examination of the cerebro-spinal fluid in 43 cases were as follows: All the reactions were positive in 41·8 per cent., the Wassermann reaction was positive in 32·5 per cent., and lymphocytosis and a positive Wassermann reaction were found in 13·9 per cent. Sixteen of the total number were infants, among whom all the reactions were positive in 62·5 per cent., the Wassermann reaction was positive in 50 per cent., and a positive Nonne reaction and lymphocytosis were found in 31·3 per cent. With one exception, in which the spinal fluid showed lymphocytosis and a positive Wassermann reaction, all the infants presented a well-marked syphilitic eruption. Twenty were older children without nervous symptoms, in whom all the reactions were positive in 15 per cent. and a positive Nonne reaction and lymphocytosis were found in 5 per cent., and seven were older children with nervous symptoms, in whom the Wassermann reaction was positive in 70·1 per cent. and lymphocytosis was found in 20 per cent. Pandy's reaction in the few cases in which it was performed complexities of the real world that they shall be capable of measurement and analysis. It mostly happens that the main difficulties of any problem have been passed when it has been defined and reduced to a form in which it can be subjected to experimental investigation.

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[1] Archives of Dermatology and Syphilology, October, 1921.

[1] Monatsschrift für Kinderheilkunde, October, 1921.

Sir JAMES MACKENZIE tells us that many of the most pressing questions of practical medicine are of the nebulous kind of which the point is at present scarcely visible. No one can answer definitely questions which are not definite; but we can sift the questions and agree upon their meaning as a preliminary to attempting the reply. The natural history of disease is clearly a great field of inquiry at present hardly touched; Dr. W. H. HAMER never fails to remind the laboratory worker that there is something in epidemiology which is beyond and behind bacteriology. In our enthusiasm, therefore, for the facility with which quantitative answers can be obtained with a burette, do not let us forget that there is a good deal of difficult work which wants doing in which its help will be lacking. By a strange confusion of thought, "scientific" work in medicine is often used as synonymous with "laboratory" work. Scientific work is any work done with accuracy and discipline of mind, and this should be as commonly maintained by those who see the sick in their homes or in the wards of hospitals as by those whose careers lie in laboratories.

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INFANT MORTALITY IN BOMBAY.

SOME of the attention concentrated on the small but regrettable loss of life which occurred in Bombay at the time of the PRINCE OF WALES'S visit last week might well be given to the appalling loss of infant life constantly occurring in that city. In the quarterly return issued by the Registrar-General the extraordinary infant mortality rate of 630 per 1000 births was recorded for the third quarter of the year, and for the second quarter the return was even worse—viz., 788 per 1000 births. It is only fair to add that the extremely high rates customarily returned by Bombay demand some correction in view of an explanation given by Dr. J. E. SANDILANDS in his annual report as executive health officer. It there appears that the low recorded birth-rate in Bombay, as compared with Madras, is due to the fact that a large number of children born of Bombay mothers are never registered at all or are registered elsewhere, many women going away for their confinement. The Madras recorded rates of 254 and 286 for the same quarters are terrible enough, but may well be near the truth. Calcutta makes no returns, possibly because they would be misleading. We are in great need of accurate figures from India.

TUBERCULOSIS SOCIETY.—The annual meeting will be held on Friday, Dec. 2nd, at 7.30 P.M., at the Caxton Restaurant, Tothill-street, Westminster, and will be followed by a supper in the restaurant. Members intending to be present are asked to forward remittance (4s. inclusive) as early as possible to the hon. secretary, Dr. F. J. C. Blackmore, at 39, Woodland-terrace, Old Charlton, London, S.E. 7. The programme for next session has just been issued. On Jan. 23rd the report of the subcommittee on classification of tuberculosis will be discussed; on Feb. 27th the subject of tuberculosis and X ray work will be considered; March 27th will be devoted to a clinical evening; on April 24th the therapeutics of tuberculosis will form the subject of discussion; and on May 22nd a general discussion on the relationship of dispensaries and other institutions for tuberculosis will take place. On June 26th there will be a provincial meeting, probably at Bristol. Meetings will be held at the Margaret-street Hospital, Margaret-street, Regent-street, London, W., at 7.30 P.M.

Annotations.

"Ne quid nimis."

HOSPITAL FINANCE OUTSIDE LONDON.

THE report on the financial position of 572 voluntary hospitals in England and Wales, excluding London, for the year 1920 follows hard upon the survey of London hospital finance reviewed in our columns last week. The author of this valuable report is director of Hospital Services to the Joint Red Cross Council, and Sir Arthur Stanley in his introduction does no more than justice to Sir Napier Burnett's work when he points out that the figures here set out make it possible for the first time to analyse with precision the sources from which voluntary hospitals derive their income. The annual expenditure per occupied bed averaged in 1920, it seems, £135, as against £107 in 1919. The report suggests that there is every indication of the high-water mark in hospital expenditure having been reached in 1920, and anticipates that the present year will show a considerable reduction in the cost of many hospital commodities. As in London, it is noteworthy that the larger hospitals with 100 or more beds, especially those with medical and nursing schools, are more expensive to run than the smaller hospitals; while the teaching and training of students manifestly exert a stimulating effect upon the standard of diagnosis and treatment, it appears that the actual work done by students does not save any hospital much money. Eleven hospitals replied to a question regarding the fees obtained from medical students: at eight hospitals no fees at all were received and at three others they amounted to an aggregate of £1400 odd. Sir Napier Burnett contrasts this laxity with five Scottish hospitals associated with medical schools at which in 1920 a sum of nearly £11,000 was realised from medical students' fees. The practice has been very different with pupil nurses. Provincial hospital finance differs in one important respect from London experience in obtaining a material source of income from workmen's contributions; these amounted in 1920 to 21 per cent. of the total ordinary income. Whenever a hospital cares to take the trouble, Sir Napier Burnett assures us, to organise this form of collection, it almost invariably meets with a rich reward. One provincial hospital actually received £114 per bed from this source, where another situated in an even more populous district derived but £2 per bed. Contributions from patients themselves produced 9·7 per cent. of the total ordinary income in 1920, exceeding by 2 the percentage of the preceding year; income from public services accounted for 14·4 per cent. of the total ordinary income, a drop of nearly 4 on the percentage of the previous year, simply due to the withdrawal of the War Office capitation grant. The report comments severely upon the paltry £39,000 received by provincial hospitals for services rendered to patients under the National Health Insurance Act. At one large hospital 26 per cent. of out-patients are insured persons making weekly insurance contributions, but this hospital receives no support whatever from insurance funds. Sir Napier Burnett foresees much larger contribution from approved societies to hospitals for services rendered to insured persons. We welcome this report at the present moment for it will be of special value to the County Voluntary Hospital Committees which are just being established. To them it commends the gathering together of provincial voluntary hospitals into federated groups with the object of working out some uniform financial scheme, of establishing some system of coördinated treatment, and of effecting some reduction of expenditure along the lines of coöperative buying. The situation is not desperate for these reasonable remedies have never been tried, while the total moneys received by provincial voluntary hospitals during 1920 actually exceeded the total expenditure by over one million be of extreme value for medical men from overseas and for officers in the Services enjoying study leave, it was held by some that it would not serve the needs of country practitioners. But others at the conference considered that the country practitioners most likely to make use of such post-graduate training would be the ones who could arrange for a prolonged stay away from their practices, while it was a unanimous feeling that a central organisation was necessary with a medical executive officer at its head. A source of income must be obtained, and the movement must be set on a business footing, so that those desirous of post-graduate tuition would be able to get the best advice, and teachers willing to assist should receive some regular remuneration. On these points the meeting was unanimous, and it was resolved to hold another meeting in the near future; this will not be, however, until the Post-Graduate Courses Committee of the B.M.A. have reported to the Council of the Association in February next.

GRATEFUL RECOGNITION.

HOWEVER bravely deformity and disablement has been borne by the sufferers in the war, it rarely has led, in this country at least, to any vocal expression of gratitude to those who spent many of their best years in relieving them. The following testimony from Canada is therefore doubly welcome:—

> *Whereas* we, the amputation cases of the Great War, assembled in Convention at Toronto, this 29th day of September, 1921, on this memorable occasion do earnestly desire to express our gratitude and thanks to the various Medical Services we have come in contact with, for their skill and perseverance shown for our good,
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> *And Whereas* we do earnestly desire to express our humble appreciation to the Nursing Sisters who have so heroically befriended us in time of need,
>
> *And Whereas* we do earnestly desire to express our deepest and sincerest regard to the Red Cross, Y.M.C.A., and all other organisations who laboured so much for our Comrades of the Great War and us.
>
> *So Be It Resolved* at this First Dominion Gathering of Amputation Cases of the Great War, to again re-affirm our faith in Canada and the Empire as we were privileged to do in the hour of test that we may take our place in the line of Canada's forward march of to-morrow as citizens and useful men.

The resolution was carried unanimously, and the spirit which prompted its proposal is well displayed in its bold pathetic words.

WE deeply regret to announce the death of Sir Sydney Beauchamp in London, on Nov. 22nd, as the result of a street accident.

Sir Edward Marriott Cooke, K.B.E., M.B., who has recently retired from the Board of Control, has been appointed an unpaid Commissioner of the Board of Control for Lunacy and Mental Deficiency.

Colonel George Sampson Elliston, C.B., M.R.C.S., who died at Felixstowe on Nov. 20th, was for many years medical officer of health for the Borough and Port of Ipswich, and was well known in the Eastern counties as a pioneer of ambulance and volunteer training.

THE first meeting of the Dental Board of the United Kingdom will be held at 44, Hallam-street, London, W., on Wednesday, Dec. 7th, at 2 P.M., when the Right Hon. Francis Dyke Acland, M.P., will take the chair. The Board will continue to sit until the termination of its business.

AT the Royal Society of Medicine on Nov. 28th, at 5 P.M., an Occasional Lecture will be delivered by Dr. Guelpa, of Paris, on the Treatment of Diabetes and Gout by Disintoxication. The lecture will be open to Fellows and visitors. On Dec. 7th Sir Berkeley Moynihan will deliver, at 9 P.M., a short illustrated address on Medicine and Art.

Public Health Services.

WILLESDEN MUNICIPAL HEALTH SERVICE: A LOCAL DISCUSSION.

THE question of the municipal health service and its encroachment on private practice, in the area of the Willesden Urban District Council, has for some time past come under the notice of the Willesden branch of the British Medical Association. The scheme, which has received a large measure of public support and is rapidly extending, is criticised by the local medical practitioner on the following grounds:—

1. The health service is now largely devoted to remedial and curative measures at the local clinics, to the prejudice of the work of preventive medicine proper to a public health department.

2. By the establishment of this service, which until recently has been free to all mothers and children of school age without question as to their ability to pay for advice and treatment, the council's health authority has been competing on unjust terms with the local practitioner. The position has not been materially improved by the scale of charges (here reproduced) which came into force on Oct. 1st.

WILLESDEN U.D.C. HEALTH DEPARTMENT.

MEDICAL SERVICES—SCALE OF CHARGES.

Ordinary Benefits.

On payment at the Municipal Clinics of a registration fee of 2s. 6d. per person, the following ordinary benefits will be available for one year from the date on which the registration fee is paid:—

Out-patient medical and dental care, supervision and treatment of mothers and children under 5 years of age resident in Willesden, and children attending Willesden public elementary schools, including the benefit of the following:—
  - (*a*) Mothers' clinics; Baby clinics; Minor ailment clinics; Throat, nose and ear clinics; Eye clinics; Ringworm clinics; Dental clinics.
  - (*b*) Specialist consultations.
  - (*c*) Prescriptions.
  - (*d*) Home nursing.

Additional Benefits.

Additional benefits are available at the following scale of charges:—

Provision of artificial teeth	Cost price.
,, surgical instruments	Cost price.
,, spectacles	2*s.* 6*d.*
Repairs to spectacles	1*s.* 0*d.*
In-patient treatment at the Municipal Hospital as follows:—	
Confinement cases	£2 (inclusive fee).
Operative treatment of tonsils and adenoids	7*s.* 6*d.* ,,
Diseases of women	3*s.* 0*d.* per day.
Diseases of children up to school-leaving age	1*s.* 6*d.* ,,

General Conditions.

The council will consider the remission of the above charges (excepting repairs to spectacles, 1*s.* 0*d.*; and the registration fee, 2*s.* 6*d.*) in cases whose circumstances are below the council's scale. The council reserve to themselves the right to refuse treatment where accommodation or equipment is not available.

3. The local practitioner has not been consulted in the establishment of this service, nor asked to coöperate in the work, which is carried on by full-time medical officers, under the direction of the medical officer of health.

At a full meeting of the Willesden division of the B.M.A., held at St. Andrew's Parish Hall, Willesden High-road, on Nov. 15th, the recent activities of the council's health department were condemned both on the ground of abstract justice and of expediency from the public service point of view, and debate centred on the method of procedure to be adopted. It had originally been intended to receive a deputation of the local Ratepayers' Union, and to hand them copies of resolutions, but this plan was abandoned owing to representations from the Society of Medical Officers of Health. After full discussion, it was decided not to receive a deputation from a lay body at a medical meeting, but to send to the council, to the three local Ratepayers' Unions, and to the press copies of a memorandum drawn up by a special committee, and of a number of resolutions passed at the meeting itself. These documents may be summarised as follows:—

General Criticism of Council's Health Policy.

The principle underlying municipal health policy in Willesden appears to be to concentrate in the hands of the whole-time permanent officers of the and they content themselves with the conclusion that "the tuberculous infection pursues quite a different course in guinea-pigs which have received an intracardiac immunising injection of bile-cultivated bacilli than it does in the controls." Amongst other interesting points in this valuable paper is the fact that the bacilli were found in apparently healthy lymphatic glands, in the dog, three months after the last injection.

THE SCHOOL OF TROPICAL MEDICINE AND HYGIENE IN CALCUTTA.

WE are informed that a few days ago, by permission of the Government of Bengal, the first course of instruction in the Calcutta School of Tropical Medicine was begun, whilst the Carmichael Hospital is now on the point of being opened, if not actually open. The provisional prospectus of the Schools of Tropical Medicine and Hygiene and the syllabus of their respective diplomas were recently issued, together with a note on the present position with regard to these institutions, including a statement of the financial support already received and of that for which the Government of Bengal is urged to make itself responsible. A brief outline of the origin of the Calcutta school was traced in these columns nearly a year ago[1]; reference was then made to the unlimited opportunities for teaching and research provided by the position and surroundings of the schools. It is hoped to organise research largely on the lines of the Rockefeller Institute in New York; the work of the schools and hospital will be chiefly directed towards solving the special problems of Bengal and the neighbouring provinces, and will aim at making the province self-supporting in the supply of highly-trained doctors and sanitarians and in the provision of medicines suitable for the treatment of diseases prevalent in Bengal. Indeed, the research side of the institute has been open for a year under the governing body of medical men, who control the endowment fund, subscribed by the public, with an income of over a lakh of rupees a year; and good work has already been recorded on kala-azar and leprosy. The Pathological Museum is in size unique among tropical museums; at the Tropical School training will be given for post-graduate instructors who will meet a great need in the province, and here special attention will be paid to the uses of indigenous drugs; at the School of Hygiene there will be held the first organised higher courses of hygiene instruction in India; and the Carmichael Hospital, regarded merely as a charitable institution, will amply justify the entire expenditure connected with it—all these institutions have been built and equipped from funds raised by Sir Leonard Rogers, whose knowledge of Indian diseases is unrivalled in breadth. As component departments of the general scheme their organisation is inter-related in a manner calculated to be not only of the utmost value in itself, but also a model for other countries to imitate; what is asked of the Government of Bengal is the annual contribution of Rs.3,92,000, a sum small in comparison with the benefits which will accrue to the province. The large sums contributed by the Governments of India and Bengal, by great commercial houses, and leading private individuals, both European and Indian, form proof of widespread confidence in the business organisation of the undertaking; but the tone of the note suggests that whilst refusal of the Bengal Government to accept the final responsibility for the upkeep is described as "incredible," such refusal may occur. The province has, it is pointed out, "the opportunity of taking up and developing a unique property, which is the envy and admiration of the whole civilised world." It must be hoped that the province will not let that opportunity go by. Its Government will, in any case, have to provide post-graduate instruction for the doctors and training in hygiene for the sanitary officers, of the province. A new scheme for these purposes would cost much more than the amount needed to finance the existing scheme. Specially interesting is a reference, in the portion of the note dealing with the School of Hygiene, to a suggestion of the director of the school, concerning the training of special instructors in personal hygiene; these would later be attached to the education department, in which their duties would consist of holding courses of instruction in the rudiments of personal and domestic hygiene for the schoolmasters of Bengal. The latter would then convey their knowledge to the children who attend their schools, and in that way the principles of sanitary reform would gradually permeate the population. It has been found almost hopeless to instruct adults whose ideas are fixed, and in the manner described above the Calcutta school would before long become surrounded by an atmosphere of increasingly intelligent public opinion which could not but further the usefulness of its work.

HOWARD MARSH.

THIS memoir[1] of Prof. Howard Marsh is an unassuming account, written with a simple charm, of a man who was alike unassuming and charming. Marsh's memory will be kept green without the aid of memoirs among a large series of patients, pupils, and friends, but it is well that there should exist a written record wherein those who did not know the man may read of a life devoted to work and duty and lived in all single-heartedness. Marsh came of stock which has produced many men eminent in various walks of life, for he was descended from East Anglian farmers. He received his early education at the Grammar School of Eye at a date when the local grammar schools of this country had far greater chances than they now possess of turning out exceptional men. His mind was turned towards medicine by his association with Dr. Miller of Eye, one of the old school of country medical men, whom he used to accompany on his rounds, and after serving an apprenticeship with his uncle, John Marsh of Clerkenwell, he entered St. Bartholomew's Hospital in 1858. He was house surgeon to Mr. Skey and afterwards house surgeon to the then comparatively new Hospital for Sick Children in Great Ormond-street. This institution made a new and valuable departure in 1863, and one which played a great part in determining the direction of some of Marsh's best work. For an after-cure department was started in 1863, under which children with chronic joint diseases were visited at their own homes after leaving the hospital by those who were competent to see that the treatment was continued systematically. At this hospital and at its daughter hospital, the Alexandra Hospital for Children with Hip Disease, Marsh laid the foundations of that knowledge of diseases of the joints which was so marked a feature of his professional life. In 1873 he was elected assistant surgeon to St. Bartholomew's Hospital, but not until 18 years later—namely, in 1891—owing to the extraordinary delays in promotion at the institution at that particular time, was he appointed full surgeon with a right to beds. Until that time he was dependent for any beds under his charge to the courtesy of his colleagues. Marsh, however, was always a remarkably young man for his years, and not only did he discharge his duties as full surgeon for 12 years with zeal and success, but on resigning this post in 1903 in the same year he was appointed Regius Professor of Surgery at the University of Cambridge. This compliment to one whose only previous connexion with the University had been as an extern examiner was still further signalised when, in 1907, on the resignation of Dr. Alexander Hill, Marsh was elected Master of Downing College. As a professor, as head of a house, and as Vice-Chancellor, Marsh profited by that faculty with which he was eminently endowed—namely, the art of getting on with people; he possessed it without

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[1] THE LANCET, 1920, ii., 1268.

[1] A Memoir of Howard Marsh, F.R.C.S., D.Sc., M.A. London: John Murray. 1921. Pp. 86. 5s.

Government, who were unlikely to contribute, the charitable, who were unable to contribute on account of other claims, the patient when he was ill, or the patient when he was well. He thought that it was preferable to obtain the payment before illness. Lord Cave's Commission would only give money to the hospitals if the hospitals could find new money, and this was an attempt to find that new money.

Dr. R. A. Bolam did not think that the promoters of the scheme had made the benefits very clear. It was not explained to the insured that he had the use of the hospital endowments. He thought it would be preferable that the medical profession should give their services free. He personally preferred to be an honorary officer of his hospital.

Dr. J. F. Gordon Dill said that the scheme was the only one that gave hope of relieving the debt of the hospitals. It would help to prevent hospital abuse. As one of the promoters of the scheme he would be glad to have constructive criticism.

Sir James Galloway said that the hospital with which he was associated had no debt, a state of affairs which was attributable to the excellent business capacity of their administrative staff. His main concern was whether the scheme, should it be successful, would be likely to interfere with their subscribers. He did not, however, think the scheme would be a permanent success, since, like all insurance schemes, it would need to be continuously boomed.

Mr. F. R. Smyth, L.D.S., said that there was no progressive diminution of the annual premium where benefits had not been paid for the preceding year, and so no inducement to continue the premium, such as was offered by insurance companies. He would like to know whether the scheme had been submitted to an actuary.

Mr. N. Bishop Harman said he was a supporter of the scheme. Times were different now from the days when the hospitals were founded. The State had no compunction about small payments from even their Poor-law patients. Why, therefore, should there be any compunction about accepting payments from the hospital patient?

Dr. A. Cox would rather see a straightforward insurance scheme, but he thought the present scheme worth a trial.

Dr. F. J. Poynton said that above all things the staffs of hospitals must preserve their honorary status. If the hospitals must have assistance it should come from the State.

Mr. Ernest Clarke thought the scheme was likely to appeal only to those who were sick.

Dr. Gordon J. Lane thought the scheme had not been properly considered, and found it difficult to believe that 2½*d.* a week could provide all the services offered, and yet leave a surplus for the hospital.

Dr. J. W. Kynaston pointed out that the scheme had been taken up at present by only three hospitals.

Sir Charles Ryall said that this was not the first insurance scheme adopted by hospitals. In the eighteenth century the Westminster Hospital set the fashion of admission by subscribers' letters which were distributed in proportion to the amount of the subscription. The real poor had thus been unable to gain admission, and it was the discovery of a poor woman in a dying condition, on whom all the hospitals of London shut their doors, since she had no subscriber's letter, that led John Marsden to found the Royal Free Hospital. Other hospitals had been forced to abandon the subscriber's letter.

In reply Mr. Eccles said he had obtained the opinion of several people associated with insurance undertakings that his scheme was financially a sound one. At St. Bartholomew's Hospital they now charged those of their in-patients, who could pay, £2 2*s.* a week, and he thought that the subscriber who found himself in hospital free, while his next-door neighbour was paying, would congratulate himself on his foresight in joining the scheme.

On being put to the vote the resolution was defeated by a large majority.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Australasian Medical Congress.

THE next Congress will represent a departure from precedent and will be a meeting of the British Medical Association in Australasia, to some extent like the annual B.M.A. gathering in the United Kingdom. Mr. G. Adlington Syme has been elected President, and the meeting will probably be held in February 1923, at Melbourne. Presidents of sections and other office-bearers have not yet been nominated.

Charge of Manslaughter.

A death under anæsthesia occurred at the Adelaide General Hospital on July 21st, 1921. The patient was a young man who had sustained a severely cut hand. The resident surgeon on casualty duty administered ether with the assistance of a student and a nurse. The patient ceased breathing after having vomited. The medical superintendent was summoned and performed artificial respiration, and also cardiac massage through an incision. A second resident officer was directed to perform tracheotomy, which was done. Death was subsequently found to have been due to suffocation owing to the patient having vomited. At the coroner's inquest the medical superintendent stated that the anæsthetic was not administered in accordance with the hospital rule, which required his own presence. A prominent barrister, for the relatives, demanded a verdict of manslaughter against all the medical men, but the coroner gave a verdict simply of death under anæsthesia, though he made unfavourable comment on the hospital management. Next day an information was laid charging the three doctors with manslaughter and they appeared before the police-court. The case was postponed indefinitely owing to the procedure of prosecuting counsel, who, when the hearing was resumed on Sept. 5th, made no appearance, but wrote a letter to the magistrate intimating that he did not intend proceeding with the matter. The informations were thereupon dismissed.

War Memorial.

The Victorian Branch, B.M.A., has decided to erect a memorial in the hall of the branch to the members who lost their lives during the war. A commission has been given to Mr. C. Web-Gilbert, the leading sculptor in Australia, to execute a design submitted by himself in bronze at an estimated cost of £600.

Bubonic Plague.

Within the past three weeks a decidedly unpleasant situation has arisen in Queensland with respect to bubonic plague. It appears that a case occurred in Brisbane, which after death was recognised as plague. Nothing was allowed to transpire until some three weeks later when a second case occurred. Since that time a few further cases have been reported, together with one case from Townsville. Infected rats have been found from over a wide area of Brisbane, in Townsville, and as far north as Cairns. A steamer arrived at Sydney from Brisbane during the preliminary period before the declared case was announced; plague-infected rats have since been found in Sydney in the neighbourhood of the wharf at which this steamer discharged cargo. Dead rats have also been found in several coastal steamers. Vigorous measures have been taken for disinfection of steamers and cargo, and rat destruction has been actively undertaken. The Brisbane health authorities have been severely criticised for concealment of the first case and no explanation of their action has yet been offered. Up to the present the outbreak has not spread rapidly, but there is apparently a wide distribution of infection among the rat population in the coastal ports.

Motor Fatality.

On Sept. 23rd Dr. G. A. Paul, a well-known surgeon of the younger generation, lost his life in an accident near Sydney. Dr. Paul and Dr. Howard Bullock left Sydney in a motor-car in order to visit a country house;

corresponded with Nonne's reaction, but the other reactions did not show a similar parallelism. Dr. Tenzer's observations prove that a positive Wassermann reaction in the cerebro-spinal fluid is much commoner in congenital syphilis than in the acquired disease, and is indeed often the only change to be found. On the other hand, although the cerebrospinal fluid was affected in a comparatively high percentage of cases, the changes rapidly disappeared, and could not be regarded as indications of a permanent damage to the central nervous system.

LOCAL ANÆSTHESIA IN STOMATOLOGY.

THE reliance of continental surgeons upon local anæsthesia is in remarkable contrast with the practice of this country. Dr. Hewer Aboulker, laryngologist at the Mustapha Hospital in Algiers, has recently made the claim[1] that local anæsthesia is applicable in the severest operations for cancer of the tongue and pharynx, and that by its use he has been able to reduce materially the death-rate in his own practice. After experiencing an operative death-rate of 55 per cent. in 18 operations for bucco-pharyngeal cancer carried out under chloroform, he has not had a single operative death among 10 subsequent operations under local anæsthesia. It would be rare in this country to find so high an operative death-rate under chloroform, yet it is worth noting what may be accomplished without a general anæsthetic in cases where this may be contra-indicated. We are informed that in the whole city of Geneva there is but one apparatus for administering nitrous oxide, and that is kept at the university clinic purely for demonstration purposes. That nitrous-oxide anæsthesia is the method of choice in this country for dental extractions is indicated by the fact that in large towns, where skilled anæsthetists are available, so many operations appear to be carried out under its influence. Dr. B. H. Haines,[2] writing in a country where local anæsthesia is much used, seeks an explanation for the better results he has obtained under nitrous-oxide anæsthesia, and finds it in the freedom from the more or less violent reaction or exacerbation of systemic symptoms which commonly follows a local anæsthetic. He does not believe that the small amount of local anæsthetic used has enough toxicity to account for these symptoms, which he has noted as routine phenomena, but attributes them to the lowered local resistance dependent on temporary interference with the circulation of the blood. Whether this is or is not the correct explanation, the fact remains that patients who take gas well usually find that the painful fugue developing from a vague uneasiness through an ache to an agony ends more abruptly when the extraction has taken place under nitrous oxide than under local anæsthesia.

BLOOD-DONORS.

IN a recent number of the *Guy's Hospital Gazette* the editor protests against the too free use of students as blood-donors. He implies that they have been encouraged to act as donors, and it is greatly to their credit that they have so readily acceded to requests for blood. Later the editor of the *St. Bartholomew's Hospital Gazette* associated himself with this protest, pointing out that the medical student is a hard-worked person, little able to part with a pint and a half of blood. It may take three weeks for a normal individual to make good even the loss of a pint, and it is clear that students should not be expected, through sheer altruism, to work at a disadvantage for so long a time as this. We should regard it as perhaps justifiable to have at hand a few volunteers among the students, carefully chosen for their physical fitness, and to reserve them for cases of extreme urgency, but the principle should not be extended beyond this. The hospital journals raise a question as to the best procedure in institutions which may have to deal at any moment with cases of severe hæmorrhage. It is clear that, if students may not be used as donors, still less may the permanent staff of a hospital be expected to serve. None of them can be spared from their duties even for a day without detriment to the hospital.

In the United States of America, where blood transfusion is more frequently practised than in this country, there has arisen a class of "professional donors." It is unlikely that anyone can make a living out of this occupation alone, as the frequency with which the healthiest man can afford to lose blood is limited to three or four times a year. Nevertheless, these professionals have thought it necessary to their interests to form a "trade-union," so that their blood may command as high a price as possible. Matters have not yet reached this pass in London, though a beginning has been made by the insertion of advertisements for blood-donors in the newspapers, and unemployed workmen have been obtained for a modest sum from the Labour Exchanges. At the present time, however, few hospitals are able to offer adequate payment to blood-donors, and in any case a system of professionals living at a distance from the hospital would not solve the problem of how to proceed in a case of great urgency. At the present time a relative of the patient is used in some instances, or a volunteer is found among the younger patients admitted for minor surgical ailment. Probably it is in the more systematic use of this kind of donor that the best solution of the difficulty is to be found. If the house surgeon responsible for dealing with the emergencies were to make a point of always knowing of at least one suitable donor among the patients, their blood could be obtained with the minimum of delay. For the less urgent cases a relative or friend belonging to the right blood group could usually be found. Some hospitals no doubt already have a system of this sort in operation, but where it is found necessary to protest against the too frequent use of students as donors it seems probable that better organisation is needed.

POST-GRADUATE EDUCATION FOR LONDON.

A MEETING was held at the House of the Royal Society of Medicine on Friday, Nov. 18th, at which representatives of the British Medical Association discussed with the Fellowship of Medicine the future of post-graduate education in London. The conference was presided over by Sir George Makins, chairman of the Executive Committee of the Fellowship. It will be remembered that the Post-Graduate Medical Committee of the Ministry of Health, under the chairmanship of Lord Athlone, presented a report earlier in the year recommending that certain steps should be taken to organise post-graduate education in London. The recommendations included attachment of a post-graduate medical school to a centrally situated London hospital, the establishment of a central office to develop educational work, and the granting of substantial financial assistance from the Treasury. Since this report was issued the idea of a central hospital devoted to post-graduate work has been abandoned for the present, the large expenditure being inhibitory. But as all our readers know, the Fellowship of Medicine has been for a long time carrying out post-graduate work in London, and the purpose of the meeting was to see how far this work could be developed along the lines of the recommendations of the Athlone Committee, and to what extent and in what places the assistance of the British Medical Association might be expected in future developments. At the meeting, which was entirely informal, Mr. Herbert Paterson, speaking for the Fellowship of Medicine, pointed out that a scheme had already been organised for a six weeks' post-graduate course, to be held early next year, continuous and occupying the whole of each day. Whilst it was admitted that such a course would the books of the Ministry. The record cards dealing with casualties from all the theatres of war had been collected, and reached in number no less than 30 millions. Each week he received 794,000 letters. In a department of this size occasional mistakes must inevitably occur. In one town 100,000 cases might be successfully and efficiently dealt with and no complaint arise, but if one slip should occur in dealing with all that number, the Minister's life was made not worth living.

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[1] La Presse Médicale, Oct. 26th.

[2] National Anæsthesia Research Society, Bulletin No. 16, Nov. 15th, 1921, p. 4.

The functions of the Ministry were to restore the pensioner and to reinstate him in the social and industrial life of the country. They had 90 hospitals, controlled 14,000 beds in their own institutions and 10,000 beds in civil hospitals, and there were at present 158,000 pensioners under treatment for whom the Ministry defrayed the cost. By means of treatment and training in convalescent centres they were trying to restore these men as fit units to the field or factory. After previous wars disabled men were too often left as derelicts on the ocean of life. They served their country in its hour of need and returned to find their families pauperised, and 6*d*. a day their reward. He refused to accept the idea that the Ministry of Pensions should be run as a business institution. A business man could do what he liked with his own money. He could make bargains and cut losses, but that would not do with the trustees of public funds, who had to hold the balance between the interests of the taxpayer, and a just and generous treatment of those who had suffered in the service of the nation.

Pension Issue Office for Scotland.

An office in Edinburgh has now been opened for the issue of pensions to Scottish soldiers. The change of administration from London to Edinburgh will take place gradually, names being transferred in alphabetical order. Soldiers only are to be dealt with for the present, while naval and air force cases will be transferred early next year. The cases of widows and dependents are meantime to be administered from London.

VITAL STATISTICS OF LONDON

DURING OCTOBER, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 19·3 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920: in the three preceding months the rates had been 10·3, 8·5, and 14·0 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Kensington, Chelsea, the City of London, Lambeth, Wandsworth, and Lewisham; and the highest in Islington, Finsbury, Shoreditch, Bermondsey, Battersea, and Greenwich. The prevalence of enteric fever was about 25 per cent. less than in the preceding month; of the 33 cases notified during the four weeks ended Oct. 29th, 6 belonged to St. Pancras, and 3 to each of the boroughs of Kensington, Chelsea, Hackney, and Camberwell. There were 28 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 27, 32, and 37 at the end of the three preceding months; the weekly admissions averaged 4, against 5, 5, and 7 in the three preceding months. The prevalence of scarlet fever again showed a marked increase—40 per cent.—over the preceding month, and was considerably higher than in any month of the present, or the three preceding years; in the month of October, 1918 (five weeks), the notified cases of scarlet fever number 1031, in 1919 (five weeks) 2179, in 1920 (four weeks) 3700, as against 4625 in the four weeks of

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING OCTOBER, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	33	—	—	4625	1803	205	5	3	3	27	6704	19·3	11	—	10	20	33	99	275	448	1·3	3913	11·3
West:																								
Paddington ...	149,673	—	—	—	126	37	6	—	1	—	2	172	15·0	—	—	—	—	1	—	10	11	1·0	118	10·3
Kensington... ...	164,177	3	—	—	127	41	8	—	1	—	—	180	14·3	1	—	—	—	1	1	11	14	1·1	139	11·0
Hammersmith...	136,200	—	—	—	143	42	2	—	—	—	1	188	18·0	—	—	—	2	—	1	11	14	1·3	122	11·7
Fulham	158,621	—	—	—	123	54	7	—	—	—	3	187	15·4	—	—	—	—	2	2	10	14	1·2	111	9·1
Chelsea	62,937	3	—	—	23	12	1	—	—	—	—	39	8·1	—	—	—	—	—	—	3	3	0·6	68	14·1
City of Westmin'r	132,615	2	—	—	111	28	9	—	—	—	—	150	14·7	—	—	—	—	1	4	8	13	1·3	104	10·2
North:																								
St. Marylebone...	101,856	1	—	—	85	25	4	—	—	—	—	115	14·7	—	—	—	—	1	—	1	2	0·3	83	10·6
Hampstead ...	91,519	2	—	—	54	83	3	—	—	—	1	143	20·4	—	—	—	—	—	6	3	9	1·3	80	11·4
St. Pancras... ...	228,178	6	—	—	283	72	10	—	—	—	1	372	21·3	—	—	3	—	2	—	11	16	0·9	181	10·3
Islington	335,907	1	—	—	525	159	9	—	—	—	3	697	27·0	—	—	—	3	2	8	26	39	1·5	306	11·9
Stoke Newington	52,984	—	—	—	51	18	3	—	—	—	—	72	17·7	—	—	—	—	—	5	1	6	1·5	39	9·6
Hackney	225,372	3	—	—	249	58	8	—	—	—	—	318	18·4	1	—	—	3	1	4	10	19	1·1	191	11·0
Central:																								
Holborn	39,676	—	—	—	44	20	3	—	—	—	—	67	22·0	—	—	—	—	—	1	—	1	0·3	41	13·5
Finsbury	78,291	—	—	—	93	61	9	—	—	—	1	164	27·3	—	—	—	—	2	8	6	16	2·7	89	14·8
City of London...	14,447	—	—	—	10	2	1	—	—	—	—	13	11·7	—	—	—	—	—	—	—	—	—	12	10·8
East:																								
Shoreditch... ...	102,044	1	—	—	134	63	7	—	—	—	1	206	26·3	1	—	1	—	1	4	17	24	3·1	105	13·4
Bethnal Green...	114,471	—	—	—	140	51	14	—	1	—	1	207	23·6	—	—	1	—	1	2	18	22	2·5	114	13·0
Stepney	241,770	1	—	—	225	155	16	—	—	1	1	399	21·5	—	—	1	3	1	14	16	35	1·9	249	13·4
Poplar	159,766	—	—	—	221	76	10	—	—	—	2	309	25·2	1	—	3	—	2	5	11	22	1·8	153	12·5
South:																								
Southwark... ..	187,142	—	—	—	181	77	13	—	—	—	1	272	18·9	—	—	—	1	1	3	17	22	1·5	175	12·2
Bermondsey ...	129,189	1	—	—	148	108	11	—	—	—	1	269	27·1	2	—	—	2	2	3	11	20	2·0	127	12·8
Lambeth	293,572	—	—	—	233	56	12	—	—	—	—	301	13·4	—	—	—	1	—	7	22	30	1·3	284	12·6
Battersea	165,664	1	—	—	257	93	4	—	—	1	2	358	28·2	—	—	—	1	1	5	6	13	1·0	138	10·9
Wandsworth ..	346,930	1	—	—	249	81	13	—	—	1	2	347	13·0	1	—	—	—	5	3	13	22	0·8	237	8·9
Camberwell ...	281,712	3	—	—	294	96	11	—	—	—	—	404	18·5	—	—	1	2	3	5	19	30	1·4	210	9·6
Deptford	115,636	1	—	—	106	30	5	2	—	—	1	145	16·3	—	—	—	1	1	—	4	6	0·7	112	12·6
Greenwich... ...	102,408	1	—	—	143	84	1	1	—	—	—	230	29·3	—	—	—	1	2	4	3	10	1·3	89	11·3
Lewisham	174,433	2	—	—	111	52	3	2	—	—	2	172	12·9	3	—	—	—	—	—	4	7	0·5	129	8·6
Woolwich	141,666	—	—	—	136	69	2	—	—	—	1	208	19·1	1	—	—	—	—	4	3	8	0·7	107	9·8

* Including membranous croup.

municipality the care (including treatment) of the child from before birth to school-leaving age, the services of these officers being placed at the disposal of all comers, and not only of the necessitous poor. This policy is opposed to the public interest, immediately because it involves unnecessary expenditure, ultimately because it must result in the formation of a class of practitioners wholly concerned in the treatment of disease in expectant mothers and in children, and the withdrawal of practice among such patients from the general practitioner.

Examination of the development of the system at the present time shows that the municipal service in Willesden is undertaking a work which, to a large extent, might be adequately provided for through other agencies. The service, thus overburdened, fails to carry out adequately its own peculiar functions. In other words, the present arrangements tend to neglect the preventive aspect of health work for the curative. This is extravagant because:

(1) Failure in prevention means an increase in avoidable sickness and disablement;

(2) The curative work can under present conditions be better undertaken by private practitioners;

(3) Persons able to pay for medical treatment are encouraged to obtain such treatment at the public expense through the public service;

(4) Owing to the excessive burden laid on the staff of the health service the work actually done cannot be adequately performed.

Here followed a series of notes illustrating the application of these general criticisms to the work of the several departments—viz., municipal hospitals, maternity and child welfare centres, and the treatment of school children.

Resolutions Passed at the Meeting.

1. That treatment at M. and C.W. centres should be confined to necessitous cases and in the case of school children to those cases where the parent fails to provide treatment recommended by the school medical officer or private practitioner.

2. That the Dunfermline scheme should be adopted in Willesden to ensure (*a*) that each child requiring treatment will in the first instance be sent to the family doctor, and (*b*) that the family doctor should have the right to refer cases to the clinics.

3. That part-time practitioners should be employed at the clinics as far as may be practicable.

4. That it is undesirable for wards in infectious diseases hospitals to be used for the treatment of non-infectious diseases and for maternity cases.

5. The division endorses the opinion of the Ministry of Health that the Willesden Hospital should not be used for non-infectious cases until the needs of infections cases are dealt with. Further, that the hospital should not be used for non-infectious cases at all, as there is no accommodation for mixed or doubtful cases even in normal times.

6. The division protests against the leaflet entitled Scale of Charges because this is practically a municipal service and as such directly opposed to the policy of the B.M.A.

7. The division calls the attention of the Willesden ratepayers to the health policy of their council, which threatens to destroy the freedom not only of the medical profession but of every individual in the community, and urges the ratepayers strenuously to oppose at the next municipal election those who are responsible for a policy which the medical profession of Willesden considers to be a serious and increasing menace to the public health.

NATIONAL PROVIDENT SCHEME.

A MEETING of the Marylebone division of the British Medical Association, held at 11, Chandos-street, W., on Nov. 16th, was given up to a discussion of the National Provident Scheme. Mr. W. McAdam Eccles moved a resolution:—

> That this meeting approves of the National Provident Scheme for hospital and additional medical services.

He said that the financial position of the voluntary hospitals in London was serious. In the past annual deficits to the amount of half a million had been largely made up by extraordinary grants from King Edward's Hospital Fund and the National Relief Fund, which would no longer be repeated. Some scheme for finding new money was therefore essential. The Cave Committee suggested three sources: (1) mass contributions from wage-earners; (2) a scheme resembling the Oxford scheme; (3) the Sussex scheme modified for London.

It was the third scheme which they were now considering. This scheme provides hospital treatment, consultations, nursing, specified dental treatment, X rays, electrical treatment, massage, laboratory investigations, and ambulance service. The advantage to the patient was that provision was made during health and that no payment was necessary for hospital maintenance during sickness. To the hospital it meant the maintenance of the voluntary system with an adequate income and no necessity of making appeals, which sometimes cost more than they produced. The general practitioner would benefit by having all the advantages of the scheme for his patient at his discretion. The staff of the hospitals were to receive 25 per cent. of the money received, and in addition, a fund was to be established from which fees for consultations at the patient's house were to be paid. The scheme, he said, would in no way increase the "hospital population," nor would it increase the sickness incidence: the voluntary hospitals were at the present moment actually dealing with the persons who should become members of the scheme.[1]

Dr. C. O. Hawthorne, in opposing the motion, criticised the financial basis of the scheme; he regarded this as unsound and as unlikely to be successful. The persons to whom the appeal was to be made were already taxed every week for one health service and would hardly welcome a further burden; in the nature of things most of the members would receive no benefits even over a series of years, and lapses would certainly be numerous; those admitted to hospital under the scheme would find there others who had paid no annual subscription and yet enjoyed the same benefits as the insured; and there was no certainty that a hospital bed would be available for a member when he required it. Thus, economically, the insurance was not a good one, for the benefits were not confined to policy-holders, and when the contingency contemplated by the policy arrived there was no guarantee that it would be met. Dr. Hawthorne also commented on the admission of persons without a previous medical examination; on the right, immediately after the payment of a single premium, to claim the full benefits of the contract; and on the absence of an income limit in the case of persons included within the scope of the National Insurance Act. He questioned the ethical defence of a procedure which would take the capital values of the hospital buildings, equipment, and endowments and would utilise these, not for purposes of philanthropy, but as the basis of a scheme of industrial insurance. Were the scheme successful financially the partial acquisition of the hospitals as at first proposed would gradually lead to the complete conversion of these institutions into nursing homes resting on a commercial basis and run for the benefit of the subscribers to the scheme; and the sick poor, for whom the hospitals were originally intended, would be relegated to the Poor-law infirmaries. A further consequence would be the conversion of the members of the honorary medical staffs into paid officers of an insurance organisation. Further, was it likely that voluntary subscriptions and donations would be given to organisations which had lost their charitable character and had become part and parcel of a commercial proposition? The voluntary hospital system rested on three supports—voluntary contributions, voluntary administration, and honorary medical service. Every one of these supports was undermined by the scheme now proposed, and both public and professional interests called for its rejection.

Discussion and Reply.

Mr. H. S. Souttar, supporting the motion, said that Dr. Hawthorne's argument was founded on two parts, first that the hospitals could continue to carry on, and second that the "sick-poor still existed." Neither of these is quite true. The hospitals had to get money, and the only possible sources were the great deal depends upon individual intelligence, and it is no uncommon thing to see a smart boy making every use of small residual hearing side by side with a dull one who has four times as much but does not, apparently, know what to do with it.

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[1] See also article by Mr. Eccles in THE LANCET, 1921, i., 1057.

There appear, from time to time, persons who have evolved schemes, more or less original (chiefly less), for "re-educating hearing." Such schemes are neither heaven-born nor new, they are at least as old as the first century of the Christian era, when Archigenes advocated intensified sound and trumpets to remedy defective hearing. Many of these ideas are well exploited, highly vaunted, and then sink into oblivion. A few, a very few, survive, often much modified. What is so deplorable about them is that each one leaves behind it a long trail of wounded—disappointed deaf adults, deaf children, whose education has been neglected for the prosecution of vain experiment, and parents who have bought experience. In practically every case the promoter of the scheme is completely ignorant of the psychology of the deaf child, the method (proved by long and practical experience) of his teaching, and the fact that every teacher of the deaf worthy of the name is making the utmost use of residual hearing every minute he is at work *and by better methods*. The thing is unfortunate, but the poor inventor is by no means alone in his ignorance; he merely shares in that remarkable ignorance of the deaf child displayed by many of the medical profession (even including some specialists), an ignorance which appears frequently to lead doctors into making the astounding and wholly unwarranted statement that a child will regain its hearing at the age of seven! I would, further, emphasise the fact that the deaf child stands upon an entirely different plane to the deaf adult. The latter is already in possession of language and automatic speech. Attempts at restoring hearing in his case, by suggestion or other means, may be successful, but to apply the same reasoning, the same arguments, the same treatment to the deaf child is unscientific and useless. It is to construct the same hypothesis upon totally different and totally unsuitable foundations.

In conclusion, I would point out that there exist individuals who, having found a hypothesis, become so enamoured of it that they work upon it in what Dr. Millais Culpin has so aptly called "logic-tight compartments." Therein enclosed, impervious to every fact which may vitiate their calculations, they justify themselves by a pseudo-reasoning satisfactory to their own peculiar mental complex. Some of the so-called re-education schemes would appear to have been framed in this way.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY.
Welbeck-street, W., Nov. 15th, 1921.

PHYSICAL EXERCISE IN HEART DISEASE.

To the Editor of THE LANCET.

SIR,—An annotation in your issue of Nov. 5th drew the attention of your readers to the value of graduated exercises in the treatment of heart disease. Although the method is an old one, its proper value has as yet found but little appreciation. This is particularly the case in the provinces, where it is practically unknown.

But if this treatment is to be successful it is necessary to take the following precautions:—

1. The exercise prescribed in each case should bear a certain relationship to the condition of the heart muscle.
2. The method ought not to be used in cases which show grave myocardial lesions.
3. In advanced cases it is advisable to make the reaction to work of the arterial pressure and pulse-rate as a sort of standard by which the amount of exercise to be taken can be gauged. Suppose a given amount of exertion produces an increase of pressure, say 10 mm. Hg, and this reaction is considered a moderate one, then the exercises are so graduated that the subsequent treatment will produce about the same reaction. Repeated exercises of increasing intensity, if this method is applied, will not produce a greater strain.
4. In advanced cases one group of muscles should be exercised at one time, the rest remaining passive. If all muscles are exercised at one and the same time an undue strain is brought to bear on the heart, unless the exercises are of so mild a nature as to be ineffective for the purpose. I found the Zander system, which I have been using for the last eight or nine years, the best method for carrying out this treatment.
5. In order to avoid all possible strain it is best to start with more difficult exercises, gradually going down to the easy ones, and then allowing a few minutes for rest.
6. It is advantageous to combine massage with exercises.
7. After the patient has carried out a course of treatment he should be recommended to take graduated walking and climbing exercise.

Graduated exercises carried out with due precaution give far better results in heart trouble than does any other form of treatment.

I am, Sir, yours faithfully,
Liverpool, Nov. 14th, 1921. I. HARRIS.

RICKETS AND VITAMIN DEFICIENCY.

To the Editor of THE LANCET.

SIR,—Dr. Amy Hodgson's admirable chemical and clinical study in your issue of Nov. 5th throws a valuable new light on the vexed problem of rickets. Any practitioner with experience of rickets could also cite cases in which the diet was in no sense deficient in vitamins. The discrepancies found by various experimental and clinical workers are explainable if we suppose that infants may have a varying capacity to absorb, or utilise, the vitamins presented to them; just as gouty and diabetic subjects have an incapacity to absorb other and grosser articles of diet. Too large a proportion of carbohydrates, or other indiscretions, might well diminish still further the capacity of absorption.

There are likewise thin, tuberculous disposed subjects who may take much fat, yet still remain thin and tuberculous disposed—unable perhaps to utilise the fat or the resistance-aiding vitamins which it contains. Some of these patients were rickety when young, as their deformed chests testify.

I am, Sir, yours faithfully,
E. WARD, M.D., F.R.C.S.,
Tuberculosis Officer, South Devon.
Paignton, Nov. 17th, 1921.

CLAYDEN *v.* WOOD-HILL.

To the Editor of THE LANCET.

SIR,—The report in your issue of Nov. 19th (p. 1073) upon this important medico-legal case fails, in my opinion, to bring out the facts quite clearly. Stated briefly, these were as follows: The patient sustained a fracture of the femur just below the small trochanter and was treated at Beccles Hospital by methods which were in accordance with the usual surgical teaching. She was not X rayed, because the apparatus at Beccles was not good enough to enable an X ray of the upper part of the thigh and hip to be obtained. She left the hospital at the end of eight weeks walking on crutches, and according to Dr. Wood-Hill's evidence and that of his partner, the fracture was then in a satisfactory position and the limb half an inch short. About ten days after her return home, the leg gave way under the body weight, and considerable pain and swelling occurred. I saw the patient 14 days after the incident, and operated upon the fracture four days later, finding the fracture united with angulation, the shortening being one and half inches.

The allegation of negligence was based upon: 1. A wrong diagnosis of the level at which the fracture took place, due to (*a*) the absence of an X ray, and (*b*) failure to examine and "set" the fracture under an anæsthetic. Unfortunately, Dr. Wood-Hill had been induced to commit himself to a sketch showing the probable level of the fracture, in which he placed it too low down in the femur. 2. A failure to treat the limb in an abducted position as the result of the wrong diagnosis. As a result of this plaintiff alleged that the fracture was malunited at the time that she left Beccles.

Dr. Bullock was driving, and in attempting a sharp curve in the road the car overturned and both were pinned beneath it. Dr. Paul died shortly after being released and Dr. Bullock was severely injured.

September, 1921.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Indian Voluntary Hospitals.

INDIAN hospitals are not, as a rule, supported by voluntary contributions, but some hospitals, for example those of the Dufferin Fund and the Walker Hospital, Simla, are supported in this way. The difficulty experienced by hospitals at home is being fully shared by the Indian institutions, and great efforts are being made to collect funds. Ladies in prominent official positions are taking an active part in helping to raise money, and entertainments are being held in Simla and elsewhere for this purpose. At a recent meeting of the Countess of Dufferin's Fund, Lady Reading made a strong appeal for the support of the fund, which controls a very large number of hospitals for women throughout the Indian Empire. Commenting on the need for support of the League for Maternity and Infant Welfare, Lady Reading emphasised the importance of the provision of trained nurses and midwives. She pointed out that except in the presidency towns such training involved hospitals under medical women. If the training was to be good and the work successful experienced medical women and equipment for these hospitals were essential. The formation of the Women's Medical Service in India gave great impetus to women's hospitals by relieving the committees of the difficult task of finding and paying the salaries of medical women. The funds so set free were used to provide the hospitals with other requisites. The number of labour cases has increased, and nearly all the hospitals under the Dufferin Fund were now in a position to give a good practical training to nurses and midwives; but nearly all of them were also in a position of financial difficulty.

Indian Science Congress.

The ninth annual meeting of the Indian Science Congress will be held in Madras from Jan. 16th to the 21st, 1922. The Medical Research Section of the Congress will then meet for the fourth time. The honorary local secretaries are Captain Clive Newcomb, I.M.S., chemical examiner, Madras, and Dr. Mohammad Azizullah Sahib Bahadur. It is hoped that a large number of delegates from the other provinces of India will attend the Congress.

Health Officers in India.

At a conference of health officers held recently at Calcutta, it was decided to form a public health association for Bengal, and to send a deputation to the Health Minister to represent the grievances of the officers. It was also decided to urge that the service should be provincialised, or, in the event of the officers being controlled by the local board, that their appointments or dismissals should be in the hands of a board of sanitary experts who would also possess power to transfer officers. The health officers also asked for first-class travelling allowances and immediate increase of salaries.

Famine Code Committee.

Owing to the almost complete failure of the crops considerable areas in the ceded districts of the Madras Presidency have been declared to be in a state of famine, and a number of Government relief works have been instituted in order to carry the hard-hit ryots over the period until the next crop may be expected. Government relief works are controlled under rules laid down in the Famine Code, but a discussion recently held in the Legislative Council made it evident that a certain amount of dissatisfaction existed regarding the rigid manner in which the rules were said to be adhered to. In order to investigate the matter the Government appointed a committee under the chairmanship of the Famine Commissioner. The committee is composed mainly of non-officials from districts commonly affected with scarcity, but also includes two executive engineers who have had experience of famine work, and the Sanitary Commissioner. Medical opinion is required as to the physical capacity of the people for work, the question of emaciation due to insufficiency of food, the sufficiency of the various diet scales laid down in the code, and the general questions of sanitation of camps, &c. In connexion with diet scales the work of Colonel McCay, I.M.S., of Calcutta, is of interest, as his findings are somewhat antagonistic to the opinions commonly held by the layman in this country.

Ayurvedic Committee.

Mention was made some time ago in these notes of a report on Ayurvedic drugs by Dr. Koman, who carried out a prolonged investigation into the therapeutic value of the most important of these indigenous medicines. The Government have now gone a stage further, and have recently decided to appoint a small committee consisting mainly of non-officials to report on the question of the recognition and encouragement of the indigenous systems of medicine in vogue in this Presidency. The object of the proposed inquiry is to afford the exponents of the Ayurvedic and Unani systems an opportunity to state their case fully in writing for scientific criticism, and to justify State encouragement of these systems. In order that a preliminary programme of work should be drawn up, and that some indication might be given of the lines on which the inquiry should proceed, the Government nominated Khan Bahadur Muhammad Usman Sahib Bahadur as chairman, and Dr. G. Srinivasamurti as the secretary of the proposed committee. Of the ten members three general practitioners from Madras City are included, Dr. U. Rama Rao, Dr. A. Lakshmipathi Garu, and Dr. M. Subramania Ayyar; whilst the Ayurvedic practitioners are represented by K. G. Natesa Sastri Avergul, of the Venkatarama Dispensary, Madras, and C. T. Arumugam Pillai, of the Ayurvedic Dispensary, Georgetown, Madras.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

A Scientific Expedition to Peru.

EDINBURGH University has a special interest in the expedition organised by the Royal Society which leaves England this week-end for Peru, owing to the fact that Dr. J. C. Meakins, professor of therapeutics, is acting as deputy director to the expedition. The main object of the expedition is the study of the circulatory and respiratory systems amongst those who live at the high altitudes of the Andes. There is a large mining population in the villages some 16,000 ft. above sea-level, and it is reputed that these people are able to perform much heavier work than can be done by any other persons in so rare an atmosphere. Modern methods will be used in the investigation, and the results may prove of real value.

Work of the Ministry of Pensions.

The Rt. Hon. J. Ian Macpherson, M.P., at a meeting which he addressed at Oban recently, stated that shortly before he went to the Ministry of Pensions no less than 331 million pounds were required by the State for the provision of pensions—a sum six times the amount of the whole national expenditure at the time he entered political life. The Ministry of Pensions was engaged at that time, he said, in the biggest work that any public department in the world had ever undertaken. Of all those who had served in the Forces, one in three had been the subject of a pension, or, stated in another way, 3½ million persons were on

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

The opening of the winter session of the General Medical Council took place on Nov. 22nd, under the presidency of Sir Donald MacAlister.

The President commenced his address from the chair by pointing out that under the new Dentists Act the Privy Council is empowered to appoint three qualified dentists to be additional members of the General Medical Council, who must also be members of the new Dental Board, constituted under the Act. He stated that the following had been appointed: Mr. W. H. Dolamore, Mr. W. H. Gilmour, and Mr. W. Guy.

Dental Board of the United Kingdom.

The President continued :—

"With special satisfaction I announce that the Privy Council have appointed, as the first Chairman, the Right Hon. Francis Dyke Acland, M.P., already well known to the Council for his distinguished public services, and in particular for his fruitful labours as Chairman of the Departmental Committee on Dental Practice. It is vouchsafed to few such Committees to see their recommendations so promptly and effectively embodied in actual legislation. The Council has loyally coöperated with the Government and with the dental profession in shaping the amended law; and it cannot but rejoice that Mr. Acland has been induced to accept the responsibility of guiding the professional body, which this law has established, through its first stages of organisation and operation. For over 40 years the Council has had the duty of regulating dental education and registration under the imperfect Act of 1878. The Dentists Register for 1922, now nearly complete, will be the last to appear under its authority. The much larger volume bearing that name will henceforth be the work of the Dental Board. The long experience of the Council and its officers will be placed unreservedly at the service of the members of the Board when they take up their laborious and delicate task under Mr. Acland's direction. The new Act leaves to the Council certain important duties relating to dental education, examination, and discipline. These necessarily imply much mutual consultation and coöperation between the Council and the Dental Board. For this reason alone it would appear to be highly desirable that the office-buildings of the Council and of the Board should be adjacent and permit of ready inter-communication. The site to the north of this building is at the disposal of the Board, should it take the view I have mentioned concerning the convenience and economy of erecting its offices there.

The law gives power to the Council to act in dental matters by an Executive Committee, including at least one of the additional members. It will be expedient to set up this Committee at once. Probably you will think it proper to follow the analogy of the Act; and, as the Council for dental purposes consists of ordinary and additional members, to constitute the Dental Executive of the ordinary members of the Executive with an additional dental member. Various orders, rules, regulations, &c., must without delay be framed by the Board, and these have in general to be approved by the Council before they become operative. In order to avoid the expense and inconvenience of frequent short meetings of the Council for the purpose of considering and expressing such approval, it would be advisable that this power should, at least in the first instance, be delegated to the Dental Executive Committee. It is regarded as certain that one or more meetings for the purpose will have to take place during December, in order that the Board may get to work at the beginning of the new year. It will also be necessary that the Council's own Standing Orders should be thoroughly revised, if only for the purpose of eliminating the parts made obsolete by the Dentists Act, 1921, and of adapting the remainder to altered conditions. I shall propose that the revision be remitted to the Executive Committee for report to the Council in May."

The Registration Figures for 1921.

During the current year (1921) up to the present date, it appeared from the President's address, the number of practitioners registered in the Medical Register was about 1600, as compared with 1457 for the whole year 1920. The number of medical students registered in 1920 was 2531; at the present date the registrations for 1921 approached, he said, 1500, a much more manageable number than before. The number of registered dental students shows a proportionate reduction from 560 to 320, which is about average number before the war.

Reciprocity in Practice.

The President re-stated the position of medical reciprocity between this country and Belgium, and gave the interesting information that, as between this country and Spain, the whole question is being reconsidered, it being possible that fresh legislation on the part of Spain will admit of reciprocal recognition of professional qualifications. Applications, he added, had been received from certain new universities in South Africa, now legally constituted within the Union, and the Executive Committee of the Council, after consideration of the particular courses of professional study, had agreed to recognise the degrees as qualifications registrable in the appropriate list of the Medical Register.

Practice of Midwifery in India.

On the subject of the standard of obstetrical knowledge attained to by those holding degrees and diplomas from Indian universities, important communications, said the President, had been received from the universities, from the Indian Government, and from the Secretary of State for India. He continued :—

"In some cases it is reported in the memorandum on the whole subject prepared for the Executive Committee that amendments in the University Regulations concerning instruction in midwifery have been or will be made. In others that any improvement of the existing conditions will require time and involve expense. The Government of India explains, through the Secretary of State, that the question of extending the facilities for midwifery training in Indian university medical schools has for some time been under examination; but urges that, in view of certain present conditions, further time should be granted for improvement before the Executive Committee decides on the question of withdrawing its recognition from Indian qualifications.

"The Secretary of State, 'while deeply impressed by the considerations urged by the Government of India, fully appreciates the importance which the General Medical Council rightly attach to the fulfilment, by individual candidates for a licence to practise, of the midwifery practice enjoined in the [Council's] resolutions.' He deems it eminently desirable that the Indian medical schools shall equip themselves with the clinical and other facilities necessary to enable Indian graduates desirous of registration in England to comply with the Council's requirements; but he asks the Council to allow to the several universities a suitable extension of time within which to reform their midwifery and gynæcological curricula, if willing and able to do so. He further offers to request the Government of India immediately to depute an experienced medical officer, fully conversant with the practice of gynæcology and obstetrics, to visit in turn the Indian medical schools, and to explain the nature of the requirements which are considered essential if their respective degrees are to continue to be recognised in this country. This officer would transmit for communication to the Council a report on each University medical school, setting forth under proper heads such information as would assist the Council in coming to a decision regarding the recognition of its degrees. The Indian Legislative Assembly has, moreover, passed a resolution recommending to the Governor-General of India in Council that the various Local Governments be advised to make more satisfactory arrangements for giving practical training in midwifery to students undergoing instruction for medical degrees and diplomas, and to bring the training up to the standard of the universities of the United Kingdom where it is not already so. The Legislative Assembly also asks that further time may be given by the Council before a final decision regarding recognition is taken.

"In view of the replies of the majority of the universities, which indicate their purpose to improve the standard of their requirements in midwifery, and of the representations of the Indian Government and the Secretary of State, the Executive Committee have resolved to postpone the consideration of the question of recognition from February, 1922, to a later date, and in the meantime to accept the suggestion made by the Secretary of State that a report, on the matters detailed in his official letter, should be obtained and communicated to the Council. The Committee have intimated to the Secretary of State that it is prepared to nominate to the Government of India a member of the Council, who should accompany the medical officer appointed to visit the Indian universities, and be associated with him in framing the report in question."

The Inspection of Examinations.

The President stated that a cycle of inspection and visitation by which the Council ascertains the standard last month. This disease was proportionally most prevalent in St. Pancras, Islington, Finsbury, Shoreditch, Bethnal Green, Poplar, Battersea, and Greenwich. The Metropolitan Asylums Hospitals contained 6154 scarlet fever patients at the end of the month, against 3722, 3408, and 4817 at the end of the three preceding months; the weekly admissions averaged 1000, against 567, 407, and 810 in the three preceding months. Diphtheria also was considerably more prevalent—40 per cent.—than in September, and was higher than in any month of this year, or the three preceding years; 1803 cases were notified during the month (four weeks), against 937 in October, 1918 (five weeks), 1169 in October, 1919 (five weeks), and 1449 in October, 1920 (four weeks). The greatest proportional prevalence of this disease occurred in Hampstead, Finsbury, Shoreditch, Stepney, Bermondsey, Battersea, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1969, 1709, and 2031 at the end of the three preceding months, further rose to 2777 at the end of October; the weekly admissions averaged 445, against 250, 209, and 322 in the three preceding months. Erysipelas was proportionally most prevalent in Holborn, Finsbury, Bethnal Green, and Bermondsey. Of the 5 cases of poliomyelitis, &c., 2 belonged to Deptford, 2 to Lewisham, and 1 to Greenwich; in the three preceding months the notified cases numbered 9, 13, and 10 respectively. Three cases of encephalitis lethargica were notified during the month, against 9, 5, and 5 in the three preceding months. The notified cases of cerebro-spinal fever numbered 3, against 7, 9, and 5 in the three preceding months. The 27 cases of puerperal fever included 3 in Fulham, 3 in Islington, and 2 each in Paddington, Poplar, Battersea, Wandsworth, and Lewisham.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended Oct. 29th, the deaths of 3913 London residents were registered, equal to an annual rate of 11·3 per 1000; in the three preceding months the rates had been 9·8, 10·6, and 10·9 per 1000. The death-rates ranged from 8·9 in Wandsworth, 9·1 in Fulham, 9·6 in Stoke Newington, in Camberwell, and in Lewisham, and 9·8 in Woolwich, to 13·0 in Bethnal Green, 13·4 in Shoreditch and in Stepney, 13·5 in Holborn, 14·1 in Chelsea, and 14·8 in Finsbury. The 3913 deaths from all causes included 448 which were referred to the principal infectious diseases; of these, 11 deaths resulted from enteric fever, 10 from measles, 20 from scarlet fever, 33 from whooping-cough, 99 from diphtheria, and 275 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, St. Marylebone, Holborn, Deptford, Lewisham, and Woolwich; and the highest in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The 11 fatal cases of enteric fever exceeded the average in the corresponding period of the five preceding years by 4; of these deaths 3 belonged to Lewisham and 2 to Bermondsey. The 10 deaths from measles were but half the average; of these 3 belonged to St. Pancras and 3 to Poplar. The 20 fatal cases of scarlet fever were 8 in excess of the average; of these, 3 belonged to each of the boroughs of Islington, Hackney, and Stepney, and 2 each to Hammersmith, Bermondsey, and Camberwell. The 33 deaths from whooping-cough were 17 above the average; of these, 5 belonged to Wandsworth and 3 to Camberwell. The 99 fatal cases of diphtheria exceeded the average by 40; this disease was proportionally most fatal in Hampstead, Stoke Newington, Finsbury, Shoreditch, Stepney, and Greenwich. The 275 deaths from infantile diarrhœa exceeded the average by 61; the greatest proportional mortality from this disease occurred in Hammersmith, Islington, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The aggregate mortality in London during October from these principal infectious diseases was 38 per cent. above the average.

The deaths from influenza registered in London during the four weeks ended Oct. 29th numbered 40, against 15, 9, and 21 in the three preceding months, and 22, 18, 1721, 65, and 21 in the corresponding periods of the five preceding years.

TREATMENT OF VENEREAL DISEASES IN LONDON.—The Minister of Health and the County Councils concerned have consented to an arrangement under which the London County Council will be able, within defined limits, to make necessary modifications in its scheme for the diagnosis and treatment of venereal diseases, without the delay, previously unavoidable, in obtaining the consent of all the participating authorities to any such modification.

Correspondence.

"Audi alteram partem."

THE EDUCATION OF DEAF CHILDREN.

To the Editor of THE LANCET.

SIR,—Mr. A. J. Story's letter in your issue of Nov. 12th opens up a question that has long wanted ventilating, and never more so than at the present time. Perhaps I, who have a knowledge of deaf children and the methods of their education based upon some 14 years of unceasing work among them, may be permitted to speak plainly upon it.

I would first express my appreciation of those who cheerfully devote themselves to the instruction of deaf children, a work the most arduous and exacting in the teaching profession and which is followed with a steadfastness of which the reward lies only in results. Mr. Story points out that teachers of the deaf "would welcome with open arms anything that would give their pupils even a serviceable modicum of hearing ability." This I can cordially endorse, for I have found them ever ready to coöperate with the doctor and to help him to the utmost from their stores of experience, provided he will let them do so. Sufferers from deafness are ever upon the look-out for some heaven-sent miracle which will restore to them the sense they lack. They are consequently always eager to kneel in flocks, sublimely credulous, at the feet of anyone who professes to have discovered a short and easy road to the renewal of hearing. The little gods to whom they kneel have, most of them, clay feet. The persons who assert this ability to restore the "snows of yester year" do so from one of two motives—deliberate fraud or complete ignorance. Of the fraudulent I do not intend to speak; I have dealt with such impostors at other times and in other places, including the Court of King's Bench. They will continue to batten upon human infirmity and credulity so long as the press, intent upon giving the public "What it *wants*" rather than what it needs, will publish their advertisements.

But those who profess to restore hearing from a complete ignorance of the true conditions with which they have to deal stand upon an entirely different footing. I can say, with my friends Mr. Story and Dr. Kerr Love, that I have never known a single deaf child in schools to recover hearing power. But every day I see children, originally believed to be totally deaf, develop a certain amount of hearing as education progresses, which is quite another matter. This developed hearing is neither a new nor a restored hearing. *It was there all the time*, unrecognised, unused. The children had no conception of the meaning of the sounds they heard, no means of asking what they meant. Their hearing, too small to be of use in their physiological education, remained, so to speak, *latent*, until the gradual acquisition of language by education under the oral system brought appreciation of it to its possessor. These are the children which, getting into the hands of someone ignorant of the real facts, will respond to education. Such children make no response to tests when first examined, and to decide whether they have or have not any residual hearing is often a matter of great difficulty. Once education is begun and the child is watched and tested repeatedly, some slight hearing—it may be anything from mere perception of sound to complete vowel hearing as described by Mr. Story—will gradually unfold as teaching progresses and the mind is awakened to appreciation. Every teacher of the deaf knows this; it is his business and he makes every possible use of it. Furthermore, some of the effect of education may be delayed, and I have noticed repeatedly how boys and girls with a limited amount of residual hearing, will, as it were, "blossom out" within a few months of their transference (at 12½ or 13 years old) from the elementary to the secondary school. Of course, a without such prescription or order of a medical practitioner, the registered pharmacist shall only sell such poison with a printed label which shall have printed upon it the maximum pharmacopœia dose and the description of the antidote, if any, to such poison, together with the name and address of the seller of such poison; (c) as regards such poisonous articles as are sold for domestic or commercial purposes, not being for human consumption, such poisonous articles shall be supplied only in distinctive bottles or containers with the words "poisonous, not to be taken" legibly inscribed upon a label thereon, together with the name and address of the seller.

Clause 9 makes it unlawful for a manufacturing or wholesale chemist to supply any poison or poisonous matter, except to a person who has been duly registered and whose name is on the Pharmaceutical Register: Provided that it shall be lawful for the council of any borough or urban district to grant a license to a person requiring poisonous substances for the use or production of commercial articles only where the obtaining of such poisons does not need the authority of a qualified medical practitioner. No person shall carry on business as a wholesale or manufacturing chemist who is not or does not employ at least one person who is on the Pharmaceutical Register. Clause 10 gives power to local authorities as defined by the Act under certain circumstances to grant licenses to persons to sell non-poisonous articles mentioned in the British Pharmacopœia for a period not exceeding one year at a time. Clause 11 places the Pharmaceutical Register under the control of the Central Council. Clause 12 states that no advertisement in connexion with the sale of any medicinal article shall refer to the curative powers of such medicinal article with reference to more than three specific diseases or complaints, which three diseases or complaints must be of a similar pathological character, and no such advertisement shall be issued without the previous sanction of the said Central Council. Clause 13 is the penalty clause, and provides that any person infringing the provisions of the Act with regard to the sale of poisons shall be liable on summary conviction to a fine not exceeding £5 for every offence. The Act is not intended to apply to Ireland.

The Prorogation.

Parliament was declared by the Lord Chancellor prorogued till Monday, Jan. 30th, 1922. The Royal Assent was given to a number of Acts, including the National Health Insurance (Prolongation of Insurance) Act.

HOUSE OF LORDS.

THURSDAY, NOV. 10TH.

Hindrances to Scientific Research.

The Marquess of **CREWE** called attention to the hardship caused to teachers and students of science in universities and colleges by the application of the provisions of the Safeguarding of Industries Act to the apparatus and material necessary for education and research in chemistry and physics. He said that the Safeguarding of Industries Act and the German Reparations Act had exercised a distinctly hampering effect upon both research and the teaching of many branches of science. A distinguished professor of chemistry at one of the older universities wrote that there was no doubt that these Acts had had the effect of appreciably diminishing the amount of research work that could be done in the laboratory. The delay, he said, was never less than three months in the delivery of chemicals required for research. Time had to be given up to the preparation of materials for which it was not possible to wait so long. There was also delay in getting German books. Owing to the increased cost of materials some of the poorer students were known to spend on the purchase of chemicals money they ought to have spent on food.

Viscount **HALDANE** supported Lord Crewe in the course he had taken, and urged the Government to take steps adapted to get rid of the difficulties or to mitigate them. Professors were suffering great hardships at the present time. The other day he was told by a very competent person who had been working in the laboratories at Cambridge, which were supposed to be the best they had in this country, and in the physical laboratory in a German university, and the equipment of the German laboratory, although it had not the positive advantages of the laboratory at Cambridge, was enormously superior because it had a much better equipment.

Viscount **PEEL** (Minister of Transport), replying for the Government, said if the requirements of scientific and educational institutions imported from abroad were to be exempted from duty the assistance given by the Act to manufacturing industries would be diminished, and besides it would be difficult, if not impossible, to say which institutions should be given the exemption and which should not. As regarded the question of cost, the cost of the production of these things was quite small to the running and working of these laboratories. It had always been a complaint that there were very few opportunities for scientific workers in this country. Supposing this Act was a success and in four or five years' time these industries could stand by themselves, a very much wider field would be provided for scientific workers, and if scientific men would help manufacturers the development would be very much expedited. If the Act were repealed we should get back to the position we were in before the war and be dependent upon Germany and other countries for the supply of these goods He promised to see that the whole subject was placed adequately before the Minister of Education.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 9TH.

Voluntary Hospitals Commission.

Mr. **LEONARD LYLE** asked the Minister of Health whether, under the terms of his departmental paper 1402, giving the terms of appointment of the Voluntary Hospitals Commission, the announcement that after the first emergency grant further grants would be only made against fresh money raised by the hospitals meant that they could not reckon, for the purposes of obtaining assistance, any ordinary revenue which they might receive in the current years; and whether, since this condition would prejudicially affect the poorer hospitals, which had practically tapped all sources of income and which now saw, at all events for the present, no further new sources of revenue in sight, he would in the interests of these poorer hospitals investigate the operation of this condition.—Sir A. **MOND** replied: The amount by which the income of a hospital for 1921 exceeds the income for 1920 will be reckoned as new money for the purpose of calculating the grants. In cases where the hospitals of a given area agree to combine for this purpose their aggregate income can be made the basis for calculating new money. As regards the second part of the question, I understand the King Edward's Fund are proposing to confer with the London hospitals as to the best method of raising their share of the anticipated deficit on the year's working.

Board of Control and Mental Defectives.

Mr. **LESLIE SCOTT** asked the Minister of Health whether his attention had been called to the circular issued last August by the Board of Control to local authorities under the Mental Deficiency Act, 1913, calling upon them to limit their expenditure under the Act next year to the total amount sanctioned for this year; whether he was aware that, even if no cases except those classed as urgent by the Board of Control were dealt with, the result of the limitation thus imposed would be to leave some 2000 urgent cases uncared for, to their own unhappiness and suffering, to the great harm of many others, and at a cost to the community in rates and taxes for police, criminal justice, and Poor-law many times as great as the cost of looking after them under the Act; and would he consider this question.—Brigadier-General **COLVIN** asked the Secretary to the Treasury whether the Treasury contribution to mental defectives was being withheld from many urgent and dangerous cases, with the result that they are left unrestrained and are a danger to the community; and whether admissions into institutions were limited to a prescribed number.—Sir A. **MOND** replied: I have seen the circular referred to. Local authorities are at present only able to deal with urgent cases, as defined by the Board of Control, provided that the expenditure involved falls within the limits of their approved estimates for 1921–22. The general question of the limitation of expenditure under the Mental Deficiency Acts necessitated by the decision of the Government that the public expenditure must be drastically reduced is receiving careful consideration, and the points mentioned in the questions will be borne in mind.

Scarlet Fever and Diphtheria in London.

Mr. **GILBERT** asked the Minister of Health whether his attention had been called to the increase of scarlet fever and diphtheria cases in London; whether his department had taken any action in order to control the spread of these diseases; if so, in what way; the number of cases now under treatment in hospitals; and if there were a sufficient number of hospital places for all sufferers if the epidemics spread further.—Sir A. **MOND** replied: The answer to the first part of the question is in the affirmative. The answer to the second part is that I have appointed a special office committee with medical representation of the London County Council and the Metropolitan Asylums Board. There are at present 6192 cases of scarlet fever and 2996 cases of diphtheria under treatment in the hospitals of the Metropolitan Asylums Board. The Board's accommodation is limited to approximately 9500 beds, but it is hoped that the arrangements which have now been made will meet the needs of the situation.

The defence sought to prove: 1. That the fracture was diagnosed as one of the upper third of the femur. 2. That the limb was kept abducted during treatment. 3. That the fracture was satisfactorily united without angulation and with only half an inch of shortening at the time plaintiff left Beccles. 4. That the union subsequently gave way because the plaintiff put weight upon it contrary to Dr. Wood-Hill's advice.

Actually the result of the case depended largely upon the question whether a re-fracture had or had not occurred. I was asked whether at the operation I found evidence of re-fracture, and replied that I did not; but I pointed out that the interval between the giving way of the limb and the operation (18 days) was sufficient for signs of re-fracture to have disappeared. Apart from this, both judge and jury seem to have ignored the possibility of bending of the callus, a well-known and common incident in fracture of the femur, which I endeavoured to emphasise in my evidence. Counsel, in summing up, claimed that my evidence negatived re-fracture, and, on the strength of this, the evidence from the Beccles Hospital that the position of the bone was satisfactory when the plaintiff left the hospital was ignored or disbelieved.

Important lessons to be learnt from this case are that every case of fracture or possible fracture should be treated as a possible medico-legal one; that careful notes made at the time should be kept; that if an X ray is not taken, the reason should be stated in writing; and that practitioners should not commit themselves to statements or diagrams of the nature of an injury except on X ray evidence. Apart from this, the medical profession must feel considerable perturbance at a legal decision which appears to place upon them responsibility for the result of their treatment apart from their acknowledged responsibility to use recognised methods and to use them carefully, for it would appear that the mere fact that the result of the treatment of the fracture was unsuccessful was accepted as a sufficient cause of action. This seems to suggest an entirely new aspect of medical responsibility. I am, Sir, yours faithfully,

Portland-place, W., Nov. 21st, 1921. R. C. ELMSLIE.

NOTIFICATION OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I write to support the suggestion of Dr. G. Lissant Cox which appeared in his paper contained in your issue of Nov. 19th to the effect that Article V. of the Public Health (Tuberculosis) Regulations should be amended by the removal of the proviso that a doctor shall not notify a case of tuberculosis if he has reasonable grounds for believing that the case has already been notified in the same district. In an industrial area it is not uncommon for a person to change his doctor. The first doctor may not have quite made up his mind as to the diagnosis, and the second doctor thinks that the first medical attendant has notified. If notification is to be of real value it must be complete, and this is one way to help to make it of real value.—I am, Sir, yours faithfully,

W. ALLEN DALEY,
Nov. 21st, 1921. M.O.H., Blackburn.

THE COCAINE HABIT.

To the Editor of THE LANCET.

SIR,—Some 25 years ago I reported the case which I treated here of a woman, about 35 years of age, moving in very good society in England, who had been taking 2 g.—i.e., 30 gr. of cocaine daily for some years—employing cognac and chloral hydrate as counter-poisons. Her drug bill amounted to over £100 a year. I was able to reduce the amount of cocaine by three-fourths in five weeks. She got rid of the remnant of the habit herself by her resolution and resort to much physical exercise—e.g., bicycling. She told me then that *all* her acquaintances living in London used some such stimulant to "get through the Season," an exaggeration that certainly had some foundation. From what I hear it appears to me necessary to warn the medical profession in England to prescribe cocaine as little as possible, or never. In the case to which I have referred it was ordered for outward application, and obliging chemists all over the world renewed the prescription. The cocaine habit is on the increase here. A few days ago a chemist's shop was broken into in Zurich and among the large store of medicines stolen were cocaine, morphine, veronal, pantopon, opium, and scopolamine. This may repeat itself anywhere unless a close scrutiny is kept over illegal sales of poison.

I am, Sir, yours faithfully,
TH. FINDLATER ZANGGER, M.D.
Zurich, Nov. 18th, 1921.

THE EARLY DISCHARGE OF SCARLET FEVER CASES.

To the Editor of THE LANCET.

SIR,—Referring to the notice of my annual report in your issue of Nov. 5th (p. 978) I beg to say that I claim no priority for my action of dismissing uncomplicated cases of scarlet fever from hospital after a stay therein of less than the orthodox period of six or eight weeks, and as a matter of fact Dr. S. G. Moore has reminded me that he had done this for some time previously with the precaution of using salicylic acid as a disinfectant of the desquamating cuticle; but my investigations, subsequently borne out by practical experience, convinced me that this was not necessary, and that the ordinary precautions generally in vogue are all that is required.

I am, Sir, yours faithfully,
Edinburgh, Nov. 12th, 1921. JAS. T. NEECH.

The Services.

ROYAL ARMY MEDICAL CORPS.

Maj. A. E. Atkinson, late temp. Capt., to be temp. Maj., and to relinquish the rank of Maj.

Capt. C. H. Stringer to be temp. Maj. whilst spec. empld. as D.A.D. of H.

Officers relinquishing their commissions:—Temp. Capt. E. E. Chipp (granted the rank of Maj.). Temp. Capt. J. H. Rodgers (retains the rank of Maj.). Temp. Lts. retaining the rank of Lt.: G. A. Clarkson and J. H. Howitt.

A. James to be temp. Lt. whilst empld. as a Dental Surg.

TERRITORIAL ARMY.

Maj. R. Lindsay, having attained the age limit, is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. A. R. Paterson, having attained the age limit, is retired and is granted the rank of Maj.

Capt. W. Murray, having attained the age limit, is retired and retains the rank of Capt.

Capt. A. J. A. McCabe-Dallas resigns his commn. and retains the rank of Capt.

Lt. J. G. B. Coleman (late R.A.M.C.) to be Lt.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Cols. C. H. James, D. C. Kemp, and S. B. Smith.

CENTRAL COUNCIL FOR LONDON BLIND.—The London County Council has appointed Capt. O. E. Warburg to be chairman of the newly constituted Central Council. The chairman and vice-chairman of the County Council's Special Committee for the Welfare of the Blind automatically become members of the Central Council. In addition, the County Council has appointed the following six persons with special knowledge of the needs of the blind to be members of the Central Council: Mr. A. E. Barber, Mrs. Adolphus Duncombe, Capt. Ian Fraser, Mrs. W. F. Hamilton, Mr. Henry Stainsby, and Mr. F. G. Mowatt. The President of the Board of Education and the Minister of Health informed the County Council that, while they did not see their way to appoint representatives to serve on the Central Council, they were anxious to render assistance and were willing to allow representatives to attend informally at meetings. Seven associations and institutions have appointed members, and negotiations are proceeding to obtain nominations from the remainder of the 19 associations in London who are concerned with the welfare of the blind.

Cancer Hospital.—The annual dinner will take place at the Hotel Cecil on Thursday, Dec. 8th. The chair will be taken by Sir Charles Ryall. Tickets (price 35*s.* each) may be obtained from Mr. Cecil Rowntree, 9, Upper Brook-street, London, W. 1.

Epsomian Club.—The annual meeting and dinner of the Club will take place in the Oak Room, Trocadero Restaurant, Piccadilly Circus, on Thursday, Dec. 8th: meeting at 6.15 P.M., dinner at 7.15 P.M. (10*s.* 6*d.* without wine). Dr. H. E. Haynes will take the chair. Members of the Club intending to be present will notify the hon. secretary, Dr. S. Maynard Smith, 49, Wimpole-street, London, W. 1.

Medico-Legal Society.—The annual dinner of this society will take place at the Holborn Restaurant on Wednesday, Dec. 14th, at 7.0 for 7.15 o'clock. Tickets, at 14*s.* 6*d.* (exclusive of wine), for members and guests may be obtained from the hon. secretary, Mr. Ernest Goddard, at 3, South-square, Gray's Inn, London, W.C. 1.

Westminster Hospital Students' Union: Guthrie Society.—The programme of meetings of this society, of which Dr. A. S. Woodwark is the president, is as follows: On Dec. 8th a Guthrie Society "Smoker" will be held; on Jan. 12th, 1922, Mr. Alfred H. Tubby will lecture on Some Experiences during the War in the Near East; Feb. 9th will be devoted to a clinical evening, when surgical cases will be shown; on March 9th Capt. A. E. Hayward Pinch will give an illustrated lecture on Radium Therapy; on March 23rd a smoking concert will be held. The meetings will be held at 8.15 P.M. in the board room of the hospital with the exception of the smoking concerts, which will take place at the medical school.

A Christmas carnival and children's fair will be held at Albert Hall from Dec. 26th to Jan. 4th, from 1.30 to 10 P.M., in aid of the following hospitals and institutions: Cheyne Hospital for Children, Church of England Waifs and Strays, City of London Maternity Hospital, East London Hospital for Children, Hospital for Sick Children, Great Ormond-street, Invalid Children's Aid Association, London Lock Hospital (Infants' and Children's Section), National Institute for the Blind, "Sunshine" Homes for Blind Children, Royal Waterloo Hospital for Women and Children, "Save the Children" Fund (British Section), Victoria Hospital for Children. Further particulars can be had from Mrs. Claremont, National Institute for the Blind, 224, Great Portland-street, London, W. 1.

The late Professor Delépine.—At a special meeting of the Senate of the University of Manchester held on Nov. 15th the following resolution was unanimously adopted:—

> The Senate desires to express its deep sorrow at the death of Prof. Sheridan Delépine, and to place on record its high appreciation of the distinguished services he rendered to the University, and to the sciences of pathology, bacteriology, and preventive medicine. During 30 years of strenuous work as a professor of this University he firmly established the position of pathology in the medical school, he made valuable contributions to medical science, and by the unstinted labours which he devoted to the organisation and development of the public health department he conferred lasting benefit upon the community.

Royal Medical Benevolent Fund.—At the meeting of the committee held on Nov. 8th 20 cases were considered, and £262 voted to 18 applicants.

Daughter, aged 64, of M.R.C.S. Eng. who practised at Bideford and died in 1872. Applicant suffers from cerebral hæmorrhage, and a trained nurse is supplied by friends who cannot continue to help indefinitely. She lives in one room lent by a friend. Her total income is derived from a life interest in £750, which amounts to £15 per annum. Voted £10.

F.R.C.S. London and M.D. Brux., aged 49, suffers from epilepsy and is at present in St. Thomas's Hospital. Owing to indifferent health has had no practice for seven years and has taken locums when well enough. His wife's income of £50 per annum is all that they have to depend upon. Voted £26 in 12 instalments.

Widow, aged 67, of L.R.C.P. Edin. who practised in Durham and during the war served as a surgeon on board Elder Dempster Line, and was drowned in a collision crossing to France in 1917. Applicant has been living on a small legacy and £100 granted her by the Elder Dempster Line. These funds are now exhausted and she is now living on proceeds of sale of jewellery and is nearly at the end of her resources. She is willing to take a post to enable her to support herself, but finds her age against her. Rent 8*s.* 6*d.* per week for one room. Voted £18 in 12 instalments.

Daughters, aged 57 and 49, of L.S.A. who practised at Ilford and died in 1903. Owing to ill-health they are unable to support themselves. Their joint income amounts to £82. Relieved by the Fund 13 times, £171, last £18 in 12 instalments, November, 1920, jointly. Voted £18 in 12 instalments.

Widow, aged 58, of M.B. Aberd. who practised at Watlington and died in 1912. All savings were used up in expenses connected with late husband's and daughter's illness, and applicant was left without means and owing to ill-health is unable to work for a living. A sister-in-law allows her 10*s.* per week. Rent 5*s.* per week. Relieved by the Fund six times, £70. Last time November, 1920, £12 in 12 instalments. Voted £18 in 12 instalments.

Widow, aged 65, of M.D. Glasg. who practised in Downe and died in 1907. The two elder sons are married and unable to help their mother: the youngest died on active service. The War Office allows applicant a pension of 14*s.* per week. Owing to defective eyesight is now unable to earn anything by sewing, and her only other income is derived as follows: £12 10*s.* per annum from investments and 14*s.* per week from a lodger. The rent and taxes amount to £42 per annum. Relieved by Fund seven times, £64, last £12 in 12 instalments, November, 1920. Voted £12 in 12 instalments.

Widow, aged 40, of L.R.C.P. Edin. who practised in Edinburgh and died in 1916. Applicant was left with four children, with an income of about £95 per annum: the children's ages now range from 7 to 15 years and they are all at school. Apart from the £95, she received this year £7 10*s.* towards education and £48 from a lodger. Rent and rates £53 per annum. Relieved by the Fund five times, last £18 in 12 instalments, November, 1920. Voted £18 in 12 instalments.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

R.M.B.F., War Emergency Fund.—A general meeting of the members of this Fund will be held at 11, Chandos-street, London, W., at 5 P.M., on Wednesday, Dec. 7th, when a report of the work of the Fund since its inception in 1916 will be presented and an outline given of the scope for its usefulness in the next few years.

Molteno Institute for Research in Parasitology.—This institute is to be opened by Lord Buxton at Cambridge on Monday, Nov. 28th, at 3 P.M. As we have already announced, the new institute is a gift to the University of Cambridge from Mr. and Mrs. Percy A. Molteno.

Society of Superintendents of Tuberculosis Institutions.—A general meeting of this Society will be held at 122, Harley-street, London, W., on Monday, Dec. 5th, at 4 P.M., when the Place of the Colony in the Tuberculosis Scheme will be discussed.

London Homœopathic Hospital.—The Countess of Plymouth presided at the Pound Day, promoted by the Ladies' Guild on Tuesday, Nov. 22nd, when the hospital benefited by the receipt of 820 lb. in goods and £107 in monetary contributions.

Foreign Decorations.—The Cross of Chevalier of the Order of Leopold has been conferred upon Dr. S. J. Gilfillan, and the Cross of Commander of the Order of the Crown of Italy upon Dr. H. W. Kaye, for valuable services rendered by them during the war.

The late Dr. William Howard Edwards.—Dr. Edwards, who died at a nursing home at Bletchingley, Surrey, on Nov. 13th, qualified M.R.C.S., L.R.C.P. Lond. in 1899, after studying medicine at Guy's Hospital, where he afterwards held a house appointment. He was a well-known medical practitioner in Streatham and the surrounding districts, and in addition to being medical officer to several insurance societies was honorary physician to the Rochester Diocesan Lodge, Brixton.

Leeds and West Riding Medico-Chirurgical Society.—A meeting of this society was held on Oct. 28th. Amongst numerous specimens and cases exhibited by members Dr. Maxwell Telling and Sir Berkeley Moynihan showed a patient suffering from long-standing acholuric jaundice in whom splenectomy had been performed. Dr. Telling read a paper entitled Psychotherapy with and without Specialism. An animated discussion followed.

At a meeting held on Nov. 11th at the Leeds General Infirmary operations were performed and cases demonstrated by members of the honorary staff. This type of meeting was a new departure undertaken at the request of a number of members.

West Kent Medico-Chirurgical Society.—A meeting of this society was held on Nov. 11th at the Miller General Hospital, Greenwich, when Mr. P. B. Roth read a paper on the Treatment of Fractures. He showed X ray plates and photographs of his cases, and urged that X ray photographs in two planes should be taken when there was injury of bones and joints; screening was not sufficient. His treatment of fracture of the clavicle was a fortnight in bed, flat on the back, without a pillow. After this treatment, he said, no deformity remained, whereas Sayer's method left a deformity and sometimes a paralysis of the hand. He advised the gentle stroking advocated by Lucas-Championnière instead of ordinary massage, and said that function returned early under this treatment. Tying the wrist to the opposite side of the neck was good treatment for fractures of the upper extremity. According to Mr. Roth, the less splinting used in fractures the better. In Colles's fracture, he said, the wrist must be kept flexed. Fractures of the femur required plate and screws to prevent deformity and loss of function; simple wiring of the broken ends of a long bone was not sufficient.

of the qualifying examinations held in this country had just been completed, the reports being in the hands of the members of the Council. On these and on any general conclusions regarding medical education the Examination Committee of the Council would report.

The inspection of the numerous examinations for

Diplomas and Degrees in Public Health

has been carried out, and concerning these post-graduate qualifications, for which the Council has a direct and special responsibility, the President said:

"The Diploma purports to guarantee that the holder possesses an expert knowledge of State Medicine, that he is highly proficient in all the branches of knowledge, scientific and practical, that concern the public health, and that he is fit to hold the administrative position and exercise the statutory functions of a medical officer of health. The rapid growth in the number and importance of these functions makes it necessary that the Council should from time to time revise the conditions it prescribes for the training and examination of such medical officers. It may find that certain subjects have become less necessary than of old, while other subjects, not heretofore greatly regarded, have become important for full efficiency. The weighty and well-considered general report of our inspector, Dr. Bruce Low, in which he sums up the lessons of his observations, deserves the Council's careful attention from this point of view. It would appear that for the modern Public Health Service the qualification to be required before admission to office should be more than an academic certificate, attainable after nine months or so of additional study, by a licentiate or graduate who has just obtained his first licence to practise. It should imply a greater maturity of outlook, a deeper knowledge of principles, and a fuller practical acquaintance with actual administrative methods than an inexperienced practitioner can fairly be expected to compass in a year. Something equivalent to a short apprenticeship in a working Public Health Department is in fact needed to supplement the lectures and demonstrations of the class-room and laboratory. The Public Health Committee of the Council, impressed by these considerations, has after full discussion prepared a series of Recommendations in this general sense. These, if they should meet with your approval, will have the effect of rendering the Council's rules simpler in expression and more uniform in operation, and of ensuring a greater maturity and a higher level of practical efficiency in those who propose to devote themselves as administrative specialists to the Public Health Service."

A Heavy Programme.

The President announced an invitation from the Revision Committee of the Pharmacopœia of the United States to coöperate with the Pharmacopœia Committee of the General Medical Council in the solution of problems of common interest, and concluded his address by stating that many matters of importance had been placed on the programme for the session, making it likely that the Council would have to sit throughout the week. Four disciplinary cases will be dealt with during the session, some of them suggesting that the extreme importance of the issue of correct medical certificates is not sufficiently recognised by the profession at large.

THE Duke of York has accepted the office of President of the Corporation of the Seamen's Hospital Society (Dreadnought), Greenwich.

HERBERT CHARLES WILKIN, M.R.C.S., L.S.A.: A VETERAN.—A very old member of the profession died on Nov. 11th in the person of Dr. Wilkin. He was born on Oct. 6th, 1832, and was thus in his ninetieth year. The son of Henry Wilkin, surgeon, of Connaught-terrace, W., he was educated at Mitcham Grammar School and came up to St. George's Hospital in September, 1852. He took the ordinary double qualification of his day, the M.R.C.S., L.S.A. in 1855, and proceeded to the Crimea as surgeon to the transport ship *Argo*; later he became assistant surgeon, 3rd Royal Surrey Militia, and settling in the Paddington district he acted as consulting surgeon to the Paddington Maternity and Rounhams Convalescent Home; he was also a member of the Harveian and Pathological Societies. In Paddington and in harness he continued to the end of his long life. In an interesting letter written to the Dean of St. George's Hospital in September of this year, he stated that he was dresser at the hospital to Mr. Cæsar Hawkins and clerk to Dr. Bence-Jones, and that the late Mr. Timothy Holmes was the house surgeon. He died at 27, Aldridge Park Villas, Westbourne Park, where he was in practice.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Pharmacy Acts Amendment Bill.

MR. O'GRADY, supported by MR. WATTS MORGAN and MR. CASEY, have introduced into the House of Commons a Pharmacy Acts Amendment Bill "to regularise the position of all persons trading as chemists and druggists or pharmacy store proprietors in the sale of drugs, the dispensing of doctors' prescriptions, and the sale of patent medicines." The Bill was formally read a first time before the prorogation, but time prevented it being proceeded with further till next session. The measure consists of 16 clauses. In Clause 1 it is proposed to enact that on and after Jan. 1st, 1925, no person shall be entitled to assume or use the title chemist in any part of Great Britain, without prejudice to his right to assume or use any other title mentioned in the Pharmacy Acts, unless such person shall be a chemist within the meaning of this Act, and be registered under this Act, provided that any person now entitled to describe himself as a chemist and druggist, or druggist, or pharmacist, or dispensing chemist or druggist, shall continue to be entitled to use so much of such title as does not include the word "chemist." Clause 2 states that on and after Jan. 1st, 1925, the Incorporated Society of the Institute of Chemistry shall alone possess the power to authorise any person to assume or use the title "chemist," and the Incorporated Society of the Institute of Chemistry shall from time to time appoint competent persons to conduct examinations for the purpose of granting persons permission or authorising persons to assume or use the title "chemist," and every person who shall have been examined by such examiners and shall have obtained from them a certificate of competent skill, knowledge, and qualification shall be entitled to register as a "chemist" under this Act, and no person shall conduct any examination until his appointment has been approved by the Privy Council, and such appointment and approval shall not, in any case, be in force for more than five years. Clause 3 provides that the registrar under the Pharmacy Acts shall place upon the Pharmaceutical Register (1) all persons who have satisfied the Council of the Incorporated Society of Pharmacy and Drug Store Proprietors of Great Britain, Limited (herein called the Pharmacy Society), at any time before and including the thirty-first day of December nineteen hundred and twenty-four, and being members of the Pharmacy Society, of their fitness to be placed upon the register, and (2) after the first day of January nineteen hundred and twenty-five, any person, being a member of the Pharmacy Society or not, who so satisfies the Pharmacy Society and in addition has received a certificate from a qualified medical practitioner, in the case of a person carrying on business in boroughs and urban districts, and of two qualified medical practitioners, in other places, that such person, to his or their knowledge has carried on business as a pharmaceutical proprietor on his own account for a period of not less than five years, and is personally known to such qualified medical practitioner or medical practitioners making such certificate to be a person of good repute and competent to carry on business as a pharmaceutical proprietor. Clause 4 gives to the Pharmacy Society similar powers to conduct examinations authorising persons to be placed on the Pharmaceutical Register as are given under Clause 2 to the Incorporated Society of the Institute of Chemistry. Clause 5 constitutes a Central Council consisting of 16 members, of whom four shall be appointed by the British Medical Association, four by the Incorporated Society of the Institute of Chemistry, four by the Pharmaceutical Society, and four by the Incorporated Society of Pharmacy and Drug Store Proprietors of Great Britain, Limited, together with a chairman who shall be appointed by and be a member of the Privy Council. Clause 6 provides for the holding of examinations by the Central Council biennially at London, Leeds, Birmingham, and Edinburgh. Under Clause 7 persons below the age of 21 years are prohibited from carrying on the business of pharmacy.

Clauses 8 and 9 deal with the sale of poisons. By Clause 8 it is proposed to enact that in addition to any conditions now contained in any Act of Parliament the following provisions shall have effect: (*a*) So far as regards such poisons and poisonous preparations or compounds thereof as may be sold only on the production of a medical practitioner's prescription or order, a copy of such prescription or order must be duly entered by the registered pharmacist in a special book for the purpose, and the prescription must be duly signed with the name and address and academic qualifications of such medical practitioner, and no such prescription or order shall be repeated without a further prescription or order being provided; (*b*) as regards such poisons as may be supplied by a registered pharmacist

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Nov. 29th.—4.30 P.M., Mr. H. H. Rayner: Cancer of the Breast; Early Diagnosis and Results of Treatment.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 21, Acomb-street, Whitworth Park.

THURSDAY, Dec. 1st.—Dr. A. C. Magian: The Menarche and Menacme.

SALFORD ROYAL HOSPITAL.

THURSDAY, Dec. 1st.—4.30 P.M., Dr. H. A. T. Ashby: Indigestion in Infants.

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE.

Post-Graduate Lectures and Demonstrations.

TUESDAY, Nov. 29th. (At the Royal Infirmary).—3.30 P.M., Mr. Q. Cuff: Demonstration of Gastric Cases. 4.15 P.M., Mr. G. H. Pooley: Demonstration of Cases.

FRIDAY, Dec. 2nd. (At the Royal Infirmary).—3.30 P.M., Dr. A. E. Barnes: Demonstration of Cases. 4.15 P.M., Mr. D. S. Kerr: Demonstration of Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.

A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.

WEDNESDAY, Nov. 30th.—4 P.M., Lecture VII.:—Prof. E. L. Collis: Health and Welfare in the Coal Mining Industry.

Appointments.

ADDIS, W. R., M.B., Ch.B. Edin., has been appointed Honorary Assistant Gynæcologist to the Salford Royal Hospital.

JACKSON, C. E. S., M.B., B.S.Lond., F.R.C.S.E., to be an additional Medical Referee under the Workmen's Compensation Act for County Court Circuit No. 32 (King's Lynn, &c.).

Albert Dock Hospital of the Seamen's Hospital Society.—GRIFFITHS, H. E., M.S. Lond., F.R.C.S. Eng., and KILNER, T. P., F.R.C.S. Eng., Surgeons.

Queen Charlotte's Lying-in Hospital.—GRIFFITHS, A. MURIEL, M.B., B.S. Lond., Senior Resident Medical Officer; HALL, EDITH M., M.B., B.S. Lond., Assistant Resident Medical Officer; RAMSAY, M. OLIVE, M.B., B.S. Lond., District Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: HART, J. H., L.R.C.P., M.R.C.S. (Purfleet); McCLYMONT, J., M.D.Edin. (Waltham Abbey).

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital.—H.S. £175.
Bethnal Green Hospital.—Asst. M.O. £400.
Birmingham and Midland Eye Hospital.—Asst. S. £100.
Birmingham General Hospital.—Two H.S.'s. £125 and £100.
Bradford City.—Asst. Bacteriologist. £600.
Bradford City Municipal General Hospital.—H.P. and H.S. Each £350.
Bridgend, Glamorgan County Asylum.—Jun. Asst. M.O. £415.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £150.
Brighton, Royal Sussex County Hospital.—H.S. £140.
Bury Infirmary.—Jun. H.S. £150.
Cambridge, Addenbrooke's Hospital.—H.P. £130.
Cardiff, King Edward VII. Hospital.—H.S. £200. Also H.P.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O.
Derby, Royal Derby and Derbyshire Nursing, &c., Association.—Two Hon. Obstet. Phys.
Derbyshire County Council.—Asst. Sch. M.O. and Asst. Tuberc. O. £600.
Dumfries, Crichton Mental Hospital.—Clin. Path. £400.
Durban, Government Hospital.—Med. Supt. £1050.
Durham, Richard Murray Hospital, Blackhill.—Res. M.O. £100.
Frimley, Burrow Hill Sanatorium, &c.—Res. Med. Supt. £600.
Fulham Parish Infirmary, St. Dunstan's-road, Hammersmith.—Third Asst. M.O. £300.
General Lying-in Hospital, Lambeth.—Res. M.O. £100.
Greenwich, Dreadnought Hospital.—H.S. £150.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hove Hospital.—Res. M.O. £250.
Iraq.—Two M.O.'s. 600 to 1000 rupees per mensem.
Lincoln County Hospital.—Jun. H.S. £150.
London Homœopathic Hospital, Great Ormond-street.—Third Anæsth. £50.
London Hospital, Mile End.—Asst. S.
London Temperance Hospital, Hampstead-road.—Res. Cas. O. £150.
Manchester Royal Infirmary.—Asst. M.O. and Asst. Surg. O. Each £35.
Manchester, Salford Royal Hospital.—Hon. Asst. Radiologist.
Middlesex Hospital.—Asst. Radiologists and Asst. Electro-Physio-Therapeutist. £200 each.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Norwood Cottage Hospital.—Two vacancies on Hon. Med. Staff.
Nottingham Children's Hospital.—Female Res. H.S. £180.
Oldham Royal Infirmary.—Three H.S.'s. Each £200.
Prince of Wales's General Hospital, Tottenham.—Hon. Surg. Reg. £100.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rochester, St. Bartholomew's Hospital.—Res. H.P. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S. and Sen. Obstet. Asst. Clin. Assts.
Royal National Orthopædic Hospital, Great Portland-street.—H.S. £150.
Royal Naval Medical Service.—Surg. Lieuts.
Royal Waterloo Hospital for Children and Women, Waterloo-road.—H.P. £100.
Shanghai Municipal Council.—Asst. Health Officer. £1540.
Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.
Sheffield Royal Infirmary.—H.P. and Asst. Cas. O. £150.
South-Eastern Hospital for Children, Sydenham.—Res. M.O. £100.
South Mimms, Clare Hall Sanatorium.—Asst. M.O. £350.
Southport General Infirmary.—Jun. H.S. £175.
Sunderland, Children's Hospital.—Female Jun. Res. M.O. £150.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Walsall Education Committee.—School Med. Insp. £500.
Warrington, Lancashire County Asylum, Winwick.—Asst. M.O. £300.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.
West Riding County Council.—School Oculist. £600.
Willesden Hospital, Harlesden-road.—Hon. Anæsth. and two Hon. Dent. Surgs.
Worcester County and City Mental Hospital.—Sen. Asst. M.O. £500.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments: Newton Abbot (Devon), and Cardigan.

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Preston and Chorley and Lancaster County Courts. Applications should reach the Private Secretary, Home Office, not later than the 14th December.

Births, Marriages, and Deaths.

BIRTHS.

BRADFIELD.—On November 1st, at Moorats Gardens, Madras, the wife of Major E. W. C. Bradfield, I.M.S., of a daughter.

EDEN.—On Nov. 14th, at a nursing home, Edgbaston, the wife of Geoffrey Eden, M.D., M.R.C.P., of a son.

MATTHEWS.—On Nov. 19th., at Eversfield-place, St. Leonards-on-Sea, the wife of L. Clive Matthews, L.D.S. R.C.S.Eng., of a son.

MARRIAGES.

FINDLAY—DAY.—On Nov. 17th, at the Church of the English Martyrs, Streatham, S.W., John Findlay, M.D., D.P.H., to Winifred Marie, youngest daughter of Mr. John T. and Mrs. Day, Hayeswood, Streatham Park, S.W.

YOUNG—GOULD-TAYLOR.—On Nov. 11th, at Consulate, Port Said, and Nov. 12th, at St. Andrew's Church, Cairo, Peter Hutchison Young, M.B., Ch.B., R.A.F. Medical Service, to Sheila, younger daughter of the late Rev. N. Gould-Taylor and Mrs. Gould-Taylor, Melbourne, Australia.

DEATHS.

LE QUESNE.—On Nov. 18th, at Southampton, Claude Philip Le Quesne, M.R.C.S., L.R.C.P., aged 55 years.

MERRALL.—On Nov. 16th, at 26, North Promenade, St. Annes-on-the-Sea, Mary Topping, the beloved wife of Harry Merrall, M.B.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Quarter Page, £3. Half a Page, £6. Entire Page, £12.

Special Terms for Position Pages.

Ex-Service Men in Lunatic Asylums.

Captain LOSEBY asked the Prime Minister (1) if he was aware that treatment allowances upon which some 6000 ex-Servicemen depended were paid strictly upon the condition that these men consented to being confined in lunatic asylums, whereas the allowance was refused in respect of patients being treated, and anxious to be treated, in certain private institutions approved by the Board of Control, but to which the stigma associated with lunatic asylums was not attached; and why the allowance was not paid in the latter class of cases. (2) If, according to official figures, on Jan. 1st, 1919, 2507 ex-soldiers were confined in lunatic asylums; that the figure had risen to 4673 on Jan. 1st, 1921, and to 6435 on Oct. 27th, 1921; if he was aware that bitter laments were continually emerging from the men so confined; and if, in view of the increase in the number of men so confined, he would consider the advisability of setting up a commission comprised of Members of the Houses of Parliament to hear complaints and investigate any possible amelioration of the conditions governing the detention of these men.—Mr. MACPHERSON replied: The Lunacy Law requires that every person who is certified as insane shall be sent to an institution approved by the Board of Control; save that under certain conditions a single patient may be placed in a private house not specifically licenced for the reception of lunatics. Treatment allowances are granted and the necessary cost of treatment defrayed by my Department in respect of all certified patients whose insanity is due to war service and who are receiving treatment in institutions, whether public or private, which have been approved by the Board of Control and by the Ministry. I cannot, of course, speak for the ex-Service men in asylums, the origin of whose unfortunate condition does not entitle them to the benefits of the Royal warrant, but as regards certified "Service" patients it is certainly not accurate to suggest that any large number of complaints are received as to the conditions of their treatment. On the contrary, the number of complaints received is few, and, on investigation, they have invariably proved to have been made on unsubstantial grounds, or to have been of minor importance. When a complaint is made it is the practice for the institution to be inspected and the whole circumstances investigated by officers of my Department either alone or jointly with commissioners of the Board of Control. Perhaps I may inform my hon. friend and the House generally that under an arrangement with the Board of Control, asylums are now visited by medical inspectors of my Department and the Service patients personally interviewed. By these means I am kept in close touch with the conditions of asylums, and I do not consider that there is any ground for adopting my hon. friend's suggestion to set up a commission of the House. I may add that I do not accept my hon. friend's statement of the numbers of ex-soldiers in asylums in January, 1919, and January, 1920, as accurate. At the latter date the number of certified Service patients was approximately 6000.

Treatment of Tuberculous Ex-Service Men.

Dr. M'DONALD asked the Minister of Pensions if he would take steps to relax the order that tuberculous ex-Service men must be treated within the area of their residence, especially when greater benefits could be offered outside such area and voluntary means were available for the maintenance of the patient.—Sir A. MOND (Minister of Health) replied: So far as I am aware no such order as is referred to in the question has been issued. The institutional treatment of tuberculous ex-Service men is undertaken by the county and county borough councils, and it is within the discretion of a council acting on the advice of their tuberculosis officer to decide in what institution any particular case shall be treated, provided that the institution and the arrangements made by the council for the use of the particular institution have been approved by the Ministry of Health.

Motor Taxation.

Major BARNES asked the Minister of Transport what was the amount which had been collected up to date in motor taxation; what amount from this had been allocated to local bodies; what amount had been paid out of this to highway authorities; what amount had been allocated in loans; and, when repayments were made, what happened to the money so returned.—Mr. NEAL (Parliamentary Secretary to the Ministry of Transport) replied: The total proceeds from the motor taxation to Oct. 31st, 1921, are £10,437,907 2*s.* 6*d.* The whole of this amount, less statutory deductions, has been paid to the road fund and has been allocated to road works, and in the main to local authorities. All payments (including advances by way of loan) are made out of the road fund generally, and not out of particular collections. All sums received by way of repayment of loans or by way of interest are credited to the local fund.

Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Dulcie S. Adkins, London Sch. of Med. for Women; John S. Alexander, Univ. Coll. Hosp.; Frances S. Barry (honours, distinguished in midwifery) and Geraldine M. Barry (honours, distinguished in medicine and midwifery, University medal), London Sch. of Med. for Women; George O. Berg and Percy C. Brett, St. Thomas's Hosp.; William M. Brown, Guy's Hosp.; John D. M. Cardell, St. Thomas's Hosp.; Dorothy S. Chamberlain, King's Coll. Hosp.; Cecil S. Cloake, London Hosp.; Ivy Collier, St. Mary's Hosp.; Philip N. Cook, St. Bart.'s Hosp.; Barbara Cubitt, London Sch. of Med. for Women; Charles O. Davies (honours, distinguished in forensic medicine), Liverpool University; George Day, St. Bart.'s Hosp.; Edith M. Down, London Sch. of Med. for Women; Ronald B. Green, Univ. Coll. Hosp.; Eleanor Harse, London Sch. of Med. for Women; Martin C. Hartley (honours, distinguished in forensic medicine), London Hosp.; Reginald W. P. Hosford, St. Bart.'s Hosp.; Arthur St. G. J. M. Huggett, St. Thomas's Hosp.; Bryan L. Jeaffreson, St. Bart.'s Hosp.; Marjorie M. Jefferson, Manchester University; Doris E. P. Jolly, King's Coll. Hosp.; Henry C. V. Joy (honours, distinguished in surgery), London Hosp.; Allan N. Kingsbury, Middlesex Hosp.; Anna G. M. Lewis, Univ. Coll. Hosp.; David J. A. Lewis, London Hosp.; Ivor Lewis and Kingsley W. Lewis, Univ. Coll. Hosp.; David M. Lloyd-Jones (honours, distinguished in medicine), St. Bart.'s Hosp.; Iorwerth H. Lloyd-Williams, Middlesex Hosp.; Muriel J. Lough, St. Mary's Hosp.; Alan McKenzie, Guy's Hosp.; Dorothy McNair, London Sch. of Med. for Women; John A. W. Robinson, King's Coll. Hosp.; Samuel Rose, Guy's Hosp.; Maud Sanderson (honours, distinguished in medicine) and Ruth M. Scutt, St. Mary's Hosp.; William H. Simmons, Guy's Hosp.; John E. Stacey, Sheffield University; Kathleen A. H. Sykes (honours, distinguished in surgery), Liverpool University and London Sch. of Med. for Women; Eric W. C. Thomas (honours, distinguished in forensic medicine and surgery), St. Bart.'s Hosp.; Ruth C. Townshend, Norah Tregear, and Doris L. Veale, London Sch. of Med. for Women; Gladys M. Wauhope, St. Andrews University and London Hosp.; and Keith M. C. Woodruff, Guy's Hosp.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ANNUAL MEETING OF FELLOWS AND MEMBERS.—On Nov. 17th Sir Anthony Bowlby, the President of the College, attended to preside at this meeting at 3 P.M. in the College theatre. As it was found that there were not a sufficient number present to form a quorum at 3.15 P.M. the President announced that according to the rules no meeting could take place. The President therefore retired. A protest was made by certain Fellows and Members who were present, and an informal meeting took place at which the resolutions on the agenda in favour of the admission of Members of the College to the Council of the College were passed.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—On Nov. 19th, in the absence of the President through illness, the Vice-President, Sir W. I. de C. Wheeler, distributed the prizes and medals to successful students. In his presidential address he referred to possible changes in the medical curriculum in the near future, and to the need for more practical work in proportion to mere study of books. He advised all young surgeons to travel in order to become familiar with work elsewhere.

HARVEIAN SOCIETY.—A meeting of this society will be held at the rooms of the Medical Society, Chandos-street, Cavendish-square, London, W., on Thursday, Dec. 8th, at 8.30 P.M., when a discussion on Is the Anginal Syndrome only of Cardiac Origin? will be opened by Sir John Charlton Briscoe, followed by Sir Sydney Russell-Wells, Dr. G. H. Hunt, and Sir William Willcox.

HARROGATE MEDICAL SOCIETY.—The fourth meeting of the session was held on Nov. 17th. Dr. A. Mantle presided and there was a good attendance of members. A paper dealing with the Clinical Interpretation of the Wassermann Reaction was read by Dr. F. B. Smith. The importance of the standardisation of the technique was emphasised as well as the desirability of using two antigens. Dr. Smith was of the opinion that cases of doubtful lues giving a negative W.R. should be retested after a provocative dose of an arsenical compound. The anomalies in pregnant women and infants of syphilitic mothers were discussed. Emphasis was laid on the necessity for treatment of syphilis in its earliest stage if relapses were to be avoided. Dr. Smith referred to evidence he had obtained of the thermolabile nature of the reaction in treated cases. The significance of the reaction in the cerebro-spinal fluid was described, and the paper concluded with a few details for obtaining a satisfactory specimen of serum.

this is not governed by the mere size of the glucose molecule is evident when we go to the kidney, for in health the renal cells are also impermeable to glucose, and it is not until normal conditions are upset in diabetes that the kidney cells allow this sugar to pass into the urine. Nevertheless, sugars with larger molecules, such as cane sugar or lactose, if introduced into the blood stream find their way out into the urine even in health. The sieve theory will thus not hold here, so recourse must be had to the "lock and key" hypothesis introduced by Emil Fischer to help us to understand the specific action of enzymes, and which has proved so useful also when one has to deal with questions of specificity in antitoxic and analogous phenomena. The chemical configuration of sucrose is such that it fits the molecular structure of the parts of the cell it penetrates; it can unlock the door and get through; glucose has a different configuration; it cannot open the door so long as the barrier or lock remains healthy. I have taken this to illustrate one of the many features of physiological advance in knowledge, which is of intimate importance to pathology, but even here, after a certain point it is necessary to have recourse to a theory or a useful simile.

Hormones.

There are many other examples of physiological advance I am tempted to press upon you, but I will be content with only one more—that of the chemical messengers or hormones, of which the discovery has been of incalculable benefit to the practitioner. Organs formerly mysterious are now opened books, and the part played by the substances they pour into the blood to minister to parts elsewhere has shed a light on many obscure maladies, as well as on the processes of the healthy body. It is true we have a general conception of the way the endocrine organs work and of what happens when the work is badly done, but up to the present there are only two of these hormones which are known to us in the true chemical sense—to wit, adrenaline, the secretion of the suprarenal medulla, and thyroxin, the iodine complex secreted by the thyroid. True, the discovery of adrenaline was no mean feat and has provided us with a useful drug. When the internal secretion of the adrenal cortex is discovered one may anticipate rational and successful treatment of Addison's disease.

It is necessary to blend newly acquired knowledge with the saving virtue of common-sense. The premature assumption of the truth of various theories is not only inimical to the progress of the science of medicine but may be an actual danger to the community of patients. What cruelly false hopes were raised in the breasts of sufferers when, in the early days of radiology, radium was vaunted as the cure for all or nearly all of our ills, cancer included.

Psycho-Analysis and Spiritualism.

This special evil of the unwisdom of accepting unproved theories, or partially tested cures, is most pronounced when one has to deal with a subject on which our knowledge is scantiest—namely, the action of the mind. I have neither friends nor enemies among the psycho-analysts, so that what I am saying now is entirely impersonal. When speaking of psycho-analysis to medical men I have sometimes been answered in this way. "After all, there are some good psycho-analysts; Dr. So-and-So, for example, gains the confidence of his patients, gives them good advice, and comforts them; he even knows a little neurology." Is not this damning him with faint praise? Any good doctor, psycho-analyst or not, can win, or should win, his patients' confidence and thus benefit them.

Whatever view one may hold as to the value of psycho-analysis in the treatment of so-called functional disorders, there can be no difference of opinion that any attempt to attack organic disease by its agency should at once be authoritatively condemned. Yet I see in an American journal of repute an attempt in this direction on the part of a qualified doctor of medicine; he proposes that multiple sclerosis should be so treated. At first one took the article to be satirical, but it is quite evident that it is intended seriously. In all ages we see at intervals instances of charlatanism making inroads into the region of exact knowledge and delaying its progress. The war has been blamed for present tendencies in this direction; the war may have exacerbated the condition of mental unrest, but did not cause it. To condemn spiritualism with its many ramifications as a delusion or as humbug, and its professors as deceivers or deceived, may be correct, but it is not argument. I should like to see the appointment of a responsible committee made up of physiologists, medical men, physicists, professional conjurers, the spiritualists themselves, together with a certain number of unbiassed public men gifted with common-sense, to investigate it by the cold light of exact experiment, and to report upon the claims of the occultists. As the matter stands at present, the practices of believers in the supernatural can only exaggerate the mental unrest to which I have alluded; moreover, if the statements of one party are ignored, many will conclude that the other side has nothing to say—as they concluded in the anti-vivisection controversy.

In conclusion, progress in the scientific foundation of medicine depends on accurate observation, experiment, and reasoning combined with imagination which must not be unbridled. True knowledge and understanding suffer from the absence of one or more of these essential attributes of progress. To recognise and guard against the pitfalls of half-knowledge is the only way to avoid them.

INSTITUTIONAL CONVALESCENCE.

IN a pamphlet entitled "Convalescent Care for an American City of One Million Population" and reprinted by permission of the Cleveland Hospital Council, Dr. Frederic Brush (Medical Director, the Burke Foundation, White Plains, N.Y.) sets forth a scheme for utilisation of that period of convalescent when recuperative rest may be favourably combined with mental and moral rehabilitation of the patient. Dr. Brush begins with the statement that the patient's home is usually the best place for convalescence, but that institutional accommodation is necessary in a proportion of cases; this proportion he sets at 10 per cent. of all hospital cases, with an additional fifth of that 10 per cent. to include patients from dispensaries and other sources. Assuming the city in question to present fair living conditions, a figure of 5000 hospital patients, plus 1000 from other sources, is taken as a planning basis. The average stay in American convalescent homes has been proved to be about 21 days; thus the 6000 patients require 350 beds.

Allotment of Beds.

An estimate based upon the experience of the institutions in great cities apportions beds as follows: (1) In a main institution for adult men and women of all ages from 15 upwards, 120 beds, including 15 per cent. or more cases of heart disease, together with cases undergoing preventive treatment, standard surgical cases requiring dressings, and cases of "chronic handicapped" convalescence; (2) in a children's home, 100 beds, for girls aged 6–15, and boys aged 6–10, including orthopædic and surgical dressing cases, and heart disease up to 20 per cent. of the total, with the above-named "standard lines" in addition; (3) in a boy's place, 30 beds, for ages 10–15, with disease classification as in the children's home; (4) in a section for mothers with infants and young children, 30 adult beds, averaging 60 patients; (5) in a special heart institution, for the seriously-ill but probably restorable cases, 40 beds, for ages and sexes as in the children's home.

The Cost of Housing.

New or expensive buildings are described as inessential. An old mansion, a large farmhouse with out-buildings, or a disused hotel may readily be adapted. Tents will serve on occasion; extensions are easily made and much equipment may be improvised. Five acres of land is the minimum. The various homes might occupy one large plot of 100 acres if the necessary separation of patients could be ensured. A site within 20 miles of the centre of the city is desirable for purposes of transport, coöperation of staff, &c. A daily cost of $1·75 to $2·00 per head might be expected, giving approximately $225,000 as a minimum yearly working cost for the 350 beds, including transport and maintenance of a city admission office. The selection of patients would be performed by one (possibly part-time) city officer, and the necessary work of following up of cases, including vocational and occupational direction, might be done by the city organisations which sent patients.

Some Details.

Dr. Brush explains that preventive tuberculosis, convalescent orthopædics, and bone diseases are included under (1), (2), and (3) above; that cardiac children well enough for reconstructive graduated exercise treatment are provided for under numbers (2) and (3); that adolescents (the group most successfully dealt with and yet most neglected in convalescence) are especially considered.

"As interest grows," he writes, "and convalescent experience matures, the extensions of this service . . . . will probably be towards separate provision for orthopædics, pay convalescents, the coloured, and for the various border-line, nervous, and mental patients, who everywhere lack long-term preventive and convalescent opportunity."

"Prevention, education, refinement, and Americanisation, occupational adjustment, vocational direction, re-encouragement," are stated to be the objects of Dr. Brush's system. "Such an institution . . . . would serve to stimulate medical study of convalescence, now a field much neglected, and would promote throughout the community interest in the problem of convalescence which will add to the efficiency of all kinds of medical care in hospitals, dispensaries, and in the home."

THE LATE MR. WILLIAM STOKER, F.R.C.S.I.—The death of Mr. W. Stoker, senior surgeon to Jervis-street Hospital, Dublin, and senior member of the Council of the Royal College of Surgeons in Ireland, has recently taken place. Although in his seventy-ninth year he was in active work until within a few weeks of his death. Mr. Stoker received his education in Trinity College and the Royal College of Surgeons in Ireland, and was admitted a Fellow of that College in 1873. Having held the post of lecturer in surgery in the Ledwich School of Medicine from 1881 to 1889, on the amalgamation of that school with the school of the College of Surgeons, he became professor of surgery in the College, and occupied this chair until 1911. Mr. Stoker was a member of the Council of the College from 1882 until his death. In his younger professional days Mr. Stoker was a very successful private teacher, and there were few Dublin students in the 'seventies and early 'eighties who did not pass through his hands. He was held in warm regard by his professional colleagues. His death closes a family connexion with Dublin medicine lasting through three generations.

PROFESSIONAL CLASSES AID COUNCIL.—The Professional Classes War Relief Council, which rendered such valuable service to the new poor during the war, continues its activities under the new title of "The Professional Classes Aid Council." It may be recalled that during six and a half years 12,000 applications were investigated and dealt with by the Council; in the four and a half years when the Council's maternity home in Princes Gate was open 547 babies were born there, of which only two died within the first four weeks of life. The education of 885 children was assisted between November, 1914, and March, 1921, and the help continued in some cases for four or five years; the total sum expended on schooling in six and a half years was £34,000. The Music in War-time Committee of the Council found employment for several hundred musicians, whilst benefiting hospitals and other institutions where entertainments were welcomed. It is not intended that the Council as newly constituted should supplant any benevolent fund organised to deal with a particular profession. Instances, however, arise in which the Council can usefully coöperate with a body unable itself to render the precise kind of help required. Thus, assistance with school fees is still continued, being a very effective method of help. Among the professions which have been or are being assisted are included: Actors, architects and surveyors, artists, authors and journalists, barristers and solicitors, Civil servants, doctors, engineers, members of the Stock Exchange, ministers of religion, musicians, schoolmasters, teachers, and governesses. The Council prides itself on the maintenance of a scrupulous regard for the feelings of applicants. The offices of the Council are now at 251, Brompton-road, S.W. 3.

MR. EMIL COUÉ'S VISIT.—On the invitation of a committee largely composed of British medical men, Mr. Emil Coué delivered on Nov. 18th and 21st at Essex Hall, London, a series of lectures on auto-suggestion based upon his experience as founder and director of the new Nancy School of Applied Psychology. Dr. Burnett Rae, who presided on Nov. 21st, said that while the lecturer had not actually taught psychologists anything new he had impressed upon them the reality of auto-suggestion by relieving many patients, while his teaching was in no way antagonistic to the principles of medical treatment. Mr. Coué explained that he himself did not heal; he taught patients how to heal themselves. Every morning before rising, and preferably before being fully awake, the patient was taught to close his eyes and repeat quietly 20 times or so, moving the lips for emphasis, "Day by day, in all respects, I am getting better and better." The same words were repeated every night on getting into bed. The words "in all respects" made the suggestive words universally applicable. Every time physical or mental discomfort was felt the phrase was repeated. The results were sure, but confidence and faith were necessary. Giving as an illustration the ease with which a man could walk on a plank placed on the ground and the impossibility, in the majority of cases, of doing so when the plank was suspended at a height, the lecturer said that it was the imagination and not the will which permitted the ability and caused the disability; man, he said, would only cease to be a puppet when he learned to control his imagination. The essential thing in practising auto-suggestion was to keep the will from being a hindrance, for if it was not in agreement with imagination it would have the effect of reversing the desired results. The lecturer expressed the hope that the study of suggestion would be introduced into the medical curriculum, pointing out the advantage to the community if backward and mentally deficient children were treated by the method he advocated. The same methods might also be applied to the inmates of reformatories.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, Nov. 28th.

OCCASIONAL LECTURE: at 5 P.M.
Dr. Guelpa (of Paris): The Treatment of Diabetes and Gout by Disintoxication.

MEETINGS OF SECTIONS.

Monday, Nov. 28th.

ODONTOLOGY: at 8 P.M.
Casual Communication:
Mr. Stanley Mummery: A Case of Mandibular Sarcoma in an Infant.
Paper:
Mr. W. F. Broderick: The Endocrine Factor in the Production of Immunity or Susceptibility of the Teeth to Caries.
The following have promised to take part in the discussion after the paper:—Sir Arthur Keith, Dr. Leonard Williams, Sir John Bland-Sutton, and Prof. Halliburton.
Members of other Sections are invited to attend this meeting.

Thursday, Dec. 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Mr. J. Ellison: (1) Squamous-celled Carcinoma of the Cervix Associated with Spheroidal-celled Carcinoma in the Body of the Uterus. (2) Unusual Case of Extra-uterine Pregnancy.
Paper:
Mr. R. H. Paramore: *Eclampsia and its Incidence.*

Friday, Dec. 2nd.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Cases and Specimens will be shown by Mr. Mollison, Dr. Dawson, Dr. Douglas Guthrie, Mr. Howarth, Mr. E. D. D. Davies, Dr. Andrew Wylie, and others.

ANÆSTHETICS: at 8.30 P.M.
Informal Meeting: Tea, Talk, and Tobacco.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Nov. 28th.—5 P.M., *Dr. Arthur Saunders:* Carcinoma of the Stomach.
TUESDAY.—5 P.M., Mr. Addison: Hernia (1).
WEDNESDAY.—5 P.M., Dr. Owen: Diagnosis and Treatment of Renal Diseases.
THURSDAY, Dec. 1st.—5 P.M., Dr. Grainger Stewart: Sciatica.
FRIDAY.—5 P.M., Mr. Addison: Hernia (2).
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., *In-patient, Out-patient Clinics and Operations.*

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 28th.—4.30 P.M., Dr. J. Bright Bannister: The Hæmorrhages of Late Pregnancy and Labour.
TUESDAY.—3.30 P.M., *Dr. F. G. Crookshank:* Physical Examination of the Chest—The Stethoscope.
FRIDAY, Dec. 2nd.—4.30 P.M., Mr. E. Gillespie: The Treatment of Paralytic Deformities by Orthopædic Methods.
Daily:—2.30 P.M., In-patient, Out-patient Clinics, Operations, &c.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Nov. 28th.—5.30 P.M., Lecture:—Dr. R. O. Moon: Functional Diseases of the Heart.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Dec. 1st.—6 P.M., Chesterfield Lecture:—Dr. W. Knowsley Sibley: Syphilis.

BRITISH ORTHOPÆDIC ASSOCIATION.
FRIDAY, Dec. 2nd.—Annual Meeting at the Liverpool Medical Institution (President, Sir Robert Jones). 10.30 A.M., Mr. H. A. T. Fairbank will open a discussion on The Late Results of Treatment of Congenital Dislocation of the Hip.—Mr. C. Thurstan Holland: Demonstration of Radiograms of Bone and Joint Affections. 2 P.M. (at the Royal Southern Hospital), Mr. T. R. W. Armour: Demonstration of Operations and Cases.
SATURDAY.—9.30 A.M., Mr. H. Platt: *Paper:* A Series of Endosteal Tumours. Mr. R. C. Elmslie: Demonstration of Endosteal Tumours and Bone Cysts. Mr. D. McCrae Aitken:—*Paper:* Function in Relation to Repair in Bone. 2 P.M., Visits to Hospitals.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE at Whitworth-street West Branch, Manchester.
FRIDAY, Dec. 2nd.—4.30 P.M., Dr. Lacey: Backache.

HOSPITAL FOR SICK CHILDREN, Great *Ormond-street*, W.C.
THURSDAY, Dec. 1st.—4 P.M., *Lecture:—Dr. B. Shires:* X Ray Appearances of Diseases of Bone.

There were 3019 deaths from respiratory diseases, and 1515 from various forms of tuberculosis. Beri-beri was responsible for 555 deaths, as compared with 804 in 1918 and 651 in 1917. During the past few years circulars have been distributed to all large employers of coolie labour calling their attention to the fact that beri-beri is produced by the consumption of white rice as the staple article of diet without a sufficiency of other foods, and advising that beans should be supplied with the rice when fresh meat or fresh fish cannot be afforded.

Government hospitals consist of the Civil Hospital, to which is attached an isolated maternity hospital, the Victoria Hospital for Women and Children, and the Kennedy Town Infectious Diseases Hospital. There is an observation station capable of accommodating 1500 persons in the event of an outbreak of infectious disease on board a ship arriving in the harbour. In the Civil Hospital, which contains 166 beds in 20 wards, 3926 in-patients and 22,446 out-patients were treated during 1919; 218 cases of malarial fever were admitted; 460 confinements occurred during the year in the Maternity Hospital, which contains 12 beds for Europeans and four for Asiatics; 54 infectious cases were treated at the Kennedy Town Hospital. In the Lunatic Asylum 207 patients of all races were treated, and there were eight deaths. The Tung Wa Hospital, which is mainly supported by the voluntary subscriptions of Chinese, receives an annual grant from the Government. Only Chinese are treated in this institution, which performs other services as well as those appertaining to a hospital, such as the free burial of the poor, the repatriation of destitutes, and the organisation of charitable relief in emergencies. Chinese as well as European methods of treatment are employed in accordance with the wishes expressed by the patients or their friends. About half the number are now treated by Western methods. The hospital is managed by a committee of Chinese, who are annually elected. It is under the supervision of a visiting physician, who is a member of the medical department, whilst two Chinese house surgeons trained in Western medicine, are members of the hospital staff. There are 323 beds in the buildings, and 7002 patients were accommodated during 1919. The Tung Wa also maintains a branch hospital for small-pox cases (Chinese only). It contains 58 beds, and during 1919 four cases were treated.

The Alice Memorial and Affiliated Hospitals are managed and controlled by the missionaries resident in Hong-Kong, agents of the London Missionary Society. The number of in-patients in 1919 was 1305. To avoid the complete seclusion from friends and relatives which removal of Chinese plague patients to the Kennedy Town Infectious Hospital entailed, four District Plague Hospitals are maintained by the Chinese in various parts of the colony. The new Kwong Wa Hospital for Chinese in the Kowloon Peninsula was opened in 1911. There are 70 beds, and 3313 patients were accommodated during 1919.

The University of Hong-Kong is an institution that arose from the joint enterprise of British and Chinese subscribers. At the end of 1919 the number of students was 225, of whom 75 were taking the medicine course. The idea of the University is to provide, close to China, education similar to that given in the British universities, but at a much cheaper cost. The medical faculty offers ample facilities for the practice of medicine. The medical laboratories were the gifts of various Hong-Kong Chinese residents. There is a large staff of instructors in medicine, and all the principal medical practitioners in Hong-Kong give lectures at the University. Clinical work is carried on at the Government Civil and Tung Wa Hospitals. The degrees are recognised for registration in Great Britain by the General Medical Council. The University insists upon all students having a proper knowledge of their own language, although instruction at the University is carried out in English.

The mean temperature for the year 1919 was 72·2° F., as against 71·2° in 1918, and 71·8° for the past 36 years. The total rainfall for the year was 76·140 inches, as against 101·605 inches in 1918, and 83·020 inches for the past 36 years. The climate of Hong-Kong is similar in its broad features to that of Kowloon and the New Territories, but at the higher levels, from 1400 to 1800 feet above sea-level, the temperature is usually from 3° to 6° lower than at the Observatory, Kowloon. The humidity is usually greater than in Kowloon, and approaches saturation for several days at a time during March and April, when mist is very prevalent. In summer the City of Victoria and the rising terraces behind it derive little or no benefit from the south-west monsoon, being sheltered by steep hills from S.E. to S.W. In winter it is exposed to the north-east monsoon, which occasionally blows along the harbour, through Lyemun Pass, with considerable violence. On the other hand, the south-west side of the island is protected from the north-east monsoon in winter, and enjoys the benefit of the south-west monsoon in summer.

EXCESSIVE PRESCRIBING.

A practitioner was recently asked by his panel committee to justify two prescriptions each containing 6 oz. of Stokes's liniment (Lin. album). His chief concern was the unreasonable cost of this prescription, which was charged at 9*d.* for the liniment and 4*d.* for the dispensing fee. This pricing is in accordance with the official tariff and cannot, of course, be altered until this tariff is modified by the fall in the cost of drugs. The criticism of the panel committee was directed to the amount ordered on one prescription. It was considered that this quantity would be wasted, and that 2 oz., or at most 4 oz., was sufficient to order on one occasion. Only in exceptional cases would it be necessary to use more than 4 oz. of liniment in a week. The cost may appear a trifling matter in one or two cases, but considering the vast number of prescriptions given in one area the total amount may be a serious and unnecessary drain on the drug fund which is provided by the Treasury out of public money.

TO VENTILATE AND DEODORISE.

The "Win-Sum" radiator, recently patented by Messrs. Tidd, Siday and Co., Ltd., of 180, Drury-lane, London, W.C., is a combination of an electric radiator and ventilating fan. The radiator forms the front of a box in which the metal fan is placed. Air is drawn into the apparatus and forced through the four porcelain and wire "elements," each of which can be turned on by a switch, thus regulating the degree of heating of the air. The manufacturers claim that the consumption of two electrical units an hour by this apparatus produces a uniform temperature of 60° F. on cold days in a room 20 ft. by 20 ft. by 12 ft. 6 in. In summer the agitation of the indrawn air and its subsequent distribution throughout the room by the agency of the revolving fan produces a cooling effect. The box-like apparatus is placed on the floor of the room near the door; it is especially intended for use in ordinary rooms of houses but can also be employed to disperse the pockets of stagnant air not infrequently found in certain parts of the "auditorium" of kinemas and other places of public entertainment. Slabs of absorbent porcelain material, to be soaked in eucalyptus or other volatile antiseptic, are provided in order that various odours may be added to the air forced through the radiator. The cost of the radiator is £20 retail.

CENTRAL HEATING IN CHICAGO.

At the beginning of another winter and with coal at its present price it is of interest to note how the question of cold dwelling houses for the people is dealt with in foreign countries. A copy of the "Bulletin of the Chicago School of Sanitary Instruction," now before us, suggests at the first glance that in that city landlords in general are compelled by the sanitary authority to supply heat to their tenants, on the ground that otherwise a building is being maintained by them in a manner dangerous to health. It is to be gathered, however, from closer study of the article that at Chicago a large number of buildings divided into separate tenements are constructed in a manner which has been recommended here as desirable from the point of view of economy. Few, if any, such buildings, however, exist in the United Kingdom as far as we are aware. In Chicago the rooms in question have no source of heating, except that which is under the control of the landlord; although they are, or can be, supplied with gas apparatus sufficient for cooking. Chicago landlords, it is stated, are, as a rule, compellable by the terms of their leases to supply heating to their tenants, who can sue them for breach of contract. Where such covenants do not exist, or possibly where they do, the sanitary authority is prepared to act in the interest of the citizens. At present, as we have said, no such heating system is general in the United Kingdom, where most of the rooms let as living rooms are warmed by open fires or gas stoves. The flats, in London at all events, which are centrally heated, are lived in by tenants who are well able to enforce the terms of their leases. The experience of Chicago, however, may point to the desirability of considering the welfare of the tenant of working-class tenements, if and when any are constructed in such a way that the dwellers in them are dependent entirely upon the landlord for warmth in cold weather. It may, in other words, be desirable when any such buildings are erected to make it the duty of a public authority to see that they are sufficiently warmed to be safely inhabited. Tenants of the humbler class do not take leases with elaborate covenants, and often hold their rooms on such terms that they are not likely to bring their landlords into court.

C. B. W. has put his finger upon defaults that are common to every form of professional education. We are afraid that the medical profession would not welcome an examination in middle age to see whether a proper standard of knowledge was still being maintained.

Notes, Short Comments, and Answers to Correspondents.

KNOWLEDGE AND UNDERSTANDING.[1]

BY W. D. HALLIBURTON, M.D. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY, KING'S COLLEGE, LONDON.

THE question, "What is Truth?" is likely to remain unanswered for many generations to come, if not for ever. Within the last year or two it has acquired new meaning in the discussions which have centred around the question of relativity so prominently brought before the scientific world by the researches of Einstein. I have not the special mathematical knowledge to pronounce judgment on Einstein's work; but so far as an outsider has been able to grasp its significance one may briefly say that it has been found that the old Newtonian laws regarding gravitation and the propagation of light have been found not immutable or even absolutely correct in detail, but are only relatively true at a given time in certain conditions of space. In the light of uncertainty regarding the fundamental laws of the physical universe, who can hope, in branches of science dealing with living things, to attain to perfect knowledge? The seekers after truth need not be discouraged, for they will often be rewarded with sufficient understanding to grasp some of its meaning and even to apply the latter to the good of mankind.

Astronomy and Chemistry.

The old laws of the physical world may not be flawless, but they have enabled astronomers to foretell eclipses with exactitude, to give us the Nautical Almanac with accurate information about the tides and numberless other data, to detect the existence and predict the appearance of new planets, and numerous other feats. In chemistry, the atomic theory is, I suppose, only relatively true. Certainly no one has ever seen an atom, still less the electrons which make up the atoms; nevertheless, such theories have played an overwhelmingly useful rôle in the progress of chemistry and physics; witness, for example, the prediction of the discovery of new elements, and the invention of new methods in the application of radiant energy for the alleviation of suffering.

Physiology and Medicine.

Coming now to the biological sciences, I shall feel more at home when I single out physiology for comment. The relationship of physiology to medicine is one on which I am never tired of dilating. I remember a time which succeeded that when anatomy and physiology were taught by the same professor, when physiology was regarded almost as an ornamental extra in most schools—being taught by a lecturer who was not a trained physiologist and had no idea of research—and when the physiological laboratory was all but non-existent. With the foundation of laboratories the professed physiologist came into being and by diligent work made discovery after discovery. But with a few brilliant exceptions the clinical observer and the laboratory worker seldom came together, and both physiology and medicine suffered in consequence. From this state of things we are now emerging; physicians are beginning to recognise that physiology is the corner-stone of medicine, and that medicine is or ought to be applied physiology. I look forward to a time when clinical teachers will, as a result of laboratory training and experience, have grasped the spirit of research and be able to teach medicine in this spirit of understanding. I do not say we have not such teachers now, but the future will, I am sure, give us many more.

Empiricism in Medicine.

Medicine is often wrongly reproached for its empiricism, but empiricism is the result of past experience. The reproach is only deserved when medical men elect that their studies shall remain empirical and do not discover causes and reasons. Take, as examples, some morsels of dietetic advice which are often heard from practitioners. (1) In a case of malnutrition take more fat, but preferably in the form of cream or cod-liver oil instead of olive oil or margarine, (2) in a case of high blood pressure abstain from the red meats, but take fish and poultry; (3) in a case of obesity take toast, but not bread, and reserve drink till the end of the meal.

The physiological explanation of the first piece of advice is now known, for the useful fats are those which contain the recently discovered essential accessory factor or vitamin. Time may show that the second and third are justifiable; some little thing, quantitatively small, but qualitatively all-important, may yet be found to constitute the difference between harmful and useful foods. When such a happy time arrives, when the doctor can give physiological reasons for the faith that is in him, shall we even then be nearer the absolute truth. We may have by then advanced a few steps, but that does not mean we should hesitate to push on. Increase of understanding at least will follow, and with it decrease of suffering and disease.

Enzymes.

We hear a great deal about the activity of enzymes or ferments. It is immaterial that a ferment may be an actual entity or a special phase of matter; ferment action is the great mechanism in the chemical and metabolic activity of the body. This fact is indisputable, although no physiologist has ever seen an enzyme in a state of purity, just as no chemist ever saw an atom, and recently acquired knowledge of the whole subject of immunology is in the same position. We talk glibly of antitoxins, agglutinins, precipitins, opsonins, anaphylactins, hæmolysins—names which are merely the result of a desire to crystallise theories in terms of speech. Such excursions of the imagination may not come into the domain of exact knowledge, but they have led to understanding of such an operation as vaccination—a purely empirical procedure in Edward Jenner's day—and have enabled practical men to devise corresponding means for the prevention or cure of other diseases.

Vitamins.

To turn to a subject already alluded to—namely, the vitamins. Hopkins compared them to the nails and cement in the building of a house; McCarrison compared them to the spark which makes the energy of the fuel effective in a motor-car. Such similes do not add to our knowledge, but they help our understanding; the vitamins are still unknown chemically, but has their study been useless? From the imperfect knowledge at present available immense benefit to mankind has already ensued in the matters of properly balanced diets and of the deficiency diseases in which absence of vitamins plays so important an ætiological rôle.

Permeability.

We owe to physiology many other conceptions beside those of enzymes and vitamins which have profoundly influenced all branches of medicine. Physical chemistry, for example, in physiological hands is one of these. A study of such questions as colloids, surface-tension, and permeability is not only of intense interest in itself but has done much of recent years to place the phenomena of life on an intelligible basis. From the wide field here opened up I will content myself with one example—namely, permeability, a subject to which my friend, Prof. H. J. Hamburger, of Groningen, has devoted a life of research. He began with red blood corpuscles, and then passed on to a study of secreting cells. The usual way of explaining the action of a secreting cell is to say that it has a selective action; on one side it is bathed with a nutrient fluid originating from the blood. At its opposite border it pours out a new fluid, we will say saliva. The statement that the cell selects from the lymph certain materials and rejects others implies that the cell has something akin to consciousness and choice, a vitalistic view which cannot commend itself to any lover of exact science. The passage of substances through cells and their membranes is regulated by various physical forces, such as filtration, diffusion, and osmosis, but these alone will not explain all the facts; the subterfuge introduced by the assumption of vital or selective activity is a mere confession of ignorance. Investigation of the permeability of the protoplasmic surface and its membrane has done much to enlighten that ignorance; the cell is permeable to some substances and not to others; it has no real choice as to what shall pass and what it prevents from passing. It has been proved further that different ions modify in various directions the normal permeability; hence the electric charge of the ions must be an important factor in determining the passage of substances through the cell and its plasmatic membrane. In diseased conditions the normal relationships in the ionic balance is upset and cellular activity becomes abnormal. Electric charge is one factor, molecular size is possibly another, solution affinities, surface-tension, &c., are others. Without attempting a description of all of these, suffice it to say that they are in the region of exact research and measurement.

Permeability of Cells to Sugar.

Such considerations may be amplified by a brief allusion of what is known in relation to the permeability of cells to sugar. The sugar of the blood is glucose (dextrose); it is always present in health, but is then entirely contained in the blood plasma; the corpuscles are impermeable to this variety of sugar except in that pathological state we call diabetes, where the normal permeability is deranged. That in linked neuronic systems of a given anatomical lesion must not be overlooked.

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[1] Being the substance of an inaugural address delivered before the Midland Medical Society, Birmingham, on Nov. 2nd, 1921.

When, as remarked above, it is stated that the overwhelming bulk of evidence points to a general speech area in the left hemisphere, lesions in which are revealed clinically by varieties of aphasia, I do not ignore the exceptional cases, of which not a few have been put on record. Several valid explanations have been advanced in such cases: perhaps the *most significant is the possibility* of left-handedness occurring, if not in the individual concerned, then in other members of his family. There is something to be said for the "stock-brainedness" theory of Foster Kennedy. Crossed aphasia, so-called, may be due to individual peculiarities, for physiological as well as anatomical anomalies may occur. And, once again, there is the question whether in a particular case a microscopical examination of the cerebrum has been made.

PHYSIOLOGICAL.

To understand the physiological mechanisms employed in speaking we may clear the ground by a brief sketch of how speech is acquired. Long ere the child has begun to articulate, his ears have become accustomed to many and varied sounds, included in which are the sounds of words, mere noises to the child, without any meaning. Some of these sounds are repeated in his hearing much oftener than others, so that he gradually learns to distinguish them and to associate them with certain objects, animate or inanimate. We have no reason to doubt that, before articulate speech begins, the infant is using both hemispheres for vision and both for audition. The next step is the endeavour to imitate by articulation the sounds he hears constantly repeated by others, and in this way the movements necessary for the *articulation* of these sounds, or words, are learned. Again we must believe that both hemispheres are being utilised for speaking *movements*; before he learns to read or write, therefore, his "inner language" consists of the memories of certain sounds closely linked to the memories of certain movements, and the former of these is also intimately bound to the visual ideas of certain objects. When his nurse says "bow-wow" he will look for or point to his little toy dog, and when it is *shown him* he will say "bow-wow." Thus as early as he begins to think at all, he is developing his "inner language."

When the child reaches the stage of learning to read and write, his inner language becomes considerably more complex. He learns to write by letters and by syllables, which are the signs for sounds, be it noted, since our writing is phonetic. In this way he acquires a visual picture for each sound, made up of a letter or combination of letters, and so he reaches the stage of a visual knowledge of letters, syllables, and words. He learns to write, however, with one hand, and that the right hand. Hitherto, as we have seen, the presumption has been that both hemispheres have been utilised for hearing sounds, for articulating sounds, and for reading signs that stand for sounds. When he writes signs that stand for sounds, we must suppose he uses largely, if not entirely, a part of his left hemisphere only, as far as the physiological *mechanism* is concerned. Now if both hemispheres have thus shared in the acquisition of speech, how comes it that in the average individual it is only necessary to destroy a limited portion of the left cerebral cortex for a complete aphasia to result? The received explanation is the general right-handedness of the genus homo, but the inadequacy of this solution can be seen when it is realised that the difference between the daily work of the two arms is vastly less than the *corresponding* difference in function between the right and the left speech areas. According to Ernst Weber the final determination of the lead of the left hemisphere, from the viewpoint of speech, is that the child is taught to write with the right *hand*, and for this theory there is no little evidence. A physiological concentration of this sort, leading finally to *preponderance of the left* hemisphere in speech mechanisms, could not have occurred until writing with the right hand had become general among all classes. Arguing by analogy, one would suppose the musical functions to be more bilaterally and equally represented and certain researches (Mingazzini, Probst) go to substantiate the contention.

Still speaking physiologically, we are to bear in mind that a spoken word and a written word are movements, while on the sensory side a seen word is no more than a seen object, and a heard word than a heard noise. Before the child can write a single letter correctly he will scribble with his pencil and say it is "writing," and if to us it is an unintelligible scrawl it is identical physiologically with an intelligible scrawl. The infant's laryngeal noises may be unintelligible but they do not differ integrally from the laryngeal noises that we call words. All must, accordingly, come under the ordinary physiological rules for motion and sensation; and physiological disorders affecting both projection-systems, be they afferent or efferent, and physiological cortical centres for motion and sensation, may impair the reception or the execution of speech elements as of any other function elements.

Though it be a platitude that speech itself is something far beyond mere function of projection-systems, this sketch of the elements has been given because of the importance of recognising that on the physiological side the mechanisms relating to speech are in every way similar to those connected with the function of the non-speech parts of the brain. Impinging on motor and sensory projection-systems connected with the execution *or reception of speech components* is a complicated series of association-systems; they are "private paths" converging on a "final common" path, and lead directly or indirectly from cortical reception-fields to those concerned with motor innervation. Disorder of these transcortical association-systems underlies the clinical phenomena of aphasia *as ordinarily understood.* Stress is laid on the fact that, anatomically, association-paths between cortical projection-fields must start from, and run into, these fields; hence ordinary lesions of the latter must inevitably involve origins or terminations of such inter-central paths. For this and other reasons complete "isolation" of the physiological systems concerned must be practically an impossibility, though, on the other hand, there is no reason to doubt that limited *functional disturbance* of association-paths occurs, and that a relative separation of the speech area from non-speech areas is a *possibility. It* is important to bear in mind, further, that the same motor cells of the cortex, say those innervating mouth, lips, tongue, palate, are used at one time in the function of speech, at others in totally different physiological combinations, and, since the function of motor speech may be grossly disturbed while the cells can be utilised for other functions, we cannot suppose the physiological defect to be localised in the cell-groups concerned. It must be outside them. Theoretically, therefore, apart from clinical and pathological considerations, disorders of speech must be disorders, physiologically, of higher mechanisms which play on those of a lower physiological level.

PSYCHOLOGICAL.

The subject increases enormously in complexity and intricacy when we turn to read, heard, written or spoken words, not as sounds, movements, &c., but as symbols or expressions of ideas. Speech is symbolic thinking, as Head has again recently emphasised; to adopt an illustration of Lloyd Morgan's, used originally in another connexion, the anatomo-physiological basis of speech is as different from symbolic thinking as is the movement of the needle on the gramophone record from the tune it can be made to play. Nor, indeed, is our illustration complete, for some hold that abstract thinking may proceed without utilisation of any of the "images" of speech. Letters and words are the signs for sounds, as already mentioned, but words are, in addition, symbols of another order altogether; they have a "content," a "meaning": as Bastian said, they are the counters by means of

QUEENSLAND HOSPITALS FOR THE INSANE.

THE general report of the Inspector of Asylums for 1920 contains the following details of the mental hospitals and reception houses in the State. On Jan. 1st, 1920, there were 1738 males, 981 females, total 2719 persons certified as insane in the State. During the year 318 males and 180 females were admitted into the mental hospitals, of whom 265 males and 141 females were admitted for the first time, while 53 males and 39 females, or 18·47 per cent., were re-admissions, as compared with 18·57 per cent. during the previous year. From the mental hospitals 145 patients were discharged recovered, and from the reception houses 41. The recovery-rate was 49·16 males, 54·78 females, 51·99 total per cent. for all the mental hospitals and reception houses in the State. This result is extremely satisfactory, for a number of recoveries take place in the mental ward of the Brisbane General Hospital of mental cases that have not been certified, and therefore are not included in the above figures. In addition to those discharged recovered, 19 males and 9 females were discharged to the care of their friends and relatives relieved or not improved. During the year, 129 males and 65 females died in the mental hospitals and reception houses, the death-rate being 7·40 males, 6·69 females, total 7·15 per cent. of the average numbers resident.

The numbers remaining in all the mental hospitals and reception houses at the end of the year were 1746 males, 951 females, total 2697, in addition to whom 26 males and 40 females were out on leave of absence; so that there were 1772 males, 992 females, total 2764, on the books certified as insane in the State. These figures show an increase of 34 males, 10 females, total 44 on those of the previous year. The proportion of the insane in 1920 was 3·74 per 1000 of the population (males 4·61, females 2·79).

The lectures, demonstrations, and practice papers have been given to the nurses and attendants during the past year at all three mental hospitals in accordance with the regulations laid down by the State Nurses' Registration Board. The nursing staffs at the three mental hospitals at present are: Goodna, 132 attendants, 96 nurses; Toowoomba, 64 attendants, 85 nurses; Ipswich, 57 attendants, 48 nurses; making a nursing staff total of 482.

AN OUTLINE OF SCIENCE.

Messrs. George Newnes are bringing out in fortnightly parts an "Outline of Science," edited by Prof. J. Arthur Thomson, following on the lines of Mr. H. G. Wells's well-known outline of universal history. The general aim of the Outline is to help the reader to get a clear and concise view of the state of present-day science in order that he may be able to follow with intelligence the modern advances and to share appreciatively in man's continued conquest of his kingdom. To middle-aged and middle-aging people who keep in the running of domestic affairs and politics it will come as a surprise to see how the discoveries of men like J. J. Thomson, Ernest Rutherford, and Frederick Soddy have made archaic their childhood's conception of dead or inert matter. The electron theory is, indeed, only just beginning to show us what electric phenomena actually mean. Similarly, the discovery of hormones at the hands of men like Starling and Bayliss is changing the whole face of physiology. If Prof. Thomson succeeds in bringing home to a large circle of readers a lively knowledge of these things he will have performed a great service to his generation. Part I. contains the Romance of the Heavens and the beginning of the Story of Evolution. The illustrations are striking and on the whole well chosen, although the photographs of planets are curiously woolly, and it is difficult to think of a view-point in space to justify the pictorial representation of the solar system on p. 16. Such popularisation of science is in harmony with the effort of the Selborne Society, to which Mr. W. M. Webb, F.L.S., calls attention in a following letter.

THE SELBORNE SOCIETY AND CINEMATOGRAPHY.

To the Editor of THE LANCET.

SIR,—In a letter which I wrote during the summer I mentioned that the Selborne Society was interesting itself in cinematography. The time has evidently come when an endeavour should be made to take advantage once more of what we may call non-theatrical films. There are many matters in connexion with science generally and natural history in particular, with customs, history, and travel which interest a large proportion of the public. The Society is beginning by introducing films into its extension lectures, one of which, with the help of travelling motor lorries carrying projection apparatus, can now be given anywhere in the country. It is forming a cinematography committee with the object of introducing more films of the sort which we have described into the cinema halls, to arrange entertainments where theatrical films are in the minority, to build up a film library, and, when prices of apparatus and films allow, to introduce the cinematograph into the ordinary curriculum of schools.

Sir George Aston and Sir Gilbert Parker have signified their intention of joining the committee, which already includes the following: Lieut.-Colonel E. S. Amery, M.P., Sir W. Watson Cheyne, M.P., Capt. W. E. Elliott, M.P., Mr. Joseph Hood, M.P., Mr. R. B. Frere, Sir Sidney Low, Mr. Oswald Mosley, M.P., Mr. Leslie Scott, K.C., M.P., Sir Ernest Wild, K.C., M.P.

I hope that any of your readers who are able to help in any way will communicate with me.

I am, Sir, yours faithfully,
WILFRED MARK WEBB, F.L.S.
The Hermitage, Hanwell, W. 7, Nov. 19th, 1921.

AN ANCIENT SCOTTISH HAIR-CAST.

To the Editor of THE LANCET.

SIR,—Mr. Alfred Ela, of Boston, U.S.A., has written calling my attention to an omission from the bibliography of my article on Hair-Casts which appeared in THE LANCET of Oct. 15th. Mr. Ela's contribution was to the *Boston Medical and Surgical Journal* in March, 1918, and ran as follows:—

> ". . . Review in *Archeological Journal*, 1916, lxxii., 402, of Banff Charters, A.D. 1232–1703, viz., Oct. 9th, 1232, lands 'were granted to Master Neis, the King's Physician, by Alexander II.'; Neis 'is reported to have obtained this reward for the service of cutting a hair-ball from his royal master's heart.' While the service seems shadowy, the fee was substantial."

I am, Sir, yours faithfully,
Cardiff, Nov. 9th, 1921. IVOR J. DAVIES.

CYNOTHERAPY.

To the Editor of THE LANCET.

SIR,—In reply to Dr. W. J. Rutherford (THE LANCET, Nov. 12th, p. 1038) I enclose a recipe for dog oil copied from Pharmacopœia Londinensis, date 1659, by "Nich. Culpeper, Gent., Student in Physick and Astrology." The book contains the name of an old owner thereof, thus: "Peter Reid, Senor. His book. Trafalger."

I am, Sir, yours faithfully,
VERE G. WEBB, M.R.C.P.I.
Haverstock-hill, N.W., Nov. 16th, 1921.

Enclosure.

OLEUM CATELLORIUM 146, OR, OIL OF WHELPS.

Colledg.—Take of Sallet oyl four pound, two Puppy dogs newly whelped, Earth worms washed in white wine one pound; boyl the whelps till they fall in pieces, then put in the worms, a while after strain it, then with three ounces of Cypress, Turpentine, and one ounce of Spirit of Wine perfect the oyl according to art.

Culpeper.—It is excellent good to bath those Limbs and Muscles that have been weakened by wounds or bruises.

THE LATE COLONEL A. B. R. MYERS'S AUTOPHLEBOTOMY.

To the Editor of THE LANCET.

SIR,—In your obituary notice (August 13th) of the late Colonel Myers no mention is made of his authorship of "Life with the Hamran Arabs"—an interesting book describing a sporting trip in the Soudan in the year 1875. It contains an incident of particular medical interest—viz., the performance of autophlebotomy (pp. 282–3). Having been prostrated with intense headache and nausea for several days as a result of sunstroke, he thought that blood-letting would do him good. As he had no European companion present at the time to perform the operation he was obliged to do it himself. He first opened a vein in his left arm, but this was ineffectual; he then did the same in the right arm and was successful in causing a flow of 8 oz. of blood. This caused some immediate faintness but procured the desired relief. In bygone days, when venesection was practised frequently and was better understood than it is now, the performance of it by a medical man on his own *corpus vile* may have happened occasionally, but I think that it must be very uncommon. I cannot remember any case recorded in literature.

I am, Sir, yours faithfully,
F. LUCAS BENHAM, M.D., M.R.C.P.
Exeter, South Australia, Oct. 5th, 1921.

PUBLIC HEALTH IN HONG-KONG.

A REPORT for the year 1919, prepared by Mr. A. G. M. Fletcher, Colonial-Secretary, estimates the total civil population at 598,100, including 13,600 non-Chinese. The birth-rate for the year was 3·9 per 1000 among the Chinese community and 20·6 per 1000 among the non-Chinese, as compared with 3·6 and 22·1 in 1918. The death-rate was 23·3 per 1000 among the Chinese and 19·9 among the non-Chinese, as against 29·6 and 19·5 in the previous year. The number of deaths from malaria (310) showed a decrease. In the City of Victoria the deaths of Chinese from this cause numbered 101 out of a population of 320,080, or a rate of 0·3 per 1000 per annum. The deaths from plague numbered 426, as compared with 251 in 1918. Small-pox deaths numbered 15, all Chinese.

speech which may not be strictly necessary for comprehension but are, nevertheless, essential for correct speaking. It is more particularly prepositions and articles which are omitted and nothing really shows the poverty of the patient's language so much as their omission. The following letter was received from an aphasic in answer to a request for a report on his condition:—

> Dear Sir,—Speech, difficulty of speaking. Arm, leg, no improvement. Pain thumb, no grip. Loss of memory, serious. Brain fag recovering, although slowly.—Yours truly.

As the *child at school is taught to spell* by letters and by syllables, so acquiring his knowledge of the morphology of words, in a similar but reversed way the disintegration in the morphology of speech caused by a cerebral lesion may result in the aphasic's having great difficulty with letters and syllables, not as regards their enunciation but as regards their correct employment. He may lose his power of spelling, but apart from that he may persistently use wrong letters or syllables and *often a long trial-and-error* process is necessary to get the correct result. Thus one patient said "shapple," "shaplin," "shapnel" in succession before he got "shrapnel"; another said "tuning-thorn." "tuning-thork," en route to "tuning-fork"; and so on. Once more, the aphasic often begins sentences which he never finishes; sometimes he has two or three words correctly put together but ending "in the air." I asked one of my patients how he was, and the answer came: "Well, I can't . . . . I never . . . . I'm a little . . . It's really. . . ."

This defect is to be distinguished from what has been improperly called the "pseudo-agrammatism" of inability to recall the names of objects. In this case the patient will speak quite correctly but is forced to employ one periphrasis after another owing to his lack of substantives: and, on occasion, the emotional comes to the aid of the intellectual, as with a patient suffering from this amnesic difficulty who was shown a photograph of his son and asked what it was. He answered in a crescendo fashion: "*my* . . . . *it's* the . . . . it's my . . . . oh! . . . . he's my . . . . oh dear! . . . . he's my boy!"

This difficulty in naming objects, in finding substantives, has long been known and its definiteness led Mills, on clinico-pathological grounds, to postulate a "naming centre" in the temporal lobe; more recently, Head has coined the term "nominal aphasia" for a type which includes this particular defect. Undoubtedly disorders of the nature of agrammatism run like a thread through most of the clinical types, and yet we must take care to limit the conception. Pick emphasises the fact that higher grades of paraphasia and of jargon-aphasia, *for example*, ought not to be classed with agrammatism, since in them the impairment lies at another level; he furnishes evidence, nevertheless, that agrammatism and a degree of paraphasia are apt to occur in combination, and that their basis is disturbance of a physiological mechanism localised mainly in the temporal lobe. The subject needs further investigation. Recent work by Förster points to a frontal localisation for the mechanisms underlying the grammatical structure of speech; Maas, on the other hand, considers agrammatism the result of the imperfectly equipped right hemisphere essaying the function of speech when the speech areas of the left are destroyed by large lesions.

Some Considerations on the Clinical Varieties of Aphasia.

For that large class of case in which the patient is unable to understand what he sees or hears I prefer to substitute the term "receptive aphasia" for "sensory aphasia." As regards audition, it should be understood by the *student that* an aphasic may suffer either from word-sound-deafness or word-meaning-deafness, and that these two conditions are distinct. He may hear sounds and tones but not be aware that they are word-sounds; or he may know them to be word-sounds but have no idea of their meaning. A foreigner ignorant of English is word-meaning-deaf to the English tongue when he hears it spoken, but not word-sound-deaf. Similarly, as regards vision, the patient may be word-sight-blind, or word-meaning-blind. In the former case he sees written or printed letters, syllables, and words as mere objects, and is unaware that they are speech-symbols; in the latter he is conscious of their being symbols for ideas, but *these symbolic meanings are not aroused by the sight* of the words.

The subjects of *receptive aphasia* have usually considerable capacity for expression, but their words are often incorrect and their agrammatism is sometimes peculiarly pronounced.

A brief excerpt from the notes of a case of this description may here be given. Unable to read a word and incapable of appreciating any but the very simplest requests, the patient was asked "How are you this morning?" and in answer rambled on as follows: "Well, just the same . . . . I know all my six little boys . . . . right away . . . . I know them all myself like . . . . I do I know if I could get away like . . . . There's six of them plenty of them . . . . There's the thing and I can't . . . . I am myself then plenty . . . . I know myself then, poor little old dears . . . . There's three little old boys . . . . Six of this lot . . . . There's two of them like . . . . There's two little old boys . . . . I know it myself if I could have got it . . . . Little old boy . . . . Anna, Anna, Anna . . . . Three to-day, Anna . . . . Poor little old dears . . . ." &c., &c. In contrast to this largely meaningless logorrhea the same patient was able to express his meaning by rich and accurate pantomime and gesture, and while he failed to give a name to any object he indicated its use quite correctly. As for letters and words he was unable to name a single one. When given a little hand mirror and asked to name it, what he said was "That's two for Jimmie . . . . Anna . . . . Anna's the boy . . . ." while what he did was to *hold it up to his face and glance into it with a smile.*

With so difficult a line of approach to the examination of cases of *receptive aphasia*, it *is remarkable* that one is sometimes able to get an unexpectedly good response if one can "tap" acquisitions which have become automatisms. This is true, indeed, of most cases of aphasia. Some sufferers from the condition can sing what they cannot "say"; a patient sang accurately the air and the words of a ditty which begins "Oh, I'm longing for my dear old home again" when he failed to say or use any of the words in other combinations in speech. Another was unable to say any of the numerals to order, or to use any of them in a sentence, but when shown the figure 1 in *print* he suddenly began to count and counted rapidly to over 20, when he was told to stop. Henschen has recently collected evidence, worthy of the attention of the student, which suggests that such acquired *automatisms* are located physiologically in the right hemisphere; the problem in many cases of aphasia is not one of *destruction* of engrams but of inability to arouse them.

Word-deafness in the sense of *word-sound-deafness* sometimes occurs almost in a pure state. The sounds of words are not distinguished by the patient from any other sounds, but his auditory engrams are utilisable for reading, writing, and speaking, though he cannot repeat words on request and cannot write to dictation. Before making the diagnosis one must be sure that his actual hearing is unimpaired. Subcortical lesions in the temporal part of the speech area have been shown to produce this variety of aphasia.

Word-deafness in the sense of word-meaning-deafness is a condition of remarkable interest. The patient hears words and knows that they are words, but these word-sounds, reaching his auditory centres, do not from thence awaken the meaning of the word, the concept for which it stands. Such patients often repeat correctly, parrot-like, what they hear, not knowing what it means; they write correctly to dictation, or copy, or read aloud, without knowing the *meaning* of what they read or write. To this variety the name "transcortical sensory aphasia" has been given, a term which for reasons stated above is unsatisfactory.

An Introduction
TO
THE STUDY OF APHASIA.

A Lecture delivered at the National Hospital for the Paralysed and Epileptic, Queen-square, on Oct. 31st, 1921,

BY S. A. KINNIER WILSON, M.D. EDIN., F.R.C.P. LOND.,
PHYSICIAN FOR OUT-PATIENTS TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.

APHASIA is a subject the study of which, difficult enough in itself, seems fated to be rendered more confusing and complex by controversy and by terminological disagreement. One of the factors in this intricacy is the possibility of approaching the problem from anatomical, physiological, and psychological sides alike, and investigators have not always been careful to avoid inappropriate transference of terms or even of conceptions from one system to another. For example, the term "centre" occurs with some constancy in descriptive accounts of aphasia, but its meaning has been so variable as often to lead to erroneous impressions. An anatomical "centre," an anatomical projection-area, may be exactly delimited, as in the case of the visual area in the calcarine cortex, the Betz-cell motor area of the precentral cortex, and so on. A physiological "centre,' on the other hand, indicates the focus of functional activity of the particular system concerned, and is not of necessity identical in site with its anatomical correlate; a "process" is not to be localised morphologically. Thus, for example, the physiological "centre" for motor cortical activity can scarcely correspond precisely to the Betz-cell anatomical system. Thirdly, however, cerebral function has a psychological aspect, and only too often has the writer on aphasia speculatively postulated psychical or ideational "centres" (e.g., Grasset's "centre O") which cannot possibly correspond to anything on the anatomical or physiological levels, but for which the same term is used. It will therefore be seen how unsatisfactory are the various schemata devised by the ingenious to simplify and organise the complexity of the cerebral speech mechanism. The plotting out of physiological centres on paper almost inevitably leads to the conviction in the student's mind that they stand for anatomical areas of the cortex, which is far from being the case, while the drawing of lines of communication between these physiological centres and a psychical or ideational "centre" makes confusion worse confounded.

Graphic anomalies apart, however, it is unwise in my opinion to divorce the psychical or psychological component from its anatomo-physiological counterpart. Speech is an intellectual process and behind the overt expression lies thought, but neglect of the anatomical and physiological basis of speech is largely responsible for the present confusion, for the psychologist is not interested in, or is tempted to ignore, the patiently acquired facts of cerebral localisation of function, and confines his attention to speech disorders as disorders of the psyche, the "localisation" of which is supposedly irrational. Yet when a small area of softening in the left hemisphere renders a patient mute, when another makes it impossible for him to read, the clinician must either forego all effort to correlate the two, or in spite of theories of psychical process must admit that local lesions of the brain may be associated with partial disorders of an intellectual mechanism. In this connexion not enough notice, I fear, has been taken of the work of Shaw Bolton in this country and of the Swiss school (von Monakow, Berze, Fankhauser) according to which there is evidence that certain layers of the cortex, considered in their whole extent, constitute the anatomo-physiological basis for certain forms of psychical activity, and, however long the step be towards proof, it is a step in the right direction.

A given aphasic symptom-complex may be looked at in three ways: What is the anatomical site of the lesion producing the defect? What are the physiological mechanisms involved? What is the nature of the psychological disorder? No study of the subject can make any pretence at completeness if any of these three aspects is ignored, nor, on the other hand, can it be harmonised with clinical data if anyone is elaborated at the expense of the others.

ANATOMICAL.

It seems superfluous to point out that by universal consent we are justified in stating that in right-handed persons the lesions apt to be associated clinically with disorders of the function of speech are situated in the left cerebral hemisphere, and in a certain part or parts of that hemisphere. According to Henschen some 1500 autopsies on cases of aphasia have now been made, and the cumulative effect of this weight of evidence, pointing as it does to the existence of a cortical speech area, cannot possibly be ignored. Exceptions but prove the rule. A glance at the charts published by Niessl von Mayendorf will suffice to show that lesions within a more or less well-defined cortical region, extending from the posterior part of the lower frontal lobe across by the island of Reil to the upper temporal and lower parietal areas, are likely to reveal themselves clinically by aphasia in one or other form. In the so-called negative cases mere macroscopical examination is insufficient. The histological study of the cortex has reached so fine a pitch that no case can be called "negative" if this has not been undertaken.

Whether localisation of lesions within this speech area, to correspond to clinical varieties, can be established is to some extent doubtful. The time-honoured division of aphasia into motor and sensory types—a physiological classification—recognises the existence of two differing groups whatever be the terminology adopted, and it is legitimate, physiologically, to distinguish efferent from afferent impairment of function. Whether it is useful may be another matter. As far as speech is concerned the doubt is whether one type of symptom ever occurs without the other, though it be in varying proportions. According to this "global" theory large lesions in the speech area are followed by gross aphasic disorders and small or limited lesions by limited aphasic disorder; in each case an aphasic disorder as a whole. The so-called pure cases of the condition—i.e., of one or other clinical variety to the exclusion of the symptoms of another—are in reality doubtful and their apparent occurrence is due, perhaps, to an unconscious trend towards schematisation; the more thoroughgoing the clinical examination the less likely are such cases to be recorded. It is a fact, none the less, to which attention must be directed, that in a given case disorder of speech may be largely limited to the receptive or to the expressive side, or indeed to but one aspect of reception or expression. There is justification, moreover, in seeking limited lesions for small aphasic disturbances, though no correspondence between anatomical size of lesion and physiological amount of impaired process is to be expected, in any regular way. The clinical symptom of astereognosis, or inability to recognise the qualities of an object by touch and so to name it, is the result, in cerebral cases, of limited lesions of the superior parietal lobule, a fact often demonstrated by operation or post mortem; and there is no good reason why inability to recognise objects by sight, or any other analogous defect on a similar plane, should not be equally the outcome of a lesion localisable with the same relative closeness.

The task of assigning disorder of function to site of anatomical defect is none the less peculiarly arduous. A tendency to correlate symptoms with naked-eye lesions and to ignore the necessity for the exact determination of their extent by the microscope is to be deprecated; further, the effect "at a distance" eclampsia supervenes. And if such lesions arise, a toxæmia must develop. A necrosis, a cloudy swelling, or even a mere persistent inactivity of cells of such important organs as the kidneys and liver, cannot exist to any extent without causing a toxæmia. If the liver is not working sufficiently, a rise of amino-compounds (and allied bodies) in the blood must occur §; and if simultaneously the kidneys are inactive, the percentage increase must become great. Such substances come largely from the intestine; and the importance of food, especially of protein food, in the rise of toxæmia is well known, and in the treatment of these cases relative or complete starvation holds a high place. Pinard, in many years' experience, had never seen eclampsia occur in a woman kept on milk for eight days (Smyly[16]). Hastings Tweedy allows water only; I agree with him that in these cases milk acts as a poison. But whilst Prof. Tweedy seems to think that milk or other foodstuff is absorbed unchanged or insufficiently changed, because of the absence of the proper enzymes or antibodies in the intestinal wall,[17] I am of the opinion that poisonous effects arise because the liver is incapable of playing its true part.

Toxæmia an Aberration of Normal Metabolism.

The toxæmia which ends in eclampsia is for me simply an aberration of normal metabolism, and eclampsia simply a uræmia, distinguishable from other acute uræmias only in the method of its production. The condition of the blood and urine in the pre-eclamptic state supports this view. It was recently pointed out that there is usually no increase in the non-protein nitrogen and urea in the blood in these cases, and that this fact serves to distinguish true *eclampsia from uræmia* due to chronic interstitial nephritis complicating pregnancy.[7] But how can such an opinion be admitted, if it is allowed that the liver is necrosed to any extent, or that its cells are rendered in any way inactive? We can understand that the urea should not be increased or should even fall, but it is impossible to think that *amino-compounds do not enter the blood* in greater extent than before, provided the intestine contain them. Indeed, a direct contradiction to the statement is afforded by the work of Killian and Sherwin, who found that in 22 cases grouped as hepatic toxæmias (in 20 of which convulsions occurred), the non-protein nitrogen was invariably high above the normal limit, being doubled in some cases. The uric acid, similarly, was much increased; on the other hand, the urea was diminished.[6] This is in line with the urinary changes. There is, I understand, in the urine of these cases a high proportion of undetermined nitrogen[18]; where can the latter come from, except from the blood?

Opinions of Other Workers.

Other workers have believed that the maternal visceral lesions are primary. Lever, in 1843, believed that puerperal convulsions result from undue pressure by the pregnant uterus on the renal veins; and that such changes as occur in the blood are due to the consequent interference with the function of the kidneys. In support of his opinion, he pointed to the differences which obtain in different pregnant women in respect of the bulging of the belly wall—arguing that such differences show that the kidneys must be subjected to more pressure in some than in others.* And although his conception fell through—because pressure on the renal veins could not be admitted, and because it did not explain the hepatic lesions, at that time unknown—yet subsequent authors have been unable to demonstrate that the differences in the belly wall, to which he referred, are without significance in this question.‖ Similarly, in France 50 years later, hepatic insufficiency is apparently regarded as explaining eclampsia. Bouffe de Saint-Blaise, following Pinard, apparently believes that a lesion of the liver is primary; and that such always precedes and indeed is the cause of the kidney lesions. But he admits that to explain the hepatic change is embarrassing. He attributes the lesion to "heredity, some previous disease, or some other morbid disposition"[2]—an explanation so weak that no one will accept it.

In recent years the difficulty has always been to explain the maternal visceral lesions; this difficulty has led to the postulation of a preceding toxæmia—arising from the placenta, the ovary, the thyroid, the breast, the intestine, and even from the fœtus itself. No one, apparently, has attempted to differentiate such a suppositious toxæmia from the toxæmia resulting when liver and kidneys have become diseased; yet clearly, if a preceding toxæmia arises, the two toxæmias must be very different. Admission of the existence of maternal visceral lesions before the onset of the fits does not, of course, dispose of the possibility that a strange toxæmia arises before the visceral lesions, or, indeed, that it causes them; but such an admission injures that hypothesis very severely, for granted the existence of such lesions, everything in eclampsia, except these lesions, is explained. Given the maternal kidney and liver lesions, it is unnecessary to look for a strange toxin arising from anywhere.

Rise of Maternal Liver and Kidney Lesions.

My conception is new in this, that irrespective of a preceding toxæmia, it explains the rise of the maternal kidney and liver lesions. In my opinion the necrosis is ischæmic—a necrosis due to a shutting-off of blood-supply determined by an occlusion, not of the supplying arterioles, but of the capillaries into which these arterioles lead; and the occlusion is produced, not by a thrombosis, but by a pressure. The thrombosis is secondary (not primary) to the necrosis; the pressure is an exaggerated intra-abdominal pressure, produced in certain cases of pregnancy, to which rises induced by activity, and especially by labour, are superadded. In some cases liver lesions, in others kidney lesions, may appear first and be most marked; as a rule, both arise together. Such a compression of the kidneys, for instance, will clearly explain the anuria, which in the presence of a toxæmia induces the fits. But a compression of kidneys and liver, if great enough and persistent enough, will explain the necrosis of their cells (and, indeed, of the preceding change), whereby a toxæmia appears. It will explain not only the visceral necrosis, but also the selectiveness of this necrosis; it explains necrosis occurring in the kidney and in the liver cells, whilst the cells of the stomach, intestine, and pancreas escape. That such a force is in play is indicated not only by the futility of alternative hypotheses, but by many positive considerations.

Outline of the New Conception.

With the time at my disposal it is impossible to do more than briefly outline this conception. It is based on the previous conception that intra-abdominal pressure is a vital force,[11] dependent on the reactions of the body wall muscles, and fundamentally related with general, and more particularly with visceral, metabolism. It was the natural result of the discovery that intra-abdominal pressure is raised in pregnancy, and of the reasoned opinion that this pressure is more raised in some cases than in others. It is confirmed by the incidence of eclampsia. Many considerations show that intra-abdominal pressure is intimately related with general metabolism,[12] and its increase in pregnancy has been demonstrated.[13] It was objected that the pressure found in accessible viscera is not an index of the intra-abdominal pressure, but the result of contraction of the gut wall.[15] But this view is untenable. In 1917 I performed Cæsarean section for eclampsia, and with the manometer in position made the following readings of which thought is carried on. Speech, in fact, is an intellectual process and it has always, therefore, appeared to me idle to attempt to distinguish speech disorders from intellectual disorders; the controversy, in any case, is bound to prove somewhat barren. Osnato has stated that intelligence in its widest sense, speech, and eupraxia, are one and the same process, and that they develop together and disintegrate together; if this is too much of a generalisation, it is nevertheless impossible, and impracticable if it were possible, to say where speech defect ends and general intellectual defect begins. Psychologically, speech disorders are disorders of the Gesamtpsyche; local lesions of structure, limited disorders of physiological mechanism, and partial disturbances of psychical process, cannot conceivably be superimposed one on the other within identical boundaries or be made to correspond precisely; the units of the standards whereby they are measured are not of the same order.

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§ Caldwell and Lyle seem to think differently.

‖ Ahlfeld's conception (1908) seems to have been similar. He laid stress on the pressure within the abdomen, and pointed to the striæ in the skin as evidence of it. And he wrote:—"Without a preceding insufficiency of the kidneys, no puerperal eclampsia." But he believed that a specific poison is at work which only in pregnancy is secreted.[4]

But we shall make no advance in the study of aphasia as a cerebral symptom or a psychical disturbance if we do not take our stand on the clinical certainty that varieties of speech impairment occur, are recognisable, can be differentiated, and are of practical and localising significance. For the clinician the problems of aphasia have to be faced in exactly the same way as those of disorders of function of the non-speech parts of the brain.

CLINICAL FORMS OF APHASIA.

Much of the dissatisfaction expressed from time to time in reference to the classification of aphasic disorders is due to confusion of thought as to the basis of that classification. From what has already been said, it will be clear that aphasia can be classified in an anatomical, physiological, or psychological scheme, but we must avoid, as has been already remarked, any transference of the terms used in the description of defects of one of these systems to the defects of either of the others. Aphasia being, in essence, a symptom or symptom-complex, we might ascertain the general site of the lesions calculated to produce it, and endeavour to correlate clinical varieties with variation in the position of the latter. We might, conceivably, speak of frontal, parietal, temporal aphasia, &c., though such a scheme would be difficult to particularise. "Island aphasia" (Inselaphasie) is a term which has never come into vogue in this country, but it represents a form of aphasic defect which appears to be the expression of local lesions involving the island of Reil and in this sense is an anatomically descriptive term. Again, aphasic disorders are commonly classed as motor, sensory, or mixed; "transcortical motor" and "transcortical sensory" are further varieties capable of clinical differentiation; "conduction aphasia" (Leitungsaphasie), too, can be recognised. These are physiological distinctions, and though much is indefinite, and still more speculative, the physiological classification of aphasic disorder is in the first place thoroughly legitimate, and in the second place has proved of practical clinical value from the viewpoint of cerebral localisation.

A third classification takes into consideration solely the psychological side and analyses speech disorders as disorders of the Gesamtpsyche, anatomo-physiological correlates not entering into the scheme. The most recent and noteworthy endeavour to classify aphasia psychologically is that made by Dr. Henry Head, for the details of which the student may be referred to his recent papers on the subject. It may be questioned whether in the present state of knowledge a pure psychological grouping must not remain more of scientific than of clinical interest, but for that matter no one of the three schemes is by itself satisfactory. There are certain important psychological characteristics of aphasic disorder in a general sense, largely common to all varieties; on the other hand, there is a definite association between certain clinical varieties and the interruption of certain mechanisms of a physiological order. It appears to me that until further advance is made a psychological arrangement has the disadvantage of losing touch with cerebral function, while an anatomo-physiological arrangement is calculated to introduce an artificial simplicity into a particularly complex subject and to ignore what must always be its fundamentally significant side. Without prosecuting further this matter of classification I wish to direct attention to some points, consideration of which is an essential prelude to the study of the disorders of speech.

Intellectual and Emotional Speech.

To the acute intellect of Hughlings Jackson we owe appreciation of the difference between the "interjectional" and the "propositionising" use of words as symbols of thought. The former is an element in emotional and the latter in intellectual speech and one may be grossly affected without proportionate impairment of the other. In ordinary aphasia there is commonly relative conservation of emotional speech; it is not infrequently noted that a patient with a limited vocabulary, the result of disease, will nevertheless contrive to convey the most varied meaning to his words by alteration of inflection, tone, accent, stress, and emphasis, and this can be done even when he has but one word to say, but one string to play on. Often, too, abundance of gesture makes up what is wanting in intellectual speech. The aphasic may say "Yes" when he means "No" and may have to depend on emotional speech, or on one or other of the above makeshifts, to express his real meaning. Or, again, he can often ejaculate words emotionally which he cannot use at all in the form of a proposition—i.e., in correct, logical speech. One of my patients who suffered from motor aphasia in the ordinary sense saw a Zeppelin descend in flames one night on the outskirts of London and ejaculated "Hallelujah!" under the stress of his emotion, which word he has never since been able to repeat "propositionally." An aphasic patient may swear with fluency when no amount of urging will get the same words out in the form of a "proposition." In one case of paraphasia from a temporoparietal lesion the patient was so irritated by his frequent mistakes—at breakfast he said "pass the ink" instead of "pass the salt"—that an only too correct "damn!" escaped his lips, whereupon his wife rated him soundly for swearing before the children.

Loss of emotional speech, intellectual being preserved, has not been the subject of much investigation, interesting though it is. Years ago Brissaud spoke of patients who had lost "le chanson du langage," and who were incapable of adding emotional meaning to their words by the light and shade of accent and emphasis. Their speech was one long monotone. Elsewhere I have recorded a case of this description, but it is not clear whether such disorder may not accompany lesions at a lower physiological level than that of ordinary aphasia.

Agrammatism.

Not enough attention has been paid, perhaps, to the grammatical and syntactical aspect of the subject, which is of fundamental importance. As words are made up of letters and syllables, so sentences are made up of words, and they are intellectually meaningless unless they are properly constructed. The path from thought to intelligent expression lies through the sentence; hence in aphasia difficulties with the sentence are prone to occur, and the aphasic often reverts by a process of involution to the standard of the child learner, who has trouble with those parts of speech that are concerned with qualifying and correlating. In the words of Mills, the grammar of language no longer exists for the aphasic. Agrammatism as defined by Arnold Pick is "that form of pathologically altered speech in which the essential elements for the grammatical and syntactical structure of speech are either lost or imperfectly employed." Many clinical examples might readily be furnished. Arising out of the same basic impairment is the tendency of many subjects of aphasia to speak or to write in the "telegram style," omitting parts of

Incidence in Labour.

Lastly, there is the effect of labour to consider. Labour naturally causes, at intervals more or less prolonged, very great rises of intra-abdominal pressure; and if an exaggerated intra-abdominal pressure is related in a causal way with the rise of the maternal visceral lesions, labour should sometimes be related to eclampsia. Whilst eclampsia usually induces labour, the latter occasionally precedes the unconsciousness and the fits. Post-partum eclampsia, I submit, must be attributed to the effects of labour; in such cases labour no doubt acts on viscera prone to the disease, but this proneness is explained by the state of pregnancy—i.e., by the pressure which has prevailed. We know that the albuminuria of pregnancy is made worse by labour; and even that albumin, at times, first appears during this act—thereby bringing labour into line with the strains of athletes. Labour occasionally causes some transient change in the kidneys; so also it sometimes determines a change in the liver—even necrosis!

The evidence of accouchement forcé in eclampsia must be borne in mind. Before this treatment was superseded by Cæsarean section it was believed by some to have a pernicious effect—the reason, I submit, being that it caused too much straining. The inference is that too much straining acts deleteriously on kidneys already diseased, as also on a liver already inactive, about to necrose, or in parts necrotic. The effect of prolonged labour due to obstruction must also be remembered; from the evidence at hand it seems that even healthy kidneys and a healthy liver can become necrosed by this means. The history of vagino-fixation, should the patient become pregnant, appears to afford such evidence. Macan relates a series of disasters following the operation from the German School. Eclampsia occurred certainly twice, and I believe three times, being attributed to some angular distortion of the ureters due to dislocation of the bladder. But this dislocation of bladder and kinking of ureters will not cause necrosis of liver cells. The only factor at work to which this causation can be assigned was, I submit, the straining for hours.[††] [9]

Conclusion.

I shall not enter upon the question of the effect of an exaggerated intra-abdominal pressure on the blood flow through the viscera. I simply remind you that the blood in its course chooses the easiest path, and that not all organs, or all parts of the same organ, are supplied in quite the same way. The great mass of blood reaching the liver has first to pass through the gastric and intestinal capillary network—with the possibility of escape by œsophageal and hæmorrhoidal veins, or, indeed, with rupture of gastric capillaries, by way of the stomach, as black vomit—for instance, during labour—which I suppose every one has seen. And as regards the kidneys, the blood reaching the convoluted tubules has first to traverse the capillary networks forming the glomeruli, with the possibility of escape by way of the medulla. Clearly, if the blood is obstructed in the cortex but escapes by the medulla, the selectiveness of the necrosis in eclampsia is explained. Similarly, if the blood flow through the liver is sufficiently impaired, liver inanition and patchy necrosis becomes intelligible. The question is whether an obstruction due to pressure and sufficient to cause such changes actually occurs in these secondary capillary areas. Does a study of intra-abdominal pressure and of the incidence of eclampsia warrant the acceptance of the idea? I submit that the evidence more than suffices to justify such a conclusion.

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[††] Ruhl made a journey of some hours to see a patient on whom he had performed this operation, on receiving from the midwife a message that though the woman had been in labour more than 48 hours, and the pains were very strong, the os uteri could not be felt (Macan). This patient, however, recovered without eclampsia.

VALUE AND COMPARISON OF RENAL EFFICIENCY TESTS.

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Various methods have been suggested during recent years for the estimation of the efficiency of the kidneys, both for the purpose of general prognosis and for guidance in treatment. It is necessary that any method to be generally employed should, in the first place, be both accurate in result and, in the second place, reasonably simple to perform. Among the tests discarded, at least to a considerable extent, as not fulfilling sufficiently these requisites, are the coefficient of Ambard, the test-meal or excretion-fixation method, and the diastase test. The coefficient of Ambard is a figure representing the relation between the amount of urea in the blood and the urea excreted daily in the urine. Objections have been raised against this method—by Chace and Myers,[1] that it does not give information beyond that obtainable by estimation of blood-urea; by Addis and Watanabe,[2] that the rate of urea-excretion is not dependent upon its concentration in the blood and urine; and by Van Slyke and Cullen,[3] that the method contains several inherent fallacies. The test-meal method of Mosenthal and Lewis,[4] which involves careful collection of the urine at two-hourly intervals throughout the day and rigid adherence to meal-times, is for this reason liable to fallacy; otherwise it is simple to carry out, and consists in the comparison of day and night urines in regard to quantity and specific gravity. The diastase test, which consists in estimating the activity of amylolytic ferment excreted in the urine, has been described by MacLean and Russell[5]; but as the amount of pancreatic diastase excreted both by healthy persons and by nephritics varies within wide limits, and as

Yet it must be repeated that however objectionable the nomenclature the clinical occurrence of the type must be accepted. Because of the persistent echolalia the patient is often taken to be demented; the most striking example of this variety of receptive aphasia I have seen was in an inmate of an asylum. For further information reference may be made to the recent admirable monograph on the subject by Kurt Goldstein. In severe atrophic lesions of the temporal lobe the syndrome is prone to occur.

For the familiar "motor aphasia" of the text-books I prefer to substitute the term "expressive aphasia." The patient cannot express himself in words, and this without paralysis of articulatory mechanisms, for what words he has he articulates correctly enough. He will show by his actions and his response to stimuli that his intelligence is largely unimpaired and that his sole handicap is inability to express what is obviously in his mind, except by such makeshifts as have already been mentioned. It is no uncommon experience to find the subject of expressive aphasia indicating by varied stress and intonation of his single word or few words how much meaning he is trying to put into them.

It is impossible to say where expressive aphasia begins or ends and nothing is to be gained by hard-and-fast delimitations which are, indeed, contrary to what one has reason to expect. In my use of the term I simply wish to emphasise the clinical fact that in the general class of aphasic disorders is a type characterised, above all, by this defect in audible expression of words. Allied to the above is a further interesting clinical variety whose chief feature is that the patient is not able to say spontaneously what he can easily repeat *to order*; similarly he cannot write spontaneously, or only very poorly indeed, whereas he copies and writes to dictation with fluency. Such cases bear a close resemblance to those cases of apraxia in which the patient is unable to perform spontaneously what he is able to do by imitating movements made in front of him. It would appear that what cannot well be said voluntarily, can be said on receipt of adequate stimuli from certain sense avenues. To this variety the name "transcortical motor aphasia" has been given, but we have seen that all aphasia is, physiologically, transcortical, so that the term is confusing and should be abandoned. Expressive aphasia in the sense of word-dumbness is undoubtedly apt to occur with lesions situated in the more anterior part of the general speech area of the left hemisphere, or with others that interrupt association paths from temporal and parietal areas converging on this anterior region.

RELATION OF APHASIA TO AGNOSIA AND APRAXIA.

Word-deafness and word-blindness are defects of recognition; the patient sees and hears but he does not understand. Now there are other defects of recognition than those concerned with words. He may see objects, but may not recognise them by sight; he may taste, smell, touch objects, but fail to recognise them by these sense avenues. He may fail by one avenue but succeed by another. The general name given to this symptom of failure to recognise is agnosia. Thus we may have visual, tactile, auditory, gustatory, olfactory agnosia. From this point of view word-deafness is a variety of auditory agnosia; it is agnosia for the sounds of words. "Transcortical sensory aphasia," as we have seen, is agnosia for the meanings of words. Exactly analogous defects can be demonstrated in the case of word-blindness and in the case of the musical functions.

On the expressive or executive side, the patient with expressive aphasia has no paralysis of the musculature of lips, tongue, palate, &c., but he cannot speak. In agraphia, there is no paralysis of the small muscles of the hand but he cannot write. The generic term now employed for inability to perform certain acts, where no paralysis prevents their execution, is apraxia. Looked at in this way, motor or expressive aphasia is apraxia of the lips, tongue, palate, &c., for the movements of speech. Agraphia is apraxia of the arm and hand for the movements of writing. Aphasia and agraphia may thus be, and not infrequently are, part of a larger apraxia—viz., apraxia for other movements than those implicated in speech. Sensory or receptive aphasia may be, and often is, part of a larger agnosia—i.e., an agnosia for other things than words.

CONCLUSION.

Appreciable advantages are secured by regarding aphasia as part of a wider cerebral syndrome—viz., that of apraxia and agnosia. If aphasia is to be considered a disorder of symbolic thinking, it is important to grasp the fact that such disorder may reveal itself where no words, as such, come into the question at all. Yet unless some explanation such as that provided by the conception of apraxia and agnosia is offered, the limits of aphasia proper will be stretched unjustifiably. A patient who dresses himself wrongly or makes mistakes or "short-circuits" in performing any act such as lighting his pipe, shows a disturbance which cannot by any legitimate means be regarded as aphasia, but the disorder is certainly one of agnosia or of apraxia. By the utilisation of these modern conceptions the way is paved for a more comprehensive insight into cerebral activities, both on the receptive and on the executive side.

ECLAMPSIA AND ITS INCIDENCE.*

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IN presenting a new conception of eclampsia, I have in mind not the fits and coma, but the toxæmia and maternal visceral lesions. That the toxæmia causes fits and coma is admitted: the problem lies in the *causation of the toxæmia*. Several explanations have been suggested—notably that the toxæmia results from necrosis of the placenta; Young considers that it arises from a placenta undergoing autolytic changes.[20] [21] Presumably the placental toxins, besides causing a toxæmia, also determine the lesions pathognomonic of eclampsia. Whether Young would allow that the maternal visceral lesions are of importance with regard to the toxæmia he has not (as far as I am aware) definitely stated. In support of his opinion, Young referred, a year ago, to the effect of releasing a tourniquet above the shattered part of a limb.[21] It must be allowed that the absorption of chemical bodies (toxins) arising from the extravasated blood and damaged tissues does produce a toxæmia; but that absorption does not produce eclampsia. Such a procedure is not followed by convulsions and coma; nor has necrosis of the liver and kidneys been demonstrated *post mortem* in such cases.† How trying would it be if every bruise produced eclampsia! ‡ To suppose that changes of a like order in the placenta cause eclampsia is, in my opinion, equally absurd.

Rôle of Maternal Visceral Lesions.

My conception, as opposed to that of Young, is that the maternal visceral lesions explain the toxæmia. That such visceral lesions precede eclampsia must be admitted; they cannot be merely terminal events in the disease. Although we may believe that the hæmatomata of the liver, sometimes found, are caused by the fits, and even that the fits exaggerate the pathological process, the view that the fits cause the lesions is untenable. Sometimes there are no fits, and the case ends with coma; but coma cannot cause the visceral lesions. In the albuminuria, the presence of casts, vomiting, and manifestations of hepatic derangement we have evidence that a change in the kidneys and liver often occurs long before

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*A paper presented at the Section of Obstetrics and Gynæcology of the Royal Society of Medicine on Dec. 1st, 1921.

† It is stated that the injection of the products of damaged muscle, experimentally, may kill the animal at once or later: and that in the latter case changes in the liver resembling those in eclampsia are found. (*Quoted by Young in his argument.*[21])

‡ According to Young, even a placenta, presenting no macroscopic change, may cause eclampsia.[21]

TABLE I.—*Parenchymatous Nephritis.*

Case.	Age and sex.	Clinical diagnosis.	Date.	Blood pressure.	Amount, in c.cm., of 24 hrs. urine.	Albumin percentage.	Casts.	Phenol-sulphone-phthalein excretion percentage.	Urinary urea-concentration percentage.	Blood-urea, mgr. per 100 c.cm.	Wassermann reaction.	Remarks.
			1921					1 hr. 2 hr. Total				
1	13. M.	Acute nephritis.	2/4		570	0·04	Bl., ep.	40. 26. 66	3·2	63	—	Condition became subacute.
			11/4	115	1140	0·04	,,	60. 20. 80	4·0	41		
			26/6	112	340	0·06	None.	28. 22. 50	4·0	64		
2	58. M.	Subacute nephritis.	9/3	242	2000	0·6	Hy., gr., ep.	Trace.	1·3	128	—	Left hosp. unfit for work, invalid. Died 7/11/21.
			4/4	204	1420	0·5	,,	,,	1·3	167		
			20/4		2000	0·5	,,	5	0·8	94		
			2/5		2000	0·3	,,	2	1·0			
3	45. M.	do.	24/4	180	1700	0·55	Hy., gr.	37. 32. 69	2·5	52	—	Left hosp. for work in good health.
			4/5		700	0·25	,,	38. 26. 64	3·0			
			20/5	115	1600	0·01	,,	43. 28. 71	3·0			
			19/6	115	1450	None.	None.	49. 37. 86	3·6	20		
			2/7	115		Trace.	,,	41. 29. 70	3·4			
			4/7			None.	,,					
4	15. M.	do. (recurrent).	21/4	130	570	Trace.	Ep.	40. 24. 64	2·0	44	—	Left hosp. for work in fair health.
			4/5	120	700	,,	,,	45. 34. 79	2·2			
			20/5		900	None.	None.	19. 40. 59	2·7			
			19/6	110		,,	,,	36. 15. 51	2·6	30		
5	37. F.	do. (post-eclamptic).	17/6	192	900	0·07	Gr., few.	15. 14. 29	2·2	28	—	Health poor; choroido-retinitis.
			23/6	150	900	0·02	,,	11. 17. 28	2·0	26		
6	44. M.	do. (post-alcoholic).	21/2	140		0·16	Hy.					Left hosp.; robust, fit for work.
			18/3			0·05	None.	48. 8. 56	1·5	29	+	
			30/3			None.	,,	58. 27. 85	4·0			
7	32. M.	Subacute nephritis.	2/6	160	1000	0·13	Hy., gr., ep.					Left hosp., convalescent.
			20/6	115	1450	None.	None.	24. 27. 51	2·7	39	—	
8	17. F.	do.	18/6	130		0·04	Hy., gr.	40. 26. 66	3·2	26	—	Left hosp. in fair health.
				130		Trace.	*B. coli* infect.					
9	62. M.	Chronic nephritis.	4/7	122	1900	,,	Hy., gr., ep.	24. 25. 49	2·3	144	—	Gradual improvement: but chronic invalid.
			19/7	120	1000		,, and pus.	23. 21. 44	2·9	136		
10	37. F.	do.	14/6/11		3700	0·5	Gr., ep.				—	Severe optic neuritis in 1911. Leads healthy life 1921.
			18/5/21	160	1500	Trace.	Gr.	30. 40. 70	2·7	29		
11	38. F.	Acute nephritis.	11/7	120	500	+ + +	Bl., ep., gr.	23. 26. 49	3·1	29		Great œdema; very rapid improvement.
			13/7		1200	0·3	Ep., gr.					
			23/7					21. 24. 45	2·5	30		
12	49. F.	Chronic nephritis.	18/4	140	570	0·15	Gr.	Trace.	0·8	349		Died of uræmia, 21/4/21.
			20/4		120	Much.		None.		371		
13	35. M.	do.	26/5	168	430	1·7	Bl., ep.	Trace.	2·3	131	—	Much improvement after three months' treatment; œdema gone; feeling well.
			17/6	148	860	0·6	,,	12. 13. 25	2·5	134		
			23/6	150	1150	0·4	,,	5. 17. 22	2·0	114		
			4/7	162	1200	0·9	,,	7. 13. 20	2·5			
			12/7		2400	0·3	,,	12. 12. 24	2·4	73		
			25/7	180	1300	0·4	,,	33. 20. 53	1·4	45		
14	21. M.	do.	31/5	210		1·2	Hy., gr., bl.				—	Poor health, but fit for light work.
			18/6	182	900	0·7	,,	30. 25. 55	2·2	25		
			26/6	172	1900	0·9	Hy., gr.	18. 17. 35	2·0	79		
			9/7	138	1200	0·6	,,	31. 23. 54	3·5			
			25/7	146	1700	0·4	,,	26. 23. 49	2·2	33		

TABLE II.—*Interstitial Nephritis.*

Case.	Age and sex.	Clinical diagnosis.	Date.	Blood pressure.	Amount, in c.cm., of 24 hrs. urine.	Albumin percentage.	Casts.	Phenol-sulphone-phthalein excretion percentage.	Urinary urea-concentration percentage.	Blood-urea, mgr. per 100 c.cm.	Wassermann reaction.	Remarks.
15	68. M.	Interstitial nephritis.	8/3	250	1200	0·6	Gr., hy.	0. 30. 30	1·7	54	—	Headaches; fit for light work only.
			3/4	230	1000	Trace.	,,	0. 30. 30	3·0			
			12/5			None.	None.	10. 42. 52	2·5			
16	58. F.	do.	5/5	300	1600	Trace.	Hy., gr.	36. 30. 66	2·3	28	—	Retinal hæmorrhage, but leads active life with care.
			1/6	260		,,	,,					
17	66. M.	Arterio-sclerosis.	30/3	154	1300	,,	None.	25. 28. 53	1·7	37	—	Dilated aorta. Chronic invalid.
			4/4	150	1700	,,		20. 33. 53	1·0	38		
			1/5	140	1200	None.		24. 27. 51	2·2			
18	84. M.	do.	9/4	220	1500	Trace.	,,	33. 36. 69	1·5	26	—	Excellent health for age.
			15/4		1400	None.						
19	57. M.	do.	28/6	205		Trace.	Gr.	36. 27. 63	4·0	144	—	Severe headaches, fit for light work only.
			29/6	145		,,						
			8/7	142		,,						
20	60. M.	Interstitial nephritis (carcinoma).	2/4		500	,,	None.	0. 35. 35	3·0	29	—	Intestinal obstn. Ascites; died. P.M. carcinoma, cystic kidneys.
			1/5		650			0. 33. 33	3·5			

TABLE III.—*Cardiac Decompensation; Secondary Renal Inefficiency.*

Case.	Age and sex.	Clinical diagnosis.	Date.	Blood pressure.	Amount, in c.cm., of 24 hrs. urine.	Albumin percentage.	Casts.	Phenol-sulphone-phthalein excretion percentage.	Urinary urea-concentration percentage.	Blood-urea, mgr. per 100 c.cm.	Wassermann reaction.	Remarks.
21	31. F.	Cardiac dilatation.	17/5	102	1200	Trace.	None.	36. 21. 57	2·5	24		Recovery after rest in bed.
			1/6	120		None.						
22	68. M.	Mitral disease: auricular fib.	19/3	92	570	0·3	Hy.	8. 8. 16	2·5	34	—	Died suddenly, 18/4/21.
			6/4		700			27. 30. 57	2·2			
23	61. M.	do.	21/3	110	850	Pres.	Bl., ep.	20. 20. 40	2·0	61	—	Died; heart failure.
			6/4		130	,,		26. 30. 56	3·2			
24	12. M.	Mitral and tricus: endocarditis.	18/4	124	1200	0·02	Hy.	42. 30. 72	4·0	21		Dev. pericarditis; chronic invalid.
25	64. M.	Mitral disease; auricular fib.	17/5	110	600	0·02	Hy., gr.	0. 16. 16	2·7	37		Chronic invalid.
			20/6	110				6. 20. 26	2·8			
26	28. F.	Mitral stenosis.	27/5	125	1200	Trace.	Gr.	40. 30. 70	2·2	28		Recovered health.
27	30. F.	Mitral disease; auricular fib.	14/3	110		Pres.	Hy.	10. 10. 20	2·4	44		Chronic invalid.
28	26. F.	Mitral stenosis.	13/3	110	1500	None.	None.	30. 10. 40	1·7	29		Recovered health.
29	47. M.	Aortic incompetence.	28/6	128	1500	Trace.	,,	0. 20. 20	2·4	44	+	Chronic invalid: failure of compensation.
			11/7		1000	,,		23. 12. 35	3·4			
30	69. M.	Mitral disease: sec. nephritis.	19/3	160	1450	,,	Hy.	0. 10. 10	1·4	27		Left hosp. improved; died suddenly 16/4/21.
			3/4		900	,,		33. 26. 59	2·5			

rectal pressure. In the left lateral position, into which the comatose patient was turned prior to operation, the pressure was 25 mm. Hg (in the normal non-pregnant the pressure in this position is 6 mm. Hg). In the supine position the pressure was 35 mm. Hg (in the normal non-pregnant it is 10 mm. Hg). On opening the abdomen (whereupon the incision simply gaped) the pressure dropped to about 30 mm. Hg; and after removal of the child the pressure registered was 10 mm. Hg. These measurements show that the pressure values found in pregnancy are not due to the tone or contraction of the visceral musculature, stimulated into activity by inserting the bag into some viscus. They indicate beyond doubt that the intra-abdominal pressure is raised, and raised considerably, above the non-pregnant normal.

Differences in the form of the abdomen, especially in development of its muscular walls, and in the degree of its distension, indicate that differences occur in intra-abdominal pressure at corresponding periods of pregnancy. It is reasonable to suppose that the pressure, as pregnancy advances, becomes greater in strong muscular women than in those who are weak. The former necessarily have strong muscular abdominal walls and strong muscular thoracic diaphragms, and when they become pregnant it is not difficult to understand that their muscles offer a more tenacious and marked resistance to expansion of the abdomen than do those of women more fragile or diseased (phthisical). It is to be expected that in primigravidæ, in whom the belly wall has never before been inordinately stretched, greater pressures should occur—other things being equal—than in pregnant multiparæ; similarly, it is obvious that tight lacing must cause greater pressures than in those who go loose.[5] So, also, the greater the abdominal distension per unit of time (as in twins, hydramnios, and concealed accidental hæmorrhage), the greater must be the pressure.

Incidence in Strong Pregnant Women.

It is just in cases in which such conditions obtain that the toxæmia of pregnancy is found and in which eclampsia is so prone to occur. I take them briefly in order. Many observers have stated that eclampsia selects, or appears more commonly in, strong muscular pregnant women. In spite of this recognition writers in recent years have paid little attention to the association, being apparently obsessed with the idea that some strange toxin arises as the primary event. Why do 60 to 80 per cent. of all cases of eclampsia occur in primigravidæ, especially in those of strongly muscular type? Are we to suppose that such are especially prone to develop strange toxins, from placenta or breast, intestine or thyroid, whilst the weak and diseased react otherwise? In the woman's first pregnancy, is her body, with its ancestral memories, unprepared for the state of pregnancy *because of good health?* If eclampsia depends on a lack of chemical adaptation, or on a proneness to develop strange toxins, then surely good health, robustness, and muscularity should not stand in such a conspicuous relation; moreover, eclampsia should occur as a rule quite early in pregnancy, instead of —as is usual—quite late. Another explanation must be sought for; it is to be found in the interference with visceral metabolism caused by the pressure change induced in pregnancy by the reaction of muscle. It is not surprising that if the intra-abdominal pressure is related to visceral metabolism, if its undue increase can cause metabolic aberrations, ¶ that such should show themselves more commonly in primigravidæ, and especially in strongly muscular primigravidæ. The proneness of such women to eclampsia is itself evidence that the preceding toxæmia is determined by a physical, not by a chemical disturbance.

Incidence in the Unmarried Pregnant Woman.

The case of the unmarried pregnant woman is important, for it affords experimental proof of this conception. How is her proneness to eclampsia to be explained? In such cases the placenta cannot be peculiarly liable to degeneration or necrosis; the manner of living must afford the explanation, and in this the fear of discovery plays the chief part. The only available means is constriction by corsets to prevent the abdominal distension which the woman in wedlock has no motive to hide. That these patients tight-lace is evident on inquiry.[14] This act, in my opinion, is the causal factor explaining eclampsia in these cases; and many writers have referred to the effect of dress on its incidence. There are other factors, of course—for instance, the patient's occupation. Many are domestics, who do house-work and washing; several also eat heartily, in spite of vomiting, wind, and indigestion. But these factors are subsidiary; they occur in many cases of eclampsia, but do not of themselves explain its prevalence in unmarried pregnant women.

Incidence in Other Types.

Primigravidæ, strong muscular pregnant women, and unmarried pregnant women, types so prone to eclampsia, may be regarded as forming a class by themselves. The selectiveness of eclampsia for these is sufficiently remarkable. But there are other types, which also form a group by themselves, the proneness of which to eclampsia is also remarkable. I refer to cases of multiple pregnancy, of hydramnios, of concealed accidental hæmorrhage, and of hydatidiform mole. The fact that eclampsia appears in such cases indicates that its cause does not reside in the contents of the uterus, because the contents in these several types are so different from each other. In spite, however, of their dissimilarity the uterine contents in at least three of these types—in cases of twins, hydramnios, and concealed accidental hæmorrhage — have one conspicuous feature in common—namely, that the size of the uterus for the period of pregnancy is more or less considerably larger than it should be. The condition obtaining in hydatidiform mole is for the moment uncertain, and I leave it for others to discuss.**

This increased size is a condition affecting intra-abdominal pressure; if the uterus grows more rapidly than is usual, then—other things being equal—higher pressures will prevail. The greater the distension of the abdomen per unit of time, the greater the response of the enclosing muscles. This response is not a nervous peculiarity or disorder: it is a normal, a natural effect. It is the result of the stretching of the muscle fibres, and of its degree and rate of progression. If the abdominal distension occurs at a greater rate than is usual in pregnancy, the spastic state of the enclosing muscles[13] must be induced earlier and have a greater effect. Even where the enclosing muscles are not well developed at the beginning of pregnancy, if twins or any of these other abnormal ovular conditions obtains, an exaggerated pressure may occur—especially if the increase in the volume of the uterus is acute (as in acute hydramnios) or sudden (as in concealed accidental hæmorrhage). In all these cases the more rapid advance of the abdominal distension has the same effect as originally good muscles; and if the latter in a first pregnancy determine an exaggerated intra-abdominal pressure, then a rapidly growing uterus in later pregnancies gives the same result. Thus, again, we have the relationship of an exaggerated intra-abdominal pressure with eclampsia.

¶ That ovarian cysts, by their mere pressure, can cause serious noxious effects, is plain from history. According to West (1858), among the causes which combine to destroy the patient is "the disorder of the functions of other viscera, as the tumour by its increasing size presses upon and disturbs them."[11] And Malcolm and Gibb (1921), referring to a case in which a very large quantity of fluid was removed from time to time from such a tumour, say: "The case now related shows that sometimes an ovarian tumour causes death simply from exhaustion and pressure . . . it was only by constantly removing the pressure that the patient could be kept alive."[16]

** Prof. Briggs has shown that the size of the uterus for the period of the pregnancy in cases of hydatidiform mole is often smaller than it should be.[9] The question is whether this is so when eclampsia—or, rather the preceding toxæmia—appears.

"TWILIGHT SLEEP"

AND THE GENERAL PRACTITIONER.

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THE administration of scopolamine-morphine as a routine during labour has now had an extended trial in this country, and it may not be inopportune to give details of my own experience of the treatment of a considerable number of cases by this method. The most erroneous ideas prevail even among medical practitioners as to its use and effects, and if this article serves no other purpose than to clear some of these misconceptions that undoubtedly exist, it will have been well justified. Many of my patients have had to run the gauntlet of repeated warnings and reprobations of well-meaning though misinformed friends, and women have told me that they dared not even tell their doctor of their intention to have twilight sleep, as he was an ardent opponent.

Current Misconceptions.

In a recent lecture delivered to the Edinburgh Branch of the Scottish Midwives' Association, Dr. Hugh S. Davidson said :—

> "Some doctors are wholly in favour of the use of twilight sleep in every case, and others are equally emphatic in condemning its use in any case. Some of the laity, especially those who have experienced it personally, swear by it, whilst others, credulously swallowing every tale they have heard, inveigh against it owing to its alleged effects on mother and child, repeating, with additions, the story they have heard that it has filled the asylums with idiots. I have been told such things by patients to whom I have advised its use, and I may say at once that I have never come across such cases, nor have I been able to discover any in the experience of my medical friends. My personal opinion is completely in favour of its use, as you can judge by the fact that I have used it among my nearest relatives."

I was amused by a question put to me by a local practitioner who had come to the home to see a patient privately. "Twilight sleep," he said, "may be all right for the mother, but what about the dead babies?" He was almost incredulous when I assured him that we had not lost a single baby in several hundred cases. Another practitioner of 25 years' standing told me that he had timorously employed scopolamine in a single case with what he described as alarming results for, after an initial injection of morphia gr. ¼ and hyoscine gr. 1/150, pains entirely ceased for a number of hours, much to his distress. He had never again had the temerity to try the method. He was much puzzled to know what procedure I should adopt in a case that might require internal manipulation, and was surprised to learn that chloroform is not contra-indicated in "twilight sleep." Misconceptions such as these are very common, and I could indicate many more; but sufficient, I think, has been said to show that the whole subject is much clouded and obscured by a fog of misunderstanding and prejudice.

Personal Results.

I now propose to give an unbiased statement of its use from my personal results. At the outset a little discrimination is needed as to when treatment should commence. If it be delayed too long the patient suffers needlessly; if it be administered too early it is more than likely the pains will cease for some time, as was the experience of my colleague detailed above. I make it a rule never to give the first injection until pains are coming regularly every ten minutes, or if these are not fraught with much discomfort, to wait until they occur at five-minute intervals in primiparæ. In multiparæ treatment should, as a rule, begin as soon as definite labour pains are first felt.

The patient has a preliminary enema and empties her bladder. The room is darkened and her ears stuffed with cotton-wool soaked in olive oil, so that her attention shall not be distracted by anything. The attendants wear soft slippers. The initial injection should consist of scopolamine gr. 1/150 and morphia gr. 1/6, given subcutaneously in the gluteal region. I know it is often usual to give morphia gr. ¼, but increased experience has led me to adopt the smaller dose, and I never repeat the morphia. In half an hour a further injection of scopolamine gr. 1/450 is given and usually repeated in half an hour. In big fat subjects the second injection often needs to be scopolamine gr. 1/200. Thirst is generally complained of early, and water should be given to relieve it, but when once amnesia is established water should not be mentioned. Subsequent injections, varying from scopolamine gr. 1/150 to gr. 1/450, are regulated by the memory test, which requires a little experience for its successful application. The patient is shown some familiar article—a watch, a comb, or a hair-brush—and asked what it is. If she is asleep wait until she is aroused by a pain. She will probably recognise the article. Half an hour later the question is put, "What did I show you a little while ago?" If she recalls it at once without any mental effort another injection is given at once; if she is hazy and has difficulty in recalling it to mind, another half an hour is allowed to elapse, when some other article is shown her. I usually exhibit my silver cigarette-case for the third test, and it is often described as something quite different—i.e., a piece of paper or an envelope—and it was once called a scalp. It is necessary to be sure that she thoroughly visualises it, as there is always some dilatation of the pupil due to the scopolamine. The article selected should be held a little distance away and in a good light, which is screened afterwards. Judged from her replies one gauges her mental condition as acute, clear, slightly clouded, or very clouded. Frequently, after a few injections, there will be no need for further testing, as the patient herself gives gratuitous evidence of satisfactory amnesia. When awakened by a pain she might give vent to some such expression as "Go down and get the bread and butter." "Leave me alone, John." "I have to go out to the shops now." She will fall asleep until aroused by the next pain, and then make similar remarks.

Effect on the First Stage of Labour.—When the initial dose is given at the correct time I am certain that the first stage of labour is markedly accelerated. I will go so far as to say that the time of the first stage is in some cases actually halved. I have given a good deal of thought as to why this should be so, and can only conclude that scopolamine in some way or another acts as an irritant to the uterine muscle—if not on all unstriped muscle. It certainly causes some diuresis, and as the drug is excreted by the kidneys this has the advantage of rapidly removing it from the system.

Effect on the Second Stage.—The second stage of labour is usually affected adversely, being often prolonged, and for this reason forceps deliveries are more frequent in "twilight sleep" than in cases without drug treatment. The irritant action of the drug plays no part in assisting the second stage, even when the drug is withheld until the second stage is reached. I was at first inclined to the theory that the hurrying on of the first stage might tire the uterus, causing a modified inertia, but I have since abandoned the idea, because, as just stated, the same delay occurs when the initial injection is given after full dilatation of the os uteri. I am now of opinion that the explanation lies more in the fact that the second stage is largely dependent upon voluntary assistance in bearing down for its completion, and voluntary effort is largely abolished in "twilight sleep." It is my invariable rule to allow the second stage to proceed for two hours, and then if there is no prospect of the immediate birth of the head I apply forceps with the strictest regard for asepsis. A few drops of chloroform are all that is needed to induce anæsthesia to the obstetrical degree. I have had no case of puerperal sepsis with the following technique :—

While I am "scrubbing up" a nurse thoroughly cleans the perineum with the aid of soap and water and a soft scrubbing brush. When the patient is ready, a Clover's crutch is applied, and she is placed across the bed on her back with the buttocks just projecting beyond the mattress, under which boards have been placed to make it firm. I wear a sterile gown and gloves. A sterile towel is placed over each leg, one across the abdomen and crutch, and one on the bed upon which the buttocks partially rest. I swab the vulva well with lysol, ʒi. to the pint, and also the vagina, the test is troublesome to perform, it has not found general acceptance.

Tests for Estimation of Power of Kidneys.

The three tests which, in the writer's opinion, are of most value in helping the clinical observer to form an opinion as to the power of the kidneys are: (1) the phenolsulphonephthalein test; (2) the urinary urea-concentration test; (3) the amount of blood-urea. Cases illustrating the figures afforded by these tests and the results deduced from them are included in the following three tables. In the first place a brief outline of the methods will be given.

1. *Phenolsulphonephthalein Test.*—This test, introduced by Rowntree and Geraghty, has been used by the writer for the past nine years, both in civil practice and in the army, with uniformly satisfactory results as regards prognosis in kidney cases. It is carried out by injecting 1 c.cm. of fluid containing 0·6 g. of the pigment into the muscles of the back or limb. At the same time the patient drinks 600 c.cm. (a tumblerful) of water, and empties his bladder. This urine is discarded. Thereafter at one hour and two hours precisely the patient again passes all the urine in his bladder and these two samples are tested for the amount of pigment contained in each. For this purpose the one-hour sample is rendered alkaline by 10 c.cm. of 10 per cent. sodium hydrate solution, diluted to 1000 c.cm. with water, and filtered to remove any phosphates precipitated by the alkali. A portion is placed in one container of a Duboscq colorimeter for comparison with a portion of a solution consisting of 1 c.cm. of the testing fluid similarly diluted to 1000 c.cm. and placed in the other container. The tints being matched by turning the screws of the containers up and down, the percentage of pigment excreted in the one-hour sample of urine is calculated as follows: $\frac{N \times 100}{U}$ = percentage of pigment excreted, where N is the height of the column of fluid in the container holding the standard dilution and U the height of the column of diluted urine. For example: if N stands at 20 mm. and U at 40 mm., then $N \times 100 \div 40 = 50$ per cent. of the pigment excreted at the end of one hour. The second-hour sample is treated in the same way, and should contain considerably less pigment than the first-hour sample. If the same amount or more pigment is excreted in the second hour, this indicates delay and a depressed renal efficiency. The amount excreted in the two hours added together should total at least 70 per cent. in health, and may rise to 85 per cent. or even 90 per cent.

Other forms of colorimeter, such as that of Hellige, where a permanent standard is employed for comparison, are less satisfactory than the Duboscq, because their readings may be vitiated to the extent of 10 per cent. or more by the fact (personally observed by the writer) that the contents of the phenolsulphonephthalein ampoule supplied by different makers vary considerably both in quality and in depth of red colour. This difference does not affect the reading of the Duboscq colorimeter, in which the standard used is the contents of an ampoule similar to that from which the patient receives the injection. Great care must be taken in carrying out this test that the patient receives exactly 1 c.cm. of the fluid, that the bladder is completely emptied at the end of each hourly period, and that the injection is not made into œdematous tissue, from which absorption takes place slowly. It should be remembered that this test is really a criterion, not merely of kidney activity, but also of the whole mechanism of absorption, circulation, and excretion of the pigment. For this reason the writer prefers the muscles of the arm for injection rather than those of the back, where œdema is apt to collect, especially in bed-patients with kidney or heart disease. An important fallacy may be introduced by the presence of blood in the urine. To eliminate this in cases of acute nephritis, the urine should be allowed to sedimentise for 12 hours and decanted, or it may be centrifuged. In this way an approximately accurate reading can be obtained; otherwise, in acute nephritis the result of this test may be much more favourable than the actual excretion of pigment warrants.

2. *Urea-Concentration Test.*—This test, introduced by MacLean and de Wesselow,[6] is very simply carried out. It depends on the fact that if 15 g. of urea be administered by the mouth to a healthy person, it is quickly absorbed and excreted in the urine. In a specimen of urine passed two hours after the ingestion of this amount, there should be at least 2·5 per cent. of urea, while usually in a normal person the amount is 3·5 or 4 per cent. or in occasional cases more. If the proportion is only 2 per cent. or less it indicates a lessened power on the part of the kidney to concentrate urea, moderately severe cases of nephritis excreting only 1·5 per cent. or thereabout; while in severe cases, when uræmia is present, it may fall below 1 per cent. The test is carried out by administering orally 15 g. of urea dissolved in water. (This amount, which is equivalent to the daily excretion on a low protein diet, does the patient no harm, and is not unpleasant to swallow. The writer's practice is to carry out the phenolsulphonephthalein and urea tests concurrently, the urea being dissolved in the 600 c.cm. of water, which the patient drinks for the former test.) One hour after the urea has been administered the bladder is emptied and the specimen measured. At the end of the second hour, when the urea excretion is at its height, the bladder is again emptied, this specimen is measured, and the urea contained in it is estimated by the ordinary hypobromite process. Gerrard's apparatus may be used for this purpose, in which case 8 c.cm. of nitrogen is the equivalent of 0·5 per cent. of urea. If the urea-tube of Doremus be employed, two of these tubes must be used in each estimation, since the reading on the lower part of the scale gives too low a result in urines which contain an approximately normal amount (3·5 – 4 per cent.) of urea; the 1 c.cm. of urine, measured by the special pipette, is divided between the two Doremus tubes containing hyperbromite solution, and the readings of the nitrogen that collects in the two are added together. The estimation of urea-concentration and the phenolsulphonephthalein excretion do not always show absolute parallelism, but, generally speaking, they fluctuate together and in cases where they disagree the two methods form a useful check upon one another. If they differ to any considerable extent the tests should be carried out again next day.

3. *Blood-Urea Estimation.*—The amount of urea in the blood can be estimated without elaborate apparatus by means of the Soya bean "urease" ferment. The method as described by MacLean and Russell[7] is carried out by taking a small quantity of blood (3 c.cm.). This is incubated in a water-bath at about 40° C. for 15 minutes along with a small quantity of finely-powdered soya bean, the urea being thus converted into carbonate of ammonia. The ammonia is subsequently drawn over by the action of a water-suction pump into 25 c.cm. of centi-normal sulphuric acid, which after half an hour is titrated against 25 c.cm. of centi-normal sodium hydrate. The difference found by titration corresponds to the amount of sulphuric acid already neutralised by the ammonia evolved from the urea in the blood. From this the amount of urea is simply calculated, every cubic centimetre of difference being equivalent to 10 mg. of urea per 100 c.cm. of blood.

A few points demanding caution may be mentioned. The soya bean powder should be as fine as possible and if kept too long may be found inert, but it retains its fermenting power for at least several months after being ground. The temperature of the water-bath should not be allowed to rise above 45° C., as the ferment is apt to be destroyed above that temperature. The blood must be examined within a few hours of being drawn, because under certain conditions ammonia-producing bodies quickly form the superiority of their plaster work and especially of their splints, made of celluloid from a cast of the affected part, fitting perfectly, and therefore preventing reactivation and relapse; recidivism we know to be a pitfall in every form of tubercle. The point I wish to put is that a great deal of this work can be done, in his own district, by each tuberculosis officer.

Hygienic conditions in a working-class home are admittedly far below those of a country hospital; but then the home task is much easier. Consider the severity of the cases at Alton—bilateral morbus coxæ (I have seen only one such around Barnsley in seven years), cases with other multiple lesions, facial and skull caries (I had never seen this before), paraplegic patients, lardaceous disease, and so on. This allocation of patients is, to my mind, just as should be. The extra facilities and skill are best bestowed upon the unfavourable case. Early and slight disease may quite well be treated at home. In bone and joint tubercle the main principle of disposal is surely the converse of that in lung tubercle. Incipient consumption is sent to the sanatorium, while highly active or extensive affections are excluded therefrom; but, speaking generally, and with one or two exceptions to be mentioned below, in osseo-articular lesions, the early case should be kept at home, the more advanced sent away.

Description of Cases.

The above theses it is hoped to defend with a short account of the 30 patients with bone or joint disease treated here, as stated, in the last two years. They are as follows: Hip alone, 9; hip and knee, 1; spine, 8; knee alone, 7; elbow, ankle, 2 each; wrist, 1; total, 30. Of the 30, 22 were new cases coming under notice within this two-year period; these new cases comprised 1 elbow, 1 hip and knee, 4 knees, 7 spines, and 9 hips. Fewer than a third of the 22—viz., 3 hips, 2 spines, and 1 knee—needed sending away for institutional care. Two of these three hips were in very young children, in whom, as is taught and as I have found, recovery is slow; for early infection of itself argues a relatively unfavourable outlook; besides, sick infants require more attention than can be expected from an overtaxed working-class mother. The girl with an affected knee was sent off, after responding well to treatment, in deference to the teaching that tuberculous arthritis in that situation is on the whole of peculiarly unfavourable prognosis. However, from subsequent experience with patients who for indifferent reasons had to stop at home, I regret I did not keep the case and save the institutional bed for a worse case; more especially as the girl has just been discharged from Alton with arrested disease after the unusually short stay of three months. Both the spinal patients came from bad homes, one being an adopted child and the other of very poor parents. Thus medical considerations alone did not by any means dictate the choice in every instance.

The remaining 16 domiciliary patients all did, or are doing, practically as well as I have seen cases do at Alton and at Rivelin Valley, the Sheffield surgical tuberculosis hospital. Our plan of home treatment—and, be it noted, whatever the destination of the patient there is some unavoidable delay during which he or she remains at home and may as well be started on the road to recovery—our plan is to have the child's bed put next an open window, preferably on the ground floor for convenience of the mother. Then appropriate extension is applied, hyper-extension by means of a pad under the mattress in spinal disease, extension by weight and pulley for morbus coxæ. In one knee case with considerable flexion of the joint and subluxation of the tibia, straightening was effected by the "triple extension" apparatus, with its application of the parallelogram of forces, in five weeks; after ten had been spent fruitlessly in a general hospital with simple horizontal traction. It is soon seen if muscular spasm is disappearing at something like the normal rate. In hip disease, adduction or abduction will take long to correct, but if flexion does not yield soon, the bed-foot pulley having to be lowered something like three inches a week, then the case is obstinate and had better go to a more favourable environment. Simultaneously cold abscesses can be aspirated. When quiescence of the lesion is obtained with good position, then a plaster can be applied and the patient allowed up, of course on crutches in leg cases. Finally—often immediately—a plaster cast of the part is taken and a celluloid splint made. By the time this is worn out or outgrown, progress has usually been sufficient to render its replacement unnecessary. However, some further time should usually elapse before resumption of school attendance, because that depresses the general health and means extra risk of trauma. This interruption to education, avoided at special institutions by having visiting teachers, is the only absolute disadvantage of domiciliary treatment. But certainly there are not enough special institutions to treat all bone and joint tuberculosis, nor, as things are, enough funds available to increase their numbers or beds sufficiently. Besides, for adult patients the available accommodation is even more exiguous.

Results.

Of the 30 cases, 6, as stated above, were despatched to institutions. Quiescence of the lesion was secured in 14 of the remaining 24. By quiescence I mean disappearance of pain and muscular spasm, healing of any sinus or cold abscess, improvement in the general health, and complete or considerable correction of deformity. Three of these, one an ankle and one a knee, both with unmistakable clinical evidence of disease, the third a hip in which the diagnosis was confirmed radiologically, have now for some time discarded all apparatus and enjoyed full return of function. In four further cases the lesion was quiescent when the patient first came to my notice. This leaves 24 less 18, or 6 patients whose disease remains active. They are all adults, two of them ex-soldiers. An elbow (in plaster), a dorsal spine (in bed), and a knee (in a celluloid splint; operation refused) are slowly improving. Another spinal case is stationary. Two, a hip with many sinuses, and a knee far advanced in disease and complicated with extensive phthisis when first seen, are getting worse. There have been no deaths.

Of celluloid splints we have made 19 and repaired 4. Besides their remedial effect, they have sometimes given—as in the cases last cited—much palliation, and have rendered patients less of a drag upon their friends. Patients naturally prefer them to leather and iron appliances. Nurses take well to the preliminary stage of their construction—the pasting of layers of book muslin on to the plaster cast with celluloid dissolved in acetone—as it much resembles dressmaking. The later stages, fitting, riveting on of leather and duralumin, one must do all oneself. Its technique, like that of lung collapse, of nose and throat work, and of the rest of our speciality, needs proper learning, but, as the event has shown, is within the compass of a mechanical faculty distinctly subnormal. The admirable polish bestowed at surgical tuberculosis hospitals is not essential; and this saves time. That time which is indispensable is well spent: it looks as though in a year or two one could be master of the osseo-articular tubercle in one's district.

My thanks are due to Sir Henry Gauvain, to Dr. C. L. Pattison, surgical tuberculosis officer of Sheffield, and to their respective staffs—among whom must be named Mr. Green, orthopædic carpenter at Alton, whose hollowed leaden stand is most useful in the shaping of duralumin supports; and, lastly, to my two nurses for their keenness and industry.

HONOUR TO A SOUTH AFRICAN MEDICAL MAN.—On Oct. 21st, a presentation, consisting of a handsome silver tea and coffee service and salver, was made to Dr. M. W. W. Cowan, of O'okiep, Namaqualand, South Africa, on the occasion of his silver wedding, on behalf of the people of Namaqualand. Dr. Cowan has practised in the district for over 20 years.

and too high an estimation results. The blood must be withdrawn before the administration of urea for the concentration test, since a considerable rise in blood-urea follows within two hours after the ingestion of the 15 g. of urea. The test is extremely delicate and reliable, however, and repeated examinations give practically identical results. The normal blood-urea lies between 20 and 40 mg. per 100 c.cm. Any estimation showing over 50 mg. may be taken as indicating urea-retention and a decided degree of kidney inefficiency. When it is over 100 mg. the patient is usually a chronic invalid, the highest figures (e.g., Cases 2, 9, and 13 of Table I.) being obtained in cases of chronic parenchymatous Bright's disease. A blood-urea reading of over 200 mg. may be taken as an indication of impending death, though it may rise (e.g., Case 12, Table I.) to 371 mg. or higher; in another case (puerperal septicæmia, showing fatty degeneration of the kidneys on post-mortem examination) it rose to 268 mg. just before death. As a rule the blood-urea changes slowly. In subacute Bright's disease it is not greatly raised, but in the uræmia of acute nephritis and in febrile diseases like pneumonia it may be raised temporarily considerably above the normal level. The negative evidence that it affords, in combination with other tests, is of great value. For example, one case with severe headaches and albuminuria, supposed at first to be nephritic, was found to have blood-urea 22 mg., phenolphthalein excretion 86 per cent., and urea-concentration in urine 6 per cent.; the kidneys were therefore exonerated and the case was subsequently found to be one of enteric fever. Another case of headaches with albuminuria had blood-urea 31 mg., phenolphthalein excretion 90 per cent., and urea-concentration in urine 3·7 per cent.; the albuminuria speedily disappeared, the case being one of neurasthenia with periodic albuminuria. In still another case of headaches, ultimately found to be occupational in origin, the blood-urea was found to be 21 mg., phenolphthalein excretion 90 per cent., and urea concentration in urine 2·5 per cent. In cases where the kidney disease is moderate in degree, the blood-urea may be constantly well within the normal limits, and the prognostic indications must then be drawn from the other tests.

above 50 per cent. return to a moderate degree of health ensued; the urea-concentration always tended to be low, as the kidneys were readily stimulated to secretion of water, but in favourable cases the urea rose to about 2·5 per cent. before the patient left hospital. In cases of this type both blood pressure and blood-urea tend to be exceptionally high, but there is no relationship between the two, because when the blood pressure falls, as it readily does under treatment, no appreciable change takes place in the blood-urea.

Commentary on Table III.—This table includes cases in which the primary defect was cardiac, but clinical evidence of secondary renal involvement was present. In these the blood-urea is normal or only slightly raised. Whilst auricular fibrillation is present, the phenolphthalein excretion is considerably lowered, it may be to 20 per cent.; and the urea-concentration is low. Both characters of the renal secretion tend to improve as the heart recovers power. It is probable that some of the debility and danger in these cases of auricular fibrillation is due to the renal inefficiency. The complete recovery of health in Case 26 and the ability of Case 24 to maintain his life despite several very severe cardiac lesions were associated with an almost normal state of renal efficiency as revealed by these tests. The important feature has been frequently noticed by the writer that if, in cardiac cases, the kidney efficiency tests give an approximately normal or only slightly lowered result during the period of cardiac decompensation a very favourable prognosis can safely be given.

Conclusions.

1. The combination of the estimation of blood-urea, of urea-concentration in the urine, and of phenolsulphonephthalein excretion, gives reliable information as to the functional efficiency of the kidneys.

2. The blood-urea estimation should form a preliminary investigation. If it rises above 50 mg. per 100 c.cm. of blood the condition is serious. If it is found to be persistently over 100 mg. recovery is not likely, and death will probably take place within a year. In uræmia it may exceed 200 or 300 mg. before death. The blood-urea may be normal while a marked degree of renal impairment exists; but in such cases the immediate prognosis is usually favourable.

3. The blood pressure shows no constant relation to the amount of blood-urea; though when blood-urea is permanently high the blood pressure is usually h

articles contributed recently to that review gave his full adhesion to Guelpa's views. This testimony is the more valuable as he was once an opponent of Guelpa. Dr. Laumonier observes—and therein I agree with him—that on the first day there may be some slight discomfort, but that on the second day of purgation and fasting all discomfort disappears, to give place to a marked feeling of well-being. Dr. Laumonier is very insistent that absolute abstinence from all solid or liquid food should be observed during the period of the fast, and this is my experience, excepting for weak cocoa, which Dr. Guelpa recommended. The treatment is drastic and should always be taken under medical direction, but according to the testimony of these French authorities no accidents have occurred in the use of this remedy.

Method of Resumption of Ordinary Diet.

At the termination of the first long fast it is important to commence with a very restricted diet—e.g., one litre of milk, or 200 g. or 300 g. of green vegetables cut up or served in soup, or 200 g. of potatoes in soup. At the end of two or three days these rations may be increased by the addition of biscuits or toasted bread, milk dishes, and one or two eggs. After eight or ten days of this light diet a return may be made to ordinary meat diet. Analysis in the case of diabetics will show whether it is necessary to revert to the fasting remedy, but in many cases a complete cure has been effected with one course of the treatment. The French school recommend that the patient will be well advised to repeat the long fast from time to time—say three or four times a year in the hot weather.

Treatment of Acidosis.

I am confident that the adoption of Guelpa's method of combining rather free purgation with fasting will prove of great benefit to patients suffering from diabetes, gout, colitis, and arthritis if the treatment be applied under medical care and direction. The imporance of constant watching on the part of the medical attendant arises from the possibility of the development or increase of acidosis during the fast, as in my own case this year. In that event the fast should be discontinued when the acidosis is detected, and resumed after a few days. In the meantime, in my own case a single dose of codein sulph. ½ gr. and urotropin 5 gr. and the reversion to food immediately stopped these symptoms. After a week of light diet the fasting can be resumed with a diminishing tendency to acidosis. I think Dr. Guelpa would have depended entirely upon a temporary return to food without any reliance on medicine. In any case, his conclusion is as stated, that the acidosis is less troublesome with each successive fast in a given course, and that the obvious benefit of each fast becomes more pronounced as the treatment is continued, within reasonable limits.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

SUPPURATIVE MONARTICULAR ARTHRITIS IN AN INFANT,

DUE TO *B. PARATYPHOSUS C.*

BY ARCHIBALD LANGWILL, M.B., F.R.C.S. EDIN.,
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THE following case is published on account of its extreme rarity.

A female infant, L. R. M., aged 11 months, was admitted to the Paddington Green Children's Hospital on May 18th, 1921, on account of a marked swelling in the region of the left shoulder-joint.

History.—She had always been a healthy infant up to about the end of March, 1921, when she developed whooping-cough. On April 27th she was very feverish, and had "continuous fits" from 5.30 P.M. till 8.30 P.M. At that time it was thought she was dying. Since then there have been no further fits, and the violence and the frequency of the bouts of coughing have gradually diminished. Breast-fed entirely since birth up till a little over a week before admission, since when she had been having several feeds of cow's milk in addition to the breast. A week before admission the mother noticed that the infant seemed disinclined to move the left arm, and that there was apparently a certain amount of pain occasioned when passive movements at the shoulder-joint were attempted. Next day the left shoulder region was swollen, and this gradually increased. No history of trauma beyond the severe convulsive seizures three weeks previous to admission. No history of diarrhœa recently or of hæmorrhage from skin or mucous membranes.

Family history.—Parents both alive and healthy. Neither has suffered from any serious illness. Two sisters, aged 3 years and 2 years respectively, also healthy.

Condition on admission.—Well-nourished infant. Temperature 99° F., pulse 152, respiration 45 per minute. On examination it was found that the left shoulder-joint was obviously uniformly distended with fluid. Fluctuation well marked. No actual redness or œdema of the overlying skin. Movements at the shoulder only slightly restricted, but when carried out passively seemed to cause the infant pain.

Operation.—On May 19th, after an exploratory puncture, chloroform was administered, and I opened the left shoulder-joint by the anterior route. On incising the joint capsule, which was tightly distended, about an ounce of a thick yellow pus was allowed to escape. This was aseptically collected for bacteriological investigation. Drainage of the joint was established by inserting a small piece of india-rubber dam, and hot fomentations were applied. Since the child was suffering from whooping-cough, the mother was allowed to take her home, with instructions to put the case at once under the care of her private medical attendant.

Pathology.—I am indebted to Mr. H. W. Perkins, pathologist to the hospital, for the following bacteriological report: "A thick yellow pus, in films of which are found a few Gram-negative bacilli. A free growth of this bacillus is obtained in pure culture. The organism is actively motile; it does not liquefy gelatin. Culturally, it presents the biochemical reactions of the salmonella group. Gas production in sugar media is feeble, and the fermentation of dulcite is slow. The organism is not agglutinated by 'Oxford' specific serums for *B. paratyphosus A*, *B. paratyphosus B*, and *B. enteritidis* (Gaertner). After daily subculture for a period of two weeks its cultural and serological characters remain unaltered. The identity of this bacillus was finally established by Lieut.-Colonel H. Marrian Perry, R.A.M.C., professor of pathology at the Royal Army Medical College, who very kindly undertook the further investigation of this organism. He found that it was agglutinated by his paratyphoid C serum to its full titre (1–5000)."

Remarks.

It is needless to emphasise the value of the notes of this case, when it is recollected that, in the first place, the recovery of *B. paratyphosus C* from even the stools or the blood is a very rare event, and in the second place, its recovery in pure culture from a suppurating joint—and this apparently as a de novo infection—must be almost unique. It is, of course, impossible to say where and when the causal organism gained its entrance to the blood stream, but might it not be permissible to assume some such relation as cause and effect between the change from feeding entirely at the breast to partial artificial feeding, and the joint infection very soon afterwards? The possibility of *B. paratyphosus C* having been "imported" by the father—as a "carrier"—from one of the theatres of war was considered, but on inquiry it was found that he had neither been abroad nor ever suffered from symptoms to suggest an infection by one of the enteric group of organisms. I may add that I have followed up the case, and have heard quite recently from the mother that the child is now in good health. The wound continued to discharge freely for about ten days, after which the amount of discharge rapidly diminished. The wound closed completely five weeks after the operation. According to the mother, not the slightest impairment of function of the affected joint remains.

I wish to express my indebtedness to Mr. D. C. L. Fitzwilliams, to whose ward in the hospital the child was admitted, for kindly granting me permission to publish these notes.

paying special attention to the urethra, preliminary to passing a catheter. Forceps are then applied and removed directly the head is crowned. Pressure with one hand over the sterile towel on the abdomen prevents the head receding. When the head is crowned a nurse injects 1 c.cm. of pituitrin deeply into the gluteal muscle. As soon as the child is born the cord is ligated; the child is then removed to another room so that its crying will not disturb the mother, who should be allowed to sleep quietly on, after having been made comfortable. I have always found the third stage quite normal in every respect.

It might be mentioned that at the commencement of the second stage I employ my time in applying hot fomentations to the perineum. These are wrung out of weak lysol, and serve the double purpose of sterilising the region and softening the tissues, thereby lessening the probability of a tear.

With regard to the vexed question of oligopnœa, I have only met with a few cases, in all of which the child spontaneously recovered without treatment of any kind. If wrapped in a warm blanket and left alone the baby will breathe normally in a minute or so. In one or two difficult forceps cases with a child born suffering from asphyxia pallida I have had resource to a hot bath and artificial respiration. The only deaths I have to record were twin premature babies—born at six months. Both breathed, but died shortly afterwards. The mother had only one injection, and the children would not have lived in any case.

Particular Advantages of Twilight Sleep.

Twilight sleep is of particular advantage in breech cases and in minor degrees of pelvic contracture, where it is desirable that the second stage should be prolonged to obtain satisfactory results. I have given it with conspicuous success in cases with heart disease, and I noticed that in his article on "Heart Disease and Pregnancy"[1] Sir James Mackenzie mentions that twilight sleep ought to be useful in such cases, but frankly confesses that he has had no experience of the treatment. In elderly primiparæ it is invaluable. One of its most striking benefits is in the appearance and feeling of well-being manifested by a patient after a long and difficult labour, which tends to endorse the absence of conscious suffering. Shock and exhaustion are largely avoided, and with their avoidance the long train of nervous after-effects and disabilities are mitigated if not entirely abolished. Surely the memory of an exhausting and agonising labour must leave in its wake a host of neurasthenic tendencies with a vivid dread of a recurrence of the event—modified though that dread might be by the knowledge that second children are less of an ordeal. Apart from economic reasons, a dread of this kind must adversely affect the birth-rate of the country.

For the busy general practitioner the scheme I have outlined above must often prove impracticable. The late Dr. F. W. N. Haultain speaks of good results obtained by leaving the injections to a responsible nurse, in telephonic communication with the doctor. The injections are given at stated intervals. The initial dose of scopolamine gr. 1/150 and morphia gr. ¼ is recommended, and thereafter scopolamine alone gr. 1/450 is injected every hour. "Although not scientifically correct," Dr. Haultain adds, "this method is sufficient to acquire the benefits required without danger." I would only add to this that the nurse should be instructed to miss an injection during any hour that the patient is heard to mutter at random, and that in a number of cases the dosage will be too small to be effective. In cases exhibiting an idiosyncrasy for the drug, who become unruly in consequence, a few drops of chloroform is all that is needed to quieten them. I have only met with one case who became so unruly as to require restraint, and I abandoned treatment on that account. Complete amnesia, however, was present during her case, and she remembered nothing of the labour.

There is no doubt that the effect of the drug varies in individuals, and I have found that, as a rough working guide, the larger the woman the larger the dose she requires. It is because of this variance in reaction in individuals that acute differences of opinion exist both in medical and lay minds as to the benefits of the treatment, and I would urge medical men before they condemn "twilight sleep" to consider the impossibility of giving an opinion without experience.

In conclusion, I would state that the more I give twilight sleep the more I like it, and I consider it to be the greatest advance in obstetrics since the employment of chloroform. That it mitigates actual pain and does not merely obliterate the memory of it is evidenced by the absence of screaming—the needle prick of the injection often passing unnoticed—and by the general demeanour of the patient, which is indicative of well-being as opposed to conscious suffering.

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[1] THE LANCET, 1921, i., pp. 1163, 1230, 1281, 1342.

DOMICILIARY TREATMENT OF BONE AND JOINT TUBERCLE.

By W. C. RIVERS, M.R.C.S., D.P.H.,
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THE lesson of the war (reinforcing as it does some neglected lessons of the past) that infection has been an overrated, and depressed individual constitutional resistance a much underrated, factor in the production of tuberculosis, will have had its effect upon the mind of the tuberculosis officer. He will easily deduce that the outstanding indication for action is the fact that the disease is twice or thrice as common in the working class as amongst the rest of the community; and that the chief prophylactic measure, therefore, is economic—namely, social amelioration. He will now feel assured that housing reform, even if practicable under present conditions, will never suffice of itself; will see that much of the time spent in examining symptomless adult "contacts," or in delivering lectures promising an early abolition of tuberculosis, was wasted. And all this realisation that prevention is really in other hands than his, will, or should, make him a Voltairian cultivator of his garden—lead him, that is, to concentrate for the time upon treatment.

In this line there seems at first sight little of much promise. The sanatorium the tuberculosis officer rarely sees; tuberculin is deservedly dropping out of therapeutic use; lung collapse applies only to a scanty proportion of one form of the disease; chemo-therapy as yet only to the small group of skin tuberculides. But there does remain something. Two years ago I left Alton after a two months' stay kindly allowed me by Sir Henry Gauvain, to study the Continental methods of treatment of osseo-articular tuberculosis of which he is so accomplished an exponent; for that period of time I have been applying the working knowledge there gained in the ordinary practice of a tuberculosis officer, and the improvement in one's results is striking.

Problem of Accommodation.

In old days the general practitioner used perforce to send hip or spine caries to a general hospital, or try to get such into one or two overcrowded special institutions. The former plan was desperate. The general hospital had not accommodation enough, and the folly of making out-patients of those needing before all else continued rest in bed in one posture, is evident. Yet, unfortunately, practitioners are still prone to this method of disposal. What often happens is that the case is sent first for diagnosis, or confirmation of diagnosis, and then goes on attending for treatment. When the National Insurance Act came into force, sanitary authorities engaged beds at a special institution, perhaps an orthopædic hospital. I have had good opportunity of comparing treatment by some orthopædists with treatment by surgical tuberculosis specialists, and have found that of the latter to be the better; mainly, I think, by reason of case of undoubted syphilis of the stomach in which the only symptom had been a sudden hæmatemesis.

(*d*) Stenosis. One case had already been quoted of pyloric stenosis. Mid gastric stenosis producing hour-glass stomach had been reported by Bensaude. This patient, who had lost 20 lb. within two months, recovered under treatment and even the biloculation disappeared. Stenosis of the cardia occurred in a case of Enriquez and Bensaude. There was no history of syphilis in this case—that of a woman, aged 35 years. Gastralgia, constant vomiting, and the loss of 80 lb. weight within 18 months, led to a screen examination which revealed a double stenosis occurring in the cardia and mesogastrium. Under specific treatment she gained 30 lb., but six months later began to lose weight again. Screening on this occasion showed no loculation of the stomach, but that the pylorus was incompetent and the duodenum greatly enlarged. The condition had then become one of the next type.

(*e*) Linitis. The example just quoted was the only one described by Dr. Monod.

(*f*) Tabes. This came within the scope of the paper only when there was a definite lesion of the stomach associated with tabetic crises.

Hereditary syphilis.—All the types described above might occur in hereditary syphilis. In children there were two special types, the symptoms of which were: (*a*) gastric hæmorrhage in the new-born; (*b*) chronic vomiting without acetonæmia.

Diagnosis.—This resolved itself into two questions, Was the stomach at fault? and Was the lesion syphilitic? In the elucidation of the latter question, the Wassermann reaction was helpful, and Dr. Monod had found Stern's reaction valuable: screen examination often revealed a characteristic picture. Where a portion of the stomach had been excised the presence of spirochætes could be demonstrated in definitely syphilitic lesions.

The action of potassium iodide provided a very useful test. In syphilis of the stomach the organ seemed to crave for potassium iodide, and rapid improvement usually occurred, whereas with other dyspepsias the drug aggravated the symptoms. There were, *however*, cases in which spontaneous cure occurred, and others where specific treatment was ineffectual.

The *treatment* he advised was the use of mercury, potassium iodide, and salvarsan. combined sometimes with tartro-bismuthate of potassium. The best treatment could only be settled by further experiment and experience. Surgical intervention was called for in certain cases, where there had been scar-tissue formation.

In conclusion, Dr. Monod said that while it could not be accepted that all cases of stomach derangement cured by specific treatment were definitely syphilitic, we should not forget that a number of otherwise uncontrollable dyspepsias were amenable to anti-syphilitic treatment.

Discussion.

Dr. J. W. McNEE said that he could add little to the clinical side of the subject, but would describe an unique example of syphilis of the stomach, which had been admitted to the wards of Dr. Sidney Martin, F.R.S., in University College Hospital. The patient was a man of 57 years, who had suffered from pain in the chest and abdomen of six months' duration. A provisional diagnosis of carcinoma of the stomach was made for the following reasons: there was a palpable mass in the epigastrium: free hydrochloric acid was absent in the gastric contents, while lactic acid was present. The Wassermann reaction was not carried out. Sudden perforation occurred shortly after admission and rapid death ensued from peritonitis. At the autopsy a large ulcer was found occupying three-fifths of the wall of the stomach, the only parts of the organ remaining free from ulceration being close to the cardiac end and close to the pylorus. The wall of the stomach in relation to the ulcerated area was greatly thickened. the thickness in parts reaching a diameter of three-quarters of an inch. Microscopically the condition closely resembled a scirrhous carcinoma, but it was noticed at the time that no secondary growths were present in the liver or neighbouring organs, and the lymphatic glands in the neighbourhood of the stomach were also free from metastases. On this account careful histological examination of the ulcerated area was carried out. In sections a condition strongly suggestive of syphilitic infection was made out, there being well-marked endarteritis obliterans of small arteries, and extensive round-celled infiltration along the vascular capillaries. In other places where the lesion appeared to be more acute abundant granulation tissue of a peculiar type, and of very active growth, was observed. A number of blocks of tissue taken from different parts of the ulcerated area were stained by Levaditi's silver method for the demonstration of spirochætes. In one block of tissue taken from an acute granulomatous area abundant spirochætes were found, morphologically identical with the *Sp. pallida*, having 8–14 regular curves. Dr. McNee exhibited the actual stomach, with microscopic and lantern slides demonstrating the various lesions and the spirochætes. This specimen appeared to be unique from the fact that the diagnosis was made by the discovery of the spirochætes. No signs of syphilis were found in any of the other organs.

Dr. A. F. HURST said that his experience of syphilis of the stomach was very limited, and he had only seen two definite cases, one of a gumma simulating carcinoma, the other being a syphilitic ulcer which simulated an ordinary duodenal ulcer. He had had the Wassermann reaction tested in at least 100 cases, when the diagnosis of syphilis was remotely possible. Nevertheless, the remarkable results of antisyphilitic treatment in the two cases to be described suggested that the Wassermann reaction should be tested in all doubtful gastric cases.

1. *Syphilis of the Stomach with Achylia simulating Duodenal Ulcer.*—The patient, a man aged 51 years, had had dyspepsia for 20 years with a five year remission. The symptoms were strongly suggestive of duodenal ulcer, pain three hours after food, waking him in the night, and relieved by a meal. A strict course of medical treatment, rest in bed, diet, and alkalies failed to improve him, and he was then sent to Dr. Hurst, who found almost complete achylia with an atonic stomach instead of the hyperchlorhydria and hypertonus typical of duodenal ulcer. The fasting gastric contents contained large numbers of leucocytes, and the stools occult blood. There was no history of syphilis, but a Wassermann reaction proved strongly positive, and a single injection of salvarsan resulted in so great an improvement that he refused further injections. He took an acid and pepsin mixture for some months, but had since had two further injections of salvarsan, and now appeared completely cured of symptoms, although the Wassermann reaction was still slightly positive.

2. *Gumma of the Stomach causing Pyloric Obstruction.*—This patient, a man aged 33 years, had syphilis in 1901. Eight years later he began to suffer from indigestion; his appendix was removed with only temporary relief. In 1911 he had pain in the right hypochondrium relieved by vomiting, with flatulence, wasting, and constipation. An X ray of the stomach revealed considerable delay supposed to have been due to a duodeno-jejunal kink. The following year X ray examination showed obliteration of the normal gastric outline in the pyloric half of the stomach. Mr. Peter Daniel operated and found a rigid pylorus without definite ulceration for which he performed a gastro-enterostomy with temporary improvement. Symptoms returned within a year, and on being called in consultation Dr. Hurst advised a Wassermann reaction, which proved positive. Three injections of neo-salvarsan proved completely curative of symptoms.

Mr. A. J. WALTON agreed that the frequency of syphilis of the stomach had been estimated variously by different observers. His experience of surgical gastric disease included 264 of gastric ulcer, 125 of duodenal ulcer, 125 of gastric carcinoma, 1 of sarcoma, and 1

A NOTE ON
GUELPA'S METHOD
IN THE TREATMENT OF GOUT AND GLYCOSURIA BY FASTING AND PURGING.

BY SIR HENRY LUNN, M.D., B.CH. DUB.

Dr. Guelpa's visit to the Royal Society of Medicine suggests to me to put on record the endeavours to combat various manifestations of gout in the one patient (myself) upon whom I have ventured to practise since I took my M.D. in 1887.

Thirty years ago, at the age of 32, I went to see my friend, the late Dr. Howard Barrett; I was suffering at the time of my visit from constant severe headaches, hæmorrhoids, and bad eczema. Dr. Barrett told me I was like "a volcano of gout ready to break out anywhere in any direction." He reduced my meat diet to very moderate limits with much advantage, but I was still pursued by gouty headaches, sleeplessness, and sluggishness of the liver.

Three years later I read Haig's "Uric Acid as a Factor in the Causation of Disease," and although Haig exaggerated the importance of uric acid in the causation of gout and other diseases, I found his book very valuable. In 1896, being still much troubled with gouty symptoms, I visited Tarasp, the waters of which resort contain a very large percentage of sodium sulphate. I was benefited greatly by a three weeks' course, which—together with Haig's views as to the value of sodium salicylate—led me to adopt a daily dose before breakfast of Carlsbad powders with 5 to 15 gr. (according to my condition) of sodium salicylate. I found also that small doses of potassium bromide with the salicylate had a remarkable and valuable influence upon my nervous system; these and a short sleep before dinner were necessary if I was to avoid bad nights and interference with my work. By these means I was able to keep down, within certain limits, the gouty tendencies which Dr. Barrett had considered so serious. Nevertheless, in Dec., 1899, Dec., 1900, Sept., 1903, Feb., 1906, and Jan., 1909, I had five prolonged attacks of acute tonsillitis and pharyngitis, followed each time by lumbago and severe erythema nodosum, which on each occasion laid me aside for periods from four to six weeks. These attacks have ceased since the adoption of prolonged fasts.

A First Fast.

In 1910 I read an article by an American in one of our monthly reviews on the fasting remedy. It was Easter Day. Immediately after reading the article I stopped eating for a fast of five days. On Easter Monday I had an 18-hole round of golf in the morning with much enjoyment, and in the afternoon attended to various matters. On Tuesday I had an exceptionally long day at business, 8.30 to 5.30, as there was no time occupied by meals. On Wednesday I commenced work in my office at 8.30, and after a very full day attended a dinner of the Isis Editors at Simpson's Tavern, where I spent the time in conversation, sipping Apollinaris Water meanwhile. I finished up at the Savage Club on more Apollinaris, getting home to Harrow in perfectly good form at 12.30 A.M. On Thursday I continued the fast, and on Friday and Saturday took milk for two days, afterwards returning to my ordinary diet, with my whole system immensely benefited by the experiment.

Systematic Fasting.

I read various American books, and in the following year took a nine days' fast on similar lines, drinking water copiously throughout, but only consuming during the whole period a pint and a half of milk divided into three glasses taken on three of the coldest days when I wanted additional fuel. Since that date I have tried every summer to put in a long fast, drinking only water during the warm weather, when the absence of fuel in the system could best be borne. I have also observed as far as possible a weekly fast for 11 years with great benefit. If I omit the weekly fast I at once suffer from a diminution of mental energy. The American school, represented by Allen of the Rockefeller Institute, did not recommend purgation with the fasting, and in common with all to whom I have spoken who have tried this treatment, constipation and a thickly-coated tongue were amongst the difficulties of the fast. In following years I gradually resorted to larger and larger doses of sodium sulphate to obviate these symptoms.

Treatment of Glycosuria.

In 1916 the anxieties of the war in business and domestic affairs caused my health to suffer. I was examined by my friend Dr. de Havilland Hall; going with him into his laboratory I was surprised to find that his test showed me to be suffering from glycosuria, which at that time amounted only to an excretion of 35 gr. of sugar per day. A carbohydrate-free diet with codeia sulph. for a short time, and a visit to the Alps, entirely removed these symptoms. My diet consisted of eggs, fish, green vegetables, excluding peas, cocoa with cream, and special biscuits of nuts, and a particular bean (kalaki), with butter ad lib. A similar attack in 1917 was quickly terminated by the same regimen and I had no recurrence until the summer of this year, when I had a sharp attack in consequence of special anxiety and strain in my home life.

Guelpa's Method.

In Paris, returning from our visit to the Spas, I called with a well-known London physician upon Dr. Guelpa, who was the first European to systematise the fasting treatment and the first physician to advocate extreme purging. He promulgated his views in 1908 and was met with vigorous opposition. His views were discussed in 1908 at the Therapeutical Society and the Society of Medicine in Paris. Laufer claimed that no invalid, no diabetic, would submit to three, four, or five days of absolute fasting combined with a daily purge. Burlureaux stated that reiterated purging might produce certain disorders and a nervous shock unfavourable to these patients, and Linossier maintained that if fasting, as we have known for a long time, gets rid temporarily of the sugar, it weakens patients and predisposes them to acidosis and to coma; and, moreover, that to stop glycosuria is not to cure diabetes, of which the presence of sugar in the urine is only one symptom. Contrary to the opinion of the American school of Allen who does not use drastic purges, but advocates adequate purges, Guelpa contends that fasting and diuresis do not expel the intestinal poisons which tend to produce auto-intoxication. He therefore concluded that purgative elimination of these poisons, and draining by osmosis of those that remained in the circulation, would largely increase the eliminating action of fasting and diuresis, and he recommended fasts of varying periods, not generally exceeding three days, with a morning dose each day of 400 g. (1¼ oz.) of sodium sulphate. Dr. Guelpa expressed his pleasure at meeting one who had come by his own experience, and without knowledge of Guelpa's methods, to very much the same conclusions, although the heroic doses just mentioned had not been adopted. Since leaving Paris I have had the opportunity of taking a steady course on these lines, fasting two days the first week, two days the second week, and two days the third, and have found that this course has been much more effective than any I have previously attempted. All sugar has disappeared and I am again returning to my usual health. Once each week I take 1¼ oz. of sulphate of sodium and fast completely for 36 hours, excepting for weak cocoa and cream. In the fourth week I fast two days.

My own personal experience may be of value, but I have no claim from general observation of a large number of patients to deal at length with this question. It was, however, of great interest to find that Dr. Guelpa—whose experience is enormous and whose methods have been so largely adopted in France—entirely corroborated my own findings. Dr. J. Laumonier, editor in chief of the *Revue de Chimiothérapie et de Médecine Générale,* in two very able

Hence arose the necessity of a simultaneous blood-urea estimation. This class of case gave a better operation risk than would be imagined from examination of the blood-urea alone. Thus in one of Mr. Everidge's recent prostatectomies, where the blood-urea was 57 and the *urea-concentration 1·93 per cent., rapid convalescence* without any symptom of uræmia occurred. In another case where the blood-urea was 131, but the urea-concentration was 2·14 per cent. suprapubic lithotomy had been performed with a good result. Amongst cases where the urea-concentration did not exceed 1·5 per cent. while the blood-urea figure fell within *normal limits, there was no single instance of recovery* after prostatectomy. The deaths were not all due to uræmia. As regards the technique of the test, Mr. Everidge withheld all fluids for 12 hours beforehand and gave half a pint of water immediately after the draught of urea-solution. Since the highest concentrations of urea in the urine had been found in many cases to occur in the third hour, it was now his custom to collect specimens of urine at the end of each of the three hours after the meal. This procedure also overcame the difficulties caused by the diuresis promoted by the urea, which, as a rule, had passed off by the third hour. It was unfortunate that the test could not be carried out in many cases complicated by digestive disturbance, as the meal was vomited; nor could it be accurately applied where suprapubic drainage had been established. An interesting point was that the urea-concentration generally rose temporarily after nephrectomy.

Blood-Urea Estimation.

The blood-urea figure was variable through wide limits in the same individual according to diet, and a single estimation might be most misleading. His attention had been drawn to this by noting the marked increment in the blood-urea during the few hours after the urea meal was administered for the urea-concentration test; this occurred during health and disease. In Mr. Everidge's experience blood-urea estimation fulfilled two important rôles: (1) an adjunct to the urea-concentration test (by eliminating an abnormally high "pressure head" of blood-urea which may be causing a high urine urea). (2) In distinguishing uræmia from other diseases clinically indistinguishable therefrom.

Results of Application of Urea-Concentration Tests.

Mr. SWIFT JOLY gave the results of the urea-concentration test as applied at St. Peter's Hospital to 64 cases of enlarged prostate. Of 23 cases where the urea concentration exceeded 2 per cent., 21 had been operated upon with two deaths. Of 14 cases with urea-concentration between 1·5 per cent. and 2 per cent. there was one death after operation. Of 13 cases in which the urea-concentration lay between 1·0 per cent. and 1·5 per cent. only five had been submitted to operation and one of these died; while four cases with a urea-concentration of less than 1 per cent. had been operated on without any death. The deaths in the first class of case (i.e., those with a urea-concentration exceeding 2 per cent.) were not due to renal deficiency. On the whole, therefore, this test yielded some indication as to the advisability of operation. In many cases, however, a low urea-concentration was accompanied by a large diuresis, so that Mr. Joly was inclined to think that the total quantity of urea excreted during the second hour of the test gave a more accurate indication of the renal efficiency. Certain precautions were always taken at St. Peter's Hospital. Every patient was kept in hospital for 24 hours on a standard diet before the test. As regards cases where nephrectomy or any unilateral kidney operation was proposed, the test could be applied to the urines from each kidney obtained by ureteral catheterisation. In cases of unilateral kidney disease, such as aseptic stone, hydronephrosis and other conditions, the urine from the healthy kidney always showed a higher urea-concentration than that from the affected side, and was not infrequently as high as 3 per cent.

Renal Function Tests in Surgical Cases.

Mr. FRANK KIDD said that there were two distinct classes of surgical cases in which renal function tests were applied: those in which the renal function as a whole needed investigation (for example, before prostatectomy) and those where the function of one kidney needed investigation before the other kidney was removed for disease. Mr. Kidd had employed at various times simple excretion tests, excretion tests combined with stimulation, retention tests (blood-urea), and the hæmo-renal index. As the result of his experience he preferred the following tests: (1) a dye test (indigo or phthalein); (2) the blood-urea test; (3) the hæmo-renal index.

Where prostatectomy was under consideration there was obviously no need to separate the urines, as only the effect of back pressure on the secreting substance of the kidney need be considered. When the renal efficiency tests indicated poor efficiency, Mr. Kidd performed a two-stage operation, and he considered that this involved less risk to the patient than catheter life. In performing the various tests he avoided the use of the catheter, which was undoubtedly dangerous; if urine could not be obtained by ordinary means he preferred the use of Pezzer's tube introduced suprapubically, as this involved less danger of infection. As regards the interval between the two stages of the operation, he thought it wiser to err on the side of waiting too long. Before nephrectomy the problem was different. Here, again, Mr. Kidd was averse to the utilisation of any test that necessitated prolonged catheterisation of the ureters for two reasons: (1) the danger of sepsis, and (2) because the introduction of the ureteral catheter reflexly affects the rate of secretion from the kidney. Quantitative tests applied to urine obtained were thus fallacious and the prolonged indwelling of a catheter inevitably produced ureteritis. In these cases Mr. Kidd relied upon a dye test combined with the hæmo-renal index, as estimated by the electrical conductivity of a drop of blood and of a single drop of urine from each ureteral catheter. He was inclined to think that the percentage of urea was a more valuable indication of the renal condition than the total amount of urea excreted. Mr. Kidd said that the colour test which he advocated had the immense advantage of being easily applicable at the patient's bedside. He did not advocate the above tests for the investigation of medical cases; for these the blood pressure, combined with ordinary clinical examination of the urine, supplied a more reliable indication of the efficiency of the kidneys.

The Need for Simple Tests.

Prof. H. MACLEAN said that renal efficiency tests must be simple if they were to be of any material help to the surgeon. By laboratory investigations it was possible to estimate the renal efficiency of any case, but the three tests advocated by him were easily applied, without complicated apparatus and without even putting the patient to bed. Prof. MacLean and his co-workers had applied the tests now on more than 15,000 occasions, and had found them efficient. The tests were (1) the blood-urea; (2) the urea-concentration; (3) the urea-concentration factor.

The Blood-Urea Test.—In interpreting this test the previous diet of the patient was most important. It was also found that the blood-urea normally increased with advancing age. Prof. MacLean emphasised that uræmia as a clinical condition had nothing to do with the urea content of the blood, and instanced a case where a patient, with a high blood-urea figure and clinical signs of uræmia, died of uræmia, in spite of the fact that the blood-urea was brought down to the normal figure by a carbohydrate diet.

Urea-Concentration.—In the interpretation of the urea-concentration figure, the amount of blood-urea and the question of diuresis had to be considered, but in general it could be stated that a urea concentration of 2·5 to 3 per cent. after the urea meal indicated efficient kidneys, while a figure of 2·0 to 2·5 per cent. indicated "good average" kidneys unless the blood-urea figure was very high. When the urea-concentration was less than 1·5 per cent. the kidneys were inefficient unless this low figure was due to profuse diuresis. In the latter event

A CASE OF
STRANGULATED OBTURATOR HERNIA.

BY A. ERNEST SAWDAY, M.B., B.S. LOND., M.R.C.S.

THE following case is particularly interesting in that it illustrates the common reluctance to diagnose a rare condition even in the presence of signs and symptoms which are strongly suggestive.

Mrs. K., aged 69, when first seen had been suffering from abdominal pain for four days. For the past three days there had been increasingly severe vomiting. The tongue was coated and the bowels had not been open for two days. An enema produced a fair result, but did not relieve the symptoms. The pain was ascribed to the lower abdomen and particularly to the left femoral region.

History.—Fifteen years ago pelvic colon resected for carcinoma. A few years later an operation for strangulated right inguinal hernia.

Examination.—Abdomen somewhat distended, but nothing palpable. Left femoral region somewhat tender on pressure. Tissues there appeared a trifle more resistant on palpation than at the corresponding point on the other side. Rectal examination negative. The possibility of an obturator hernia was considered, only to be dismissed in favour of obstruction by a recurrence of growth.

Operation.—On opening the abdomen turbid fluid escaped, and the apex of a loop of the lower ileum was felt passing through the left obturator foramen. This loop was very tightly nipped, but after some manipulation it was withdrawn into the abdomen. It was found to be a Richter's hernia involving nearly the whole circumference of the bowel, and a large patch on the anti-mesenteric border of the gut was quite gangrenous. Some six inches of ileum were resected and a side-to-side anastomosis performed. The patient did well for some days and the bowels were well opened on several occasions, but at the end of a week hypostatic pneumonia set in and she died two days later.

This case is typical of the text-book description of strangulated obturator hernia, which most frequently occurs in old ladies; the classical signs and symptoms of acute obstruction are accompanied by pain, slight tenderness, and resistance in the region of the femoral sheath.

Derby.

A CASE OF
DISCHARGE FROM THE UMBILICUS.

BY FREDK. JOHNSON, M.B. LOND., F.R.C.S. ENG.

THE following case is uncommon and merits record.

H. C., a railway plate-layer, presented himself complaining of a discharge from the navel of some two weeks' duration, accompanied with pain below and to the right of the spot. The patient was of a strong and robust build, and there were no symptoms referable to the intra-abdominal organs. By manipulation a clear and scanty serous discharge could be expressed from the umbilicus. An induration with a fairly well-defined margin, rather larger than a half-crown piece and somewhat tender, was detected below and to the right of the umbilicus. The induration was situated apparently in the muscular wall rather than in the skin or subcutaneous tissues.

The patient's general condition suggested nothing of an acute nature. He was taking holiday and wished to return to work after a few days. A soothing warm application was prescribed, and two days later the patient returned with the story that a hay or grass seed had been passed with the discharge. This statement at once afforded a clue to the case. I examined the navel more minutely and found a fine track leading in the direction of the induration. An ordinary director was passed into the sinus; on its withdrawal the groove of the instrument was found to contain a thick cheesy offensive material with which were mixed the sheath remnants of grass seeds. The patient volunteered the statement that he had been engaged during the summer in removing hay from a railway cutting. The subsequent course of the case revealed nothing noteworthy; more grass-seed débris escaped and the discharge gradually subsided and with it the swelling below the umbilicus.

It was clear that several dried grass seeds with their cuticular coverings had become imbedded in the folds of the umbilicus and, aided possibly by the barb-like character of the seed covering and the contractions of the subjacent muscles, had penetrated the surface layers of the abdominal wall.

Southborough, Kent.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SYPHILIS OF THE STOMACH.

AN occasional lecture on Syphilis of the Stomach was delivered on Nov. 23rd by Dr. GUSTAVE MONOD, physician to Vichy Thermal Hospital, Sir JOHN BLAND-SUTTON, President of the Society, being in the chair.

Dr. MONOD said that the question of syphilis of the stomach was of great interest, as the treatment and life of the patient depended on correct diagnosis. As early as 1834 Prof. Andral (Paris) taught the occurrence of this condition, and cases were recorded by Dieulafoy, Hayem, Fournier, and Pater (Paris 1907). At the present time with the more accurate means of diagnosis, numerous cases had been described by Smithies, Hemmeter (U.S.A.), Chiari (Germany), Hayem, Leven, Bensaude, and Florand (France). Among the few British authors who had mentioned this disease were Soltau Fenwick[1] and McDonagh.[2] Syphilis of the stomach might exhibit itself by sclerosis, gummata, or submucous infiltration. An excellent specimen of this third condition, showing the spirochætes in situ, was being demonstrated by McNee.

The *frequency* of this condition varied greatly according to the various authorities, but Dr. Monod thought that the figures were increasing. The English records were surprisingly low compared with the French and American ones. He wondered if this was due to the prevalence of syphilis in France. Or might it be that syphilis was diagnosed earlier in England and treated, thereby preventing complications such as that which he was now discussing?

The *clinical types* of syphilis of the stomach might be summarised as follows:—

(*a*) Neuralgic or chronic dyspeptic.

(*b*) Ulcer. A case was described by Prof. Fournier in which gastrorrhagia was stopped by treatment with potassium iodide. Soltau Fenwick said that 5 per cent. of gastric ulcers are specific, while other authorities said 10 per cent. (Engel) and 20 per cent. (Lang). A report at the last international congress of medicine in Strasbourg estimated 100 per cent! During the war Castaigne found eight positive Wassermann reactions amongst 40 cases of gastric ulcer in soldiers, and four of these were cured by antisyphilitic treatment. The ulcer might be due to thrombosis, to the breaking down of a gumma, or to gastro-radiculitis.

(*c*) Pseudo-cancer. Many cases in which syphilis had mimicked carcinoma were now on record. Hayem had reported a case in which a pyloric tumour in a man, aged 71, disappeared under antisyphilitic treatment. The same author also recorded the case of a man, aged 60, suffering from vomiting, cachexia, and hypoacidity, on whom he performed pylorectomy under the impression that the condition was cancerous. The patient recovered and remained well. Examination of the excised pylorus revealed only syphilitic infiltration. The question arose, would anti-syphilitic treatment have been as effectual? This question might be answered by the experience of Tuffier, who operated on a man, aged 35 years, for a supposed hydatid cyst of the liver. Operation revealed a large gumma and was not proceeded with. Anti-syphilitic treatment was given, but in spite of this stenosis of the pylorus developed for which gastro-enterostomy had to be performed later. The second operation revealed a pylorus encircled by dense syphilitic scar tissue. Florand reported a similar case: pain after meals, vomiting, and loss of weight accompanied by a palpable tumour led to a diagnosis of cancer. Operation in this case revealed a syphiloma of the left lobe of the liver extending to the pylorus. Gastro-gastrostomy, followed by anti-syphilitic treatment, resulted in a cure. Lemierre and Roulot-Lapointe had recorded a which he had recently discovered, while working on tests of pancreatic function. He had discovered that the kidney acted as a safety valve to the blood-sugar and that the urine normally contained the same concentration of sugar as the blood. In renal disease this correspondence no longer held, and the blood not infrequently contained three times as much sugar as the urine. The fraction $\frac{\text{blood-sugar}}{\text{urine-sugar}}$ therefore gave an indication of the renal efficiency. The test could be applied to a very small quantity of urine or blood, ½ c.cm. of either being sufficient. It was therefore particularly valuable when applied to the small quantities of urine obtained by ureteral catheterisation, and would in these circumstances give an indication of the functional activity of either kidney. By the employment of this test Dr. Wallis had been able on one occasion to indicate disease in one kidney when all other tests had given no indication of total renal inadequacy, and there were no clinical signs of renal disease. It was subsequently discovered that the kidney was the seat of a hypernephroma.

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[1] THE LANCET, 1899, ii., 410.

[2] Venereal Diseases, 1920.

The Doubtful Adequacy of Pathological Tests.

Mr. Girling Ball said that during the past year the renal function tests he had employed were (1) the urea-concentration test; (2) the estimation of the urinary diastase; (3) the estimation of the blood-urea. In addition to these in some cases estimation of the normal urinary sugar had been carried out. From a review of the results, it became obvious that the clinical findings should always hold the first place in the judgment of the surgeon. In the majority of his cases the clinical findings and pathological tests agreed closely, but the one or two exceptions made him sceptical of the value of any pathological test.

Mr. Ball's cases were divided into two groups: (1) those of obstruction in the lower urinary passages, and (2) those of ureteric or renal disease. In the first group there were 12 cases of prostatic enlargement, two of them carcinomatous, which were not submitted to prostatectomy. Of the remaining ten four died, two from pulmonary embolism and two from renal suppuration. One of the patients who died of pulmonary embolism had only had the first stage of a two-stage operation performed, in recognition of the fact that he had had chronic obstruction and that his urine was of persistently low specific gravity, and despite the fact that the renal function tests were normal. Unfortunately, a post-mortem could not be obtained, so that it was possible that the diagnosis of pulmonary embolism was incorrect. After the suprapubic drainage he had developed symptoms suggestive of uræmia, but at no time was there any suppression of urine.

In the second group were 17 cases of ureteric and renal disease. In three of them both kidneys were diseased. When the disease was unilateral, Mr. Ball believed that if the combined excretion from both kidneys gave normal figures and the clinical findings showed that there was another kidney secreting urine normal to ordinary urinary analysis, the diseased kidney could be safely removed. The difficulties of obtaining urine from each of the two kidneys in such a manner as to make chemical examination satisfactory were great. The urinary sugar and urea tests had, however, confirmed the clinical findings, and were important as they could be carried out with small amounts of urine.

The Points of View of Physician and Surgeon.

The attitude of the physician and of the surgeon towards these tests appeared to Mr. Ball to be quite different. The former wanted to know the functioning power of the kidney from the point of view of prognosis, while the latter wanted an opinion as to whether he should perform an operation in the most adequate fashion, a modified operation, or whether he should operate at all. The surgeon wanted the test that would indicate the amount of renal reserve, and no such test had yet been invented. Further, the tests were all made under the best conditions with the patient in bed and the kidneys being called upon to do a minimum of work. It was well known that a man could exist with one kidney, and that he would stand the operation of nephrectomy provided the second kidney was sound, and it had been his practice to rely on clinical investigations to demonstrate the absence of disease in the supposedly sound kidney.

The discussion stood adjourned.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Exhibition of Cases and Specimens.

A laboratory meeting of this Society was held at the London School of Tropical Medicine, Endsleigh Gardens, on Nov. 17th, Surg.-Rear-Admiral Sir P. W. Bassett-Smith presiding.

Specimens were shown by Dr. W. Broughton-Alcock, Dr. J. G. Thomson, and Prof. R. T. Leiper.

Major H. C. Brown, I.M.S., demonstrated a method to facilitate the isolation of bacilli of the enteric and dysentery group in dysenteric stools. By the addition of one part of high-titre specific agglutinating serum to nine parts of saline emulsion of a small portion of fæces, sedimentation of the particular agglutinated, but still living, organisms was obtained with separation from other intestinal bacteria. Withdrawal by pipette of a droplet of the sediment and plating on MacConkey's medium secured on incubation a high proportion of colonies of the infecting organism. Culture plates were shown with controls to demonstrate the efficiency of this method as applied to the isolation of *B. paratyphosus*.

Dr. P. H. Manson-Bahr gave an account of a case of amœbic abscess of the liver which had ruptured into the lung, and was eventually cured by large doses of ipecacuanha. Diagnosis was confirmed by the presence of cysts of *E. histolytica* in the sputum. Abundant growth of yeast fungi was obtained on cultivation from the sputum, and but for the finding of histolytica cysts might have been taken to point to a mycotic infection as the primary cause of disease.

Dr. Manson-Bahr also showed microscopical preparations and drawings illustrating the pathology of bacillary dysentery.

Dr. G. C. Low and Dr. Elizabeth O'Driscoll showed pathological specimens: (1) From a fatal case of blackwater fever in which a positive Wassermann reaction had been obtained. Reference was made to similar instances, suggesting the possibility of a syphilitic factor in the causation of some cases of blackwater fever. (2) From a supposed case of malaria, in which malignant endocarditis and splenic infarcts were found on post-mortem examination. Other examples of the erroneous diagnosis of malaria were quoted as by no means infrequent. (3) Trypanosomes in the cerebro-spinal fluid and blood of a case with a previous history of malarial fever, in which the course of the trypanosome infection was characterised by slow cerebration, peripheral neuritis, and raised temperature.

Dr. Andrew Balfour showed specimens of two poisonous sea-fish, or Laffe, from Mauritius: (1) *Pterois volitans* (Linnæus); (2) *Synanceia brachio*, var. *verrucosæ*. Both possessed formidable poisonous dorsal spines, the venom from which, on puncture of the skin, gave rise to severe local abscess and septicæmia, with serious symptoms of violent pain up the limb, great restlessness, and occasionally fatal results. The remedy applied by the Mauritian fishermen was claimed to be effective, but its composition was kept secret by the natives.

Mr. A. Bacot and Dr. J. A. Arkwright showed stained preparations of the various forms of *Rickettsia melophagi* found in the sheep ked—*Melophagus ovinus*.

Squadron-Leader H. E. Whittingham gave an account of cases of sand-fly fever in Malta, from of leather-bottle stomach. Whenever possible microscopic examination of excised portions had been made, but the Wassermann reaction had not been carried out as a routine.

Linitis Plastica.—In his own series there was only one case of leather-bottle stomach, too extensive for gastrectomy. Post-mortem investigation showed this to be a case of carcinoma, and the London Hospital had found no example of the syphilitic variety of linitis plastica.

Carcinoma of the Stomach.—It was well known that syphilis occasionally produced a tumour very like an early cancer. Bird believed that syphilis was to be suspected if the tumour was succulent looking and almost opalescent, and if the omentum showed white unexplained scars. Some of the cases of supposed carcinoma too extensive for gastrectomy, which recovered completely after gastro-enterostomy or even without any interference, might have been syphilitic, and he (Mr. Walton) had met with three such cases where the operation had been performed by another surgeon. Among his gastrectomies there was no evidence of syphilis on microscopic examination.

Chronic Gastric Ulcer.—The majority of reported cases of syphilis of the stomach resembled chronic gastric ulcer. In the London Hospital Pathological Institute only one case of a syphilitic lesion of the stomach had been demonstrated at over 12,000 post-mortems. He thought it probable that the variation in the figures might be due to the fact that some of the ulcers occurring in syphilitics were not in themselves specific but simple peptic ulcers. It should be remembered that a positive Wassermann reaction was not definite evidence that the lesion in the stomach was syphilitic. The appearances of a syphilitic ulcer were said to be as follows: they were deep with much surrounding infiltration, often causing much distortion of the stomach; perigastric adhesions were common, and widespread scarring occasionally caused obstruction necessitating operation.

As regards symptoms, the general health appeared to suffer considerably and loss of weight was marked. Hæmorrhage occurred just as in the cases of chronic ulcer. According to Downes, free acid tended to be diminished. In his (Mr. Walton's) experience syphilitic lesions of the stomach were rare.

The Histological Diagnosis of Syphilis.

Prof. H. M. **TURNBULL** said that the histological diagnosis of syphilis was even more difficult in the stomach than in any other organ. If the changes typical of syphilis elsewhere—namely, infiltration with plasma cells, lymphocytes and eosinophils, endarteritis and endophlebitis, and the presence of multinucleated giant cells—were to be accepted as evidence of a syphilitic origin of a gastric ulcer, then all, or almost all, chronic peptic ulcers would have to be classed as syphilitic. There was definite evidence, however, against such an extreme view, and Prof. Turnbull thought, in view of Dr. McNee's success in demonstrating the *Spirochæta pallida*, that this would provide the only positive evidence of the syphilitic origin of any gastric lesion. At the Pathological Institute of the London Hospital they had examined portions of 713 stomachs from the operating theatre without finding any evidence of syphilis. Syphilis of the stomach was undoubtedly very rare; in 13,000 post-mortems at the hospital one doubtful case only had been found, although they had constantly been on the look-out for it. A few apparently typical "gummatous ulcers" of the stomach proved on histological examination to be chronic peptic ulcers with a growth of a Gram-positive streptothrix in their bases. The one doubtful case was that of a female patient, aged 30, who died after a miscarriage at the sixth month, which had been preceded for three days by profuse hæmatemesis. Post mortem abundant evidence of syphilis was obtained in the aorta, the scarring of the soft palate, vaginal orifice, &c., and the positive W.R. of the blood. There were a number of enlarged fibro-caseous glands in relation to the bronchi and trachea, and an enlarged upper lumbar gland on each side. A large irregular ulcer involving the posterior surface of the body and fundus of the stomach, with a granular yellowish-grey base surrounded by a raised border honeycombed with small ulcers, showed on histological examination changes typical of intense gummatous inflammation. Gummata were found in the liver. This case was still under investigation and Prof. Turnbull thought it doubtful, since the distribution of the glandular enlargement was typical of tuberculosis spreading from the hilum of the left lung, and because he had not found spirochætes on microscopical examination of no less than 14 different portions of the stomach stained by Levaditi's method.

SECTION OF UROLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 24th, Sir **THOMAS HORDER**, the President, being in the chair.

Mr. **JOHN EVERIDGE** opened a discussion on

RENAL FUNCTION TESTS.

He said that the tests chiefly employed by himself were (1) dye-excretion; (2) forced urea-excretion; (3) urea-retention (blood-urea). About 600 cases, mostly surgical, had been investigated by him.

Dye-Excretion.

Two dyes had been employed, phenolphthalein and indigo-carmine. By the former, quantitative, and by the latter qualitative estimation of the renal function was attempted. Indigo-carmine was employed to give an estimate of the relative working of each kidney. By its use the frequency of jets from the ureters as seen with the cystoscope was made obvious and a hidden ureter easily discovered. Phenolphthalein, in the opinion of Mr. Everidge, could not be relied on to give a very accurate estimate of the total renal function. He had found it give only 66 per cent. of accurate results when used as a preliminary investigation before operation (chiefly prostatectomy) on the lower urinary tract. In one case where colour came through in five minutes, and 36 per cent. of the dye was excreted in the first hour, the patient died after the second stage of a two-stage prostatectomy; post mortem very little renal tissue was present. When used as a test of relative kidney value, phenolphthalein gave about 54 per cent. of results which were thought to be accurate since they coincided with those obtained by alternative tests and from the clinical phenomena. In many cases the test gave a doubtful result and in 15 per cent. the results were quite misleading.

One case, a female, who had suffered for five years from symptoms suggestive of a right-sided intermittent hydronephrosis, gave the following results after the injection of 6 mg. of phenolphthalein and catheterisation of the ureters: From the right kidney the colour came through in ten minutes, while none appeared from the left kidney in half an hour. Pyelography immediately after revealed no abnormality on the left side, while the right presented a definite piecture of hydronephrosis. Mr. Everidge showed radiograms of this case. Subsequent operation revealed stenosis of the upper end of the right ureter, and the patient made an excellent recovery in spite of the apparently low efficiency of the left kidney as estimated by the phenolphthalein test.

Mr. Everidge added that the personal equation entered largely into the reading of any dye test, and that his personal reading might be open to criticism. The presence of blood or other pigments in excess in the urine obviously vitiated this test.

Urea-Concentration Test.

Although at first somewhat sceptical that so simple a test could be efficient, Mr. Everidge had found this test demonstrate increasing or decreasing renal efficiency with remarkable accuracy. Certain precautions had, however, to be taken, and of these a 12 hours' abstention from food and drink before the test was essential. In certain cases with a high "pressure head" of urea in the blood, urea appeared to be forced through the kidney as MacLean had suggested.

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[1] THE LANCET, June 19th, 1920.

would doubtless throw additional light on other morbid conditions.

Discussion.

Prof. E. P. **Cathcart** referred to the importance of the study of the respiratory exchange. Unless such investigations were well and thoroughly done, they were valueless. All the apparatus in use had flaws and some many flaws. Of the apparatus recently introduced for general clinical use most was of little use and of limited application. For accurate results methods such as the closed circuit or gas analysis must be used. Physiologists believed this study to be one of the most fundamental. It gave clues to changes taking place in the living organism and enabled us to learn more completely what was the normal and what abnormal. In Prof. Cathcart's opinion the new methods would throw much light on many problems but would not be adaptable to clinical use on a large scale.

Dr. **Leonard Findlay**, in congratulating Dr. Fleming on his work, said his own observations on the condition known as infantile atrophy had led to certain conclusions as to the cause of the condition which were shown to be wrong by Dr. Fleming's observations. Dr. Fleming had done experiments in a case of obliteration of the bile-duct in which there was practically no metabolism of fat. In this condition the respiratory quotient was lowered by the fat, showing that free fat interfered with carbohydrate metabolism. Towards the understanding of questions of nutrition, the study of the respiratory quotient was of great value. Finkelstein taught that an infant should be fed according to the expected weight and not according to actual weight, and Dr. Fleming's results showed that this was correct. No doubt other theories and other problems in nutrition would be helped by these studies.

Mr. **James Taylor** made a communication on

Stovaine Anæsthesia.

He described the method of giving stovaine and the care to be taken in its administration, limiting his account to his own experiences in something over 500 cases. He used only the heavy variety, and while believing some of the other drugs are safer, found that none gave such a perfect muscular paralysis, and this was of great importance in abdominal cases. Mr. Taylor always used stovaine and glucose and all his injections were given in the lumbar region. He considered stovaine to be the most perfect method of blocking the afferent nerves and protecting the patient from shock, in other words, of obtaining anoci-association. A fall of blood-pressure occurred just after the injection and this might in rare cases be alarming. In Mr. Taylor's opinion operations associated with much shock could be more successfully performed under spinal anæsthesia than with any other anæsthetic. In ten disarticulations at the hip after intrathecal injection all the cases recovered except one, where the collapse after a railway smash was extreme. Twelve consecutive cases of Wertheim's operation were performed without a death; in one of these cases the whole rectum from the pelvic colon downwards was also removed. Another group of cases where stovaine had definite advantages was that including intestinal obstruction in the presence of much abdominal distension. In these cases the abdominal muscles were so completely paralysed by the injection that the difficulty of closing the abdomen so often experienced was completely done away with, and, moreover, there was less tendency to paralysis of the involuntary muscle of the intestine. Mr. Taylor referred to several of the disadvantages of the method, such as the trouble of injection, usually slight, and the difficulty of procuring the proper mental atmosphere during the operation. This, however, introduced less strain on the operator than that of working with general anæsthesia where the administrator was not highly skilled. The administration of morphine and hyoscine would send the patient to sleep during the operation. Mr. Taylor said that the greatest objection to stovaine was the initial fall in blood pressure and apparent collapse. This might be overcome by injection of pituitrin or inhalation of a little ether. In elderly and feeble people, those with serious renal disease and those suffering from recent loss of blood or anæmia the condition of the patient might become alarming. The duration of the anæsthesia was variable and the higher the site of the operation, the shorter time it lasted. In the upper abdomen it lasted about half an hour and in the lower abdomen about one hour. Fifteen minutes after the administration of stovaine and glucose no further extension upwards took place.

ULSTER MEDICAL SOCIETY.

A meeting was held on Nov. 17th, Dr. **Robert Hall**, the President, in the chair.

Prof. T. **Walmsley** read a paper on the

Origin of Man.

He dealt first with the broad outlines of evolutionary progression, and drew attention to the experimental or tentative forms which have existed at all levels of the animal kingdom. On this basis he speculated as to whether there had been tentative forms of man. The history of man was inextricably mixed with all the problems of the Quaternary or Pleistocene period. Prof. Walmsley described the period of Neolithic culture, and then the different phases of the late Palæolithic age, the peoples of the two being compared and contrasted, and the probable present-day representatives of the Magdalenian and Solutrean phases were pointed out. He defined the Mousterian period, and described Neanderthal man, special reference being made to the size of the brain and the nature of the teeth. Prof. Walmsley supported King's view that Homo Neanderthalensis was a distinct species, or at least something more than a variety of modern man. He outlined pre-Mousterian periods, and placed in them Heidelberg man, Java, Piltdown, and Galley-Hill, indicating the relationship of Heidelberg to Mousterian man. Pithecanthropus was an earlier offshoot, in some ways more different and in some ways less so, from modern man, while the Galley-Hill skull, though distorted, was modern in its general form, but primitive in detail. Prof. Walmsley concluded, therefore, that they were early offshoots from the human stem, that the differences between them and modern man were greater than the differences between modern races, and that they should probably be classed as different species.

A discussion followed in which Prof. W. J. **Wilson**, Dr. H. L. **Kisack**, Prof. J. A. **Lindsay**, and others took part.

The **Secretary** announced that the annual dinner of the Society would be held on Dec. 8th.

LIVERPOOL MEDICAL INSTITUTION.

A meeting of this society took place on Nov. 17th, Dr. J. E. **Gemmell**, the President, in the chair, when Dr. **Haward Bywater** read a short paper on Malarial Eye Complications.

Dr. **John Hay** described three cases of

Spontaneous Pneumothorax.

In each case the patient was a male in the early twenties. The pneumothorax was left-sided, and recovery was uneventful; there was no effusion and there was no pyrexia. He discussed the question of diagnosis, pointing out its extreme difficulty in some cases in the absence of an X ray report. In his opinion this was due to the frequent absence of the more dramatic physical signs so definitely associated with pneumothorax. In a closed dry pneumothorax there was a different grouping of signs, and thus recognition was less easy than in a case where amphoric breathing, metallic tinkling, and metallic echo were present. Dr. Hay discussed the character of the pain in these cases, and referred to its remarkable similarity to cardiac pain.

Prof. MacLean advocated repeating the test immediately by giving a further 15 g. of urea. The initial diuresis usually disappeared after the second meal, and the figure then obtained would be reliable.

The Urea-Concentration Factor.—This was the fraction :—

$$\frac{\text{Number of mg. of urea in 100 c.cm. of urine}}{\text{Number of mg. of urea in 100 c.cm. of blood}}$$

and represented the power of the kidney to concentrate the waste products from the blood. The normal figure for the factor was 60 to 80. When the factor was about 40 the outlook for any surgical operation was poor, and with a factor of 20 almost hopeless. By the consideration of the three tests he had found no difficulty in prognosticating the risk of major surgery on the urinary apparatus, but he wished to emphasise the fact that results depended not altogether on renal efficiency but also on the rapidity and dexterity of the surgeon.

Certain Fallacies and Corrections.

Mr. **CYRIL A. R. NITCH** said that Prof. MacLean had elaborated a technique which was so simple in application and so simple to understand that with a knowledge of the different normals the surgeon required very little experience to form a good working conception of renal efficiency or deficiency. Mr. Nitch had employed the following tests during the last three years: (1) the percentage of urea in total amount of urine passed in 24 hours by a patient on a normal hospital diet; (2) the urea concentration in second and third hour specimens after a dose of 15 g. of urea; (3) the blood urea-concentration; (4) the clinical signs of renal functions, such as the degree of thirst, the appetite, particularly for meat the condition of the tongue, and the colour of the skin. Any single test might be misleading, but when all these were taken together a very reliable indication of the condition of the kidneys was obtained. In fact, he had recently shown Prof. MacLean a tabular statement of over 100 cases subjected to operation, and after reading the results of the tests Prof. MacLean had given a forecast in every case. There were, however, certain fallacies :—

1. The percentage of urea in 24 hours was normally about 1·5 per cent. in hospital patients, but the figure depended entirely on the diet, and would naturally be higher on a diet containing an unusual amount of proteins.

2. The urea-concentration test might be modified by diuresis, as already pointed out by previous speakers.

3. The amount of urea in the blood on an ordinary hospital diet was normally 20-40 mg. of urea per 100 c.cm. of blood, but the amount was subject to some variation according to the amount of protein in the diet. Prof. MacLean had already pointed out that it was useless to attempt to prevent uræmia by confining a patient to a carbohydrate diet.

4. The clinical signs were, in Mr. Nitch's opinion, the most valuable of all, and when a patient exhibited a typical clay-coloured complexion, a beefy tongue, and complained of thirst or a disinclination for meat, he would not allow any chemical test to influence him in favour of operation. On the other hand, if the clinical signs were good, while the chemical tests were below standard, he would be guided by the clinical signs. Mr. Nitch instanced a case where prostatectomy had been performed successfully, although the chemical tests were bad, while the patient's general condition would seem to indicate fair renal efficiency.

He added that the diastase test had been performed as a routine in all his cases, but that the results had been so variable that he had ceased to place any reliance on it.

Mr. Nitch's conclusions, based on a series of 118 cases comprising urethral strictures, lithiasis, diseases and neoplasms of prostate, bladder, and kidneys, were that the three tests mentioned were simple and efficient; they were harmless to the patient, and could be applied to every variety of urinary disease; they gave more accurate information than any others at present in use; and that the clinical signs of renal function were of great importance and should never be overlooked.

Renal Function as a Unit.

Mr. **J. B. MACALPINE** referred to the different points of view from which physicians regarded this subject, and the numerous tests which they had invented with the object of differentiating the various non-suppurative inflammations of the kidney. Much of the work of the physician had a histological basis, but in the surgical field the kidney function was to be regarded as a unit, and the tests applied were designed to supply indications in prognosis and treatment. Mr. Macalpine discussed two tests: the phenolsulphonephthalein test and the blood-urea test. This former test represented the kidney function in excreting urea and similar substances, the excretion of phenolsulphonephthalein being comparable with that of several substances, amongst them urea. On the other hand, the amount of blood-urea indicated the "head" of urea necessary before which it could be expelled through the kidney. The two tests should, and did, as a rule in actual practice, show parallel results. It was, however, well known that the normal human being had approximately three times the amount of renal tissue necessary for existence, and that signs of renal failure only set in when about two-thirds of the kidney tissue had been destroyed. But when the activity of the kidney was limited by disease then the organ had to work more and more continuously in order to meet the requirements of the body. Toxic products only appear in the blood when the whole of the safety margin of renal tissue had been destroyed. Renal degeneration had therefore advanced a long way before the blood-urea test gave any definite indication. The phenolsulphonephthalein test gave earlier indications of renal degeneration, although, as already stated, the indications by the two tests ran practically parallel.

Mr. Macalpine thought that these artificial tests were more variable in prostatic disease than an examination of the symptoms. He believed that the effect of the tests had been to widen out the rungs of the uræmic ladder so as to make it possible to observe more clearly the position occupied by any one patient in the scale. Further, he thought it possible to mark out arbitrary figures on the scale indicating: (1) the upper limit of the normal variation for blood-urea; (2) a line below which a one-stage operation might be safely done and above which a two-stage prostatectomy was advisable; and (3) a line which would lie at the entrance to the danger zone. He assumed that 40 mg. per 100 c.cm. represented the upper limit of blood-urea in healthy people. He regarded 50 mg. as the limit for one-stage prostatectomies and 75 or 80 mg. as the level at which the prognosis should be guarded. After urinary decompression operation the activity of the kidney was still further depressed and blood-urea figures naturally increased. After this preliminary depression a reaction or positive phase occurred and an adequate study of the blood-urea curve at this period was of the greatest importance. Nothing could be more haphazard than to submit a patient to the second stage of operation until it was known that the blood-urea had fallen to normal. Further, an immediate post-operative fall in the blood-urea should not tempt one to proceed with the second stage until it was certain that the fall was not due to the post-operative restriction of urea-forming bodies in the diet. Renal fibrosis might result from back pressure, but might also arise from sclerotic lesions of cardiovascular origin. The fall of blood-urea after decompression was liable to be very slow when fibrosis was due to the latter cause. Mr. Macalpine had on one occasion waited as long as five months before performing a successful prostatectomy.

In cases where it was desirable to avoid operative interference, systematic readings of the blood-urea should be made to see to what extent, if any, the kidney was deteriorating. In such cases, the phenolsulphonephthalein test should be avoided since it involved the use of the catheter with the attendant risk of sepsis. In that type of renal tubercle, with extension to the bladder, rendering ureteral catheterisation impossible, Mr. Macalpine regarded the blood-urea test as the most satisfactory means of estimating the efficiency of the second kidney.

A New Test.

Dr. **R. L. MACKENZIE WALLIS** said he had had experience of several of the tests already described. He wished, however, to speak mostly about a new test

Reviews and Notices of Books.

ESSENTIALS OF MENTAL MEASUREMENT.

By WILLIAM BROWN and GODFREY H. THOMSON. Cambridge Psychological Library. Cambridge University Press. 1921. 21s.

THIS book is a successor to one published by Dr. Brown in 1911, the old material standing without much change, but being supplemented by five new chapters from the pen of Dr. Thomson. The two authors write separate prefaces, and Dr. Brown appears to reserve his opinion on certain views of his colleague. The book falls into two parts, on Psychophysics and on Correlation. Of the former, a chapter of 12 pages is given to the nature of mental measurement, but is restricted to the case of sensory thresholds. A highly condensed chapter is allowed to the actual methods of measuring these, one to Skewness of Frequency Distributions, and one to the Elementary Theory of Probability. The second part of the book, which is about equally long, deals successively with the following topics: Introduction to Correlation; Mathematical Theory of Correlation; Influence of Selection; Correction of Raw Correlation Coefficients; the Theory of General Ability: and a Sampling Theory of Ability. There are in addition several useful mathematical tables.

If we compare the book with its chief existing English rival, the "Mental and Social Measurements" of Thorndike, it becomes obvious that it aims at being fundamental and concise, rather than at bringing the exposition within the compass of very weak mathematicians. If the ground the authors cover omits much that many would like to see there, this is chiefly due to their assigning a relatively large space to certain questions in which they are especially interested. One of these is the correction of raw correlation coefficients. Here they strongly oppose the corrective formula suggested by Prof. Spearman, but unfortunately their position is mainly based on some curious slip in the value of the "probable error" concerned, this being given by them of the wrong order of magnitude. Still greater space is devoted to the theory of ability, in respect of which Dr. Thomson strongly combats the view that the correlations found between the results of mental tests should be attributed to one "general factor." But it is to be regretted that he could not have managed to introduce some notice of the basal objections to his argument published by Spearman in May, 1920.[1] The theory proposed by Dr. Thomson in place of that of the general factor is one of "sampling." According to this, the said correlations are due to "a number of factors at play in the carrying out of any activity such as a mental test, these factors being a sample of all those which the individual has at his command" (p. 188). Other topics receiving full, but by no means excessive, notice are the Criterion of Goodness of Fit of Psycho-physical Curves and the calculation of correlations by ranks instead of by measurements. Here Dr. Brown, though still maintaining a cautious attitude, has at any rate widely departed from the very pronounced hostility of his earlier edition.

The book may be thought to attempt to combine two very different aims. The first is to supply a general text-book on the methods of mental measurement, whilst the second is to write a keenly controversial pamphlet, of which the chief topic is not general methods, but special ones applied to special matters. On the other hand, these matters do no doubt stand at present in the very forefront of experimental work, and the authors are among those whose views will be received with the highest degree of interest. Their words ought to and will be widely read. The polemical trend is tempered by generous eulogies of adversaries and the style of writing is admirable.

PHYSIC AND FICTION.

By S. SQUIRE SPRIGGE, M.D. Camb., F.R.C.S. Eng. London: Hodder and Stoughton. 1921. Pp. 307. 12s. 6d.

THIS book ranges over a wide field of medical and paramedical interests—the medicine of the novels to which the author confesses an addiction, the probability of being able to poison anyone without being found out, what "out-of-date" means in medicine, eugenic marriage certificates, Cornelius Agrippa—one might almost say it treats *de quibusdam aliis* as well as *de omnibus rebus*.

Running through the book are two main propositions. The first is that medicine is progressive and constantly advancing, sometimes by slow accretion, sometimes by one of those fundamental leaps which does not simply add one more piece to knowledge, but multiplies all previous knowledge a hundredfold. The difficulties of the poisoner have gradually become greater and greater with the advance of chemistry, culminating perhaps for the present in the admission of the validity of physiological tests for aconitine with which Sir Thomas Stevenson hung Lamson. But Lister transformed the surgical world by one great bound. One way and another this progress, quick and slow, is going on all the time, and compels medical education and medical practice to enlarge their borders in proportion. The second, less appreciated but no less important, thesis is that the doctor has now definitely ceased to be a member of a craft whose mysterious and exclusive information is doled out to the public in pontifical decisions. There are questions whose medical bearing is as obvious as their general importance, though answers to them cannot be dictated by medicine. The medical factor has now intruded into so many matters of public interest that an increasing number of thoughtful men and women are compelled to solve a certain number of medical problems either for themselves or in coöperation with doctors. The abandonment of a distinctive dress by medical men means something more than a desire for personal comfort or unobtrusive modesty. It means that doctors are not set apart from an educated public, the whole of which must and does play its part in the promotion of healthiness. No one can doubt the importance of this change, least of all those who read it in Sir Squire Sprigge's urbane and moderate statement and who will realise in his volume that it is possible to be desperately serious without being in the least bit solemn—indeed being sometimes very much the reverse.

TUBERCULOSIS.

Tuberculosis of Children. By Prof. HANS MUCH, Director of Department for Science of Immunity and for Research of Tuberculosis at the University of Hamburg. Translated by Dr. MAX ROTHSCHILD, California. New York: Macmillan Company. 1921. Pp. 156. 12s. 6d.

IN this book on tuberculosis of children Prof. Much takes a long time in getting to the children, but when he does so he is much to the point. Only the last half of the book is devoted to children; the first half is a general survey of the problems of immunity in relation to tuberculosis. In both parts the author is remarkably lucid, and, considering the great complexity of the subject discussed, some readers will be tempted to raise the question: Is the author able to discuss these problems with clear-cut precision, as if most of them were already solved, because his is a master mind, or is his clarity of view simply due to his following only his own lines of thought, and using blinkers in regard to theories and hypotheses which clash with his own? He does, indeed, discuss the views of other authorities, but most of them, to judge by his verdict, must be strangely misguided persons. The satirical exclamation, "How these Christians love one another!" would seem to be applicable to present-day pathologists as well as to early Christians. On Spengler's I.K. the author passes the judgment which a spironema had been isolated by blood culture on to Noguchi's medium, and the modification of blood-agar (Wenyon, v. infra) in six out of 26 patients. The blood was cultivated on the first day of fever, and controlled by ordinary broth cultures. On the sixth day of incubation the resulting growth was used for the inoculation of volunteers, including himself, who developed typical symptoms of sand-fly fever, slight elevation of temperature, malaise, aches and pains, and anorexia. The blood counts showed a well-marked leucocytosis. One case from which the spironema was obtained developed jaundice and febrile relapses on the eleventh and twenty-second days, the jaundice being possibly due to a mixed infection. A specimen of the cultivated spironema was shown by dark-ground illumination.

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[1] Psychological Review, 1920, xxvii., 159–172.

Dr. C. M. **WENYON** demonstrated a culture-medium for protozoa and other organisms, consisting of a 10 c.cm. mixture of 1 part of nutrient agar to 9 parts 0·85 per cent. saline, cooled after sterilisation to 50° C., to which were added 20 drops of blood obtained with aseptic precautions from the ear of a rabbit by the paraffin method. This medium was less complicated than Noguchi's, and had been found of practical value for the cultivation of *Leptospira hæmorrhagica*, *Leishmania donovani* and *tropica* at 24–30° C., trypanosomes and flagellate organisms such as *Embadomonas intestinalis*. Hogue's egg medium for the cultivation of *Trichomonas* and *Embadomonas* was also described.

Dr. **WENYON** also showed a number of mice, whose blood, as the film under the microscope demonstrated, was heavily infected three months previously with *Trypanosoma equiperdum*, the cause of the disease known as "dourine" or "mal du coit" in the horse, donkey, dog, and rabbit, but less pathogenic for rats and mice. In the mice shown the trypanosome infection had disappeared after infections of "Bayer 205," and the mice were now in perfect health.

Dr. A. C. **STEVENSON** demonstrated some microscopic specimens for diagnosis.

Dr. **ALDO CASTELLANI** and Dr. M. **DOUGLAS** showed cultures on glucose-maltose and glycerine, agar and carrot of a monilia fungus, *Hemispora rugosa*, isolated from the tonsils of a case of tonsillitis, which, in the light of the cultures obtained, was regarded as tonsilo-mycosis. Following inoculations of the fungus into a rabbit, the monilia was recovered from the heart's blood, spleen, liver, and kidney.

Dr. S. H. **DAUKES** demonstrated the collection made by Prof. Woodland of a series of Indian cobras (*Naia tripudians*), which had been preserved in formalin and showed variations in colour markings.

Dr. P. A. **MAPLESTONE** showed a smear stained with Leishman from an ulcerating granuloma on the inside of the cheek of a female Australian aboriginal, aged 22, showing large mononuclear cells heavily infected with organisms associated with granuloma pudendi, also free extracellular forms. The condition, very rare in the mouth, cleared up rapidly with intravenous injections of tartar emetic.

Dr. J. W. S. **MACFIE** and Prof. **WARRINGTON YORKE** showed a specimen of urine from a case of paroxysmal hæmoglobinuria indistinguishable from that passed during an attack of blackwater fever, and also specimens of blood from the same case showing autolysis. The explanation of the autolytic reaction depended on complement splitting; the reaction was not given by blood from blackwater fever patients.

Dr. **MACFIE** and Prof. **YORKE** also showed, from specimens illustrating the minute anatomy of *Oxyuris equi* (Schrank, 1788) and *Enterobius vermicularis* (Linnæus, 1758), that these belonged to quite separate type species. They exhibited also a blood film of a rat showing a small spirochæte obtained from a Gold Coast dog; the organism was regarded as identical with *Sp. laverani* (Breinl and Kinghorn, 1906).

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A MEETING of this Society was held on Nov. 18th.

Respiratory Exchange in Health and Disease.

Dr. G. B. **FLEMING** made a communication on the Practical Application of the Determination of the Respiratory Exchange in Health and Disease. He outlined what was meant by the respiratory exchange by physiologists and pathologists, and explained the principles of direct and indirect calorimetry. The latter method was the one employed in his observations, when he used a closed circuit apparatus connected with which was a movement recorder. In order to fix a standard the basal metabolism was first determined. After much work this has been fixed for adults at 28 calories per kilo per 24 hours, or 950 calories per square metre of body surface per 24 hours. The difficulty in the case of infants was very great; the figures for very young children might not be strictly accurate, but were near enough for practical purposes. Dr. Fleming showed tables illustrating the basal metabolism at various ages and the influence of various factors thereon. In considering the practical application of this work, Dr. Fleming referred to Cathcart's studies of food requirements in the recruit undergoing training, and then compared the caloric requirements of men engaged for eight hours a day in various industrial pursuits with the requirements of an active boy of from 1 to 15 years old. The more arduous the occupation, the higher the metabolism. In certain diseases careful studies had been made and some valuable facts had been ascertained. In diabetes mellitus the respiratory quotient was low, and this proved that in spite of a high sugar content of the blood sugar could not be metabolised. It had been shown also that the metabolism in diabetes was carried out at an extravagant rate. Consequently as full a diet as possible should be given, other factors which might contra-indicate such a diet being taken into consideration. In exophthalmic goitre the metabolism was carried on at an excessively high rate, while in myxœdema and cretinism it was very low. The internal secretion of the thyroid seemed to have the power of stimulating metabolism. In a cretin under Dr. Fleming's observation there was a basal metabolism of 378 calories per 24 hours before thyroid treatment; after thyroid treatment for eight days the basal metabolism had risen to 482 calories per 24 hours. Recently Dr. Fleming had been studying infantile atrophy on similar lines and he outlined various conceptions as to the cause of this condition, and explained how he had tested the hypothesis that the fats, although absorbed, might not be utilised. From the figures obtained he had shown that the atrophic infant could burn fat. Dr. Fleming demonstrated diagrams which appeared to show that the metabolism was not carried on at an extravagant rate. In adjusting the figures it was found that the actual weight of the marasmic child when used for the calculation gave erroneous results, and that up to a point the calculated weight-for-age was the correct figure. This was accounted for by the fact that until 35 per cent. of expected weight has been lost the wastage had been at the expense of metabolically inactive tissue, fat, and carbohydrate, but that below this figure there was actual tissue wastage. One outcome of the investigation was that infants should be given quantities of food suitable for their expected weight—i.e., their age—rather than their actual weight. Dr. Fleming referred to observations of heat output in fever, and to the making good of loss by feeding. In conclusion he claimed that the study of the respiratory exchange allows us to prescribe a diet suitable for various forms of industrial or athletic activity, and to the varying requirements of the human organism from extreme youth to old age. In disease it had afforded knowledge concerning the derangement of metabolism in diabetes, exophthalmic goitre, myxœdema, infantile atrophy, and fever, and further use of these methods individuals, and tests for identification. The second portion describes the methods to be employed in manipulating the various classes of medicinal products to make them separable in accordance with this scheme. There is ample internal evidence that the volume has been written by one with much experience in the analysis of drugs and medicinal preparations. In a future edition Mr. Fuller may see his way to be a little more precise and amplify such expressions as "agreeable" or "disagreeable" odour.

The book will be useful to those who are concerned with the chemical examination of pharmaceutical products.

A French-English Dictionary for Chemists. By AUSTIN M. PATTERSON, Ph.D., formerly Editor of *Chemical Abstracts.* London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1921. Pp. 384. 18*s.*

THIS book forms a companion to the German-English Dictionary for Chemists by the same author, reviewed in THE LANCET of Dec. 29th, 1917. This volume also is concise and easy of reference. We have found remarkably few errors and those not important. For example, *trognon* is not the core of a cabbage but the stump. To the explanation of *primeur*, "early product," might be added "or fruit." *Epuisé* also means "out of print." The inclusion of terms such as roi, reine, baronne, chevalier, seigneur, and monsieur seems unnecessary, and the American spellings of "thru" and "thoroly" appear strange. But apart from these trifles the compilation is unusually accurate, and the paper, binding, and printing are excellent.

Handbook of Chemistry and Physics. Eighth edition. By CHARLES D. HODGMAN, M.S., Assistant Professor of Physics in Case School of Applied Science; assisted by MELVILLE F. COOLBAUGH, M.A., Professor of Chemistry in Colorado School of Mines; and CORNELIUS E. SENSEMAN, M.A., Color Laboratory, United States Bureau of Chemistry. London: Chapman and Hall, Ltd. 1921. Pp. 711. 24*s.*

THE eighth edition of this book of over 700 pages contains a mass of accurate and useful information. That a large portion of the physical data is culled from the Smithsonian Tables is a guarantee of reliability, and there are few instances where one looks in vain for numerical values for the physical or chemical constants which have been experimentally determined. The arrangement of the book as a whole makes it easy to find the data required; possibly, however, it would have been better to place the definitions of the physical quantities and the characteristic chemical formulæ before, instead of after, the data pertaining thereto. On the whole, the subject-matter is rigidly chemical or physical, a few pages only being devoted to what are called Laboratory Arts and Recipes. The five pages devoted to the solution of problems in chemistry and physics do not enhance the value of the book. There are two and a half pages devoted to the functions, uses, and composition of foods which are obviously inadequate as an account of this wide subject. The volume, though large, is handy, and is equipped with an index covering 17 pages.

JOURNALS.

RIVISTA D'OSTETRICIA E GINECOLOGIA PRATICA. September, 1921. Anno III. Published by Prof. F. Montuoro, Palermo.—This is the official organ of the Sicilian Obstetrical and Gynæcological Society. The present issue contains an original article by Prof. Romolo Costa, director of the School of Obstetrics and Maternity of Novara, on Some Objections to Partial Symphysiectomy. These objections, which are four in number, are refuted by the author. He states that: (1) There remains no doubt whatever that partial or superior symphysiectomy in cases of pelvic contraction opens the way for the passage of the fœtus, and has its chief application in simple flat pelves where the true conjugate diameter is not below 75 mm. (2) As regards the permanent effect of the operation, in none of the women operated on was there any bony regeneration of the osseo-cartilaginous wedge taken out. (3) Out of seven women operated upon none of them showed any disability in walking as soon as they left their beds, usually about the tenth day. (4) There was no fear of any septic infection of the joint.—Dr. C. Calcaterra, of the University of Pavia, describes five cases of transperitoneal suprapubic Cæsarean section. He claims that this is the operation of election owing to the possibility it affords of ensuring exclusion of the uterine opening from the peritoneal cavity, and for its greater facility, simplicity, and rapidity of technique, while it possesses all the advantages of the extra-peritoneal method.—Dr. A. Buscemi, of the Obstetric Clinic at Florence, describes two cases of hepatic carcinoma occurring in pregnancy, one complicated by cardiac disease and ankylostomiasis, the other more advanced but pure—both in the first six months. The pregnancy exerted an unfavourable influence on the clinical course of both patients. In the case where it was the sole lesion there was rapid progress of the disease with effusion into the pleura; in the other case the aggravation was not so manifest until after parturition.—A number of pages are devoted to extracts and reviews, both Italian and foreign, and a brief article treats of subjects interesting to nurses trained in this branch.

HEALTH AND EMPIRE.—We have received the first issue of a monthly journal (price 6*d.*) issued by the National Council for Combating Venereal Diseases. In a prefatory note Lord Gorell hopes that it may play a valuable part in concentrating activity and formulating public opinion in the antivenereal campaign. An editorial article deals with the information which now flows in from European public health departments. Broadly speaking, it appears that Holland along with this country rely upon the voluntary principle, while Scandinavian countries, our own Dominions, and America avail themselves of certain compulsory powers. Outside this country the question of prophylaxis has not become acute. Dr. F. N. K. Menzies deals with the provision of hostels in London, without which no venereal disease scheme can be regarded as complete. Description is given of the efforts being made for amending the Merchant Shipping Act in order to remove from the seafarer the disabilities from which he suffers when he contracts venereal disease. The present position of affairs at Constantinople is described; the presence of destitute Russian refugees in addition to a congested permanent population of Greeks and Armenians has led to an amount of prostitution which is a menace to the public health. It is hoped that an International Red Cross Commission on public health will deal with a situation which has become a serious anxiety to the armies of occupation.

Corrigendum.—In an annotation last week dealing with the memoir of Prof. Howard Marsh, we alluded to him as Vice-Chancellor of Cambridge University. We learn, however, that he was already over age for that position when appointed Master of Downing College.

DAVID LEWIS EPILEPTIC COLONY.—At the annual meeting of the supporters of the David Lewis (Manchester) Epileptic Colony, held in Manchester on Nov. 25th, it was stated that the average number of colonists in residence was 356, the highest in the colony's history. The beds provided for four army men nominated by the Ministry of Pensions had been fully occupied. The occupations found for many of the colonists on the farm had proved most beneficial to them. Dr. Alan McDougall stated that drugs still took only a minor part in the treatment of their colonists; amongst patients seeking admission to the colony were persons to whom anti-epileptic drugs had been given over long periods without much success. Almost all the colonists were improving in health, and were happier than they were in their previous surroundings; some became so much better that they were able to return home and earn their own living.

Mr. R. C. Dun read a paper on

Undescended and Misplaced Testicle.

He reviewed the experimental and clinical work done on the ætiology, physiology, and pathology of the condition, and sifted the evidence regarding the spermatogenic and internal secretory powers of the undescended and displaced testicle. Mr. Dun discussed the bearing on these functions of the various operative procedures, and detailed the technique of the many operations suggested for the condition, giving results of operations in his own cases. He drew the following conclusions from his study of the subject. (1) Early operation is not advisable on account of the natural tendency for a testicle undescended at birth to descend into its normal position during the first years of life. (2) The associated presence of a hernia does not call for early operation. (3) The age selected for operation should be from 8 to 10 years. Testicles undescended at that age are unlikely to descend naturally, and symptoms—pain and attacks of orchitis—very frequently develop at this period. (4) Retained testicles which cannot be palpated should not be subjected to operation. (5) An undescended testicle should never be removed, on account of its possible spermatogenic power and its certain internal secretory power. (6) Abdominal replacement is not to be recommended as it is proved experimentally to destroy the spermatogenic function, should any be present, though the internal secretory power is retained. (7) Transplantation into the scrotum is the operation of choice. It can be successfully performed without endangering the vitality of the organ in the majority of cases where an undescended testicle is palpable.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

At a recent meeting of this Society MM. Pissavy and Touvay communicated a paper on the Treatment of Hæmoptysis by Pituitary Extract, in which they reported their observations on 15 cases of considerable hæmoptysis in pulmonary tuberculosis treated by intramuscular or intravenous injections of the extract of the posterior lobe of the hypophysis. They maintained that with the exception of artificial pneumothorax there was no method so effectual for checking hæmoptysis. Although in the great majority of cases the cessation of hæmorrhage was immediate, it was not always permanent. Not infrequently the hæmoptysis recurred after an interval of a few days and a fresh injection was required. The intramuscular route was often inadequate, and the intravenous route was alone reliable. One c.cm. of pituitary extract in 10 c.cm. of normal saline was injected slowly into the vein, five minutes being taken for the operation so as to avoid any shock. The most probable explanation of the action of the drug was that it caused an increase of the coagulability of the blood (Emile-Weil and Porak).

Mr. A. Richaud read a paper on the Posology of Cicutine Hydrobromide, in which he stated that as the results of observations in man and experiments in animals the toxicity of this salt was not so great as had hitherto been supposed. He had given one dose of 10 cg. subcutaneously or 15 cg. in two doses. Some signs of intolerance were observed when 16 cg. were injected at once.

In a paper on the Treatment of Gonorrhœa by Lymphotherapy Mr. S. Artault de Vevey reported 18 cases of gonorrhœa, 11 of which were in men and 7 in women, successfully treated by lymphotherapy—i.e., by intramuscular injection of the patient's serum obtained by the application of a blister.

Mr. R. Lautier read a paper on the Treatment of Gonorrhœa by Cedar-Wood Oil, in which he stated that he had treated cases of acute and chronic gonorrhœa with or without prostatitis, cystitis, vesiculitis, and orchi-epididymitis by administration of cedar-wood oil. The doses ranged from 2 to 8 g. a day. The dose was at first 2 to 3 g. and was gradually increased to 25 to 30 cg., the maximum dose being continued until recovery was complete—i.e., when the following requirements were fulfilled: (1) Disappearance of all discharge. (2) Disappearance of all filaments in the first jet of urine passed on getting up in the morning. (3) Disappearance of all subjective symptoms in the patient. Mr. Lautier's conclusions were as follows: (1) Cedar-wood oil was very well borne by the patients, even in such large doses as 6 to 8 g. a day. It did not cause any digestive disturbance, renal reaction, lumbar pain, or albuminuria, which cannot always be avoided with sandal-wood oil preparations whatever their degree of purity. No nervous symptoms were ever observed, such as vertigo, headache, excitement, or depression. (2) In acute gonorrhœa the various oils of cedar wood have a rapid action, cure being all the more readily obtained the earlier treatment is commenced. The previous use of antiseptic injections seemed to delay recovery. (3) In cases of gonorrhœa treated exclusively by cedar-wood oil from the commencement of the disease no urogenital or general complications were ever observed. (4) In cases of old-standing gonorrhœa which were refractory to all other treatment, a very rapid cure was sometimes obtained by the use of cedar-wood oil. In other cases it had to be given regularly for one and a half to two months to obtain a permanent cure. A few chronic cases proved refractory even to large doses of cedar-wood oil. These failures were exceptional with the essence of *Juniperus virginiana* or *Bermudiana*, and more frequent with the essence of *Cedrus atlantica*. (5) In cases of prostatitis, cystitis, vesiculitis, and orchi-epididymitis a rapid cure was obtained, except in cases where the gonococcus was associated with other micro-organisms, when 1 or 2 g. of hexamethylene tetramine were required to obtain a satisfactory result.

Mr. Lautier also read a paper on the Special Action of Cinnamate of Soda in Tuberculosis, in which he came to the following conclusions: (1) Cinnamate of soda definitely increases the output of urine, the increase amounting to one-third of the normal amount of urine passed in the 24 hours. (2) If before treatment the urine passed is deficient in urea and rich in uric acid, urates, and phosphates, after a few days' treatment the urine shows the following changes: The urea is increased to the normal amount, and the uric acid and urates are diminished in proportion to the increase in the urea. The phosphates are much diminished, and their elimination tends to return to normal. (3) If before treatment the patient's urine is normal, it undergoes no change in the course of treatment. (4) If before treatment one of the elements in the urine is excreted below the normal amount, the amount excreted tends to return to normal under treatment. Cinnamate of soda thus proved to be a mild diuretic and a regulator of the metabolism of nitrogenous substances and phosphates in the tuberculous organism. The gain in weight shown by the patient was mainly due to this action.

Mr. A. Claret read a paper on the Treatment of Anaphylactic Symptoms of Alimentary Origin, in which he stated that after unsuccessful treatment of this condition by various other drugs, he gave hexamethylene tetramine by the mouth, being guided by the following considerations: (1) The drug raises the blood pressure and increases its viscosity, these conditions, as Lumière has shown, tending to inhibit the development of anaphylaxis. (2) Insufficiency of the liver and kidneys, on which this drug has a selective action, creates a condition favourable for the development of anaphylaxis. Rapid recovery followed administration of uroformine in doses of 1 to 1½ g. daily.

Mr. Henry Bourges reported a case of *B. coli* Septicæmia in a child, aged 11, cured by subcutaneous colloid therapy.

ROYAL CANADIAN INSTITUTE.—At the next meeting of this institute, to be held in Toronto shortly, Lieut.-Colonel R. McCarrison will give an address on Diet and Malnutrition.

RONTGEN SOCIETY.—A general meeting will be held on Tuesday, Dec. 6th, at 8.15 P.M., in the Institution of Electrical Engineers, Savoy-place, Victoria Embankment, London, W.C. A paper on Some Investigations on Transformer–Rectifier Sets for X Rays will be read by Mr. M. A. Codd and a note on X Ray Tubes Connected in Parallel will be communicated by Mr. C. E. S. Phillips. Members wishing to read papers, show apparatus, or lantern-slides, are requested to communicate with the Hon. Secretaries, Dr. E. A. Owen, The National Physical Laboratory, Teddington, Middlesex; and Dr. Russell J. Reynolds, 140, Harley-street, W. 1.

A WEST SUSSEX SANATORIUM.—On Nov. 18th, Lord Leconfield opened the West Sussex County Council's Sanatorium near Chichester. The Council has purchased Aldingbourne House, a fine Georgian mansion standing in a well-timbered park of about 120 acres, and converted it into an institution for tuberculosis patients. There are 10 wards accommodating 44 patients, and in the grounds there are revolving shelters for 15 patients. The total cost of the scheme has been approximately £40,000, but the average price per bed has been reduced by the grant from the Government, and the county council has placed the figure at £500 per bed. Of the 120 acres, the county council has reserved 35 acres for the sanatorium requirements, and the remaining 85 are being utilised for small-holdings.

phases of the pandemic, a result in general agreement with that of PEARL. Dr. VAUGHAN next considers the history of influenza between 1893 and 1918 and goes carefully into the date of first appearance in 1918. He is inclined to trace the origin of the pandemic to America and to attribute its dispersiveness and virulence to movements of individuals and masses from one part of the world to another, whereby the partly adapted parasites become planted, as it were, into new soil, and the original equilibrium is disturbed—quoting the actual words of THEOBALD SMITH. The results of a sampling inquiry, similar to but more detailed than that undertaken by Dr. J. NIVEN and the Ministry of Health, resemble those of the English investigators, but Dr. VAUGHAN had materials for a consideration of racial and occupational susceptibility. The latter revealed no significant selection; as to the former it would seem that the Irish suffered less than other races—a contrast to their high mortality and morbidity rates from tuberculosis. Evidence of a relation between overcrowding and attack rate was hardly more striking than in England, but the following figures are remarkable: Of 360 persons occupying the same bed as a patient, 166, or 45·2 per cent., were infected; of 303 occupying the same room but not the same bed, 59, or 19·5 per cent., were infected; of 1064 members of the family of a patient but not belonging to one of the two previous categories, 273, or 22·3 per cent., were infected.

On the important subject of immunity, Dr. VAUGHAN was led to think that previous attack conferred no protection against the 1920 recurrence, a conclusion compatible with the results of the English inquiry, from which some protection against an autumn attack appeared to be conferred by the summer attack of 1918. Both sets of observations agree that the absence of any enduring immunity is an important factor in the explosiveness of primary influenza. The monograph ends with an appeal for further study. Influenza will surely return, Dr. VAUGHAN writes; he gives his reasons for asserting that there will be mild epidemics within the next few years, that later another pandemic will arrive, and that after this will come pandemics in succession. This is not an assertion made for flesh-creeping purposes, but a deduction from observation. In 1918, as in 1889, we were caught unprepared; let us do our utmost to prevent the recurrence of the tragedy; to delay is to lose the valuable information gained during the last two years. The future is not without well-grounded hope, but success will not be achieved until we have a much deeper understanding of the epidemiology of influenza. We think that the results reported by Dr. VAUGHAN, together with those of the Ministry of Health, justify a conclusion more definite even than these words convey. It is clear that influenza is in a different epidemiological class from that which contains small-pox and typhoid and that it has affinities with typhus on the one hand and pneumonic plague on the other. Small-pox and typhoid are epidemic diseases which, wholly apart from any general sociological factors, can be absolutely controlled. Their complete control is sadly impeded by ignorance and incompetent or selfish local authorities; the intellectual problem itself has been solved. Typhus and plague are in a different class. Of the former we may predicate with certainty that it will always become epidemic when the general standard of life has fallen to a critical value: of the latter we can say that a low standard of life, plus an unknown x, must be realised. The optimist hopes that influenza is more nearly akin to plague than to typhus, and that the x may be unmasked and prove to be a something which we can control here and now. The pessimist, focussing his attention upon the known factor, will be of opinion that a sinking standard of life, underfeeding, unemployment, overcrowding—conditions now characterising so large a proportion of the inhabitants of Europe—must sooner or later bear fruit which even the epidemic intelligence service desiderated by Dr. VAUGHAN will be unable to nip in the bud.

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Noise and its Cure.

NOISE is a serious evil in industrial communities. Continuous exposure to loud noises may lead to a sense of weariness that impairs working capacity more quickly than does severe muscular fatigue. It thus tends to lower output and so to raise the cost of production. From the economical point of view noise may therefore be regarded as exercising the same malign influence upon production as inefficient management, poor light, bad ventilation, or excessively long hours. This was, in brief, the message of Prof. H. J. SPOONER'S Chadwick Lecture delivered at Blackburn on Nov. 21st—to combat the noise plague, whether in our city streets or in our workshops and factories, and we are grateful to him for initiating a public movement for its removal. As Dr. DAN MCKENZIE has pointed out in "The City of Din," civilisation is noise, the more it progresses the noisier it becomes, and he has pictured Nature's desperate remedy of producing a human race devoid of hearing in order to protect the brain from the damaging effects of overwhelming auditory stimuli. The fact is that while noise may be tolerated, if not ignored, by healthy people at their best, the majority are not in a condition of bodily and nervous health to resist the irritation and consequent weariness induced by a long continuance of loud noises. It is not only the naturally hypersensitive CARLYLES who suffer, for few long-distance travellers by rail are altogether exempt from a fatigue which is probably due as much to the incessant bombardment of the brain by massive auditory stimuli as to any other factor. Over and above the effect of noise upon the general nervous system, there is the deleterious influence exerted directly upon the hearing-organ of workers in noisy occupations; and the list of occupations causing noise deafness at the present day is a long and increasing one. Hitherto, it must be confessed, the general attitude towards the evil of din, whether in the workshop or in the street, has been to regard it as inevitable, and to seek mitigation by the personal use of antiphones or ear-plugs.

But—and it is well to state it frankly—din, even in an industrial milieu, is not inevitable. We need go no further than to the modern motor-car to realise that when quietness in machinery, essentially noisy in its working, is of marketable value, the genius of engineering will ultimately succeed in supplying that quality. The difference between the smoothly running, almost silent automobile of 1921 and its fussy predecessor of 1900 is a measure of the preference given by purchasers to a noiseless vehicle. Now if, as Prof. SPOONER suggests, quietness in a factory can be shown to have an economic value, then we may reasonably anticipate that it will be forthcoming. Even now "quiet running" is beginning to figure more and more in the advertisements of engines other than those of the internal combustion type. Fortunately, apart from intentional reduction of noise, the natural evolution of modern engineering is tending in the direction of electric transmission in that it ". . . . is entirely devoid of any biological justification." A little further on he says of the same preparation that ". . . the agglutinating bodies which are supposed to be present in the red blood-cells . . . so far have had a most mystic existence in science." The author's opinion of the arguments in support of Maragliano's serum are summed up in the sentence: "Very crude ideas!" Marmorek fares little better, and his theory as to the nature of the tuberculin reaction is dismissed with: "This opinion is without foundation and has been proven wrong by me." Friedmann's turtle vaccine is also discussed unfavourably. After the storm provoked by all this iconoclasm, the reader is guided into the calm and safe waters of treatment by partial antigens. The author admits that it has been most difficult to disentangle the conflicting views and experiences with regard to tuberculin, but ". . . out of this chaos of varied opinions have developed the convincing and unshaken theories which are the results of the latest research." There follows an account of Prof. Much's partial antigen treatment. With regard to the possibilities of prophylactic vaccination on Deycke-Much lines, the author admits reluctantly that the proof of its usefulness would, of course, have to be furnished by statistics, but a little further on he adds plaintively, "Statistics have ruined many a possibility." Supporters of Much and his school may find in this half of the book a useful summary of his teachings. Others, who credit the author with a vividly creative and frolicsome imagination, are not likely to change this opinion.

While the first half of this book is a reflection of the author's vocation, the second half represents more or less an avocation, and is certainly the more instructive of the two. The modern view that in childhood the disease usually takes the form of hilus tuberculosis is accepted as correct. Prof. Much holds that pulmonary tuberculosis is secondary, as a rule, to disease of the glands in the hilus region. As for pleurisy in childhood, he regards it not as a primary tuberculous lesion, but as a comparatively late sequel to tuberculosis of the bronchial glands.

The author is to be congratulated on his translator, who has most faithfully reproduced the tone as well as the more material contents of the book. A few may consider this tone too perky and truculent; but most will probably enjoy the book from cover to cover.

Domiciliary Treatment of Pulmonary Tuberculosis. By F. RUFENACHT WALTERS, M.D., B.S., M.R.C.P. Lond., F.R.C.S. Eng., Joint Tuberculosis Officer for Surrey; late Physician Crooksbury Sanatorium and Mount Vernon Hospital for Consumption. London: Baillière, Tindall and Cox. 1921. Pp. xii. + 290. 12*s.* 6*d.*

IN the preface to this book Dr. Rufenacht Walters states that his object has been to furnish the practitioner with a compact and reliable guide to the treatment of pulmonary tuberculosis. He has succeeded in this object. In spite of its modest dimensions, it would hardly be an exaggeration to apply the term "encyclopædic" to this book; the author has condensed nearly all the modern literature, and much—too much—of the back literature of the subject into a wonderfully compact digest. With regard to remedies which have been tried and discarded, such, for example, as the intravenous injection of formaldehyde, it seems a pity that they should figure even briefly in this work. The practitioner is often a busy man, and he may have more than enough to do in mastering remedies which have survived the ten-year test. In his discussion of such remedies as Maragliano's serum the author omits to give his personal opinion; yet this is just what the practitioner wants to know. In some cases it is certainly possible to read between the lines that the author's account of a remedy is of the nature of an obituary notice, but he is unfortunately too considerate of the feelings of others to damn their work outright as valueless. Here and there, however, there is no mistaking his opinion, and in rationing his review of Much's partial antigens to exactly one line and a half, he conveys more to the reader than if he had let himself go. It is interesting to note that the author regards tuberculin ". . . as a remedy of the first importance." At present this is not the fashionable verdict on tuberculin, and the author shows no little courage in defending what might seem to many a lost cause. But as he is probably more familiar with the literature of tuberculosis than anyone, his opinion carries weight.

Tuberculosis and How to Combat It. By FRANCIS M. POTTENGER, A.M., M.D., LL.D., F.A.C.P., Monrovia, California. London: Henry Kimpton. 1921. Pp. 273. 10*s.* 6*d.*

Dr. Pottenger's book, he tells us, is published at ". . . the solicitation of my patients in order to put in a permanent form talks which have been delivered to them from time to time." From start to finish this work is characterised by sweet reasonableness, and the author has taken pains to explain carefully the reasons for the various rules he lays down for his patients. The book is worth reading both by doctors and patients, for it contains many useful hints as to their mutual relations.

CHEMISTRY.

Die Arzneimittel-Synthese auf Grundlage der Beziehungen zwischen chemischem Aufbau und Wirkung, für Aerzte, Chemiker und Pharmazeuten. Von Dr. SIGMUND FRÄNKEL, A.O. Professor für Medizinische Chemie an der Wiener Universität. Fünfte, umgearbeitete Auflage. Berlin: Verlag von Julius Springer. 1921. Pp. 906. M.276.

THE fifth edition of this voluminous and comprehensive book is a further enlargement of the previous one of 1918. The literature of the subject is now incorporated up to May, 1921. The new matter deals mainly with the subjects of taste and of quinine and arsenic compounds. The book is now so full of details that it is more of the nature of a dictionary than a general account of the subject; the mass of detail tends to smother the descriptions and makes the reading wearisome. The book is written on the unvarying German plan. There is a general section consisting of three chapters on the theory of the action of drugs, both inorganic and organic, with special reference to the part played by the individual chemical groups in the compound in the physiological action. A fourth chapter deals with the changes of organic substances in the organism. In the special section (14 chapters) a description of the numerous preparations employed as antipyretics, narcotics, alkaloids, antiseptics, purgatives, diuretics, &c., is given. The large index is useful and well compiled.

The book will be of service to those interested in the chemical constitution of drugs and their action on the organism, and will appeal as much to chemists as to the medical profession.

The Qualitative Analysis of Medicinal Preparations. Second edition. By H. C. FULLER. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1920. Pp. 191. 12*s.* 6*d.*

A KNOWLEDGE of the use to which a medicine is to be employed is obviously often a guide in arriving at its possible composition, and its price will often suggest what will probably not be present. Mr. Fuller rightly points out that most of the tests devised for detecting active ingredients have been worked out on pure substances and that little or no account is taken of the influence on the reaction of other substances present, for example, in a complex medicine. He has therefore devised a scheme of separation by which the different substances are obtained at particular stages of the analysis and their identity established by suitable tests. The first portion of the work describes the preliminary manipulation for the separation of the ingredients into large groups, followed by the separation into smaller groups and

Annotations.

"Ne quid nimis."

THE RESEARCH DEFENCE SOCIETY.

THE Research Defence Society was founded in 1908 with the object of enlightening the public on questions relating to animal experiment, and methods of medical research generally. The direct aim was the creation of an association which could rebut, on behalf of scientific workers, the attacks made upon physiological endeavour sometimes by individuals and sometimes by societies of apparently humane bent. It is recognised that, in most instances, the abuse is due to the kind heart of the critic as much as to his ignorance, but it has not been possible to take so urbane a view of certain persistent misrepresentations. Experiment upon animals has been successful in throwing light upon or actually combating many processes of disease, and it has been the task of the Society to distribute authoritative statements, written in language which could be appreciated readily by any intelligent lay reader, and disposing of the sinister rumours which have been prevalent for some time concerning the deeds and the personalities of working physiologists. The Society, since its inauguration, has obtained the active support of a large number of medical men, and also of many enlightened laymen, and success has encouraged it to further efforts, but closer contact with the general practitioner is very desirable. For while the medical profession is obviously in the best position to appreciate the ultimate merits of experimental work, and to realise how important it is that physiological and pathological research should be unfettered in its beneficent purposes, it is the general practitioner who can best bring this home to the public. Through the advocacy of the general practitioner a rapid extension of the work of the Research Defence Society might speedily result. While it is realised that difficulties stand in a medical man's way should he become an active propagandist, yet it is well known that many opportunities present themselves to medical men, during the course of their professional work, of influencing opinion in the right direction.

The Research Society welcomes all members of the medical profession as members or as associate members of the Society, or to associate themselves with the Society upon the following terms :—

Full membership: By subscribing to the Society 10s. per annum, receiving in return the published reports and pamphlets of the Society free of cost.

Associate membership: By subscribing to the Society 5s. per annum, and receiving in return such reports and pamphlets of the Society as are desired at cost price.

Association: By requesting the publications of the Society to be sent to them at cost price, or by requesting that there shall be sent to them, at cost price, such pamphlets as would be of particular use to them in propagating knowledge of methods used in medical research work.

A post-card will elicit further particulars from the Secretary, Research Defence Society, 11, Chandos-street, Cavendish-square, London, W. 1.

PROTEIN SENSITISATION AND BRONCHIAL ASTHMA.

AMONGST the many diseases which have been ascribed to anaphylaxis since Charles Richet's classical researches in 1902, bronchial or spasmodic asthma probably occupies the most important place. It is true that the various stages in the mechanism of sensitisation are still obscure and that we have had to fall back on ill-defined terms such as "indirect" or "secondary" anaphylaxis to bring spasmodic asthma into line with the true experimental anaphylaxis of animals. But the clinical picture of the disease, its frequent coincidence with drug hypersusceptibility, serum sickness, and the like, and, most important of all, its close resemblance to the signs and symptoms noted in anaphylaxis in animals, afford substantial evidence of a close relationship. As long ago as 1909 Auer and Lewis[1] showed that the lung of an anaphylactic guinea-pig presented changes resembling bronchial asthma in man, and since that date there has been a steady stream of research on this important subject, culminating in a long series of observations of a highly original character by Dr. I. Chandler Walker[2] and Dr. R. P. Wodehouse[3] in connexion with the Choate Research Grant in America. These researches were commenced in 1916, but the wide significance of them is only now beginning to be realised. Briefly stated, Chandler Walker has shown that if a foreign protein be inoculated into a superficial scarification of the skin in an asthmatic—and presumably sensitised—patient, an urticarial wheal may result at the site of inoculation within the brief space of half an hour. Not every foreign protein will act thus, and not every asthmatic patient is hypersensitive in this way. Some patients react to dried bacterial proteins, others to blood serums, others only to protein split products of hairs, feathers, wool, vegetables, &c. A positive reaction is regarded as an indication of abnormal protein sensitisation of the patient with that particular substance, or a split product of it. A large range of substances may be tested in one patient, and in a recent article Dr. J. F. Ward[4] reports cases in which as many as 80 and 90 different protein tests were made before a positive reaction was obtained. The issue of the *New York Medical Journal* containing this article is largely devoted to protein sensitisation and contains much interesting information.

A vast field of clinical research is thus being opened up and as usual a caveat is needed. In the first place it is clearly important that the cases investigated should be unmistakable cases of true spasmodic asthma, and that other possibilities, such as pulmonary tuberculosis or renal disease, should be ruled out. A case has recently come to our notice, for example, in which a so-called asthmatic patient, after many negative tests, was found to give a positive reaction to the protein of hen's feathers and advised accordingly, but within a few weeks tubercle bacilli appeared in the sputum and the whole aspect of the case was necessarily altered immediately. Such instances will doubtless become frequent unless every clinical and pathological means of investigation are first brought to bear upon the case. Again, a large series of controls in normal persons requires to be made as soon as possible, since it is not unlikely that we may all be found hypersensitive to some protein substance or other if only a sufficiently large series of tests be made. On the experimental side also the gaps in the chain of evidence must not be lost sight of. Protein sensitisation and its mechanism are but little understood, and in the case of asthma the relationship to anaphylaxis is at present partially inferential. It may not be difficult to visualise some of the steps, at any rate, in the mechanism of a protein reaction with wind-blown pollen or ingested food, but the intermediate stages of protein infection with material from a feather pillow enclosed in a stout bed tick and a frequently washed linen pillow case are not quite so obvious. The mechanism of protein sensitisation within the bodily tissues is also a matter needing careful thought and experimental research. Is it analogous to tuberculin sensitisation on the one hand, or to the Schick test for diphtheria, with its assumption of natural immunity, on the other? And, finally, is it a matter of physico-chemical, humoral or cellular disturbance, closely allied, as in true anaphylaxis, to shock?

These and cognate questions await an answer. Meanwhile it behoves us to proceed warily. The

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[1] Jour. of Amer. Med. Assn., 1909, liii., p. 458.

[2] Jour. of Med. Research, 1916–1917, xxxv., pp. 373, 391, 487, 497, 509, and 1917, xxxvi., pp. 231, 237, 243, 295, 423.

[3] Boston Med. and Surg. Jour., 1916, clxxv., p. 195, and Jour. of Immunol., 1917, ii., pp. 227, 237, and 243.

[4] New York Med. Jour., Sept. 21st.

THE LANCET.

LONDON: SATURDAY, DECEMBER 3, 1921.

The Sanctity of Medical Certificates.

AT the session of the General Medical Council, which has just been concluded, certain practitioners were summoned to appear on the charge of improper issue of medical certificates, and after the consideration of their case by the disciplinary body of the profession received a serious warning. The giving of medical certificates is now an onerous part of the practitioner's duty, and the work has been largely increased by the passage of the National Insurance Act with no commensurate increase of emolument. It might be well if the General Medical Council would consider the making of a representation upon this point to the Privy Council, or through the Privy Council to the Government; but it is absolutely necessary that the General Medical Council in carrying out its duties as a disciplinary body of the profession should insist that such certificates as are given by medical men should be given only with a full sense of responsibility.

When the new system of medical certification of incapacity of insured persons for work was introduced in 1915 the function of the general practitioner as certifier was brought under review, and it would now be well to inquire how far the innovation has been successful in meeting the difficulties of both parties. The complaints recently made by approved societies hardly refer to the difficulties which led to the establishment of the new system, being concerned rather with the few flagrant instances of unprofessional conduct. When such complaints are found after investigation by medical service sub-committees to be substantiated, it still remains to consider how far these lapses are due to mere slackness and want of appreciation of the importance of certification, and how far to the ignorance of the practitioner as to his obligations both moral and legal towards his patients and the insurance authorities. Certificates appear to be looked on by certain practitioners as matters of form incidental to ordinary practice, and two instances which came before the General Medical Council at the session just closed illustrated this fact. Medical certificates are most important documents. Those required by the new system of certification ensure certain benefits to the sick insured person legally entitled to them; they also safeguard the approved society endowed with certain statutory duties. But the certificate of a medical man is in most cases the main guarantee against fraud or illegal demands on insurance funds. A certificate is defined as "a written declaration of some fact," and to certify is defined as "to make known as certain." The form of certificate is so worded that it states certain "facts" and certain opinions. The first fact is that the certifier has "this day," or on a certain day, examined the patient. The second fact is that in the opinion of the certifier the insured person is incapable of work, and the third fact is that he is incapacitated by reason of "a specific disease or bodily or mental disablement." Of the first there can be no doubt, but in the second and third statements the fact is associated with the opinion of the certifier, acting to the best of his knowledge and belief. His signature is the guarantee of bona fides, which is shaken not so much by the correctness or otherwise of the opinions stated in the certificate as by the deception practised when certificates are given under circumstances which preclude proper consideration or render it impossible for the statement to be true. Although a uniform phrasing saves time, it is in one respect almost a pity that so much of the certificate is printed. Had the statement to be written out it would be perfectly clear what is the nature of the statement which the practitioner is making when he attaches his signature.

The medical certificate is the main evidence or guarantee on which sickness benefit is paid; it has been compared to a cheque payable on demand, but it is not the only evidence and societies are compelled by regulations to review such certificates and to regard them in the light of any other facts concerning the sick insured person within their knowledge. They may even refuse to acknowledge the certificate as a proper guarantee and decline to pay benefit, but they would be required in such a case to show cause for refusal, if the insured person exercises his right of appeal. Many a practitioner rightly regards it as a matter of pride for his certificates to be questioned, for the value of the certificate and the estimation of the facts and opinions it contains depend to some extent upon his professional reputation. In the ordinary course of administration, certificates are reviewed for various reasons and a routine method is adopted for selecting cases to be referred to the regional medical officers. The first reason appears to be the duration of illness; these officers were appointed to provide a further opinion in cases of prolonged incapacity. The second reason is vagueness of wording and the use of such phrases as debility or catarrh. Where the certificate is purposely vague, a precise description of the disabling condition must be furnished to the official referee. The third reason for referring cases is the receipt from a sick visitor of a report which, from the lay point of view, throws doubt on the insured person's incapacity, owing to something in his observed conduct or activities. Close coöperation with the regional medical officers will assist the practitioner in obtaining justice for his insured patients and in protecting himself from the importunate person who may readily make his life a burden. Certification is a many-sided obligation.

Epidemiology of Influenza.

THE preface to Dr. WARREN T. VAUGHAN's important epidemiological study[1] of influenza is dated Sept. 17th, 1920, and he was therefore not able to use the elaborate report on the great pandemic issued by our Ministry of Health 12 months ago. While the author may regret this circumstance, since it has deprived him of the opportunity of strengthening certain conclusions and modifying others, the reader will welcome a completely independent account of the same series of events from the Harvard Medical School. The preliminary sections of the monograph treat on familiar lines of the history of influenza. Prof. RAYMOND PEARL's study of the correlation between the explosiveness of an outbreak and the pre-epidemic general rate of mortality in cities is fully described. In English cities the standard death-rate was highly correlated with the death-rate of the first wave, but little correlated with the death-rate in the second and third cases. They commonly measure from 0·5 to 0·3 cm. in diameter. The deformity ranges from slight kinks or angulation of the tube caused by dragging or outside pressure to total obliteration. Dr. Andrews is of opinion that this duodenal deformity is a very constant feature of medical and surgical diseases of the upper abdomen, and that pouches and diverticula form a constant if small proportion of those deformities. Some of these defects are only apparent owing to outside pressure, spasticity, or temporary exudate round callous ulcers. Some are transient and relieved by medical treatment. A residue of permanent structural deformity is found and of this number a small minority have actual pouches which require operation.

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[1] Influenza, an Epidemiologic Study. By Warren T. Vaughan, M.D. Baltimore, 1921 (The American Journal of Hygiene). Pp. 259.

ANTITETANUS IMMUNISATION.

IN certain parts of this country tetanus is so prevalent among horses that it is the custom for veterinary practitioners to inject a dose of antitetanic serum before performing any cutting operation upon a horse, and, in the case of an accidental wound which has come in contact with the ground, to inject serum as a matter of routine. In such districts it would be an immense gain to the owner and breeder if he could confer upon foals and young stock an early and lasting immunity against tetanus. The paper read on Nov. 15th[1] before the Pathological Section of the Royal Society of Medicine by Mr. J. B. Buxton, F.R.C.V.S., and Mr. A. T. Glenny, B.Sc., assumes, therefore, an aspect of practical importance. Five hundred horses tested by them gave no evidence of possessing any antitoxic immunity. An injection of tetanus toxin containing 20 test doses over-neutralised with antitoxin was administered thrice at intervals of three days. A month later the horse so immunised was found to tolerate a quantity of toxin exceeding 2000 guineapig-lethal doses and probably equal to several hundred minimum horse-lethal doses. Had these facts been available previous to the war, no doubt they would have been applied to the saving of the lives of many valuable horses. The duration of the immunity conferred remains to be accurately determined, but should the method prove, on further trial, to be a safe preventive against tetanus, it might be expedient so to immunise every horse in the kingdom. The collateral question will then arise whether the same method can be applied to prevent accidental tetanus in the human subject.

PROF. FRANKL IN DUBLIN: CURRENT GYNÆCOLOGICAL PROBLEMS.

THE Dublin School has long been distinguished for its broad outlook on diseases of women, and the recent visit of the distinguished Viennese professor of gynæcology, Dr. Oscar Frankl, in response to an invitation from the Royal Academy of Medicine in Dublin, was part of a lively interchange of thought with Continental medicine. Prof. Frankl delivered a series of lectures, one of which dealt with the interrelationship between menstruation and ovulation, a subject of great interest, upon which our knowledge is still far from perfect. He began by pointing out that the functions of the female genital glands can continue regularly and satisfactorily only if the balance between the different ductless glands is maintained. The disappearance or the hyperfunction of a gland immediately produces a disturbance in the physiological balance, which has been termed dyshormonia. Seitz has happily compared the effect to the constituent parts of an orchestra which are not in tune. Faulty playing on the part of one performer produces a discordant effect upon the whole. The cyclic changes in the uterus which accompany menstruation are produced by the effect of the internal secretion of the ovary, and this organ in its turn is maintained in a proper condition of function by the secretions of all the other ductless glands of the body. Frankl believes that the ovum and the corpus luteum are the most important hormone-producing tissues in the ovary, and that the onset of menstruation marks the death of the ovum. When the ovum lives and becomes embedded in the mucosa of the uterus then the corpus luteum persists, and menstruation does not take place. The result of exact histological study has demonstrated that the follicle ruptures about the fourteenth to the sixteenth day from the end of the last menstrual period, and that menstruation and ovulation do not coincide as was taught by Leopold and others. Thus it would appear that the corpus luteum prepares the uterine mucous membrane for the reception of the ovum, and that the involution or death of that body produces the hæmorrhage of the menstrual period. The apparent contradiction that the same secretion produces first hyperæmia of the endometrium, and that then its absence produces the menstrual bleeding, is explained by Frankl as follows. During the premenstrual stage the glands of the uterine mucous membrane are distended with secretion which contains a tryptic ferment, while by the swelling of the mucosa the mouths of the glands are more or less closed. When the corpus luteum begins to involute the hyperæmia subsides, the swelling diminishes, and the contents of the glands escape. The tryptic ferment then produces a more or less extensive digestion of the mucosa and consequent bleeding, and it is the presence of this tryptic ferment which accounts for the non-coagulability of the menstrual blood. It is interesting to note that Frankl does not believe in the presence of an interstitial ovarian gland in a sexually mature woman, and maintains that at present we have no proof of its existence or of its function.

In another lecture Prof. Frankl dealt with the method of treating cases of malignant disease by the action of X rays or radium, a subject which is attracting as much attention at Vienna as it is in Dublin. Such extravagant hopes have been excited in the minds of many by the reports of successes obtained by one or other of these methods that an impartial review of the results to be expected is of particular value. The chief defect of radium is its very limited area of action, which does not extend probably more than 4 c.cm. from the centre of the tube. Its effectiveness further decreases in ratio to the distance, and the peripheral portions of a tumour may therefore not only receive a dose which is insufficient to destroy the cancer cells, but even a dose which has the effect of acting as a stimulus to the cells and causing rapid proliferation and early metastasis. The ideal treatment is one which exposes all the cells within the radius of the rays to the same quantity and quality of rays. All the cells of the body are sensitive to the X rays or radium, and especially cancer cells and the specific cells of the ovary. It is therefore possible by the use of certain qualities and quantities of rays to destroy not only tumour cells, but also the follicles of the ovary without any harm to the surrounding tissues. The difficulty of the treatment lies in the fact that it is impossible to expose all the cells of a cancer mass of a certain thickness to the proper dose, and not to apply a dose which has the effect of only provoking stimulation and proliferation or of destroying the health-surrounding tissues. To produce such a result it is necessary to use the hardest rays obtainable. In an endeavour to obtain better results than the very unsatisfactory ones which accompany even the most radical operative procedures in the treatment of cancer of the neck of the uterus gynæcologists have perhaps expected too much from the use of X rays and radium. As Frankl points out, there is no excuse for abandoning the knife in favour of such treatment, but a combination of the two methods promises to give better results than either alone, and it is particularly important to subject cases operated upon to subsequent treatment with one or other of these methods. It is undoubtedly true that in a small percentage of cases ray treatment may render an inoperable case operable, or may even bring about its cure, a sufficient number of such place of the old-fashioned noisy rotating shafts and belts. To enforce the abolition of unnecessary din Prof. Spooner calls for an improvement in the existing laws. Public opinion has already led to some advance. We need submit no longer to the nerve-racking key-bugles of beanfeasters or the shrill whistling of commissionaires for taxis. But no public authority can yet prevent the screeching of a steam-saw in the vicinity of dwelling-houses. To those who suffer thus, only a civil action at law is open with all its costly delay. But progress under stress of economic pressure may prove more prompt than legal enactment. Prof. Spooner considers the advisability of fixing a limit of permissible noise, for which purpose a unit, or standard of noise would be necessary. It might be difficult to find such a standard, although in general it would be fair to regard as "noise" any sound in street or workshop which necessitated the raising of the conversational voice within a few yards of the source of the sound. To replace a test sound so variable as the human voice, a noise-producer of a certain definite intensity could be devised, the inaudibility of which by normal ears within the stated distance would constitute the limit of permissible sound. But physical details may safely be left to the ingenuity and resourcefulness of the scientific engineer, once he has been given clearly to understand that civilisation is no longer to connote noise.

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[1] THE LANCET, Nov. 26th, p. 1109.

The Phenomenon of d'Herelle.

In 1915 F. W. Twort[1] described the occurrence of spontaneous lysis of micrococci derived from calf vaccinia, and attributed the phenomenon to ferment action. The same phenomenon was described independently by d'Herelle in 1917, and the latter's persistent investigations and constant advocacy of an interesting explanation of the facts observed has brought the subject into great prominence throughout the world. Briefly, the facts elucidated by d'Herelle are these. If an emulsion of a stool from a case of dysentery be filtered through a Chamberland filter the clear bacteria-free fluid obtained is capable of dissolving *B. dysenteriæ* Shiga, in vitro. Such extracts differ in their activity, the less active ones only destroying a certain number of the organisms, whilst the more active ones procure the complete solution of a whole culture. A still more striking fact follows: such lysed cultures contain the active principle in large amounts, so that when a trace of the solution obtained in the first experiment is added to a second normal culture of Shiga's bacillus this also undergoes lysis, and a trace of this solution will reproduce the phenomenon in yet a third culture, and so on indefinitely. Only living bacilli undergo lysis; dead cultures are not affected. These, in the main, were the first facts elucidated and they remain undisputed. The lytic phenomenon is attributed by d'Herelle to the presence of a filter-passing, ultramicroscopic living virus, which is an obligatory parasite upon the bacterial body, and is capable of cultivation only in the presence of such organisms; it undergoes no increase in ordinary culture-media. Since these facts were made known, the subject has been much broadened and all sorts of subsidiary phenomena have been brought into prominence. It has been shown that the lytic substances may be found in other situations than the intestinal contents, and that even when coming from this source they are not specific—that is, substances lytic for Shiga bacilli may be found in persons not suffering from dysentery. It has also been shown by J. Dumas that similar substances may be obtained from earth and some waters, and by J. Bordet, also from leucocyte-containing peritoneal exudates. The interpretation of the phenomenon has been a matter of active discussion and three main explanations have been put forward. Firstly, the contagium-vivum theory of d'Herelle; secondly, the view of T. Kabeshima, who believes the lytic agent to be an enzyme, basing this opinion upon the fact that solutions maintain their activity for years, and also that the principle can be extracted by acetone; such an extract will initiate lysis, which can then be propagated in series. The third view is that supported by the authority of Bordet, who has sought an explanation on developmental grounds and believes that a new strain of bacteria is developed, under the conditions of the experiment, which is susceptible to autolysis, and that it is the presence of the autolytic products which causes a similar modification in subsequent generations of bacteria, thus enabling the phenomenon to be propagated; in short, that bacteria in undergoing lysis produce the environment conducive to the development of an autolytic strain. Bordet has produced the d'Herelle phenomenon by using extracts from the peritoneal fluid of a guinea-pig which has received an injection of micro-organisms. These different views have given rise to a good deal of contentious literature; much of this is difficult to sift as the experiments adduced are by no means conclusive and the discussion occasionally degenerates into a series of formal contradictions. It has also been shown that under the influence of the lysin many cultures divide into two types, one of which transmits the lytic principle—and is Bordet's autolytic strain—whilst the other is resistant to lysis and does not transmit the property. These strains differ from one another, and from the "normal" parent strain, in certain of their properties. There is apparently a process of selection, by which a small minority of resistant organisms are enabled to establish themselves as a true-breeding type in a culture in which they were previously swamped by a majority of the sensitive strain. These results appear similar to those of J. A. Arkwright, who by a different method of selection was able to split dysentery cultures into separate strains. As regards the phenomenon of lysis the most attractive explanation appears to be the conception of an unorganised lytic enzyme whose continued transmission may be regarded as an example of the autocatalysis; the freeing of the catalytic enzyme by the actual process of lysis, just as in the hydrolysis of an ester the acid set free serves to accelerate the reaction. The statement that the rate of the reaction increases as it proceeds falls in very well with this view. d'Herelle,[2] in the face of all criticism, has maintained his theory of a living bacteriophagium. In reviewing the work which has been done upon this subject we are impressed by its importance from many points of view. It has certainly brought to light a type of bacteriolysis quite different from that described by Pfeiffer, and is full of suggestion with regard to immunity and therapeutics. It has long been becoming evident to bacteriologists that the ideas current in the last decade, as to the fixity of the characters by which they identify and define species, must sooner or later go by the board, to give way to a much broader conception whose limits are the limits of physiological variation, within which the characters of any given organism may change. d'Herelle's work exemplifies the complexity of many of the processes occurring in connexion with bacteria, and whatever the final explanation of these phenomena may be, we are indebted to him for his consistent exposition of them and for the stimulus which his views have given to bacteriological research.

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[1] The Lancet, 1915, ii., 1241.

[2] Comptes Rendus de la Soc. de Biol., 1921, vol. lxxxv., No. 30, p. 767.

being the time necessary for an effective sensitisation. Their serum injected into a guinea-pig immediately caused a marked hypercoagulability in the blood of this animal and produced the same property in man. This property renders the serum applicable to every kind of hæmorrhage, including that due to various blood dyscrasiæ and as a preventive in surgical intervention in parts liable to bleed or in hæmophilic patients; it may be used in doses of 10–20 c.cm. subcutaneously. There are no special contra-indications, and serum disease is exceptional and never severe. In healthy subjects in whom the blood coagulability was previously estimated by MM. Dufour and Le Hello, it was found that this was markedly increased after injection; and they are furthermore of opinion that the factor of increased blood coagulability may enter into the explanation of some of the hitherto unexplained phenomena of shock. In conclusion, 11 cases are cited by the authors of hæmorrhage after abortion, from uterine and vesical cancer, at the menopause, in hæmophilia, melæna and hæmatemesis in which the injection of this serum was followed by marked and immediate benefit.

INTESTINAL OBSTRUCTION DUE TO MECKEL'S DIVERTICULUM.

Two cases of this unusual condition were reported in October. Surg.-Captain M. L. B. Rodd, R.N., details[1] a case of intestinal obstruction in a boy of 17 whose appendix had been removed six months before. A large intussusception, starting 2 inches from the ileo-cæcal junction, was found at the operation; and when this was unravelled a diverticulitis was found, about 18 inches higher up, and this also was intussuscepted. The diverticulum was removed, recovery being uninterrupted. Another case is mentioned in which the condition, diagnosed as appendicitis, proved at operation to be a diverticulitis.——Major Dean F. Winn, Medical Corps, U.S. Army, gives an account[2] of a still more curious example of this condition. A soldier of 19 was being operated upon for appendicitis on Nov. 9th, 1920, and it was found difficult to bring the inflamed appendix up into the wound owing to a dense peritoneal band which held down the ileum. With difficulty the band was traced upwards and was found attached to the blind end of a Meckel's diverticulum 8 inches long. As the patient now began to suffer from shock, the diverticulum was not removed. The patient subsequently refused further operation, though warned of his risk, and he was discharged to duty on Nov. 26th. He was readmitted at 3 A.M. on the next day, Nov. 27th, again suffering from intestinal obstruction, and at the second operation, that evening, a band of omentum was found attached to the tip and side of the diverticulum, incarcerating several loops of dusky and distended bowel. This time the diverticulum was removed. Convalescence was normal. Each of these authors quotes a paper in the *Annals of Surgery* for May, 1921, by Coley and Fortune, who had only been able to find in the literature since 1917 16 cases of intestinal obstruction by Meckel's diverticulum.

POST-GRADUATE COURSES ROUND BRISTOL.

THE committee in charge of post-graduate study in medicine in the University of Bristol, encouraged by the success achieved in courses of demonstrations held recently in several country centres, is proposing to extend its activities by arranging for similar courses in other towns in the south-west of England. In rural areas with cottage hospitals, University lecturers undertake all these demonstrations, a course consisting, as a rule, of six. For towns of larger size, with hospitals of 100 beds, the University offers several alternative plans: (1) To conduct a course similar to those arranged for smaller centres, in which all the demonstrations are given by the University "team"; (2) to undertake nothing but the organisation and the advertisement, the course itself being given by members of the local hospital staff; (3) to combine the two schemes by making the University team responsible for some demonstrations, the remainder of the course being undertaken by the local hospital staff. Prospective centres are invited to appoint a local secretary to whom, or to the director of post-graduate studies, each practitioner attending the course pays a fee of two guineas, to cover the cost of postage, advertisement, and travelling; should there be any balance, an honorarium will be handed to the lecturer. A list of subjects is offered to the group who select a series of six. In the courses already held one demonstration has been given per week, the subjects being the treatment of fractures, the uses and preparation of vaccines, and recent work in cardiac disease. To each of these two demonstrations have been devoted. For the courses which it is hoped may be held next spring, a much wider choice is offered, including various aspects of surgery, medicine, gynæcology, ophthalmology, and so on. A synopsis of each demonstration that is offered for selection is given, and the group is thus able to find what is most likely to satisfy its needs. The advantage of such courses to the country doctor, who finds it difficult to leave his practice for more than a day at a time, is obvious. It is to be hoped that this kind of work will be widely undertaken, not only in the south-west of England, but also throughout Britain by the appropriate universities. To this end inquiries as to procedure will be welcomed; they should be addressed to the Director of Post-graduate Studies, Department of Pathology, University of Bristol.

TREATMENT OF SCARLET FEVER WITH IMMUNE HUMAN SERUM.

TREATMENT of patients suffering from an acute infectious disease with the serum of convalescents has been widely used in the United States and in Germany, particularly in the cases of scarlet fever and measles, but has not to our knowledge been employed in this country. The present extensive epidemic of scarlet fever in London should afford plenty of opportunities of testing the value of this new method. In a recent paper read before the Chicago Society of Internal Medicine, Dr. G. H. Weaver,[1] of the Durand Hospital of the John McCormick Institute for Infectious Diseases, reports his observations on 54 cases of scarlet fever treated by convalescent serum. All the cases were severe, 38 being of the toxic type, 6 being characterised by septic complications, and 10 showing a combination of toxic symptoms and septic complications. Only two deaths occurred, one in the toxic and the other in the septic group. In neither case was any appreciable benefit derived from the serum. The blood was taken during the fourth or early in the fifth week of the disease, only those being chosen as donors who were free from any suspicion of tuberculosis, whose blood gave a negative Wassermann reaction, and who had had a typical attack of scarlet fever without complications; 200–300 c.cm. were taken from adults, and proportionately less from bigger children. After the serum had separated from the clot it was drawn off, mixed with serum from two or three other patients, and 0·3 per cent. of tricresol added. Cultures were then made from the mixture which, if sterile, was placed in small bottles of 30 c.cm. capacity and kept in a refrigerator till it was used. The serum was injected intramuscularly in doses of 60–90 c.cm., half the amount often being injected into each thigh. Intravenous injections were sometimes used, but did not present any advantages over the other route. If no obvious improvement occurred a second injection was given after 24 hours. Beneficial effects, however, following clinical group of cases loosely called spasmodic asthma probably contains many varieties. It resembles the unsorted post-bag, and we shall be greatly surprised if the whole group yields its long held secret to any one form of specific remedy. Rather we may look to protein sensitisation to remove from the amorphous collection the one group of cases only, leaving us with a large batch still undesignated. Where the interest is so great, clinical enthusiasm is apt to overrun experimental data. This nimbleness is not a vice, but it demands watchfulness.

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[1] Journal of the Royal Naval Medical Service, October, 1921, p. 314.

[2] Military Surgeon, October, 1921, p. 464.

[1] Journal of the American Med. Assoc., Oct. 29th, 1921.

EPIDEMIC HICCOUGH.

TOWARDS the end of 1919, first in Austria and then in Italy, the attention of medical observers was drawn to a singular affection of short duration characterised by obstinate and inveterate hiccough, which was reported on by Economo at Vienna, Michele and Pisani at Florence, Cardarelli and Pontano at Rome. A few months later the appearance of the same affection was noticed by Dufour at Paris and by Gautier in Switzerland. The question arose whether this epidemic hiccough was a separate disease or a larval and abortive form of some more serious condition such as epidemic encephalitis or influenza. Prof. Pontano, with Dr. Trenti, made some elaborate researches on four cases under their care who were free from physical signs of any other affection and, moreover, had negative Wassermann reactions.[1] They attempted to transmit the disease to twelve other subjects suffering from various chronic affections by injecting blood *in toto*, or filtered through Berkefeld N. candles, or solution of fresh extract, and of pharyngeal washings. All the inoculations gave negative results. They distinguish this form of epidemic hiccough from that which is merely an hysterical manifestation of gastralgia and consider that it is a toxinfective disease as shown by its pharyngitis, its febrile and general symptoms and its consecutive asthenia. They point out that epidemics of hiccough have occurred in the past and discuss their relation to epidemic encephalitis and influenza, a theory maintained with much vigour by Dufour, Lhermitte, Gautier, and others. They are inclined with all due reserve to insist that no such connexion exists, that epidemic hiccough is not a myoclonic form of either of these two diseases and, moreover, does not exhibit any close epidemiological or clinical relation with them. They base their opinion on the negative results of the inoculations made by them.

FOOD AND NUTRITION IN AUSTRALIA.

THE problem of food and nutrition is engaging considerable attention in Australia, and a pamphlet summarising the essentials has been written by Dr. C. E. Corlette, surgeon to the Sydney Hospital, at the invitation of the N.S.W. Board of Trade. An examination of the climatic factor is included in this summary. The same general principles as to salt, vitamin, and protein requirements apply everywhere, but in hotter climates the caloric requirements are less, and the main question was to determine the reduction on the average of 3300 cals. adopted by the Inter-Allied Food Commission. Basal caloric requirements have not yet been measured in Sydney, but they should lie below the 1680 cals. for northern U.S.A., and above the 1290 cals. for Rio de Janeiro, or even 1090 if the lowest determination be taken. Between these places there is thus a margin of 390–590 cals. Dr. Corlette has attempted to calculate the figure for N.S.W. indirectly from the heat loss by respiration. In New York respiratory heat loss amounted to 27·7 cals., in Sydney to 21·6, in Rio to 15·8 per cubic metre of respired air in winter; 15·6, 15·9, and 11·4 respectively in summer. At a respiratory rate of 16 cubic metres per day the respiratory heat loss is 368 at New York, 302 at Sydney, 222 at Rio for the whole year: 443, 345, 253 respectively in winter; 249, 254, 182 in summer. The annual difference between New York and Sydney is thus 66 cals. per day; but actually it is more since summer and winter are not of equal duration, the advantage being with Sydney, which has shorter winters. The main heat loss by the body is through the skin, and it has been determined that the respiratory loss is 11–12 per cent. of the total. The total difference will thus be eight to nine times as great—i.e., over 500 cals. The average caloric requirement for Australia will therefore be 2800. A preliminary investigation by Dr. H. S. H. Wardlaw from analyses of the actual food consumption of five women and four men workers in the laboratory—i.e., individuals performing light work—gave 2110 cals. for the men and 1977 cals. for the women per day. The protein consumption was 71·2 g. for the men and 58·9 g. for the women. These figures become 2321 for men and 2175 for women, with 78·3 and 64·8 for protein, if the usual allowance of 10 per cent. be allowed for loss by waste. They correspond fairly closely with the estimate of Dr. Corlette, remembering that these individuals were performing light rather than average work. Prof. H. G. Chapman (in another pamphlet) considers that most men in Australia perform hard work during the day, and advocates 5000 cals. for the food purchased so as to allow for waste, which often amounts to over 25 per cent. Even this allowance gives a much larger caloric requirement than the calculations by Corlette indicate. The allowance for women was estimated at 2500 cals. Australians are big meat eaters, though the consumption of meat has lessened since the war. The use of proteins to supply calories beyond the 80 g. daily requirement for maintenance and growth is wasteful, since great loss occurs during utilisation due to specific dynamic action. This action is illustrated by considering the case of a starving man burning from his own stores 100 cals.; a quantity of protein yielding 100 cals. does not suffice to replace the loss. The giving of food raises the metabolism, like poking a fire; combustion proceeds at a greater rate, and both food and stored-up fuel are burnt. The output is balanced by 140 cals. from protein, 114·5 from fat, or 106·4 from sugar. In other terms specific dynamic action causes a loss of 30·9 per 100 cals. from protein, 12·7 from fat, and 5·8 from sugar. Carbohydrate is thus the best fuel for the body. Muscular work makes no appreciable extra consumption of protein, and either carbohydrate or fat best supply the calories. Carbohydrate, if amply provided, also reduces the protein consumption.

DUODENAL DIVERTICULA.

IN a paper[1] read before the Section on General and Abdominal Surgery at the recent meeting of the American Medical Association, Dr. E. Wyllys Andrews, of Chicago, states that our knowledge of duodenal diverticula falls naturally into two periods. The first, or necropsy period, extends from 1710, when Chomel first described the condition, to 1910, during which it was regarded as a rare and interesting anatomical deformity, while in the second, or Roentgen ray period, from 1910 to 1917, clinical evidence pointed to those diverticula being important factors in the syndrome of gastro-duodenal ulcer. Dr. Andrews adds that to this period, or perhaps to a coming third period, belongs the evolution of the operative cure of the condition. Buschi, of Bologna, in 1911 compiled 54 examples of duodenal diverticula, including three of his own, with a list of 62 previous authors. Duodenal diverticula are acquired rather than congenital deformities, as they belong mostly to the later half of life. The importance of age in the ætiology is shown by the fact that the youngest patient in Linsmayer's series of 45 cases was 36. The diverticula are usually single and most frequently situated near the papilla of Vater. Their direction varies, being forward, backward, upward, or downward in different

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[1] Il Policlinico, xxviii., Practical Section, August 29th, 1921.

[1] Journal of the American Medical Association, Oct. 22nd, 1921.

Dr. Kingdon's character, had expressed himself satisfied with it. The Council's solicitor, having briefly recapitulated the facts, read letters as to Dr. Kingdon's character in the interval from Dr. J. C. Johnston Acres, Dr. Louis C. Bean, Dr. P. R. Dodwell, and Dr. James Smyth. Dr. Kingdon expressed his regret, and gave an undertaking in regard to his future conduct in relation to certificates. The Council's solicitor did not desire to address the Council in reply. No member of the Council desired to put any question to Dr. Kingdon through the chair. The Council having deliberated on the case in camerâ, the PRESIDENT announced the judgment of the Council as follows:—

> I have to inform you that the Council has considered the evidence as to your conduct during the interval which you have tendered and has resolved: "That it does not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Nathaniel Stevenson.—The Council considered the case of Nathaniel Stevenson, registered as of The Phœnix, Rainham, Essex, M.B., C.M., 1893, U.Glasg., who had been summoned to appear before the Council on the following charge:—

> "That, being a registered medical practitioner, you abused your position by committing adultery and eloping with Mary McArtney, a married woman, you having been the medical attendant of the family, of which adultery you were found guilty by the decree of the Court of Session, Edinburgh, dated May 28th, 1921, in the case of George McArtney or Macartney *v.* Mrs. Mary Lugton or McArtney and Dr. Nathaniel Stevenson, in which you were the co-defender; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

There was no complainant in this case. Dr. Stevenson was not present in answer to his notice, nor was he represented by counsel or solicitor. The Registrar having read the notice, in the absence of a complainant the solicitor placed the facts before the Council. He proved the service of the notice and read a certified copy interlocutor which he put in in the case of George McArtney or Macartney against Mrs. Mary Lugton or McArtney, in which Dr. Stevenson was co-defender, and an account of the proceedings at the Court of Session from the *Glasgow Herald*, dated May 30th, 1921, and certified copies of the notes of evidence given at the hearing, which he also put in. This closed his case.

The Council having deliberated on the case in camerâ, the PRESIDENT announced the judgment of the Council as follows:—

> I have to announce that the Council has considered the charge made against Nathaniel Stevenson, and that it has judged him to be guilty of infamous conduct in a professional respect, and has directed the Registrar to erase his name from the Medical Register.

The Case of Alexander McRobbie Donaldson.—The Council considered the case of Alexander McRobbie Donaldson, registered as of Inglewood, Briercliffe, Burnley, M.B., Ch.B. 1905, U.Aberd., who had been summoned to appear before the Council on a charge amended by assent of the Council to the following terms:—

> "That, being a registered medical practitioner, you, on March 24th, 1921, signed and gave to one Arthur Baldwin a certificate stating that you had that day examined the said Arthur Baldwin, Mrs. Arthur Baldwin, Mrs. Leaver, Harold Leaver, and Arthur Leaver, and found them in good health and sound mentally and bodily and likely to remain so, whereas you had in fact made no examination whatsoever of the said Arthur Baldwin, or Mrs. Arthur Baldwin, Mrs. Leaver, Harold Leaver, and Arthur Leaver, which certificate was untrue, misleading, and improper; and that in relation thereto you have been guilty of infamous conduct in a professional respect."

Dr. Donaldson attended in answer to his notice, accompanied by Mr. Alexander Neilson, K.C., instructed by Messrs. Hempson, solicitors.

There was no complainant in this case, but it was brought to the Council's notice by the Senior Medical Officer of the Australian Imperial Force. In the absence of a complainant, the Council's solicitor then proceeded to place the facts before the Council. He called Major Morris, A.I.F., as a witness, and examined him as to the truth of his declaration. Major Morris and a colleague, Dr. E. W. Evans, had examined Baldwin at Tilbury as he was about to embark for Australia and had dissuaded him on grounds of physical unfitness from proceeding with his journey. Major Morris was cross-examined by Mr. Neilson. The Council's solicitor did not desire to re-examine Major Morris, who answered questions put to him through the chair by members of the Council. The Council's solicitor next called Dr. Ernest W. Evans, Senior Medical Inspector of the Marine Department of the Board of Trade, and examined him as a witness. Dr. Evans was cross-examined by Mr. Neilson, re-examined by the Council's solicitor, and answered questions put to him through the chair by members of the Council. Mr. Stanley Hamilton Foss, assistant manager of the Orient Line, was also examined as a witness. This closed the case against Dr. Donaldson.

Mr. Neilson addressed the Council on behalf of Dr. Donaldson. He read letters from the Registrar to Dr. Donaldson, dated August 18th, 1921, and Dr. Donaldson's replies thereto, dated Sept. 8th and 9th and Oct. 13th, 1921. He called Dr. Donaldson and examined him as a witness on his own behalf. Dr. Donaldson was cross-examined by the Council's solicitor, and answered questions put to him from the chair, and by members of the Council through the chair. Mr. Neilson did not desire to re-examine Dr. Donaldson. Mr. Neilson read testimonials as to character from Dr. Herbert Edmundson, Burnley, enclosing a resolution passed by the Burnley branch of the British Medical Association; from Dr. Andrew MacGregor Sinclair, ex-Mayor of Burnley; from Mr. R. Allan Baxter, clerk to the Burnley Insurance Committee; from Mr. William Clitheroe, district superintendent of the London Mutual Assurance Society, Limited, Burnley Branch; and from Mr. John William Clegg, L.S.A., of Burnley, which he put in. This closed his case. The Council's solicitor did not desire to address the Council in reply. The Council then deliberated on the case in camerâ, and subsequently adjourned.

WEDNESDAY, NOV. 23RD.

After the Council had continued its deliberations in camerâ on the case of Alexander McRobbie Donaldson, the PRESIDENT announced the judgment of the Council as follows:—

> I have to inform you that the Council has given very careful consideration to the charge brought against you and to the evidence produced in support of it, and has found that the facts alleged against you, as indeed you yourself have acknowledged, have been proved to its satisfaction, and that the certificate in question was given, in your own words, in a "lax and careless" manner. The Council regards laxity in the giving of such a certificate as a very grave matter, and worthy of severe censure; it has resulted, as has been shown in this instance, in consequences injurious to the persons to whom the certificate is given, and to others. The Council, having regard to your previous good character and to the warning which you have received during the course of these proceedings, trusts that your conduct as touching certificates will in future be beyond reproach; and it has accordingly not seen fit to direct the Registrar to erase your name from the Register.

Dr. Donaldson thereupon gave an undertaking to the Council as to his future conduct in the giving of certificates.

The Case of Nariman Bejanji Kolsa-Walla.—The Council considered the case of Nariman Bejanji Kolsa-Walla, registered as c/o Grindlay and Co., 54, Parliament-street, S.W. 1, L.M.S.U. 1910, Bombay, D.P.H. R.C.P.S. Eng. 1914, who had been summoned to appear before the Council on the following charge:—

> "That, being a registered medical practitioner, you have sought to attract to yourself patients in the villages of Rainworth and Blidworth, Nottinghamshire: (1) by personal visits to and/or interviews with persons who were to your knowledge panel patients of Nowroji Merwanji Tarachand, a registered medical practitioner; (2) by offering to charge a lower fee for confinements than the charge made by the said Nowroji Merwanji Tarachand; and (3) by personal attendance at a meeting held at the Wesleyan Schools, Blidworth, when those present were asked to put their names on your panel list, and forms of notice to change

cases having been recorded to establish this fact beyond dispute. Seven of 42 cases of inoperable cancer of the cervix have been cured in Frankl's clinique, while he reports that 58·8 per cent. of cases subjected to ray treatment subsequent to operation have remained well after a period of five years. In the treatment of hæmorrhage from the uterus due to the presence of myomata or unconnected with obvious signs of disease the rays act upon the follicular elements in the ovary, and by destroying these bring about a cessation of the ovarian secretion and so produce amenorrhœa. Just as small doses may have a stimulating effect upon the cells of a malignant growth, so they may stimulate the follicular epithelium of the ovary, and it has been suggested therefore that they might be employed in the treatment of obstinate amenorrhœa.

Both these lectures are included in a very full report which appears in the *Dublin Journal of Medical Science* for November.

JUBILEE OF THE FINSEN INSTITUTE.

A FEW weeks ago the Finsen Institute in Copenhagen celebrated a double event—its 25-year jubilee, and the opening of an annexe for the light treatment of surgical tuberculosis. Some conception of the size and importance of this Institute can be gleaned from the following figures. The staff includes 22 doctors, 108 nurses, and 84 other employees; the annexe for surgical tuberculosis has cost three million kroner, accommodates 145 in-patients, and is equipped for the daily treatment of 150 patients. Niels Finsen's hope that light treatment could be extended to deep-seated disease, notably heart disease, was not realised in his life-time, but his successors have kept his aims in view, and in 1913 they began that treatment of surgical tuberculosis with carbon arc light which has now come into general use at the Institute.

PLAGUE AND SMALL MAMMALS.

PLAGUE was imported into coastal towns of South Africa many years ago, but as little or no manifestation of the disease was reported for some years, it was hoped that the infection had died out. Quite recently an entirely new series of outbreaks have been occurring inland and far remote from towns. In his interesting paper in our last issue, Dr. L. G. Haydon, assistant health officer for the Union of South Africa, set out clearly the peculiarities of these outbreaks—viz., (1) they were confined to a scattered rural population; (2) no "domestic" rats could be found in the farms; and (3) the time-intervals between the small groups of cases showed that they were not closely connected to each other. These new manifestations could not at first be brought into line with the ordinary epidemiology of plague, which requires flea-infested rats living in the same house with human beings; consequently it was necessary to look round for some other agent in disseminating the disease. After long and careful investigation into the fauna of the infected parts of the country it was discovered that two varieties of smaller mammals, which lived in numbers in the fields, were extensively infected with the disease—namely, the gerbille (*Tatera lobengulæ*) and the multimammate mouse (*Rattus coucha*), animals living in close contact with each other and the commonest of the animals captured for identification. The human cases of plague were confined to people who lived in the open and followed an agricultural or pastoral occupation: in one case a history was elicited of having taken meals sitting on the ground riddled with burrows of these animals.

Dr. Haydon's short communication is of great importance. It shows that the chain of infection to the human being is in reality the same in both town and country; in the latter case two small rodents, very similar in habit to the field-mouse, are the responsible agent for disseminating the virus; in the town, the "domestic" black and grey rat perform this function. Similar epidemics have been reported from other parts of the world. In the early part of this century there was an epizoötic of plague amongst field rodents in Essex followed by a few human cases. In India outbreaks have occasionally been reported amongst field-mice on the threshing floors around infected villages. Comparatively little is known about the extent and duration of these outbreaks amongst field-rats, but in the light of recent work done by Kunhardt and Chitre it is safe to say that provided climatic conditions are favourable for flea-breeding and the mean temperature does not remain for long below 50°F., the disease will be kept alive by the abortive epizoötic that occurs at the commencement of the colder weather. In these conditions the disease will spread like an ulcer, healing in the middle but always creeping further afield at the edges. When the non-spreading or quiescent period of the year (presumably the cold weather) approaches, active manifestation will remain in abeyance, but will commence again where it ceased as soon as favourable climatic conditions return. Dr. Haydon points out that any measures for getting rid of these small mammals are extremely difficult to carry out; the best results have, he says, been obtained with carbon bisulphide. We would point out that no measure yet designed for the extermination of rodents is anything like so satisfactory as the epizoötic of plague itself. Taking into account the scattered nature of the population, the right course would appear to be (1) to warn the people of the danger of sitting about on the ground, particularly if rat-burrows are plentiful; and (2) to push the ordinary inoculation against plague in order to save the lives of the human beings who, in spite of warning, expose themselves to the danger of infection in the course of their daily work. Whether or no the disease will die out amongst the small mammals of the countryside depends largely on climatic conditions of which our knowledge is very incomplete.

ANTIHÆMORRHAGIC SERUM.

IT is a characteristic peculiar to medical discoveries that they nearly always have their origin in some chance clinical observation. To this MM. Dufour and Le Hello owe the discovery of an antihæmorrhagic serum which they have named "Anthema" which they credit with a hypercoagulant property, particularly rapid and responding to the most urgent and serious requirements which are so constantly met with in medical and surgical practice. In a communication to the *Progrès Médical* of July 16th, 1921, they relate the case of a young woman admitted into the Broussais Hospital with purpura hæmorrhagica, epistaxis, and gingival and uterine hæmorrhages. The usual antihæmorrhagic remedies were applied without success. She had in particular several injections of antidiphtheritic horse serum which seemed without effect, when some days after the last injection the temperature rose suddenly to 40° C., and a generalised erythema made its appearance. At the same time the hæmorrhages ceased. Five days later they recurred and another injection of the serum was given, followed by fresh local reaction, urticarial eruption, and rise of temperature. At the same time, as in the first instance, the hæmorrhages stopped, but this time permanently. These facts led the authors to think that the voluntary production of these phenomena would be able to give rise to a well-defined humoral property—namely, hypercoagulability. Its realisation, however, seemed difficult. To obtain such an immediate effect as is necessary in hæmorrhages, it is not a question of the direct development in the patients of an anaphylactic state by excessive injection of serum, since it is well known that anaphylactic sensitisation requires a certain period of incubation for its production. But the patients can profit by the advantage that can be obtained from passive anaphylaxis by the injection of serum from a sensitised animal. Anthema is the serum of rabbits which have had, at intervals which have been regulated by experience, several very small successive intravenous injections of horse serum. The animals are bled 21 days after the first injection, he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886."

The report was adopted by the Council.

Revision of Standing Orders.

On the motion of Dr. NORMAN WALKER, chairman of the Business Committee, seconded by Sir ARTHUR CHANCE, it was agreed that the Executive Committee be requested to revise the standing orders and report to the Council at the May session.

Public Health Committee.

Sir JOHN MOORE, chairman of the Committee, presented this report. In pursuance of a resolution of the Committee agreed to at the May session, to which the Council accorded sanction, the Committee held a special meeting on Sept. 27th, 1921, the session extending over two days.

On Nov. 26th, 1920, the General Council authorised the Committee to consider and revise the existing resolutions and rules for Diplomas in Public Health originally adopted by the Council on June 1st, 1889, and amended and amplified from time to time, particularly on Dec. 1st, 1911, with a view to bringing the special course of instruction required of candidates for the diploma into harmony with the duties of a modern medical officer of health. In approaching their task the Committee had the advantage of perusing the reports of the visitors on recent examinations for the Diplomas in Public Health held by many licensing bodies, particularly the reports of the inspector appointed by the General Council, Dr. R. Bruce Low, on these examinations, and the general report by the inspector on the series of examinations—a most able document drawn up after an exhaustive inspection by a man of great experience in all matters relating to public health.

The result of their study of the various reports was that the Committee were of opinion that the time had come for a reconsideration of concessions granted to meet the exigencies of the war. They were convinced of the necessity for lengthening the curriculum and for lengthening the scope of study and raising the standard of examination generally. As an aid towards the attainment of these ends, the Committee hoped that the General Council would, in the impending revision of the curriculum for qualifying examinations in medicine, surgery, and midwifery under the Medical Act, 1886, lay stress on the necessity for developing the teaching of the preventive aspects of medicine in the course for those examinations.

The Committee noted that the existing examinations passed, on the whole, the ordeal of visitation and inspection satisfactorily, and it also recorded with gratification that the 21 licensing bodies which grant diplomas or degrees in "Sanitary Science, Public Health, or State Medicine" took in good part such criticisms as have been offered.

The inspector's reports on the various examinations were epitomised as follows:—

England and Wales.

1. *English Conjoint Board.*—"Judged by present standards the examination, in my opinion, is quite satisfactory."

2. *University of Oxford.*—"The examination exacts from the candidate a high standard of knowledge."

3. *University of Cambridge.*—"An efficient test of the competent knowledge of the candidate in regard of the duties of a Medical Officer of Health."

4. *University of Durham.*—"Candidates require to possess a distinctly high proficiency in all the branches of Public Health and Preventive Medicine."

5. *University of London.* M.D. (State Medicine) Examination.—"Candidates need to possess a very high standard of proficiency in all the subjects pertaining to Public Health and Preventive Medicine."

6. *Victoria University of Manchester.*—"The examination requires a good standard of knowledge from those who desire to obtain the Diploma in Public Health."

7. *University of Birmingham.*—"The examination affords an efficient test of the knowledge of the candidates."

8. *University of Liverpool.*—"The examination exacts a high standard of knowledge from the candidates in all branches of Preventive Medicine and Public Health."

9. *University of Leeds.*—"The examination requires from all successful candidates a high standard of knowledge of Public Health and Preventive Medicine."

10. *University of Sheffield.*—"The examination requires of the candidates a high proficiency of knowledge in Sanitary Science and Preventive Medicine."

11. *University of Bristol.*—"The examination affords a satisfactory test of the theoretical and practical knowledge of the candidates in Sanitary Science and Preventive Medicine according to present standards."

12. *University of Wales.*—"The examination requires from the candidates a high standard of knowledge in the various branches of Sanitary Science and Preventive Medicine."

Scotland.

13. *Scottish Conjoint Board.*—"The examination in its character and scope, and as carried out at Glasgow in my presence, in May, 1920, exacted from the candidates a distinctly high proficiency, scientific and practical, in the various branches of knowledge associated with Public Health and Preventive Medicine."

14. *University of Edinburgh.*—"The standard of the examination is above the average, and those who pass must show a high proficiency in all the branches of Public Health."

15. *University of Glasgow.*—"Candidates for the B.Sc. in Public Health of the University of Glasgow must attain to a high standard of knowledge in all branches of Public Health and Preventive Medicine before they can hope to be successful."

16. *University of Aberdeen.*—"The examination, as at present carried out, furnishes a satisfactory test of the competence of the candidates in Public Health and Preventive Medicine; it exacts a high standard of knowledge from those who submit themselves to the test."

17. *University of St. Andrews.*—(Report incomplete owing to clashing of dates with the examination at the University of Dublin on June 20th, 1921.)—"From the evidence with which I was supplied I have no reason to doubt that the examination was efficiently carried out."

Ireland.

18. *Conjoint Board in Ireland.*—"The tests applied to the candidates were prolonged and searching. They called for a high standard of knowledge in the various branches of Public Health and Preventive Medicine."

19. *University of Dublin.*—"The examination exacts from the candidates a high proficiency in the various branches of Public Health and Preventive Medicine."

20. *National University of Ireland.*—"The examination may be regarded as an efficient test of the proficiency of the candidates—it requires that the candidates shall possess a high standard of knowledge of the various subjects."

21. *Queen's University, Belfast.*—"The examination affords a satisfactory test of the knowledge of the candidates, who are required to show a high standard in all branches of Public Health and Preventive Medicine."

In addition to the inspector's reports and those of various members of the General Council acting as visitors, the Committee received valuable communications from individuals, whose scientific standing and wide experience of all that concerns public health and preventive medicine bespoke an attentive hearing and thankful acknowledgment on the part of the Committee. Many licensing bodies also, as well as members of the Committee and others, made suggestions as to the revision of the resolutions and rules for the Diploma in State Medicine. Finally, the Committee submitted for the consideration of the General Council a draft of revised rules for the Diploma in Sanitary Science, Public Health, or State Medicine.

The main rules suggested in this draft were briefly as follows:—

1. A period of not less than two years to elapse between attainment by a candidate of a registrable qualification in medicine, surgery, and midwifery and his admission to the final examination for a diploma in sanitary science, public health, or State medicine.

2. The curriculum for a degree or diploma in sanitary science, public health, or State medicine to extend over a period of not less than 12 calendar months subsequent to attainment of a registrable qualification.

3. Every candidate to produce evidence of having attended, during a period of not less than five months, at an institution approved by the licensing body granting the diploma, practical instruction in laboratory work in: (*a*) Bacteriology and Parasitology (including Entomology), especially in their relation to diseases of man, and to diseases of lower animals transmissible to man; (*b*) Chemistry and Physics in relation to Public Health. At least 180 hours must be devoted to course (*a*), including not less than

the injection occurred with great uniformity. Improvement in the general condition out of proportion to the change in the temperature curve was the most striking phenomenon. Two or three hours after the injection the temperature began to decline, the fever sometimes terminating by crisis.

RHODESIAN MAN.

EXPERTS have long differed as to whether the remains found in the Mousterian period and the various skeletons known as the Heidelberg man, the Piltdown man, and pithecanthropus are more or less in the direct line of descent of present-day man from the higher apes, or whether they count as offshoots from the human stem which did not mature. At a recent meeting of the Ulster Medical Society, which we briefly report, Prof. T. Walmsley emphasised the point of view that all these earlier types are more divergent among themselves than present-day human races and should rank as different species. Further light on the question may be expected when the precise systematic position has been determined of the skull unearthed by Mr. W. E. Barren last summer in a Rhodesian cave and now in the British Museum. In *Nature* for Nov. 17th Dr. A. S. Woodward, F.R.S., sets out the points in which this skull resembles and differs from those of other prehistoric findings. Its general appearance is strangely similar to that of the Neanderthal man, the large and heavy face being even more simian in appearance; the median longitudinal ridge shows an affinity to that found in pithecanthropus although much larger; the great flat maxillaries resemble those of the La Chapelle skull; the narial openings run down upon the face as in the gorilla, while the anterior nasal spine is typically human. The position of the foramen magnum gives reason to postulate an erect attitude, and the portion of the tibia found does not differ essentially from that of a tall and robust modern man. The fact that at first sight the dentition appears to be affected with caries makes this Rhodesian man very modern indeed. But these and many other points remain to be cleared up by discussion at the Anatomical Society of Great Britain and Ireland.

THE MEDICAL DIRECTORY.

THE Medical Directory for 1922, which has just reached us, is the seventy-eighth annual issue, and appears a week earlier than it did last year. The numerical summary of the medical profession on page 37 shows that the number of names in the London area is practically stationary, while there is an increase of 21 names in the Provincial section and much more considerable additions under the headings of Wales, Scotland, Ireland, Abroad, and the Services. The total number of names in the Directory is now 45,586, as against 44,926 last year—an increase of 660. A useful addition is the list of honorary secretaries of the statutory local medical and panel committees which appears on pages 33 to 35. The volume, though large, is handy and convenient, and the information it contains is not only accurate, but arranged with taste and a sense of proportion. The price of the Directory is 36*s*. net.

THE Thomas Vicary Lecture will be delivered at the Royal College of Surgeons of England next Thursday, Dec. 8th, by Sir Charles Ballance, who has taken as his subject A Glimpse into the History of the Surgery of the Brain.

A SOCIAL evening will be held at the Royal Society of Medicine on Wednesday, Dec. 7th, at 8 P.M., when the President of the Society and Lady Bland-Sutton will receive Fellows and their friends. At 9 P.M. Sir Berkeley Moynihan will deliver a short illustrated address on Medicine in Art.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, NOV. 22ND.

THE address delivered by the President was reported in last week's issue of THE LANCET. At its conclusion a vote of thanks to the President was carried by acclamation. The PRESIDENT then read a letter from Mr. Norman Bennett, formally tendering his resignation as a member of the Council.

Dental Education and Examination Committee.—Mr. Dolamore, Mr. Gilmour, and Mr. Guy were appointed additional members of the committee until the next election of the committee.

Dentists Act, 1921.—The Council proceeded to appoint three members, one from each of the English, Scottish, and Irish branches, to be members of the Dental Board of the United Kingdom; Mr. Waring, Sir James Hodsdon, and Sir Arthur Chance were appointed. On motions put from the chair, it was agreed (1) that the business of the Council arising out of the Dentists Act, 1921, be delegated to the Dental Executive Committee until the next session of the Council in May, 1922; (2) that Mr. Dolamore be appointed a member of the Executive Committee for Dental Business, and that the committee so constituted be the Dental Executive Committee under the Dentists Act, 1921.

Restoration of Names to the Medical Register.—The Council then deliberated on certain items of business in camerâ. Strangers having been readmitted, the PRESIDENT announced that the Registrar had been directed to restore to the Medical Register the names of Nariman Hormasji Clubwala and Thomas Stancy Sharpley.

Penal Cases.

The Council then proceeded to the consideration of penal cases.

The Case of Clement Thomas Cory Kingdon.—The Council considered the case, adjourned from May 24th, of Clement Thomas Cory Kingdon, registered as of 62, Falcon-road, Clapham Junction, S.W., M.B., C.M., 1893, M.D. 1905, U.Edin., who appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you, on Feb. 7th, 1921, signed and gave to one W. McKernon, ex-member of the Australian Imperial Force, a certificate dated Feb. 5th, 1921, that the said W. McKernon was suffering from influenza, and was at present (i.e., on Feb. 5th, 1921) unable to travel, whereas you had neither seen nor examined the said W. McKernon on Feb. 5th, 1921, or at all before Feb. 7th, 1921; and that in relation thereto you have been guilty of *infamous conduct in a professional respect.*"

The complainants were the Australian Imperial Force, represented by Major E. W. Morris.

At the conclusion of the case the PRESIDENT announced the decision of the Council as follows:—

I have to inform you that the Council has found that the facts which were alleged against you in the notice of inquiry . . . . have been proved to its satisfaction, but that the Council has taken into consideration the evidence as to your previous good character and your assurance that the certificate was given without due care and thought. In order to give you an opportunity to rehabilitate your character and to prove to the Council that you realise the gravity of your offence, the Council has postponed judgment till the November session, when you will be required to attend and to produce evidence from your professional brethren regarding your conduct, and in particular in regard to your practice in the giving of certificates. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren who may be willing, upon written application from the Registrar, to testify, by letter addressed to him for the use of the Council, as to your character and conduct in the interval. You will receive, in due course, a formal written intimation of what I have just announced to you, and the intimation will specify the dates to which I have referred.

Dr. Kingdon attended in answer to his notice. He was not accompanied by counsel or solicitor. The Australian Imperial Force, the complainant, was not represented, but Major Morris, its representative at the hearing in May, having seen the evidence as to were re-admissions, the number was reduced to 50 individuals; but the elimination of these duplicates did not, according to Dr. Barnes, make any material change in the percentage (2·7 per cent.) of patients with tuberculous consorts. That 2·7 per cent. of all married tuberculous patients should have tuberculous consorts is not surprising, as this percentage of the general population probably suffers from clinical tuberculosis. So far the case for conjugal tuberculosis is unconvincing. But the records of 229 consecutive widowed patients showed that 93, or 40 per cent., had lost their consorts by death from tuberculosis. As a control Dr. Barnes investigated the causes of death in 3400 married people under the age of 70, and he found that tuberculosis was the cause of death only in 12 per cent. According to this calculation, the percentage of persons widowed by tuberculosis is more than three times as great among sanatorium patients as among the general public. The objection may be raised that Dr. Barnes's comparison is misleading because, in all probability, most of his sanatorium patients were between the ages of 20 and 50. Yet he has compared their fate with that of married people up to the age of 70. Had he used as controls healthy widowed persons between the ages of 20 and 50, he would probably have found a higher tuberculous percentage than 12.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

MANCHESTER.

Dr. James Niven's annual report for 1920 is, as usual, a very interesting document. The death-rate from all causes is the lowest yet recorded: the low death-rate from tuberculosis also forms a record, while the marriage and birth-rates have risen. In the census figure for the population (730,551) the death-rate for the year works out to just under 14 per 1000 and the birth-rate 26·18. The (uncorrected) figure for the infant mortality rate is 97·08, the death-rate from pulmonary tuberculosis 1·1, and from other forms of tuberculosis 0·23. Dr. Niven pleads for a study of pneumonia. "Much work," he says, "has been done on its bacteriological study, but no real progress has yet been made towards elucidating its public health relations or the measures required for its reduction." Later in the report Dr. Niven points out that double occurrences of lobar pneumonia in a household are quite common, though frequently separated by considerable periods of time, and puts forward the suggestion that lobar pneumonia is, in a sense, infectious, though a third factor must be introduced to explain the vagaries of its infectivity.

On the question of venereal disease, Dr. Niven thinks we cannot yet say how much educational and clinical efforts have availed. In his view the question is largely one of prevention, and since he believes that the measures required to be taken by individuals are not difficult to apply, he considers it the duty of every person who incurs risk to take every possible means to avoid being the means of bringing destructive diseases to others. An early treatment centre was opened in December, 1919, and a second in September, 1920. Treatment is free and upon two conditions—viz., (1) that the exposure to infection has taken place within 12 hours; (2) that there are no signs of venereal disease. During 12½ months 3467 persons received treatment, 3218 coming from Manchester and Salford. The remainder were mostly from neighbouring districts, but 22 came from London and 12 from Liverpool. There is evidence that in 11 cases who exposed themselves to definite infection no disease developed. In the case of one centre the expenditure for 12½ months was £320, and of the other for four months £120. As regards the V.D. clinics, Dr. W. A. Young reports that far more males than females seek treatment. Among gonorrhœal cases the proportion of males to females is about 8 to 1. Dr. Young considers that little improvement in this respect can be expected until women are taught to regard all vaginal discharges as matters requiring special investigation. The number of cases ceasing to attend the clinics before completion of treatment is the most disappointing feature of the whole report, though good results were obtained at one clinic by sending out letters urging the patients to return to the centre. Dr. Young says: "The only remedy would appear to be in some form of notification of these cases with power to follow them up and compel them to continue treatment at approved centres or by approved medical practitioners until they comply with the accepted tests of cure." Provision for the intermediate treatment of gonorrhœa is inadequate, and patients resent the idea of going into the union infirmary at Crumpsall where alone accommodation, said to be excellent, has been made for pregnant women. At the end of 1920 there were 36 medical practitioners in Manchester qualified to receive salvarsan substitutes free of cost.

Dr. Niven states that, in spite of the assistance of the Panel Committee, notification of tuberculosis is still very late in many cases. He is puzzled by the considerable rise in the number of primary notifications of non-pulmonary tuberculosis, which accompanies a fall in the number of primary notifications of pulmonary tuberculosis. He does not think this is due to increased tuberculous infection in milk, and considers the possibility that there may be an increase in the number of tuberculous persons handling foodstuffs. The number of persons notified as suffering from pulmonary tuberculosis who were found to be handling foodstuffs in 1917, 1918, and 1919 was 66, 32, and 94 respectively. One of the conditions of notification of pulmonary tuberculosis was that the work of the notified consumptive was not to be interfered with. This has always been a weak spot in the regulations and ought to be amended.

Dr. D. P. Sutherland, the senior tuberculosis officer, deals with the failure to tackle the smoke nuisance, which is common to most mill districts. He attributes the "tolerance that is exhibited towards a death-dealing condition of this kind as in part the measure of Lancashire's preoccupation with its material progress. It tends towards decreased efficiency per unit, however, and in the larger view is very expensive." Dr. Niven has frequently referred to the importance of properly chosen and properly cooked food, and this report includes a note which has been issued to health visitors on vitamins. Manchester is now nearly up to date in scavenging arrangements, the relics of the evil past being represented by 217 midden-privies, 1322 pail closets, and 2182 wooden boxes for house refuse. We are surprised to learn that Manchester still tolerates such a state of things as that described in Dr. Niven's report on the nuisance from tips, several of which belong to the corporation and most of which were on fire in March, 1921. Manchester has apparently not gone in for destructors, and, we should think, would be well advised to consider the provision of one of the modern sorting plants which have given good results elsewhere. The shortage of houses was estimated at 17,727 in 1919. Dr. Niven says it is even greater now. In his next and last report Dr. Niven hopes to give a retrospect and a prospect as regards public health matters in Manchester.

SCHOOL MEDICAL SERVICE.

CAMBRIDGESHIRE.

There are 137 public elementary schools in this county, with a school roll of 10,822 children and an attendance of 10,229. Of these, 5356 underwent routine inspection, the number of children found to require treatment being 731, of which 328 received it. 3·7 per cent. of the routine cases suffered from enlarged tonsils and adenoids, 0·8 per cent. needing immediate operation. Breathing exercises are encouraged for those not requiring immediate operative treatment; printed instructions to this end are issued doctors to yourself were distributed, and that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainant was N. M. Tarachand, M.R.C.S., L.R.C.P., 1893. Dr. Kolsa-Walla attended in answer to his notice, accompanied by Mr. Norman Birkett, his counsel, instructed by Mr. E. B. Hibbert, his solicitor. Dr. Tarachand, the complainant, was accompanied by Mr. E. Huntsman, of Nottingham, his solicitor.

The Council's solicitor having read the notice, Mr. Huntsman proceeded to open the case for the complainant. After reading a letter from Dr. Kolsa-Walla to Dr. Tarachand, he called seven residents of the village of Blidworth and examined them as witnesses; these witnesses were in turn cross-examined by Mr. Birkett, and some were re-examined and questioned from the chair and by the legal assessor, also answering questions addressed through the chair by members of the Council.

Mr. Huntsman then called Mr. Nelson Frank Bayliss, clerk to the Nottinghamshire Insurance Committee, and examined him as a witness. He was also cross-examined by Mr. Birkett, and answered questions put to him, through the chair, by members of the Council. This closed the case for the complainant.

Mr. Birkett addressed the Council on behalf of Dr. Kolsa-Walla. He read a testimonial as to Dr. Kolsa-Walla's character from Mr. M. R. Saunders, L.R.C.P., of Hucknall, Nottingham, which he put in, together with other medical testimonials which he did not read. He also read and put in a statement from 77 panel patients who had transferred from Dr. Tarachand to Dr. Kolsa-Walla. The further consideration of the case was postponed, and the Council adjourned.

THURSDAY, NOV. 24TH.

The Council continued its consideration of the case of Nariman Bejanji Kolsa-Walla.

Dr. Kolsa-Walla attended, accompanied by Mr. Bertram Long, his counsel, instructed by Mr. E. B. Hibbert, his solicitor. Dr. Tarachand, the complainant, was accompanied by Mr. E. Huntsman, of Nottingham, his solicitor. Leave having been accorded by the Council, Mr. BAYLISS made a statement correcting certain statistics as to transfer of panel patients that he had given the previous day.

Mr. LONG then called Dr. Kolsa-Walla as a witness on his own behalf, and examined him as to the truth of the particulars set out in his statement of defence. Dr. Kolsa-Walla was cross-examined by Mr. Huntsman, and re-examined by Mr. Long. He answered questions put to him by the Legal Assessor and from the chair. Mr. Long next called Mr. Arthur Tyler, insurance agent, and four other witnesses, all of whom he examined as witnesses. They were then cross-examined in turn by Mr. Huntsman; several also answered questions put from the chair, by the Legal Assessor, and by members of the Council through the chair. This closed the case for Dr. Kolsa-Walla. Mr. HUNTSMAN addressed the Council in reply. This closed his case.

The Council having deliberated on the case in camerâ, the PRESIDENT announced as follows:—

> I have to inform you that the facts alleged against you in the notice of inquiry have been proved to the satisfaction of the Council; that the Council is of opinion that the practice of advertising and canvassing is contrary to the public interest and discreditable to the profession of medicine; that the Council takes a very grave view of such practices, but that, having regard to your comparative inexperience, it is prepared to give you an opportunity to prove that you are capable of more worthy conduct in the future, for which purpose it has postponed judgment till the November Session, 1922, when you will be required to attend and to produce evidence from your professional brethren regarding your conduct in the interval. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren in the neighbourhood of your practice who may be willing, upon written application from the Registrar, to testify, by letter addressed to him for the use of the Council, as to your character and conduct during the next 12 months. You will receive, in due course, a formal written intimation of what I have just announced to you, and the intimation will specify the dates to which I have referred.

The Council then adjourned.

FRIDAY, NOV. 25TH.

The Council devoted this day to consideration of the reports of various committees.

Dental Education and Examination Committee.

This report was presented by Sir JAMES HODSDON, chairman of the committee, and dealt with three subjects: (*a*) colonial and foreign applications; (*b*) the dental curriculum; and (*c*) Dental Board of New South Wales. The revision of the curriculum was under consideration a few years ago, but the matter was postponed in view of the appointment of the departmental committee and the possible introduction of a new Dentists Bill. Now that the Bill had become the Dentists Act of 1921, and that the Council had the benefit of the advice of three members of the Dental Board, the recommendation was that it be referred to the Dental Education and Examination Committee to make suggestions for a revised curriculum in dentistry, and to report at the May session of the Council.

The report was adopted.

Union of South Africa and Empire of India.

The Executive Committee reported that, at its meeting on July 21st it received information that Part II. of the Medical Act, 1886, had been extended by an Order in Council to the Union of South Africa. The Committee having considered the curriculum of the University of South Africa, directed the Registrar as follows:—

> "That any person who holds the degrees of M.B., Ch.B., granted after examination in medicine, surgery, and midwifery by the University of South Africa, shall be entitled to be registered in the Colonial List of the Medical Register, provided he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886."

At its meeting on Nov. 21st the Executive Committee received and considered a further application for the recognition of its degrees from the University of Cape Town and instructed the Registrar as follows:—

> "That any person who holds the degrees of M.B., Ch.B., granted after examination in medicine, surgery, and midwifery by the University of Cape Town shall be entitled to be registered in the Colonial List of the Medical Register,"

with the same proviso as in the case of the University of South Africa. On the same date the Committee received a communication from University College, Johannesburg, formerly a constituent College of the University of South Africa, and the seat of its medical school, forwarding a copy of an Act of the Union creating the College a separate university under the title of the "University of the Witwatersrand, Johannesburg." The University of the Witwatersrand applied that the Council would grant to its degrees the same recognition as it did to those of the undivided University of South Africa. The Committee resolved:—

> "That the Registrar be directed to register in the Colonial List of the Medical Register any person who holds the degrees of M.B., B.Ch., of the University of the Witwatersrand, Johannesburg, granted after examination in medicine, surgery, and midwifery, provided he satisfies the Registrar of the General Medical Council regarding the other particulars set forth in Part II. of the Medical Act, 1886."

On the same date the Committee considered a communication from the University of Lucknow, to which the King George Medical College, together with its hospital and hostel had been transferred from the University of Allahabad, applying that the recognition hitherto accorded to the degrees of the University of Allahabad should now be accorded to those of the University of Lucknow. The Committee resolved:—

> "That the Registrar be directed to register in the Colonial List of the Medical Register any person who holds the degrees of M.B., B.S. of the University of Lucknow, provided

the fringe of this problem; there is work for at least three whole-time dentists among the 6–8 year group alone. Thirty cases of definite pulmonary tuberculosis and 58 suspected cases were reported, all of which received some form of treatment, 42 being sent to sanatoriums. The coöperation between the 25 infant welfare centres is strengthened by the employment of health visitors as school nurses; treatment of children 2–5 years of age might also be undertaken at these clinics.

SHREWSBURY.

Out of a school population of 5000 over 1000 were subjected to routine examination, and 1063 cases were treated at the school clinic, making altogether 4422 attendances. Of the 8-year-old group, 15 per cent. showed subnormal nutrition, compared with 6 per cent. of infants and 8 per cent. of leavers. No arrangements for providing school meals have yet been made, but, in spite of the high subnutrition no case of actual pulmonary tuberculosis is reported. 26·5 per cent. of infants were found to have dirty heads, whereas the intermediate group and the leavers showed only 8 per cent. and 4 per cent. respectively. This is contrary to the usual rule, infants generally showing a higher standard of cleanliness. A vigorous campaign against uncleanliness is being conducted. There is a comprehensive scheme of treatment, which is evidently taken advantage of to the full extent. The school medical officer, Dr. H. Gordon Smith, is also certifying factory surgeon for his district, and in this capacity is able to control to a certain extent the health of a large number of children after they have left school.

PRAGUE.

(FROM OUR OWN CORRESPONDENT.)

The Health Budget for 1922.

PARLIAMENT has approved the budget for 1922, amounting to 18 billion Czechoslovak crowns. The Ministry of Health and Physical Education has a budget of 149 millions, as compared with 18 millions in 1919, 46 millions in 1920, and 88 millions in 1921. The biggest item in the budget is 37 millions for the nationalisation of hospitals. This measure is due to the bad financial situation of these institutions owing to the war. Most of the hospitals have hitherto been in the hands of the district and provincial authorities, who had practically no resources, as the Austrian Government forbade them to collect local taxes. The second biggest item in the budget is 30 millions for maintenance of State institutions—hospitals, sanatoriums, preventoriums, and laboratories. Eleven millions are devoted to the fight against social diseases; this constitutes the biggest outlay for truly preventive work, the above-mentioned items being more curative than preventive. For special measures against epidemic diseases 12 millions are budgeted for, against 7 millions in 1921.

A Tuberculosis Sanatorium near Prague.

A large tuberculosis sanatorium has lately been completed at Prosecnice, near Prague; it was erected by the Central Federation of Sickness Insurance Associations, with money contributed by labour organisations. The sanatorium is well situated, with a good railway connexion; there will be 164 beds in the main building and over a hundred in the two wings, which are connected with the main block by open porticos. This establishment indicates an important advance in the antituberculosis campaign; hitherto Czecho-slovakia has only possessed two sanatoriums for adults with pulmonary tuberculosis, and institutional treatment, especially for the insured, was impossible. There are a number of pavilions for tuberculosis in district general hospitals, but these places are filled with advanced cases and cannot be counted as sanatoriums.

Masaryk Antituberculosis League.

The Masaryk Antituberculosis League is about to give a course on tuberculosis for physicians in the first half of December. The lectures will be given by a member of the Society for Research in Tuberculosis and will consist of a series of 54 theoretical lectures. In addition there will be practical exercises. The number of attending physicians is limited. The course is given chiefly for the benefit of physicians who want to be connected with the tuberculosis dispensaries which are being erected all over the country under the auspices of the Masaryk League. This is a second course of the kind this year, and it has been arranged because the number of those who decided to attend the first course exceeded by far the number which could be admitted.

Health Insurance for Civil Servants.

The Senate is discussing a Bill to insure State employees of all classes against sickness. No financial benefit would be provided during sickness, because at such times State employees receive either salary or pension. Medical benefit is also extended to the insured person's family; the patient is free to choose his doctor among those physicians who have contracted with the insurance authorities, and is entitled to stay in a hospital as long as it is necessary. Lying-in hospitals are included. The dependent mother, wife, and daughter of the insured would receive during the last six weeks of pregnancy not less than 400 crowns, and after childbirth 600 crowns and 100 a week premium for nursing the child, payable for a period not longer than 12 weeks. The Bill goes further than insurance for working men, in that it permits payment of transportation fees when patients have to leave home for treatment by a specialist. The Bill would not include employees in provincial or district services; the latter would then constitute the only salaried profession which is not yet included in some form of sickness insurance.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Tuberculosis in Belfast.

Dr. Andrew Trimble, chief tuberculosis officer of the city, has issued his report for the year 1920–21. It is a complete and, in most respects, a satisfactory document. The most important event of the year was the opening of the Municipal Hospital for Tuberculous Children at Graymount, consisting of a residence and grounds of about 15 acres; an open-air school for children in connexion with this institution is intended for "contacts." The children attending the school are provided with tram tokens for the journey to and from the school, and with two meals served during school hours. Open-air instruction is found to have a most beneficial effect upon the children. In the various tuberculosis institutes in the city 2121 examinations of new patients were conducted during the year. The new patients numbered 2234, including 113 transfers, compared with 2675, 2358, 3420, and 2977 in the four previous years. Pulmonary cases numbered 935, of whom 446 were males and 489 females. There were 119 glandular cases (44 male and 75 female); osseous cases numbered 82 (33 male and 49 female); and abdominal cases 28 (15 male and 13 female). There remained 22 other forms of tuberculosis, of whom 6 were male and 16 female. The preponderance of females is in accord with the experience of former years, and probably finds its explanation, in whole or in part, in the conditions of female employment. 1579 patients received treatment at the Institute, 3945 received domiciliary treatment, and 250 received sanatorium treatment. The total number of deaths was 978, of whom 762 died from pulmonary tuberculosis. This is a reduction of 91 deaths as compared with the previous year, and represents a

150 hours of practical laboratory work. At least 90 hours must be devoted to course (*b*), including not less than 70 hours of practical laboratory work.

4. Every candidate to produce evidence of having received, during not less than 100 hours, at an institution or from teachers approved by the licensing body granting the diploma, instruction in the following subjects: (1) Principles of public health and sanitation; (2) epidemiology; (3) sanitary law and administration; (4) sanitary construction and planning; (5) vital statistics; (6) meteorology and climatology.

5. Every candidate to produce evidence that he has attended for three months on the practice of a recognised hospital for infectious diseases, and received instruction in the methods of administration. At least 30 attendances in not less than two days in each week shall be required, and clinical records of not fewer than six cases observed in the wards.

6. Every candidate to produce evidence of a period of not less than six months, spent in acquiring practical knowledge of the duties, routine and special, of public health administration under the supervision of a medical officer of health, who shall certify that the candidate has received, during not less than three hours of each of 60 working days, practical instruction in these duties, including those relating to: (*a*) Maternity and child welfare service; (*b*) health service for children of school age; (*c*) venereal diseases service; (*d*) tuberculosis service; (*e*) industrial hygiene; (*f*) inspection and control of food, including meat and milk.

7. The examination for the diploma or degree to be divided into two parts, Part I. and Part II., each of which shall extend over not less than two days, and shall be conducted by examiners specially qualified. A candidate must pass in all the subjects of Part I. before being admitted to examination for Part II., and must pass in all specified subjects in either Part I. and Part II. at the same time.

8. The examination for Part I. to be practical, written, and oral, and shall include the following subjects: Bacteriology and parasitology (including entomology); and chemistry and physics in relation to public health.

9. The examination for Part II. to include the following subjects: Hygiene and sanitation; epidemiology and infectious diseases; sanitary law and vital statistics; public health administration.

The examination to be written and oral, and to include practical examinations in infectious diseases; meat inspection; inspection of premises, dwellings, workshops, schools, &c. Candidates may not be admitted to examination for Part II. until after they have completed the prescribed courses of instruction, and until after the lapse of not less than two years from the date of his obtaining a registrable qualification in medicine, surgery, and midwifery.

The report was received and entered on the minutes.

(*To be continued.*)

TUBERCULOSIS.

RECENT AMERICAN WORK.

Comparative Susceptibility of Men to Tuberculosis in New York.

IN the *Bulletin of the New York Tuberculosis Association* for September–October, 1921, attention is drawn to the remarkably high death-rate from tuberculosis among males, as compared with females. Since 1910 there have been 67,748 deaths from tuberculosis among males of all ages, and only 31,148 among females. The proportion is thus 64 to 36. As the population of New York includes practically equal numbers of males and females, these figures can be taken as a true index to the comparative death-rates for the two. In both sexes the death-rate shows an almost identical decline since 1910; it is 44 per cent. among males and 45 per cent. among females. As this decline has continued during the first months of 1921, it is calculated that in the past 11 years the death-rate from tuberculosis in both sexes in New York has been halved. The remarkable sex difference in the death-rate is correlated with the overwork and unhygienic conditions from which males suffer outside the home. Pertinent to this matter is the fact that while in 1920 alone 146,054 visits were paid by nurses in the homes of patients, not one such visit was paid in the workshops employing men.

Re-infection in Tuberculosis.

It is doubtful whether much advance has been made towards the solution of the tangled problem of re-infection by a long paper on this subject by Dr. Edward R. Baldwin and Dr. Leroy U. Gardner in the *American Review of Tuberculosis* for August, 1921. But their experimental investigations and comprehensive review of the literature of the subject should serve a useful purpose in charting the many pitfalls lying in wait for the unwary. To decide whether and to what extent primary infection confers immunity to a second infection from without, they inoculated guinea-pigs by the inhalation of tubercle bacilli of the human type and of low virulence. The first step was to produce, if possible, a completely arrested tuberculosis before re-infection was attempted. They made use of the culture isolated by Trudeau as early as 1891, and subsequently used extensively in the U.S.A. in experimental tuberculosis. They found that re-infection is quite feasible when relatively large doses of tubercle bacilli are given by inhalation, but the second infection did not form the caseated tubercles with the regularity seen in the primary tuberculosis. There was, instead, a localised inflammatory reaction with, as a rule, a moderate degree of proliferation. The tracheo-bronchial glands suffered no further disease in the mild re-infections; in short, an abortive form of the disease was provoked, and the exceptional cases not conforming to this rule could be explained either on the assumption of over-dosage or of absence of primary infection. In the second section of their work the authors attempt to apply clinical and epidemiological observations to the solution of the question: What proportion of old tuberculous foci is responsible for the clinical disease of adults? Their review shows that, according to different authorities, from 20 to 80 per cent. of clinical tuberculosis after the fifteenth year is derived directly from infection in childhood. The difference between 20 and 80 per cent. is rather wide.

Back to the Pulmonary Apices.

Of late years radiologists have been so engrossed by hilus tuberculosis that the apices of the lungs have suffered comparative neglect except by old-fashioned clinicians. A swing of the pendulum in this matter is to be found in a paper by Dr. James G. van Zwaluwenburg and Dr. G. P. Grabfield in the *American Review of Tuberculosis* for June, 1921. In a long series of cases they have paid special attention to a rather dense linear shadow, lying just beneath the second rib and over the apex of the lung, as seen in stereograms of the chest taken in the postero-anterior position. By imperceptible gradations these shadows merge into the well-known shadows of apical tuberculosis till it is impossible to distinguish the pleural from the pulmonary opacities. This study has led to the conclusion that the chronological order of this form of disease is: the lymphatics of the neck—the pleuræ—the apex of the lung. The phenomenon of pleurisy with effusion can be explained on the assumption that a serous exudate from an apical lesion gravitates to the lower thorax, spreading infection there. The suggestion is also made that the above route of infection is not necessarily the rule, and the prevailing distribution of the disease in children seems to point to some other route. In this connexion the guess may be ventured that the lymphatic drainage in the adult differs fundamentally from that in the child. Certainly radiologists agree that the picture of chronic pulmonary tuberculosis in the adult is very different from that in the child.

Conjugal Tuberculosis.

In a paper in the October number of the *American Review of Tuberculosis* Dr. Harry Lee Barnes discusses the possibility of tuberculous infection between husband and wife; incidentally and accidentally he shows how dangerous it may be to draw conclusions with regard to this much debated subject. His paper is based on the records of 5608 consecutive cases of tuberculosis admitted to the Rhode Island State Sanatorium. Of the 2262 married persons, only 62 of them stated that their consorts suffered from pulmonary tuberculosis. As 12 of these cases ference being recommended. After operation the re-education of muscles should be patiently carried out, taking care that the stronger muscles are kept in abeyance whilst the tone in the weaker muscles is being developed. For example, we often see inversion of the foot from an external popliteal nerve lesion, due to the over-action of the tibialis anticus. This would be avoided if the weaker peronei had been concentrated upon; a possible transplantation of the tibialis anticus, to correct inversion, would be unnecessary. This neglect of the weaker muscles is seen equally in recovery after musculo-spiral nerve lesions, where you get radial deviation on dorsi-flexing the wrist. *This can and should be avoided. In splinting* a hand or foot when paresis is present in the extensor group, full dorsi-flexion should not be resorted to. The extensor group will thus be able to work in the inner range if and when voluntary power returns, and a spasm in the antergic or flexor group will be avoided.

Some such scheme of coördination between schools, centre and orthopædic hospital, would help the work and objects of the Central Committee, and might form a basis for a national orthopædic scheme.

I am, Sir, yours faithfully,

M. Dockrell.

Ministry of Pensions Hospital, Blackrock,
co. Dublin, Nov. 25th, 1921.

THE QUESTION OF SELF-DISINFECTION.

To the Editor of The Lancet.

Sir,—We, the undersigned, physicians and surgeons, medical officers of health, and officers in medical charge of venereal disease clinics, having reviewed the whole subject, have not formed our opinion on the question of self-disinfection without careful consideration. In addition to practical experience the following points are convincing:—

1. Such evidence as has been adduced in favour of this policy is founded on the results obtained in the Navy and Army among men, under discipline, who were carefully and in many cases individually instructed by certain enthusiastic and competent officers. When tried by other keen medical officers with men under discipline the method failed. Even had it been successful, to teach and instruct the civilian population in as detailed a manner is obviously impossible. *Careful individual and collective detailed instruction is given* to the troops of the British Armies of Occupation in Germany and at Constantinople. Materials and packets for self-disinfection are available, yet, in the Army of the Black Sea, the rate of infection was 213·73 per 1000 for 1920 and 238·94 per 1000 men for January to June, 1921 (House of Commons, Nov. 3rd, 1921) and in the Army of the Rhine the figures are 188·62 per 1000 men for 1920, and 148·90 per 1000 for January to June, 1921 (House of Commons, Nov. 3rd, 1921).

2. Unless disinfection is extremely carefully carried out it would fail to effect its purpose. In the largest clinic in London between July and September of this year, out of 375 men presenting themselves for treatment 101 had used some form of chemical disinfection, chiefly permanganate of potash, within a very short time of running the risk; and *from September up to date, of 201 new cases 47 had used permanganate of potash, the majority of them within 5, 10, 15, or 20 minutes after exposure to infection.*

3. Self-disinfection has been extensively carried out in Germany during the last six years, and great stress, during an intensive campaign, has been laid on the virtue of prophylaxis and self-disinfection. The German delegates at the Red Cross Congress at Copenhagen last May stated that in their opinion there was no evidence of diminution in the number of cases of venereal disease, and no sign of any fall in its incidence. Dr. Pinkus stated that, in Berlin alone, he *estimated that there were 25,000 fresh cases of infection each year.*

4. It is likely to lead to disease in large numbers of young persons. In Dresden, where the system of prophylaxis by self-disinfection has been actively pressed by poster, handbill, and address, it was found that the number of boys between 14 and 18 coming up for treatment at one clinic had increased during one year from 14 to 101, and of girls between the same ages from 60 to 116. In the first three months of 1921 the number of boys was 33 and of girls 61.

5. The first risk may be as fatal in causing disease as the *fiftieth, and a boy of 15 is just as capable of taking infection* and conveying the disease as a man of 50. Therefore, to carry out this policy effectually, it would be necessary to instruct every boy on reaching the ages of 14 or 15, and see that he is provided with disinfecting materials.

6. The argument in favour of self-disinfection is that it can be carried out without any delay. To fulfil this condition *it would be necessary for the disinfectants to be carried on the person.* This would be an ever present and continuing incitement to illicit intercourse, and would tend to lead to an increase in the number of risks incurred.

7. It is very nearly impossible for women satisfactorily *to disinfect themselves. This is shown by the conditions* existing in Constantinople, where instruction in the methods of self-disinfection has for some time past been given by medical men to all prostitutes at the examination centres. In spite of this, however, the number of infected women in this group works out at 560 out of 2000 each month.

8. Notwithstanding any warning given, a certain number *of individuals, in whom the diseases may have developed,* will persist in using the disinfectant materials as a means of treatment. By so delaying the use of true remedial measures, they will prolong the period of infectivity to others, and of treatment necessary for cure for themselves. This is within the experience of a number of the signatories.

We are, therefore, of opinion that the policy of promiscuous propaganda as to the security conferred by personal self-disinfection among the civilian population is likely not only to fail in its object in decreasing the amount of venereal disease, but also may actually lead to an increase in the gross number of cases.

We are, Sir, yours faithfully,

(Signed)

William Ainslie.*
James Ashe.
Ruth Balmer.*
Henry Bardsley.*
Thomas Barlow.
Florence Barrett.
Percy Bassett-Smith.
William Benton.†
Elizabeth Bolton.
Philip Boobbyer.†
John J. Buchan.†
J. C. Buckley.*
Mary G. Cardwell.*
Eveline Cargill.
A. K. Chalmers.†
Francis Champneys.
Annie Clark.*
A. B. Cottell.
Robert Donnellan.
Mary Buchan Douie.
Dyce Duckworth.
Eric Evans.*
Letitia Fairfield.
G. R. Fletcher.
G. E. Gask.
Charles Gibbs.*
Thomas Gibson.†
Alfred Pearce Gould.
Rupert Hallam.
H. McCormick Hanschell.*
Dorothy C. Hare.
P. Maynard Heath.
Lydia M. Henry.*
A. Bostock Hill.†
T. Eustace Hill.†
J. A. Hislop.†
S. J. Holden.†
Jonathan Hutchinson.
J. Johnstone Jervis.†
R. H. H. Jolly.†
James Kaye.†
G. Kettlewell.*
Harold Leader.
E. Lewys Lloyd.†
James Alexander Lindsay.
Charles Macalister.
Ewen J. Maclean.
Mary H. Macnicol.*
Otto May.
Louise McIlroy.
Charles Melville.
Jane Miller.*
William Milligan.
Malcolm Morris.
S. G. Mostyn.†
George Murray.
Bernard Myers.
Frank Radcliffe.
M. L. Rawlins.*
John Robertson.†
Frank Robinson.†
Bertram Rogers.
Margaret Rorke.*
Amand Routh.
William G. Savage.†
Mary Scharlieb.
A. Rendle Short.
Edmund M. Smith.†
James Stowers.
H. H. Tooth.
E. B. Turner.
Frank Wacher.†
Jane Walker.
Kenneth Macfarlane Walker.*
A. M. Chalmers-Watson.
James Wheatley.†
Douglas White.
H. Heathcote White.*
R. Whitehead.
Beckwith Whitehouse.*
William Whitla.
W. Kenneth Wills.*
John T. Wilson.†
F. T. H. Wood.†
German Sims Woodhead.
A. F. Wright.

* V.D. Clinic Officers.
† M.O.H. for Counties or County Boroughs.

National Council for Combating Venereal Diseases,
80, Avenue Chambers, Southampton-row,
London, W.C. 1, Nov. 29th, 1921.

RENAL EFFICIENCY TESTS.

To the Editor of The Lancet.

Sir,—I was reported in your issue of Nov. 26th as saying at a recent meeting of the Bristol Medico-Chirurgical Society that there was a "close parallelism between the curve of fluid outflow . . . . and the output of urea." The charts shown were in illustration of the established fact that the specific gravity of the to teachers for systematic use in schools, and also to parents when desirable. During the year 374 cases of impetigo were reported (100 more than the previous year), and these cases, as also 26 cases of scabies, were treated in their homes, being kept under observation the while by school nurses. 5947 home visits were paid by the nurses, mainly for the purpose of "following up" and inquiring into infectious disease. Arrangements for the treatment of defective vision have been made with Dr. J. C. W. Graham and a travelling ophthalmic clinic will be held by Dr. J. H. Gellatly, assistant school medical officer. A motor-car carrying equipment is also provided for dental treatment.

The number of children dentally inspected was 10,372 (16·5 per cent. more than last year), and the number treated was 2467 (1 per cent. more than last year). It is satisfactory that the number of teeth extracted (4890) shows a decrease of 5·8 per cent., while 1088 teeth were filled, an increase of 13·8 per cent. over last year's figure. Dr. Frank Robinson observes that extraction is necessarily more frequent in a rural scheme of dentistry owing to the inability of the dentist to pay the number of visits required for fillings. This would seem somewhat hard on the country child. The proportion of refusals of treatment decreased from 40 per cent. in 1919 to 34·2 per cent.; it is interesting to note that this reduction was recorded among the re-inspected children, particularly among those for whom treatment had been previously refused. The school nurses paid 1453 home visits in connexion with the dental work.

The question of dealing adequately with defective children is being taken in hand. Special arrangements have been made for several of these cases, but further accommodation is required, and the suggestion that adjoining education authorities should combine in this matter may be fruitful.

Out of a total of 137 schools 109 schools were closed for infectious disease, 57 for measles, 17 for whooping-cough, 9 for scarlet fever, 5 for diphtheria, 19 for influenza and epidemic catarrh, 1 for chicken-pox, and 1 for mumps. These figures seem very high.

CHESHIRE.

Of an average school attendance of 55,123, the total number of individual children examined in the county was 20,396, including 3149 special cases. 3·6 per cent. were referred for treatment for uncleanliness. There were 535 cases of enlarged tonsils and adenoids, 341 of which suffered from enlarged tonsils alone, and 219 from adenoid growths. Dr. Meredith Young, commenting on two cases of "aprosexia" brought to his notice during the year, refers to the immediate and striking improvement in mentality which followed within a month of the removal of adenoid tissue. 845 cases of dental disease were treated by the school dentist, whose appointment has been amply justified, and there is evidently plenty of work for at least one other dentist in the county. 1440 children were referred for detailed examination by the school oculists, 451 prescriptions for spectacles being given. Special leaflets on myopia and squint, adapted from those in use in the county of Durham, were circulated among parents. These leaflets serve to educate parents who, as a rule, are lamentably ignorant of ocular hygiene. The appointment of two school oculists has facilitated the treatment of a much larger number of children than it was possible to have treated in former years. Dr. W. J. McIvor finds enlargement of the thyroid gland common in both girls and boys at puberty; he also reports many cases of hypo-thyroidism. No exact figures are given, but the condition is said to be accompanied by defective nutrition, anæmia, and ichthyosis. Dr. Young notes that the condition of enlarged thyroid is accompanied by moist hands, and is often associated with a history of night sweats and disturbed sleep.

The number of feeble-minded children attending public elementary schools is reported as 113, 16 attend certified schools, and 26 are out of school altogether. Dr. W. Stacey made an intensive examination of 108 cases suspected of mental defect, and found 64 of these fit to attend the ordinary elementary school with a little special attention. This information was given to the head teacher and a scheme for the education of these children was outlined. Of the 108 only 29 were definitely defective. 20,047 free dinners were supplied during the year, 740 being given out at the minimum charge of 1s. a week per family. In February, 1921, distress became acute in certain districts and new feeding centres had to be opened. Dr. Young has found that, in the case of infectious disease, teachers are not so anxious as they used to be to make out a case for school closure, and they have coöperated loyally in helping to prevent the spread of disease. Very much can be done in this direction by intelligent teachers. Dr. Young reports that the work of medical inspection has now returned to pre-war conditions. He suggests, however, that the work itself would be much more interesting if the school doctors could have a rest from routine inspection and employ their time on some specialised problem.

EAST SUSSEX.

The County Council of East Sussex has 37,833 children aged from 5–16, of whom 23,271 are on school registers and 15,069 were examined, 11,141 undergoing routine inspection. 136 suffered from malnutrition, 606 from nose and throat troubles, 133 from defective hearing, and 93 from ear disease. Altogether, apart from those with defective foot-gear or suffering from uncleanliness, 1760 children were referred for treatment, and 1329 required further observation. Dental treatment has begun, but it is still insufficient. There are also beginnings of treatment for ophthalmic and other cases. There is no preventive treatment so far for physically defective or weakly children. Provision of classes for dull and backward children is also unsatisfied. The nursing is generally done by district nurses, but 17 schools were unprovided in this respect. There were 80 school closures for infectious disease, including whooping cough 16, mumps 7, chicken-pox 6, influenza 2; as these were mostly rural schools closure may have been unavoidable. Dr. A. G. R. Foulerton reports that arrangements for 1921 include the prospect of more clinics throughout the county. The appointment of extra medical help will relieve the present pressure of work and give opportunity for further development.

PERTHSHIRE.

The education authority's scheme for medical inspection and treatment has been approved by the Scottish Board of Health with certain reductions—e.g., £50 for a second set of instruments for the dental clinic, £135 for fitting up a county clinic. The cost of clerical work and a heavy stationery outlay was criticised by the Board, but it is understood that the first item includes the cost of assistance at dental and medical clinics, while all office sundries are included under the heading of stationery. Plans and estimates for a clinic at the Old Infirmary Buildings are shortly to be submitted.

WARWICKSHIRE.

This excellent report is made cumbersome by valueless tables printed on foolscap. There are in this county 310 schools with 37,000 children; many of the schools are overcrowded. One-third of the 15,898 children examined were referred for treatment. Only 13 per cent. of the school population had unclean heads, but 5 per cent. were excluded for impetigo. There is now an extra minor ailment centre, making seven in all, and during the year 2525 received treatment here. The comprehensive scheme for treatment in the county as a whole is now in full swing. This is the first complete year of dental treatment, which is carried out by means of a motor-car with portable dental equipment. Dr. A. Hamilton Wood remarks that one man can only touch

Obituary.

PETER THOMPSON, M.D., CH.B. MANCH.,

PROFESSOR OF ANATOMY AT THE UNIVERSITY OF BIRMINGHAM.

THE death of Peter Thompson, which occurred at Penmaenmawr on Nov. 16th, after a long illness, causes a gap in the ranks of British anatomists which will not easily be filled. The only son of the late Mr. Peter Thompson, of Earlestown, Lancashire, he was born in 1871 and was educated at Upholland Grammar School. Thence he proceeded to Owens College (which afterwards became the Victoria University of Manchester), and after a distinguished career as a student he graduated M.B., Ch.B., with second-class honours in 1894, and in 1899 took the M.D. as a gold medallist. After holding the appointments of senior demonstrator of anatomy in Owens College and lecturer in anatomy in Victoria University, Thompson came to London and was appointed lecturer on anatomy at Middlesex Hospital. From 1901 to 1904 he was hon. secretary of the Anatomical Society of Great Britain and Ireland, and from 1905 to 1909 professor of anatomy and Dean of the Faculty of Medicine at King's College. He was then elected to the chair of anatomy at Birmingham, where he had been Dean of the Faculty of Medicine since 1912.

Thompson was always an enthusiastic anatomist, showing his wide view of the subject even in his student days. Trained under the late Prof. Young of Manchester, his work tended at first in the direction of comparative anatomy, with a view to the light thrown by this on human structure, and he came prominently into the notice of the anatomical world by his well-known work on "The Myology of the Pelvic Floor"; this was followed by papers on variants of the same subject, and also on other comparative subjects, mainly myological. About the time he accepted the chair at King's College he began to take an absorbing interest in embryology. In a lecture delivered there in 1908 he emphasised the need for visualising embryonic structures, and after describing His's method of model-making gave a vivid account and demonstration of Prof. Born's method of reconstruction by means of wax plates. He spent some time in Germany, working in Keibel's laboratory, where he acquired a knowledge of the various technical processes which are utilised in embryological work. He produced several papers of value, dealing with general conditions and special parts of young human embryos. These showed evidence, as did all Thompson's work, of care, thoroughness, and extensive knowledge of the literature of the subject in hand. He continued this embryological work after he went to Birmingham, but the disease which ultimately cut short his career soon began to affect his power of work; in fact, shortly before the beginning of the war, he said to a colleague that he felt he had done his work, and would do no more original research. He carried on his official duties, however, to the utmost extent that his strength would allow, and devoted much of his time to increasing the teaching scope of his department. As a teacher he was known far and wide. He combined a power of lucid exposition with an accurate and most extensive knowledge of the body, and communicated his enthusiasm to his students. Thompson utilised his knowledge of comparative anatomy and human embryology for purposes of exposition, but in his school such explanations were made subsidiary to the subject of descriptive anatomy, and were not converted into the main theme from which the human structure was suspended as an important appendage. He stood for complete acquaintance with descriptive anatomy as the necessary object of a student's work in the dissecting-room, and was no believer in the system of skimming over details asserted to be "of no practical importance."

Prof. Thompson had a lovable personality, and his death will be felt as a personal shock to many who knew him throughout the country, even though of late years he had rarely appeared in the gatherings of his former colleagues. He married in 1906 a daughter of the late Mr. G. L. Davies of Helsby, Cheshire, and had two sons.

GEORGE SAMPSON ELLISTON, C.B., V.D., M.R.C.S., L.S.A.

COLONEL, T.F. (RETD.)

Colonel G. S. Elliston, son of the late Dr. William Elliston of Ipswich, died at his residence St. Edmund's, Felixstowe, on Nov. 20th in his seventy-eighth year. He qualified M.R.C.S. and L.S.A. in 1866 from Guy's Hospital where he subsequently held house appointments, and later became house surgeon at the Royal Free Hospital and the East Suffolk Hospital, Ipswich. In 1872 Colonel Elliston became a general practitioner in Ipswich; a few years after he was appointed medical officer of health for the borough, and later held other appointments, including those of medical officer at the Isolation Hospital and medical officer of health to the Stamford Rural District. Before his tenure of office as medical officer of health a small-pox epidemic had visited Ipswich, revealing the insanitary condition of certain areas and, incidentally, the fact that there was no provision for dealing with infectious cases. The passing of the Public Health Act of 1875 therefore gave Colonel Elliston an opportunity of putting the town into a better sanitary condition. Old and unhealthy sites were cleared, an isolation hospital was built, and arrangements were made for the provision of a hospital ship. For some 32 years Colonel Elliston continued to work unceasingly in the cause of public health, and on his retirement received the unanimous thanks of the Corporation and the appointment as consulting medical officer for a further period of five years.

Colonel Elliston actively associated himself with the Volunteer movement and with the St. John Ambulance Association. He received his first commission as acting assistant surgeon in the 1st Suffolk Rifles in 1872, subsequently becoming surgeon lieutenant-colonel of the Suffolk Volunteer Infantry Brigade, P.M.O. of the East Anglian Territorial Division, and afterwards administrative medical officer of the East Anglian Division, Royal Army Medical Corps. He became an examiner for the St. John Ambulance Association in 1880 and an Honorary Associate of the Order in 1893, subsequently being made a Knight of Grace. He was made a C.B. in 1911 and retired in 1912, after 40 years service with the Volunteer movement.

Colonel Elliston belonged to a family well known in medical circles. His elder brother was the late Dr. W. A. Elliston, a former President of the British Medical Association and the father of the late Mr. Guy Elliston, for many years secretary of the Association, and of Mr. G. S. Elliston, editor of the *Medical Officer*, while his uncle, Dr. George Green Sampson, was four times mayor of his native city, Ipswich, an unusual civic honour for a medical man. His own father had a large practice in Ipswich, "so Elliston," writes an old friend and colleague, "when he settled down to practise in Ipswich after a term as house surgeon at the East Suffolk, had little need of introduction. But general and family practice had from the first small attraction for him. Medicine in its collective aspect was far stronger in its appeal to him. Ipswich in the 'sixties was mediæval in its insanitation—no general sewerage, no public scavenging, no means of isolating infectious disease, the privy-midden abounding—a fine field for the young sanitarian whose steps were deliberate and whose aim was pursued with conscientiousness. In connexion with another branch of social medicine, Elliston became more widely known. When, in 1878, the St. John Association started the civil ambulance movement, Elliston was a pioneer of it throughout and beyond East Anglia. Organising, training, lecturing, became his hobby. Its usefulness, the traditions of the ancient order, its simple pageantry, strongly appealed to him; a field day without his commanding presence, anywhere in the east and midland districts, seemed rate of 1·8 per 1000, compared with 2·1 per 1000 in 1919. The death-rate from tuberculosis in Belfast has fallen by 61 per cent. since 1890, and by 44 per cent. since 1900, the rate in 1920 being the lowest during the last 40 years. An analysis of cases arising in connexion with the various trades of the city shows that the higher figures were found in the following occupations: Clerks 17, carters 11, messengers 11, engineers 27, tobacco workers 18, doffers 26, drawers 11, laundresses 20, reelers 16, spinners 25, stitchers 40, winders 11. There were 100 cases amongst discharged soldiers, 122 cases amongst school boys, 142 amongst school girls, and 135 cases amongst housewives. Of 1186 patients found to be suffering from tuberculosis during the year 471, or over 39 per cent., have had personal association with tuberculosis amongst the members of their families. Dr. Trimble lays stress upon preventive measures, and the need for more attention to be given in the medical curriculum to the prevention of disease. According to Dr. Trimble the public are becoming more alive to the significance of early symptoms, and the importance of prompt diagnosis and treatment. The nurses in the employment of the Institute report improvement in the habits of the people, and a higher average of cleanliness. Dr. Trimble pleads for patience in estimating the results of anti-tuberculosis measures.

Queen's University of Belfast.

The Vice-Chancellor has presented to the Senate his report for the year 1920–21. The number of students in attendance was 1076, of whom 762 were men and 314 women. In the medical faculty the number was 588, 463 men and 125 women. The Medical Museum has been rearranged, and many new specimens, especially in the embryological collection, have been added. The new department of dentistry is now in full working order. During the year the students of the University undertook a street collection on behalf of this department. The sum of £1000 was realised and handed over to the Royal Victoria Hospital to equip the dental department of that institution. This department is now in possession of adequate premises and a full modern equipment.

The late Sir Joseph Michael Redmond, M.D.

Sir Joseph Redmond, past President of the Royal College of Physicians of Ireland, died suddenly on the morning of Nov. 25th at his residence, Merrion-square, Dublin. Although of late years he had reason to suspect some cardiac weakness, his health had recently given rise to no special cause for anxiety, and after a full and active day on Nov. 24th he retired to rest as usual. A few hours later he passed quietly away. He was 68 years of age. Sir Joseph Redmond's whole professional life was spent in Dublin. Having taken his qualification from the Royal College of Surgeons in 1878, he was for some time demonstrator of anatomy in the Catholic University School of Medicine. He was appointed one of the physicians to the Mater Misericordiæ Hospital, to which institution he gave devoted service up to his death. He became M.D. Brux. (honours) in 1890, and also received the M.D. N.U.I., *honoris causâ*. He held many posts as consulting physician to various charitable institutions, and acted as examiner to the Royal College of Physicians. He was Vice-President of the College from 1900 to 1902, and President from 1906 to 1908. On the termination of his office as President he received the honour of knighthood. He was a frequent contributor to medical literature. Sir Joseph Redmond was one of the most modest and unassuming of men, but with much quiet dignity; as a physician he was thoughtful and careful, and his abilities, together with the general confidence felt in his high character, assured him a lucrative practice as well as an honoured place in the profession.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—A dinner will be held to-day, Friday, at the Connaught Rooms, Great Queen-street, London, W.C., at 7 for 7.30 P.M., Mr. James Berry presiding.

Correspondence.

"Audi alteram partem."

CLAYDEN *v.* WOOD-HILL.

To the Editor of THE LANCET.

SIR,—The facts of the case of Clayden *v.* Wood-Hill recently decided at the Suffolk Assizes, a short report of which appeared in your issue of Nov. 19th, when a verdict of £750 damages was given against a medical man for alleged negligence in the treatment of a fractured femur, should be studied by all medical practitioners. The plaintiff was thrown out of a trap and sustained a fracture of the upper third of the right femur. Two days later she was moved to the Beccles Cottage Hospital, in Suffolk, where Dr. Wood-Hill, of Beccles, attended her. The fragments united, and in eight weeks she returned home to Hertfordshire with strict instructions from Dr Wood-Hill that no weight was to be borne by the limb without the permission of her family doctor. A week later, when standing in her room at home, she felt the limb give way and she fell on to a sofa. Abundant evidence was produced at the trial that as regards splinting, extension, and position of the limb, the fracture was treated in accordance with modern methods while the plaintiff was an inmate of the Beccles Cottage Hospital.

The verdict of the jury largely turned on the question as to whether, at the second accident nine weeks after the first, a giving way of the previously united fragments took place. By very adroitly drawing from one item in the medical evidence bearing on this question an inference which, from a medical point of view, was entirely unjustifiable, counsel for the plaintiff induced the jury to bring in a verdict for the plaintiff with damages as stated. Many of those who watched the case throughout its course are convinced that a grave miscarriage of justice has taken place, and for this reason a fund has been started to reimburse Dr. Wood-Hill in the very heavy expenses incurred by him, which, we are informed, will amount, with costs, to about £1600. Naturally, the question of appeal has been very carefully considered, and Dr. Wood-Hill has been advised against this course by both his counsel and his solicitor.

It is true that at the time of the trial Dr. Wood-Hill was not a member of one of the Medical Defence societies, but this, although showing a lack of foresight on his part, is no reason for refusing to help him in this emergency. The fund will also serve as a token of the respect and esteem in which Dr. Wood-Hill is held in Beccles and the neighbourhood.

The following subscriptions have already been promised:—

	£	s.	d.
Mr. Hugh P. Helsham (Beccles)	26	5	0
Mr. John H. Allden (Beccles)	20	0	0
Mr. Christopher T. Helsham (Beccles), Sir Robert Jones (Liverpool), Mr. George E. Gask (London), Mr. R. C. Elmslie (London), Dr. Samuel J. Barton (Norwich), Dr. F. W. Burton-Fanning (Norwich), Sir Hamilton Ballance (Norwich), and Dr. Wilson Tyson (Lowestoft) .. .. each	10	10	0
Sir John Lynn-Thomas	10	0	0
Dr. H. Muir Evans (Lowestoft), Dr. C. B. Ticehurst (Lowestoft), Dr. D. W. Boswell (Lowestoft), Mr. J. C. Mead (Lowestoft), Mr. S. H. Burton (Norwich), Mr. Donald D. Day (Norwich), Dr. Sydney H. Long (Norwich), Mr. A. J. Blaxland (Norwich), Dr. R. W. Mullock (Southwold) .. .. .. each	5	5	0
Dr. D. H. Hutchinson (Lowestoft)	3	3	0
Mr. E. W. Everett (Norwich), Dr. H. J. Starling (Norwich), Mr. S. F. Smith (Beccles) .. each	2	2	0

Subscriptions should be sent to Sir Hamilton Ballance, Norwich, and will be acknowledged from time to time in the medical press.

We are, Sir, yours faithfully,
ROBERT JONES, JOHN LYNN-THOMAS.
GEORGE E. GASK, HAMILTON A. BALLANCE,
R. C. ELMSLIE, WILSON TYSON.
Nov. 26th, 1921.

⁂ Since our brief report of this case appeared on Nov. 19th (p. 1073) it has been made perfectly clear that while the X ray apparatus at the Beccles Hospital

Medical News.

University of Oxford.—The degree of B.M., B.Ch. has been conferred on D. G. T. K. Cross, St. John's College.—A War Memorial Scholarship of £100 per annum, and confined to intending medical students, is offered for competition at University College on Dec. 6th. Scholarships in natural science, most of which are open to intending medical students, are offered at University, Balliol, Oriel, Lincoln, Magdalen, Christ Church, and St. John's Colleges, examining in combination on Dec. 6th; and at Jesus College on Dec. 17th. *Appointment of Examiners*:—In Organic Chemistry: Edward Hope, M.A., Fellow of Magdalen College; in Human Anatomy: Prof. Arthur Thomson, M.A., Student of Christ Church; in Human Physiology: Martin W. Flack, B.M., M.A., University College; in Materia Medica and Pharmacology: Reginald St. A. Heathcote, D.M., New College; in Pathology: Prof. Henry Roy Dean, D.M., New College; in Forensic Medicine and Public Health: Francis J. Stevens, D.M., Exeter College; in Medicine: Harold Batty Shaw, M.D. Lond.; in Surgery: Sir William Thorburn, M.D. Lond.; in Obstetrics and Gynæcology: George H. A. Comyns Berkeley, M.B. Cantab.

University of Manchester.—At a meeting of the Court of Governors of the University of Manchester held on Nov. 16th it was stated that the number of students at present is 2711, of which 575 are new entries. There was a deficit of nearly £18,000, but the University appeal had now reached £231,851, apart from the £15,000 raised by a bazaar. Amongst gifts from towns Oldham had contributed £8355 and Stalybridge £3637. During the last five or six years the total expenditure on new buildings and equipment had been something like £100,000. The rush of students was responsible for involving the University in large and costly extensions, and the expenditure had doubled within the last five years. The Court approved the proposal to appoint as Professor Emeritus, Dr. E. S. Reynolds, professor of clinical medicine in the University from 1913 to 1921.

University of London: *Post-graduate lectures on Mental Deficiency.*—A course of lectures supplemented by a course of Clinical Instruction has been arranged by the University Extension Board in coöperation with the Central Association for the Care of the Mentally Defective. The clinical instruction will consist of visits to schools, homes, and certified institutions for the mentally defective, and demonstrations of individual cases of defect by experts to small groups of students. The course will be of two weeks' duration, beginning on Monday, June 12th, 1922. It is intended for qualified medical practitioners and more especially for those who are engaged as certifying officers to local authorities under the Mental Deficiency Act, 1913, as school medical officers, or as medical officers of institutions, or who are otherwise definitely concerned with defectives. The course will be based on the requirements of the syllabus for the University of London Diploma in Psychological Medicine, and the University will grant a certificate of attendance to those who have attended the whole course regularly, taking both theoretical and practical work. Lectures will be delivered at the University of London, South Kensington, by Dr. A. F. Tredgold, Dr. W. C. Sullivan, Dr. E. Prideaux, Dr. F. C. Shrubsall, Mr. Cyril Burt, and Miss Lucy Fildes. Each student will visit one special school and one large certified institution for defectives, and will attend demonstrations by the lecturers and other experts. The registration fee will be £1 1*s.*, and the fee for the course £5 5*s.* The course will only be held if a sufficient number of students are registered, and intending students are therefore asked to send in their applications as soon as possible to Miss Evelyn Fox, at the University of London, South Kensington, London, S.W. 7, from whom further particulars may be obtained.

The London Inter-Collegiate Scholarships Board announce the following Entrance Scholarships and Exhibitions for 1922:—Twenty-five scholarships and exhibitions of an aggregate total value of about £2920, open to men and women, and tenable in the faculties of arts, science, medical sciences, and engineering of University College, King's College, East London College, and Bedford College, will be offered for competition on May 2nd, 1922. Fifteen medical entrance scholarships and exhibitions of an aggregate total value of about £1300, tenable in the Faculty of Medical Sciences of University College and King's College, and in the Medical Schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital, will be offered for competition on June 27th, 1922. Full particulars and entry forms may be obtained from the Secretary of the Board, Mr. S. C. Ranner, the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

Epsom College: St. Anne's Home Scholarship. The Council of Epsom College will shortly award a St. Anne's Home Scholarship of £12 a year to the orphan daughter, between the ages of 7 and 12, of a medical man. Full particulars can be obtained from the secretary, Mr. J. Bernard Lamb, at 49, Bedford-square, London, W.C. 1.

Voluntary Hospitals Commission.—Lord Cave, whose report on the voluntary hospitals led to the present scheme for assisting the hospitals, has agreed to serve on the Local Voluntary Hospital Committee for Surrey, as one of the members nominated by the Hospital Commission. Considerable progress has now been made in the establishment of Local Voluntary Hospital Committees in various parts of the country; and during the present week steps are being taken by the Commission to arrange for the preliminary meetings of the local committees for Cornwall, Derbyshire, Glasgow, Monmouthshire, Salop, Staffordshire, Surrey, Warwick, and Worcestershire.

Association of Economic Biologists.—A general meeting of this association will be held at 2.30 p.m. on Friday, Dec. 9th, in the Botanical Lecture Theatre of the Imperial College of Science, South Kensington, London, S.W. 7. The chair will be occupied by the President, Sir David Prain, and Prof. J. H. Priestley will open a discussion on The Resistance of the Normal and Injured Plant Surface to the Entry of Pathogenic Organisms. The hon. secs. of this association are Mr. Wm. B. Brierley and Mr. S. A. Neave, Rothamsted Experiment Station, Harpenden, Herts.

Prince of Wales's Hospital and North-East London Post-Graduate College.—A successful reunion dinner was held at the Trocadero Restaurant on Oct. 27th, with Dr. Arthur Giles in the chair. It was unanimously decided that a reunion association in connexion with the hospital and post-graduate college be formed, and a committee was appointed for this purpose. All inquiries and communications should be addressed to the hon. secretaries, Dr. Jenkins Oliver, 1, Devonshire-place, London, W. 1, and Mr. S. O. Rashbrook, 15, Gordon-street, London, W.C. 1.

Newcastle-upon-Tyne and Northern Counties Medical Society.—The annual address will be delivered in the library of the Royal Victoria Infirmary on Friday, Dec. 9th, at 4.45 p.m., by Mr. Herbert Tilley. The subject will be Some Common Diseases of the Ear, Throat, and Nose. The annual dinner will be held the same evening in the Grand Assembly Rooms, Barras Bridge, Newcastle-upon-Tyne, at 7.15. Tickets, at 15*s.* each, can be obtained from Mr. Norman Hodgson, 11, Jesmond-road, Newcastle.

Donations and Bequests.—By will the late Sir Frederick Thomas Edridge, J.P., of Bramley Croft, Croydon, Surrey, has left £5000 in trust to pay the income to the Croydon General Hospital while it shall remain an institution of which not less than one-half of the cost of maintenance shall be provided by voluntary contributions; £1500 each to the Surrey Convalescent Home for Men, Seaford, and the Children's Convalescent Home, Bognor; £1000 each to the Croydon General Hospital and the Victorian Convalescent Home for Women, Bognor; and £500 to the Beddington Female Orphan Asylum. These bequests, however, do not take effect during the lifetime of the testator's wife.

Royal Dental Hospital: Annual Dinner.—The annual dinner of the staff, past and present students of the Royal Dental Hospital of London, which took place at the Hotel Victoria on Nov. 26th, was well attended by all sections of the School, senior and junior. Dr. H. Austen, who presided, while expressing satisfaction with the progress of the Dental School in many directions, lamented the absence of research laboratories and of sufficient accommodation for the treatment of in-patients. Mr. H. Stobie, dean and director of the studies at the School, reviewed the last academic year, with its grand total of 316 students and pupils, and noted an entry this session of 80. The overcrowding in the mechanical department had now passed on into the operating department, where its effects were still felt. The staff had been increased by two extra honorary anæsthetists and by the appointment of Dr. Stanley Colyer as assistant radiologist. He welcomed the institution by London University of a bachelorship in Dental Surgery which was only awaiting its curriculum. The new appointment of medical registrar in the School was giving dental dressers for the first time a comprehensive view of morbid conditions in the mouth. Miss L. B. Aldrich-Blake, dean of the London School of Medicine for Women, responded to the toast of "The Visitors," and the arranged programme, which included excellent glee singing, ended with a felicitous speech from Mr. W. H. Dolamore in proposing the chairman's health.

urine varies directly with the amount of urea present and that in the two-hourly specific gravity test for renal efficiency the point on which stress is laid—namely, the variation of more than eight degrees—depends on the excretion of urea and water primarily, chlorides to a less extent. The close parallelism is between the S.G. of the urine and the percentage of urea. The S.G. was estimated with the pyknometer and the urea percentage found by the technique and calculation devised by Prof. H. MacLean.

I am, Sir, yours faithfully,

Clifton, Bristol, Nov. 27th, 1921. CECIL CLARKE.

THE ORIGIN OF VACCINATION.

To the Editor of THE LANCET.

SIR,—In his profoundly interesting inaugural address before the Midland Medical Society at Birmingham on Nov. 2nd (THE LANCET, Nov. 26th, p. 1139), Prof. W. D. Halliburton is reported to have said:—

> "Such excursions of the imagination may not come into the domain of exact knowledge, but they have led to understanding of such an operation as vaccination—*a purely empirical procedure in Edward Jenner's day*—and have enabled practical men to devise corresponding means for the prevention or cure of other diseases."

In this pretension (the italics are mine) I must join issue, as the right understanding of the evidence is of such importance to the whole world, and its correct inference was never of greater importance than now when vaccination has become unmeaning amongst the uneducated in this country, largely from the misunderstanding of the facts.

What are the facts? When ascertained they were certainly not excursions of the imagination, nor were they empirical. In 1774 Benjamin Testy, a Gloucestershire farmer, to save his family from the hideous disfigurement and blindness occasioned by small-pox (the plainest of women were considered beautiful when unscarred by it) as well as its appalling mortality, inoculated with cow-pox his wife and two sons for the purpose of protecting them from small-pox. He succeeded, and had the honour of being "stoned" and reviled by his neighbours. What led him to inoculate them was the popular tradition of the district, incited mainly by the hilarity of the dairy-maids who milked the cows, and who jeered at the thought of catching small-pox when they had already contracted cow-pox in their daily occupation.

In 1796, the immortal Edward Jenner, the inoculator of small-pox in his district in Gloucestershire, after weighing all the evidence he had gained, had the courage to carry out his closely reasoned conclusions that the facts were unassailable, and established on sure ground the practice of vaccination which the whole world gripped after the usual period of opposition and calumny.

I am, Sir, yours faithfully,

Rugby, Nov. 25th, 1921. CLEMENT DUKES.

EQUITY IN HOSPITAL APPOINTMENTS.

To the Editor of THE LANCET.

SIR,—The gift of being able to touch a sore spot without provoking pain is denied to most, but this ideal is very nearly achieved by Sir Clifford Allbutt in THE LANCET of Nov. 5th, in his candid yet courteous discussion of the election of candidates for honorary hospital appointments. He writes:—

> "It is easy now, when good appointments have been made in the London University, to say, nevertheless, that the mode leaves something to be desired. At present the election is virtually in the hands of the honorary staff of the hospital concerned. It is true that hitherto the hospital staffs have used their power loyally and with moderation; but this gives us no guarantee for the future. In the London University it would be better for the Senate to establish standing election committees, renewed by rotation, of independent—that is, ad hoc unofficial—persons of distinction in the several parts of medicine. The hospital staff would thus be relieved of the duty not only to consider the claims of particular interests or promotions, but also those of past services or private friendships."

Every large hospital has its secret history of staff election politics, and if we are to believe unsuccessful candidates, many first-rate men are now eating their hearts out because their rivals had other support than that of their intrinsic merits. What are the qualifications, primary and secondary, required, and who are the best judges thereof? On the second point Sir Clifford Allbutt is perfectly explicit, and few will join issue with him on it, though the principle for which he pleads seems to have been honoured chiefly in the breach. But what of the qualifications for these appointments? What, if any, importance is to be attached to "breeding," eminence in athletics, suavity, and the many other social qualifications which count in the election of an aspirant to membership of an exclusive upper-middle-class club? We know that the possessor of these qualifications succeeds better in life than the man who looks like a drain rat, runs amuck with his aspirates, and adopts a frankly irreverent attitude towards incompetence in high places.

The first type may be personally more attractive than the second, but it is well to remember the oft-quoted dictum of head masters that the popular school boy seldom rises above mediocrity, and that a shaggy exterior and uncouth manners may hide genius. An old frequenter of medical congresses once said that their chief value lay in the opportunities they afforded of studying prominent men hitherto known only by their writings. And he revised his estimate of the written word according as the authors thereof gave a good or bad impression when they spake. Is this test sound? Against it might be cited the case of Moses, St. Paul, and many another intellectual giant without "presence" and unable to shine on a platform. Many a man of minor gifts has bluffed his way to eminence by sheer force of speciousness. In his "Life of Gladstone" Lord Morley tells of an Oxford don who always looked as if he was going to say something witty. It was not till a critical observer remarked that he never got beyond this stage that his reputation as a wit was shattered. It is, of course, very difficult to appraise the qualifications of candidates for honorary hospital appointments, but the unsuccessful candidate, convinced of the inferiority of his successful rival, may find consolation in the reflection that, when mediocrity backed by nepotism prevails, the iconoclastic judgment of students at the large teaching hospitals soon leaves naked the nether part of the idol with feet of clay.

With regard to resident hospital appointments, the selection of candidates is usually quite fair, and they are now seldom expected personally to canvass the members of the senior honorary staff. I do not wish to sign this, as it might appear that I was making personal reflections, but you, Sir, will recognise that I am, as well as yourself,

Nov. 14th, 1921. QUITE DISINTERESTED.

SWIMMING FACILITIES FOR BLIND CHILDREN.—Some time ago the Education Committee of the London County Council was authorised to consider whether facilities with regard to swimming should be provided for children attending the Council's schools for the blind. After careful consideration and consultation with the managing committees of the schools in question, the Education Committee has reported to the Council that, in their opinion, it would be inadvisable to proceed further with the suggestion. The Council has, therefore, decided that no provision for swimming shall be made.

THE LATE DR. W. H. SMART.—William Herbert Smart, who died suddenly on Nov. 5th, after an operation, at a nursing home in Birmingham, aged 59, was the only son of the late Sir William Richard Edwin Smart, K.C.B., R.N., and was educated at Caius College, Cambridge, and at St. Thomas's Hospital. He graduated in 1882, and became M.A., M.B. in 1886, having in the previous year obtained the M.R.C.S. Eng. After holding a house appointment at St. Thomas's Hospital he was resident clinical assistant at the East London Hospital for Children, and later entered upon medical practice at Polesworth, near Tamworth, where for upwards of 30 years he was medical officer of the district under the Atherstone Board of Guardians. In 1897 he contributed to our columns a note on a case of tetanus successfully treated by antitoxin.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Dec. 7th.

SOCIAL EVENING: A Social Evening will be held on Wednesday. The usual social programme will be provided, but, in addition, Sir Berkeley Moynihan will deliver a short address on "Medicine in Art," with lantern illustrations. The President and Lady Bland-Sutton will receive at 8.30. Fellows are welcome to invite any of their friends, including ladies, and no tickets of admission are required.

MEETINGS OF SECTIONS.

Monday, Dec. 5th.

TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Discussion: on "Amœbic Dysentery in Great Britain: its Significance and Treatment." To be opened by Dr. Broughton-Alcock. Prof. Warrington Yorke and Dr. P. Manson-Bahr will also speak.
Paper:
Dr. M. Khalil: Thermotropism in Ankylostome Larvæ.

Tuesday, Dec. 6th.

SURGERY: SUB-SECTION OF ORTHOPÆDICS: at 5.30 P.M. (Patients' Casts and Photographs at 5 P.M.)
Discussion:
On "Stabilising Operations in the Treatment of Paralytic Deformities of the Foot," to be opened by Mr. Naughton Dunn (Birmingham).
The President (Mr. Laming Evans), Mr. Bankart, Mr. Aitken, and others will take part in the Discussion.

PATHOLOGY: at the Lister Institute, Chelsea-gardens, S.W.3: at 8.30 P.M.
Dr. V. Korenchevsky: Experimental Rickets in Rats, with Demonstration of Specimens. Dr. G. Ségal: The Association of Typhus Virus with the Various Blood Elements. Mr. A. W. Bacot: Demonstration of Rectal Infection of Lice by Weigl's Method. Mr. A. W. Bacot and Dr. G. Ségal: The Development of Rickettsia in Lice, following Intrarectal Infection with Typhus Virus. Dr. R. St. John Brooks and Dr. M. Rhodes: Some Observations on the Hæmorrhagic Septicæmia Group. Miss E. H. Lepper: Gall-bladder Infections following the Intravenous Inoculation of Coliform Organisms in Rabbits. Dr. S. P. Bedson: Demonstration of Histological Material from Experimental Purpura. Dr. S. Kanai: Dysentery Immunisation per os.

Wednesday, Dec. 7th.

SURGERY: at 5.30 P.M.
Papers:
Sir Charles Ballance: Ligation of the Innominate Artery.
Sir Lenthal Cheatle: A New Operation for Inguinal Hernia.

Thursday, Dec. 8th.

BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.
Paper:
Dr. A. G. S. Mahomed: The Relation of Atmospheric Electrical Variations to the Incidence of Epileptic Fits.
Discussion on the Organisation of the Section.

NEUROLOGY: Clinical Meeting at the Hospital for Paralysis, Maida Vale, at 8 P.M.

Friday, Dec. 9th.

CLINICAL: at 5.30 P.M. (Cases will be shown at 5 P.M.)

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Informal Meeting: Tea, Talk and Tobacco.
Dr. Carelli, of Buenos Aires, will give a Demonstration of his "Method of Radioscopic Examination with the Help of Gas Injections." Dr. Riddell will also give a Demonstration of a "Simple Apparatus for Making Serial Radiographs of the Pyloric Region in the Horizontal and Upright Positions."

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
Clinical Evening.

HUNTERIAN SOCIETY, Sion College, Victoria Embankment, E.C. 1.
Wednesday, Dec. 7th.—9 P.M., Sir Henry J. Gauvain: Surgical Tuberculosis (illustrated by lantern slides).

HARVEIAN SOCIETY OF LONDON, Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.
Thursday, Dec. 8th.—8.30 P.M., *Discussion:* Is the Anginal Syndrome only of Cardiac Origin? Opened by Sir John Charlton Briscoe, followed by Sir Sydney Russell-Wells, Dr. G. H. Hunt, and Sir William Willcox.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.
Monday, Dec. 5th.—General Meeting at 122, Harley-street, at 4 P.M., A Discussion on The Place of the Colony in the Tuberculosis Scheme, will be opened by Dr. S. Tinker, and a Discussion on The Place of the Sanatorium at Present and in the Future, will be opened by Dr. Noel Bardswell.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
Monday, Dec. 5th.—5 P.M., Dr. Arthur Saunders: Digestive Disorders of Old Age; Carcinoma of the Stomach.
Tuesday.—5 P.M., Mr. Addison: Intravenous Therapy.
Wednesday.—5 P.M., Mr. Page: Anæsthesia.
Thursday.—5 P.M., Mr. Bishop Harman: Congenital Cataract.
Friday.—5 P.M., Dr. Pritchard: Blood Pressures.
Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
Monday, Dec. 5th.—5.30 P.M., Lecture: Dr. Parsons-Smith: Infective Endocarditis.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
Thursday, Dec. 8th.—4 P.M., Lecture: Mr. H. A. T. Fairbank: Coxa Vara.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
Tuesday, Dec. 6th.—4.30 P.M., Dr. F. E. Tylecote: The After-treatment of Pneumonia.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Whitworth-street West Branch, Manchester.
Friday, Dec. 9th.—4.30 P.M., Dr. Fletcher Shaw: Ante-partum Hæmorrhage.

ANCOATS HOSPITAL.
Thursday, Dec. 8th.—4.30 P.M., Mr. Harry Platt: The Diagnosis and Treatment of the Common Affections of the Hip-joint.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
Wednesday, Dec. 7th.—4 P.M., Lecture VIII.:—Sir Kenneth Goadby: Lead Poisoning in Industry.

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE. Post-Graduate Lectures and Demonstrations.
Tuesday, Dec. 6th. (At the Royal Hospital.)—3.30 P.M., Prof. Douglas: Vaccines. 4.15 P.M., Mr. V. Townrow: Demonstration of Cases.
Friday. (At the Royal Hospital).—3.30 P.M., Dr. G. Wilkinson: Diagnosis of Diseases of the Accessory Sinuses of the Nose. 4.15 P.M., Dr. G. Wilson: Orthopædics.

CHADWICK PUBLIC LECTURES, Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.
Thursday, Dec. 8th.—8 P.M., Dr. Charles Singer: History of the Doctrine of Infection.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
Thursday, Dec. 8th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Eczema.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Monday, Dec. 5th.—4.30 P.M., Dr. J. Bright Bannister: Some Obstetric Emergencies.
Tuesday.—3.30 P.M., Dr. F. G. Crookshank: Physical Examination of the Chest (3)—The X Rays.
Friday.—4.30 P.M., Dr. C. E. Sundell: The Clinical Diagnosis of Tuberculosis in Children.
Daily:—2.30 P.M., In-patient, Out-patient Clinics, Operations, &c.

Appointments

McDonald, N., M.B., Ch.B. Vict., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Hon. Anæsthetist, Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.

Thomson, E. G., M.D., B.Ch. Aberd., to be one of the Medical Referees under the Workmen's Compensation Act, 1906, for the Sheriffdom of Forfar.

Certifying Surgeons under the Factory and Workshop Acts: Skeggs, B. L., M.R.C.S., L.R.C.P. Lond. (Stevenage); Strachan, A., M.B., Ch.B. Edin. (Finedon).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road.—Res. H.S. £160.

Bedford County Hospital.—Asst. H.S. £150.

Birmingham, City Hospital for Infectious Diseases.—Temp. Asst. M.O. £350.

Birmingham Ear and Throat Hospital.—H.S. £200.

Birmingham General Dispensary.—Res. M.O. £500.

Birmingham, Queen's Hospital.—Obst. and Ophth. H.S. Each £90.

Bridgend, Glamorgan County Asylum.—Jun. Asst. M.O. £415.

Bristol General Hospital.—Hon. M.O. Hon. Med. Reg. Hon. Clin. Assts.

Bristol Royal Hospital for Sick Children, &c.—H.P. £150.

Burnley, Victoria Hospital.—H.S. £200.

Bury Infirmary. Jun. H.S. £150.

incomplete. At meetings of all kinds his presence was much in demand for his persuasive and genial speech."

The attendance at his burial in Old Felixstowe Church on Nov. 24th was evidence of the large circle of friends among whom Colonel Elliston was held in affectionate regard.

SIR SYDNEY BEAUCHAMP, M.B., B.CH. CAMB.

Sir Sydney Beauchamp, who died in London on Nov. 22nd as the immediate result of an accident, will be deeply regretted by an unusually large circle of friends, as well as by patients and colleagues. He had for many years been in practice in the West End of London, and his skill and devotion to his patients were as marked as the modesty with which he received success and attained to a high place in our professional ranks.

Sydney Beauchamp was born at Bexley, Kent, in 1861, and was educated at Gonville and Caius College, Cambridge, where he graduated in the natural science tripos in 1887. Proceeding to St. Bartholomew's Hospital he took the English double qualification in 1889, and in the following year the Cambridge degrees of M.B., B.Ch. At St. Bartholomew's Hospital he held several minor appointments, among others that of assistant electrician, but it was in general practice, and especially as a skilful obstetrician, that he made his mark. The outbreak of war found him too old for immediate service abroad, but he was made responsible for the organisation of Wrest Park as a military hospital. This was in September, 1914, and he remained its chief medical officer until it was destroyed by fire. It was the admirable work that he did at this hospital, and the devotion which he displayed as physician to the lying-in hospital of the Officers' Families Fund, which brought Beauchamp's name to the notice of the authorities and led to his invitation to accompany the British Delegation to the Peace Conference in Paris as its medical officer. In 1920 his name appeared in the Birthday Honours as having been granted a civil knighthood, a distinction that was thoroughly well deserved.

It is a tragedy that so useful a life should have been cut off in its prime, for although Beauchamp had reached 60 years of age he was an essentially young and energetic man, clear-headed, helpful, and untiring. The expressions of regret at his tragic death which have appeared in the public press represent in his case more than lip-service.

H. E. CORBIN, B.Sc. LOND., M.R.C.S., D.P.H.,

MEDICAL OFFICER OF HEALTH, STOCKPORT.

Dr. Herbert Ernest Corbin, M.O.H. Stockport, died at his residence in Stockport on Nov. 24th at the early age of 49. Dr. Corbin took the degree of B.Sc. Lond. in 1897 and qualified M.R.C.S. and L.R.C.P. in 1903, having won from St. Mary's the Senior University Exhibition. After qualifying Dr. Corbin took the D.P.H. in 1905 and held many appointments, including that of medical superintendent of the London Fever Hospital and assistant M.O.H. at Croydon and Willesden. His publications show that his interests were specially directed towards the prevention and treatment of small-pox. He was appointed M.O.H., Borough School M.O., and medical superintendent of the Isolation and Small-pox Hospitals of Stockport in 1908, where he organised the public health department and brought it to a high state of efficiency. Dr. Corbin was joint author (with A. M. Stewart) of a "Handbook of Physics and Chemistry," which reached its fifth edition in 1920. His war record was distinguished. When war broke out he was medical officer of the Manchester Artillery and after mobilisation was appointed special sanitary officer to the 66th East Lancashire division. He then became Major in the R.A.M.C., T., served in Mesopotamia with the rank of Lieut.-Colonel, and during 1917–18 was M.O.H. at Bagdad. Dr. Corbin is survived by a widow and two children.

JOHN SCOTT, M.A., M.D. ABERD.

THE death of Dr. John Scott, formerly of Manchester, took place at Abridge, Essex, on Nov. 22nd. Dr. Scott graduated as M.A. in the University of Aberdeen in 1866, took the degrees of M.B. and C.M. at the same University in 1873, and became M.D. in 1891. He then settled in Manchester in general practice; he was honorary physician to the Manchester Southern Hospital for Diseases of Women and Children—now incorporated in St. Mary's Hospitals—and for several years was lecturer and instructor in vaccination in the University of Manchester. Possessed of wide academic culture Dr. Scott also had literary ability and knowledge of languages, and was thus an expert scientific translator. Some years ago his health began to fail and he retired from his Manchester duties to reside at Abridge with his son, Dr. J. Bethune Scott, at whose house he died at the age of 73.

The Services.

ROYAL NAVAL MEDICAL SERVICES.

Surgn.-Cmdr. H. H. Gill is placed on retired list at own request, with rank of Surgn.-Capt.

Surgn.-Lieuts. L. S. Goss and A. G. Taylor to be Surgn. Lieut.-Cmdrs.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. A. L. Howell retires on retired pay on account of ill-health caused by military service, and is granted the rank of Col.

Capt. F. P. Rankin retires, receiving a gratuity, and is granted the rank of Maj.

Capt. P. A. With is restored to the establishment.

Temp.-Lt. H. C. Perkins to be Temp. Capt.

Temp. Capts. relinquishing their commns., and retaining the rank of Capt.: J. T. Rearden, T. E. Dobbs, E. H. Griffin, J. MacRae, J. G. Castellain, and E. D. Lindow.

ARMY DENTAL CORPS.

Temp. Capt. W. Philp, Dental Surg., from Spec. List, to be Capt.

Acting Capt. G. W. Allen, from Unempld. List, R.A.F., to be Lt., and to be temp. Capt.

TERRITORIAL ARMY.

Capts. H. R. Moxon and H. F. Humphreys to be Majs.

Majs. A. B. Whitton and J. M. Bowie resign their commns. and retain the rank of Maj., with permission to wear the prescribed uniform.

Capt. A. S. Walker resigns his commn. and retains the rank of Capt.

The following relinquish their commns: Lt.-Col. J. P. S. Ward, with permission to wear the prescribed uniform: Capts. T. L. de Courcy, C. B. Alexander, H. B. Cunningham, and T. J. Costello.

2nd W. Genl. Hosp.—Capt. E. D. Telford, having attained the age limit, is retired, and retains the rank of Capt.

2nd S. Genl. Hosp.—Capt. W. Cotton, having attained the age limit, is retired, and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Lt.-Col. A. M. McIntosh from Genl. List, R.A.M.C., to be Col.

Maj. R. E. Williamson (Lt.-Col. and Hon. Col., Ret., T.F.), having attained the age limit, is retired, and retains his rank, with permission to wear the prescribed uniform.

Capts. D. E. Finlay and J. H. Jordan, from R.A.M.C., Genl. List, to be Majs.

Capt. J. McG. Deuchars resigns his commn. and retains the rank of Capt.

ROYAL AIR FORCE.

Group Capt. (actg. Air Commodore) M. H. G. Fell (Lt.-Col., Bt.-Col., R.A.M.C.), relinquishes his temporary commission on return to army duty.

Group Capt. D. Munro is appointed Director of Medical Services, Air Ministry, vice Group Capt. (actg. Air Commodore) M. H. G. Fell.

Flight-Lt. W. G. L. Wambeek is granted a short service commission in the rank stated, retaining his present seniority.

The undermentioned are granted short service commns. as Flying Officers: E. C. K. H. Foreman, W. J. G. Walker.

J. Paxton is granted a temporary commn. as a Flight-Lt.

whilst 47,851 were criminally inflicted. Death occurred as a result of injuries in 5617 of the cases examined, of which 1640 were cases of criminally-inflicted injuries.

Hospital Accommodation.

It is recorded with satisfaction, as a proof of increasing public interest in the provision of hospital treatment for the poor, that during the year several notables have interested themselves in collecting funds and have personally given very generous donations of money and land for the building and upkeep of new hospitals. The existing ones are most inadequate in number and size for the population. The Government have accepted from Messrs. Thomas Cook and Son the liberal gift of the freehold building and equipment of their hospital at Luxor, and it is hoped that this institution will shortly be reopened. A sum of £E.500 has been privately subscribed to supply Kena Hospital with an electric plant for lighting and X ray work.

During the war the military accommodation provided for the sick and wounded from the forces in Egypt, Palestine, and Gallipoli had to be supplemented by the use of the Egyptian Government hospitals under the public health administration for the reception of a portion of these, and 44,630 sick and wounded were actually treated in these hospitals during the years 1914–19. With the cessation of hostilities the necessity for this has gradually diminished, so that last year provision had to be made for only 407 military cases. There has consequently been a reduction in the general number of in-patients from 64,704 in 1919 to 62,493 in 1920. On the other hand, the number of out-patients has increased from 219,573 in 1919 to 274,557 in 1920, the number of attendances having been 578,789, or roughly two per patient. The number of major operations performed increased from 9051 to 12,797. Special anthelmintic annexes similar to that attached to Kasr-el-Aini Hospital at the end of 1919 were established in connexion with the Qaliub, Benha, and Mansura general hospitals for the free treatment of out-patients suffering from ankylostoma, bilharzia, and other worm infections. This is intended to form part of a general campaign against ankylostoma and bilharzia in Egypt. The number of out-patients treated since the opening of these annexes is 14,905. Of these, 1905 were infected with ankylostoma and 13,000 with bilharzia. The seven schools for training native midwives in provincial towns continued to do good work and remained open throughout the year. These centres are becoming increasingly popular both with the general public and with the medical profession. The 13 children's dispensaries worked continuously through the year, except that at Assiut, which was closed on the ground of lack of funds. Though simple remedies are prescribed for the sick children attending the dispensaries, these institutions are also infant welfare centres, where the mothers receive instruction in the care of their children, in simple hygiene, correct methods of feeding, suitable clothing, &c., and above all the matrons try to inculcate habits of cleanliness. This is a difficult matter under the primitive housing conditions which prevail, with the total lack of water-supply or of any lavatory accommodation, but some progress is evidenced by the cleaner faces and clothing of the children attending the dispensaries. The total number of attendances in 1920 was 301,703 and the number of children receiving treatment was 56,462.

Since 1903, when Sir Ernest Cassel made his gift of £E.40,000 for the purpose of providing centres of ophthalmic treatment, the scope of this branch of the medical service has gradually increased until at present there are 20 hospitals provided for the purpose of affording treatment to sufferers from eye disease. Of these, 5 are travelling hospitals, which are moved as required from place to place, and 15 are permanent. The number of patients treated in 1920 was 91,921, of whom 4232 were actually admitted into hospital. A special ophthalmic hospital is urgently required in Cairo. It is now impossible to cope with the vast number of patients who come demanding operations to relieve in-growing eyelids and eyelashes—one of the cicatricial results of trachoma—whilst there is also insufficient ophthalmic relief in Cairo for the thousands who suffer, especially during the hotter months of the year, from painful and destructive diseases of the eye. There is therefore a pressing necessity for a centrally situated hospital equipped with 100 beds and able to treat 2000 out-patients daily in the summer.

Infectious Diseases.

The incidence of infectious disease during 1920 was exceptionally low. There was a reduction of 60 per cent. in small-pox, 48 per cent. in plague, 22 per cent. in typhus, and 12 per cent. in relapsing fever. One case of cholera occurred at Suez in the summer. There was a slight rise in the number of cases of malaria, probably in large measure the result of the fuller notification of cases. During the year 34,173 passengers and immigrants from countries infected with cholera landed in Egypt. Measures of control and observation at their destinations were applied to 33,578 of these, and no cholera infection showed itself. Land passengers from Palestine were similarly controlled for all diseases. Difficulties of ordinary transport obliged the Government to charter a steamer for the transport of the Egyptians making the pilgrimage to Mecca, the number being 1658 in addition to the Mahmal escort and staff of 507. Before their departure all pilgrims were vaccinated against cholera. No regular visit was made to Medina, but in view of the possibility of pilgrims paying clandestine visits to that place and escaping observation by returning over the Medina railway, on which there are no regular quarantine arrangements, a system of patrols was instituted in the Sinai Peninsula for the purpose of intercepting any pilgrims who might enter Egypt directly from Arabia or through Palestine. Fifteen such pilgrims were intercepted by these patrols and put under observation. No cholera was reported from the Hedjaz and none occurred amongst the returning pilgrims.

Laboratory Examinations.

The total number of examinations carried out in the laboratories during the year was 18,411, as compared with 15,050 in 1919, showing, as before, a steady increase. 10,098,720 doses of vaccine lymph were prepared in the Vaccine Institute in 1920 as compared with 5,645,020 in 1919, this considerable increase being due to the fact that the Epidemic Service of the Public Health Department undertook a large campaign of general revaccination with the object of stamping out or reducing the continual occurrence of small-pox in Egypt. In 1920 1228 persons were treated in the Antirabic Institute. Most of these had been bitten by dogs, but cases of bites by such diverse animals as cats, wolves, monkeys, donkeys, horses, mules, camels, jackals, and rats were also treated. Two persons bitten by a rabid human being likewise received treatment.

During the last 12 months the Anti-Malaria Commission has spent considerable sums of money in filling in breeding-places of mosquitoes or draining them, and in the case of large bodies, stocking them with larvæ-eating fish. Special work has been carried out in the oasis of Siwa and Kharga, where malaria of a severe type was rampant. Careful spleen examination work has been carried out by the Public Health Department, and as a result it is proposed now to deal with a number of sites (especially in the Fayum) where such efforts appear most necessary. The Commission is satisfied that there is no immediate danger of the rapid increase of malarial infection in Egypt, but at the same time is of opinion that a careful watch should be kept on this disease, and that steady continuous work should be done to get rid of all possible sources of infection.

(*To be concluded.*)

INFECTIOUS DISEASE ON ACTIVE SERVICE: THE AMERICAN EXPEDITIONARY FORCE.

In the *Military Surgeon* for October Dr. Haven Emerson of New York gives account of the communicable diseases which occurred in the American Expeditionary Force in France from July, 1917, to May, 1919. Diphtheria (4714 cases, 62 deaths, case mortality 1·3 per cent.) was brought over to France early by the 32nd and 35th Divisions, but later contracted by infection from the French civil population, more numerous in the less devastated American zone. At Mesves wound diphtheria occurred; it did not cause the usual toxæmia, and was not controlled by the injection of anti-diphtheritic serum. In the British Army, it may be remarked in passing, the infected wounds were dressed with anti-diphtheritic serum. Mumps (82,000 cases, 43 deaths, case mortality 0·05 per cent.) was, as ever, an important disease in an army of young men, for it meant 1500 hospital beds constantly occupied, and 4500 at one time in December, 1918. Measles (8207 cases, 86 deaths, 1·05 per cent. case mortality) became insignificant after new troops ceased to arrive. Its extreme contagiousness was a challenge to employ every precaution; daily or twice daily inspections, segregation, enforced hygiene were the principal safeguards. Cerebro-spinal fever (1965 cases, 911 deaths, case mortality 46 per cent.) appeared mostly at the bases, being contracted in crowded transports where each man had only 9 square feet of area. It was most frequent in October, 1918, with influenza prevalent and the coöperation of cold, wet weather, over-crowding and exhaustion. Scarlet fever (2064 cases, 70 deaths, case mortality 3·39 per cent.) occurred mostly at the beginning of the campaign; it was communicated in the transports and was easily controlled. The diagnosis of cases of dysentery does not seem to have been so vigorously determined by the laboratory as in the French and English armies. It is noted that there were 150,000 cases of diarrhœa in the 1st Army in July, 1918. Such a strain on the administrative machinery must have determined to some extent the fortunes of that month.

DENTAL BOARD OF THE UNITED KINGDOM.—The constitution of the Dental Board of the United Kingdom is as follows: Mr. Francis Dyke Acland, M.P. (Chairman); Mr. Laurence George Brock; Mr. Fred Butterfield; Sir Arthur Gerald Chance, F.R.C.S. Irel.; Mr. Dugald McCoig Cowan, M.P.; Mr. William H. Dolamore, M.R.C.S., L.D.S.; Prof. William Henry Gilmour, M.D.S., L.D.S.; Mr. William Guy, F.R.C.S. Edin., L.D.S.; Sir James Hodsdon, F.R.C.S. Edin.; Mr. Horace Archibald Robertshaw; Mr. Edward Leo Sheridan, F.R.C.S. Irel., L.D.S.; Mr. John Sinclair; Mr. Holburt Jacob Waring, F.R.C.S.; and Mr. Norman C. King, Registrar. The offices of the Dental Board will be at No. 44, Hallam-street, Portland-place, London, W. 1. All communications should be sent to the Registrar at that address.

HUNTERIAN SOCIETY.—A meeting will be held on Wednesday, Dec. 7th, at 9 P.M., at Sion College, Embankment, London, E.C. Sir Henry Gauvain will read a paper on "Surgical Tuberculosis," which will be illustrated by lantern slides. All members of the medical profession are cordially invited to attend.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES: SCOTTISH COMMITTEE.—A Conference of representatives of local authorities and others interested in the prosecution of active measures in Scotland for combating venereal diseases will be held in the City Chambers, Glasgow, to-day, Friday, Dec. 2nd. In the morning the Conference will be addressed by Sir Malcolm Morris and Sir Leslie Mackenzie, and in the afternoon by Dr. M'Gregor-Robertson, Dr. A. R. Chalmers, Dr. G. Y. Richardson, and Dr. J. A. Third.

BIRMINGHAM HOSPITAL SATURDAY FUND.—The amount of this year's collection is £58,768, and when a few outstanding contributions have been received it is estimated that the total will be £60,000, or about the same as last year. After providing for the maintenance of the Fund's convalescent homes, surgical aid department, and the interest on the debt on Romsley Hill Sanatorium, there remained a balance of £27,500 to be distributed among the hospitals. This distribution was arranged as follows:—General Hospital £9000, Queen's Hospital £6000, General Dispensary £2250, Children's Hospital £2250, Women's Hospital £1650, Eye Hospital £950, Orthopædic Hospital £600, Skin and Urinary Hospital £650, Jaffray Suburban Hospital £750, District Nursing Society £500. Sums varying from £15 to £450 were distributed to 22 other hospitals and nursing associations.

LITERARY INTELLIGENCE.—Mr. Henry Kimpton announces the forthcoming publication of the following books: X Rays and Radium in the Treatment of Diseases of the Skin, by George Miller MacKee, M.D.; Diseases of the Skin, by Richard L. Sutton, M.D., fourth edition, revised and enlarged; Psycho-Analysis in the Service of Education: being an Introduction to Psycho-Analysis, by Dr. Oskar Pfister, authorised translation; How to Become an Efficient Athlete, by John B. McDougall, M.D., M.R.C.P.—Messrs. J. and A. Churchill announce the forthcoming publication of a new book on Nerve Exhaustion, by Sir Maurice Craig, C.B.E., M.D., F.R.C.P.—Messrs. William Heinemann announce the forthcoming publication of the following books: The Practitioner's Manual of Gynæcology, by Dr. A. C. Magian. History of Electrotherapy, by Dr. Hector A. Colwell. Rickets, by Dr. J. Lawson Dick. Influenza: Essays by several Authors, edited by Dr. F. G. Crookshank. Dosage Tables for Deep Therapy, by Dr. Friedrich Voltz; edited and with a preface by Dr. Reginald Morton.

SUNDERLAND ROYAL INFIRMARY: NEW ORTHOPÆDIC DEPARTMENT.—On Nov. 19th the Richardson pavilion was formally opened at this institution to house the orthopædic department. The paid medical officer in charge has a staff of assistants (male and female) trained and certificated in massage, medical electricity, and remedial, including gymnastic, exercises. He is also in charge of the X ray department. The plan of the one-storied brick building was designed by Mr. W. Robinson, senior honorary surgeon, and the architects, Messrs. W. and F. Milburn. The building includes a waiting room, cloak rooms, an office, a medical officer's consulting and examination room, dressing cubicles, rest room, a large room for massage, electrical treatments, radiant heat and light beds, and accommodation for remedial and gymnastic exercises. There are four bathrooms, one for whirlpool and contrast baths, another for Plombières treatment, a third with long baths, aerated and medicated, and an Aix douche, and a fourth for Vichy and spray baths. There is also a room with arm and leg paraffin wax baths, and a heated linen room. It will be seen that the department is also a completely equipped hydropathic installation. The cost of the building and equipment was nearly £9000.

POUND FOR POUND BASIS OF HOSPITAL ASSISTANCE.—At a meeting of the president and general council of King Edward's Hospital Fund for London, held on Nov. 9th, a resolution was passed protesting against the condition, attached by the Treasury to the temporary assistance voted by Parliament to voluntary hospitals, requiring that fresh money shall be raised pound for pound with the Government grants, on the ground that it will lead to great difficulties, and probably to great injustice. This resolution was forwarded through the Voluntary Hospitals Commission to the Chancellor of the Exchequer, who has replied that the stipulation that the Government grant of £500,000 should be administered on a pound for pound basis is absolutely fundamental, and, furthermore, that the £500,000 grant is the limit of Government assistance to the voluntary hospitals.

THE LATE DR. W. M. HUNTER.—William Munn Hunter, who died at the age of 94, on Nov. 10th, at his home in Eckington, was educated at Paisley Grammar School and at Glasgow University, where he graduated M.D., Ch.B. in the year 1862. After acting as ship surgeon, when he suffered shipwreck off the coast of Newfoundland, he entered upon general practice at Eckington and covered a large area on that side of Sheffield, retiring only a few years ago. Of his 11 children, nine are living.

RYE, WINCHELSEA, AND DISTRICT WAR MEMORIAL COTTAGE HOSPITAL.—Princess Louise, Duchess of Argyll, visited Rye on Nov. 15th and opened this hospital, which has been erected just outside the Rye borough boundary at a cost of about £18,000. The building of the hospital has been made possible mainly through the generosity of Lady McIlwraith, while a total of £25,000 has been collected towards this object. The hospital provides 12 public beds and two private wards, the whole being equipped with all the latest appliances.

SOCIETY OF M.O.H.'S: SCHOOL MEDICAL GROUP.—At a meeting of this Group held in London on Nov. 19th, Dr. J. W. Fraser, of Hull, being in the chair, a resolution was passed as follows: "That the Minister of Health should undertake all the powers and duties now delegated to the Board of Education with respect to medical inspection and treatment of children and young persons as was originally intended and as was the expressed wish of Parliament during the passage of the Ministry of Health Act, 1919." All those present were in favour of bringing such a vital health service into organic relation to other health services, such as infant welfare. It was also resolved, in view of the fact that more than 75 per cent. of absence from school is due (or alleged to be due) to ill-health, to ask the Ministry of Health to encourage the policy of appointing nurses as school attendance officers and more effectively to supervise the health of ailing children. The next Group meeting will be held in Birmingham in January or February.

THE LATE DR. JAMES D. WYNESS.—The death took place at his residence, 1, West Craibstone-street, Aberdeen, on Nov. 24th, of Dr. James Davidson Wyness, one of the best known general practitioners in Aberdeen. Dr. Wyness, who was 76 years of age, was the son of Mr. Alexander W. Wyness of Inverurie, and was born there in 1845. He studied at Aberdeen University, where he graduated M.B., C.M. in 1872 and M.D. in 1874. He commenced practice in Schoolhill, from there he moved to Union-street, and later to West Craibstone-street. He had a very large general practice; his was a striking personality, and his kindliness made him exceedingly popular with all his patients. In 1903 Dr. Wyness acquired the estate of Teuchar and Castlehill, near the village of Cuminestown, some five or six miles from Turriff, and latterly spent several weeks there every year. Dr. Wyness was a widower, and is survived by a daughter, his only child.

TYPHOID AT BOLTON-ON-DEARNE.—The Hemsworth Joint Hospital Board, who have already received 13 typhoid cases from Bolton-on-Dearne (West Riding of Yorkshire), have agreed, upon request from the West Riding County Council, to hold 10 beds in readiness for the reception of any small-pox cases arising during the period of the epidemic in the areas normally served by the various small-pox hospitals temporarily in use for typhoid cases. The latter are the small-pox hospitals of the Kendray Joint Hospital Committee at Lund Wood, of the Doncaster and Mexborough Joint Hospital Board at Conisbrough, and of the Wath, Swinton, and District Joint Hospital Board at Hoober. Dr. J. R. Kaye, county medical officer, believes the epidemic to be subsiding, although primary cases are still appearing. A polluted well in High-street, Bolton-on-Dearne, has been sealed and shut off. Three patients died during the week ending Nov. 19th, bringing the total deaths up to 13; there have been 170 cases reported in this outbreak, distinct from the 52 cases during July and August.

LIBRARY

ON SOME
HEART PROBLEMS.

Delivered before the Hunterian Society on Oct. 26th, 1921,

BY ERNEST H. STARLING, C.M.G., M.D. LOND.,
PROFESSOR OF PHYSIOLOGY, UNIVERSITY COLLEGE, LONDON.

IN this paper I propose to discuss some questions, connected with the behaviour of the heart in disease of this organ, which have interested me ever since I was house physician. At that time the account given by Cohnheim, based on an experimental study of the problem, was insufficient to explain the various phenomena observed in the wards. My earliest work, therefore, when I obtained the run of a laboratory, was on the heart, and though I have diverged into other fields of investigation, the questions which intrigued me at that time have always retained their fascination, so that I have returned again and again to their investigation. I cannot even now claim to have cleared up the questions which seemed so difficult to answer, and this evening I can only deal with a few of the points which have been eliminated by the investigations of the last 30 years.

THE MARGIN OF ADAPTATION.

Why the heart fails, and how it fails, are problems which must come before us in every disease, not only in those primarily affecting this organ itself; since, in the end, death is due to failure of the circulation, and we mark the point of its occurrence by the moment at which the heart ceases to beat. In heart disease we have a condition in which cardiac inadequacy may continue for a long time. This inadequacy may mean simply a diminution of the margin of response, so that life may continue more or less normal so long as all effort or other condition is avoided, which would throw increased strain on the heart. In nearly every function of the body in the healthy individual there is a margin of adaptation of about 1000 per cent.—i.e., the organ can, working at its utmost, perform ten times as much work, chemical or physical, as is demanded of it during a condition of rest. If this margin is diminished to 500 or 300 per cent., we may speak of a cardiac inadequacy, although, leading a sheltered existence, the individual may remain healthy and all his functions may go on unimpaired. But it is when the margin is diminished below this point, or when it is impossible to preserve an individual from such shocks and strains as call up more than this margin of adaptation, that we get a condition of cardiac insufficiency which we may speak of as heart disease. This insufficiency may be due to gross lesions of the valves, so that the pump is leaky and more work is demanded of it to maintain the normal flow, but in almost every case there is also some disorder of the muscular tissue itself. This disorder may be localised in one part of the heart or may affect the whole musculature. We know that the function of the heart is to pump blood from the venous side, where it enters at a low pressure, into the arteries, and to maintain in the latter a pressure sufficient to provide blood for all parts of the body in proportion to their working requirements. The fraction of the total output of the heart which goes to each tissue is regulated chiefly by the vaso-motor system, though it is also affected by chemical changes in the tissues themselves. As a rule, when one organ or set of organs is working, blood for its needs is supplied at the expense of other parts of the body. Thus hard exercise is accompanied by a diminished flow to the alimentary canal, and when the alimentary canal is flushed with blood, the muscles are not capable of attaining their full activity. To every part of the body the supply of blood is a constantly varying quantity.

BLOOD SUPPLY OF THE BRAIN.

There is, however, one organ which can never go short, however much other tissues may cry out for blood, and that is the brain, the master-tissue of the body, on whose functioning depends the continued existence of all other parts. It has not been possible to prove the existence of a vaso-motor nerve supply to the vessels of the brain, nor is such a supply necessary, since this organ itself controls the blood flow through all the rest of the body and will rob every other part, if necessary, to maintain the flow through itself. The circulation through the brain is therefore dependent almost entirely on the maintenance of the normal blood pressure in the carotid and vertebral arteries. This pressure cannot be diminished without affecting the functions of the master-organ, and we may be certain that every other organ may suffer, including the heart itself, before the brain will allow the arterial blood pressure to drop below the limit at which it can receive a supply of oxygen adequate for its needs. Thus when there is loss of blood, there is a constriction, through the vaso-motor centre, of all the vessels of the body, cutting off blood supply to the skin, intestines, and muscles. There is a lowering of the venous pressure, the heart beats more quickly so that as much as possible of the blood may be passed into the carotid artery to maintain here a normal arterial pressure. If the flow of blood or the supply of oxygen to the brain is diminished, as by ligature of the carotids or by cutting off the supply of oxygen to the lungs, there is again universal vascular constriction so as to raise the pressure in the circle of Willis and vertebral arteries, and to make up by increased velocity of blood for its diminished oxygen content. The same vaso-constriction follows local anæmia of the vaso-motor centre in the brain, such as may be produced by a rise in intracranial pressure.

DIMINISHED OUTPUT OF THE HEART AN ESSENTIAL FACTOR.

Cohnheim, in his investigation of heart failure, argued that any inadequacy of the heart pump must cause a fall of arterial pressure and a rise of venous pressure on account of the diminished output, and was confirmed in his conclusions by experiments in which he tried to imitate the conditions in failure of compensation by gradually filling up the pericardium with fluid, so as to hinder more and more the diastolic expansion of the heart. These experiments, however, put us on a false track. I have already pointed out that in the intact animal the last factor in the circulation to suffer must be the general arterial pressure, since it is on this that depends the flow through the brain. It is surprising how many years we had to wait after Cohnheim's investigation for any actual determination of the blood pressures in heart disease, and I believe the first of this kind were those carried out by my brother, H. J. Starling, in 1906. He pointed out that in no case of ordinary heart disease is the arterial blood pressure found below the normal, though in a considerable number the pressure may be above normal. This is especially the case if the condition is attended with cyanosis, so that the vaso-motor centre is in a partial condition of asphyxia. In general conditions, where for some reason there was a high blood pressure before the onset of cardiac inadequacy, this high blood pressure continues. There is, however, one physical factor in the circulation which is defective. In spite of the normal or high arterial pressure there are very often cyanosis without any corresponding defect in the entry of air to the alveoli, distended veins, and signs of inadequate circulation through all parts of the body except the brain itself. Direct measurement has shown that there is in fact a defective circulation, that the heart at each beat and in each unit of time is putting out less blood than normally. The essential factor, therefore, in heart disease is diminished output of the heart.

Can we form any idea as to how this state of things is brought about? We shall be helped to its under-

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £200.
Cambridge, Addenbrooke's Hospital.—H.P. £130.
Cape Town University.—Technical Asst. in Surgery. £350.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O.
Coventry and Warwickshire Hospital.—Res. Jun. H.S. £200.
Croydon General Hospital.—Hon. Jun. P.
Finsbury Dispensary, Brewer-street, E.C.—P. £50.
Great Northern Central Hospital, Holloway.—Two P.'s.
Grimsby and District Hospital.—Res. H. S. £300.
Harefield, Middlesex County Sanatorium.—Sen. Asst. Res. M.O. £150.
Hospital for Consumption and Diseases of Chest, Brompton.—Anæsth. £100.
Inverness Northern Infirmary.—H.S. £150.
Ipswich, East Suffolk and Ipswich Hospital.—Res. M.O. £350.
Iraq.—Two M.O.'s. 600 to 1000 rupees per mensem.
Lambeth Parish Infirmary.—Jun. Asst. M.O. £300.
Leicester Royal Infirmary.—Two H.S.'s. £200.
London Temperance Hospital, Hampstead-road.—Res. Cas. O. £150.
Loughborough and District General Hospital, &c.—Res. H.S. £200.
Macclesfield General Infirmary.—Sen. H.S. £180.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester City.—M.O. £450.
National Dental Hospital, Great Portland-street.—Hon. Anæsth.
National Hospital for Paralysed &c., Queen-square.—Asst. P.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Northampton, County of.—Tuberc. O. £700.
Nottingham City Asylum.—Sec. Asst. M.O. £400.
Nottingham General Hospital.—H.S. £200.
Oldham Royal Infirmary.—Three H.S.'s. Each £200.
Royal Free Hospital, Gray's Inn-road, W.C.—H.S. and Sen. Obstet. Asst. £50.
Royal National Orthopædic Hospital, Great Portland-street.—H.S. £150.
Royal Naval Medical Service.—Surg. Lieuts.
Sheffield Royal Infirmary.—Cas. O. £150.
Southport General Infirmary.—Jun. H.S. £175.
Sunderland Royal Infirmary.—Path. and Bact. £300.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Walsall Education Committee.—School Med. Insp. £500.
Warrington, Lancashire County Asylum, Winwick.—Asst. M.O. £300.
Western Ophthalmic Hospital, Marylebone-road.—Two Hon. Asst. Surgs.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 4 (Lancaster County Courts). Applications should reach the Private Secretary, Home Office, not later than Dec. 11th

Births, Marriages, and Deaths.

BIRTHS.

LOWMAN.—On Nov. 23rd, at "Pencarrow," Enfield, the wife of Rupert R. Plowman, of Calcutta, of a daughter.

YWELL.—On Nov. 23rd, at Paget House, S.W., the wife of Dr. Percy Dodd Pywell, of a daughter.

OSS.—On Nov. 27th, at Worcester House, Sutton, Surrey, the wife of J. N. MacBean Ross, M.C., M.D., F.R.C.S., of a son.

COTT.—On Oct. 13th, 1921, at 8 R.A. Lines, Meerut, India, the wife of Major T. H. Scott, D.S.O., M.C., R.A.M.C., of a son.

ILSON.—On Nov. 27th, at Harley-street, W., the wife of Dr. S. A. Kinnier Wilson, of a son.

MARRIAGES.

ORWARD—MIDDLEMISS.—On Nov. 22nd, at St. Cuthbert's, Earl's Court, Dr. Ernest Lionel Forward, M.R.C.S. Eng., L.R.C.P. Lond., to Aileen Frances, only daughter of C. S. Middlemiss, C.I.E., F.R.S., Srinagar, Kashmir, India, and Mrs. Middlemiss, Crowborough.

USSELL—MCKEAN.—On Nov. 9th, at Colombo, Captain Wm. Russell, M.C., R.A.M.C., to Marjorie Doris Clive, younger daughter of George A. V. and Mrs. McKean (formerly of Manchester and Newcastle-on-Tyne).

DEATHS.

ORBIN.—On Nov. 24th, at his residence, Trevenen, Beech-road, Stockport, Herbert Ernest Corbin, B.Sc. Lond., D.P.H., Medical Officer of Health of the County Borough of Stockport, aged 49 years.

LISTON.—On Nov. 20th, at St. Edmund's, Felixstowe, Colonel George Sampson Elliston, C.B., V.D., M.R.C.S., Knight of Grace of the Order of St. John of Jerusalem, in his 78th year.

TCHFIELD.—On Nov. 24th, at 61, Arragon-road, Twickenham, Henry Robert Campbell Litchfield, L.R.C.P. Lond., M.R.C.S. Eng.

NIS.—At Karachi, India, on Oct. 18th, 1921, after a long illness, Sadie Geneviève, the dearly-loved wife of H. Carey Venis, B.A., L.R.C.P., L.R.C.S., D.P.H., Medical Officer of Health, Port of Karachi.

B.—*A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Short Comments, and Answers to Correspondents.

EGYPT AND THE SOUDAN: HEALTH AND SANITATION.

I.—EGYPT.

A REPORT by Field-Marshal Lord Allenby, His Majesty's High Commissioner, on the affairs of Egypt and the Soudan for the year 1920, includes several references to medical and sanitary matters. The following is a summary of some of the principal points:—

Owing to the fact that the conditions of Government service generally in the various Ministries are at present under investigation by the "Cadre Commission," no material progress has been made in the reorganisation of the health services of the country on the lines recommended by the Government Commission which was appointed in 1918 to advise on this subject. The creation of a post of Under-Secretary of State for Health in June of last year has been of some advantage to the administration in so far as it has placed the head of the service in the position of being able to act with greater effect in all matters affecting the health interests of the country, but the directorate is still needlessly overloaded with many matters of trivial detail which will be difficult to get rid of until the four main branches of the administration are put in the position of autonomous services dealing directly with other Government administrations as regards their own work, whilst the functions of the controlling authority in its relation to them are largely confined merely to such intervention as is necessary for the coördination of their efforts. With the creation of the new post of Under-Secretary of State there occurred certain changes in the positions of the higher personnel. The director-general became Under-Secretary of State, the deputy director-general was made director-general, whilst the post of deputy director-general was suppressed and a new post of inspector-general was created, to which was appointed one of the senior Egyptian divisional inspectors, Dr. Ahmed Bey Tewfik. The dissatisfaction with the conditions of service in the public health administration continues, but the difficulties of recruiting for the service were somewhat eased during 1920 by the hope that some improvement might result from the findings of the Cadre Commission.

Special Legislation.

During the past year two questions urgently called for fresh legislation. The requirements of the first of these were met by the introduction of a new law giving greater powers of dealing with unqualified dental practice, which had gradually become a serious public danger. The penalties under the old law afforded an insufficient deterrent to a gradually increasing number of ignorant persons who found in the practice of dentistry a lucrative source of gain, and in February the new law was promulgated. In order to draw some distinction in favour of those unqualified practitioners, who by long practice had acquired some empirical knowledge of the art, provision was made for the grant of a modified form of permit to those who had been in continuous practice as dentists for ten years or more and who could pass a special examination. Of 218 candidates admitted to the technical examination 193 satisfied the examiners. The second question which called for special legislation was first brought to notice in the summer of 1919 when it was reported to the department that a soldier of the British Army had contracted anthrax by using an infected shaving brush, which was found to be one of a consignment recently imported from Japan. On May 29th a law was promulgated forbidding the admission of any shaving brushes into the country unless accompanied by certificates of disinfection from the competent authority in the country of manufacture. With the cessation of hostilities and the greater facility for obtaining labour, the work of filling in or draining those ponds of stagnant water and marshes which constituted a danger to public health was again actively taken up and has progressed considerably. Twenty-nine Government-owned birkas were filled in, with an aggregate area of 75,179 square metres.

Prostitution.—Medico-Legal Examinations.

The number of prostitutes registered in Egypt was 5836. 173,931 examinations were made, in the course of which 1085 women were found suffering from syphilis, 4306 from gonorrhœa, and 959 from other diseases. During the year 7860 prostitutes actually received treatment in Government hospitals, 1425 of these being for syphilis, 5729 for gonorrhœa, and 719 for other diseases.

During 1920 60,405 examinations of injured persons were carried out by the medical officers of the Public Health Department. Of these, 12,554 were accidental injuries, such an extent by increased dilatation that it tears its own structure in its effort to cope with the increased load thrown upon it, and post mortem one finds the heart muscle studded with small hæmorrhages. In the body this over-distension is prevented by the pericardium, and possibly in some hearts the physiological process of adaptation by dilatation may be limited by the fibrous character of the myocardium. But in each case the cardiac inadequacy will reveal itself by a diminished output, to which the central nervous system, in its selfish activity, will respond by shutting off the blood supply to the various organs of the body, so that the greater part of the output can be diverted to the brain and an adequate pressure maintained in the carotid and vertebral arteries. In this condition the main arterial trunks will be normally distended. The peripheral vessels, capillaries, and veins will be depleted of blood, as shown by the pallor of the skin, while there will be a certain amount of distension of the auricles and great veins near the heart.

But the process does not end here. The lowered capillary pressure and diminished flow through the tissues at first cause increased absorption of fluid from the tissues, especially from the alimentary canal, associated with diminished urinary secretion. The result of these factors is to increase the amount of fluid in the circulation, causing a condition of hydræmic plethora, which, in the presence of cyanosis and the consequent stimulation of the bone marrow, may be converted into a real plethora, a new formation of red corpuscles keeping pace with the increased volume of the blood flow. The venous system and capillaries thus fill up to their normal pressure, the arterial trunks remaining as full as before. This increased filling of the veins tends to produce a further rise of diastolic pressure, but cannot cause any further dilatation of the heart except by a gradual giving way of the pericardium, and therefore will not evoke any stronger contraction of the cardiac muscle. The increased venous pressure may cause, reflexly, a still further acceleration of the pulse; but it will not be indefinite, since, as Bolton has shown, the veins tend to give to the increased pressure in their interior, so that one finds them distended although the pressure in them is only a few millimetres of water above normal. Under these extreme conditions, too, the rate of the heart will depend not only on the reflex acceleration through rise of auricular pressure, but to a still larger extent on the central excitation of the cardio-inhibitory or cardio-acceleratory mechanism dependent on the state of the brain itself, fall of blood pressure in the cranium tending to cause acceleration, while other physiological conditions may excite the vagus centre and diminish the rate of the heart, so that it is difficult in any given case to prophesy what will be the resultant rate of the heart.

Even though the heart dilates and quickens, the sparing of this muscle is the office of the central nervous system, and this maintains the arterioles constricted, so that the amount of blood coming into the venous system and into the heart is less than normal, and the heart remains at just that stage of dilatation at which it can empty a diminished amount of blood into the arteries against a normal arterial pressure. As a rule, however, this adaptation affords only an imperfect protection for the diseased organ, since it calls into being other morbid states which have a secondary influence on the heart muscle and tend to make its condition worse. The muscular weakness we may regard as protective, since it is the muscular contractions which are the main factor in determining the inflow of blood into the heart. The diminished flow through the lungs, however, causes deficient oxygenation of the blood, which reacts unfavourably on the functional capacity of the heart muscle. The functions of the alimentary canal are interfered with, thus retarding nutrition; the functions of the kidneys are diminished, so that excretion of waste products is imperfectly carried out. The whole venous and capillary system gradually fills up with stagnant badly oxygenated blood, and as a result there is deficient nutrition of the capillary wall with increased exudation of lymph and the production of dropsy in all the dependent parts of the body. In the upright position it must be remembered that the main factor in maintaining the venous flow towards the heart consists of the contractions of the voluntary muscles, so that the capillary pressure normally in the feet is not higher than that in the hand. If these movements are absent, the capillary pressure rises in all dependent parts by the amount of hydrostatic pressure represented by the height of the heart above the part; this fact in itself is sufficient to account for the gradually increased transudation of fluid.

Thus the law of the heart, which expresses so perfect an adaptation of this organ under healthy conditions and with intact muscle fibre, is limited under extreme conditions in the normal individual and under ordinary conditions in the diseased individual by three factors. Two of these consist in a mechanical limitation of the dilatation which may evoke increased energy of contraction, and are in the first place the pericardium, and in the second place (in disease) inextensibility of the myocardium in consequence of development of fibrous and scar tissue in its interstices. In the third place, a continuous and indefinite rise of diastolic pressure is prevented by the gradual dilatation of the large veins to accommodate the excess of fluid which remains in them, and the diminished rate of flow of blood through the capillaries into the venous system.

I cannot pretend to have explained all the phenomena of uncompensated heart disease by the action of the few factors which I have discussed. I have shown that a consideration of the isolated heart-lung enables us to understand how heart failure, however brought about, must lead to a limitation of output, but it is hardly conceivable that the heart in situ, unable to respond to the demands made upon it, does not itself invoke the interaction of the central nervous system, which may be used either to increase the response of the heart muscle, as certainly occurs in the healthy individual, or possibly to save the muscle at the expense of other organs of the body, subject only to the demands of the brain itself, when the heart is in danger of failing through excessive fatigue. It is possible, too, that other factors, such as retarded rate of relaxation, may serve to diminish the inflow into the tired heart. But of these factors we have very little knowledge, and the part to be assigned to each requires a profounder clinical knowledge of the failing heart than I can pretend to possess.

Treatment of Failure of Compensation.

Although we cannot claim by our inquiry to have obtained a clear image of all the factors concerned in producing the clinical signs of failure of compensation, we are enabled to see the physiological reason for the efficacy of various measures employed in its treatment.

1. Most important is rest, which not only diminishes the demands on the heart from the arterial side, but by removing the main cause for the return of the blood to the heart enormously decreases the inflow into this organ; and it is inflow which in the healthy heart determines output.
2. The value of oxygen, when there is any cyanosis, is explained by its action in diminishing the blood pressure necessary to drive a sufficient amount of blood through the brain, the relaxation of arterioles, and the improved supply to the vital organs of the body, and the direct effect of a proper supply of oxygen in improving the contraction and aiding the reintegration and recovery from fatigue of the heart muscle.
3. The plethora attending failure of compensation is a reaction on the part of the organism as a whole, not on the part of the heart, and does not assist this latter organ. It may, in fact, be harmful when the heart is beginning to recover under the influence of the other modes of treatment just mentioned. One can therefore understand the beneficial effects of bleeding as a preliminary measure in certain cases of

EUGENICS IN SWEDEN.

In May last the Swedish Riksdag decided by an overwhelming majority to provide funds for the foundation of an institute for the study of eugenics. It is claimed that this is the first instance of a national governing body giving tangible proof of its conviction that the science of eugenics has at least a putative practical value, and that the State must help as well as exploit the researches of race-hygienists. The appointment of Prof. Herman Lundborg as Director of this State Institute for the study of race-biology augurs well for the future. Important papers which he has already published on hereditary factors in tuberculosis are a guarantee that essential questions will not be neglected at the institute under his control.

A MEDICAL ART CALENDAR.

The fourth annual issue is announced of the well-known illustrated Medical Art Calendar issued by Mr. J. Philip Kruseman at The Hague, with text in English and Dutch. The present calendar delineates the alchemist, the barber-surgeon, and the dentist in their workshops rather than the family physician, and may be regarded as caricature more than portraiture. But the numerous artists of the Dutch school whose works are reproduced give evidence of their customary insight into character, and the collection has considerable archæological interest. The ways and manners of some of the characters portrayed are still to be observed among the unqualified or unregistered practitioners of the healing art. The price of the calendar is 6s. post free.

DREAM FAIRIES.

Dr. T. Wilson Parry, whose modest excursions into verse belie the popular idea that doctor and materialist are synonymous terms, has, in his book entitled Dream Fairies (London: Simpkin, Marshall, Hamilton, Kent and Co., 1921, pp. 34, 2s. 6d.), some pretty conceits about flowers and fairies. His nine themes and the dedication—

> To every child whose spirit wild
> Hears beckonings from the brook—

are illustrated by a series of ten designs from the pencil of Mr. Gerald Aylmer, whose imagination and dexterous pen have caught the message of the verses while displaying a keen appreciation of floral beauty. One of the pieces, "The Prescription," has already appeared in *St. George's Hospital Gazette*, and a quotation from it will show the spirit in which Dr. Parry writes:—

> R A nettle-sting,
> Lustre from a lace-fly wing,
> Glitter from a night owl's eye,
> Wing-down from a butterfly,
> Sheen from a grasshopper's skin,
> Flashings from a troutlet's fin,
> Glimmer from a glow-worm's light,
> Glint from a kingfisher's flight,
> Add the blush of one wild rose,
> Several dew-drops interpose,
> Pound them in an acorn-cup,
> Then, dear fairy, drink it up.

The thin quarto is in a dainty cover and the print is bold. It would make a welcome present for a child at Christmastide and it should equally appeal to many grown-ups.

A COMBINED BIRTH CONTROL AND WELFARE CENTRE.

The centre, which began its career at 153a, East-street, Walworth, London, S.E. 17, on Nov. 9th, was open to members of the press on Nov. 24th. The centre is being conducted under the auspices of the Malthusian League, its object being to give definite instruction in regard to birth control, as well as the advice usually given at infant welfare centres. There is a nurse in attendance daily, but enquirers about birth control are directed to attend the doctor's special weekly consultation. It is not taken for granted that those attending wish for information about birth control unless they ask for it, but such information would apparently be given as willingly to a young, newly-married woman as to one who already had a large family, though some preliminary inquiries are always insisted upon. There does not seem to be any promise required that the instruction will not be handed on to others. The centre is still in its infancy, but later on visits will be paid to the homes in order that the conditions in individual cases may be ascertained. Structurally the premises appear adequate. On the ground floor there is an unfurnished room in which prams may be left, also a secretary's room and a doctor's consulting room; upstairs, the waiting room, stretching the full length of the house, has been made attractive with good picture posters and brightly-coloured washing cushion seats. The centre is not connected with any municipal or local authority, but is run entirely as a voluntary concern, advertised by means of open-air lectures in South London, and by the distribution of educational leaflets and forms of application.

VENEREAL DISEASE IN AUSTRALIA.

An association is to be formed for the prevention of venereal disease in Victoria. It will consist of laymen and medical practitioners, and its activities will be mainly educative, Sir James Barrett being the moving spirit in the new organisation. A somewhat similar body already exists in New South Wales. In Western Australia the Government proposes to abolish the compulsory notification provisions of the existing Venereal Disease Act in that State. The general experience of notification in those Australian States which have special venereal disease legislation has been disappointing; it is quite certain comparatively few females are notified. Compulsory treatment does not appear very satisfactory, and there is great divergence of opinion as to the value of certification of cure.

THE SCHOOL CHILD'S ENVIRONMENT.

Some indication of the effect of environment upon the physical condition of children of school age arises from comparative examinations at the Allcock-street and Bournville elementary schools made by Dr. J. B. Lowe, assistant school medical officer of Birmingham. The former is an old building, situated in one of the most congested areas of Birmingham, a district full of back-to-back and tenement houses; while the latter is a modern building in an industrial suburb. The allowance of cubic and floor space per boy is, however, the same, and it is stated that there are no marked differences in the ventilation, heating, or sanitary conditions of the two schools. The examination consisted of an ordinary medical inspection and the recording of physical measurements. The differences shown were as follows: Allcock-street (out of 118 scholars): Above normal, 6 per cent.; below normal, 41·5 per cent. Bournville (out of 106 scholars): Above normal, 17 per cent.; below normal, 19 per cent.

AN INSTITUTE OF APPLIED PESTOLOGY.

At the London Pavilion, Shaftesbury-avenue, on Nov. 24th a meeting was held with the object of inaugurating an Institute of Applied Pestology. Dr. Nathan Raw, M.P., presided, and those present included Lord Aberconway and representatives of the medical and other scientific professions. Mr. Alfred E. Moore, of the Inc. Vermin Repression Society, delivered a short address in which he pointed out that the new Institute sought to coördinate efforts in the extermination of all pests, not rats alone. The effects of the Rats and Mice Act, recently passed, were nullified by allowing rubbish dumps to form suitable breeding grounds for myriads of mice. Men in universities and hospitals were spending their lives in seeking to find remedies for pest-borne disease at a remuneration often not greater than a dustman's wage. The Institute would endeavour to remedy this state of things and to assist manufacturers in exterminating the pests which ravaged their stocks and raw material. By articles in the press, by the exhibition of films, and in other ways, it was hoped to educate the public. An executive committee was then constituted with Mr. Moore as chairman; Mr. J. E. Pryde-Hughes and Mr. J. L. Hayden, joint hon. secretaries; Prof. F. Hobday, F.R.C.V.S., and Col. S. J. M. Auld, D.Sc., were among those nominated as vice-presidents. The subscription was fixed at 1 guinea for Fellows, 5 guineas for Members, and half a guinea for Associates. The meeting closed with an exhibition of films showing how rats enter and leave ships, warehouses, and wharves, how they destroy live stock, materials, and property and defile food, and the methods for destruction of rats recommended by the Ministry of Agriculture and the Vermin Repression Society. The address of the Institute is 168, Fleet-street, London, E.C.

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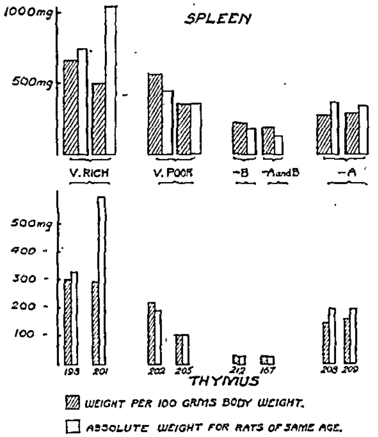
animal to as low as 1200 has been observed. The polymorphonuclear leucocytes are not affected to the same extent. As a result a differential count gives figures in which the proportions are completely changed. In a normal rat the polymorphonuclear leucocytes constitute about 30 per cent. of the total leucocytes, representing in absolute figures about 2600 cells. As the condition resulting from the deficiency of vitamins progresses the relative proportion of the polymorphs increases, so that in the later stages they may equal in number the lymphocytes and even exceed them (see Fig. 2, rats 161 and 167).

Comparative Effects of Deficiency of A- and B-Vitamins.

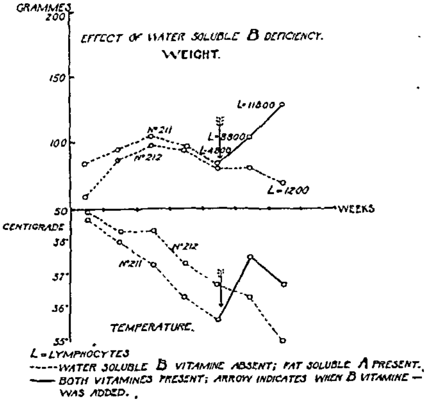
When a diet deficient in B-vitamin but containing vitamin A is given, the same general results follow in rats as when both vitamins are absent (see Fig. 3, rats 211 and 212). There is the same initial cessation of growth, followed by a decline in weight and a gradual fall of the temperature. In the final stages of the water-soluble B deficiency the animal presents the same condition of emaciation. This identity of the condition for the specific water-soluble B deficiency with that for the complete vitamin deficiency is

FIG. 1.



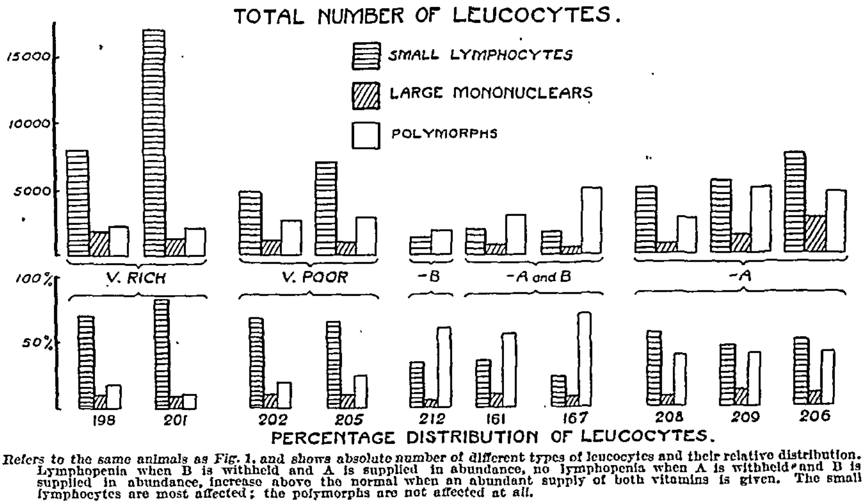
Shows weights of spleen and thymus altering with changes in the diet. Note that the vitamin-rich diet is an artificial diet, while the vitamin-poor diet is a natural diet—namely, the laboratory diet of bread and water, maize and rice referred to in the text, which is, however, adequate to maintain the animals in good health. The weights are given both calculated per 100 g. of body weight (shaded), and in absolute figures for rats of equal age (not shaded). Atrophy as the result of withholding vitamin B, no atrophy when vitamin A is withheld. Great increase in weight when an abundant supply of vitamins is given.

FIG. 3.



Curves of weights and of temperatures and number of lymphocyte counts of two rats on a diet free from vitamin B alone, but containing an abundant supply of vitamin A. Effect on weight, temperature, and number of lymphocytes of adding the deficient vitamin to the diet of one rat (No. 211).

FIG. 2.



Refers to the same animals as Fig. 1, and shows absolute number of different types of leucocytes and their relative distribution. Lymphopenia when B is withheld and A is supplied in abundance, no lymphopenia when A is withheld and B is supplied in abundance, increase above the normal when an abundant supply of both vitamins is given. The small lymphocytes are most affected; the polymorphs are not affected at all.

standing by a study of the isolated heart, provided that we remember that it is the isolated heart that we are studying and do not imagine that the results obtained thereby will suffice by themselves to explain the phenomena met with in the complex vascular system with its multifarious relationships, nervous and otherwise, in the body. In physiology we analyse each complex function into its constituent parts in order that we may synthesise them again later and understand the function as a whole. Physiology may become a dangerous guide in clinical medicine if we forget this process of synthesis and try to explain any complex morbid condition with our eyes directed only on one or two of the factors involved.

ACTION OF THE ISOLATED HEART.

With this caution in mind, we may learn something from the behaviour of the isolated heart. We can make a preparation of the mammalian heart and lungs entirely separated from the rest of the body, so that the heart is cut off from all nervous influences and is simply a muscular pump causing a flow of blood through an elastic system of tubes. In this case the only variable factor is the muscular wall of the heart. All the other conditions—the amount of blood entering the heart, the resistance to the flow of blood from the heart, the arterial pressure, the temperature at which the heart works—are directly subject to our control, and can, if we so desire, be maintained constant. And we can measure the pressures in any of the cavities of the heart, the total amount of blood put out by the heart, as well as changes in the systolic and diastolic volume of this organ. In studying the heart under these conditions, we are at once struck by the perfection of its mechanism. The heart of a dog, released from the vagus control to which it is normally subjected in the body, beats at about 140 per minute. The rate of this beat is unaltered by any mechanical conditions, and is simply a function of the temperature of the pace-maker in the right auricle, and therefore can be modified at will by altering the temperature of the blood entering the heart. If we increase the amount of blood entering the heart by raising the venous reservoir or by relaxing the screw clip on the wide tube passing to the right auricle, the heart sends out a correspondingly increased amount of blood into the pulmonary artery and into the aorta. If we maintain the inflow constant and alter the arterial resistance, we find that the heart still maintains its output unchanged, although the arterial pressure, and therewith the work thrown on the heart, may be increased from 50 mm. Hg to 250 mm. Hg. There is, of course, a limit to this power of adaptation possessed by the heart. If either the inflow or the arterial resistance is increased too much, the blood may accumulate in the heart cavities, the diastolic pressure rises, and the output falls off. This limit depends in the first place on the pericardium, and may be raised by opening the pericardium, when the distended heart is found to give a maximum output greater than when it is confined by the pericardium. The enormous work at the highest limits of capacity of the heart is only performed at the expense of the heart muscle, and one finds hæmorrhages in the heart muscle due to rupture of its fibres after it has been made to work at this maximum power during 10 or 20 minutes.

MECHANISM OF ADAPTATION.

I have shown that this power of adaptation possessed by the isolated heart is determined by a very simple law—namely, the relationship between the length of the heart muscle and the force of its contraction. In any given heart, the greater the length of its muscle—i.e., the greater the dilatation of the heart—the stronger is the contraction. Thus if the work presented to the heart is suddenly increased, the heart fails for a time and therefore gradually dilates. But with each dilatation its contraction becomes stronger, so that finally the heart is putting out as much blood as before but with a greater systolic and diastolic volume. With a constant inflow the physiological condition of the heart, its contractile power, is measured by its diastolic size. A heart in good condition contracts strongly with only a small diastolic distension, so that it practically empties itself of blood at each systole. As its physiological condition deteriorates, its fibres have to be longer to exert the same force during contraction. We therefore find that the heart dilates, and though it is sending out at each beat as much blood as before, there is a considerable amount of residual blood in the heart at the end of each contraction. We speak of the heart in the first condition as one with "good tone," and the second condition as "bad tone." Thus, if we keep the mechanical conditions of an experiment on the isolated heart constant, the heart will gradually get larger as it becomes tired, but there will be no signs of failure of the circulation, the output and the arterial pressure remaining constant.

Let us suppose that a well-trained athlete starts to run. Even before he starts there will be a central preparation for the exercise, which will be shown by a quickened respiration and a rise of blood pressure. As soon as he begins his course the pumping movements of the muscles of limbs and respiration will largely increase the inflow of blood into the right heart. The heart will react to this in two ways. In the first place it will dilate, and by this means will give a stronger contraction and send out on the arterial side the whole of the blood that it receives. Other things being equal, the increased diastolic filling will cause some rise of pressure on the venous side of the heart, and as a result there will be reflex inhibition of the vagus control, with probably some stimulation of the accelerator nerves, and a quickened pulse beat. The heart reacts therefore to exercise by increased output per beat and by increased rate of beat. We find these two factors taking a varying part in the adaptation to exercise in different individuals. In the well-trained man the increased output per beat may be more marked than the rise in pulse-rate. In the untrained individual—i.e., in an individual whose heart has probably a poor tone and a larger residual quantity of blood at the end of each beat—it is the quickening of the pulse-rate which is more evident. Finally, however, the heart may be putting out three times as much blood at each beat and contracting at a rate two and a half times normal, so that the total output per minute may be increased seven or eight times. Since under these conditions there is a somewhat more effective utilisation of the oxygen carried by the blood, the heart is able to supply the ten-fold increase in oxygen which is required by the contracting muscles.

EFFECT OF FATIGUE.

These conditions cannot, however, endure indefinitely; the heart muscle working at eight times its normal rate tires. The phenomena of fatigue can be studied in the heart-lung preparation. Fatigue means diminution of physiological efficiency—i.e., the heart, in order to produce a given rise of pressure at its contraction in its interior, must start from a more dilated condition than when it is fresh. But a heart at its maximum efficiency is dilating at each diastole to the limits set by the indistensible pericardium. It cannot then dilate more during diastole. The effect of fatigue, therefore, is simply to reduce the output of the heart. This may be felt in various ways. If it affects all parts of the heart, the insufficient supply to the muscles causes muscular weakness and incoördination. If it affects chiefly the right side, there may be signs of anoxæmia, such as headache and vomiting, as well as muscular weakness. The man is forced finally to give up running through fatigue, but the fatigue in this case is almost entirely failure of the circulation by failure of the heart. We see therefore that in this muscular fatigue, the output of the heart, though increased above the resting amount, is insufficient for the needs of the body. In the diseased heart, the muscle is inadequate for the normal needs of the body. A healthy heart deprived of its pericardium will react to

(*B*) A consideration of the effects of X radiation upon animals shows that a primary destruction of lymphocytes is followed by disturbances in nutrition identical with those produced by withholding B-vitamin. (*C*) Other evidence on the relationship between the functional activity of the lymphoid tissues and the nutrition of the body. (*D*) A criticism of the prevalent conception that vitamins are essential for the life of every cell.

A. *Effect of a Diet Rich in Vitamins.*—The effect of a diet particularly rich in vitamins has been compared with that of a diet poor in vitamins but containing sufficient to maintain the animals in good health and in a normal condition.

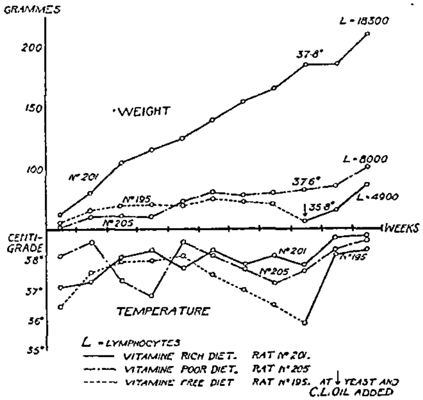
TABLE II.

Diet.	Rat No.	Weight in g.		Final length in cm.*	Weight in mg. of—		Lymphocytes distribution.				
		Initial.	Final.		Spleen.	Thymus.	Total in 1 c.mm.	Small L.	Large L.	Polym.	Eosinoph.
Vitamin-rich	198	40	110	15·5	740	330	9,600	71·5 %	8·5 %	17·5 %	2·5 %
	201	60	210	18·5	1060	690	18,300	83·0 %	6·0 %	11·0 %	0·0 %
Vitamin-poor	202	40	80	14·25	460	185	5,800	67·5 %	11·0 %	15·0 %	6·5 %
	205	50	100	14·5	360	105	8,000	64·5 %	8·5 %	25·5 %	1·5 %

* Nose to root of tail.

The vitamin-rich diet is an artificial food mixture and onsisted of the vitamin-free standard basal ration (extracted casein, starch, olive oil; salt mixture) to which dried yeast and cod-liver oil had been added. The vitamin-poor diet is a natural diet. It consisted of a diet of bread soaked in water alternating with boiled rice and maize. This has been for years the usual diet of all the rats of the Imperial Cancer Research Fund laboratory. That this diet maintains them in good health is evident from the fact that they breed on the diet and suffer little from intercurrent disease, epidemics being rare. They put on weight and grow, though slowly. Table II. gives a comparison of two young rats kept on this laboratory diet for ten weeks with two rats of equal age kept on the vitamin-rich diet. The latter put on weight and grow in size much more rapidly although the diet is artificial. There is no difference in the temperature, but there is a distinct difference in the development of the lymphoid tissue. The weight of the thymus of rats of equal age is much greater on the vitamin-rich diet; it is heavier even when calculated for 100 g. of body-weight. (See *Fig.* 1.) The spleen also tends to be heavier on the vitamin-rich diet if calculated per 100 g. of body-weight, and is much heavier when the absolute figures, comparing animals of equal age, are considered. (See Fig. 1.) The total number of lymphocytes is also higher on the vitamin-rich diet. (Fig. 2.) In rat 201 (see Fig. 6), which grew most rapidly and reached the weight of 210 g. in ten weeks, while in the same time another rat (No. 205) with the same initial weight, but kept on the laboratory diet, had reached only 110 g., the total number of *lymphocytes gave the exceptionally high figure* of 18,300. That this was not accidental or due to an error was confirmed by another count a few days later, which gave 17,800. It has been noted that rats from the laboratory of the Radium Institute, where a very varied diet is given, grow much more quickly and give lymphocyte counts *decidedly higher. These experiments emphasise the importance of the vitamins.* Not only is a certain minimum necessary for the healthy vegetative and reproductive life of an animal, but if increased beyond this limit the vitamins, in a drug-like action, produce a further effect.

FIG. 6.



Curves of weight and of temperature and number of lymphocytes of three rats kept on an artificial diet rich in vitamins, on a natural diet poor in vitamins, and on a completely vitamin-free diet respectively. Also recovery of rat 195 kept on the vitamin-free diet when vitamins are added again.

We therefore feel justified in concluding that an ample supply of vitamins A and B stimulates the functional activity of lymphoid tissue and that this is associated with more rapid growth and a general improvement of nutrition.

B. *Effects of Exposure to X Rays or Radium.*—A consideration of the effects of exposure to X radiation or to radium has an important bearing on the thesis.

The first change to be observed is a diminution in the number of circulating lymphocytes; so sensitive is this reaction that an amount of radiation insufficient to be detected photographically will cause an appreciable diminution in the number of circulating lymphocytes within an *hour after exposure. Not only do the circulating lymphocytes* disappear from the blood, but moderate exposures will sterilise the whole body of lymphoid cells so that an examination of spleen, thymus, or other lymphoid tissues will reveal a more or less complete absence of these cells. If by means of repeated small doses of radiation this *lymphopænia be kept up, changes subsequently occur in the* animal identical with those resulting from the withholding of B-vitamin. The animal rapidly loses weight, the temperature falls, the testicles present an atrophic condition, adipose tissue disappears, and the animal finally becomes "marasmic" and dies.

The immediate disappearance (within an hour) of circulating lymphocytes following radiation has no decided analogy with the effects of withholding vitamin B; on the other hand, the general and maintained absence of those cells associated with repeated doses of radiation appears to be due to an interference with their production, and a similar want of production is to be observed in the lymphoid tissues of animals starved of vitamin B. In this respect, also, the two effects would seem to have common ground. The regeneration of the lymphoid tissues, which follows the atrophy due to radiation when exposure is discontinued, is strikingly similar to that observed in vitamin experiments when the deficient vitamin B is added to the diet. The spleen, thymus, and other lymphoid tissues increase in size and present abundant production of lymphocytes; the blood content passes from exhibiting a lymphopænia to a lymphocytosis, which may sometimes far exceed the norma limit; and the general condition of the animal then becomes normal. *Fig.* 7 gives the results of an experiment especially designed to illustrate these effects of radiation, which since their discovery 15 years ago,[9 10] have been extensively studied, both in this country and in the United States.[18 19 23 27 33] The observations were made on eight rats, of which four were subjected *intermittently to exposures of radium* over a period of 21 days, while the other four animals were kept as controls. The amount of radiation applied was measured. By the use of screens, and by varying the amount of radium bromide, the exposure to radium was varied on different days. The maximal exposure given at one time was 0·20 rads and was given on the first two days and on the last day. The intermediate exposures were smaller and varied from 0·02 rads to 0·04 rads. The total exposure given over the whole period amounted to 1·25 rads, failure of compensation, as well as the value of diminished salt intake.

4. Another factor of importance in enabling the heart muscle to recover its physiological condition is the circulation through the coronary vessels. In my earlier experiments on the isolated heart-lung preparation I used to put the arterial pressure low, in order—as I thought—to give the heart, under the abnormal conditions of experiment, as little work as possible to do. Many hearts, after the artificial circulation had been established, continued to fail and finally went into delirium or ceased to beat. One day, when the heart was obviously failing, I put up the pressure to 150 mm. Hg, thinking that I should kill the heart outright. Instead of this happening, the heart first dilated widely and beat more forcibly, but as it reacted to the pressure in the arterial system it steadily improved, and both its diastolic and systolic volumes diminished. It continued to beat against this high pressure for hours, so that on all subsequent occasions I have raised the arterial resistance to start with, so that the heart, as soon as it is connected with the artificial system of tubes, has to contract against a high resistance. In my early experiments the arterial pressure had been insufficient to furnish an adequate supply of blood through the coronaries to the heart muscle. As soon as this was supplied by a temporary rise of blood pressure, the heart muscle steadily improved and the heart was able to contract against an abnormally high resistance without undue dilatation, improvement in physiological condition being marked by diminished volume, or as would generally be stated, increased tone of this organ. I am inclined to ascribe the beneficial effects of graduated exercises in heart disease very largely to the improvement of the coronary circulation brought about by the temporary rise of arterial pressure accompanying the exercises. So important is the coronary circulation for the functional capacity of the heart that every medical man should be aware of the manner in which this circulation is regulated. The oxygen usage of the heart is directly proportioned to the work it does, and its oxygen supply must therefore vary within the same limits as its work—i.e., in a healthy heart from 1 to 7 or 10. The most important factor, as is shown by the accompanying table, in determining the amount of blood flowing through the coronary arteries, and therefore the oxygen supply to the heart muscle, is the arterial pressure, so that as the resistance to the heart beat increases, there is a corresponding increase in the flow of blood through the heart muscle. Under extreme conditions of work the flow through the heart muscle may be greater than has been found in any other organ of the body and may amount to 5 c.cm. of blood per minute for every gramme of heart muscle. But the supply of blood and of oxygen is aided by two more circumstances. In the first place, as soon as increased strain is thrown on the heart, or this organ commences to fail, we find an augmented flow through the coronaries out of all proportion to the blood pressure the aorta. This is not due to the accumulation of carbonic acid in the blood and must be determined by the formation of metabolites, of which lactic acid may be one, in the labouring muscle fibres. Moreover, the heart has an astounding power of utilisation of the oxygen in the blood. When an isolated heart is fed with blood from an asphyxiated animal, we find that the heart removes the last traces of oxygen from the blood, so that the blood from the coronary sinus does not contain one-half per cent. of oxygen. The enormous range of adjustment in the coronary circulation characteristic of the healthy heart enables us to form some idea of the evil results which must follow impairment of the power of adjustment, such as may occur in consequence of disease of the coronary arteries themselves. We may see how rapidly such a failure of adjustment may act on the heart muscle by repeating Cohnheim's experiment of ligature of one main branch of the coronaries. This is almost invariably followed, within a period varying from a couple of minutes to half an hour, by fibrillation of the ventricles and death of the animal, and a similar result may occur in man as a result of any unequal derangement in the powers of adjustment possessed by different parts of the coronary system.

Dog, 11 kg.; weight of heart, 107 g.

	Time.	Arterial pressure, mm. Hg.	Rate of heart per min.	Total coronary output	Total output.	Output per heart beat, c.cm.	Venous pressure, cm. H_2O.
I.	12·5	84	150	40·80	851·80	5·72	9·6–12·4
	12·8	108	150	50·30	840·30	5·60	8·8–12·0
	12·12	140	150	70·75	840·75	5·60	8·0–11·2
	12·15	170	150	117·40	867·40	5·75	8·0–10·8
	12·18	208	150	260·30	860·30	5·72	12·0–22·0
	12·21	104	150	80·30	840·00	5·60	8·4–10·4
	12·27	101	150	80·30	830·00	5·55	8·0–10·0
	12·30	44	150	30·40	820·00	5·45	7·6–10·0
II.	12·34	60	150	50·30	1452·00	9·70	10·4–12·8
	12·38	100	150	50·30	1350·00	9·00	10·0–12·8
	12·41	128	150	124·90	1346·90	9·00	10·4–12·4
	12·45	166	144	208·00	1386·00	9·65	12·0–14·0
	12·50	190	144	300·00	1310·00	9·20	32·0–34·0

The venous inflow was increased between I. and II.

ON THE FUNCTION OF THE LYMPHOCYTE AND OF LYMPHOID TISSUE IN NUTRITION,

WITH SPECIAL REFERENCE TO THE VITAMIN PROBLEM.

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WHEN a rat is kept on a diet completely free from vitamins its growth is at first arrested, then its weight declines, its temperature falls, and eventually the animal dies in a state of complete emaciation. The ordinary white adipose tissue has completely disappeared. The glandular adipose tissue—the "brown fat"—is still present; but microscopic examination shows that most of the cells still contain very small droplets of fatty material, which are, however, much smaller than those found in a normal rat, and in some cells may be quite absent. There is a profound atrophy of the lymphoid tissue, which is obvious to the naked eye. This is most striking in the thymus, which is hardly visible. The Peyer's patches, which stand out very clearly in the intestine of a normal rat, are mostly not visible to the naked eye; after careful search a few can be detected here and there. The spleen is shrunk to a narrow ribbon (see Fig. 1, rat 167). The size of the lymphatic glands in the mesentery and in the groin underneath the skin exhibits such variations, even in normal animals, that it is difficult to appreciate differences in size in animals kept on a vitamin-free diet. Microscopic evidence shows that the lymphoid tissues are empty of lymphocytes. Not only is there a diminished production of lymphocytes in the spleen and lymph glands, but the disintegration of lymphocytes in these organs is also diminished as indicated by the infrequent occurrence of phagocytosis and the relative absence of cellular debris. This change in the lymphoid tissue is reflected in the blood. There is a diminution in the total number of lymphocytes; of these, the small lymphocytes are particularly diminished. This diminution may amount to 50 per cent. when the animal begins to show definite signs of suffering from the lack of vitamins, as indicated by its ruffled fur and by fall of temperature to about 36°, instead of 37°–38° given by a normal animal. In the final stages a fall in the number of lymphocytes from the average figure of 8000 per cmm. of the normal feeding, and in which the only lesion found so far has been atrophy of the thymus.[25] We have not been able to find in the literature systematic observations on the condition of the lymphoid tissue generally in this condition. Dr. D. H. Paterson[22] has kindly informed us that in his observa*tions on post-mortem examinations of cases of malnutrition* and marasmus carried out in the Hospital for Sick Children, Great Ormond-street, he has always found an atrophy of the spleen associated with an atrophied thymus, and that the Peyer's patches were so atrophic that they could not readily be made out. We have not been able to find in the literature observations on the lymphocytes in the different *conditions of malnutrition and marasmus.*

D. *Necessity of Vitamins for Individual Cell Life.*—Are vitamins necessary for the life of the individual cell or for the life of the animal as a whole? The fundamental assumption has been made—and is now generally accepted—that every living animal cell requires *not only foodstuffs but also vitamins:* life cannot exist without vitamins. That is, in fact, the definition of vitamins.

MacCarrison[17] suggests as an explanation the analogy that "vitamins are as the spark which ignites the fuel mixture of a petrol-driven engine, liberating its energy. The spark is of no use without the fuel, nor the fuel without the spark." Although the animal continues to take in food, its cells cannot utilise the food and starvation results. We may remark in passing that this generalisation does not apply either to the C-vitamin—*since rats do not suffer in health* if this vitamin is withheld—nor to the A-vitamin, since starvation does not, as a rule, result when this vitamin is withheld. The generalisation was, in fact, established on the basis of the earlier experiments on pigeons and rats before the existence of several vitamins had been recognised and when either the B-vitamin was withheld alone or when a complete absence of vitamins had been established. This in itself weakens the conception of vitamins as substances essential to the life of all cells. But we shall argue here as if this conception applied to the B-vitamin alone. In our preliminary note[5] we *have already criticised this conception.* But it is of such fundamental importance that it may not be out of place to repeat and extend our criticisms.

The evidence on which the conclusion is based is derived entirely from experiments on highly differentiated animals—viz., mammals and birds. If the conclusion is correct it should apply to all forms of life. Numerous attempts *have in fact been made to show that it applies to even the* lowest forms of life: yeasts, bacteria, and plants. The case of yeast is of special interest because it is particularly rich in the water-soluble B-vitamin. It must therefore either be capable of synthetising this vitamin or it must be dependent on a pre-formed supply. The recent work of Nelson, Fulmer, and Cessna[26] has shown quite clearly that yeast is capable of synthetising the water-soluble B-vitamin, and Harden and Zilva[8] have independently arrived at the same conclusion. Since this paper was written Coward and Drummond[2] have published observations which prove that plants can synthetise the fat-soluble A-vitamin, and that apparently this synthesis may be effected from inorganic salts. The experimental evidence on which the claim of the indispensability of vitamins for the lower forms of life was based has been subjected to a critical review and experimental test by Lumière,[18] who showed that these experiments quite clearly established the facts that the *lower forms of life can live and grow in the absence of* vitamins. The addition of material containing vitamins had merely a stimulating effect on the growth of these cells, and it was not even clear whether this effect was due to the addition of the vitamins or to other organic material.

The generalisation that life cannot be maintained in the absence of vitamins, even in its limited form as applying to the B-vitamin, does not necessarily follow from the experimentally established facts. These facts are that a highly differentiated animal—a bird or a mammal—dies in a condition of starvation when the B-vitamin is absent. But although a highly differentiated animal as a whole requires vitamins in order to maintain its life, it does not follow that all the cells of such a highly differentiated animal require the vitamin. If such animals presented a definite lesion in some organ or tissue essential to life, and if such a lesion would account for the condition of emaciation and the eventual death of the animal, then the generalisation that all *cells require vitamins, or even this* particular vitamin, would have to be abandoned. In the past such a lesion has not been found. The functional atrophy of the lymphoid tissue throughout the body had not been noticed and the importance of the function of this tissue in relation to nutrition was not recognised. Starvation was looked upon as the primary effect caused by the absence of B-vitamin, and the atrophy of spleen and thymus which has been repeatedly noticed by several authors was regarded as the result of the chronic starvation.

That the absence of the B-vitamin ultimately leads to a condition of emaciation similar to that produced by the complete absence of food is beyond doubt. To the view that this is due to the failure of the cells of the body to utilise the food absorbed from the intestine in the absence *of the B-vitamin we oppose the conclusion that it is due to* a specific lesion which leads to a functional atrophy of the lymphoid tissue. Such an atrophy of the lymphoid tissue, whether it is brought about by withholding the B-vitamin or by exposure to radiation, or by any other agency such as a toxin, produces a condition of marasmus.

Therapeutic Considerations.

This conclusion suggests the possibility of therapeutic applications apart from the obvious one in conditions of marasmus associated with a lymphopænia. We have seen that an abundant supply of the water-soluble B-vitamin stimulates the functional activity of the lymphoid tissue and increases the number of lymphocytes in the circulating blood. The administration of this vitamin may therefore have a favourable influence in the course of infections in which the defence depends on the activity of the lymphocytes. The old-fashioned administration of yeast to persons suffering from boils is perhaps an empirical application. Conversely it may be possible to inhibit the excessive production of lymphocytes in lymphatic leukæmias by withholding this vitamin. Another more obvious application which would appear to follow is that persons undergoing treatment by X rays or radium, or working with these radiations should receive an ample supply of this vitamin in their diet. We are at present investigating whether the resistance of animals to radium can be increased by an abundant supply of vitamins.

Summary and Conclusions.

Absence of the water-soluble B-vitamin from the diet leads in rats and mice to an atrophy of the lymphoid tissue throughout the body and to a lymphopænia in the circulating blood. The polymorphonuclear leucocytes are not affected. Absence of the fat-soluble A-vitamin does not lead to an atrophy of the lymphoid tissue and there is no lymphopænia.

Absence of the water-soluble B-vitamin leads to characteristic nutritional disturbances such as loss of weight, emaciation, subnormal temperature which may be designated by the term "marasmus." No such marasmus results from withholding the fat-soluble A-vitamin.

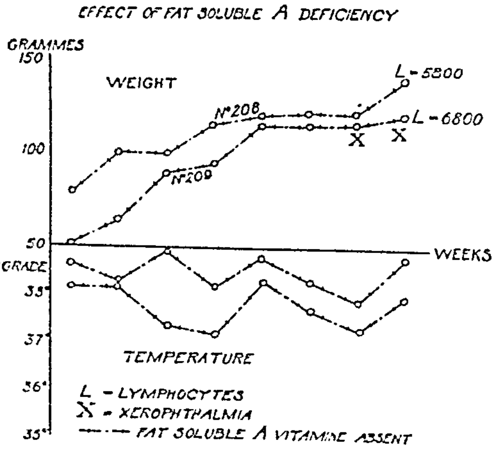
The lymphopænia *established by withholding the* water-soluble B-vitamin is rapidly abolished by the administration of the water-soluble B-vitamin and, *pari passu with it, the concomitant marasmus.* A permanent lymphopænia, and associated with it an atrophy of the lymphoid tissue throughout the body, can also be induced by exposure of rats to sufficient doses of X rays or radium. Such animals then also develop a condition of marasmus similar to that observed when the water-soluble B-vitamin is withheld. Since the functional disturbances in the lymphoid tissue produced by two such widely different agencies lead to the same nutritional disturbances it is concluded that the lymphocytes play a part of fundamental importance in the nutrition of the body. Other evidence points to the conclusion that they are concerned in the absorption and assimilation of food from the intestine.

Further evidence of the existence of an intimate relationship between the *functional activity* of the lymphoid tissue and the general nutrition of the organism is afforded by the fact that an abundant *supply of the water-soluble B-vitamin has a favourable* effect on the development of lymphoid tissue and the number of lymphocytes, and associated with it on the general nutrition of the animal. There is, further, the clinical experience that disturbances of lymphoid tissue are of special significance in infancy and are there frequently associated with nutritional disturbances.

The conception that vitamins—and the B-vitamin in particular—are necessary for the life of every individual cell is criticised. This vitamin is necessary for the maintenance of life of a highly differentiated generally recognised. It is usually attributed to the fact that the deficiency of the fat-soluble A-vitamin takes a longer time to produce its effect. The blood picture in an animal kept on a diet free from the water-soluble B-vitamin, but containing an ample supply of the fat-soluble A-vitamin is, like the general condition of the animal, identical with that just described for the complete absence of vitamins; a great reduction in the number of lymphocytes, especially the small lymphocytes, is found. The polymorphs show no change (Fig. 2, rat 212; Fig. 5, rat 211).

Quite a different condition is presented by an animal kept on a diet free from the fat-soluble A-vitamin, but containing an ample supply of the water-soluble B. In a typical experiment these animals do not show a gradual fall of the temperature, and even in the last stage do not show the profound emaciation of the water-soluble B deficiency (Fig. 4, rats 208 and 209). There is still a fair amount of fat in the body. A characteristic feature is their great susceptibility to infection, of which xerophthalmia is such a frequent instance that it has been regarded by some observers as a specific result of the absence of the fat-soluble vitamin. Other infections, however, may occur while xerophthalmia is absent. These animals do not show an atrophy of the lymphoid tissue (Fig. 1, rats 208 and 209), nor is the total number of lymphocytes in the blood less than that found in normal animals (Fig. 2, rat 208, 209, and 206). Observations on changes on the other elements of the blood are in progress.

FIG. 4.



Curves of weights and of temperatures and number of lymphocytes of two rats kept on a diet free from vitamin A alone, but containing an abundant supply of vitamin B. One of the rats developed xerophthalmia. (Compare with Fig. 3.)

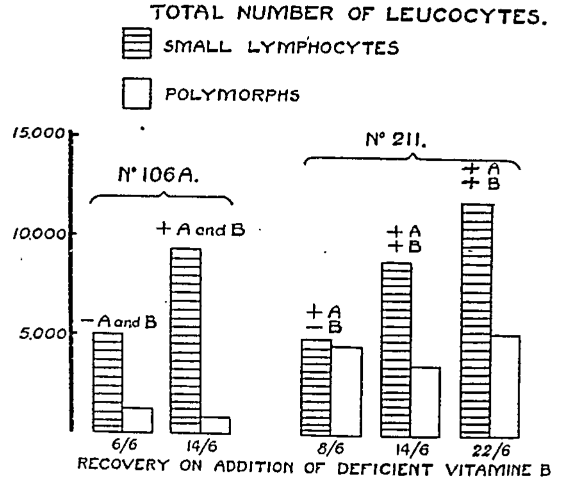
For the purpose of this paper we only refer to the typical condition produced by withholding the A-vitamin alone in order to emphasise that it differs entirely from that produced by the absence of the B-vitamin, both as regards the functional activity of the lymphoid tissue and the general nutritive condition of the animal. The two conditions are contrasted in Table I.:—

TABLE I.

	Lymphoid tissue.	Number of lymphocytes.	Temperature.	State of nutrition.
Absence of—				
Vitamin A ..	Not atrophied	Normal.	Normal.	No emaciation.
Vitamin B ..	Atrophic.	Diminished.	Subnormal.	Emaciation.
Vitamin-A & B	,,	,,	,,	,,

No less striking than the atrophy of the lymphoid tissue, when the water-soluble B-vitamin is withheld, is the recovery of this tissue when this vitamin is added again to the food. Thus in rat 211 (see Fig. 3), which had been kept on the basal vitamin-free ration and cod-liver oil for five weeks, the total number of lymphocytes had fallen to 4800 at a time when the temperature had become very subnormal (35·6°). The weight was then 80 g. The water-soluble B-vitamin was then added in the form of yeast. Within six days the total number of lymphocytes increased to 8800; after another week it had risen further (see Fig. 5) to 11,800. This rise was accompanied by a complete change in the general appearance of the animal, which rapidly increased in weight to 130 g. in two weeks and had a normal temperature. (Fig. 3.)

FIG. 5.



Total number of leucocytes in vitamin deficiency and recovery after the deficient vitamin has been supplied. Rat 106A had been kept on a diet free from both vitamins A and B for seven weeks until 6/6, when both vitamins were added to the diet. Rat 211 (see Fig. 3) had been kept on a diet containing an ample supply of the fat-soluble A, but deficient in water-soluble B for five weeks until 8/6, when the deficient vitamin was added.

In rat 106A (see Fig. 5), which had been kept on a completely vitamin-free basal ration for seven weeks, the total lymphocytes were found to be 5000. Then both vitamins were added and 12 days later the count gave 9900 lymphocytes. There is also a rapid increase in the size of the spleen and thymus, and the Peyer's patches stand out again very prominently. When one considers the extreme degree of atrophy of the thymus in the absence of the B-vitamin, it is astonishing to see the large mass of tissue in an animal which has received the water-soluble vitamin for only a few days (7–10 days). Histologically the various lymphoid tissues show a very active formation of small lymphocytes. Accompanying this change in the lymphoid tissue is the well-known effect on the general nutrition of the animal. It rapidly puts on weight and gets fat, its ordinary adipose tissue getting well loaded with fat.

A Specific Function of the Lymphocyte.

These observations indicate that a specific relationship exists between the water-soluble B-vitamin and lymphoid tissue in the sense that the formation of lymphocytes is impaired in the absence of this vitamin. As a result of our observation the following conception of the mode of action of B-vitamin deficiency has been arrived at: *the lymphocyte has an important and specific function in maintaining the nutrition of the cells of the body, and the disturbances in nutrition which follow the withholding of B-vitamin are secondary to a specific lesion which leads to an interference with the functional activity of the lymphoid tissues.*

This conception will now be considered under the following headings: (*A*) Observations show that an ample supply of vitamins, as compared with a supply restricted but adequate to enable the animals to grow, to breed, and to maintain them in all respects in normal health, has a favourable effect on the functional activity of the lymphoid tissues and on nutrition.

Cowgill[4] utilised these results as a test for the presence of vitamin B in natural food-stuffs. He found that the potency in promoting appetite ran parallel to the potency in relieving symptoms in polyneuritic animals.

Lumière[5,6] fed pigeons with decorticated rice and noticed a marked diminution of intake. There was evidence of stasis in the upper part of the digestive tract. The rice was seen to lie as a compact mass in the stomach. Trituration was defective, and the onward passage of the bolus through the pylorus was greatly delayed. There appeared to be a condition of deficient glandular secretion and hypotonus of the intestinal wall. A small dose of extract of rice polishings provoked abundant glandular secretion and stronger intestinal movements which resulted in rapid *evacuation of the masses of polished rice lying in the upper* intestine. He found that these animals die sooner than starving animals, and quotes Forster, who obtained similar results in dogs.

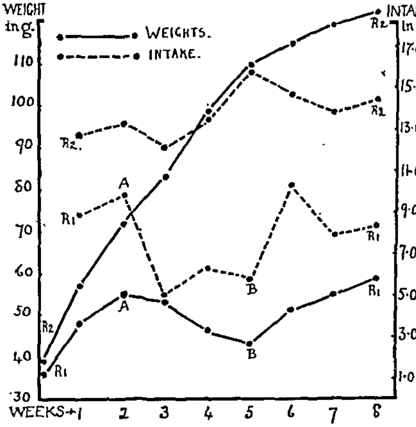


Chart showing weight and intake curves of two rats. R 2: both vitamins administered throughout. R 1: both vitamins administered at first. At A both vitamins were removed; at B a trace of marmite was added to diet. Note sudden falling off of food intake at A and rapid recovery at B.

There appears, therefore, to be a considerable accumulation of evidence that the appetite is adversely affected by the absence of vitamin B from the diet of animals. It is insufficient, however, to state that the vitamin acts by diminishing appetite. Appetite is a general conception, the physical expression of which is the food intake. The problem still remains to explain why the intake is lowered when the vitamin is withheld. It is a general experience that on post-mortem examination of rats fed on diets deficient in vitamins A and B to find the stomach full of food and active fermentation in progress. Sometimes the stomach is definitely dilated. This finding suggests that there is *some defect in the power of the stomach* to deal with its contents and propel them farther down the intestinal canal. *Lumière, too, found the food lying as an inert mass in the stomach* of the pigeons experimented on. From a study of the work detailed, it is suggested that the diminished intake may be accounted for quite simply in the following way. The contractions of the stomach wall are weak, the secretion of the gastric glands is defective, and as a result the stomach is never empty. It is always partly distended with fermenting material. Hunger contractions do not take place, the craving for food becomes low, and the intake falls off considerably. *This theory, that the defect lies in the stomach*, receives valuable support from the fact that the animal responds so very rapidly to the re-addition of the vitamin to the diet. In rats the rise in intake is marked at the end of 24 hours. In pigeons, rapid evacuation of the contents of the intestinal canal occurred immediately after administration of the vitamin. Admitting the fact of lowered food intake, it must be borne in mind, however, that the loss of weight shown by the animals, and their ultimate *death, can still only be partially accounted for.* In Drummond's experiments,[1] improved intake was obtained by adding flavouring agents to the diet; *growth, however, only occurred when the vitamin* was added. In one of Karr's dogs, though the intake remained high in the absence of the vitamin, general symptoms of the vitamin deficiency developed. Forster's experience, that dogs succumbed more rapidly on a vitamin-free diet than when completely deprived of all food, is also very significant.

It may be concluded with some degree of assurance that vitamin B produces its effects by acting primarily, if not solely, on the intestinal canal. In its absence muscle-tone is diminished, peristaltic movements are weak, and there is a reduction in the amount of digestive juice secreted. As a result, stasis occurs, the appetite flags, and the food intake falls off considerably. It is almost certain, however, that the animal is still consuming sufficient to enable it to survive for considerably longer periods than it actually does. *The explanation for the early decline may perhaps be found in the changes which occur to the food which is retained for an abnormally long time in the intestine.* Fermentation soon sets in and toxic bodies may be produced which adversely affect the general health of the animal, death resulting from the combined effects of all the factors mentioned.

Conclusion.

Vitamin B acts by facilitating the efficient carrying out of the functions of the intestinal canal. The main effects produced by the absence of the vitamin—i.e., diminished food consumption, loss of weight, and ultimate death—are due to intestinal stasis and the absorption of toxic bodies which results therefrom.

The expenses of this research have been partly defrayed by a Government grant made through the Royal Society. The prepared palm-kernel oil was kindly presented to me by Messrs. Lever Bros., to whom I tender my thanks.

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AORTIC INCOMPETENCE:

A CLINICAL STUDY.

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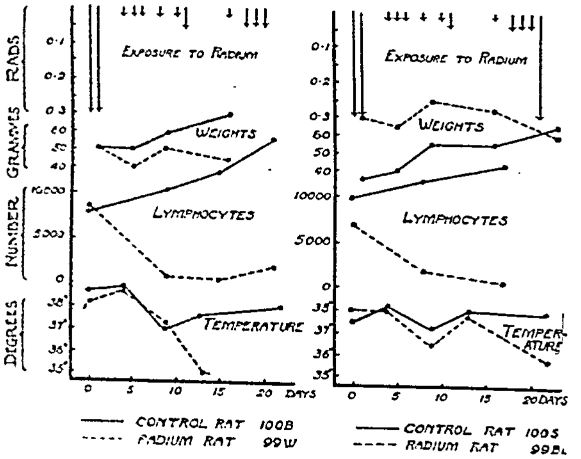
The following analysis of cases of aortic valvular disease was undertaken largely with a view to discovering, if possible, those untoward signs in routine clinical examination which might possibly be utilised to give some warning of the sudden terminal event which so frequently disconcerts the patient's relatives and the physician in charge of the case.

Material and Incidence.

Fifty cases have been taken in the unselected order of their coming under hospital care, and form one section of a series of about 400 heart cases which have been examined. Thus aortic disease would constitute 12½ per cent. of the cardiac cases, a much lower proportion than that found at the Edinburgh Infirmary (Gillespie, Edin. Hosp. Rep., 1898). The lower percentage is no doubt accounted for by the large number of cases sent to a heart clinic nowadays and classified under the heading "effort syndrome." *In no instance in this series was a diagnosis of aortic stenosis made*, the only cases showing a thrill at the base of the heart being such as were shown by X ray to have an aneurysm. The average age of the series was 38 years, the youngest patient being 21 and the oldest 67. Only five cases occurred in women and 40 of the cases were married.

the difference in the length of the arrows giving an approximate indication of the amount of exposure in rads applied on different days. All the four rats exposed to radium reacted in the same way: cessation of growth, fall of temperature, and lymphopænia. When killed the animals showed macroscopically atrophy of the lymphoid tissues; the Peyer's patches were difficult to identify, the thymus had disappeared almost completely, the spleens were very small; in three of the animals the splenic weight was determined and found to be 40 mg., 90 mg., and 110 mg. respectively. Microscopically these tissues were depleted of lymphocytes, and cell division of the plasmoidocytes is infrequent. The figure illustrates the effects of radiation on growth, temperature, and number of lymphocytes with reference to two of the rats, and demonstrates clearly the great similarity to the condition presented by animals in which the lymphoid tissue is undergoing atrophy as the result of withholding the water-soluble vitamin B.

FIG. 7.



Effect of exposure to radium on the body-weight, temperature, and number of lymphocytes. The amount of exposure to radium measured in rads is indicated approximately by the length of the arrows.

C. *Function of Lymphoid Tissue with Relation to Nutrition.*—What is the nature of the function of the lymphoid tissue in relation to nutrition? Unfortunately our knowledge of the function of the lymphoid tissue has hitherto been very obscure in spite of the large amount of work that has been devoted to it. We know very little concerning the condition determining the formation of lymphocytes. The problem of the fate of the lymphocytes is also not yet solved.

From observations on the number of lymphocytes entering the blood stream by the thoracic duct Davis and Carlson[6] conclude that many more lymphocytes enter the blood with the lymph in the course of 24 hours than can be found in the blood at any given time. Bunting and Houston[1] have confirmed this conclusion. They calculate that 3,300,000,000 cells enter the blood stream during 24 hours. Since the number of lymphocytes in the circulating blood remains approximately normal, lymphocytes must either constantly be undergoing disintegration within the body or leave the blood stream. It is probable that both these processes take place. Lymphocytes may temporarily leave the blood stream and return to it by the thoracic duct. Another fraction may leave the body altogether, as Bunting and Houston suggest, by passing through the intestinal mucous membrane into the lumen of the intestine. It is certain from histological evidence that a disintegration of lymphocytes takes place in the lymphoid tissue. But what determines the disintegration of lymphocytes, and what relation there is between disintegration and new formation of lymphocytes, are questions to which no certain answer can as yet be given.

There is evidence that the lymphocytes take a part in the absorption of food from the intestinal canal, where they are present in large numbers in the villi. Fatty substances on account of their specific staining reactions can be shown to be absorbed by lymphocytes.[24] Such histological evidence cannot at present be brought for the nitrogenous constituents of the intestinal contents. But chemical evidence to that effect was furnished by one of us, who showed that during digestion the corpuscular elements of the blood are richer in non-coagulable nitrogen than during sting.[4] This and observations on the absorption of tein introduced parenterally led to the conclusion that the leucocytes take a part in the absorption of the nitrogenous food materials.[3] There are, therefore, two channels by which food material is absorbed and utilised; it is carried partly in solution in the fluids of the blood and partly it is ingested and carried by the cellular elements, presumably the lymphocytes. The passage along the path represented by the lymphocytes is impeded when a lymphopænia has been established either by withholding the water-soluble B-vitamin or by exposure to radiation, and disturbances in nutrition leading to marasmus ensue. There is evidence that the absorption of food is impaired in yet a different manner, when the water-soluble B-vitamin is withheld. Rats kept on the vitamin-free basal ration show, when killed four hours after the food has been given, a stomach distended with food. The intestine is more flaccid and more dilated than in an animal which has received the same ration with the addition of the water-soluble vitamin, and the peristaltic movements are less powerful. The blood-vessels in the pyloric portion of the stomach and in the intestine are not so dilated. This effect on the intestinal tract is an immediate one and occurs at once when the water-soluble vitamin is withheld. The explanation of this apparent general paresis of the intestinal tract requires further investigations. It accounts, perhaps, for the reduced intake of food which, as several observers have noticed, occurs when the water-soluble vitamin is withheld and which so far has received no satisfactory explanation. As shown by the well-filled stomach, the animal does not decline to take food when the water-soluble vitamin is withheld, but the intestinal tract appears to be unable to deal with the food as efficiently as when the vitamin has been given; therefore the capacity to take food is limited. Our attention has been drawn recently to a paper by Lumière,[16] who describes a similar effect in pigeons as the result of feeding on polished rice.

It might be held that the reduced intake of food is in itself an adequate explanation of the condition of marasmus, which is the result of the deficiency of the water-soluble vitamin. This possibility has been considered by Hopkins and later by Drummond,[2] and they are agreed that the reduced food intake is not in itself an adequate explanation of the decline in health which the animals undergo. This view has received confirmation recently by the observations of Karr[14] on dogs. These animals also showed a reduced food intake when the water-soluble vitamin was withheld. But one dog exceptionally maintained its normal food intake. Nevertheless, it, too, passed into the same abnormal condition as the other dogs with a reduced food intake.

Jolly[12] and his collaborators[13] have made an extensive study of the effect of acute and chronic starvation on the lymphoid tissue. They found an atrophy of this tissue, especially of the spleen and thymus, accompanied by a great rarefaction of lymphocytes; in fact, a condition similar to that occurring after radiation and after withholding vitamin B. They also state that chronic underfeeding produces a more intense atrophy than acute starvation. They do not appear to have examined the circulating blood for a lymphopænia. As a result of his observations Jolly[12] looks upon the lymphoid tissue "comme un tissu renfermant des réserves précieuses, d'une grande noblesse au point de vue de la constitution chimique auxquelles l'animal peut faire appel à certains moments. . . . . Le tissu lymphoïde nous apparait ainsi à la fois, comme une réserve de cellules sanguines et comme une réserve de constituants nucléaires." Further observations are necessary to determine whether starvation alone produces as marked a lymphopænia as the withholding of the B-vitamin. In man observations have been made only with reference to the total number of leucocytes, and the effects are apparently not constant. Von Noorden[21] states that in his clinics low numbers—3000 to 4000 total leucocytes—were frequently found in persons emaciated from underfeeding. But he also quoted other observers who have obtained nearly normal figures in such cases. Different results were also obtained on one and the same man, the fasting man Succi; Luciani[15] records a fall from 14,530 to 861 per c.mm. between the first and seventh day. Then they rose to 1530 per c.mm. and remained there throughout his 30 days' fast. In Vienna, however, Tauszk[27] recorded on the same person on another occasion a more gradual diminution from 9600 on the third day to 4200 on the thirtieth and last day of the fast.

Human pathology furnishes further evidence in support of the intimate relation of the lymphoid tissue to nutrition. The blood of infants and young children is particularly rich in lymphocytes, and during the first year gives figures as high as 8000–10,000 per c.mm.[7 11] The lymphocytes then gradually diminish in number, but the level of 2000 per c.mm. which persists throughout adult life is not reached until the sixth year. The fact that disturbances of the adenoid tissue are of special significance in childhood and are frequently associated with disturbances in nutrition[11] is well known. There are, moreover, in infants conditions of marasmus which cannot be ascribed to neglect or deficient

Irregularity occasionally noted in four cases; pulse delay in the radial only noticed twice, but was not particularly looked for. Of the cases not recognised as having a collapsing pulse, all but two had also a presystolic murmur; of these two exceptions, one was found post mortem not to have aortic incompetence, and the other had only a small heart giving rise to no symptoms.

Blood pressure.—Brachial blood-pressure readings (with a Tycos instrument and the auscultatory method) were taken in nearly every case. In eight cases the systolic pressure was 120 mm. Hg or less. In all the rest it was above this normal. The difference between systolic and diastolic pressure was usually extremely well marked, in some cases no diastolic reading being possible. The average difference between systolic and diastolic readings was 85 mm. Hg. No observations were made with regard to arm-leg differences.

Aneurysm.—A definite aortic aneurysm, proven by X ray examination, was found to be present in nine cases, in all of which the W.R. was positive, and the electro-cardiographic left-sided preponderance was very marked indeed.

Lungs.—No lung changes were found in these cases, except the basal crepitations indicating œdema from cardiac failure, and these only in such cases as died in hospital.

Œdema.—The same may be said of œdema generally, and no history of recurrent œdema of ankles was obtained from these patients except in two cases complicated by lesions of other valves and known to be suffering from auricular fibrillation.

Of the three cases which died of slow progressive general anasarca no history of previous cardiac failure was obtainable. One patient, who had advanced renal disease, was said to have occasional variable œdema of the ankles.

Vomiting.—Vomiting was only complained of by patients when there was evidence of grave cardiac disability, and its appearance heralded the end. It occurred—but only as a very late event—in three out of the four patients who died suddenly. One patient ate his breakfast prior to coming to hospital, on his weekly visit, said he felt sick, immediately vomited, and fell dead.

Liver.—Hepatic enlargement was only found when there was other evidence of cardiac failure, except in one case where an alcoholic history, the consistence of the organ and its freedom from tenderness, seemed to justify the additional diagnosis of hepatic cirrhosis.

Spleen.—The spleen was found enlarged and palpable in nine cases. In five of these malaria was known to have occurred in the past, one patient was known to have hepatic cirrhosis, which condition was thought to account for the enlargement. Four cases were diagnosed as subacute bacterial endocarditis, and one as ulcerative endocarditis. In this connexion the frequency with which a past malarial history is obtained in these cases of subacute endocarditis appears to be greater than the fortuitous coexistence of the two diseases would warrant. There seems evidence for the belief that malaria in aortic valve lesions of old standing is liable to determine the onset of this complication.

Eyes.—Routine examination of the fundus oculi was made and pulsating retinal vessels were occasionally observed but in six cases definite retinal changes were found—1 bilateral syphilitic choroiditis, 1 bilateral optic atrophy (tabetic), 2 retinal hæmorrhages (renal; both cases dead), 2 retinal hæmorrhages (in subacute endocarditis; both cases dead).

Kidney.—The renal function was investigated by the urea-concentration test in 39 cases. Response was found to be below normal in eight cases—3 of renal disease, 1 with auricular fibrillation, and 4 with red blood cells also present, and thought to be cases of subacute endocarditis.

Tenderness.—Hyperalgesia was investigated in all cases and in only seven was any tenderness elicited, although so many of the patients complained of præcordial pain or discomfort. In two cases which gave a history resembling, if not identical with, angina, both showed marked tenderness. Two other cases, both with large hearts, showed a tender spot at the left seventh costochondral junction. The rest had only slight præcordial tenderness.

Exertion.—In nine cases the exercise tolerance was quite good, and these patients possessed little or nothing in the way of symptoms except one patient, a tabetic. The rest of the patients had a very poor response to exertion, becoming distressed and breathless on very slight provocation.

X ray.—The routine radiographic examination which was made gave most valuable information, both as finally deciding the presence or absence of an aneurysm and also in corroborating the clinical findings with regard to the cardiac size and shape. The typical aortic form of heart was reported in almost every case.

Other Diseases and Mental Change.

Other diseases were found to coexist in these patients, but always in some way related to the cardiac condition. Thus, to recapitulate: 1 ulcerative endocarditis, 4 subacute endocarditis, 1 active syphilis, 1 tabes, 1 hepatic cirrhosis, 2 nephritis. In no case was any mental change noticed in the patients except in the tabetic, who constantly professed himself very fit indeed in spite of his manifestly parlous state. He showed no other indications of G.P.I. beyond this and his optic atrophy.

Diagnosis.

Very little evidence is available to show how frequently errors of diagnosis are made in aortic disease. Several cases had murmurs difficult to hear either by direct auscultation or with any form of stethoscope. Much help was obtained by bending the patient well forward and listening along the aortic course, but it is essential to keep a firm grip on these patients, as their vertigo is always increased by this manœuvre, and they are very liable to fall. In one case at least a diagnostic error was probably committed, and this in spite of the fact that the possible fallacy was thought of and discussed. The patient had advanced renal disease with retinal hæmorrhages, urgent dyspnœa, and signs of a very large pericardial effusion. There was a systolic murmur and an impure first sound at the apex. Diastolic murmur was not audible at the base, but was heard at the fifth left costal cartilage, soft and blowing in character. The second sound was easily heard. The possibility of pericardial friction was discussed, but ruled out on account of (*a*) the character of the sounds, and (*b*) the size of the effusion. Operation was undertaken later to remove the pericardial fluid in the hope of relieving the respiratory distress. This was to some extent successful, but the patient died four days later. At the post-mortem there was some sclerosis of the aortic valve segments, but no regurgitation to the water test.

Circulatory Conditions.

Much help was obtained from electrocardiographic tracings, conditions being revealed which could not otherwise have been made out.

P.R. interval.—No case of heart-block was found in this series, but the P.R. interval exceeded the normal in four cases—one of rheumatic disease with left-side preponderance who remains well, two of arterio-sclerosis (one died from heart failure, the other shows retinal hæmorrhages), and one case of subacute endocarditis who died suddenly.

Inversion of T.—The inversion of T in lead 2 in the absence of digitalis administration was found in four cases—1 syphilitic aortic disease with right-sided dominance, 1 rheumatic disease with left-sided preponderance, cardiac asthma and angina, 1 arterio-sclerosis, and the case of pericardial effusion which showed no aortic incompetence at post-mortem. All four of these cases were clinically very ill.

Q.R.S. interval.—No case in this series was found showing a Q.R.S. complex exceeding the normal period.

Left-side preponderance.—It was thought that if a left-sided hypertrophy were the response to mechanical aortic damage, its absence should indicate a want of recuperation on the part of the patient; except where a coexisting mitral stenosis might occasion a right-sided preponderance (R.S.P.). Investigation along these lines gave the following results: General condition remarkably good in 8 cases. R.S.P., 3; L.S.P., 3; no change, 2. General condition remarkably bad in 11 cases. R.S.P., 2; L.S.P., 8; no change, 1. Obviously the degree of regurgitation would form a large factor in the resulting hypertrophy. Estimation of the grade of regurgitation was attempted with the following results: Slight, 15 cases: L.S.P., 6; R.S.P., 5; no change, 4. Grave, 25 cases: L.S.P., 17; R.S.P., 4; no change, 4. Of those cases showing a grave degree of regurgitation and no change in the electrocardiogram two are already dead. Among the tracings a left-sided preponderance was found 21 times. In 15 of these the cardiac enlargement was marked and aortic in type, in 2 cases the clinical enlargement was slight, while in 4 cases no enlargement was made out. Of these 21 cases 5 had a presystolic murmur; 8 were thought to be rheumatic, 9 syphilitic, and 4 arterio-sclerotic.

Right-side preponderance.—Nine such cases were found; 4 had a presystolic murmur, 5 were considered rheumatic in origin. There was no evidence for regarding the R.S.P. cases as more serious than those showing L.S.P.

P.-wave or auricular wave.—An examination of the P. wave as regards magnitude and duration gave no help as regards the presence or absence of true mitral stenosis. Seventeen cases gave a P. deflection exceeding 3 mm. in lead 2, and of these only 6 had a presystolic murmur. In 5 the P. wave was split, but only one had a presystolic murmur, and animal, not because its presence is necessary for the life of all the cells of such an animal, but because its presence is necessary for the normal functioning of lymphoid tissue. In other words, the term "deficiency diseases" is, like the term "vitamin," a misnomer. These diseases have their origin, like other diseases, in specific lesions. These lesions may be induced by different agencies of which a deficiency in vitamins is only one.

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THE EFFECT OF B-VITAMIN ON THE APPETITE.

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YOUNG rats fed on diets deficient in vitamin B lose weight after varying periods of time and finally die in a condition of emaciation. It was thought interesting to determine whether diminished food intake was a contributory factor in this loss of weight. Young rats from the same litter were employed. All the animals were fed for the first two weeks on a basal ration containing vitamin A and B in the form of cod-liver oil and marmite respectively. The basal ration was the one usually employed by workers in this field and contained purified caseinogen, starch, and a salt mixture. As a source of fat containing no vitamin A a specially prepared form of palm-kernel oil was used. It consisted of an edible quality of palm-kernel oil which had been heated for four hours at 160° C., and subsequently treated with superheated steam at 230° C. Experiments (unpublished) have been carried out with this substance, which show that palm-kernel oil, after such treatment, is quite free from the fat-soluble A vitamin.

Method of Experiment.

The rats were kept in metabolism cages in a warm room. The food—placed in beakers which were firmly fixed in the cage so that no spilling could occur—was presented twice a day, in the morning and evening, and on each occasion was allowed to remain in for a period of one hour. The average daily intake of each animal on such a diet was thus determined. After two weeks both vitamins were removed from the diet of certain of the rats. The others were kept on the diet rich in vitamins, and served as normal controls. At once, within 24 hours, the animals receiving the vitamin-free diet showed a considerable fall in their food intake. The level of intake remains low throughout the period that this diet was maintained. At the same time there was also a steady decline in the weights of the animals. Thus, one of the rats which had been consuming on an average 9·37 g. daily now only took 5·64 g.; during this period, too, its weight fell from 55 g. to 43 g. The control animal fed on a diet rich in vitamins maintained a daily intake of 14·20 g. and its weight rose from 72 g. to 110 g. (Table I.)

TABLE I.

Week of experiment.	R 1.			R 2.		
	Diet.	Average daily intake.	Weight 36 g.	Diet.	Average daily intake.	Weight 39 g.
		g.	g.		g.	g.
1	Normal	8·95	48	Normal	12·6	57
2		9·79	55		13·1	72
3	Vitamin-free	4·8	53		11·98	83
4		6·41	46		13·7	99
5		5·73	43		15·94	110

A trace of marmite was now added to the diet of the vitamin-free animals. It was administered separately in the mornings about two hours before the first feed. The marmite was eagerly consumed by the animals. The intake of the basal ration at once rose and at the same time the weights began to improve. The improvement in intake was as rapid in onset as the fall had been after the removal of the vitamins. In the case of the above-mentioned animal the intake rose from 5·73 g. to 8·66 g. daily. The weight rose from 43 g. to 59 g. in a period of three weeks. It should be noted that the intake never reached the level attained during the period when both vitamins were administered. (Table II.)

TABLE II.

Week of experiment.	R 1.			R 2.		
	Diet.	Intake.	Weight.	Diet.	Intake.	Weight.
		g.	g.		g.	g.
6	Vitamin-free and trace of marmite	10·22	51	Normal	14·6	115
7		7·66	55		13·8	120
8		8·22	59		14·2	123

Previous Experiments Summarised.

The literature on the subject is not very extensive.

Drummond[1] has investigated the protein metabolism in rats fed on diets containing no vitamin B. He was unable to detect any abnormality sufficient to account for the inability to maintain weight. During the course of these experiments he noted that the food-consumption of the rats fed on the diet deficient in vitamin B was reduced. Increased consumption could be brought about by the addition of flavouring agents to the diet. The same effect was produced by the addition of water-soluble vitamin B. Only when the vitamin was added, however, was there any resumption of growth. Drummond[2] has also shown that there is no disturbance of fat absorption in the absence of the fat-soluble vitamin A from the diet.

Karr[3] carried out experiments on dogs, in which weighed quantity of food deficient in water-soluble vitamin B was presented to the animals. At first the portion was completely consumed. Subsequently most of the animals refused to take a part, and ultimately failed to eat any. The desire to eat could be restored on addition of vitamin B. The same result was obtained if the vitamin was presented apart from the food. In the case of one animal, although the intake remained normal, the usual symptoms produced by the vitamin deficiency made their appearance.

These tubes were incubated for 18 hours, and a loopful was then plated on MacConkey. Time did not admit of the use of the brilliant-green method in all cases. It would appear that this method leads to an increase in the number of non-lactose-fermenters isolated. The control experiment of incubating plain peptone-water tubes for the same period was, however, not performed. From the MacConkey plate colonies were picked off and planted into glucose peptone water, and, after 24 hours' incubation, a loopful from the glucose tube was plated on MacConkey, and a single colony selected from this final plate for complete investigation. All sugar tubes were sterilised by heating them to 100° C. on three successive days for 15 minutes. The sugars used were glucose, mannite, maltose, saccharose, and dulcite, and were supplied by Baird and Tatlock, litmus being used as the indicator. The sugars were present in 1 per cent. solution, except in the case of lactose, which was added to 3 per cent. All sugar tubes were incubated for three weeks before they were finally discarded; this revealed the presence of numerous late-lactose-fermenters, which on MacConkey and for the first few days in the 3 per cent. sugar tube produced no recognisable fermentation of lactose.

Indol.—Tested for by the ether-extraction method. The Voges-Proskauer test was applied to some of the organisms, a three-days' growth at 37° C. in glucose broth being well shaken up with a 10 per cent. caustic potash solution. No positive results were obtained with this test with any of the organisms described below; it is possible that the potash solution was not sufficiently strong.

Motility.—Investigated in hanging-drop preparations, 18-hour broth cultures being used. In certain doubtful cases control preparations were made in 5 per cent. carbolic acid.

Gelatin.—Twenty-five per cent. gelatin was employed, to ensure the medium remaining solid at laboratory temperatures. Tubes were kept under observation for six weeks.

Lead acetate agar.—Slopes were inoculated between the agar and the glass. Blackening was observed both in the medium and in the surface growth which developed at the point of insertion of the needle. It appears advisable to add the acetate as late as possible to the cooling agar, many batches proving useless in which the temperature of the agar appeared to be the disturbing factor. A time-limit seems necessary in employing this test, as many organisms will produce blackening if left for three or four days on the agar.

All agglutination tests were performed by the macroscopic method with unit volumes of 0·2 or 0·3 c.cm. Normal human serum controls were always employed. The tubes were incubated in a water bath for two hours at 37° C., and then for two hours at 56° C., confirmatory readings being taken overnight. Pipettes with rubber teats, graduated to 0·1 and 0·01 c.cm., were used in making the dilutions. Rabbits were used for the preparation of antiserums, the method of Chick and Dalyell being followed with excellent results.[2] In testing these serums a dilution of 1/4000 was the highest used, complete flocculation at this titre being regarded as sufficient indication for bleeding the rabbit. These locally-prepared serums, preserved with 0·1 per cent. carbolic, retained their efficacy for over a year, even under the inadequate conditions of storage prevailing at the laboratory.

In all, the stools of 38 normal natives have been examined, samples being taken on three successive days in the majority of the cases. Specimens were examined as fresh as possible—usually within one to two hours after the passage of the stool. As "normals" were considered healthy individuals, or hospital patients suffering from mild venereal disease or from minor ailments. Stools from 26 natives suffering from typhoid or dysenteric disease were similarly dealt with. Stools from 12 abnormal Europeans, all of whom were suffering from some kind of intestinal disturbance, were also examined, and one Indian stool from a case of typhoid.

The various groups of organisms will now be considered, and the relative frequency with which each of these groups occurred will be shown at the end of this section in Table II. For the agglutination tests in connexion with Groups 1 and 2 only two dilutions were used, of 1/40 and 1/500, the object being to obtain a rough idea of the serological affinities of the various strains with a minimal expenditure of time. The main characters of the groups are indicated in the subjoined Table I., following upon which will be found a brief account of the serological tests applied to each group. Each case receives a reference number, the various colonies isolated being distinguished by letters. Thus 113a, b, and f, all come from the same individual, No. 113.

Group 1.—Found in 2 abnormal natives, 10 normal natives, and 2 abnormal Europeans. Rabbits were prepared against three strains of organisms of this group—viz., 232e, 234g, and 247c—and the other strains were tested against these three agglutinating serums. Serum 232e gave complete agglutination at 1/500 with strains isolated from six different natives, and gave complete agglutination at 1/40 with a strain from a seventh individual, the 1/500 dilution with this last strain proving negative. With Group 1 strains from eight other natives, normal and abnormal, no agglutination resulted at either dilution. Serum 234g gave complete agglutination at 1/40, nil at 1/500, with a strain from a normal native. With 14 other strains of Group 1, isolated from different natives, normal and abnormal, no agglutination occurred at either dilution. Serum 247c gave complete agglutination at 1/500, with strains from four different normal natives. With eight other strains from different normal natives no agglutination occurred at either dilution.

These experiments showed also that Nos. 232e and 247c were nearly related, if not identical, strains, neither of which showed any serological affinity to No. 234g.

It is thus plain that at least two distinct serological races are included in Group 1, which is of fairly frequent occurrence in normal natives' stools in Uganda. Morgan found organisms of this kind occurring in as many as 11·7 per cent. of his cases, but they always gave a positive indol test.[3]

Group 2.—Found in 7 abnormal natives, 20 normal natives, 3 abnormal Europeans, and 1 Indian. Rabbits were prepared against two strains of this type of organism—viz., 234f and 247d—and the other strains were tested against these serums. Serum 234f gave complete agglutination at 1/500 with one strain (from a different individual); also complete agglutination at 1/40, trace at 1/500 with a strain from another individual; also complete agglutination at 1/40, nil at 1/500 with a strain from a third individual. Serum 247d gave complete agglutination at 1/40, nil at 1/500, with strains from two different individuals.

These experiments showed also that Nos. 234f and 247d have totally different serological affinities. Under the heading "blood cultures" further observations are made concerning this group of organisms.

Group 3.—Found in 2 abnormal natives and 3 normal natives. Rabbits were prepared against two strains, 100H and 113d, which came from a native typhoid and a native dysentery case respectively. Neither serum had any action with the heterologous organism. Serum 113d gave no agglutination with any of the heterologous strains tested, including five sent to me by the pathologist at Nairobi. Serum 100H gave interesting results. With two out of the three strains isolated from Uganda natives this serum gave complete agglutination in 1/1280. These two strains came from different individuals. Complete agglutination at 1/1280 (highest dilution employed) also resulted with one of the five Nairobi strains of Morgan's bacillus, the other four strains giving negative results at all dilutions.

In no case has the serum of the individual, normal or abnormal, from whose stool Morgan's bacillus has been isolated in Uganda given any agglutination with his own strain from 1/20 upwards. All the above agglutination tests were controlled with normal human serum. The third Uganda strain, 261a, isolated from the stool of a normal native, gave no response with either serum, and produced acid and clot in milk. This organism is therefore not to be regarded as a typical Morgan No. 1, and is accordingly not included in the percentages of Table II. Morgan found his organism in as many as 55·8 per cent. of his cases.[3] The recognition of serological affinity between three strains of Morgan's bacillus from natives, one from a native typhoid case in Uganda, one from a normal Uganda native, and the third from a dysentery outbreak in Nairobi is interesting.[1] The rôle played by this bacillus as a pathogenic agent is still doubtful, though workers for the Medical Research Committee have of late advanced reasons for regarding it as of some significance. The scanty evidence put forward above is insufficient to warrant any opinion on this point.

Group 4.—Found in 6 abnormal natives, 1 normal native, and 3 abnormal Europeans. Nos. 113a, 202, 257, and 174 gave no agglutination with either their host's serums or with a Burroughs and Wellcome (B. and W.) Flexner serum or with two locally-prepared Flexner serums. Nos. 211, 212, 213 gave no agglutination with the patients' serums or with B. and W. Flexner and typhus serums. All three organisms gave complete agglutination at 1/320 (highest done) with each of two monovalent serums prepared locally against two strains of Flexner bacillus derived from the Lister Institute.

Pathogeny.

The pathogeny may be considered under five headings, as follows :—

(1) *Rupture of a valve segment.*—One case may possibly have originated by rupture of a valve segment, but there is no conclusive evidence. The patient fell down a cliff side with a machine-gun on Gallipoli in 1915, was picked up unconscious, found to have a cardiac lesion, invalided home and out of the service, and died in hospital from cardiac failure with general anasarca. The diastolic murmur was always high-pitched and musical in quality. No post-mortem was permitted. No history or evidence of past rheumatism or syphilis was obtainable. The total duration of the disease was five years.

(2) *Acute rheumatism.*—There is considerable difficulty in separating the cases due to rheumatic endocarditis from those not so caused. Two methods were attempted, firstly by careful collection of childhood and adult histories with regard to rheumatic affections, including chorea, tonsillitis, scarlet fever, growing pains, &c. Thus 21 cases gave evidence of rheumatic fever : two other cases gave a history of severe sort-throat or scarlet fever which appeared to stand in direct causal relation to the disease. Two cases had suffered two attacks, and one case three attacks, of rheumatic fever. In only one case of the series was a history of rheumatic affections in the family obtained. Of the female cases all were definitely rheumatic in origin, except one case which at the post-mortem was found not to have aortic incompetence. In only 11 of the 21 cases was the cardiac lesion discovered at the time of the rheumatic attack. The second method attempted for separating the cases of rheumatic origin was from the character of the mitral lesion found. Rheumatic endocarditis is more likely to affect the mitral valve, giving rise to stenosis, than any other ætiological factor at present known. Sixteen cases were found to present a presystolic crescendo murmur at the apex. No attempt was made to differentiate the murmur of true stenosis from the Austin Flint murmur. In my opinion it is not usually possible. Of the 16 cases presenting two murmurs, aortic diastolic and mitral presystolic, there was a definite history of rheumatism in 11 cases, a positive Wassermann reaction (W.R.) in three cases, and evidence of arterio-sclerosis in two cases. It is probable that the presystolic murmur heard in the syphilitic and arterio-sclerotic cases was produced by the method to which Flint drew attention. No post-mortem evidence is yet available.

(3) *Syphilis.*—W.R.'s were tested in 45 cases ; 16 of them proved to be positive, 11 being positive 1 in 40 dilution of serum, and 5 positive 1 in 5 dilution. In four cases there was a history of rheumatic fever as well as a positive W.R. ; in two of these the cardiac lesion appeared to be the direct and immediate outcome of the rheumatism, but in the other two the heart lesion was found 18 and 26 years after the rheumatic attack, and was probably syphilitic.

(4) *Arterio-sclerosis.*—Twelve cases were found in which neither of the preceding ætiological factors were active. In seven of these the occupation was known to entail unusually heavy work, but in the other five cases the work was light. Two of these cases were found to have deficient renal function.

(5) *Infective endocarditis.*—With regard to an infective active endocarditis without associated rheumatic phenomena, one case had typical acute fulminating ulcerative endocarditis, and four other cases were regarded as subacute bacterial endocarditis.

Duration.

Of the fatal cases the time during which a cardiac lesion was known to have existed averaged only two and two-thirds years. Taking the whole series together the number of years the lesion was known to have existed at the time of examination averaged three and a half years, the period of collection being eight months. Of the 50 cases six were discovered incidentally in the course of general routine medical examination, and were entirely latent, giving no symptoms recognised by the patient. To this number must be added two other cases similarly found, which could not, on account of their nature, be added to this series.

Symptoms.

Pain.—Not severe in character, but recurring at fairly frequent intervals : pain over the præcordium occurred in 26 cases : anginal attacks in two cases ; three cases complained of epigastric pain.

Dyspnœa.—Occurred in all cases to some degree, reaching a serious point in six cases : asthmatic attacks repeatedly occurred in two cases, both of which also had anginal attacks. Twenty-one of these patients had some degree of orthopnœa, but in only five was it distressing.

Cough.—Troublesome from time to time in almost all the cases, but forming only in very few the outstanding feature of the disease, even for a short time.

Vertigo.—An almost constant symptom ; in several cases the reason for seeking medical advice.

Predisposing Causes.

Various causes have been regarded as contributing either to the actual production of disease or to the final breakdown.

Tobacco.—So far as this series is concerned, tobacco did not appear to affect the issue. Patients who had been heavy smokers, using more than ten cigarettes per day, or three ounces of tobacco per week, were not found ; but in all cases where the cardiac condition was giving rise to symptoms the patients volunteered the information that they had given up smoking as they found that it made them worse.

Alcohol.—There was good reason to believe that alcoholic excess had occurred in five cases. On the other hand, 17 cases stated that they were lifelong abstainers.

Games.—In no case was there reason to suppose that playing games stood in any causal relationship to the disease. Neither could it be used to determine the onset of the lesion ; several patients who had suffered an attack of rheumatic fever in early life played games successfully and without any difficulty in adolescence.

Work.—Known to have been unusually heavy in 27 cases —not an unusually high proportion in cases limited to the hospital class of patient. Five cases found in which the work was very light, and neither rheumatism nor syphilis had occurred.

Physical Signs.

The physical signs are as follows :—

Tremor.—Striking rarity of those fine tremors of hands and tongue so constantly seen in the effort syndrome cases. In seven cases tremor of hands was well marked, but all seven patients were obviously and seriously ill. In only one case was tremor of the neurasthenic type seen.

Pallor.—Noticed in 30 cases, slight in eight, very striking in six.

Clubbing.—Definite clubbing of fingers in ten cases, in none of which was any sign of a congenital lesion, but in four cases there were other signs of an active infection.

Petechiæ.—Much difficulty was encountered in determining the occurrence of petechiæ. In many cases, originally seen in the out-patient department, and later taken into the wards for observation, such petechial spots as were found around the neck, lateral aspects of thorax and abdomen, outer side of thighs, &c., entirely disappeared after a week in hospital. In only four cases were petechiæ satisfactorily demonstrated ; these all had an infective endocarditis and are already dead.

Vessels.—The apparently enlarged, tortuous, pulsating temporal artery was observed in 23 cases ; the violently pulsating neck vessels absent in only five cases. Capillary pulsation found 36 times.

Area of cardiac dullness.—This area, as determined by light percussion, was found materially enlarged in all but four cases, in which four there was other evidence that the aortic defect was only slight.

Position of heart apex beat.—Found to be as follows :— Aortic incompetence alone : fifth space, 11 cases ; sixth space, 22 cases. Aortic incompetence with presystolic murmur : fifth space, 6 cases ; sixth space, 11 cases.

The degree to which the apex beat extended beyond the left nipple line varied considerably, in four cases reaching as far out as the anterior axillary line. The character of the apex beat was normal in nine cases, in seven of which the aortic second sound was audible in the neck. The beat was powerful and heaving in 38 cases, but wavy and extending over several intercostal spaces in three cases—one of which had ulcerative endocarditis, one is thought to have subacute endocarditis, and the third has active syphilis, very thick vessels, and a small heart.

Murmurs.—Only three cases were found in which no murmur was audible at the apex. In 16 cases a presystolic crescendo murmur was audible. The diastolic murmur was itself heard at the apex in 34 cases, and in 10 cases only a systolic murmur was heard there. At the aortic cartilage a to-and-fro murmur was heard in 33 cases ; in the remainder of the cases a diastolic murmur only was heard, among the latter the murmur difficult to hear was encountered. In 21 cases the second sound was audible at the root of the neck ; in the remainder it was inaudible. As above stated, a presystolic murmur was found 16 times, and of these 16 cases, 11 gave a clinical history of rheumatic affections.

Pulse.—Varied in frequency at rest from 60 to 120 beats per minute ; definitely collapsing in character in 35 cases.

Group 10.—Found in 2 abnormal natives, and 2 normal natives. A high-titre agglutinating serum prepared locally against a *B. pyocyaneus* strain isolated from blood of native S. (cf. blood cultures below) agglutinated fully to 1/610 (highest dilution used) with two strains from two different normal natives.

TABLE II.—*Showing Percentage Occurrence of Various Groups in the Stools Examined.*

Group.	In abnormal natives (total 26).	In normal natives (total 38).	In abnormal Europeans (total 12).	In abnormal Indians (total 1).
1	7·6	26·3	16·6	—
2	26·9	52·6	24·9	—
3	7·6	5·2	—	—
4	22·8	2·6	24·9	—
5	15·2	—	—	—
6	3·8	2·6	33·2	—
7	11·4	2·6	8·3	—
8	11·4	7·8	8·3	—
9	5·2	3·8	8·3	—
10	5·2	3·8	8·3	—

Blood Cultures.

A small number of blood cultures were performed in connexion with the above investigations. On three occasions Gram-negative bacilli were recovered —twice from native S., whose disease resembled mild typhoid, and once from European W., who suffered from a low enteric-like fever lasting three weeks without any characteristic bowel symptoms.

Technique.—Blood was drawn from a convenient vein in the arm by means of a sterile all-glass syringe. At first the citrated blood was added to broth—with or without the trypsin suggested by Douglas[3]—and to sterile ox bile. Latterly the clot method was employed. The blood was allowed to clot in the test-tube, the serum removed, and the clot carefully washed with sterile saline. The washed clot was subsequently broken up with a sterile glass rod, and the fragments added to 2 per cent. sodium taurocholate in distilled water. All the three positive results were obtained by the clot method.

Clinical Description of Cases.

(*a*) *Native S.* (male). The following description was kindly supplied by Dr. W. L. Webb, medical officer, Kampala.

"S. was admitted to the gaol hospital on Oct. 16th, 1920, apparently on the first day he had felt indisposed enough to claim exemption from work. Temperature on admission, 100° F., rising that evening to 103° F. Blood negative to malaria; tongue coated almost completely with white fur; no enlargement of spleen could be made out, no rash was seen; a tendency to diarrhœa during first ten days. Stools typical of typhoid throughout. Temperature reached normal on fourteenth day of disease. The man was weak, and lost weight during his illness, but during the whole time was mentally alert. S. was transferred from Masindi to Kampala gaol during January, 1920. During his stay in gaol he has performed ordinary prison duties, cultivation, wood and water carrying, &c. No previous illness is noted on his sick sheet."

The patient's serum on Oct. 18th, 1920, gave no agglutination with *B. typhosus*. The available charts showed a gradual rise to 105° during the first nine days followed by a return to normal during the next four days. Unfortunately the temperature chart covering the date of the second positive blood culture is not available at the moment of writing, but to the best of my recollection a slight secondary rise occurred for a few days. At all events no marked rise occurred in connexion with the presence in the blood of *B. pyocyaneus*, a state of affairs in striking contrast to the usual course pursued in pyocyaneus bacillæmia in whites.

(*b*) *European W.* (female). The patient had been indisposed for a few days before admission. Bowels never loose throughout the illness; indeed, there was a tendency towards constipation. Tongue furred. Slight general tenderness to pressure on abdomen. Headache and general malaise were the main symptoms complained of, and the patient remained bright and comparatively cheerful throughout her stay in hospital. No rash was seen at any time. Patient's serum was tested on Jan. 14th, 1921, against *B. typhosus*, *B. para A* and *B*, *para C*, *M. melitensis* and *para-melitensis*, and *B. proteus* with negative results. On Feb. 16th, 1921, the serum was again negative to *B. typhosus*, *para A* and *B*, from 1/20 to 1/320 dilution. Patient ultimately discharged from hospital in excellent health. For the first 18 days after admission the temperature remained between 99° and 101°, on only four occasions passing 101° by a point or two. On the 11 following days the evening temperature reached 99°.

Description of the Organisms and their Serological Reactions.

(*a*) *From native S.* First positive blood culture performed on Oct. 21st, 1920. On the MacConkey plates inoculated from the 2 per cent. sodium taurocholate tube, and also from a glucose broth tube to which another portion of the clot had been added, a bacillus, No. 190f, was isolated in pure culture. This bacillus gave all the reactions of Group 2. The growth on agar tended to become sticky after a few days, and a pellicle was often noticeable in the sugar tubes. A second positive blood culture was obtained from native S. on Nov. 7th, 1921, when organism 190m, giving the reactions of *B. pyocyaneus*, was isolated in pure culture.

Serological Tests.—(1) *With organism No. 190f.* A rabbit was prepared against No. 190f, and a high titre serum was obtained which we will call serum 190f. On Oct. 29th and Nov. 7th, 1920, the patient's serum gave no agglutination with No. 190f from 1/20 upwards. Bacillus 190f was not agglutinated in any dilution, from 1/20 upwards, with any of the following serums: B. and W. *typhosus para A*, *para B*, a high titre serum prepared against the organism isolated from European W. (cf. infra), and the serum of European W. Serum 190f gave no agglutination from 1/20 upwards with organisms of Group 2 isolated from the stools of ten different natives, normal and abnormal; but it agglutinated completely to 1/320 (highest dilution tried) No. 236d, a member of Group 2, which was isolated from the stool of European W.

(2) *With organism No. 190m.* The patient's serum gave no agglutination response with No. 190m a few days after its isolation. A rabbit was prepared against No. 190m and a high titre serum, which we will call serum 190m, was obtained. This serum 190m gave rapid and complete agglutination to 1/320 (highest dilution tried) with Nos. 115a and 143c, which were typical pyocyaneus strains isolated at different times from the stools of normal natives.

The case of native S. is of interest in that two different organisms were isolated from the patient's blood on different occasions. On each occasion the organism found was present in pure culture. On the day on which No. 190f was isolated, clot cultures were made from nine other natives in the same ward, all of whom were suffering from acute Flexner dysentery (cf. Group 4, Nos. 211–213 of Table I.). The same technique was employed for all the cases, a sodium taurocholate and a glucose broth tube receiving portions of the clot from each individual. In eight of the nine dysentery cases both tubes remained sterile. In the ninth case the glucose broth tube was contaminated with a Gram-positive motile bacillus, the bile-salt tube remaining negative. On several other occasions in which clot blood cultures were made, the tubes remained absolutely sterile. In view of these control experiments, together with the unlikelihood of *B. fæcalis alkaligenes* obtruding as a contamination during carefully conducted blood culture experiments, I consider that Cases S. and W. are genuine examples of an invasion of the blood by the organisms isolated.

(*b*) *From European W.*—Isolated on Jan. 14th, 1921, by adding broken up washed clot to 2 per cent. sodium taurocholate in distilled water. The organism appeared in pure culture, and gave the reactions of Group 2, save that it rapidly blackened lead acetate agar. Clot blood cultures performed on patient W. on two other occasions, within ten days of the isolation of bacillus "W.," proved sterile.

Serological Tests with Bacillus "W."—A high-titre rabbit serum was prepared against the organism. This serum gave no agglutination in any dilution from 1/20 upwards with any of ten strains of Group 2 isolated from ten different natives, normal and abnormal. With No. 232a (a Group 2 organism from the stool of a normal native) this serum gave complete and rapid agglutination up to 1/320 (highest dilution used). Bacillus No. 232a differs from bacillus W. by producing no blackening on lead acetate agar. The serum of patient W. gave no agglutination on two different days, from 1/20 dilution upwards, with either bacillus W. or No. 190f (from native S.), or with bacilli of Group 2 isolated from the stools of four different normal natives, one abnormal European, and the patient's own stool (No. 236d).

Organisms Isolated from the Stools of Patients S. and W.

(*a*) CASE S.—On Oct. 29th, 1920, bacillus No. 102 was present in considerable numbers in the stool, which was of pea-soup character. This organism conforms with Group 1, save that it appears to be non-motile, that milk is turned acid (this requires confirmation), and that neutral-red is turned pink. It was thought that this bacillus might be a typhosus strain with some of its characters masked, but no response was given with either a B. and W. *typhosus* only one a history of rheumatism. Of the 17 cases, 6 had a rheumatic history, 5 a positive W.R., and 5 arterio-sclerosis.

Conclusions.

The prognosis in aortic disease remains almost as difficult a problem to-day as it was years ago. Nevertheless modern methods do give invaluable help in certain cases. Pathological increase in the P.R. interval or the duration of the Q.R.S. complex yields information as to myocardial damage which could not be arrived at by other means or could only be guessed at without any definite proof—e.g., P.R. interval increase, four cases. two already dead. Inversion of T. in lead 2, four cases. one already dead. and two others seriously ill. But this matter of "looking for a sign" remains as unprofitable in this century as in any other; it is only by utilising every method of investigation, old as well as new, that a correct estimate is likely to be arrived at in these difficult cases.

Active infections.—The careful and repeated examination of the urine for red blood cells, the systematic search for petechiæ, enlargement of the spleen, pallor and clubbed fingers—as indicative of the subacute bacterial endocarditis described by Libman and by Horder—is perhaps the most important procedure in the whole clinical examination of the patients, and only to a less extent, because less frequent, in all cardiac cases.

Ætiology.—Arteriosclerosis and renal disease, long regarded as ætiological factors, also demand special investigation, more particularly as regards renal function and retinal hæmorrhages. The W.R. and X ray examination both give invaluable help, especially as regards the occurrence of aneurysm, which, although present, may give no signs or symptoms at all.

Correlation of findings.—The correlation of all the findings will probably point the way, and each factor follow the expected line; yet in a certain number of cases this will not be so, and explanation of the anomaly may be extremely difficult. Where the size of the heart does not appear to correspond to the degree of regurgitation, as judged by the collapsing character of the pulse, difference in systolic and diastolic pressures, presence or absence of aortic second sound at the root of the neck, and the presence of L.S.P. in the electrocardiogram, the possibility of an adherent mediastino-pericarditis must be borne in mind; it was thought to be a possibility in only one case of this series. Of the 40 cases fully investigated, all the facts arrived at followed the expected line in 31, but in 9 cases the findings did not correspond in some particular. Of these nine cases 3 are already dead, 1 has an active endocarditis, 1 probably an adherent pericardium, and the other 4 cannot be at present explained. Those factors which herald a lethal result have already been sufficiently insisted upon. but it would seem that cases which show a want of correspondence in all the findings of a routine examination should also be regarded as of serious outlook.

I wish to thank Dr. Arnold Renshaw, pathologist, and Dr. J. M. W. Morison, radiologist, for much help in routine work, and the Pathological Department of the University of Manchester, whose generous grant made this work possible.

ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON.—In the last two decades great extensions have been made to this hospital. but circumstances have till now prevented a corresponding extension in the accommodation for nurses. The original nurses' home could provide lodging for 43 of the nursing staff; now the staff numbers 78. As far back as 1907 the matter became pressing, the provision of accommodation in rented houses involving discomfort to the staff in addition to being a costly procedure. In 1912 the governors had plans prepared for an extension of the original nurses' home; a special appeal for funds was made early in 1911, but the project had then to be abandoned, and it remained in abeyance until 1919, when a legacy of over £20,000 was left by Miss Walker. This legacy was treated as capital, and at a cost of £23,000 accommodation has now been found for 88 nurses. The extension to the nurses' home was opened by Princess Mary on Nov. 22nd, on the occasion of her first visit to Brighton in an official capacity. She also presented badges to nurses.

ON THE
NON-LACTOSE-FERMENTING BACILLI
IN THE STOOLS OF HEALTHY AND UNHEALTHY UGANDA NATIVES.
(*Preliminary Observations.*)

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THE establishment of a laboratory in a country where the bacteriological aspects of disease have hitherto received practically no attention entails a great deal of preliminary work in order to arrive at a proper appreciation of the limits of normal health for the community. In Uganda we have to deal with a mixed population of Europeans, Asiatics, and natives, many of whom are strangers in the land and only partially adapted to their environment. The native community includes members of many different tribes, accustomed to different dietetic and climatic conditions, and about whose nosology relatively little is known. In the Uganda Laboratory Report for 1920 a number of Arneth counts were published, which were made with the object of revealing the limits within which variation is compatible with normal health in the various communities. From the little that has been done in this direction it is already clear that considerable care must be used in basing conclusions on this test. The investigations recorded below deal with the non-lactose-fermenting Gram-negative bacilli present in the fæces of healthy and abnormal inhabitants of Uganda—coloured and white. Attention has been confined to non-lactose fermenters, because most of the recognised pathogenic intestinal organisms belong to this category. The work of Douglas and Colebrook and others for the Medical Research Committee has afforded a model upon which the inquiry was roughly moulded, and the results obtained are presented in the briefest manner possible in view of the paucity of the material examined and the relative incompleteness of the examination.

The observations here recorded represent the work of one session terminated by my departure on leave. During my absence the majority of the strains described below will be maintained on agar, to be re-examined when occasion offers. The small number of serological tests applied up to date is explained by the press of routine and other work on the limited laboratory staff. No absorption tests were possible owing to the absence of a suitable centrifuge, but it is hoped to overcome this difficulty next session. It was necessary also to dispense with pathogenicity tests, as the supply of animals was inadequate. The organisms isolated have been grouped provisionally according to the principal sugar reactions. It is realised that the sugar fermentation reactions of an organism do not constitute an infallible means of differentiating species, but they supply a convenient expedient in inquiry of this nature. At present Uganda is fortunate in being relatively free from enteric disease, but the knowledge that must accrue from an investigation of this nature will prove of value should a demand for a prophylactic vaccine arise in the future. It will be interesting to see whether the serological races indicated in some of the groups below will survive the test of absorption. The recognition of serological affinity among strains giving the reactions of Morgan's bacillus No. 1, and isolated in Uganda and Kenya Colony respectively, may prove of some significance in view of Pirie's observations on this organism in Nairobi.[1]

Technique.

A small portion of the stool was thoroughly emulsified in sterile distilled water in a test-tube, and after the emulsion had stood for some 15 minutes a loopful was spread on a MacConkey plate. Only one plate was used for each direct plating, and at times only half a plate. At the same time two or three loopfuls of the emulsion were inoculated into peptone-water tubes containing 0·4 and 0·6 c.cm. of a 1/10,000 solution of brilliant green per 10 c.cm. of medium

Balance of Calcium Metabolism.

In health, he said, the balance of calcium metabolism was controlled by the endocrine apparatus. The parathyroids, pars anterior of pituitary, medulla of suprarenal, with possibly the thymus gland, regulated absorption and fixation, while the gonads (ovary and testis) and possibly the thyroid, regulated excretion. In tetany, due to parathyroid insufficiency, the calcium content of the blood had been shown to be much reduced, while in acromegaly, due to hyperplasia of the pars anterior of the pituitary, there was increased deposit of fixed inorganic lime. The inactivity of the gonads during youth helped the growing child to keep and utilise lime, while the absence of ovarian secretion helped the pregnant woman to conserve lime salts for her child. Mr. Broderick had found that as the result of infectious fevers in children (with their concomitant overstimulation and final exhaustion of the endocrine glands) the saliva during convalescence was deficient in alkalinity and in calcium content. By the administration of suitable pluriglandular preparations a rapid recovery of alkalinity and normal calcium content could, in Mr. Broderick's opinion, be brought about. As a result of his researches into the alkalinity of the saliva, he had found that the alkaline index was higher in children than in adults, but the highest index occurred in old people who suffered from pyorrhœa. The alkaline index was generally low in ill-health and where progressive caries existed. It was his belief that the diminished alkalinity of the saliva which predisposed to caries was due to an upset in the balance of the endocrine glands.

The Antagonism of Pyorrhœa and Caries.

The endocrine glands, in the opinion of Mr. Broderick, were also responsible for the rate of utilising calcium ions. He had seen recently two pronounced cases of acromegaly where the teeth had been removed for pyorrhœa. Dentists knew that pyorrhœa and caries were antagonistic conditions, and that the former occurred with hard sound teeth that had withstood caries. In osteomalacia, where the reverse changes took place in the skeleton, the changes in the teeth had been carelessly reported on by medical men. Since bones harden or soften as the result of endocrine derangement: might not the same causal agents underlie the alteration in the consistency of the teeth?

The Bearing of Acidosis on Caries.

The important condition of acidosis had been defined by Sellard as "a diminution from any cause in the reserve supply of the alkaline bases in the blood and other tissues, ... the physico-chemical reaction of the blood remaining unchanged, except in extreme conditions." In the normal metabolism of foodstuffs there was a constant tendency towards the production of acids which were normally got rid of by the lungs as CO_2, by the kidneys in form of acid salts, by neutralisation with ammonia formed in metabolism of proteins, and lastly, by using up the body supply of alkaline salts. The first line of defence against acidosis lay in the carbonates and phosphates of the blood. As regards the carbonates, the reaction was expressed—$NaHCO_3 + HCl = NaCl + H_2O + CO_2$, the neutral salt (NaCl) being excreted by the kidneys, with the loss to the body of its alkaline base. Every acid molecule would thus rob the body of alkali but for the action of the alkaline sodium hydrogen phosphate in the blood, which when reacting with CO_2 reproduced $NaHCO_3$, e.g.:

$$Na_2HPO_4 + H_2O + CO_2 = NaH_2PO_4 + NaHCO_3.$$

Thus even in health acids formed within the body, or, taken in food, slowly acted as a drain on the alkali reserve of the blood which had constantly to be replenished. Calcium did not normally form an important element of this alkali reserve, although in acidosis a marked diminution of calcium took place in the blood serum, and if calcium salts were demanded for the mere vital purpose of overcoming acidosis they were no longer available for their primary purpose of hardening the skeleton and the teeth. There was clinical evidence in support of this. The demands of the body for alkali after the acidosis of acute fevers led to rapid tooth destruction often seen during and after convalescence.

There was a further point in the consideration of acidosis of special interest to dentists. Many dentists were obsessed by the idea that the large proportion of carbohydrate in the modern diet was largely responsible for the prevalence of caries. It must be remembered, however, that to cut down carbohydrates to a minimum was to tend to create acidosis. Mrs. May Mellanby, in her work upon vitamins, had shown that feeding on a diet deficient in vitamin A led to deterioration of the dental tissues, and Howe had produced caries in animals by similar means. McCarrison conclusively proved that food deficiencies had a definite action on the endocrine apparatus and hence arose the changes in the teeth.

Mr. Broderick's conclusions were as follows:—

1. So long as the enamel remains intact there can be no caries.
2. *Enamel in health progressively hardens as life proceeds.*
3. This hardening is due to a progressive laying down of lime salts, taken from the body store of ionic calcium.
4. *This body store is, in health, equivalent to the need* of the individual at the time, and is preserved by the endocrine apparatus, which is also the fixer of lime salts in the teeth.
5. If the endocrine apparatus is thrown out of balance in the direction of calcium starvation, this reserve store is diminished, and *fixation of lime salts in the teeth is interfered* with.
6. An upset in endocrine balance in childhood youth and pregnancy *will be in the direction of calcium starvation.*
7. Calcium starvation will lead to a diminished calcium index in the saliva, with a lessened alkalinity of that secretion, *thus directly promoting caries.*
8. Endocrine derangement, leading to a loss in balance towards calcium starvation, will tend to produce a condition *of acidosis by lessening the alkali reserve of the body*; in the compensation of this condition the calcium salts, together with other alkaline salts, will be utilised for acid neutralisation, *and therefore not be available for the hypercalcifying* the teeth.
9. If the acidosis be more severe, built-up and fixed *inorganic lime will be torn away from bones and teeth to* help build up this alkali reserve, and thus preserves life, lowering the resistance of the teeth to caries.
10. *That without this susceptibility to caries, exciting* causes such as food fermentation do not matter; but if immunity be removed hardly any reasonable care and *attention are sufficient to preserve the teeth entire.*
11. That endocrine derangement will account for all the conditions leading to dental caries, whether they be diet, *lack of vitamins, or altered salivary secretion.*

Mr. Broderick showed the skulls of three rabbits from the same litter. The first had been fed on a normal diet, while the diet of the second and third contained ovarian extract, and a mixture of extracts of thyroid, pituitary, and suprarenal glands respectively. It was noticed that the teeth of the rabbit fed on ovarian extract had thinner enamel than that of the one on normal diet, while the teeth of the rabbit fed on the mixture of gland extracts were larger, and the enamel was the more dense.

Discussion.

The PRESIDENT, in opening the discussion, suggested that much experimental work would be required to establish some of the introducer's deductions.

Prof. W. D. HALLIBURTON found much in the paper of a suggestive nature. It was now being widely realised that the health of the teeth did not depend entirely on the use of the tooth-brush. He felt that Mr. Broderick was right to attach much importance to our knowledge of calcium metabolism; but while a vast amount of work had been done on this subject, there was still very little certain knowledge of it. He thought, however, that just as when the functions of the heart and lungs were first discovered, every disease was ascribed to some derangement of these organs, so at the present time there was a tendency to explain everything by an upset of the endocrine organs.

No. 128 gave complete agglutination at 1/160, traces at 1/640, with the patient's serum, and complete agglutination at 1/80, traces at 1/160, with the serum of an adjoining dysentery case. A rabbit was prepared against No. 128, and its serum gave complete agglutination to 1/320 (highest employed) with the two above-named Flexner strains from the Lister Institute. Bacillus No. 185, isolated from a native with clinical typhoid whose serum agglutinated *B. typhosus* in high titre, differed from the other members of the group by producing acid and no gas in dulcite and in turning milk faintly acid. Indol test positive. Other strains from the same stool produced in addition acid in lactose. These organisms were examined repeatedly for motility, but on no occasion was genuine motility seen. Organisms with the characters of Groups 1 and 2 were found in the same stool.

Group 5.—Found in 4 abnormal natives. No. 77c was agglutinated up to 1/160 by the patient's serum, the particles being fine throughout the series. The others of the group were not affected by their host's serums from 1/20 upwards. Nos. 77c, 96d, 31a, and 25 gave no agglutination response with B. and W. Flexner and typhosus serums. A rabbit was prepared against No. 25, and the high-titre serum so obtained tested against the other three members of the group. Nos. 77c and 96d and 31a gave no response, but No. 31b gave complete agglutination at 1/320, and particles easily visible to the naked eye at 1/160 with this serum. No. 31 is interesting. When first isolated the strain showed no action on saccharose, but in six months' time certain colonies were found to ferment this sugar. This race, known as No. 31b, was also distinguished from No. 31a by agglutinating completely at 1/320 with the serum of a rabbit prepared against No. 25.

Group 6.—Found in 1 abnormal native, 1 normal native, and 4 abnormal Europeans. No. 50 agglutinated completely to 1/1280 with the patient's serum. An organism, No. 49a, similar in general reactions to No. 50, isolated from the urine of the same patient, also agglutinated to 1/1280 with patients' serum. Controls with normal human serum negative. None of the other members of the group were agglutinated by either the host's serum or by B. and W. para A, para B, and enteritidis serums, or with a locally prepared para C serum from 1/40 upwards.

Group 7.—Found in 3 abnormal natives, 1 normal native, and 1 abnormal European. Corresponds to Douglas's Group V.[4] The organisms of this group all gave negative results with B. and W. para A, para B, and enteritidis serums, and also with the host's serum, from 1/40 upwards.

Group 8.—Found in 3 abnormal natives, 3 normal natives, and 1 abnormal European. Corresponds to Douglas's Group X. No. 29a gave almost complete agglutination at 1/80, traces at 1/160, with B. and W. enteritidis serum. None of the other members of the group gave any response from 1/40 upwards with either the host's serum or with B. and W. para A, para B, or enteritidis serums.

Group 9.—Found in 1 abnormal native, 1 normal native, and 1 abnormal European. Corresponds to Douglas's Group IV. No organism of this group gave any response with either the patient's serum or a locally prepared para C serum, or with B. and W. para A, para B, and enteritidis serums.

TABLE 1.

Description of organism.	Motility.	Sugar fermentations.					Indol.	Milk.	Lead acetate.	Neutral red.	Voges-Proskauer	Gelatin.	Provenance of organisms. (N.=native, E.=European.)
		Glucose.	Mannite.	Maltose.	Saccharose.	Dulcite.							
GROUP 1 .	+	A	O	O	O	O	O	O or alk.	O	O	O	O	—
GROUP 2 .	+	O	O	O	O	O	O	O or alk.	O*	Yellow	O	O	—
GROUP 3 .	+	AG	O	O	O	O	+	O	Sl. +		O	O	—
GROUP 4.													
115a. . .	−	A	A	O	O	O	O	O	+	Pink	O	O	N. dysentery case.
257 . . .	−	A	A	O	O	O	O		O			O	Normal N.
262 . . .	−	A	A	O	O	O	O	A/alk.		Pink		O	E., little blood and mucus.
174 . . .	−	A	A	O	O	O	+	A/alk.	Sl. +	Pink		O	E., diagnosis hepatitis: no diarrhœa.
211–213. .	−	A	A	O	O	O	+	A/alk.	O	Pink	O	O	N. with typical bacillary dysentery. Recovery.
128 . . .	−	A	A	A	O	O	+	A/alk.	O	Pink	O	O	
GROUP 5.													
77c . . .	+	A	A	A or O	O	O	O	Alk.	O		O	O	Abnormal N.: dysentery.
96d . . .	+	A	A	O	O	O	O	Alk.	+			O	—
31a & b .	+	A	A	A	A or O	O		A/alk.	+	Pink	O	O	N.: clinical typhoid.
25 . . .	+	A	A	A	O	O			+	Pink			
GROUP 6.													
50 . . .	−	AG	AG	AG	O	AG	+	Alk.			O	O	Abnormal E.
51 . . .	−	AG	AG	AG	O	AG	+	Alk.	+	Pink	O	O	
89 . . .	+	AG	AG	AG	O	AG	O	Alk.			O	O	Abnormal N., typhoid.
I.A. . . .	+	AG	AG	AG	O	AG	+		Sl. +	Pink	O	O	
224 . . .	+	AG	AG	AG	O	AG	+					O	Abnormal E.
205 . . .	+	AG	AG	AG	O	AG	O		O			O	Normal N.
97b . . .	+	AG	AG	O	O	AG	+	AC	+			O	Abnormal E.
GROUP 7.													
158b . .	+	AG	AG	AG	AG	O	O	AC	+			L	Normal N.
113f . . .	+	AG	AG	AG	AG	O	+	AC	+		O	L	
91d . . .	+	AG	AG	AG	AG	O	O	AC	+			L	—
77d . . .	+	AG	AG	AG	AG	O	+	Alk.				L	Abnormal N.: dysentery.
97c . . .	+	AG	AG	AG	AG	O	+	AC	+			O	—
113b . .	+	AG	AG	AG	AG	O	+	Faint A	+	Pink	O	L	Normal N.: "climbs" on agar slope.
GROUP 8.													
204 . . .	+	AG	AG	AG	AG	AG	+		+	Pink		O	Normal N.
29a . . .	+	AG	AG	AG	AG	AG	+	AC digestion		Fluor.	O	O	Abnormal N.: typhoid.
76a . . .	+	AG	AG	AG	AG	AG	+	A/alk.	Sl. +			O	Abnormal N.: dysentery.
234 . . .	−	AG	AG	AG	AG	AG	+	O	+	Pink		O	Normal N.
203 . . .	−	AG	AG	AG	AG	AG	+			Pink		O	
B.I. . . .	+	AG	O	AG	AG	AG	+	AC	Sl. +		O	O	Abnormal N.: typhoid.
GROUP 9.													
85 . . .	+	AG	AG	AG	O	O	+	Alk.	+			O	Abnormal N.: typhoid.
$97c^1$ . . .	+	AG	AG	AG	O	O	+	AC	+			O	Abnormal E.
156a . . .	+	AG	AG	AG	O	O	+	A	+	Pink		O	Normal N.
201 . . .	+	AG	AG	AG	O	O	+		+	Pink		O	
GROUP 10 .	+	O	O	O	O	O						L	Pyocyaneus: green on agar.

* Except organism from European W.: see clinical description of cases, (*b*), and various paragraphs following.

O = No essential visible alteration of the medium.

+ = Motility, indol-production, or blackening of the lead agar respectively.

A., acid; alk., alkali: G., gas; C., clot: L., liquefaction of the gelatin; Sl., slight.

the point of interest being that each uterine contraction made the fibroid harden and protrude, causing the patient extreme pain.

Dr. Marshall divided the cases into three classes: (A) Cases which might safely proceed to term. (B) Cases requiring operation, but suitable for myomectomy. (C) Cases requiring hystero-myomectomy. As to Class A it was doubtful if there was any justification for the induction of abortion, as so many apparently hopeless cases proceeded to term. Large fibroids which had almost occluded the pelvis occasionally rose with the growth of the uterus, aided no doubt later by the development of the lower uterine segment, and normal delivery followed. In the Class A cases the main complaints to be feared were pain and hæmorrhage. Rest, sedatives as indicated, and general treatment usually met these cases, which, if not improving, must be considered as included in Class B. The indications for myomectomy were torsion of a subserous fibroid with necrosis, prolapse, or impaction of a subserous fibroid in the pelvis, an anterior fibroid causing retroflexion likely to cause abortion or incarceration and excessive pain. The cases suitable for this line of treatment were of the subserous type. It was not advisable to remove an interstitial fibroid of any size during pregnancy, because of the attendant hæmorrhage, the weakening of the uterine wall, and the frequency of abortion following. In three cases he had performed this operation, two proceeding later to term, the third aborting on the third day. In Class C the fibroids were generally very extensive and patient had extreme pain. Rest and the usual methods did not ease her.

The majority of cases which went to term terminated spontaneously, but one had to be prepared to meet more than usually severe labour-pains, uterine inertia, and malpresentations, and in neglected cases rupture of uterus would follow. Dr. Marshall recalled one case in which a fibroid in the pouch of Douglas had to be pushed past the brim to permit delivery, and he felt that had this been impracticable a posterior colpotomy might have been done. The correct line of treatment was Cæsarean section, in cases of obstruction, provided the patient was otherwise in a state for this operation. In the case of a fibroid which might be removed later by myomectomy, it was best to perform that operation at a later date, but in the presence of extensive fibroids or possible infection Cæsarean hysterectomy was the ideal line of treatment. Under proper supervision craniotomy should never be required, and pulling a child past an obstructing fibroid with forceps was certainly to be condemned. Post-partum hæmorrhage, both primary and secondary, was apt to occur in a uterus the seat of submucous and subserous fibroids. The possibility of these complications should not be forgotten, and means to combat them should always be at hand and used promptly. A more serious danger was sepsis. Pressure or injury during parturition might lead to degeneration and subsequent sepsis, or the tumour might be injured during forceps delivery and later become infected. In conclusion, Dr. Marshall expressed his astonishment at the extraordinary shrinkage noted in uterine fibroids after a pregnancy.

Discussion.

Prof. J. M. MUNRO KERR congratulated Dr. Marshall on his interesting communication. In view of the great tolerance of uterus and patients to fibroids he almost felt inclined to look upon pregnancy, labour, and the puerperium as the complications. In the past year he had seen four cases in which hysterectomy had been contemplated, but two of these had been carried safely to full time, when the patients had living children by means of Cæsarean section. Fibroids were apt to degenerate during pregnancy owing to the altered metabolism, and Prof. Kerr advocated the practice of elimination with rest in all cases. In cases where only one tumour of several caused trouble, this could often be removed by myomectomy. This operation was a simple one in pregnancy; rupture of uterus rarely followed it, and cases were recorded in which operators had gone down as far as the decidua without disturbing the pregnancy.

Dr. W. D. MCFARLANE had seen many cases which had appeared hopeless go to term. He agreed that stimulation of the excretory organs was of great advantage. One case of interest was that of a patient who had a pregnant fibroid uterus impacted in the pelvis. Laparotomy was performed, the uterus lifted from the pelvis, and the woman proceeded to term and delivered herself normally. After delivery the tumour was so reduced in size as to be almost unappreciable.

Dr. J. LINDSAY spoke from his experience as a general practitioner, whose attitude was to give pregnancy the preference to fibroids. He had never seen abortion follow fibroids, and in cases where fibroids had been appreciated in early pregnancy he had not experienced any difficulty in delivery.

Dr. CRAIG had had examples of abortion and sterility resulting from fibroids. In one case he had found a small fibroid in the pouch of Douglas; at the second confinement difficulty was experienced, and at the third induction proved necessary. Growth continued and hysterectomy was ultimately required.

In reply Dr. MARSHALL expressed satisfaction at the importance laid on the medical treatment of fibroids. The pregnancy was the all-important thing, and effort must be directed towards its preservation. He felt disinclined to accept myomectomy with its attendant risks, and in cases where operation was unavoidable greatly preferred hysterectomy.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Nov. 24th, Dr. GODFREY CARTER, the President, being in the chair, when Mr. W. W. KING opened a discussion on

The Treatment of Ante-partum Hæmorrhage.

From an analysis of various hospital reports, covering nearly 60,000 deliveries, he had estimated that the incidence of this complication of childbirth was 2·5 per cent. as opposed to the usual estimate of 0·2 per cent. Mr. King confined his remarks to that variety of ante-partum hæmorrhage which results from placenta prævia, and showed that on theoretical grounds hæmorrhage, shock, and sepsis should be the three great dangers which would threaten the life and health of the mother. Prematurity, hæmorrhage, and the direct results of treatment were the corresponding causes of fœtal death. In the 898 cases of placenta prævia analysed 7·6 per cent. of the mothers and 55·3 per cent. of the children lost their lives. The figures were identical with some published 20 years ago, and show that there has been no improvement in the results of treatment during these years. A study of the maternal mortality showed that 15·9 per cent. of the total deaths occurred in women who were admitted to hospital in so grave a condition that they died undelivered. Out of 58 patients who were delivered 15·7 per cent. died of hæmorrhage, 18·9 per cent. of septicæmia, and 51·7 per cent. of shock. Considering the nature of the disease it was surprising that hæmorrhage had caused so few of the deaths. This would appear to show that the methods in common use for the arrest of hæmorrhage were efficient at least in this respect. Most, if not all, of the deaths from septicæmia were the result of faulty technique and should therefore have been avoided. Tissue-trauma in the presence of hæmorrhage was the great cause of shock, and the need for the gentlest manipulation, and, above all, of avoiding rapid delivery, did not appear even yet to have been fully realised. More than half the total deaths were due to this cause, and, in the majority of cases, it was clear from the records that death had resulted from the too hasty extraction of the child. The other deaths were not of obstetrical importance, with the exception of one from rupture of the uterus. In serum or with a locally-prepared high-titre *typhosus* serum. On Oct. 29th, 1920, and on Nov. 7th, 1920, the patient's serum gave no agglutination from 1/20 upwards with No. 192.

(*b*) CASE W.—A large proportion of late-lactose-fermenters were always present in both the direct and brilliant green plates from this patient. On one occasion No. 236d was isolated in practically pure culture on a brilliant green plate. No. 236d shows the typical characters of Group 2, lead acetate agar not being blackened. On several occasions *the patient's serum showed no agglutination from* 1/20 upwards with 236d. As mentioned above, serum 190f gave complete agglutination with No. 236d in two hours at 37° up to 1/320 (highest dilution used).

Thus from the blood of two patients—one native and one European—organisms with the general reactions of *B. fæcalis alkaligenes* have been recovered. These two organisms are quite distinct serologically, and while one (W.) blackens lead acetate agar in 18 hours, the other (190f) does not. That this latter characteristic has, however, no deep significance is indicated by the fact that while serological tests indicate close affinity between organisms 232a (from stool of normal native) and bacillus W. (from blood of European W.), No. 232a does not blacken lead acetate agar.

Conclusion.

The observations recorded in this paper, limited though they are, show that organisms assignable to Groups 1 and 2 of Table I. are relatively common in the fæces of normal natives in Uganda. The recovery on two occasions of organisms of Group 2 from the blood of patients suffering from typhoid-like disease, but whose serums give no agglutination with typhoid or paratyphoid bacilli, indicates that organisms of the *B. fæcalis alkaligenes* type may play an important part in the production of enteric disease in Uganda. In the event of a prophylactic enteric vaccine being called for in the Protectorate this type of organism must be considered. The existence within the limits of Group 2 of races showing no serological relation to one another must also be borne in mind. The work of *Shearman*[6] *and Hirst*[7] *is interesting in this connexion.*

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MANCHESTER EAR HOSPITAL.—The sixty-fourth annual report shows that 5690 new patients were treated, nearly the same number as last year; the in-patients numbered 512, and the operations 891. *Patients are sent* to this hospital from as far afield as Hereford and even the Isle of Man.

CARE OF THE MENTALLY DEFECTIVE.—The Central Association for the Care of the Mentally Defective announce special lectures and an exhibition to be held during the tenth annual conference of Educational Associations at University College, Gower-street, London, W.C., from Jan. 2nd to the 6th, 1922. On Monday, Jan. 2nd, at 5 P.M., Miss Lucy G. Fildes will lecture on the Training of Teachers for Mentally Defective *and Backward Children* and Special Methods of Teaching. On Jan. 4th, at 10 A.M., Miss K. L. Marsden will speak on the Organisation and Scope of Backward Classes, and on Jan. 5th, at 5 P.M., the Possibility of Coöperation between the School Medical Officer and the Teacher in the Training of Sub-Normal and Mentally Defective Children will be the subject of an address by Dr. G. A. Auden. Members of the Association are entitled to free admission to the conference. Tickets for all meetings (7s. 6d.), or for single meetings (1s.), will be on sale at the secretary's table during the conference.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ODONTOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Nov. 28th, Mr. M. F. HOPSON, the President, being in the chair.

Mr. F. W. BRODERICK read a paper on

THE ENDOCRINE FACTOR IN THE PRODUCTION OF IMMUNITY AND SUSCEPTIBILITY OF THE TEETH TO CARIES.

He said that the ætiology of dental caries had not yet been thoroughly elucidated. W. D. Miller's theory would explain the onset, and Sim Wallace's conclusions would explain the prevalence of caries; but these theories, if true, made it difficult to understand why any teeth should remain sound at all. Mr. Broderick contended that there must be some other factor in question besides the affinity of lime salts for acids, since acids were invariably present in the mouth whatever precautions might be taken. He quoted E. C. Kirk as saying that the susceptibility to dental caries varied at different periods of life; youth was most susceptible, while during adult life a period of immunity commonly supervened. Pregnancy increased the susceptibility. Dental caries occurred in mouths which were well kept both by the use of the tooth-brush and the skill of the dentist. Mr. Broderick said that he had previously put forward the theory that the calcium-utilising power of the body was influenced by the secretions of the endocrine glands. If the enamel formed a complete covering for the tooth, caries could not take place; but if the enamel were removed from even a small area, the tooth was inevitably doomed, unless artificial measures were taken, except in the extraordinary condition of "arrested caries." Clinically there was a wide range of differences in the enamel, in colour, opacity, and hardness; and as a rule, a tooth long erupted was harder than one recently so, although analysis did not reveal any great difference in the lime content.

Calcium Content.

The calcium content of the body occurred in two forms: (i.) fixed in the tissues as inorganic salts, and (ii.) as part of the alkali reserve of the body. The calcium, which was not needed for building or repairing acted as an alkali, gave tone to muscle, helped to govern the function of the heart, and kept up the excitability of nerve tissue. Of the total lime salts ingested, much was excreted without change in the intestine, and part that did enter the blood stream was excreted in the urine, after having perhaps functioned within the body in the ionic form; it was lost for the purpose of tooth-hardening which Mr. Broderick believed was normally a continuous process. Fixation of the ionic calcium in the tooth was as necessary as its absorption from the intestine. It was useless to increase the quantity of calcium in the diet in treating either dental conditions or such diseases as rickets or osteomalacia. The quantity of calcium necessary *to keep the body* in health was extremely small.

Need of Lime Salts.

Mr. Broderick quoted experimental evidence to show that mere deficiency of lime would not explain the prevalence of dental caries.

The need of lime salts varied at different ages. During growth it must obviously be greater, and during adult life the balance between intake and output was more stable except in women whose calcium metabolism was liable to the rapid alterations of pregnancy and menstruation. During the period of decay the tendency became rather towards calcium saturation.

asphyxia with accumulation of CO_2 in the tissues as the result of impeded circulation, from imperfect fat-metabolism, from elimination by the kidneys of alkali in excess, from any renal defect which inhibits the elimination of acid sodium phosphate. The physiological changes brought about had been made the basis of methods for the diagnosis of acidosis and the estimation of its degree, but none of them were quite satisfactory. The estimation of CO_2 tension in the alveolar air of infants and young children was not an easy procedure. The apparatus required expert manipulation and was difficult to use in routine work in private and in hospital. True acidosis was associated with but not always due to the presence of acetone bodies, and the most common cause of it from the clinical point of view seemed to be the excess of sodium phosphate in the blood. It was the function of the kidney to excrete this substance, and it did so normally in considerable quantity. Failure in this excretion resulted in retention and consequently diminished alkalinity. In most infantile diseases there was an associated pyrexia and urinary secretion was diminished sometimes to the point of anuria. Renal function was often inactive even without the existence of true renal disease. Impaired renal function was of high importance as a factor in the production of acidosis; it was frequently associated with ketosis, but the latter was usually of lesser importance.

Reviews and Notices of Books.

DICTIONARY OF PRACTICAL MEDICINE.

Edited by Sir MALCOLM MORRIS, K.C.V.O., FREDERICK LANGMEAD, M.D., F.R.C.P., and GORDON M. HOLMES, C.M.G., C.B., M.D. Dub., F.R.C.P. In three volumes, containing in all 1796 pages. London: Cassell and Co., Ltd. 1921. £5 5*s*. complete.

THIS dictionary ranges over the whole gamut of medicine, surgery (with the exception of fractures, dislocations, and major operations), midwifery (not including labour), gynæcology, dermatology, clinical pathology and bacteriology, forensic medicine, public health, and anæsthetics—and the important task is accomplished in a work of three volumes. With such an ambitious scope it is clear that all subjects cannot be dealt with fully, and that the dictionary must not be compared with a series of standard text-books dealing with the individual subjects. To justify its existence it must, therefore, present in a handy form the essentials of knowledge contained in the text-books and journals, together with the personal views of the contributors.

As regards medicine, we can but postulate a hypothetical practitioner who seeks help when confronted with a patient showing slightly unusual symptoms, and try to estimate what help he would receive. One faced with an atypical cretin could not fail to find illumination from the illustrated note on cretinism, while the brief reminder of the symptoms of diverticulitis might well serve to clinch the diagnosis in an obscure case. The article on disseminated sclerosis is up to date, including modern conceptions of its ætiology, and in a disease whose early manifestations may be so varied the section on symptomatology should be of great use. In seeking information on less well-defined conditions the practitioner may be less well served. If consulted by a patient who has expectorated a fibrinous cast from his bronchi, he will find no reference to this somewhat obscure but important condition under the heading "bronchial" or "cast." From "fibrinous bronchitis" he will be directed by a cross-reference to "bronchitis"; in the article on this subject the only relevant allusion is that in cases of diphtheritic infection of the bronchi a fibrinous membrane may be formed in the large tubes, but this, of course, has nothing to do with true fibrinous bronchitis which may occur in acute or chronic varieties. Again, the practitioner may seek information on modern views of asthma, on the diagnosis of difficult cases by their sensibility to various cutaneous protein tests, and on treatment by means of desensitisation by antigens. These methods are sufficiently well recognised to merit mention in any modern account of asthma, but receive none here; moreover, asthma is regarded by some at least as a toxic idiopathy, not necessarily due to reflex vagal stimulation.

Medico-legal work often presents far more difficulty to the busy practitioner than does any problem in diagnosis or treatment. He may well feel at a loss how to proceed when suddenly called in to give evidence in a doubtful case of infanticide or of injury; these subjects are admirably dealt with, and the article on medical evidence should be of considerable help in the preparation of data for the court. Under the heading of malpraxis the reader will find a pregnant and topical warning as to the dangers to which he is liable from an action for damages brought by a dissatisfied patient. As to surgical subjects, but little space is wasted on descriptions of difficult operations which can only be performed by the specialist. Advice is clearly given that a case in certain stated circumstances should or should not be operated upon, and this alone is what the practitioner requires to know. A few special points are well brought out. The importance of complete nephrectomy in cases of tuberculosis localised to one kidney is emphasised. Although such a line of treatment is well recognised by specialists, it is still only too often believed by practitioners, and even by consulting physicians, that palliative treatment is satisfactory; thus valuable time is often lost and the disease may be allowed to progress until the second kidney is affected. An unusual but very helpful section is that dealing with enlargement of lymphatic glands; in one short article the diagnosis is clearly and carefully considered. Intestinal obstruction is a subject deserving of rather wider consideration. It is curious to note that although operation is advised in some cases of hyperpituitarism, no such form of treatment is even suggested where there is a deficiency in the function of this gland. Fröhlich's syndrome and cases of the Loraine type are often due to cysts which may be cured by operative treatment.

On the whole the articles dealing with obstetric and gynæcological affections are disappointing, though the accounts of pruritus vulvæ, puerperal insanity, radium therapy, and syphilis deserve mention as being specially illuminating. The omission of any consideration of labour leaves a noticeable gap which cannot but affect the completeness of the accounts of conditions of pregnancy and the puerperium. In the discussion of puerperal eclampsia insufficient stress is laid upon the modern methods used by the Rotunda school, and perhaps too much stress upon veratrum, a drug not much used in this country. The warning against operative interference and the undue performance of Cæsarean section in this condition is a wise one. The old-fashioned distinction between sapræmia and septicæmia is still maintained under the heading puerperal septicæmia. This distinction is quite out of date, since the former is now recognised to be a mild grade of the latter. Under the heading of sterility we are told that prostitutes are sterile because of sexual exhaustion; this is probably not so, since the woman is generally quite a passive agent and the sterility in most cases is due to pelvic disease. The description of the pathology of subinvolution of the uterus is somewhat defective. The account of fibroids of the uterus is ill-balanced, too much stress being laid upon red degeneration, and the operation of myomectomy, recommended for certain cases, is not as a matter of fact much practised. The prognosis given of the probable results of operative treatment of carcinoma of the uterus is unduly optimistic. Most gynæcologists at present get but poor results, and the modern

Dr. **Leonard Williams** thought people should ask themselves "What can we do to be saved from this deadly heritage of caries?" Dr. Harry Campbell had contended that if our children were fed as we feed our puppy dogs on material which compelled vigorous mastication, the natural development of the jaws would be ensured, and malposition and malnutrition of the teeth abolished with the consequent caries, pain, and pyorrhœa. Dr. Williams held that this was not quite sufficient. A vigorous calcium metabolism was also necessary, and for this normally acting endocrine glands were essential. And to ensure a good team of endocrine glands one had to begin with the child in utero. The mother must be fed on vitamins. Lime was necessary to the teeth and jaws; endocrines were necessary to the lime, and vitamins were necessary to the endocrines. When the child had erupted his teeth he must be taught to masticate vitaminous foods, so that not only would he develop his masseter muscles and mandible, but also he would have normally working endocrines. The pituitary gland was of especial interest to odontologists. The high-arched palate, and the undeveloped mandible, so often associated with adenoids, were a "function" of pituitary insufficiency. The child was usually bright and well developed, but the outside upper incisors were badly developed and the nails had no half-moons at their roots. Sometimes there was a vagary of pigmentation. For these undeveloped jaws dentists sometimes prescribed pituitary extract. He emphasised two points: the preparation of the whole gland should be prescribed in doses of 5–6 gr. three times daily; pituitary therapy was useless unless the child was fed on an intensive vitamin dietary.

Mr. **J. A. Woods** (Liverpool) said that he had seen a patient suffering from osteomalacia, and her teeth were exceptionally good. He had noticed that during pregnancy there was no very marked increase in caries, except where there had been neglect beforehand. He thought Mr. Broderick had laid too much stress on the importance of the enamel.

Mr. **J. G. Turner** said that Mr. Broderick appeared to try to establish two main points: (1) that diminished alkalinity of the saliva leads directly to dental caries; (2) that enamel after eruption of the tooth undergoes both increase and decrease of its lime salts. Dealing with the first point, Mr. Turner asked whether it was certain that saliva ever reached the sites of caries, which depended on the lodgement of sticky starchy and sugary food together with acid-forming germs. They were covered by mucus. Decay always began in the "stagnation areas," never on the well-rubbed areas, which showed that susceptibility to decay was particular to portions of each tooth, not general to the whole tooth. Thus saliva had practically no influence on dental caries. Other observers had failed to find increased susceptibility to caries in acute illness: the decay which became apparent during the 6–12 weeks of an illness began months before and was due to show itself at this time. Caries of the enamel was a slow process. Mr. Turner himself had estimated that the least time to perforate the enamel at the buccal gum edge (this was not the extreme edge of the enamel) was nine months, and at the abutment area two years. Such figures put out of court observations based upon the decay of illness or pregnancy. Mr. Turner said that it was difficult to prove that enamel underwent variation in its content of lime salts. If mucus was impervious to saliva this thesis fell to the ground at once. Clinically he did not know of such hardening. Hypoplasic enamel remained soft throughout life. He did not find that pyorrhœa and dental caries were mutually exclusive, they were commonly associated; so much so, that he called one form of dental caries "decay of pyorrhœa." Mr. Broderick quoted Dr. Kirk as saying that youth was the period of greatest susceptibility. In his (Mr. Turner's) experience there was a predisposition to decay throughout life. He attributed the relative immunity of adult life to the fact that fewer sweets were eaten, that there was some attempt at cleanliness, and that the removal of decayed teeth allowed drainage of the remainder.

Mr. **J. Howard Mummery** said that it was commonly taught that enamel was an inert or dead substance, as it did not appear to show any channels, yet the enamel of teeth was not absolutely impervious; it was susceptible to dyes. Many observers had shown extensive malformation in the enamel of the teeth even of apes. He himself had ground sections of teeth from a neolithic jaw, and even here there were numberless defects and fissures in the enamel.

Sir **Frank Colyer** said that Mr. Turner had already anticipated him in many observations he had intended to make. As regards the decay of pregnancy, when it occurred, he believed it was due to nothing more than the soft starchy foods commonly eaten by pregnant women. The caries of infancy he called "biscuit decay." Children were sent to bed after a meal of biscuit and milk, which resolved itself into an infective "biscuit poultice" around their teeth. Dr. Williams had said that we should feed our children as we feed our puppies. But even puppies were incorrectly fed on "pappy" food, and developed pyorrhœa in consequence. He said, as regards the formation of the jaws, here as elsewhere the shape of the bone depended on the forces acting upon it, and if the jaw were insufficiently used, it would be poorly developed. If endocrine derangement were responsible for dental caries why should 66 per cent. of 500 London horses have carious teeth, and why should hutch-fed rabbits also suffer from caries while the same animals in a wild state were practically immune? His brother, Dr. Stanley Colyer, had observed marked differences in the incidence of caries amongst three native tribes living in South Africa, which could only be accounted for by the very slight difference in the diet, since the tribes were ethnologically related and living under otherwise similar conditions. The tribe which included sugar in its diet was chiefly afflicted with caries!

Mr. **Broderick**, in reply, said he had come to learn and not to teach.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A meeting of this Society was held on Nov. 16th in the Faculty Hall, Glasgow, when Dr. G. **Balfour Marshall** delivered his Presidential address on

Fibroids complicating Pregnancy, Labour, and Puerperium,

with illustrative cases. He said that since his undergraduate days great changes had come in the management of pregnancy, parturition, and the puerperium in cases complicated by uterine fibromyomata. Then it had been the teaching and the practice to induce abortion in many cases; with the development and comparative safety of laparotomy, Cæsarean section, and hysterectomy, the treatment was now revolutionised. Dr. Marshall pointed out that women suffering from fibroids were frequently sterile, and this was particularly true of the submucous and interstitial varieties of these growths. He quoted two cases in which women who had borne children subsequently became sterile owing to fibroids. Pregnancy could occur in cases of submucous and even polypoid fibroids, and although there was a tendency to abort, such pregnancies might proceed to term. Abortion and premature labour were sometimes due to fibroids, especially the submucous type. Dr. Marshall had met with abortion due to all varieties of fibroid, and three of which he described in detail. He described also the following case, illustrative of the production of premature labour by a sessile subserous fibroid.

Mrs. M., aged 25, one child. Complaint of abdominal pain and swelling. Examination revealed a seven months pregnancy complicated by a large subserous fibroid projecting from the anterior uterine wall at the level of the umbilicus. There was slight uterine hæmorrhage, and labour was just beginning. Patient delivered herself without difficulty, even if he does not undertake their treatment. In discussing various special conditions, the author has not hesitated to call in the aid of specialists with the result that there are authoritative chapters dealing with such subjects as tuberculosis, cutaneous lesions of the external genitalia, acidosis, X ray therapy, and radium treatment. The book is well illustrated, there is a good index, and a well-selected bibliography. Altogether the author is to be congratulated on the sound and clearly written text-book which should prove most useful to practitioners and students.

Menstruation and its Disorders.

By EMIL NOVAK, A.B., M.D., F.A.C.S., Instructor in Clinical Gynæcology, Johns Hopkins University. London and New York: D. Appleton and Co. With *40 illustrations.* 1921. Pp. 357. £1 1*s.*

As the author states in his preface, a great deal of new knowledge on the important subject of menstruation has been accumulated during the past 10 to 15 years, and our conception of the nature of this process has undergone a considerable change. This book is a most excellent monograph and contains a full account of all we know at the present time on this subject. In considering the relation between œstrus in the lower animals and menstruation in women the work of Heape is quoted with approval and his views are adopted. A good and well-illustrated account is given of the changes which occur in the mucous membrane of the uterus during menstruation. A full note is furnished upon Schroeder's description of the process, divided into the three stages of desquamation, proliferative and secretion, is given, and it is pointed out that if his work is confirmed it is a step forward in our knowledge of the relationship of ovulation and menstruation. Schroeder believes that, as a rule, ovulation takes place about the fifteenth day of the cycle, at the end of the proliferative stage, and further supports the old view that there is a complete loss of the superficial or functional layer of the endometrium followed by regeneration from the basal glands. The interesting question of the formation of the corpus luteum is fully discussed and illustrated. Dr. Novak inclines to the belief that the cells are of epithelial origin, but as he points out there is need for the study of larger numbers of early córpora lutea.

The old and the new views with regard to the causation of menstruation are passed in review, and the evidence in favour of the modern belief that the essential cause is the internal secretion of the ovary is well discussed. No doubt most readers would think that the non-coagulability of the menstrual blood was capable of a ready explanation, but that this is not so is evident from the fact that Dr. Novak is able to do no more than sum up the findings of those who have tried to explain this phenomenon. To show the thoroughness with which the author deals with the whole subject, we may mention that besides a good chapter on the clinical manifestations of menstruation, there are sections dealing with puberty, the hygiene of puberty, precocious menstruation, and non-menstrual genital hæmorrhages in the new-born; these are followed by three chapters dealing with the menopause and an interesting study of the relation of menstruation to ovulation. From the histological evidence, which seems the most trustworthy, there appears to be a definite relation between the two, and ovulation would seem to occur most commonly between the fifth and fourteenth day of the cycle. Amenorrhœa, dysmenorrhœa, and intermenstrual pain are fully considered, and there is also a useful chapter on hæmorrhage from the uterus, special importance being given to the functional variety. A very useful and practical chapter is the one dealing with the part played by the endocrine glands in association with the menses and the organotherapy of menstrual disorders. The final chapter on treatment by radium and X rays is contributed by Prof. Howard Kelly and Dr. C. F. Burnham. There is a full and complete index.

A good monograph, full of sound information and with excellent bibliographies.

LIFE AND TIMES OF AMBROISE PARÉ.

With a new translation of his Apology and an Account of his Journeys in Divers Places. By FRANCIS R. PACKARD, M.D. New York: Paul B. Hoeber. 1921. Pp. 297. $7.50.

GRANTED that it was worth while to write another book about Paré after Mr. Stephen Paget's work, to which Dr. Packard refers with praise, the book now before us is compiled as well as possible except for one or two slips. The illustrations are many and good, there are two maps of old Paris, and an admirable index is included. Thomas Johnson's translation of the Apology and the Journals is known to most men who study medical history, but the style is too archaic for some people. We note that both on the frontispiece and in the table of illustrations Johnson's name is mispelled as Johnston, an error which should be corrected. Another slip occurs in a footnote on p. 153, "The Low Bretons speak a Celtic patois very dissimilar to French as spoken in Paris." Breton is not a patois but a distinct language, akin to Welsh and still more to the now extinct Cornish language. The Apology was written in answer to the attack made on Paré's use of the ligature in amputations, by Etienne Gourmelen. It was a crushing answer, and in addition remarkable for the way in which Paré insists on the necessity for practical knowledge in surgery as apart from that obtained from books. Altogether Dr. Packard's book is good reading.

BIOLOGICAL CHEMISTRY.

By H. E. ROAF, M.D., D.Sc., M.R.C.S., L.R.C.P., Professor of Physiology at London Hospital Medical College, University of London. London: Methuen and Co., Ltd. 1921. With 47 diagrams. Pp. 216. 10*s.* 6*d.*

THE diagram of biological processes, which forms the frontispiece of this interesting book, shows the extreme points of the range of biological chemistry. The various intermediate stages are described succinctly in the text under Sections II. and III., entitled Anabolism and Catabolism. Section I., Chemical and Physical, is an outline of the organic and physical chemistry needed for an understanding of the subject. The abstract facts of these subjects are very difficult to make clear and there is no short cut to their thorough understanding. Though considerable space is devoted to this section, it is not really adequate to explain the elements of chemistry; the reader is expected to have some knowledge, and of this he will be reminded by study of this section.

The section on anabolism deals first with photosynthesis and contains a short account of F. F. Blackman's researches on the conditions affecting this change, such as intensity of illumination and quality of light, temperature and concentration of the substrate, carbon dioxide, and the mechanism of light absorption by the chlorophyll. Here is also given a brief account of the chemistry of chlorophyll and other pigments and their possible functions. Carbon dioxide is transformed through formaldehyde to carbohydrate; this occurs probably by reduction through formic acid, but only the suggestion that the first stage is carbon monoxide and hydrogen is here mentioned. Polymerisation of formaldehyde to a hexose is evidently the next stage, though cane sugar or starch is the end-product. Hexose appears to break down to lactic acid through pyruvic aldehyde; pyruvic acid may yield acetaldehyde from which fat may be formed by aldol condensation, as suggested by Raper. Fat synthesis may equally well take place by the union of acetaldehyde and pyruvic acid according to Smedley, though the stages are more complicated. The synthesis of amino-acids for building up proteins one other case this catastrophe was recorded, but the patient recovered. As to details of treatment, Mr. King advised palliative treatment in the interests of the premature child when the hæmorrhage was slight and the conditions suitable. With severe loss and the patient not in labour Cæsarean section was generally the best treatment. In cases in which the patient was in labour the Champetier de Ribes bag should be used in the interests of all living and viable children. Version should only be used for the dead and non-viable. Rupture of the membranes was only safe when the hæmorrhage was slight and the os at least half dilated. By adopting palliative treatment in suitable cases under proper conditions, by Cæsarean section and by the use of the Champetier de Ribes bag, it should be possible to reduce considerably the enormous fœtal mortality of placenta prævia. The maternal death-rate would be reduced by early treatment, careful asepsis, gentle manipulation, and slow delivery. Morphia and intravenous glucose were advocated in the prevention and treatment of shock. Strychnine was useless and pituitary extract dangerous.

Discussion.

The PRESIDENT said that his practice had always been to effect delivery as soon as possible, irrespective of the life of the child.—Mr. P. E. BARBER stated that in his experience version was the most satisfactory method of treatment. He asked what evidence there was that patients died of shock. He thought that hæmorrhage was the most common cause of death.—Prof. M. H. PHILLIPS, while agreeing upon the whole with the main propositions of the paper, thought that Cæsarean section should be more commonly performed for placenta prævia. He emphasised the danger of rapid delivery and of even slight post-partum hæmorrhage.—Mr. J. CHISHOLM related his conversion from rapid delivery to the saner method of slow extraction.

MANCHESTER MEDICAL SOCIETY.

A SPECIAL meeting of this Society was held on Nov. 23rd in conjunction with the members of the Liverpool Medical Institution in the Medical Society's Reading Room, University of Manchester. After the meeting the visitors were entertained to dinner by the members of the Manchester Medical Society. Dr. T. A. GOODFELLOW, President of the Manchester Medical Society, was in the chair.

Dr. R. J. M. BUCHANAN read a paper on

Points of Clinical Interest in the Diagnosis of Abdominal Diseases.

He emphasised the importance of definite pain as a sign of organic disease. He considered the terms "neuritic, "neurosis," and so forth in relation to abdominal disease as mostly wrong and certainly unsafe. So-called functional disease was the last to be sought for. Dr. Buchanan drew attention to abdominal pain caused by disease in the thorax—e.g., empyema, pulmonary syphilis, pericarditis, and spinal diseases—and to pleuritic effusion as an early herald of malignant disease in the abdomen. He thought that too little attention had been paid to careful auscultation of the abdomen, especially in localising peritonitis, and pointed out the value of light auscultation of the abdominal aorta for a bruit which he found present in pathological conditions in which the aorta is pressed upon, especially malignant disease. Dr. Buchanan suggested that this physical sign might be tested as occasion arose. He considered that delay in recuperation of the blood after hæmatemesis favoured a diagnosis of malignant disease. Profound anæmia often accompanied malignant disease of the cæcum. Dr. Buchanan emphasised the prevalence of venous thrombosis in malignant disease, and said that in any case of thrombosis the viscera should be examined. He spoke also of the exacerbation of symptoms with pyrexia noticeable in cases of leaking gastric and duodenal ulcer. Dr. Buchanan advocated that all cases in which X rays are used a complete "watch through" should be done. He pointed out the ease with which disease of the appendix could be revealed even to the demonstration of concretions, and illustrated this with lantern-slides. In such cases the cæcum was often distended, a Jackson's membrane present, and plication called for. Dr. Buchanan drew attention to the tender spots on the back in the region of the suprarenals in Addison's disease. His address was illustrated with water-colour drawings, radiographs, and lantern-slides.

Mr. G. P. NEWBOLT read a paper upon the

Diagnosis and Treatment of Carcinoma of the Large Intestine,

based upon 60 cases upon which he had operated. Of these 26 occurred in the sigmoid colon, 11 in the splenic flexure, 11 in the cæcum, 8 in the hepatic flexure, and 4 in the transverse colon. Out of 33 resections done up to 1917, 12 patients were alive at present. Sigmoid and splenic growths were, he thought, most favourable. He emphasised the importance of an early diagnosis in these cases if a successful result was to be obtained, pointing out the difficulty in diagnosis where the growth was small. Radiology had done a good deal in helping the exact location of some of these growths. He considered that a three-stage operation of cæcostomy, followed by excision of the growth with direct union, and later by a closure of the cæcostomy, was the ideal operation in the absence of obstruction. Paul's operation was the best in cases where obstruction was present. Cæcostomy should be done in patients who were very ill in consequence of acute obstruction. As 37 out of the 60 growths were situated in the sigmoid and splenic regions Mr. Newbolt advocated incision on that side in cases in which the situation of the growth had not been exactly diagnosed. Where obstruction existed he advocated exploration from the right side with the view of localising the growth, and then a cæcostomy, with free removal of the growth later when the intestines were empty. He suggested that the median incision was rarely necessary.

Dr. MURRAY BLIGH read a note on

Ketosis in Children,

in which he referred to the lack of practical assistance in the diagnosis of the condition and in the estimation of its degree. He considered there was urgent need of means to measure precisely the extent of acidosis in children. He referred to the practice of limiting the amount of food or of actually starving children immediately before operation and to the tendency of the anæsthetic, whether ether or chloroform, to convert a relatively mild ketosis into a severe intoxication. The custom of postponing operations because the tested urine showed the presence of acetone, the saturation of the child with bicarbonate of soda, and the infliction of a second period of starvation was based on unsound knowledge. The qualitative test for acetone indicated nothing more than that acetone, diacetic acid, and oxybutyric were present in the blood and were being eliminated in the urine. The presence of acetone in the urine of children was misleading as evidence of depletion of alkali reserve in the blood. It suggested the possibility of dangers which did not exist, and it led to uncontrolled treatment with alkalies. Dr. Bligh recalled the experiments of Prof. Haldane and his co-workers in which the eating of large quantities of alkali led to a state of alkalosis as evidenced by diuresis, increased alveolar CO_2, and diminution in the ammonia in the urine, but the appearance also of acid bodies in the urine. Acidosis occurred without acetonuria and also occasionally along with acetonuria when there was no relationship between the two conditions. The causes of acidosis were multiple. Physiologically it was a diminution below certain limits in the alkalinity of blood plasma. Clinically such a condition might result from bacterial infection, from fermentation and its resultant lactic acid production; from internal and the whole forms an attractive volume. The series is undoubtedly of value as a means of rapid reference to recent publications, and the practitioner is enabled to purchase separately the volumes dealing with subjects of especial interest to him.

LECTURES ON THE SURGERY OF THE STOMACH AND DUODENUM.

By JAMES SHERREN, C.B.E., F.R.C.S., Surgeon to the London Hospital; Member of the Council and Court of Examiners, Royal College of Surgeons of England; Examiner in Surgery, University of London. London: H. K. Lewis and Co., Ltd. 1921. Pp. 99. *4s. 6d.*

IN this book Mr. Sherren has published a series of lectures given by him to the students of the London Hospital. The diseases dealt with are gastric and duodenal ulcers, stenosis of the pylorus, and carcinoma of the stomach. The ætiology, symptomatology, and treatment of the simple ulcer is discussed fully. Around the subject of the chronic ulcer there has raged a controversy which cannot yet be said to have died down. Without entering into the merits of conflicting theories or methods, Mr. Sherren gives us his own views and methods of investigation and treatment, built upon a large experience. The book is a plea for more accurate clinical observation, for whereas test-meals and X rays may be of assistance, they are often misleading. The clue to a correct diagnosis lies in a review of the clinical aspects of the case, and the clue to success in treatment is in an early and exact diagnosis. In this book will be found much valuable help for those who have to deal with these difficult conditions.

OPERATIVE DENTAL SURGERY.

By J. B. PARFITT, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon and Lecturer on Operative Dental Surgery at the Dental School of Guy's Hospital. London: Edward Arnold and Co. 1921. With 108 illustrations. Pp. 319. *21s.*

Dr. Parfitt interprets his title in a somewhat limited sense, for he omits those proceedings of the dental surgeon which may be classed as minor surgical operations; for instance, the extraction of teeth is discussed only as regards the mechanical principles and not from the purely surgical aspect, and the reader will therefore find no detailed account of how best to remove teeth and no helpful suggestions for negotiating difficult teeth, such as the misplaced lower third molar. Perhaps in future editions the author may see his way to include an account of this side of operative dentistry, and so add to the value of what is undoubtedly a very useful work.

This book deals mainly with the methods of filling and crowning teeth, but there are also useful chapters on scaling, ionic medication, and the management of children, written in a concise yet clear way, so that we gain the impression that we are receiving the results of experience gained in practice and teaching. During recent years much attention has been drawn to the question of pulpless teeth, and many ailments have been attributed to the presence of such teeth in the mouth. The reader naturally turns with interest to see what are the author's views upon this subject. He deals with it in a broad-minded way; he shows the difficulties that are encountered in filling root canals, and points out that the safety and usefulness of such teeth depend entirely on the presence or absence of infection. He shows clearly, too, that it is impossible to remove all the pulp tissue from many teeth, but considers that if such tissue as is left is kept sterile during the operation on the pulp the patient's own natural or acquired immunity is very likely able to keep it permanently sterile. As regards septic teeth, he is of the opinion that such can be rendered sterile, and for this purpose he advocates the use of tricresol with 10 per cent. of paraform.

This book should be extremely useful to anyone engaged in the practice of dental surgery.

JOURNALS.

IN the JOURNAL OF THE R.A.M.C. for November Dr. H. M. Woodcock gives the first part of an article on *hæmatophagy*, a function of the large mononuclears, by which they absorb other blood elements when outworn. They digest these elements, and then portions of their pseudopodia become abstricted, and so blood platelets are formed. The article is well illustrated.—Major N. V. Lothian continues his historical investigation of the soldier's load, telling us that the Earl of Leicester (ca. 1560), whose armour is in the Tower, rode over 25 stone, which accounts for the heavy type of the knight's horses. He again remarks on the large number of non-combatant attendants who accompanied the heavily armed soldiers, as was evidenced at Bannockburn, when their charge over the "Gillies' Hill" appeared as the advance of a new army, and decided the fate of that historic day.—Captain W. D. Beamish believes he prevented an epidemic of influenza at Kasauli by volatilising iodine over a small spirit lamp in the barrack-rooms, and avoided having to close a school at Sanawar by similarly treating the class-rooms. The cost was half a rupee a day. His reports are certainly interesting.—Major J. E. H. Gatt observed an outbreak of mumps in a group of 400 Mahomedans, while 400 Hindus alongside entirely escaped, because the Mahomedans feed themselves with their hands out of a common dish, while the Hindus cook and eat, each by himself.—Lieut.-Colonel Langford Lloyd pleads for a peep-sight, one-tenth of an inch in diameter, as backsight for the service rifle, and decentred glasses for rifle shooting.—Major E. H. Myles finds that castor oil applied externally is the best treatment for vaccinia, and Sir L. Gubbins, formerly Director-General, wishes physical training to be continued throughout the soldier's service, and notes what fine men for the service the London carmen are, in part as the result of their continually working in the open air.

Reports and Analytical Records.

BIOLOGICALS: TESTS AND REMEDIES.

(BURROUGHS WELLCOME AND CO., SNOW HILL BLDGS., E.C. 1.)

Diphtheria Toxin for Schick Reaction.—This firm is now issuing phials of the diluted toxin ready for use in the Schick reaction. This test is performed by injecting intracutaneously in the arm 0·2 c.cm. diphtheria toxin diluted in saline to approximately 1 c.cm., an amount representing 1/50 minimum lethal dose for a guinea-pig. A phial for control test containing an equivalent amount of heated toxin is supplied. The test is based upon the fact that man normally possesses sufficient diphtheria antitoxin in his blood to neutralise this small amount of toxin injected. In such event a negative result is obtained and the patient is said to be immune. In some cases, however, this small amount of natural antitoxin is absent and the injected toxin gives a pink flushed area in the skin from half to one inch or more in diameter with a smaller deep red centre. This positive reaction signifies lack of immunity. The control test made with heated toxin in the other arm should, of course, show no reaction. Many thousands of diphtheria contacts examined in this way show that it is possible to separate immune from non-immune persons. An annotation on this test with references to recent literature appeared in THE LANCET, 1921, i., 1317. A previous test toxin issued was put up with 0·5 per cent. phenol and could not safely be kept for more than a fortnight.

Diphtheria Toxin-Antitoxin Mixture for Active Immunisation.—We have also received from the same firm samples of their diphtheria prophylactic toxin-antitoxin mixture. This mixture is stated to contain in 1 c.cm. a small amount of diphtheria toxin to which has been added just sufficient antitoxin to neutralise tendency to combine radium or X rays with operation is the outcome of dissatisfaction with present methods. Three subjects typical of those about which the practitioner often seeks in vain for information are infant feeding, examination for life insurance, and the preparation for, and the after-treatment of, operations. All of these are admirably presented.

Our selection for special praise or blame of certain individual sections of a well-planned work must not be allowed to give the impression that the volumes lack balance. The proportion of space and importance allotted to each subject is well maintained. There are numerous plates and figures illustrating the text, and some of the coloured plates are excellent. The contributors to the work are numerous and distinguished, and though all the articles may not reach the same high standard, most of them are complete, concise, and up to date, and the dictionary thus deserves a place in the library of every practitioner.

SEXUOLOGY.

Sexual Life of Primitive People. By H. FEHLINGER. Translated by S. HERBERT, M.D., and Mrs. HERBERT. London: A. and C. Black. 1921. Pp. 133. 6*s*.

Sex: For Parents and Teachers. By W. L. STOWELL, M.D. New York: The Macmillan Company. 1921. Pp. 204. 17*s*.

As is now acknowledged, the practice of politics has a good deal to learn from science, especially perhaps from medical science. Nowhere, surely, is there a more obvious lesson than the sexuological one, both at home and abroad. That peoples groaning under the evils of venereal disease and prostitution should seek to impose, more or less forcibly, their own practice in sexual matters upon other peoples practically free from the said evils, is an anomaly that will divert at any rate the Muse of History. Dr. Herbert has done good work in translating—capably enough—this well-documented but succinct account of the sex life of savages. We see again the peculiar character of ethnology—namely, the difficulty in making generalisations. "It is a mistake," says Fehlinger, "to assume hastily that customs among primitive people that appear strange to us must therefore be ancient and be relics of a primitive state. Every primitive race has a long history behind it, and it is not likely that it has remained static all the time." However, with physical characteristics we are on surer ground than with social culture; and in the author's account of the very late appearance of sexual secondary characters in a Melanesian tribe it may be permissible to see evidence of an approximation on their part to the primitive bisexuality. This is an exact and scientific work, which may be recommended as a source of information.

Dr. Stowell's is one of the countless popular expositions and recommendations of sexual enlightenment. It differs from them in general by being illustrated. Several of the plates are unnecessary—e.g., of a sow suckling a litter, especially as the animal is not, as stated, a Berkshire, but of the variety known as Large White. The work is orderly in arrangement, but poor and somewhat naïve in style. Parents and teachers may, however, find much helpful matter here, and their charges may in after years have cause to thank them for consulting the worthy and chatty pages of this book.

THE ORGANS OF INTERNAL SECRETION.

Their Diseases and Therapeutic Application. Third edition. By IVO GEIKIE COBB, M.D., M.R.C.S. London: Baillière, Tindall and Cox. 1921. Pp. 352. 10*s*. 6*d*.

Dr. Cobb's book on the organs of internal secretion was originally published in 1916, and a third edition is evidence of a favourable reception.

In the present volume two chapters have been added, one dealing with the inter-relationship of the ductless glands and the nervous system, and another in which some practical points on hormone-therapy are discussed. The book is intended for the general practitioner, and in this it fulfils its purpose very well, for Dr. Cobb avoids as far as possible the discussion of unproved theories, preferring to confine himself to such things as he has himself tested in practice or have been approved by men of large authority on the subject. The literature of endocrinology is now becoming voluminous, and too many authorities are being led by their enthusiasm into making exaggerated claims for their special methods of gland therapy. Dr. Cobb avoids these exaggerations; and is properly cautious in his presentation of the opinions of others where these have not been sufficiently corroborated. The book presents the main facts of our knowledge of the ductless glands in such a form as will prove of great value to the general practitioner.

Dr. Cobb devotes fully a quarter of his book to the thyroid gland and its disorders. His treatment of this subject is on the whole adequate, but his list of the minor thyroidal deficiencies might be extended. Both the suprarenal and pituitary glands receive somewhat less attention than they deserve; the physiological action of adrenalin on the circulation might with advantage be discussed in greater detail and the importance of minute doses in asthma pointed out. Dr. Cobb gives a very minor place to anterior pituitary, for he considers the action of the pituitary gland depends almost entirely on the active principle of the posterior lobe. This will not be admitted by all endocrinologists, for extracts of the anterior lobe have an extensive therapeutic application, both in the disorders of the young and in the degenerative changes of old age. More might be made also of the use of corpus luteum in treatment. These, however, are minor criticisms, and are not intended to detract from the value of the book, which admirably serves the purposes for which it is intended.

GYNÆCOLOGY.

By BROOKE M. ANSPACH, M.D., Associate in Gynæcology, University of Pennsylvania. With an introduction by JOHN G. CLARK. London and Philadelphia: J. B. Lippincott Company. With 562 illustrations. Pp. 752. 42*s*.

IN Dr. Clark's introduction this text-book is described as one of a type in which the author selects his literary references with great care and, combining these with the observation gathered from his mature experience, constructs a well-balanced text-book. It would seem that this is not undue praise, and the author is to be congratulated on the production of a well-written and comprehensive work. Considerable stress is laid upon the important facts in embryology, anatomy, and physiology, which should be known to the student when he begins the study of the diseases of women, and the chapter on embryology is well and copiously illustrated. A section dealing with developmental anomalies follows naturally, and then a good account of the anatomy and physiology of the pelvic organs. The chapters dealing with physical examination are well arranged, and the details of the investigation of the urinary tract are given more fully than is usual in a work of this kind. Particular diseases of the various parts of the genital tract are next dealt with in detail. In the chapter on diseases of the endometrium and myometrium there are some good illustrations of sections of the uterine wall treated with Weigert's stain. The chapter dealing with the hygiene of adolescence and the relation of neuroses to pelvic diseases is especially illuminating; and an important one from the point of view of everyday practice is that on backache, for the author describes very clearly the part played by status in the production of backache in women. Perhaps more space is devoted to the diseases of the urinary tract and of the anus and rectum than is usual in English text-books of gynæcology, but, after all, a knowledge of these affections is essential to the gynæcologist

THE LANCET.

LONDON: SATURDAY, DECEMBER 10, 1921.

Old and New Methods of Diphtheria Prevention.

THE report on diphtheria, made to the Ministry of Health by Dr. S. MONCKTON COPEMAN, published last week, should give an impetus to the greater use in this country both of the Schick reaction as a means of determining susceptibility to the disease, and of toxin-antitoxin mixture as a means of conferring active immunity on those who are found to be susceptible. From the time of SCHICK's first publication in 1913 onwards the nature of this simple test has been frequently described in medical literature, and the character of positive and "pseudo" reactions obtained to it have been illustrated. The extensive use made of this test, and of active immunisation methods, in certain American cities, especially New York, is also common knowledge. When all due reservations are made, it seems certain that once the technique of this little test has been mastered, and experience has been gained in judging the reactions, (especially if a control test with heated toxin solution is performed at the same time on the opposite arm,) the distinction of the positive response presents little difficulty, when it can be asserted with considerable confidence that on exposure to infection diphtheria will only occur among the positive reactors.

This separation of susceptibles in itself is a valuable aid to preventive measures in times of epidemic diphtheria. It is still more valuable as an index to those members of the community at risk, who should be advised to receive active immunising treatment by toxin-antitoxin mixture, in the anticipation that they will obtain an effective immunity which is likely to last for several years. In this country, partly because other means of dealing with the spread of diphtheria are so well established, and partly through the absence of any supply of the necessary materials by public health authorities, the Schick and associated methods have been very little used in practice. Dr. COPEMAN'S presentment of the facts is derived mainly from PARK, ZINGHER, and others who have secured the adoption of these methods on a most extensive scale in the schools of New York, as well as among the general population of that city. In Great Britain the Schick test has been applied, though only on an experimental scale, at a few infectious diseases hospitals, notably those in Edinburgh and Manchester. Dr. COPEMAN'S own experience has been limited to trials of the method on a small scale, first in an institution in Bristol, and later at the Mitcham Schools of the Holborn Union. The results of these trials, which he made with the assistance of several distinguished fellow-workers, and with standardised toxin-antitoxin mixtures prepared by Dr. R. A. O'BRIEN of the Wellcome Laboratories, appears to have been generally satisfactory. In the Mitcham schools, all of 329 children, ranging in age from 3 to 14 years, were submitted to the Schick test, and 98 afforded a positive reaction. All the reactors were immunised by means of at least three separate inoculations of toxin-antitoxin at intervals of four to seven days in doses of 0·05 c.cm., 0·25 c.cm., and 1 c.cm. In three only was the reaction following the inoculation even of sufficient severity to require a day's stay in bed. Of eight adults inoculated with similar doses, none were off duty at any time, although one suffered from malaise and soreness of the arm for a couple of days. According to the view expressed in this report, the evidence of the effectiveness of the Schick method combined with active immunisation is now sufficient to make its adoption desirable in special cases. A chief instance is that of nurses and others who come into close contact with diphtheria infection. Another is the systematic use of the method in residential schools and similar limited communities. Further than this, there is the not infrequent case of parents who are specially anxious to avoid all possible risk of diphtheria infection for their children, and who are anxious and ready to accept any prophylactic method which can be recommended to them with confidence. A more difficult question is raised when it is asked whether the general application of this measure of prevention, as adopted in New York, should be recommended for English communities. The obstacles which would have to be met, before wholesale testing and inoculation could be undertaken at our elementary schools, and among the population generally, are obvious and somewhat formidable. In a note, addressed to Sir GEORGE NEWMAN and forming a preface to Dr. COPEMAN'S report, Dr. G. S. BUCHANAN expresses the opinion that it would be premature to advise such a system of general immunisation in this country. Before this could be done, it would be necessary not only to have further and longer experience of the New York results, but also to consider whether equally good results cannot be achieved by the customary measures of diphtheria prevention which we adopt, and more particularly by improved methods based on the same principles. It is clear that in some respects our traditional means of dealing with diphtheria prevalence need to be revised.

The principal directions in which revision is necessary will be found in Dr. BUCHANAN'S observations, given elsewhere in our present issue, which raise practical considerations of considerable importance. Measures of prevention in regard to diphtheria carriers ought, in view of present knowledge, to be restricted, if it can be shown to be possible, to those carriers whose diphtheria bacilli are demonstrated to be virulent. The practicability of applying this principle depends largely on the development of laboratory methods recently proposed, by which the virulence of a number of separate cultures can be tested simultaneously on the same experimental animal. The restriction of preventive measures to virulent cases would, of course, permit a very desirable economy in time and in money when dealing with diphtheria outbreaks. Another important economical consideration is raised in the portion of the report which insists that there is no good legal or practical ground for notifying the "bacteriological" carrier, otherwise healthy, as a case of diphtheria, or for removing such a carrier to an isolation hospital—often to the exclusion of cases requiring treatment. The warning given against waiting for bacteriological confirmation before giving antitoxin in cases already clinically recognised as diphtheria deserves special attention, as also do the limitations of routine swabbing at schools and hospitals. It is evident that methods of prevention based on the detection of infective cases and carriers should not be discarded in favour of the new systems of prophylaxis until further efforts have been made to improve on them in the light of newer knowledge of the carrier condition and of virulence tests. This can only be done by careful collection and study of the experience, past and future, of public may again be through ketonic acids like pyruvic, which can be converted into alanine with ammonia. The difficulty of ascertaining the intermediate stages and the methods of determining them are pointed out.

The section on catabolism contains a description of the process of digestion in animals—absorption, nutrition, respiration, excretion, and the chemical regulation by the secretions of the ductless glands. Each chapter is short, yet the essentials are well and carefully explained. The author's aim was to write a readable account of the chemical processes in living organisms. He has succeeded in doing so. The book can be thoroughly recommended to readers wanting an introduction to biochemistry, while the numerous references to larger books and to original papers will be valued by those who have been stimulated to desire more information.

Practical Biological Chemistry. By G. BERTRAND and P. THOMAS. Translated from the third edition by H. A. COLWELL. London: G. Bell and Sons. Pp. 348. 10*s.* 6*d.*

MM. G. Bertrand and P. Thomas's "Guide pour les Manipulations de Chimie Biologique" is a work well known and much appreciated in France, and Mr. Colwell has performed a good service to our technical literature by undertaking the somewhat laborious task of translation. The work is broad and practical in character and will be read with interest by students of biochemistry. It is not intended as a laboratory handbook for the specialist in pathological biochemistry or any other particular branch of the subject, but is designed to afford a suitable scheme of work covering a wide field, so as to ensure a broad foundation for any investigations the student may afterwards concentrate upon. The first portion of the work is concerned with the detection and estimation of the elements, such as copper in snails' blood, boron in wine, &c. The sugars, polysaccharides, glucosides, fatty and aromatic acids, fats, alkaloids, proteins and their hydrolysis, pigments, and so forth, follow, with appropriate methods of isolation, detection, and estimation. The second portion is concerned with enzyme chemistry and is evidently the work of Prof. Bertrand, who is a master of this subject. Hydrolases, oxidases, clastases, elements of microbiology, fermentations and the identification and estimation of the chief products of fermentation, and various synthetic phenomena are dealt with in a clear and concise fashion. A few errors occur—for instance, a wrong value is given to the specific rotatory power of maltose, and the value of the book would be much enhanced if references were given in the text.

EARLY SCIENCE IN OXFORD.

Part I., Chemistry. By R. T. GUNTHER. Oxford University Press: Humphrey Milford. 1921. Pp. 91. 10*s.* 6*d.*

PREVIOUS to the publication of the book now before us Mr. Gunther had already conferred an obligation on students of the history of science in Oxford by the issue of his Daubeny Laboratory Register, which, among other information, gave a list of scientific treatises by members of Magdalen College up to and after the erection of the Daubeny Laboratory. The earliest treatise mentioned is one by Edward Wotton, 1552, being a zoological work entitled "De Differentiis Animalium," a part of which—namely, that dealing with insects—was published by Dr. Thomas Moufet, under the title of "The Theatre of Insects, in 1634," and again edited and published together with Topsel's "History of Four-footed Beasts," by J. R., M.D., in 1658.

The present volume is the first of a series intended to deal with the history of science in Oxford in general. Part II. is to treat of mathematics, and Part III. with astronomy, and further parts are to follow supposing that financial difficulties in regard to the cost of production are overcome. If the following portions of the work are as good as that now before us Mr. Gunther may be warmly congratulated, for he has given us a most interesting account of chemistry at Oxford from the time of Roger Bacon down to the nineteenth century.

The first persons, it may be assumed, to sell what may be broadly called "chemicals" in this country were the apothecaries, and although Freind says that Johannes Falcandus of Lucca, 1357, was the first apothecary in England, Mr. Gunther points out that Wood mentions one John the Spicer who held a seld—i.e., shop—in *ypotecaria*, in the parish of All Saints in Oxford in 1332. (We can add an even earlier mention of apothecaries than this, for the Ward Robe Rolls mention one Odin the Spicer who was Apothecarius Reginæ in 1313.) After Bacon experimental science languished until the early years of the seventeenth century, but circa 1640 Oxford became the centre of scientific study in England. The protagonist was the Hon. Robert Boyle, who was the first to prepare hydrogen, and who also was the first to introduce into Oxford a regular teacher of practical chemistry—namely, Peter Sthael, "a great hater of women and a very useful man." In this century, too—i.e., in 1671—John Dwight of Christ Church took out a patent for the process of salt-glazing stoneware, and about the same time Sir Kenelm Digby and John Mayow were experimenting on the use of "the Sal-Nitro" in agriculture. Mayow was Fellow of All Souls, a great chemist, and was the practical discoverer of oxygen as put forward in his Tractatus de Respiratione. Besides the Oxford laboratories there were many in London and the suburbs, one of which was kept by Nicolas Le Fevre or Lefebure circa 1664, when Professor of Chemistry to Charles II. He wrote a work called "A Compleat Body of Chemistry," in which, amongst other receipts, he gave directions for preparing "mummy" quite equal to that prepared from "bodies dried up in the hot sands of Lybia."

To return to Oxford, the first university laboratory was founded by Elias Ashmole in 1683, and, like most other seventeenth century laboratories, was placed in a cellar to minimise danger from fire; it may be said of early chemists that, like the early Christians, they wandered in dens and caves of the earth. The eighteenth century study of chemistry in Oxford is marked by the foundation of the Worcester Porcelaine Company by Dr. John Wall, of Worcester and Merton Colleges, and by the lectures of Dr. Martin Wall, who remarked in his first lecture that "Chemistry has improved Science . . . . given occasion to the invention of gunpowder, and a coup de grâce to the miseries of war," a statement which reads oddly in the light of recent events. We need only add that Mr. Gunther's book ends with a full account of Dr. Daubeny, his laboratory, and the apparatus contained therein, a worthy finish to an excellent compilation.

GENERAL MEDICINE.

Vol. I. of the Practical Medicine Series. Edited by FRANK BILLINGS, M.S., M.D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago; and BURRELL O. RAULSTON, A.B., M.D., Assistant Attending Physician and Resident Pathologist, Presbyterian Hospital, Chicago. Chicago: The Year Book Publishers. 1921. Pp. 630. $2.50.

THIS volume is the first of a series of eight, to be issued at monthly intervals, and covering the entire field of Medicine and Surgery. It is intended to summarise the work of the previous year in a handy form for the general practitioner, and is therefore somewhat similar in aim to the *Medical Annual*. This volume deals with the infectious diseases, respiratory diseases, diseases of the heart and blood vessels, endocrinology, metabolic disorders, diseases of the urinary and gastro-intestinal tracts, affections of the liver and pancreas, and deficiency diseases. It consists of a series of abstracts from papers published in the American, British, and Continental medical journals, about 70 per cent. of these being culled from the American press. There are 38 plates, gratitude. It is a serious reproach to our national medicine that we are unable to provide adequate instruction in midwifery for our students; we should not in such a connexion be using the word adequate at all, for we ought to be able to show that the best facilities for teaching so important a subject are forthcoming.

Sir WILLIAM SMYLY divided his verdict upon the examinations in midwifery into four headings and reported as follows: The examinations of the Universities of Bristol, Birmingham, Durham, Manchester, St. Andrews, Glasgow, Belfast, and Dublin, of the Apothecaries' Hall of Dublin, and of the Irish Conjoint Board were "sufficient." These ten were personally inspected. He was unable to be present at the clinical examinations in Leeds and Edinburgh, but accepted the evidence of the examiners as to the methods followed and declared the examinations "sufficient." But of the examinations of the Apothecaries' Society, the London Conjoint Board, the Universities of Liverpool, Oxford, and Sheffield, the Scottish Conjoint Board, the University of Aberdeen, and the National University of Ireland, he said "in the absence of a clinical examination I cannot consider this examination sufficient"; while of the examination of London University he said "this examination is not sufficient." The examination at Cambridge was not reported on. The exact meaning which Sir WILLIAM SMYLY attached to the word "sufficient" seems to have been uncertain, but the Examination Committee of the General Medical Council have taken a lenient view in holding that their inspector meant to warn rather than to condemn those bodies whose tests he did not find "sufficient"; it is serious enough that practically half of all the bodies inspected should require warning on so vital a matter in the training of the practitioner. It might be expected that Sir WILLIAM SMYLY, one of our wisest and most experienced obstetricians, would hold strong views on the necessity of raising the level of examinations in midwifery and gynæcology, especially on the practical side, and the Examination Committee took him to imply that, apart from the question of the clinical tests, he was not dissatisfied with the level of efficiency actually required by any of the licensing bodies, save perhaps the University of London; and he was understood not to suggest that any of the candidates who had passed the examinations of the bodies in question should have been rejected.

With regard to the University of London, that body has already taken steps to remedy conditions which were capable of being immediately improved. Additional examiners have been appointed and the well-known rule that no student should be examined by one examiner only will be more carefully insisted upon. Further, every candidate will be for the future required to furnish certificates of instruction in clinical midwifery and gynæcology. The University will have to submit to reinspection at an early date, and no doubt the authorities find the position a vexatious one, but those who know where the real fault lies will find it difficult to allot blame. The teaching of practical midwifery is exceedingly difficult in the absence of a proper number of beds for lying-in women, and there is acute need for a larger number of beds of this sort in London. Putting the public side of the matter away from our minds, the London medical student suffers by comparison both with Ireland and with Scotland in receiving very little clinical instruction in this subject, though in all others he is particularly fortunate. That domestic midwifery has enormous value no one doubts, but it ought to be accompanied and illuminated by careful demonstration in specially equipped institutions. At a recent discussion of the Obstetrical Section of the Royal Society of Medicine concerning the teaching of obstetrics to medical students, the fact emerged that the number of beds available for lying-in cases in London hospitals attached to medical schools was only 97 of a total of 5250 in the 12 hospitals, and of these 69 only were available for teaching of medical students. Since that time some improvement has taken place, and a sensible number of lying-in beds have been added to the humiliating total, but many more are required. And until they are forthcoming the teaching bodies concerned may be submitted to reproach which they cannot avoid.

The Production of Chemical Drugs.

MUCH of the recent legislation in this as in other countries bears the stamp of the war; and governments have not yet broken free from a habit acquired in times when haste in the framing of measures of protection was a factor of prime importance. The hour of extremity is as productive of good resolutions as is a New Year's eve, and it is a common experience that these resolutions fade with the morning. But a short while ago we had made up our minds that the German and his goods were to be kept at arm's length for more than one generation; yet at this very time, before the wreckage of war has been cleared away, civil, if not polite, intercourse has been established, while great German cargoes are being unloaded at our ports. In some cases the goods are welcomed here because labour conditions in Germany and the disproportionate rate of exchange enable us to obtain them at lower prices than those at which they can be produced here; in other cases we are glad to have the goods because it is difficult, if not almost impossible, to procure them elsewhere. When the war began it was at once realised that we had allowed ourselves to become so completely dependent upon Germany for our supplies of certain kinds of manufactured articles that our stores, when exhausted, could only be replenished with difficulty. As a matter of fact this position offered problems which proved insoluble with anything approaching to complete satisfaction. The main thing was to produce the wherewithal to beat the enemy, and with this supreme task to accomplish there was little opportunity to become proficient in the manufacture of things not essential to the main purpose.

Among the chief articles which had to be used sparingly because their main supply was cut off were certain ranges of chemical drugs, analytical reagents, and laboratory glassware, and the resolve was made that never again would we be caught so soundly sleeping when so much required doing. Endeavours were made to produce here what we could not obtain elsewhere, and some of the wanted articles were produced in due course and on a commercial scale. Protection was promised for these infant industries, but when the time came for these promises to be fulfilled the public had already lost some of its enthusiasm, and the question of cost, which was a trivial matter when we were spending seven millions sterling a day, had again become an important factor in our calculations. Accordingly the Government passed the Safeguarding of Industries Act. If the volume of criticism of this measure has any foundation, it would have been in the interests of commerce had the Government failed to keep its pledge; but for better or for worse the Safeguarding of Industries Act is in operation, and the question that concerns the medical profession is whether the British chemical it. Three injections of 1 c.cm. given at weekly intervals, subcutaneously, are considered sufficient to produce immunity. The method was described in our columns by A. T. Glenny, K. Allen, and R. A. O'Brien (THE LANCET, 1921, i., 1236).

Sachs-Georgi Reaction for Syphilis.—The sample of Sachs-Georgi antigen submitted is considered to give, when diluted, a denser suspension than the original antigen. This suspension of a cholesterinised extract of heart tissue is put up in the usual 1 c.cm. phials ready for diluting 1 in 10 for immediate use.

Mixed Gland Preparation.—Tabloid brand preparations of endocrine glands have also been received from the same firm. These are designed for oral administration. No. 1 tabloid is obtained from endocrine glands of the male and No. 2 from the female. In the former six gland extracts are used, and in the latter seven.

BENZYL BENZOATE CAPSULES.

(PARKE, DAVIS, AND CO., 50–54, BEAK-STREET, W. 1.)

We have received samples of benzyl benzoate put up in gelatin capsules, each containing 5 minims of the ester with an equal volume of olive oil. The contents of the capsules are clear and homogeneous. Benzyl benzoate occurs naturally in Peruvian balsam and in balsam of tolu; it may be prepared chemically by the interaction of benzyl alcohol and benzoyl chloride, or of benzaldehyde and sodium benzylate. The capsules have been prepared for use as antispasmodics in the treatment of conditions in which there is supposed to be undue rigidity or spasm of unstriped muscular tissue. Good results have followed its administration in persistent hiccough (THE LANCET, 1920, ii., 512), whooping-cough (ibid., p. 615), and asthma (ibid., pp. 808 and 920); and it has also been recommended in such various affections as excessive intestinal peristalsis, cardiospasm, pylorospasm, biliary, ureteral, and renal colic, and spasmodic dysmenorrhœa. The dose is 1 to 3 capsules, three or four times daily.

"LUKMAH" TONIC TEA.

(ELLIS DAVIES AND CO., 16, MINCING-LANE, LONDON, E.C. 3.)

This tea, which is sold in a finely broken condition at 1*s.* 10*d.* the half-pound packet, is stated to be blended with "a neutralising agent of tannin." On analysis the tannin content of the tea was found to be 13·7 per cent. and the ash 5·64 per cent. Both these figures may be regarded as typical of a tea of good quality. An infusion of the tea showed no smaller amount of tannin than is customary in normal tea. We do not think that it is wise to apply the term "tonic" to tea unless there has been addition of a drug having specific medicinal properties.

CINZANO BRUT.

(CINZANO, LTD., 43, DOVER-STREET, LONDON, W. 1.)

This is a natural sparkling wine, the product of Italy, of agreeable flavour and of a champagne character. The relatively high alcohol content and low sugar show it to be fully fermented. The composition on analysis was:—

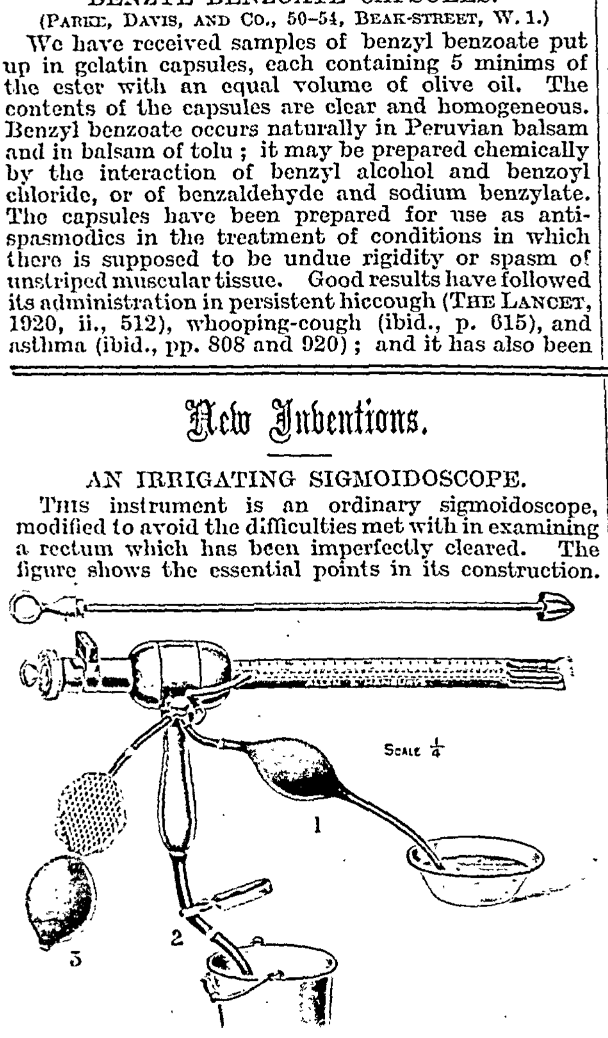
	Per cent.
Alcohol	13·55 (by volume).
Equivalent to	23·8 proof spirit.
Total extractives	2·60
Containing mineral matters ..	0·14
" sugar (as invert sugar)	1·35
" cane sugar	nil.
Total acidity as tartaric acid ..	0·7
Volatile acid as acetic acid	0·03

Preservatives, including sulphites and salicylic acid, were tested for and found to be absent.

New Inventions.

AN IRRIGATING SIGMOIDOSCOPE.

THIS instrument is an ordinary sigmoidoscope, modified to avoid the difficulties met with in examining a rectum which has been imperfectly cleared. The figure shows the essential points in its construction.



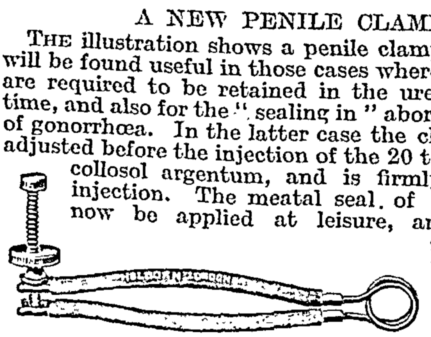
A short way beyond the eye-piece the calibre of the tube is increased to form a definite chamber, in which any remains of an enema or fluid fæces will collect without running down on to the eye-piece. From this chamber fluid can escape through the handle, which is hollow and is attached to a wide rubber tube closed when not in use by a clip (2). At the side of the chamber there is a three-way tap connected with the ordinary bellows (3) and a Higginson's syringe (1). By means of the tap either the bellows or the Higginson's syringe can be put into communication with a narrow tube which passes along the inner wall of the instrument, terminating just inside its open end. By this means it is possible to inflate the bowel in the usual way or to project a stream of water over the bowel wall. When the operator finds that there is an escape of fluid from the bowel he removes the clip from the tube attached to the handle, turns the tap so as to connect the Higginson's syringe with the narrow inner tube, and washes the bowel clean. When this is accomplished the tap is turned in the opposite direction, inflation resumed, and the examination completed. The only other point to be noted is the shape of the obturator, which is grooved at the sides to allow for the inner tube. I have used the instrument a large number of times, and although it may appear rather complicated it is quite simple to use.

Messrs. Allen and Hanburys, of Wigmore-street, London, W., have carried out my design.

ARTHUR EDMUNDS, C.B., M.S. Lond.,
Queen Anne-street, W. F.R.C.S. Eng.

A NEW PENILE CLAMP.

THE illustration shows a penile clamp that I think will be found useful in those cases where medicaments are required to be retained in the urethra for some time, and also for the "sealing in" abortive treatment of gonorrhœa. In the latter case the clamp is loosely adjusted before the injection of the 20 to 30 minims of collosol argentum, and is firmly closed after injection. The meatal seal of collodium can now be applied at leisure, and the clamp should not be removed until after the seal has hardened. The clamp will be found to be satisfactory for use with any adolescent or adult male patient. Owing to such great variations in size of the penis with different individuals the usual spring clamp is often useless. The "sealing in" abortive treatment of gonorrhœa is very valuable in suitable early cases, and any method tending to the simplification of the technique is of interest.



The instrument has been made from my design by the Holborn Surgical Instrument Company.

Harley-street, W. H. WANSEY BAYLY.

important additional resolution was directed to investigation as to the inclusion of "all dangerous drugs of whatever origin, which produce similar effects" to those named in the Convention of 1912, and to the desirability of convoking another International Conference to draw up a yet wider Convention.

The Governments of Germany and of the Serb-Croat-Slovene State have also been invited to nominate representatives on the Advisory Committee. Inasmuch as, by the terms of the Convention, medicinal opium and all preparations, both non-officinal and officinal, containing more than 0·2 per cent. of morphine are to be confined to medical and legitimate purposes, we do not see how this can be effected unless in all producing countries, whether Turkey, India, Persia, or China, the area under poppy cultivation and the actual amount of production of raw opium are brought under strict supervision and control.

SCHOOLS OF PUBLIC HEALTH IN THE UNITED STATES.

IN recent years there have been important extensions in the teaching of hygiene and public health in American universities. For many years the School of Technology at Cambridge, Boston, which is closely affiliated with Harvard University, has led the way in the training of men for public health work. The late Prof. W. T. Sedgwick was the leader in this movement, and many of the most distinguished public health workers in the States owe their inspiration to his teaching and example. With his work Prof. G. C. Whipple was closely associated, and Dr. C.-E. E. A. Winslow, professor of hygiene in Yale University, is one of the most distinguished alumni of this school. These three and many others trained in the same school were non-medical graduates; and although a few of the non-medical graduates from the school have become the heads of State Boards of Health, most of them have become sanitary engineers and advisers on water and sewage and allied problems, and have not been engaged in public health administration as it is understood in England. The question as to whether there is a large need of public health experts of the highest grade who do not start as medical graduates is not under discussion at the moment; but it is noteworthy that in the States, as the country has become more fully settled, official public health posts are being generally occupied by medical men, though many of them, unfortunately, are destitute of training for their special work. At Harvard and Yale Universities excellent courses of instruction in public health work are given, and, as in a number of other universities, there are elaborate courses of instruction for social workers, and for nurses and public health nurses. But until the School of Hygiene and Public Health was opened at Johns Hopkins University, under the distinguished directorship of Dr. W. H. Welch, it cannot be said that the needs of those medical men wishing to be trained for a public health career were adequately met. The courses at this new school contemplate certificates after one and degrees after two years' work, and include a very thorough practical training in the foundation subjects of public health, physiological hygiene, chemistry, dietetics, zoology and protozoology, bacteriology, &c., as well as training in epidemiology and vital statistics and in applied public health. The endowment of the school is derived from the Rockefeller Foundation, and is adequate in amount to ensure that professors and associate professors each has ample opportunity for that combination of research and teaching which keeps teaching alive and prevents it from becoming mechanical and stereotyped.

The Johns Hopkins school has been successfully launched; and now we learn that the same beneficent foundation has endowed a similar school at Harvard University with the munificent initial gift of one and three-quarter million dollars. That the new school will justify its existence, and will have an important influence on public health developments in America may be safely prophesied. Its success, like that of its predecessor at Baltimore, will become more rapid so soon as one or more States can be induced to make it a condition of holding their public health appointments that candidates shall possess a satisfactory diploma or degree in public health.

EPIDERMOID CYSTS.

Dr. Henry H. Sherk[1] of Pasadena, California, who gives a brief résumé of 15 cases, on 11 of which he operated himself, remarks that epidermoid cysts are of fairly frequent occurrence, but are almost invariably unrecognised, being generally mistaken for sebaceous cysts. They have been variously termed atheromata, inclusion cysts, implantation cysts, and epidermoids (Franke). Only the elements of the epidermis are found in the wall and contents of these cysts. Some are undoubtedly traumatic in origin, and others are with equal certainty congenital. Those of traumatic origin grow more slowly and are of smaller size than the congenital, as embryonal cells have a greater ability to grow. Writers differ as to the most common site of these tumours. In the present series the cysts were found in the following situations: scalp, 4; back, 2; shoulder, arm, cheek, lower jaw, neck, breast, groin, buttock, and finger, 1 each. In two cases there were multiple cysts, the remainder were single. Seven were in men and eight in women. The cysts always appeared as more or less hemispherical nodules, projecting from the body surface, a few unattached to, but the majority fixed to the skin and freely moveable on the subjacent tissue. The overlying skin, with few exceptions, was firmly attached to the cyst. Epidermoids are not flattened like sebaceous cysts, nor, like them, can they be moulded or changed in shape. They are also differentiated from sebaceous cysts by the absence of an opening or duct by which their contents can be expressed. The pearly lustre and laminated appearance of the contents constitute their most noticeable characteristic, the final diagnosis being made by histological examination, which shows only the elements of the epidermis.

HYDATID FREMITUS.

THE description and explanation of hydatid fremitus or thrill given in the text-books is somewhat contradictory. Some writers say that it is pathognomonic of hydatid cyst; others, that it may be elicited in other forms of cyst. Prof. L. E. Barnett has contributed to the *New Zealand Medical Journal* for October a valuable paper which does much to clear up the confusion on the subject. He finds that two forms of vibration can be elicited on percussing fluid tumours. The first is an ordinary fluid wave vibration which is not peculiar to hydatid cysts, but occurs as a rare manifestation in certain thin-walled cysts in close contact with the abdominal wall. It may be felt in a very large hydronephrosis, parovarian and mesenteric cysts, a hugely distended bladder, ascites, and a unilocular hydatid cyst. This form of fluid vibration will be familiar to clinicians. The distinctive feature of the true hydatid thrill was first clearly described by Briançon in 1828. It is the exquisite spring-like vibration which is distinctly prolonged beyond the moment of percussion, and which is associated with the remarkable drum-like resonance heard on auscultatory percussion. Hydatid fremitus of this character alone is pathognomonic of hydatid cysts. It is of extreme rarity. Prof. Barnett has been quite sure of its presence only in seven cases, although he endeavoured to elicit it in over 300 cases of hydatid cyst. In every case in which it was demonstrated the following physical conditions were present: 1. The mother cyst was close under the parietes. 2. Its walls showed signs of degeneration, leading to a slackening of the high tension that normally exists in hydatid cysts. 3. Some large daughter cysts were present, not closely health officers, medical officers of isolation hospitals and schools, with the closest possible association of the bacteriological laboratory in their investigations. It is satisfactory to note that the Ministry of Health are continuing to obtain the facts from all these sources, as well as from special research being conducted by the Medical Research Council, in the hope that before long it will be possible to obtain scientific authority for a code for the prevention of the spread of diphtheria as definite as that which we now possess in the cases of enteric fever and small-pox.

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[1] Surgery, Gynecology, and Obstetrics, November, 1921.

The Therapeutic Possibilities of B-Vitamin.

The absence of B-vitamin from food has hitherto been associated mainly with those severe symptoms collectively grouped together as beri-beri: hence this vitamin is often referred to as the anti-neuritic factor. But though these manifestations are the final result of the long-continued consumption of food entirely lacking, or containing a little but not enough of, this vitamin, the earlier signs appear to be of even greater importance. **McCarrison**, who has studied this aspect of the disease with such care in animals and man, considers that the earlier symptoms are referable to the digestive and endocrine systems, and only the later ones to the nervous system. In the early stages he has recorded loss of appetite, indigestion, flatulence, abdominal pain due to gaseous distension of the hollow viscera, headache, giddiness, weakness, coldness, breathlessness; and at a later stage chronic constipation, colitis, appendicitis, intussusception, stasis, and gastro-duodenal ulcers. Post-mortem examination showed atrophy of thymus, pancreas, spleen, and all endocrine organs except the adrenals, which were enlarged. **Cramer, Drew,** and **Mottram** record in our present issue (p. 1202) that rats fed on a diet deficient in B-vitamin showed a shrinkage of thymus and spleen, almost complete disappearance of Peyer's patches and lymphoid tissue in general, and a diminution of small lymphocytes in the blood. A state of marasmus is associated with this atrophy of lymphoid tissue and is apparently the specific effect of the absence of B-vitamin. In concluding from their observations that B-vitamin is not necessary for the life of each individual cell, and that its presence is necessary solely for the normal functioning of lymphoid tissue, the authors enter upon more debatable ground. If the effect of absence of B-vitamin were limited to the atrophy of lymphoid tissue and production of marasmus, such a conclusion might be justifiable, but their theory will scarcely account for the complexity of symptoms in beri-beri. The article by Dr. **Samson Wright**, on p. 1208, draws attention to the loss of appetite of animals fed on a diet deficient in B-vitamin, the quantity eaten being dependent on the apparent quantity of B-factor in the food.

Of the three vitamins, the B-factor seems most closely connected with metabolism, growth, and health. Several workers have observed a connexion between food assimilation and the amount of B-vitamin in the food, and it is surprising that while each of the three vitamins have long been used as specifics for certain diseases, the general therapeutic and tonic possibilities of B-vitamin have not been further explored. This subject offers an almost virgin field to the general practitioner anxious to do some useful clinical research, and we commend to his attention the therapeutic considerations advanced by Drs. **Cramer, Drew,** and **Mottram** as well as the suggestions of Dr. **Samson Wright**. Carbohydrate and fat metabolism seem dependent upon a proportionate amount of B-factor per calorie ingested. This connexion suggests the administration of B-vitamin in cases of diabetes to assist the utilisation of sugar. The addition of cod-liver oil or butter (fats rich in A-vitamin) to a diet deficient in B-vitamin has been shown to cause loss of weight and ill-health, while an increase in amount of B-vitamin led to assimilation of the fat with renewed health and growth. Cases of marasmus in infants, which had failed to put on weight by the usual treatment, began to grow directly they were given extra B-vitamin. As long ago as 1917 A. F. **Hess**[1] found that although yeast, which is rich in B-vitamin, apparently possessed little or no value as an antiscorbutic, it proved an excellent stimulant of growth in infants; he showed graphs of infants of under 1 year, 1½, and 2 years old who had maintained an almost constant weight for weeks or months in spite of various changes in diet, and showed an immediate and continuous rise after the administration of autolysed yeast. In some cases the appetite was stimulated, but in others there was a prompt response though the total food intake was not increased. That the yeast had a favourable effect on the digestive processes was shown not only by the increase in appetite, but by the improved character of the stools.

The chief source of B-vitamin in our food is the seeds of cereals and other plants, but the factor is removed from cereal seeds in the process of milling. Sugar, sago, and other farinaceous products are lacking in B-factor, meat and fish are poor, offal and eggs in comparison rich. Vegetables and milk contain small amounts. The quantity in these foodstuffs is scarcely sufficient to balance the large carbohydrate consumption of white flour in our diet, unless eggs, fruits, and vegetables are eaten in great quantities. The products richest in B-vitamin are the germ of cereals and yeast. Germ as such is not consumed by humans (except in wholemeal bread) and the yeast used in baking bread is not sufficient. Yeast contains B-vitamin in great concentration, and palatable preparations made therefrom can compensate for the lack of B-vitamin in other foods. No ill-effects have been ascribed to too great a consumption of foods rich in B-vitamin, and it is likely that certain cases of vague ill-health would be improved by the consumption of additional quantities of B-vitamin. There is here a promising field for clinical research.

The Teaching of Practical Midwifery.

At the recent meeting of the General Medical Council the Report of the Examination Committee on the latest series of inspections of the qualifying examinations furnished material for an important debate, and will have given rise to much reflection in the Council as well as outside. The inspectors for medicine and for surgery reported that the examinations held by 23 of the bodies empowered to grant legal qualifications were satisfactory, but the inspector for midwifery and gynæcology, Sir **William Smyly**, had no such tale to tell. There is no part of the practitioner's work so anxious and so responsible as his work as obstetrician, and in no department of his duties are skill and watchfulness so repaid in the saving of life, in the prevention of sickness and deformity, and—a very practical addition—in the earning of unstinted tration—the provision has been made in the Ministry neurasthenic hospitals for the accommodation and treatment by trained medical officers of the cases referred to in the question.

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[1] American Journal of Diseases of Children, 1917, xiii., 98.

What question and answer did not elicit was whether the provision of "Ministry neurasthenic hospitals" has been sufficient, and whether the combination of the neurasthenic hospitals with hospital treatment under the control of the Minister of Pensions is achieving success. It must best be known by the relatives of patients, and by medical men whose advice has been invoked independently of the Ministry, whether the neurasthenic hospitals referred to are full and overfull, or are able to receive suitable cases whenever they arise; and, also, whether the treatment afforded in hospitals under the Minister's control is always the most suitable for the individual case. We are inclined to believe that the question of the Minister's control may sometimes prevent the patient's treatment at an institution which would be open to him, and suitable for his case, and that questions of economy may intervene to render the treatment of ex-service men mentally affected less effective than it should be. Their case and that of their relatives is a very hard one. In many instances the disability will continue for a long time or perhaps will be permanent. The removal of all certified ex-service men from public asylums would no doubt entail some expense to the Treasury, but camps and buildings must now be standing vacant and under Government control the use of which, it is submitted, might be seriously considered. Moreover, the treatment now accorded is not being given without expenditure. The public is rightly jealous of increased expenditure by any Government department, but the removal of the stigma of the asylum from sailors and soldiers broken in the war would make an appeal to universal sympathy.

MONOPOLY IN POISON GAS.

WERE it not for such lurid writing as Mr. H. W. Nevinson's account of his visit to the great American poison gas-works at Edgewood, Baltimore, in the *Manchester Guardian* for Dec. 2nd, interest in gas warfare might be said to be flagging. The fact that Major V. Lefebure's "Riddle of the Rhine"[1] deals in great part with the history of gas warfare, and the production of war chemicals does not commend the book to the medical any more than to the general reader at the present time. Nevertheless, it conveys a lesson for peace conditions, as for war, which cannot be regarded lightly by the great nations other than Germany. Major Lefebure, himself a trained chemist, had opportunities for investigating his subject from many points of view, first in the field of battle, later as a liaison officer, and finally as a member of Inter-Allied Missions to the German Chemical Factories after the Armistice. With this first-hand information he has been able to place the issue before the public with praiseworthy clearness. He shows in detail how the success with which Germany was able to deluge the Allies with new and unexpected poisons was directly due to the facilities provided by her highly organised chemical industry. The toxic materials employed in war were organic compounds prepared in great part from the same raw materials as had been used in peace-time for the manufacture of synthetic drugs and aniline dyes. In most instances, details of which are given, the manufacturing plant normally devoted to the production of ordinary commercial products was adapted with only slight modifications for the elaboration of deadly poisons. A striking example is mustard-gas, which was manufactured on the lines ordinarily followed in the preparation of synthetic indigo. Even for explosives the chemical factories provided the essential elements, notably the Haber nitrogen fixation plant, by means of which ammonia and nitrates could be obtained when supplies of nitre were stopped. The facilities enjoyed by Germany in the secret and rapid provision of these war materials were in strong contrast with the difficulties encountered by the Allies, who not only had to build new and specialised factories for the manufacture of special substances, but in many cases to institute difficult and prolonged research before methods suitable for full-scale production could be elaborated. For the future the moral is obvious. If wars are to recur any huge organic chemical industry must be regarded as potential armament in the modern sense, and it would be in the highest degree inadvisable that one country alone should possess this overwhelming initial advantage. But apart from any consideration of war, it is not to the advantage of any branch of scientific progress in other countries that Germany should in future retain the dominant position that she has had in the past in the realm of chemical research and manufacture.

EXPERIMENTAL RICKETS.

PRELIMINARY reports of the work done by Dr. E. Mellanby on the causation of rickets have appeared in previous numbers of THE LANCET.[1] The present monograph[2] gives the experimental evidence on which these reports were based, and it brings up to date the record of five years' work and the result of observations on no less than 400 puppies. A brief account is given of the earlier experiments which led to the exclusion of certain possible causative factors and which pointed to rickets being a problem in dietetics, more particularly centring round a disturbance in calcium metabolism. The criteria by which the presence or absence and the severity are to be judged are discussed and compared; the external appearance of the puppies, radiograms of their bones, the calcium contents of the shafts of the bones, and the histological appearance form the basis for report. There is general agreement in the results obtained by these methods, though there are occasions when some difference is apparent, differences which are in part capable of ready explanation and which in part point out the need for further research. The earlier experiments led to the evolution of a diet which produced rapid and marked rickets in well-growing puppies. This diet remains the basis of the later work except that the amount of bread it contains was controlled in the later experiments. By additions to this basic diet of fats and oils the relative anti-rachitic influence of the various substances was estimated: thus it was found that cod-liver oil had the most effect in promoting calcification of bone, and linseed oil and babassu oil little or no effect. The question is discussed as to whether the anti-rachitic factor, which ricket-preventing substances are presumed to contain, is the same as fat-soluble A-vitamin, and from the identity in distribution in the several fats and oils and their mode of action the author inclines to the view that anti-rachitic and fat-soluble A-vitamins are the same. There are interesting experiments testing the activity of other food factors in the ætiology of rickets. Thus it was found that protein has a definite anti-rachitic effect while carbohydrate tends to promote the development of rickets. Further experiments bear on the question of exercise in its relation to rickets, and the author compares its influence to that of protein in preventing or modifying the disease.

The author takes a wide view of the subject, as is evident from the short summary given above, besides which other factors, such as infection and the possibility of thyroid extract modifying the disease, are discussed. In fact, while there were at one time two somewhat opposed schools of thought, the one holding the view that rickets is a food-deficiency disease and the other maintaining that it is primarily the result of bad external environment and deficient exercise, Dr.

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[1] London: W. Collins and Co., Ltd., 1921. Pp. 279. 10s. 6d.

[1] THE LANCET, 1919, i., 407; 1920, i., 604.

[2] Experimental Rickets, by Edward Mellanby, M.A., M.D., *Medical Research Council, Special Report Series, No. 61.*

industry, not to mention other trades whose products so intimately concern the medical profession, will be able, as a result of the protection afforded, to produce here articles which at present are mainly imported. We hope sincerely they will, but it must be admitted that the circumstances at the moment do not favour them. The Act is to remain in force for five years only, and as Germany has had forty years' start, the period of protection is brief. Again, between the introduction of the Bill and the enforcement of the Act several months elapsed during which importers had the opportunity, which they did not fail to employ, to bring into this country, free of duty, large supplies of those articles which are now subject to a tax of 33⅓ per cent. So considerable were the imports of some of the products that there is said to be a sufficient stock of them to satisfy the country's requirements for a very long time, and thus, in effect, a part of the five years' period of protection is lopped off and the industries concerned are discouraged from the start. The next question is whether the duty will be sufficiently high to serve its purpose, and to this no general answer can be given at any rate in respect of chemicals. The protected list of chemicals contains something like five thousand articles, and possibly more than a third of these are not at present made in this country; a large proportion of the latter are rarely used either in medicine or the arts or commerce, and it is estimated that so far as this proportion is concerned it is extremely unlikely that it would be worth the while of any manufacturer to undertake their production here. Further, it is alleged to be physically impossible to produce here several of the protected articles, so that by taxing the importation of such articles as santonin and menthol no British industry can ever be safeguarded. Incidentally, however, a referee is now hearing a complaint against the inclusion of santonin in the list, and as it is understood that the duty on menthol is to be modified, for the moment comment on the inclusion of these two articles must be in abeyance.

The Act provides that "synthetic organic chemicals, . . . analytical reagents, all other fine chemicals (except sulphate of quinine of vegetable origin), and chemicals manufactured by fermentation processes" are to be subject to an import duty of 33⅓ per cent. The Board set up under the Act has not the power to exclude from the list any article which falls in these categories. In compiling the list the Board has given to the term "fine chemicals," a wide interpretation that is now being challenged. Should it be established that the Board's view is correct, the only remedy open to the complainants will be an amendment to the Act, and we believe that already an amending Act is suggested which, without taking away any safeguard from British manufacturers, will secure an unhampered supply of desired products which are not likely to be produced here economically within the space of five years. So far the operation of the Act has not affected values in a general or substantial way. This is due to three causes: the large quantities of articles brought in before the duty was imposed, the bad state of trade resulting in keen competition among dealers for orders, and the low exchange value of the mark. As time goes on stocks on which no duty was paid will become depleted, and prices may then advance to the full extent of the amount of the duty, unless the Act has the desired effect and enables our manufacturers to compete with foreign producers; for trade must in time improve, and holders of stocks will become firmer in their views, and finally the exchange value of the mark will not be such an important factor, since the German manufacturers are now compelled officially to quote in sterling. Taking a broad view of the situation, while the principle of the Act, namely, the protection of essential industries, may be sound, we think it would have been in the interests of all concerned—the producer, the dealer, the prescriber, the chemist, and the ultimate consumer—had Parliament set up, under the Act, advisory committees representative of all interests, for the purpose of laying down the articles which should be protected. In the event of an amending Bill being framed we suggest that this principle should be adopted.

Annotations.

"Ne quid nimis."

OPIUM AND THE LEAGUE OF NATIONS.

PROGRESS has been made with the putting into force of the Opium Convention by the League of Nations since we last referred to the subject.[1] Both the Assembly and the Council of the League have had before them the report of the Advisory Committee appointed by the Council on the recommendation of the first Assembly, which met in December, 1920. This report of the Advisory Committee which held its first meeting in May of 1921, and which will meet again in the early part of next year, was considered and reported upon by Commissions both of the Assembly in September last and by the Council in October. It appears that the Council of the League on June 28th last approved of request being made to all Governments, whether members of the League of Nations or not, to ratify the Convention as soon as possible. They further resolved that Governments party to the Convention should prevent the export of the drugs named in the Convention (opium, morphine, heroin, cocaine, &c.) to other countries unless the Government of such importing countries approved thereof and certified that the drugs would be used for legitimate purposes. They also resolved to direct the attention of contracting Powers having treaties with China to the need for prevention of contraband trade in opium and other dangerous drugs. Moreover, as we intimated in September, the Council in June last took a step in advance of the Advisory Committee's report and resolved:—

> That in view of the world-wide interest in the attitude of the League towards the opium question, and of the general desire to reduce and restrict the cultivation and production of opium to strictly medicinal and scientific purposes, the Advisory Committee on Traffic in Opium be requested to consider and report, at its next meeting, on the possibility of instituting an inquiry to determine approximately the average requirements of raw and prepared opium, specified in Chapters I. and II. of the Convention, for medicinal and scientific purposes in different countries.

The second Assembly of the League of Nations, recently held in Geneva, on the report of its Commission No. V., adopted, in the main, the resolutions of the Council of June, though with a few rather important amendments as well as with some additions. Lastly, the Council, on Oct. 17th, adopted a report containing the Assembly's resolutions as amended and added to. Perhaps the most important amendment made was that of the Council's own resolution of June 28th, quoted verbatim above, in reference to restriction of the production of opium. The limitation to "strictly medicinal and scientific purposes" was struck out and "legitimate purposes" substituted therefor. This modification of the Council's previous resolution was, as explained to the Assembly, "to meet the very special conditions obtaining in various countries, particularly in India, where opium is largely employed as a prophylactic or an effective remedy" without medical advice or prescription. The most public supply by the addition of chlorinated lime. The 65-year old man on whom the inquest was held, on returning home after a day of strenuous activity, retired to bed feeling ill; vomiting and purging set in, and he died stuporous about 30 hours after. His house was situated about half a mile from the well where chlorinated lime was added to the water, and no discomfort or illness accredited to the water-supply was reported from any of the intermediate 25 or 30 connexions along the main. Assuming that the deceased man drank as much as two quarts of public water daily, he would have taken no more than one-eightieth of the curative dose of chlorinated lime as set down in the American Pharmacopœia. Fortunately for the credit of the water, an expert pathologist of the University of Pennsylvania performed an autopsy which showed no evidence of inflammation of the alimentary tract and led him to the opinion that death was due to dilatation of the heart, possibly brought on by exertion in a subject of marked arterio-sclerosis. This autopsy took place six days *after* the jury's verdict and led to a re-empanelment, when a supplementary report was issued "that chlorine was neither directly nor indirectly the cause of death." The fact that the present constitution of society makes it difficult to overtake a lie was, we presume, the reason for reporting the case fully in the last issue to hand of the U.S. Public Health Reports.

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[1] THE LANCET, Sept. 3rd, p. 518.

FURTHER WORK ON EXPERIMENTAL TAR CANCER.

WE have referred recently to the importance of this new line of experimental cancer research. How actively work in this direction is proceeding is evident from the fact that we have to record the publication of two further papers on this subject from two new centres of cancer research. One by Dr. Deelman[1] is dated from the Antoni van Leeuwenhoek House in Amsterdam. Both carcinoma and sarcoma were produced as the result of the repeated application of tar to the skin of mice. The paper is in the Dutch language, so that, unfortunately, its contents are not readily accessible. But the author expresses the opinion that he has observed in one case a carcinoma arising from a benign growth. The other paper[2] by Prof. B. Bloch, the Director of the Dermatological Clinic in Zurich, and his assistant, Dr. W. Dreifuss, registers a further advance, because these authors have succeeded in locating the cancer-producing agent of coal tar in the fraction with a boiling-point of over 300. This fraction is soluble in benzol and retains its activity after distillation. This fraction gave the remarkable result that 100 per cent. of the mice to which it was applied gave rapidly growing carcinomata within four months. The malignant character of these tumours was established by their morphology, by their infiltrative and destructive growth, and by the spontaneous formation of metastases in lymph glands and lungs. The hydrocarbons with a lower boiling-point also produced tumours, but these were of a benign character. It is probable that further work along these lines will yield important and novel information on the difficult and much debated problem of the relationship between benign and malignant new growths. A further communication dealing in detail with the chemical aspect of the various tar fractions and their biological properties is promised. Another interesting observation by these authors is, that while tumours could be produced in rabbits and in mice by the application of tar, guinea-pigs have so far failed to react in the same manner. Although the authors do not comment upon this negative result, it is of interest, because it emphasises the susceptibility of the cell as an important factor in the genesis of cancer. Differences in the susceptibility of cells to react to a given irritant by the cancerous change exist not only between different species, but between different individuals in the same species, between different tissues in the same individual, and even between different cells in the same tissue.

METEOROLOGY AND BACTERIAL INFECTION.

THE season is one when the "common cold" is in evidence and when the doctor's inability to prevent or cut it short is apt to lead to some reproach of medical skill. Something might be hoped from a collective study of the medical reports available under the Insurance Acts. Do the colds of sedentary workers last longer than those of outdoor workers? Does keeping the house answer better than going out? Are summer colds the most intractable? The answer to questions such as these is outside any possible individual experience but should be within the scope of concerted inquiry. In the meantime help is welcome from any source, and certain passages in Dr. E. J. Butler's recent address to the Association of Economic Biologists are, at all events, suggestive. In the absence of a blood-supply and of anything resembling a mucous membrane, the plant can hardly be expected to throw any direct light on catarrhal conditions in animals. But Dr. Butler, who is director of the Imperial Bureau of Mycology, has found one direction in which plant disease may have a bearing on the problem. He has shown that such relatively small variations of temperature as 8 or 10° C., and of humidity as 5 per cent., are sufficient in certain cases to determine whether a parasite can cause a 100 per cent. infection or none at all. Plants lend themselves to such study inasmuch as they can be grown under constant conditions of humidity and temperature in special chambers when the exact relations of their diseases to the environment can be determined. This relation, singularly close in some cases, has to be worked out on the parasite and host together, for the host-parasite complex, as it is called, does not always behave in the same way as either alone. Parasites that are perfectly harmless under one set of conditions will infect freely under conditions not very widely different. We should like to see the main facts of this relationship in plant diseases brought up for discussion at one of the societies specially interested in climatic medicine. The way has already been prepared by such a study as that of Colonel C. A. Gill on the Rôle of Meteorology in Malaria in a recent issue of the *Indian Journal of Medical Research.*

SELF-DISINFECTION IN THE CAMPAIGN AGAINST VENEREAL DISEASES.

IN the *International Journal of Public Health* for November–December, 1921, this question is discussed by Sir G. Archdall Reid, who advocates the instruction of the individual in methods of self-disinfection, and by Dr. Otto May, who presents the case against. Both articles should be read, but much that they contain is mere beating of the wind. It is a matter of regret that the protagonists on both sides of this question cannot see their way to join hands and oppose a united front to a common evil, for there is a line of research, not likely to be barren, to which they might well devote their attention.

The present state of affairs is confusing and annoying. Both parties to this discussion, and the societies which they represent, are agreed that "the best way of avoiding venereal disease is to abstain from promiscuous sexual intercourse." That is the ideal, but human nature and civilisation being what they are, Sir Archdall Reid holds, in effect, that the ideal is unattainable. He is persuaded of the futility of "exhortation" and advocates that "prospective sinners shall receive instruction in disinfection." How this instruction is to be imparted he does not sufficiently make clear. If it is to be given by posters displayed in lavatories, worded so ambiguously that they will not convey their full meaning to "an innocent boy," it seems to us it will do more than fail. Yet this is one means by which Sir Archdall Reid suggests the necessary information should be disseminated. In packed but having room to vibrate in contact with the walls of the parent cyst. The signs given when other physical conditions are present may be summarised as follows: single tense cyst—no thrill; single slack cyst—a wavy fluctuation but no thrill; cyst with daughter cysts tightly packed—no thrill. Prof. Barnett tried to verify these observations experimentally, using an imitation mother cyst made from the inner tube of a motor tyre and daughter cyst made from finger-stalls distended with water, but, like previous experimenters, not with unqualified success. It is here exceedingly difficult to reproduce artificially the exact conditions met with in nature.

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[1] Nederl. Tijdschrift voor Geneeskunde, 1921, Part 2, No. 20 (October).

[2] Schweizerische med. Wochenschrift, Nov. 10th, 1921.

THE HERITAGE SCHOOL AT CHAILEY.

THE present financial position of the Heritage Schools of Arts and Crafts for Crippled Boys and Girls at Chailey, in Sussex, is a cause of anxiety to those who are responsible for the work there carried on. An appeal for funds is issued by Princess Louise, Duchess of Argyll, Chief Patroness of the Schools, supported by the Bishop of London (President) and Sir Robert Jones (Chairman of the Surgical Board); the increased cost of upkeep of all kinds—repairs to buildings, wages of staff, food, &c.—has rendered necessary an augmented income for this most well-deserving institution. Founded in 1903, the schools have harboured 860 children up to the present time; of these the boys have been trained in woodwork of all kinds, particularly toy and cabinet making, and the girls in needlework and children's dressmaking. At the completion of their courses, equipped with a means of earning their own livelihood, they are placed with well-known firms. During the war 590 shell-shocked children were cared for, and a hospital was opened which housed in all some 600 wounded soldiers. The recent gift, by Sir Jesse and Lady Boot, of an operating theatre has greatly increased the means of dealing with paralysis, rickets, and congenital deformities. Sir Robert Jones speaks of the institution as having enormous possibilities of development, given sufficient financial support—making mention of electric light and an improved water-supply as immediately desirable. It is to be hoped that, even in these days of reduced subscriptions, the season of the year will not be without its effect upon the balance-sheet at Chailey.

THE INFLUENZA BACILLUS IN CULTURE.

THE recent epidemic of influenza stimulated a number of researches into the biological properties of *B. influenzæ*. Important new facts have been added, chief amongst which may be mentioned the demonstration of a soluble toxin, serologically differing races, and the production of indole. In addition, much light has been thrown on the substances required for the growth of the bacillus. This of necessity opened up the old controversy as to whether the bacillus was capable of growing in pure or impure cultures in the absence of blood. At the present moment the majority of workers seem agreed that *B. influenzæ* in pure culture cannot be grown in the absence of blood or some derivative of it. With regard to the behaviour of impure cultures there is some difference of opinion. Catani,[1] and more recently Thjotta,[4] as well as Williams and Povitzky,[6] claim to have obtained growths of *B. influenzæ* in mixed cultures in the absence of blood pigment. On the other hand, contemporary workers refuted Catani's claims (Ghon and Preyss [2] and Luerssen[3]), whilst among modern workers Fildes,[5] Rivers,[7] Putnam and Gay,[8] Davis,[9] and others have obtained uniformly negative results. Catani apparently failed because the test employed by him for the absence of hæmoglobin in his media was not sufficiently delicate; he made use only of the spectroscope as a test for blood pigment. It is now known that minute quantities of blood too small to be detected by this means are quite sufficient for the growth of the bacillus of influenza. The findings of some of the more modern workers are open to the same criticism.

As already indicated, the actual nature of the substance or substances required for the growth of *B. influenzæ* has also been the subject of considerable inquiry. It has been determined that two factors are necessary, both of which are to be found in blood—one derived from blood pigment and the other from the non-pigment fraction (Fildes). We have used above the term blood-pigment factor instead of hæmoglobin, for the fact is that hæmoglobin itself is incapable of allowing growth, which is determined rather by traces of methæmoglobin present. Ordinary human blood-agar grows *B. influenzæ* only feebly, while if the same medium has been just brought to the boil luxuriant growths are obtained (Levental's medium). The chief effect of the heating apparently is to change the hæmoglobin into methæmoglobin or some pigment derivative. This pigment-derived substance is heat-resisting, and with one exception (Thjotta) has not been found outside blood. Thjotta's results are so diametrically opposed to those of Fildes, Davis, and others that they cannot be accepted without further proof. The second substance necessary for the growth is heat-labile; as well as in blood it has been found in various animal and plant tissues (yeast and potato extracts). Although in agreement with Terada's claim [10] that the bacillus of influenza should not be called *hæmoglobinophilic*, the researches enumerated above do emphasise its strictly *hæmophilic* nature.

EX-SERVICE MEN MENTALLY AFFECTED.

Two questions asked in the House of Commons shortly before it adjourned related to the care of sailors and soldiers who took part in the war and whose minds, as the result of their service, have become affected. The whole subject of the conditions in which such men are treated is unquestionably one in which not only their relatives but the public are deeply interested. It is felt by many that a clear distinction should be made between those who, through fighting in the defence of their country have become of unsound mind, and those other unfortunates who are the normal inmates of "lunatic asylums"—we use the historic term intentionally. The first of the questions referred to, asked by Capt. C. E. Loseby, M.P., elicited the reply that there are now about 6210 ex-service men receiving treatment in county or borough asylums at the cost of the Ministry of Pensions, and that of these 4110 have dependents eligible for and in receipt of treatment allowances—that is to say, that they receive payments dependent upon the degree of mental incapacity affecting the man in the asylum. The slur attaching to the wife, and even more to the children, of the man known by their neighbours to be in an asylum falls upon them. The second question, asked by Mr. Gillies, M.P., had reference to the provision of institutions by the Board of Control for ex-service men, who are not certifiable as of unsound mind. From the reply it is gathered that there are no such institutions in existence, and secondly, that as to this class of case, steps have been taken by the Ministry of Pensions to secure for all uncertifiable ex-service officers and men, whose condition is due to war service, hospital treatment under the control of the Ministry, entirely independent of lunacy adminisauthorised to call a special meeting of the Education Committee for this purpose should it be found necessary before the beginning of the May session.

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[1] Catani, A.: Zeitschr. f. Hyg. und Infektionskrankh., 1901, vol. xxxvi., p. 29.

[2] Ghon, A., and v. Preyss, W.: Centralbl. f. Bakteriol. Orig., 1902, vol. xxxii., p. 90.

[3] Luerssen, A.: Ibid., 1904, vol. xxxv., p. 434.

[4] Thjotta, T.: Journ. Exper. Med., 1921, vol. xxxiii., p. 763.

[5] Fildes, P.: Brit. Journ. of Exper. Path., 1921, vol. ii., p. 16.

[6] Williams and Povitzky, O. R.: Journ. Med. Research, 1921, vol. xlii., p. 405.

[7] Rivers, T. M., and Poole, A. K.: Bulletin Johns Hopkins Hosp., 1921, xxxii., p. 202.

[8] Putnam, J. J., and Gay, D. M.: Journ. Med. Research, 1920, vol. lxii., p. 1.

[9] Davis, D. J.: Journ. of Infectious Diseases, 1921, vol. xxix., pp., 171, 178, 187.

[10] Terada, M.: The Japan Medical World, 1921, vol. i., p. 8.

On question put from the chair, the chairman of the Education Committee was requested to hold a meeting of as many of the conveners of the committees as was possible that afternoon, with a view to accelerating the preparation of the Scottish and Irish conjoint reports and of the final report.

In a further oral interim report the chairman of the Education Committee indicated some of the steps proposed in order that the standard of preliminary examination should in accordance with the Council's resolution be raised to the level of that required in other learned professions; and that from Jan. 1st, 1923, all students should be required as a condition of registration to pass an examination in General Education equivalent to that required by British universities from matriculants in Arts or pure Science, and proposed that his interim report should be entered in the minutes; but that the discussion thereon should be postponed.

After some discussion an amendment, proposed by Sir SYDNEY RUSSELL-WELLS and seconded by Dr. RUSSELL, that the debate on the motion be adjourned, was agreed to. The Council then adjourned.

SATURDAY, NOV. 26TH.

The Report of the Examination Committee.

Dr. NORMAN WALKER, chairman of the Committee, presented this report on the series of inspections of qualifying examinations, and began by a reference to the comparatively short time occupied by the inspection. The first inspection took place in April, 1920, and all the inspections, with the exception of those of the midwifery examination at Cambridge, the surgery examination of St. Andrews, and the examinations of the National University of Ireland held in Cork and Galway, had now been completed. The inspectors on medicine and surgery had reported that all the examinations were "sufficient," but they had made numerous suggestions for the improvement of examinations, many of which they reported to be already excellent. The report of the inspector on midwifery required closer consideration. The examination in midwifery of the 23 licensing bodies were divided into four classes, as follows:—

1. The inspector reported after personal inspection that the examinations of Bristol, Birmingham, Durham, Manchester, St. Andrews, Glasgow, Belfast, and Dublin Universities, the Apothecaries' Hall of Dublin, and the Irish Conjoint Board were "sufficient."
2. He was unable to be present at the clinical examinations in Leeds and Edinburgh, but accepted the explanation of the examiners as to the methods they followed and declared the examinations "sufficient."
3. Of the examinations of the Apothecaries' Society, the London Conjoint, the Universities of Liverpool, Oxford, and Sheffield, the Scottish Conjoint Board, the University of Aberdeen, and the National University of Ireland, he said, not always in the same words, but always apparently with the same meaning, "in the absence of a clinical examination I cannot consider this examination sufficient."
4. Of the examination of the University of London he said "this examination is not sufficient."

It was manifest that Sir William Smyly held strong views on the necessity of raising the level of the practice on midwifery and gynæcology, and of examinations in these subjects; his varying forms of expression suggested warning rather than condemnation of the bodies included in Class 3.

The Committee did not understand Sir William Smyly to mean that, apart from the question of a clinical examination, he was dissatisfied with the standard of proficiency actually required by any of these licensing bodies, or that any candidates passed the examination who should have been rejected. The Committee was in full sympathy with the inspector's object of raising the standard of examination and practice; and while it recognised the difficulties associated with a clinical examination in midwifery and gynæcology, it regarded the matter as of such importance that it recommended the Council to draw the attention of the licensing bodies in Classes 3 and 4 to the inspector's report. With reference to Class 4, the body concerned, the University of London, had adopted resolutions, now in operation, (1) appointing additional examiners; (2) arranging that students shall not be examined orally in the presence of one examiner only; and (3) requiring from each candidate a certificate of instruction in clinical midwifery and gynæcology. The Committee recommended an early re-inspection of the examination in midwifery in this University.

Dr. Tooth had reported on the efficient teaching of and examination in pathology, which in certain of the universities was a part of the final examination. He did not apparently regard the position of pharmacology so favourably, and advised that more attention be devoted to the correct writing of prescriptions. A matter frequently referred to by the inspectors was the disregarding by certain of the licensing bodies of the recommendation of the Council (No. 7) that students should not be examined by one examiner alone. Most of the bodies into whose examination the practice had crept indicated in their remarks on the inspector's report that it would not occur in future. The strict acceptance of the Council's recommendation meant more examiners, but also meant better and fairer examination. The Committee urged that its importance be impressed on all the bodies.

Examination in Clinical Medicine.—The Committee noted that the time allotted to the candidate for the "long" or "commentary" case varied considerably, being three hours in several examinations, and ten minutes in one. The Committee was of opinion that it was very important to impress upon the student the necessity of careful and thorough examination of all patients; that at least an hour and a half should be devoted to this part of the examination; and that it considered that a recommendation to this effect should be made.

Evidence of Further Study after Rejection.—Recommendation 4, adopted by the Council, was as follows: "A candidate remitted in any subject should, before he is admitted to re-examination, be required to produce satisfactory evidence that he has pursued the study of that subject during the interval of remission." This recommendation had not been very closely observed by the bodies, which might partly explain cases referred to by the inspector on surgery of candidates appearing for the tenth time for examination. Incidentally on this recommendation another matter arose: in those bodies where examinations were held only twice yearly rejection necessarily involved a six months' period of further study, and no suggestion was made that the period need ever be longer than that; but those bodies who held more frequent examinations should be recommended to look more closely into the question of the period of further study, and instruct their examiners to pay greater attention to the regulations which in most cases exist.

Interchange of Examiners.—On collating the reports it was noted that the names of several examiners appeared in connexion with the examinations of more than one licensing body. Quite a number examine in two; three is not uncommon; and two, one in surgery and one in midwifery, examine in four. There was much to be said for a more general adoption of this plan; not only did it give the examiners greater experience, but it obviously tended to maintain a uniformity of method and an equality of standard such as is desired by those who advocated adoption of the one-portal system. Dr. Tooth had made the interesting suggestion that an interchange of visits of inspection should be arranged between representatives of all the universities and licensing bodies.

Marking.—Whatever the total figure—which varied from 55 in the English Conjoint to 1200 in the University of Manchester—the pass standard was almost invariably 50 per cent. of the maximum figure. It would assist the Council if the various examining boards would agree on a uniform system of marking, but it should be the universal practice that no one who was unable to obtain 50 per cent. in clinical medicine or clinical surgery should be admitted to the Medical Register. On the question of exemption, the Council's recommendation that a 60 per cent. mark should be required was not universally adopted; some bodies admitted to one subject at a time and gave a pass on a 50

Mellanby's opinion, as expressed in this monograph, tends to compromise between these extreme opinions. Thus an anti-rachitic factor, "probably identical with the fat-soluble vitamin," together with sufficient calcium and phosphorus in the diet, are considered factors of first importance in preventing rickets; meat and exercise assist in prevention. Restriction of any of the four factors named or excess of carbohydrate food promotes the development of rickets. These results agree well with clinical opinion and practice. The research emphasises the importance of a balanced diet and indicates that too much of one substance may be as harmful as too little of another. The work is being actively prosecuted, and the author states that the present publication is to be regarded as an interim report.

PLAGUE AND SMALL MAMMALS.

WE commented last week on Dr. L. G. Haydon's article (THE LANCET, Nov. 26th, p. 1103) which dealt with sporadic outbreaks of plague in South Africa, and drew freely upon information supplied to him by Dr. J. Alexander Mitchell, Secretary for Public Health and Chief Health Officer to the Union of South Africa. Dr. Mitchell has since sent us a copy of a paper, read by him at the South African Medical Congress in October, which deals fully with the fauna of the infected country, and includes an extremely valuable account of the fleas found on the various animals that have come under notice during these investigations. Dr. Mitchell lays particular emphasis on the fact that the human cases were nearly always infected from gerbilles; evidence of recent migration and desertion of gerbille burrows was obtained in a few instances, mummified carcases and skeletons actually being found, showing that the epizoötic was a severe one. Most of the plague cases occurred in the area frequented by the gerbille.

POIKILODERMA ATROPHICANS VASCULARE.

ACCORDING to Dr. John E. Lane [1] of New Haven, Connecticut, who reports a case under his care in a man aged 30, and another under the care of Dr. Oliver S. Ormsby, of Chicago, only 12 previous cases have been published, nine in German, two in French, and one in Russian literature, of the remarkable skin condition, described by E. Jacobi in 1906, under the name of poikiloderma atrophicans vasculare. Of the 14 cases on record, nine were males and five females. The youngest was 6 years of age, two were 41, and the rest between 20 and 33. In all the cases in which reference was made to it the Wassermann reaction was negative. In a few instances other diseases were associated with it, such as pulmonary tuberculosis, myositis, rheumatic or gouty manifestations, juvenile muscular atrophy, calcareous deposits, malaria, ichthyosis, and lymphosarcoma. The dermatosis usually begins in late youth or early adult life, is of very slow evolution, and of approximately symmetrical distribution. It is attended by mild pruritus and presents as its chief manifestations telangiéctasis, pigmentation, and later capillary hæmorrhages and atrophy. Histologically there are two stages, an inflammatory and an atrophic. The inflammatory stage is manifested by round-celled infiltration and dilatation of the superficial vessels and alternate increase and diminution or absence of pigment, while the atrophic stage is characterised by flattening of the papillæ, degeneration and disappearance of the elastic tissue, and atrophy of the collagen bundles. Poikiloderma has been variously classed as a disease *sui generis* (Jacobi), a toxic erythema (Ehrmann), lupus erythematosus (Kreibich and Arndt), atypical scleroderma (Jadassohn), and diffuse idiopathic atrophy (Darier, Brocq). The conditions for which poikiloderma may possibly be mistaken are Schamberg's progressive pigmentary disease, Majocchi's disease and generalised telangiectasia connected with syphilis. Nothing is known as to the ætiology, but it has been suggested that toxic bodies acting on the vessels and connective tissue may be factors in its causation, while the theory of an embryonic defect has been maintained by Glück and Bettmann.

CORONERS' JURIES AND THE L.C.C.

TWO pieces of war legislation which have proved of value under peace conditions were the Acts of 1917–18, governing the size and attendance of coroners' juries, and the London County Council is anxious to preserve both these measures as a permanent reform in the procedure of coroners' courts. The Coroners (Emergency Provisions) Act, 1917, provided that "seven" and "eleven" should be substituted for "twelve" and "twenty-three" as the minimum and maximum numbers of jurors summoned by a coroner to form a jury. The question of reducing the number of inquests held with a jury was dealt with by the Juries Act, 1918. Section 7 empowered a coroner to hold an inquest without a jury, if he was satisfied that it was proper to do so. He was prohibited from exercising this discretion in cases where (*a*) death occurred in prison, (*b*) death occurred in such circumstances as to require an inquest under an Act other than the Coroners Act, (*c*) there appeared to the coroner reason for summoning a jury or for suspecting that the deceased had come to his death by murder or manslaughter. Unless Parliament takes further steps both Acts will cease to operate on Feb. 28th, 1922. These war-time relaxations of the law had previously been advocated by the London County Council, and their working has afforded a large measure of relief to the community in the matter of jury service. For instance, the coroners' vouchers in three districts, over a limited period, show that out of 152 inquests no fewer than 140 were held without a jury. No complaint has been received and considerable financial saving has been effected. Before 1917, jurors' fees in the County of London amounted to more than £3000 a year, but this amount was reduced in 1919 to £533 10*s*. Moreover, in many cases of sudden deaths at infirmaries and hospitals, the coroners have been able to view the body at the place of death, thus saving the cost of its removal to a public mortuary. This course would not have been possible if a jury had been required to view the body. Acting on the recommendation of its Public Control Committee, the County Council has therefore decided, in the interests of economy and public convenience, to urge the Government to take steps to give permanent effect to these useful provisions.

THE SAFETY OF CHLORINATED WATER.

IT is unreasonable to expect tap-water to taste like lemonade, but it should, at least, not be nauseating. The rapid and careless way in which chlorination had to be carried out for troops on foreign service bred in many of them a permanent prejudice against any kind of "doped" water which has carried over into civil life. Of course, the sterilisation of water by means of chlorine long antedates the late war, and Sir Alexander Houston recounts the well-meant criticism directed against him in connexion with the chlorination of the water-supply at Lincoln as long ago as 1905. During the war chlorination secured its place as a universal method of making any doubtful sample of water safe for immediate use as a beverage, and a large part of London's water was treated in this way. The removal of the taste after sterilisation has been effected is now a simple matter, and was set out in a recent circular issued by the Ministry of Health. Prejudice being thus on the wane, little alarm was created in June last, either on the spot or in other countries having organised water-supplies, when a coroner's jury in Chester County, Pennsylvania, returned the sudden death of a local citizen as due to "general systemic debility caused by chemicalised water, which produced a severe gastroenteritis followed by cardiac failure." Pending the completion of new filters, the Pennsylvania Department of Health is prudently disinfecting its

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[1] Archives of Dermatology and Syphilology, November, 1921.

4. That in the examination in clinical medicine at least an hour should be allowed for the examination by the candidate of his principal case.

5. That candidates who obtain very low marks should be remitted for further study for a longer period than three months.

6. That in the final examination candidates should either pass all three subjects (medicine, surgery, and midwifery) at one sitting or be required to complete the whole of the final examination within a period of 18 months.

7. That the recommendations of the Council on professional examinations be revised, and that they be circulated in draft to all the bodies for their consideration and observations.

Education Committee.

The adjourned consideration of the draft report was resumed; the following were its main proposals:—

Examinations in Great Britain.—The Council will recognise the undernoted university examinations subject to the conditions specified below: The University of Oxford—Responsions; the University of Cambridge—Previous Examination; and the Matriculation Examination of the Universities of London, Durham, Scotland, Manchester, Liverpool, Leeds, Sheffield, Birmingham, Wales, and Bristol.

The conditions prescribed by the Council are: (1) The standard of the examination shall not be lower than that of the University Matriculation Examinations in the Faculties of Arts and Pure Science; (2) the certificate shall bear evidence that the candidate has passed in the following subjects—viz.: (1) English; (2) mathematics, elementary or additional, or a science—(*a*) physics; (*b*) chemistry; (*c*) physics and chemistry; (3) a language other than English; (4) any other subject or subjects embraced in the official list of the examining university.

Subject to the conditions specified above (Section I.), the Council will recognise all examinations conducted by recognised authorities in Great Britain accepted by one or more of the above-named universities as equivalent for purposes of matriculation within the accepting university to an examination named in the preceding list (Section I.). The Council will continue to recognise examinations conducted by bodies other than those (referred to in Section II.) directly recognised by the universities of Great Britain. Recognition will not be extended under this section to any examination unless the Council is satisfied (1) that in scope and standard it is equivalent to a recognised examination of a British university, and (2) that it fulfils the conditions specified by the Council (Section I.).

Examinations in Ireland.—Subject to the specified conditions (Section I.) the Council will recognise the entrance examination of the University of Dublin, and the matriculation examinations of the National University of Ireland, the Queen's University of Belfast, and the Royal College of Physicians and Surgeons in Ireland, and all examinations accepted by one or more of these bodies as equivalent for purposes of entrance or matriculations to the above-named examinations.

Colonial Examinations.—Subject to the specified conditions (Section I.) the Council will recognise all examinations of Colonial universities which are accepted by one or other of the British universities as equivalent for purposes of matriculation within the accepting university to an examination named in the list of examinations recognised by the Council (Section I.).

Restoration of a Name to the Register.

The Committee, having considered an application from John Shaw for restoration of his name to the Register (from which it was removed at his own request in 1908), recommended to the General Council that the Registrar be directed to restore to the Medical Register the name of Dr. John Shaw; and having also considered the application for removal of name of Miss Lillie M. A. Jones, recommended that it be not acceded to, on the ground that the Executive Committee is not satisfied that she has ceased to practise. The Council adopted these recommendations.

This concluded the business of the session.

EPSOM COLLEGE.—The Council of the College will shortly be awarding "France" pensions of £30 a year to medical men not under 55 years of age, whose income, independently of any allowance from the College, does not exceed £100 a year. Forms of application can be obtained from the secretary, Mr. J. Bernard Lamb, at 49, Bedford-square, London, W.C. 1.

A REPORT ON DIPHTHERIA.[1]

A PRELIMINARY note addressed to Sir GEORGE NEWMAN, Chief Medical Officer of the Ministry of Health, prefaces a report upon diphtheria made to the Ministry by Dr. MONCKTON COPEMAN, F.R.S. The note is written by Dr. G. S. BUCHANAN, C.B., Senior Medical Officer, Ministry of Health, and runs as follows:—

1.—*Schick Test and Active Immunisation Against Diphtheria.*

The report herewith submitted deals, *inter alia*, with the use of the Schick test as a means of recognising susceptibility to diphtheria, and with the method of conferring immunity, by means of inoculations of a standardised toxin-antitoxin mixture, on those who have been found to be susceptible to diphtheria by this test, or are assumed to be susceptible on other grounds. This system of diptheria prevention has been adopted on an extensive scale in New York, where prevalence of diphtheria has been greater and the mortality from this disease considerably higher than in this country. The object of its adoption is not the separation from the population of infective cases and carriers; it is assumed that risk of infection from such cases must always be considerable and to a large extent beyond control, and it is consequently considered preferable to adopt a method which secures a substantial immunity of the general population concerned, or at least of a large part of it. In order that this may be obtained on a sufficient scale, the New York system provides a medical service for carrying out the testing and immunising, especially in the school population. Steps are also taken to obtain the coöperation of medical practitioners who apply the Schick test, and where necessary undertake the immunisation, with material supplied to them from the New York State laboratories.

In his report Dr. Copeman has collected and set out some of the principal considerations and data regarding the Schick test and methods of immunising against diphtheria. With this he has combined the results of personal observations of these methods from his experience at Bristol and that of several collaborators, particularly Dr. D. S. Davies, Prof. Walker Hall, Dr. Nixon, and Dr. Norgate at Bristol, and Dr. O'Brien of the Wellcome Laboratories.

The observations on this subject in the report will, it is anticipated, be useful to medical officers of health and hospital and school medical officers who have specially to deal with diphtheria outbreaks in this country. It would be premature to advise that in English communities general immunisation of persons susceptible to diphtheria should be attempted on the New York scale. More information and experience would be necessary before this could be recommended, and it would be necessary to be satisfied that equally good results cannot be obtained by extension and improvement of the methods of diphtheria prevention on which we rely at present. At the same time, there are already circumstances in which the evidence available may be considered to warrant a trial of the Schick reaction and toxin-antitoxin immunisation. For example, a parent who for one or another cause is specially anxious that his child should avoid all possible risk of contracting diphtheria, may ask whether medical science cannot now provide a means by which the degree of the child's susceptibility can be estimated, and by which, if the susceptibility is great, the child can be protected for at least some years without any substantial risk, and with at most only a transient and insignificant disturbance of health, as the result of the inoculation. A similar question may be asked by nurses and others likely to come much into contact with diphtheria cases, or again by medical officers of residential schools and other limited communities at a time when diphtheria is epidemic. The information now available—much of which is epitomised in Dr. Copeman's report—shows that there is good warrant for an affirmative answer to such questions.

The technique of the Schick test is comparatively simple, though, like all scientific methods, it requires some little experience before the observer can have confidence in himself and in his interpretation of the reactions obtained. Its essential points are now fully described in medical literature and some practical suggestions—especially as to control inoculations with heated toxin—are set out in this report. Demonstrations of the test might readily be given (if they are not given already) at post-graduate courses or during the instruction on infectious diseases which forms part of the curriculum of medical students.

The immunising treatment is obtained by a series of simple inoculations. The necessary toxin-antitoxin mixture (as also the toxin required for the Schick test) is, in New York, support of his position he quotes many impressive statistics from the experience of the army. But the value of his statistical evidence is seriously impaired by the fact that all of it deals with men under discipline. The casual civilian is hardly likely to carry out self-disinfection with anything like the thoroughness of the soldier—who, in addition to a suitable opportunity for self-disinfection in an "ablution hut," has a lively knowledge from the "exhortations" he has heard of the seriousness of venereal disease. In the matter of statistical evidence, however, Sir Archdall Reid is effectively countered by new facts put forward by Dr. Otto May, who makes use of figures quoted by Prof. Galewsky at the North European Red Cross Regional Conference on Venereal Diseases held in May at Copenhagen. In Germany, methods of self-disinfection have been taught with German thoroughness, and prophylactic agents of the recognised kind are easily procurable. The figures speak for themselves. In Dresden in 1919 14 boys and 60 girls between the ages of 14 and 18 attended Galewsky's Venereal Clinic for treatment. In 1920 there were 105 boys and 116 girls between the same ages, and in the first three months of 1921 the figures were: boys, 33; girls, 61. One must be careful in deducing conclusions from statistics, but these figures are very significant. Further, Dr. Otto May quotes figures from a certain London clinic which show that of 375 infected men who came for treatment 101 stated that they had used chemical disinfectants after exposure.

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[1] Report on Diphtheria to the Ministry of Health. London: His Majesty's Stationery Office. 1921. 9*d*.

Any medical man actively engaged in the treatment of venereal disease can cite cases where "disinfection" immediately after intercourse has failed to prevent disease. It is often said that morality based on fear is a poor kind of morality, but surely it is better than immorality encouraged by a false sense of security. May we suggest to Sir Archdall Reid and Dr. Otto May and the societies they represent that, with this week's great political example before them, they declare a truce to all wordy warfare and devote the next 12 months to collecting evidence from the medical officers in charge of 100 of the larger V.D. clinics on these two points: 1. What proportion of patients attending with fresh infections used disinfecting agents (and if so, what) (*a*) before intercourse, and (*b*) immediately after intercourse. 2. To what extent does the use of calomel ointment or other mercurial immediately before or immediately after intercourse delay the appearance of, or modify the characters of, the primary sore. If incomplete "disinfection" makes a primary sore atypical it may lead to delay in the institution of proper treatment, and so bring about disaster. Reliable evidence as to these points would do more to enable the man with an open mind to come to a right decision in this vexed question than any of the arguments that have hitherto been advanced.

AN important conference upon serological problems will take place in London on Monday, Dec. 12th, and following days. The conference has been convened by the Health Committee of the League of Nations and will meet under the presidency of Prof. Th. Madsen, Director of the State Serological Institute of Denmark, who is the president of that Committee. Distinguished workers from laboratories in the following countries will attend the conference: Austria, Belgium, Denmark, France, Germany, Great Britain, Italy, Japan, Poland, and Switzerland. It is hoped that the President of the Office International d'Hygiène Publique and an American representative will also be present. The British delegates will be nominated by the Medical Research Council. By the courtesy of the Government the meetings will take place at the Ministry of Health. The conference will be occupied with a consideration of existing methods of standardising sera and the possibilities of attaining an agreed international system of serological standards. It will also take count of the methods used in leading laboratories for the serum diagnosis of syphilis. Arrangements for new investigations will be discussed.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

(*Concluded.*)

FRIDAY, NOV, 25TH.

Pharmacopœia Committee.

The **PRESIDENT**, as chairman of the Committee, presented the report to the Council. The number of copies of the British Pharmacopœia, 1914, sold by the publishers between May 21st, 1921, and Nov. 19th, 1921, was 1427. The number sold in the year ending Nov. 19th, 1921, was therefore 2407. The total number sold since the date of publication was 41,385. The stock in hand was sufficient to meet the present demand for some time to come. On behalf of the Committee, Sir Nestor Tirard and Prof. Greenish, as editors of the British Pharmacopœia, 1914, had attended a conference called by the authorities of the National Physical Laboratory to consider the question of the official testing and marking of glassware used for purposes of measurement. It was understood that, as a result of the conference, an advisory committee is likely to be set up, on which the General Medical Council would have representation. It was desirable that some of the difficulties in respect of the standardisation of measuring vessels, indicated in the preface to the British Pharmacopœia, 1914, should be considered and, if possible, obviated before the next revision of the work. A cordial offer of coöperation with the Committee in matters of common pharmacopœial interest had been received from the chairman of the Committee of Revision of the Pharmacopœia of the United States of America, 1920–30. The Committee had, on behalf of the Council, welcomed the offer warmly and accepted it, being assured that such coöperation cannot but be of the greatest importance, both in the interest of the respective Pharmacopœias and in that of international comity and friendship.

Students' Registration Committee.

Sir **NORMAN MOORE**, chairman of the Committee, presented this report to the Council. The report was adopted. Various applications for exceptional registration or antedating of the commencement of professional study had been considered by the Committee and were made the subjects of recommendation in the report. The following institutions, having applied for the approval of the Council, and satisfactory evidence as to their visitation having been shown, were added to the list of those recognised by a licensing body and approved by the Council: Burnley: Municipal College; Cheltenham: Dean Close School; Ipswich: High School; London: North London Collegiate School; Streatham Hill High School; Wimbledon High School; Shrewsbury: Shrewsbury School.

Education Committee.

Dr. **MACKAY**, chairman of the Committee, made an oral interim report to the effect that the work of the Curriculum Committee was going on in a very satisfactory manner. Four English subcommittees had been reported, and a conjoint report had been presented; in the case of Scotland and Ireland, the conjoint stage had not been reached. He proposed that the final reports of all the committees when completed should be printed and circulated among all the members of all the committees; that any further comments by members of the committee on proposals submitted by other committees should be transmitted at as early a date as possible to himself; and that he should then arrange for a joint meeting of all chairmen of committees, with the object of arranging for due consideration of the changes; that thereafter all the reports along with the comments thereon made by the chairmen be transmitted to the Education Committee, which should then prepare a general statement for the consideration of the Council at its next meeting in May, 1922. The President was a normal throat. Exceptional instances are on record of healthy persons with apparently normal throats and no nasal discharge acting for long periods of time as carriers, and some degree of security against these rare cases may be obtained by the routine swabbing recommended in the Memorandum on Exclusion from School, 1909, which requires negative reports from three successive swabs taken on separate days as a condition of the return of the child. But even this proceeding cannot be relied upon for the certain and automatic detection of such cases, and, as already indicated, a positive result may only mean the presence of a non-virulent bacillus, which does not justify exclusion from school. In Prussia such considerations as these have led to the arbitrary solution that, for the present, no diphtheria carrier, if otherwise healthy, is to be excluded from school longer than eight weeks after clinical recovery (Ministerial Circular of April 11th, 1921).

(c) *Routine Swabbing in Outbreaks of Diphtheria in Schools and Institutions.*—This practice would seem to be chiefly useful on the first appearance of cases of diphtheria in the school or class. A class, the members of which have been but slightly exposed to an initial infection, may, by means of swabbing, be pronounced with reasonable confidence to be free from carriers. Or the system may succeed in detecting one or more other children whose throats or noses are infected and so lead to their isolation and the clearing of the class, for the time being, from all carriers. At a later stage, however, and particularly in day schools, it would seem that the spread of the carrier condition (as distinct from actual diphtheria) often becomes extensive, and at this stage systematic swabbing, producing large numbers of positive results, affords little guide for useful practical action. Negative bacteriological results in such cases may be consistent with intermittences in a chronic carrier condition. In such circumstances it seems better to concentrate on the clinical condition of the children, and the temporary exclusion from school of those showing signs of chronic sore-throat and nasal discharge, while at the same time using bacteriological methods principally for the determination of the nature of these particular cases. The practice in the London County Council schools has now come to be based largely on these considerations.

Numerous observations are being made on questions such as those on which I have touched. It is to be hoped that, by their active continuance both in the laboratory and in the field, it may before long be possible to obtain scientific authority for something like a definite code for the effective prevention of the spread of diphtheria, such, for example, as we may be said now to possess in the case of enteric fever or small-pox. At the Ministry every effort is being made to follow the development of the subject. Medical officers of health and medical officers of schools and isolation hospitals can, in this connexion, do a specially valuable service if they will communicate to the Ministry, in the form of special reports or otherwise, the results of preventive measures which they test, and the views which they have been able to form in regard either to the extension or to the simplification of the methods of which they have had experience.

MEDICINE AND THE LAW.

Landru.

Henri Désiré Landru has been found guilty at Versailles and sentenced to death for the murder of 10 women and a youth. The jury, who convicted him "without extenuating circumstances," immediately signed a document in his favour. There will be an appeal, and the last has not been heard of a case which has already dragged on for some years.

It was proved as clearly as possible, in the absence of eye-witnesses, that Landru killed his victims at his villa at Gambais, and did away with their remains by burning them in a stove. This rough-and-ready form of cremation owed its success to the house being isolated by a garden, and to the murderer being able to conduct his activities at his leisure. There was, however, the evidence of neighbours as to unusual smoke and odours. Further, the state of the stove, which was new when Landru first occupied his house, indicated that excessive use had been made of it. His counsel's appeal to a higher court on his behalf will probably be based largely upon the non-discovery of ascertainable portions of the bodies of any of the victims named in the indictment. This may have influenced the jury in endorsing the claim for a reprieve, who may also have felt a doubt as to Landru's sanity. As to this, Landru in all reasonable probability would have been convicted in England in far less time than his case has occupied in France, and would not have been found "guilty but insane." In whatever way the gaps in the story of his crimes are filled up, he can hardly be conceived as not knowing the nature and quality of his acts when he committed them, and not knowing that they were wrong.

Some measure of mental abnormality, no doubt, may be assigned as partly responsible for a series of crimes almost without parallel in the records of civilisation. This was evidently the impression conveyed to Sir William Orpen, R.A., whose account of a day in the Versailles court appeared in the *Evening Standard*, with a graphic sketch of the murderer's head. Sir William Orpen writes:—

> "Having seen him I cannot believe that if he murdered those poor people he ever did it in cold blood for the paltry sums of money it has been proved he received from their disappearance or murders. No, it must have been sensual blood lust which caught him at times and made him mad, after which he returned to his normal, kind, contented humdrum life until the madness took him again."

This expression of belief in an impulse beyond the murderer's control is interesting as coming from a layman, but it is subject to the observation that Landru coolly and cunningly provided himself with a series of victims by similar methods in every case, and having found a way of dealing with the bodies which promised immunity from discovery pursued it methodically. In this he resembles the pair of murderers whose names are most familiar to us in this country, and whose case in other respects may be compared with his. With him and with them ultimate discovery was practically certain. He and they persevered until they were caught. The story of Burke and Hare has recently been related here, and in many lay journals, and it forms the latest volume of "Famous British Trials," but the resemblance to Landru's story may be pointed out. Burke and Hare found that Knox, an anatomy teacher, required bodies for his anatomical school and was ready to pay £10 apiece for them and to ask no questions. Dissected bodies could not be reassembled for identification, and there was comparative safety when once they were disposed of. Burke and Hare certainly murdered for profit, and although Landru's booty may not have been large in our eyes, he took care to secure it. Burke and Hare, like Landru, preyed upon a class whose members are apt to disappear without inquiry being made as to their absence. They, however, included men with women among their victims, and lust was not an element in their crimes. Landru's apparent advantage lay in the fact that a woman before going to live with him as his wife or mistress, probably prepared her friends, if she had any, for her prolonged absence, and in outwardly favourable circumstances left a home at some distance before dying in the "accursed villa," as the prosecuting counsel called it. Women who become the mistresses of men of his class, besides being birds of passage, would not correspond with their relatives.

Rex v. Starkie.

The Court of Criminal Appeal has dismissed the appeal of Dr. R. W. Starkie against his conviction and sentence at the Central Criminal Court to nine months' imprisonment. The principal ground of the appeal was the trying together upon one indictment the charge of administering drugs with the intent to procure miscarriage, and charges alleging the use of instruments for the same purpose. It was also argued that in his summing up Mr. Justice Acton ought to have directed the jury expressly that in considering their verdict upon the count relating to drugs, they must ignore all evidence given before them on the other charges. Sir Richard Muir replied per cent. mark therein. It had been suggested that this practice was growing; it was clearly contrary to the recommendations of the Council.

Unity of Final Examination.—The inspectors on medicine and surgery, the latter in more forcible terms than the former, both advocated that candidates should either pass all three subjects (medicine, surgery, and midwifery) at one sitting, or that, if exemption in single subjects were permitted, candidates should be required to complete the whole examination within some prescribed period. The inspector on medicine admitted that, in those bodies which included pathology, pharmacology, forensic medicine, and hygiene in their final examination, the burden on the candidate would be heavy, and he suggested that the bodies which followed this plan might adopt the one generally followed elsewhere, and arrange for a pre-final examination in these subjects. The Committee agreed to recommend to the Council that it should be a recommendation to the bodies that the final examination in the three subjects of medicine, surgery, and midwifery should be completed within a period of 18 months. The Committee thought that the separation of the examination in clinical medicine and clinical surgery from the systematic parts of the examinations in these subjects is inadmissible.

Mental Diseases.—Several of the bodies did not profess to include this subject; others included one or two questions in the medicine paper; in others it appeared in the syllabus. Liverpool and Bristol had a separate paper on the subject, and Durham, Dublin, and Birmingham each held a clinical examination.

Diseases of Eye, Ear, and Throat.—The inspectors in medicine and surgery recommended that candidates' knowledge of these diseases should either be efficiently tested in the final examination, or should produce evidence that they had been sufficiently instructed and tested as to their knowledge of these subjects.

There was considerable discussion of the body of the report, several members of the Council expressing their satisfaction at the Committee's mention of the advantage to students of examination by two examiners sitting together rather than by a single examiner.

Sir Arthur Chance, referring to the fact that in the inspector's detailed consideration of examinations the words "no questions on mental diseases were put" occurred in the note on the Irish Conjoint Board, said that if mental diseases were admitted then such subjects as ophthalmology would also have to be included, and examination on the three main subjects of medicine, surgery, and midwifery would be lengthened and weakened.

Sir Francis Champneys pointed out that the inspection of examinations was not yet normal or fully recovered from the conditions imposed by the war. With regard to a clinical examination in midwifery, this was impossible to obtain in some places. Examining bodies had no control over the material. The difficult and essential things to teach were diagnosis and treatment of abnormal labour; clinical examination of ordinary cases would not give what was required. Fixed dates for examination were impossible in this connexion; a student should be taught manipulation and diagnosis in the course of his work, and strictly certificated by his instructor for purposes of examination.

Sir James Hodsdon, after referring to the difficulty of clinical examination in obstetrics and the importance of proper preparation of students for examinations, said that with reference to the system of marking the examiner's question to himself must not be "does this candidate deserve 50 or 60 per cent.?" but "is this candidate fitted to pass the examination?" He favoured the unity of the final examination, believing that a candidate tended to neglect further study of the subjects he had passed in. Only five licensing bodies at present required students to pass medicine, surgery, and midwifery at one time.

Dr. T. W. Griffith said that it would injure the final examination to insist on pre-final special tests; it was well for students to expect examination in all parts of medicine.

Sir Gilbert Barling pointed out that a candidate who failed several times in only one of three subjects was practically condemned to seek another career. He wished the Council to bear in mind that a new curriculum was being prepared, and supported the plan of certification of students in clinical midwifery.

Sir Sydney Russell-Wells expressed satisfaction that the Council was agreed concerning the wisdom of having two examiners sitting at a time, and spoke of the financial difficulty in this respect.

Mr. Waring stated that he had found the percentage method of marking more satisfactory than any other, and emphasised the importance of making students familiar with methods of examination in ophthalmology, oto-rhino-laryngology, &c.

Sir John Moore pointed out that with regard to the examination of the Irish Conjoint Board, the inspector had been rather hard on that body; he had merely come upon an examination in which mental disease happened not to be the subject of a question.

Prof. Littlejohn regretted that the Council had never indicated at what period in a student's career he should be taught forensic medicine and public health subjects.

Sir Jenner Verrall advised the Council not to be too much concerned with the convenience of examining bodies, and also emphasised the importance of examination by two examiners.

Dr. Macdonald hoped that no discouragement would be cast upon any attempt to better the teaching of clinical medicine; midwifery was at present a disgrace to the profession.

Mr. Turner pointed out that in the reports of all the papers given during the examinations inspected only two questions had dealt with venereal disease. At present the ordinary medical qualification did not permit a practitioner to obtain free material from the Government for treatment of these diseases; post-graduate evidence of knowledge was required by the authorities. The older generation was past praying for; the only hope in this matter was to equip the coming general practitioners thoroughly in this respect.

Sir Edward Coey-Bigger remarked that the death-rate among midwifery cases was practically at a standstill, that something—in his opinion the teaching of the subject—was radically wrong, and more midwifery hospitals were needed.

Dr. McVail agreed with Prof. Littlejohn that it was difficult to discuss the report before the report on the new curriculum had been issued. He had not noted much reference in the report to the machinery of examination. An early "block" should be provided so that a student could not go through the early subjects only to fail repeatedly at a later stage.

Dr. Norman Walker answered various points which had arisen, and claimed that although the Examination and Education Committees might seem to interfere with one another in the matter of the curriculum, of which the report had not yet been issued, yet it would be a pity to hold up their work on that account. The clinical examination in midwifery was very easy in some places, very difficult in others, but improvement might be secured if the licensing bodies could be made to feel that the Council were serious with regard to this matter. He then presented the following recommendations of the Examination Committee, which were adopted by the Council:—

1. That the attention of those bodies who do not hold a clinical examination in midwifery and gynæcology should be drawn to the importance of observing No. 19 of the Council's recommendations.[1]

2. That the President be requested to arrange for a re-inspection of the examination in midwifery in London University at an early date.

3. That the importance of observing Recommendation 7—viz.: "A candidate should not be orally examined except in the presence of two examiners," should be impressed on all the bodies.

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[1] Recommendations of the General Medical Council concerning Professional Examination, adopted June 9th, 1896, May 30th, 1907, and Nov. 26th, 1909, of which No. 19 reads as follows: "The final examination should include clinical and practical examinations in midwifery and gynæcology."

accommodation for nurses was urgently needed. A trust estate which had been left to accumulate for 14 years was now available for convalescents of the infirmary, the sum amounting to £600,000. The new home would be used for patients who could not walk.

Dec. 5th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

A New Biological Station in the Austrian Alps.

A PRIVATE benefactor has enabled the Vienna biological station to establish a new laboratory and organise an up-to-date research station on the Mondsee, a lake near Salzburg. The research station was at first situated in Vienna and later at Trieste, where its chief activity was the study of the fauna and flora of the Adriatic. With the breakdown of the Austrian Empire it was transferred to the Lake of Luntz in Upper Austria, but there the water proved too cold; it had, moreover, to be utilised for the supply of power to factories. On the Mondsee all conditions for continuation of research are to be found; the lake is warm (average temperature about 17° C.) and of great depth (187 metres), containing a large quantity of water, and having a fairly uniform climate. It is conveniently near university cities, being midway between Vienna, Innsbruck, and Munich. It may be recalled that Prof. Steinach's researches on rejuvenation were carried out at the biological station.

Sunshine and Health.

September was the healthiest month on record since the year 1912, owing no doubt to the uninterrupted sunshine experienced for over 250 hours during that period. Nevertheless, the population continued to diminish; the number of deaths was 1937, whilst 1915 living children were born. In July and August there was a small excess of births, but the number of cases of infectious diseases and the general morbidity were higher than in the corresponding period of the previous year. October was also a very healthy month, with a marked absence of all catarrhal conditions, generally prevalent at that time of the year. Sick-clubs and hospitals experienced beneficial effects from the prolonged summer weather; club balance-sheets showed unusually low figures for sick-pay and hospital accommodation of insured members declined. Some improvements were also noted in the health of patients at the children's clinic, at the lupus institute, and in the hospital for war cripples.

Sporotrichosis in Children.

At a recent meeting of the Vienna Medical Society Dr. König exhibited three patients, aged 10, 5, and 7 years, who had long been suffering from pathological conditions diagnosed as tuberculous. The oldest child, a boy, had had a swollen knee-joint for more than a year, had received all the regular treatments, and was able to walk again, but suffered a relapse; several livid-coloured foci in the vicinity of the knee then appeared, and thin discharge from a fistula was noted. In this condition the patient was brought to the clinic where the Pirquet and Wassermann tests proved negative. A diagnosis of tuberculosis was nevertheless made, and by chance, during operation on the joint, there were found a few reddish corpuscles, which on microscopic examination showed distinct sporulation. Thereupon large doses of iodine were given, with very good results. In the other cases, also, a diagnosis of tuberculosis was made elsewhere; there, too, the Wassermann and Pirquet's tests were negative, and the appearance of the affected region—hip-joint—was significant of tuberculous disease. Only after protracted observations was it possible to determine the presence of sporotrichosis. In a third case, a girl of 7 years, who suffered from kerato-conjunctivitis combined with painful inflammatory changes of the hip- and malleolus joint, a diagnosis of tuberculous affection was out of the question. Here again Pirquet's and Wassermann's tests were negative, and antirheumatic treatment was of no use, but iodine proved useful. Dr. König pointed out that a number of similar cases could doubtless be found, where the symptoms were similar to tuberculosis or syphilis but where both tests were negative, so that other ætiological factors must be suspected—sporotrichosis or actinomycosis. In the discussion which ensued, several competent observers agreed that in a number of cases alleged tuberculous disease of joints or bones did not run the accustomed course or respond to routine treatment. In such cases iodides nearly always gave excellent results.

Sixtieth Birthday of Prof. Hayek.

On Nov. 25th Prof. Hayek, the well-known director of the laryngological clinic, received numerous compliments on the occasion of his sixtieth birthday. His former and present assistants and numbers of his pupils assembled at the clinic, together with representatives of learned societies from Germany, Switzerland, Italy, Argentina, Uruguay, and Japan. One of the chief features of the celebration was the presentation to the well-known rhinologist of a remarkable Festschrift, a volume of 800 pages containing 74 original papers on rhinology, collected in honour of Hayek's contributions to professional knowledge. Since Hayek has been at the head of the clinic he has made it a centre of investigation of the physiology of the nose, throat, and trachea. A number of important researches on the pathology of the voice, the radical operations of cancer of the larynx, and the restitution of function of the upper respiratory organs have been originated.

Prolonged Dispute between Sick Clubs and their Physicians and Pharmacists.

For more than a fortnight the doctors of the Krankenkassa—which comprises chiefly factory employees, day-labourers, and artisans—have, after due notice, refused to treat these patients as members of the sick-club, regarding them as private patients, and making the same charges to them as to their regular private patients. The doctors demanded equalisation of their pay with that of other club officials, and upon refusal of their demand declared a medical strike. The pharmacists have also cancelled their arrangements with these clubs, refusing to dispense prescriptions to them at reduced rates. Over 250,000 persons are affected by the strike; the club is bound by law to provide medical help for its members in case of illness, so that the members try to recover the costs of medical attendance from the clubs. The Board of Health is endeavouring to reconcile the three parties; the club doctors have the support of the entire profession, and there is hardly a doubt that they will gain their point. The outcome of the conflict is watched with close interest by the entire profession; success in this connexion will stiffen the resistance of the doctors in the struggle with the Government, which is rendered inevitable by the present trend of legislation. The promises exacted from the Government by the 4-hours strike in the early spring of this year have hitherto remained on paper. Preparations are therefore being made to force the Government to comply with the reasonable demands of the medical profession.

Nov. 25th.

TROPICAL DISEASES LIBRARY.—Since the removal of the Tropical Diseases Bureau to the buildings occupied by the London School of Tropical Medicine the libraries of the two institutions have been united. The common library, which is known as the Tropical Diseases Library, is administered by a committee representing both institutions as well as the Seamen's Hospital Society, who are the trustees. The aim of the Tropical Diseases Library is to promote the study of tropical medicine and hygiene; the library and reading room are open daily from 9 A.M. to 6.30 P.M. (Saturdays 9 A.M. to noon) to all members of the profession who are interested in those subjects.

distributed on a large scale from State and other recognised laboratories, the authorities of which guarantee the uniformity of the constituent elements and of the mixture. Corresponding supplies in this country have hitherto been obtainable from the Wellcome Laboratory, and no doubt bacteriologists at other laboratories who are experienced in this type of work can furnish the protective material prepared according to the generally accepted standards. No officially standardised supply is issued by our public authorities.

It is important to note that the constitutional reaction produced by the immunising mixture may exceptionally be somewhat severe, particularly in adults and in those who, in response to the Schick test, show a positive combined with a strong "pseudo" reaction. Dr. Copeman's experience in this matter is referred to on pages 22 and 23 of his report. This consideration, however, need not prevent the use of the immunisation method, especially when regard is had to the much more formidable results of an attack of diphtheria. But, in the adult especially, it is advisable to meet the possibility by commencing inoculation with a minimal dose—say, 0·01 c.cm.—which is unlikely to cause any trouble even in susceptible individuals.

2.—*Customary Methods of Control of Diphtheria.*

Dr. Copeman also makes some observations in his report on the general question of dealing with diphtheria carriers and on other matters which bear on the methods of control of diphtheria which are customary in this country.

This question has recently received much attention from various sides, particularly in consequence of the increased epidemicity of diphtheria in certain districts of England, including London, during the past few years. In connexion with this the medical officers concerned with the matter at the Ministry have had the benefit of frequent exchange of views with medical officers of health, medical officers of infectious diseases hospitals, and bacteriologists, including members of the Committee of the Medical Research Council which is studying bacteriological standards, and a committee of the Epidemiological Section of the Royal Society of Medicine.

In essence, the chief difficulty in the choice of appropriate methods of prevention lies in assessing the infective ability of the different individuals who collectively are classed as "carriers" of the diphtheria bacillus. The fact that this bacillus, when present in the mucous membrane of throat or nose, can be recovered and identified by swabbing and transmitting the swab to the bacteriologist, was established many years ago; first for those suffering from clinical diphtheria, and afterwards for the convalescent and for the healthy person who harbours the bacillus for longer or shorter periods without any ill-results to himself. In its original medical application, and in methods of public health administration based upon it, the simple procedure of swabbing and awaiting a positive or negative opinion from a bacteriologist seemed almost self-sufficient. The bacteriologist's report on the swab determined the diagnosis of the case; persons believed to have been closely in contact with the case were also swabbed; a negative finding would be considered as for practical purposes evidence of absence of danger, while any positive finding demanded all available precautions, time, and patience, until at length one or more reports on subsequent swabs happily proved to be negative.

These earlier and simpler conceptions have now in large measure been abandoned with the growth of knowledge as to the frequency of the carrier condition (in other diseases as well as in diphtheria) and of the very definite distinction which we have now to make between virulent and non-virulent diphtheria bacilli, although these are morphologically and culturally indistinguishable. Moreover, it is generally realised that, in practice, the results of swabbing are materially affected both by the thoroughness of the swabbing itself and by the method of examination and reporting which is followed in the laboratory. In all these circumstances it is important not to attach undue importance to a ritual of routine bacteriological examinations and reports, and not to regard such examinations and reports (as usually obtained in present practice) as the one and only basis of preventive action against diphtheria.

Observations may here be made on the following points, which frequently arise one way or another in practice.

(*a*) *Notifiable Diphtheria.*—The notification of cases of diphtheria under the Infectious Diseases (Notification) Acts should be limited to persons actually suffering from diphtheria—i.e., those exhibiting clinical signs of the disease, with or without bacteriological evidence of the presence of diphtheria bacilli. In the practice of some districts and of many medical practitioners, including, often, the medical officers of hospitals and residential schools, notification is frequently extended to include diphtheria carriers who themselves present no sign of illness. It is doubtful whether this practice is justifiable. Statistically it leads to much confusion; indeed, comparisons between diphtheria notification rates in different areas and in different parts of the country have for some years been rendered very unreliable by reason of uncertainty in this respect. Administratively, the effect may be equally unsatisfactory. The healthy carrier, as a result of his notification as a victim of diphtheria, is frequently removed to hospital where he may stay to the exclusion of persons urgently requiring treatment (a matter of great importance during the stress of an epidemic) and at unnecessary cost to the public authorities. Further inquiry and consideration might have shown that no benefit to the community or to the individual was likely to result from his segregation. A child attending school, for example, who is found to be a carrier, may merely have acquired that condition in common with the majority of the other children in his class at a time when diphtheria infection has been prevalent in the school for many months, and himself have no signs of illness; his bacilli may be non-virulent, and consequently he does not in all probability constitute a danger to others. Non-virulent diphtheria bacilli are not known to be capable of changing into virulent organisms.

It is no doubt of assistance to the medical officer of health, as a guide to preventive measures, to be informed of the result of the swabbing of any person in his district who is suspected to have diphtheria or to be a diphtheria carrier. But as the notification of cases which do not present clinical evidence of diphtheria cannot be required under the Infectious Diseases (Notification) Acts, arrangements should be made to obtain information in regard to such cases without relying upon the machinery of notification. Any local authority may incur necessary expenditure in arranging with practitioners in the district for the supply of such information relating to carriers as may be needed to enable the authority and its officers to carry out their duties under the Public Health Acts.

(*b*) *Antitoxin Treatment.*—Attention should be called to one circumstance in which substantial danger may result from depending too exclusively on bacteriological results. This is the case of antitoxin treatment, which should be begun at once when the clinical evidence of diphtheria is definite. Dr. F. Thomson and other experienced medical officers have recently insisted on the unsatisfactory results of the delay which is caused by the medical attendant having waited for a report on swabs sent to the bacteriologist before administering antitoxin.

(*c*) *Fitness for Discharge from Hospital.*—There is considerable divergence in the practice of different infectious disease hospitals as to the extent to which diphtheria convalescents are bacteriologically examined before being sent to their homes. If abundance of bacteriological assistance were available, including ample opportunities for applying tests for virulence, it would no doubt be desirable to follow a general rule that no case should be discharged until a sufficient number of examinations has been made to establish a very high degree of probability that the convalescent has ceased to harbour diphtheria bacilli; or that, if he is still a carrier, the organisms concerned are non-virulent. In practice, however, these conditions can seldom be realised, and the choice lies between obtaining a much more imperfect degree of information from routine swabbing, without virulence tests, and discharging the ordinary cases, when clinically convalescent, without any appeal to bacteriological findings.

There is little doubt that the necessity for routine bacteriological examinations can be materially lessened by due attention to the re-establishment of normal conditions in the throat and nose before the patient is discharged. The removal of enlarged tonsils, adenoids, &c., has been shown to be of particular importance and to form in itself a powerful method of reducing the numbers of infective carrier cases after diphtheria.

The experience in regard to return cases of certain Metropolitan Asylums Board hospitals in which no routine bacteriological examinations of discharged convalescents are made, seems to show that the return of convalescents to their homes in an infectious condition may be avoided with as much success as that obtained by those hospitals which adopt the rule that two or more negative swabbings must be obtained before the discharge of the patient is permitted.

In general, perhaps, it may be advised that when the bacteriological resources at the disposal of a hospital are limited, they will best be utilised for purposes of diagnosis of doubtful cases, and, with regard to convalescents, for those showing chronic nasal discharge or chronic sore-throat, the nature of which requires special investigation from the carrier point of view. In such instances it is always desirable that the laboratory should be in a position to follow up any positive results by virulence tests. Some recently suggested methods for simplifying these tests are referred to by Dr. Copeman on page 29.

(*d*) *Return of Diphtheria Convalescents to School.*—Somewhat similar considerations here apply. The risk of return of a virulent carrier may be greatly lessened, without recourse to bacteriological tests, by making sure that the convalescent is clinically recovered, is free from nasal discharge, and has human being (and after all, Mr. Peacock is very human) to furnish the information required. The vast majority of the thousand or more medical officers of the Second Army who were placed in medical charge of troops (and in whose capacity I wish Mr. Peacock could have higher faith) were accustomed to live in intimate contact with their brother combatant officers and shared alike in that intimate knowledge and sense of responsibility for their men which it has always been their pride to maintain.

I am, Sir, yours faithfully,
M. COPLANS.

The Jenner Institute Laboratory, Church-road,
Battersea, Nov. 30th, 1921.

FASTING.

To the Editor of THE LANCET.

SIR,—By his interesting and instructive article which appeared in THE LANCET of Dec. 3rd, Sir Henry Lunn has rendered a great service to the profession in redirecting attention to the therapeutic value of fasting. Pray permit me to support his thesis and offer a few comments. When the Allen starvation treatment for diabetes was first introduced, I tried it on several patients in my wards, and was more than satisfied with the results. The first patient, to whom I suggested it in private, was a semitic looking gentleman who claimed an ancient Scottish lineage. He irradiated a characteristic atmosphere of good temper and good living. When I had finished my recital of the benefits of a three days' fast, he became as if deflated; his face assumed a look of horror, and he growled at me, "That's all very fine, doctor, but have you ever tried it?" The retort that I was not a diabetic was obvious and prompt. It was, nevertheless, humiliating to have to confess the negative, and the unpleasant experience determined me never again to be obliged to make a similar reply to what might seem to a layman a perfectly legitimate question. For the next week-end, therefore, I ordained for myself a fast on Allen lines; that is, no food of any kind and only water to drink. Realising the probability and also the inadvisability of hoarding my fæces for the prescribed three days, I took a grain of grey powder on the Friday night and a dose of Epsom salts on the following morning. Then I fasted, secundem artem, until Tuesday morning. On Saturday I felt well, but I am told that my conversation was terse in matter and staccato in manner. On Sunday I felt very well, and endured my trial in the spirit of a Christian martyr. I was resigned. On Monday I felt very well indeed, and did my work at home and at the hospital with zest and vigour. I had arrived at the stage of the superior person who regards meals as mundane matters suitable only to the Philistine and the pork butcher. And truth to tell, I swallowed the cup of tea and the banana which broke my fast on the Tuesday with a certain indefinable regret, as though I had fallen from grace and was no longer worthy to be numbered among the elect.

Since that time, now many years ago, I have frequently repeated the experience, and always with the same result. The first day, craving; the second, resignation; the third, rejoicing and rejuvenescence. The result is that I can cordially recommend the discipline as an occasional exercise to anyone who is obliged to lead a sedentary life. The rationale of its beneficence is probably as follows. In the ordinary routine of town life we do not completely oxidise our intake; there remains a residue which is only partially oxidised. These "suboxides," if I may so term them, are mildly but cumulatively toxic, and give rise to many of the minor maladies and discomforts of everyday life. In the process of fasting these suboxides, which are relatively insoluble, become thoroughly oxidised, and thus fitted for normal and easy excretion.

It is almost certain that the energy which is set apart for our digestive processes takes the path of least resistance. It seizes upon the easily oxidisable, and when that has been disposed of, but not before, it attacks the tougher portion of the proposition. Thus it comes about that the tired horse has the heavier load to pull. Is it any wonder that he falters by the way? The faltering in this case means suboxidation, which can only be corrected by giving an opportunity for an oxidation which is full and free. This is well and physiologically effected by fasting—and by no other means. Sir Henry Lunn says that he sometimes takes cocoa on his days of fast. He will, I am sure, forgive me for saying that, for the reasons given above, he is wrong. Cocoa is more readily oxidisable than, say, urates of soda, and the metabolic energy will naturally seize upon it rather than upon them. The result is a retardation of the curative process. If, instead of a cup of cocoa, Sir Henry Lunn will take half a grain of thyroid, he will expedite his cures and qualify himself to better his present most excellent and timely instruction.

I am, Sir, yours faithfully,
LEONARD WILLIAMS.

Harley-street, W., Dec. 4th, 1921.

THE QUESTION OF SELF-DISINFECTION.

To the Editor of THE LANCET.

SIR,—I have read the letter on this topic in your issue of Dec. 3rd with unusual interest, since I have never been quite able to understand why prophylactic measures against venereal disease amongst Canadian troops met with failure, complete and ignominious, whilst identical measures appear elsewhere to have attained considerable success, notably in the Portsmouth area. That "prevention is better than cure" is customarily regarded as axiomatic; and the Canadian military authorities in England attempted with characteristic vigour and thoroughness, through the medium of instructive lectures and the supply to soldiers proceeding on leave of packets and full instructions as to their use, to reduce the incidence of venereal disease. London, being comparatively accessible to troops in Canadian camps, a special treatment centre, suitably disguised, was established here in charge of a competent genito-urinary specialist, and soldiers urged to report immediately after exposure. As no upsetting questions were asked, no record kept of names and numbers, and they were greeted with neither head-wagging, curtain-lectures, nor sermons, the men made full use of the facilities afforded. After confirmation of the use of the materials which had been supplied, an irrigation with potassium permanganate was given, for which later on was substituted the injection into the anterior urethra of a little argyrol solution, the penis having been first clamped near the peno-scrotal junction and then cleansed with sterile water.

I thought very favourably of the scheme indeed, and as officer i/c treatment at the principal V.D. hospital, an institution with 1300 beds and a large out-patient attendance, I followed with great interest the results, supplementing the figures obtained in our admission-room by inquiries along similar lines in the various units through their medical officers. We finally concluded that the net results of the effort were nil; indeed, the advantage at times seemed with the men who had not availed themselves of the facilities; such are the vagaries of statistics, however painstakingly prepared. Our own hospital personnel, numbering 125, and many of them university undergraduates, were under no illusion as to the value of our prophylactic measures, and customarily declined with thanks both the packets and the treatment, preferring to rely on their own individual methods, usually prompt ablution with soap, and urination.

I hold no brief for either of the Venereal Councils competing for a place in the sun, and the literary weapon discharged by the N.C.C.V.D. will, no doubt, draw a return salvo from the N.C.P.V.D. It may be said, however, that the former base their whole campaign on two fundamental conceptions (or misconceptions): firstly, that the public, and especially the young, are ignorant and must be instructed; secondly, that if the possibilities of venereal disease are vividly brought to their notice they will remain on behalf of the Crown to the effect that where it is alleged that an object has been attempted, or carried out, by two different methods, evidence as to both can be given at the same trial. Dr. Starkie's method, he said, was apparently to administer pills first, and, if they failed, to use instruments. The appeal failed, the court holding that the cases relating to drugs and to the use of instruments could be tried at the same time, and that the jury had been properly directed.

Brown v. *Craig and Pitcairn.*

Mr. J. Gore Brown, whose action against Sir Maurice Craig and Dr. J. J. Pitcairn was tried in May of this year, appealed unsuccessfully for a new trial or for judgment. Mr. J. Gore Brown claimed damages against the two defendants, alleging conspiracy, false imprisonment, and that they had wrongfully certified him as insane. The appeal was dismissed by Lords Justices Bankes, Scrutton, and Atkin, who held that the jury had been properly directed by Mr. Justice Baillhache, and that the only issue raised at the trial was that of a criminal conspiracy by the defendants against the plaintiff. That was the case which the latter had to establish, and his doing so depended chiefly upon the letter alleged by him to have been written by Sir Maurice Craig and denied by the latter. It was argued on behalf of Mr. Brown that there were other matters to which the jury's attention should have been drawn by the judge, but in the opinion of Lord Justice Bankes, who delivered judgment at length, the summing up was fair, sufficient, and satisfactory.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Edinburgh University Chair of Midwifery.

THE University Court of Edinburgh has decided that the teaching of gynæcology is to be combined with the duties of the chair of midwifery. The salary under the new arrangement will be £1200, the professor being allowed to undertake private practice. The curators are to consider on Dec. 16th the names of those qualified for the appointment.

Scottish Voluntary Hospitals.

A report compiled by Sir Napier Burnett shows that there are 94 voluntary hospitals in Scotland with 6981 available beds. Eighteen hospitals have each over 100 beds and account for 4913 beds. Five hospitals, with a total of 2933 beds, are attached to medical schools. The report itself deals with 78 hospitals with 6600 available beds. These hospitals treated during 1920 92,000 in-patients and 310,000 out-patients. The hospitals attached to the medical schools treated altogether nearly 200,000 patients, or approximately 48 per cent. of the total. During the year hospital expenditure was very high, but there is every indication that the present year will show considerable reduction of the cost of many hospital commodities. Good results are anticipated from the committees now being established by the Voluntary Hospitals Commission as regards coördinating and financing hospitals within near distances of each other, and in organising coöperative buying. It is also considered that the adoption of a simplified system of hospital accounts and a uniform financial year would result in considerable benefit.

The demand for beds was greatest in the large hospitals. In those with over 100 beds approximately 92 per cent. were occupied during the year; in intermediate hospitals, with 30 to 99 beds, the figure was 81 per cent., and in hospitals of less than 30 beds 77 per cent. Comparing the non-teaching hospitals with over 100 beds in England and Scotland, there was little difference in the ordinary expenditure per available bed: but in the teaching hospitals there was a remarkable difference: the English group show deficit of £55 as against £15 per available bed in the case of the Scottish group. Workmen's contributions form a much smaller proportion of hospital income in Scotland than in England. Local Hospital Saturday collections form a rich source of revenue if properly organised, and this method of obtaining funds appealed to an increasingly large number of hospitals during the year. There is a prospect of larger contributions being received in future from the approved societies under the Insurance Acts.

Orphan Homes of Scotland.

Sir Joseph Maclay presided at the annual meeting held at Glasgow of subscribers to the Orphan Homes, the Consumptive Sanatorium, and the Colony for Epileptics at Bridge of Weir. The report contained the record of the fiftieth year's work of the Orphan Homes of Scotland. During the last year the average number of children in the homes was about 1100. During the war many children of soldiers were cared for, but most have been returned to their fathers during the past year. Fifty-one boys had gone to Canada, a country where they had the best chance of making good, and which numbered amongst useful citizens many who had gone from these homes. Fifty-one children had gone to various trades and situations. The healthiness of the homes was remarkable, there having been only four deaths out of the average of 1100 children. In the Consumptive Sanatorium the average number was 152 patients, of whom approximately 50 per cent. were discharged fit to resume ordinary life. In the Colony for Epileptics there were 103 patients.

The Royal Infirmary, Edinburgh.

The third annual meeting of the League of Subscribers to the Edinburgh Royal Infirmary was held on Nov. 29th, when Mr. Paton, the organising secretary, reported that the results attending the organised collections on behalf of the infirmary from public works and business establishments had shown a steady progress, a total of £17,808 having been collected from the various groups of subscribers. The bulk of employees' contributions from the country districts, including those raised by the miners and oil-workers, were reckoned separately from the League funds, and the total raised from these sources would this year be not less than £15,000. In round figures the systematic contributions of organised labour yielded something like £32,000 to the infirmary, which was equal to about one-quarter of the cost of maintenance. The present membership of the League consisted of 989 groups, composed of from thousands to less than a dozen members in different districts. Sheriff Crole, chairman of the board of management, gave some interesting figures concerning the work of the institution. The in-patients for the year numbered 13,600, drawn almost equally from the city and the country, while the out-patients numbered 41,800.

Fourteen years ago the income of the institution was £50,000; now it was over £130,000, but it required great efforts to keep it up to that. The current accounts had not yet been audited, but the income from all sources would show a balance to the good over expenditure. The year's accounts were another triumph for the voluntary system. The total contributions for the year from approved societies amounted to £1709, a disappointing figure, seeing that there were some 200 societies, and nearly 29,000 members had received benefit; yet only 15 societies had given anything out of their surplus to the infirmary. Within the years 1913–18 they had received into the wards 29,000 insured persons, and had treated as out-patients 49,215, and the infirmary had expended upon these in-patients alone over £148,000.

Sheriff Crole recounted work at present being carried out in the infirmary involving capital expenditure. The whole of the heating system was being remodelled at a cost of £15,000. The departments that were being developed were those for X rays and radium, and the bio-chemical laboratory; larger conscious creatures . . . . experiments of a light-bearing kind, you may rightly undertake in the unreflecting animal in the hope of cure which in man cannot be tried without very long periods of tentative proofs . . . . but the large view of the matter is that disease pertains to the whole field of life, animal and plant, and that without the comparative method no science has flourished."

Clearly, then, the obvious course seems to be that human and comparative pathological research should be more closely linked together in the future than they have hitherto been in the past.

I am, Sir, yours faithfully,
W. M. SCOTT, F.R.C.V.S.

Bridgwater, Dec. 3rd, 1921.

BLOOD-DONORS.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of Nov. 26th on the question of blood-donors may tend to bring the subject into that prominence which is at present lacking in this country. I am in cordial agreement with the writers in the *Guy's Hospital Gazette* and *St. Bartholomew's Hospital Journal* and would deprecate the use of the medical student's blood for purposes of transfusion. Up to the present one has usually depended on some relative of the patient to provide the necessary blood in an emergency, but occasions must arise when such will not be available. Last year, in order to meet this difficulty, I examined and classified the blood of a large number of the Sheffield constables, thinking that they were a healthy body of men and easily procurable in a sudden emergency, but unfortunately, after the classification was completed, the Sheffield Watch Committee refused to allow me to utilise the blood of volunteers from their men. I have recently applied to the manager of the tramways for similar facilities, expecting a like answer, as there are obvious objections to the use of men on public duty. I think it would be of advantage if donors could be selected from the general population by some carefully worded advertisement asking for volunteers, each volunteer to receive a small fee for submitting to grouping tests, and, in the event of his blood being used, a fee of at least five guineas.—I am, Sir, yours faithfully,

Sheffield, Dec. 1st, 1921. E. F. SKINNER.

OCCUPATIONAL THERAPY IN HEART DISEASE.

To the Editor of THE LANCET.

SIR,—I was much interested in your annotation on physical exercises in the treatment of heart disease in the issue of Nov. 5th; also in the letter of Dr. I. Harris on the 26th, both referring to my communication of Oct. 22nd. In neither comment, however, was the essential part of my letter discussed, the remarks being confined to the general question of the value of exercises in the treatment of heart disease. The point I desired to emphasise was the humanitarian and economic importance of looking upon the beneficial effects of physical exercises, not as an end in itself, but as means for the acquisition of a capacity for work in a line compatible with the patient's physical powers, always keeping in view his adaptability to a change of occupation. To achieve this, patients should be carefully graded and training begun at an early period of convalescence; such training should be specially directed towards preparation for the kind of work appropriate to each case subject to modification where necessary. I have pointed out the unsatisfactory results which follow the return of a patient convalescent from an attack of heart failure to an occupation which had abundantly manifested its unsuitability. In this connexion a quotation from a pamphlet, entitled "Sanatoria for Cardiacs," issued by the Association for the Prevention and Relief of Heart Disease, N.Y.:—

"The value of sanatorium treatment of convalescent cardiacs has passed the experimental stage. Experiences with selected groups of children and young adults have shown the tremendous value of institutional treatment in securing a degree of recovery which affords them the opportunity for useful lives and self support. The results obtained by the Burke Foundation, which has cared for over 2000 selected cases in the past six years, are most convincing. Of 130 boys between 10 and 16 years of age received during the first two years and carefully followed, 85 per cent. have remained steadily at work or at school since leaving the institution. The results obtained in adults and more advanced conditions are less striking, but the economic advantage of rendering a large proportion of these sufferers self-supporting and no longer a financial burden to the community, as well as the humanitarian motive of prolonging life and assuaging suffering, should make an urgent appeal to both our pockets and our sympathies."

In another pamphlet from the same source on *Occupation for Cardiacs* occur remarks under the following headings: Danger from Overstrain, Choosing a Job, General Housework, Skilled Employments, Employer's Coöperation, Change of Occupation. With regard to the latter, the important point in making a selection is that the new job should demand as little physical exertion as possible. The writer of this pamphlet concludes: "There are but few cardiacs who cannot do something to earn a living, and many of them can earn as good wages as if they had no disease whatever."

That the subject of heart disease, its prevention and treatment—including occupational therapy—is being systematically studied in America medical literature bears ample proof. The question is, Are we in this country doing our share in the practical application of the knowledge we possess?

I am, Sir, yours faithfully,
CHARLES W. CHAPMAN.

Harley-street, W., Nov. 30th, 1921.

THE SUSSEX PROVIDENT SCHEME: FIRST YEAR'S WORKING.

To the Editor of THE LANCET.

SIR,—In view of the fact that some doubts have been expressed as to the economic soundness and financial stability of the Sussex Provident Scheme, it may interest some of your readers to hear the results of the first 11 months' working. It was decided to make the first financial year one of 11 months in order that the associated hospitals might receive what was owing to them before the last quarter day of the current year. The financial arrangement which was agreed to when the scheme was initiated was that, for the first year, the income of the scheme should be divided into 40 parts and that these should be allotted beforehand to the associated hospitals, in a varying proportion based upon the work which each might be expected to do. This was, of course, a purely experimental arrangement and subject to being changed in the light of the first year's experience, but the results which have been attained will be of value in the future whether the scheme maintains its existence or not.

One satisfactory result is that, although some hospitals have been favoured more than others, they have all been paid in full for the cost of the services which they have rendered to the members of the scheme during the year; but beyond this 100 per cent., the percentage of payment to the cost of the work done varies very considerably. One hospital which, so far as can be ascertained, has not been called upon for any service to the members of the scheme has been paid one-twentieth of the total income, and of the others the percentage varies from 105 at the Brighton, Hove, and Preston Dispensary, to 307 at the Sussex Throat and Ear Hospital. At the New Sussex Hospital for Women and Children and the Stephen Ralli Memorial Laboratory it reaches 108, while at the Royal Sussex County Hospital it amounts to 117·5. The Dental Hospital has been paid at the rate of 15*s.* 4*d.* a visit. The visiting consultants have been paid a fee of £3 3*s.* for each consultation, while one-eighth of the total income still remains in

Correspondence.

"Audi alteram partem."

GENERALIA ON THE LOUSE PROBLEM ON THE WESTERN FRONT.

To the Editor of THE LANCET.

SIR,—Mr. A. D. Peacock's letter appearing in your issue of Nov. 19th in reply to mine which appeared on April 30th hardly disposes of the subject of combating lousiness amongst troops in the field. There is a plain issue between us as to the proved utility of certain types of disinfestor as well as the question of responsibility, and I therefore trust that I may be allowed to state my experience as a sanitary officer for the benefit of others likely at some time or other to be as acutely interested. I have already said that no type of hot-air disinfestor was ever used in the Second Army during the period of my appointment as Sanitary Officer. This circumstance was due entirely to the unreservedly adverse report furnished in the winter of 1916–17 by Mr. Peacock, who, after considerable experimental investigation in the field of certain proposals first communicated to me by Mr. Bacot, entomologist of the Lister Institute, stated that hot-air disinfestation was not only useless but dangerous. I have already cited his reasons in detail. Mr. Peacock now states: "I admit my judgment of 1916–17 was somewhat premature on certain points, but the seriously impairing effect of wet and muddy garments upon hot-air disinfestors still remains a fact (sic)." I want to make it quite plain that during the whole period of my service in forward areas in France, Italy, and North Russia (some five years) I have never once seen a hot-air type of disinfestor in use.

Mr. Peacock's duty in the Second Army was to report, as entomologist, upon the efficiency of various types of disinfestor in use, as well as upon the value of insecticides. The two main methods of disinfestation were steam and the Clayton apparatus (i.e., fumigation by SO_2 and SO_3). Again and again I was assured by Mr. Peacock that he had no fault to find with either of these systems, and therefore his present attitude with regard to the Clayton apparatus is beyond my understanding. I would like to add that in North Russia, on the Murmansk front, where the troops came into close contact with cases of typhus and small-pox amongst the civilian population, we were entirely without disinfesting or disinfecting apparatus of any description. I therefore turned my attention to utilising for this purpose the large chamber of a discarded railway box-wagon to be used as a mobile disinfestation and disinfection chamber in which were hung garments and equipment to be treated. The fumigating gas was obtained by burning sulphur prepared in a special manner to facilitate combustion. The special preparation consisted of sheets of newspaper, cut approximately foolscap size, which had been coated on both sides with a thin layer of sulphur. This was done by momentarily dipping the sheets into a vessel of molten sulphur and hanging them in the air until the film of sulphur had cooled and solidified—a rapid procedure. A number of such prepared sheets was loosely bound together with a few strands of wire to form "brimstone books," which were suspended in mid-air by a wire attached to suitably placed hooks in the roof of the wagon. On the floor, immediately underneath each suspended "book," was placed a tray filled with sand in order to catch such drops of burning brimstone as might be set free and fall. The wagon having been made gas-tight and suitably charged with the material to undergo treatment, a sufficient number of "brimstone books" was suspended and set alight by the operator, who thereupon withdrew and closed all doors, the compartment remaining closed for a period of three to five hours. A similar method of disinfestation was employed for all civilian houses requiring treatment, and in no case did an accident by fire occur nor did a single case of typhus or small-pox arise amongst our troops. The only billets available were the civilian houses, nearly all of which were built of rough logs resting simply on one another, the intervening space being roughly plugged with felt, which formed a natural harbour for lice, bugs, and other "minor horrors." On the principle that "handsome is as handsome does," I think that burning brimstone should be given pride of place in the armamentarium of a sanitary officer, for it was our only help in a critical and lonely situation, and in this connexion I regretted the absence of the Clayton apparatus, which had proved during long years so reliable and dependable in the field in France and Italy and on other fronts as the easiest and readiest means for producing, controlling, and distributing the gases of burning sulphur. If Mr. Peacock "personally wrestled wholeheartedly with the plant on many a day" he shows that he did not know how to handle it, and he therefore failed to get the good results obtained by hundreds of men who handled it properly. I have not seen the manuscript report Mr. Peacock made to the War Office, but surely he did not base his condemnation on the score of expense or the mechanical difficulty he experienced in working the machine; or does he condemn the machine because he now considers the gas is an inefficient insecticide?

With regard to the general question of responsibility for the anti-louse measures taken, Mr. Peacock may be interested to learn that the so-called "louse problem" was recognised even in the early days of the war at the base camps. The first recorded attempt to deal with the matter was made by No. 1 Sanitary Section of the Regular Forces at No. 1 Base at St. Nazaire. By October, 1914—fully a year before Mr. Peacock's attention had been drawn to the matter—an organised scheme of disinfesting and bathing of troops was at work. Use was made of the steam disinfector at the "Service Sanitaire Maritime," augmented by improvised apparatus constructed out of packing cases, oil-drums, and copper tubing. Hot baths were obtained by the use of waterproof sheets, "lessiveuses," and tubs procured locally. Some 80 to 100 men and their belongings were dealt with daily, and local requirements were adequately met. It is important to note in this connexion that the men under treatment had arrived from England but a few days previously, and it was already proved at that early stage of the war that the fresh arrivals in France were responsible for the infestation of the camps. Not only was the "louse problem" among troops in camps realised and overcome, but all improvised ambulance trains, contents included, arriving at the base were dealt with by disinfecting squads, as a routine measure, immediately after unloading. The possibility of an outbreak of typhus amongst troops in the forward area was considered both in December, 1914, and January, 1915, when Major-General Sir Robert Porter (Director of Medical Services, Second Army) asked me to prepare a scheme for dealing with disinfestation of troops on a large scale should necessity arise. In the end, arrangements were made to earmark in the neighbourhood of Steenwoorde some 30 agricultural locomotives of a stationary type to be used as steam disinfestors, and, in addition, all hop-oasts (i.e., drying kilns) between Bailleul and Poperinghe, and all chicory kilns in the neighbourhood of Dickebusch, Reninghelst, and Vlamertinghe were similarly ear-marked to be utilised as fumigation chambers.

Lastly, with reference to the method employed officially for ascertaining the extent of lousiness amongst troops (namely, by direct inquiry from officers in medical charge of troops and from officers in charge of medical units receiving sick and wounded men) Mr. Peacock affirms that he can conceive of no method better than his own—"i.e., by doing the job personally and thoroughly from the front line backwards: *living it, not reading it*" (the italics are my own). I would remind him that, although he necessarily had no knowledge of plans and no first-hand knowledge of operations, it was beyond the capacity of any individual his advocacy of the practice of cremation chiefly to persuasive conversations with his personal friends. he was keenly interested in the adoption of this as a hygienic method of disposal of the dead. He was the author of many well-written papers on widely different subjects, ranging from reflections on The Antiquity of the Globe and on The Principles of Organology to contributions to the therapeutics of variola, chronic gastric catarrh, and typhoid fever. A man of wide general culture, his experience of continental as well as British methods of diagnosis and treatment of disease gave him a well-deserved reputation as a wise physician.

WILLIAM GORDON WOODROW SANDERS,

M.D. MONTPELLIER, F.R.C.P. EDIN.

THE death of Dr. Gordon Sanders in early middle life has removed one of the best known British practitioners on the French Riviera. Dr. Sanders came of a medical family. His grandfather practised in Edinburgh; his father was professor of pathology in the University. He graduated there himself in 1889, with first-class honours, becoming clinical tutor in the medical wards of the Royal Infirmary. After a brief attempt to carry on the family tradition in the city of his upbringing he was obliged by ill-health to go abroad. A few months' residence at the University of Montpellier procured for him the doctorate, and therewith the right to practise on French soil, and he spent the remainder of his life at the delightful and important climatic station which Lord Brougham made famous in the early 'forties. With native ability and zeal for work, combined with an intuitive instinct as a clinician, Dr. Sanders made a large circle of friends among the patients who return to Cannes year after year to avoid the Northern winter.

While still at Edinburgh Dr. Sanders presided for some years over the Medical Society, and his personal interest in cardiac pathology resulted in a series of papers dealing with malformations of the heart and cardio-pulmonary murmurs. Since 1894 he had been a Fellow of the Royal College of Physicians of Edinburgh. Abroad he was an active member of the Continental Anglo-American Medical Society.

THE LATE PROF. PETER THOMPSON.

LAST week we gave a brief record of Prof. Thompson's life-work, largely from the administrative standpoint. His fellow anatomist, Prof. James C. Brash of Birmingham, writes of him from two other points of view.

"Prof. Thompson was great as a teacher and great as an investigator. Into his teaching work he poured the energetic enthusiasm which was a leading feature of his character, and dull must he have been who could not respond to such a stimulus. He was at his best in his devotion to the exposition of what he always thought and spoke of as the wondrous tale of development, and in this connexion it has been said of Prof. Thompson (a new version of the stock phrase, in praise of the anatomical lecturer. about making the 'dry bones live') that he made for his students out of a difficult subject a fascinating fairy-tale.

"His original work falls naturally into two periods, separated from each other by the date of his appointment to the King's College chair. The first of these periods was morphological, the second embryological, and in both he did outstanding work. His work on the muscles of the pelvis is well known, and apart from its comparative value has passed into standard description. 'The Myology of the Pelvic Floor,' presented as an M.D. thesis, was a model of descriptive writing, expanded later in a series of papers, and finally summed up in an article on 'The Structures of the Pelvic Outlet' in the fourth edition of Morris's Treatise on Anatomy. The turning-point of his career as an investigator came in the summer of 1906 when, working under Profs. Wiedersheim and Keibel at Freiburg, he became practically acquainted with modern methods of embryological work. His work on a human embryo 2·5 mm. long from the collection of Dr. Robert Meyer in Berlin resulted in the well-known paper in the *Journal of Anatomy and Physiology* in 1907, 'Description of a Human Embryo of Twenty-three Paired Somites,' beautifully illustrated by drawings provided by his wife. He had constructed a model of the embryo. This was his introduction to the wax-plate method of which he became an enthusiastic exponent, and to his advocacy of which may be traced a good deal of subsequent work in this country.

"It remains to note some special features of Prof. Thompson's work during his Birmingham period. Soon after his appointment he delivered two special post-graduate lectures on 'Some Early Human Embryos' to large and appreciative audiences. In 1910 his Arris and Gale lectures on 'Some Embryological Problems in Relation to Medicine,' published in THE LANCET, dealt with many points of practical interest in the development of the thyroid, the lung buds, the liver, and the heart. In 1915 he enhanced the reputation of his department by bringing to fruition an illustrated volume, published by the University Council, of 'Studies in Anatomy,' his own contribution being a valuable study of a 7 mm. human embryo."

Prof. Brash gives many further evidences of his colleague's devotion to his task. Up to the time of his death Thompson continued to work, as his health allowed him, at a paper describing an early human ovum mentioned in his Ingleby Lectures of 1918. Such in brief outline, Prof. Brash adds, was the career of one who, stricken in his prime, had yet accomplished much, and whose loss is a hard blow to his friends and to the University which he adorned.

Medical News.

UNIVERSITY OF OXFORD.—The following degree has been conferred:—

M.D.—W. H. Butcher, St. John's.

UNIVERSITY OF CAMBRIDGE.—The following degrees have been conferred:—

M.D.—C. J. Stocker, Trinity.

M.B. and B.Ch.—F. P. N. Parsons, Pembroke; R. S. Scott, Caius; G. W. Theobald, Emmanuel.

M.B.—J. M. Higgington, St. John's; R. B. P. Lansdown, Pembroke: G. P. N. Richardson, Christ's.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—H. Amin, Guy's Hosp.; J. L. Delicati, Bristol; E. D. Foster and J. S. Lewis, St. Mary's Hosp: and J. A. Marriott, Manchester.

Medicine.—A. G. L. Brown, Westminster Hosp.; S. Cohney, Sydney and London Hosp.; W. E. F. Davidson, St. George's Hosp.; M. T. A. Elnakeeb, Cairo; R. Erskine-Gray, Charing Cross Hosp.; E. D. Foster, St. Mary's Hosp.; S. A. Hayes, Kingston, Ontario; R. Henein, Manchester; M. Hilmy Eid, Cairo and Guy's Hosp.; C. F. Long, Bristol; D. Menzies and A. Misbriky, St. Mary's Hosp.; S. Sedaros, Cairo and Guy's Hosp.; L. Spira, Vienna; and R. S. Thomas, Charing Cross Hosp.

Forensic Medicine.—A. G. L. Brown, Westminster Hosp.; M. T. A. Elnakeeb, Cairo; E. D. Foster, St. Mary's Hosp.; R. Henein, Manchester; C. F. Long, Bristol; C. Martiny, Copenhagen; L. Spira, Vienna; and H. M. White, Leeds.

Midwifery.—J. I. Cahill, Middlesex Hosp.; A. G. L. Davidson, St. George's Hosp.; M. T. A. Elnakeeb, Cairo; E. D. Foster and A. Misbriky, St. Mary's Hosp.; and C. A. Nicholl, London Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: W. E. F. Davidson, J. L. Delicati, E. D. Foster, R. Henein, M. Hilmy Eid, C. F. Long, and D. Menzies.

HISTORY OF MEDICINE: THIRD INTERNATIONAL CONGRESS.—This congress will be held in London, under the presidency of Sir Norman Moore, from July 17th to 22nd, 1922. Meetings will be held at the Royal Society of Medicine, the Royal College of Physicians, the Royal College of Surgeons; also at the Wellcome Historical Museum, where there will be an exhibition of objects connected with the history of medicine, surgery and the allied sciences, including ancient manuscripts, early printed books, pictures, sculptures and engravings, ancient surgical instruments, medals, and so forth. The subjects suggested for discussion by the International Society of the History of Medicine are: (1) The principal seats of epidemic and endemic disease in the Middle Ages, including plague, gangrenous ergotism, leprosy, and malaria; (2) the history of anatomy. Further information may be obtained from the general secretary, Dr. J. D. Rolleston, 21, Alexandra Mansions, King's-road, London, S.W. 3.

chaste. Some acquaintance with the psychology of youth, particularly in relation to sex matters, leads me to think that both these propositions are untrue. I am tempted to ask the N.C.C.V.D. the following pertinent questions:—

1. Are they quite satisfied that the statistics upon which they base their activities are accurate?

2. Is it not true that the number of "cases" automatically increases as the number of treatment centres is increased; the patients often visiting many centres in turn, so that "one" becomes in completed statistics "six," "ten," or more? We know that with dissatisfied patients this occurs.

3. Do they know that with venereal disease there is often associated a peculiarly characteristic mental depression and a tendency to introspection, due, perhaps, in the first instance to the exaggerated warnings of quacks, but also in some measure attributable to the deductions of the type of scientist who reasons from one to all?

4. Do they admit any connexion between their graphic descriptions of the "horrors" of venereal disease and the present increase in sexual hypochondriasis?

5. Do they not consider that the perusal of certain of their pamphlets may cause unnecessary suffering and anxiety to those unfortunately already infected? Or doesn't it matter?

6. Are they psychologically sound in regarding deviation from virtue as resulting from a calmly considered and rational decision? On the contrary, is it not usually an unreasoning act, the result of an emotional storm?

7. Do they believe their extensive, and expensive, campaign to be justified either by social conditions or, more important, any actual improvement attained?

8. Do they visualise the extent of the disservice their publications are doing and have done to this country abroad, and particularly in the United States?

9. Has the campaign greatly benefited anyone, excluding possibly the manufacturers of expensive "ethical" venereal remedies?

I am, Sir, yours faithfully,
HAROLD D. L. SPENCE, M.D.

Catoline-street, Bedford-square, W.C., Dec. 2nd, 1921.

THE ÆTIOLOGY OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—I do not contend that the food factor is the only factor in the causation of adenoids. All causation is complex, and it is only for practical purposes that we single out one particular factor and speak of it as the cause. If the data I have enumerated in my letter in your issue of Nov. 19th are accurate, it follows as a logical conclusion that the great preponderance of adenoids among British children is related to the peculiar nature of the British diet. The only way Mr. W. Rushton (Dec. 3rd) can cast legitimate doubt on that conclusion is by disproving the accuracy of the data, and this does not seem to me possible. The citation of two or three special cases as proof that I am exaggerating the food factor in the ætiology of adenoids carries little weight. What is needed is to compare, as I have done, the relative frequency of this disease among large numbers of children brought up on British diet with large numbers of children brought up on a non-British diet.

But even the cases cited by Mr. Rushton are not convincing. They do not answer to my conception of properly fed children. The first child was breast-fed for six months only and developed rickets. The other two children were bottle-fed from birth. The fact that all three developed adenoids and tonsils suggests a pronounced catarrhal diathesis in each case, and this again suggests defective intestinal digestion, of which the most common cause in children is improper food. Dr. Sim Wallace, Mr. Rushton tells us, "attributes adenoids to weather conditions." While Dr. Wallace and I are in agreement on many questions, on this point I am reluctantly compelled to differ from him. There is no room for compromise in regard to it. In so far as damp predisposes to catarrh (a bacterially induced inflammation) it may help to produce adenoids; but the average child, if properly fed and enjoying in consequence a sound intestinal digestion, has little tendency to suffer from those catarrhal infections which issue in adenoids. The climate of our country has been damp for thousands of years, but we have the evidence derived from disinterred skulls that it is only within comparatively recent years that adenoid disease has been common in this country. Consider also the fact that, although (strange to say) rickets is almost unknown in Australia among the white children, adenoids is rampant among them. I may add that this disease appears to be equally common among the white children in South Africa. One of the worst cases I have ever seen occurred in a British child who was brought up on the veldt!

Can Mr. Rushton escape from the conclusion to which these facts point?

I am, Sir, yours faithfully,
HARRY CAMPBELL.

Wimpole-street, W., Dec. 3rd, 1921.

PATHOLOGICAL RESEARCH: HUMAN AND COMPARATIVE.

To the Editor of THE LANCET.

SIR,—The science of pathology has made enormous advances during the last two decades, but great indeed as these are, where is the man who will deny that the more he studies and the more he learns, the less he seems to know, ever and anon emphasising the great home truths that a vast realm of unexplored territory awaits the enthusiast for investigation. Even in the field of routine cases which we see in practice daily, where clinical data appear to present themselves in almost standardised sequence, often leave us nonplussed when we take the trouble to verify our conclusions by an autopsy. This is an unsatisfactory state of affairs. In human medicine post-mortem verifications, largely for sentimental reasons, are tabooed, much valuable material being thereby lost to science. Such a plea, however, cannot be put forward by the practitioner of comparative medicine, for here sentiment counts less; nevertheless, the busy veterinary practitioner invariably loses active interest in his case the moment death steps in, simply because he cannot afford the time to make a special visit to the knacker's. What an enormous volume of valuable script is committed thus yearly to oblivion only those who come directly in touch with the subject-matter can realise. Has the time, therefore, not arrived when some scheme could be instituted whereby data and material might be collected at the animal "morgues" distributed throughout the country?—the veterinary surgeon attending selected cases supplying clinical history, &c. Knowledge as to the cause and course of disease in its most diverse form would be tapped to the economic benefit of the human and animal population. By such a scheme at first sight it may be urged comparative pathology would gain much and human pathology little, but in reality this would not be so, for the connecting link between animals and man, from a medical point of view, is very close indeed.

One need only cite experimental research work performed in animals to illustrate the benefit which man derives from comparative pathology. Further, a larger and broader outlook on the field of medicine is required from all of us to-day, and bearing on this point Sir Clifford Allbutt writes:—

"The address you enclose to me contains on every page illustrations of the cross lights which each branch of morbid biology would throw upon the rest. Many little points which to you seem of every-day interest are new to me in this sense, that they illuminate principles which in human medicine are less prominent, in your field they shine out with a new perspective. For instance, you can with every kindliness and caution act at your own discretion unhampered by hesitations coming of the fear and reflections of more

ROYAL NORTHERN HOSPITAL. — The Great Northern Central Hospital, Holloway, will henceforth be known as the Royal Northern Hospital.

SANATORIUM BENEFIT IN MANCHESTER. — An elaborate report has been issued by the Sanatorium Benefit Sub-Committee of the Manchester Insurance Committee dealing with the period from July, 1912, to the end of April, 1921, when the work was passed over to the Manchester Corporation. Three hundred beds were secured in sanatoriums and other institutions, and a special tuberculosis dispensary service was set up in the city capable of dealing with 1248 persons weekly. During the period included in the report, 8139 applications were received from insured persons eligible for sanatorium treatment—5690 from men and 2449 from women. A table of age-groups shows that between the ages of 16 and 50 the number of applications from men remained fairly constant; the greatest number from women was between the ages of 16 and 21, most probably because many women ceased to insure on becoming married. Statistics show that the cases from the several wards of the city were most numerous from the poorer and more congested areas—the percentage varying from 0·45 to 2·06—the average percentage over the whole city being 1·14. Of 5690 men treated, 770 showed no signs of active tuberculosis, and of 2449 women, 445 gave similar records. Emphasis is laid on the importance of early notification of the disease; applications for sanatorium benefit have in the past been received from persons who died a few days afterwards. A considerable number of patients left the various institutions before the termination of their period of treatment or declined an extension of this period, and most of these self-discharges seemed to be due to domestic circumstances; for the same reason some patients found it impossible to enter an institution for treatment. The committee express the view that "their work has largely contributed to the progress made in Manchester in the treatment of this disease." Dr. D. P. Sutherland, senior tuberculosis officer of the committee, adds that during the period of sanatorium benefit the death-rate from pulmonary tuberculosis fell from 1·53 to 1·10, and associated with this fall there was an increased survival rate of infected notified cases. Of undoubted sputum-positive cases of tuberculosis during 1913-17, 67 per cent. were known to be living at the end of 1919. For sputum-negative cases for the same period the figure was 82 per cent.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Dec. 12th.

WAR: at 5.30 P.M.
Paper:
Colonel H. W. Grattan: Medical Organisation, with Special Reference to the Transport of Wounded in Open Warfare.

Tuesday, Dec. 13th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Paper:
Dr. H. W. Vines: The Parathyroid Gland in Relation to Calcium Metabolism.

Wednesday, Dec. 14th.

PSYCHIATRY: at 5.30 P.M.
Paper:
Dr. T. A. Ross: Some Points about Repression.

Thursday, Dec. 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases. The following will be shown by:
Dr. George Pernet: (1) Morphœa Faciei. (2) Parakeratosis *Variegata.*
Other cases will be shown.
Paper:
Major A. E. Milner: Diathermy in the Treatment of Lupus Erythematosus.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Dec. 12th.—8.30 P.M., Paper by Dr. Aldo Castellani on *Hæmorrhagic Bronchitis of Non-Tubercular* Origin.—Demonstration by Dr. J. S. Owens on Dust in Expired Air.

THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Dec. 15th.—7.15 P.M., Demonstration by Dr. A. Balfour and Dr. D. E. Anderson of Views, Photos, and Other Objects of Interest from Mauritius. 8.15 P.M., *Paper by Dr. A. Balfour*: A Medical and Sanitary Survey of Mauritius—Past, Present, and Future.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury-square, W.C.
WEDNESDAY, Dec. 14th.—8 P.M., Prof. H. G. Greenish and Miss C. E. Pearson: Volatile Oils in Pills (communication from the Society's Research Laboratory). Mr. T. E. Wallis: Moths as Pests in the Pharmacy (Corcyra, Ephestia and Borkhausenia).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Dec. 12th.—5 P.M., Dr. Scott Pinchin: Differential Diagnosis of Pulmonary Tuberculosis (2).
TUESDAY.—5 P.M., Mr. Page: Anæsthesia (2).
WEDNESDAY.—5 P.M., Dr. Grainger Stewart: Facial Palsies.
THURSDAY.—5 P.M., Mr. Bishop Harman: Senile Cataract.
FRIDAY.—5 P.M., Mr. Steadman: The Relation of Dental Sepsis to the Public Health.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and *Operations.*

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Dec. 12th.—4.30 P.M., Dr. J. Bright Bannister: Puerperal Sepsis.
TUESDAY.—3.30 P.M., Dr. F. G. Crookshank: Physical Examination of the Chest (4)—The Exploring Syringe.
FRIDAY.—3.30 P.M., Dr. T. H. C. Benians: The Laboratory Diagnosis of Tuberculosis in Children.
Daily:—2.30 P.M., In-patient, Out-patient Clinics, Operations, &c.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Dec. 12th.—5.30 P.M., Lecture:—Dr. R. O. Moon: Arterio-Sclerosis.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Dec. 15th.—4 P.M., Lecture:—Dr. R. Hutchison: The Problem of the Solitary Child.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Dec. 15th.—6 P.M., Chesterfield Lecture: Dr. W. Knowsley Sibley: Acne.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Dec. 13th.—4.30 P.M., Mr. P. R. Wrigley: Enlarged Prostates.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Dec. 15th.—4.30 P.M., *Dr. N. C. Haring*: Fluid in the Chest.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Whitworth-street West Branch, Manchester.
FRIDAY, Dec. 16th.—4.30 P.M., Dr. Ward: Treatment of *Bronchial Affections in Children.*

SALFORD ROYAL HOSPITAL.
THURSDAY, Dec. 15th.—4.30 P.M., Dr. C. C. Heywood: Thoracic Tuberculosis in Children.

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE.
Post-Graduate Lectures and *Demonstrations.*
TUESDAY, Dec. 13th. (At the Royal Infirmary.)—3.30 P.M., Mr. J. Mouat: Complications of Traumatism. 4.15 P.M., Prof. J. B. Leathes: Nephritis.
FRIDAY. (At the Royal Hospital.)—3.30 P.M., Dr. E. F. Skinner: Neurosyphilis. 4.15 P.M., Dr. G. E. Mould: Classification of Mental Diseases.

BRITISH MEDICAL ASSOCIATION (North of England Branch).
FRIDAY, Dec. 16th. (At the Royal Victoria Infirmary, Newcastle-on-Tyne.)—2.15 P.M. to 5 P.M., Scientific Demonstrations.

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road.—Res. H.S. £160.
Ashton-under-Lyne District Infirmary.—H.S. £200.
Barry Accident and Surgical Hospital.—S. £750.
Bath, Royal United Hospital.—H.P. £180.
Birmingham Ear and Throat Hospital.—H.S. £200.
Birmingham, Ministry of Pensions Orthopædic Centre.—Jun. M.O. £350.
Birmingham, Queen's Hospital.—Obst. and Ophth. H.S. Each £90.
Bristol Royal Hospital for Sick Children, &c.—H.P. £150.
Bristol Royal Infirmary.—H.P. and H.S. £120 each. Ophth. Hon. Reg.
Bury Infirmary.—Jun. H.S. £150.
Cape Town University.—Sen. Lecturer in Physics. £450.
Cheadle, Barnes Convalescent Hospital.—Res. M.O. £300.
Cheadle, Cheshire, Cheadle Royal.—Asst. M.O.
City of Westminster Union Infirmary, 369, Fulham-road.—Sen. Asst. M.O. £350.
Coventry and Warwickshire Hospital.—Res. Jun. H.S. £200.
Govan District Asylum, [illegible], Glasgow.—Jun. Asst. M.O. £275.

hand. The percentage of members who are recorded as having received in-patient treatment during the 11 months is 2·083, and the percentage of those recorded as having received out-patient treatment (including dental, massage, and X ray cases) is 8·5.

Although no definite conclusion can be drawn from these figures they are suggestive and encouraging. The number of members of the scheme is still small, and for a large proportion of them the services will be available without further payment during part of next year. On the other hand, as the scheme is becoming more generally known the number of new members joining every month is showing a steady increase, and if this should continue there cannot be a doubt that the success of this year will be repeated and increased in the future.

I am, Sir, yours faithfully,
SELBY,
Hon. Sec., Sussex Provident Scheme for Hospital
Dec. 5th, 1921. and Specialised Medical Services.

The Services.

ROYAL NAVAL MEDICAL SERVICES.

Surgn. Lieut. L. W. Gemmell to be Surgn. Lieut.-Cmdr.

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. W. Ebden, from Res. of Off., R.A.M.C., to be Capt.

The undermentioned Lts. (temp. Capts.) to be Capts: J. D'Arcy Champney, V. J. Perez.

Temp. Capt. (actg. Lt.-Col.) G. Clarke relinquishes his commn. and is granted the rank of Lt.-Col.

R. W. Shaw to be temp. Lt.

ARMY DENTAL CORPS.

Lt. (temp. Capt.) B. W. Tyson to be Capt.

SPECIAL RESERVE OF OFFICERS.

The undermentioned relinquish their commns.: Maj. J. M. Darling (retains the rank of Maj.), and Capts. H. W. Hills (granted the rank of Maj.), J. R. Crolius (on appt. to a commn. in the R.A.F.), and H. F. Vellacott (retains the rank of Capt.).

TERRITORIAL ARMY.

Capt. J. D. Fiddes to be Maj.

Capt. R. V. Favell and is granted the rank of Maj.

Capt. J. R. Griffith (late R.A.M.C.) to be Capt.

Capts. A. R. Grant and N. G. H. Salmon resign their commns. and retain the rank of Capt.

Lt.-Col. C. Graham-Grant, having attained the age limit, is retired and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. J. E. Bates, having attained the age limit, is retired and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. A. F. Rutherford, having attained the age limit, is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. P. H. Mitchiner is restored to the estbt.

The undermentioned officers relinquish their commns. and retain their rank: Majs. J. Allan, W. Y. Martin, F. B. Jefferiss, and R. Thornton (with permission to wear the prescribed uniform); and Capts. D. R. Harris, W. J. H. Davis, and J. Cook.

1st Lond. (C. of L.) Genl. Hosp.—Lt.-Col. (Bt.-Col.) H. J. Waring resigns his commn. and retains his rank.

4th Lond. Genl. Hosp.—Capt. C. Ogle, having attained the age limit, is retired and retains the rank of Capt.

TERRITORIAL ARMY RESERVE.

Col. W. Ranson, from Genl. List, to be Col.

Lt.-Col. A. E. Kidd, from 1st Casualty Clearing Station, to be Lt.-Col.

Capt. A. Ramsbottom, from Genl. List, to be Lt.-Col.

Capt. J. F. Ward, from R.A.M.C., Genl. List, to be Capt.

Maj. J. Nightingale, having attained the age limit, is retired and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

ROYAL AIR FORCE.

T. J. D. Atteridge is granted a short service commission as a Flying Officer.

Lt. (temp. Capt.) G. W. Allen, Army Dental Corps, is granted a temporary commission as a Flight Lt. while attached for Royal Air Force duty.

Obituary.

THOMAS GAMBIER, M.D. ST. AND.

THE history of the Eversfield Chest Hospital at St. Leonards is to a great extent the history also of the life of its founder, Dr. Thomas Gambier, whose death occurred on Nov. 27th in his eighty-fifth year.

The third son of George Gambier, of Canterbury, he was at the youthful age of 15 articled to a country surgeon, and then held posts as assistant house surgeon and dispenser at the Kent and Canterbury Hospital. In October, 1858, he entered the Middlesex Hospital, where he gained three years later one of the resident appointments in competitive examination. During his studentship young Gambier took an active part in the resuscitation of the Medical Society attached to the hospital, becoming its secretary and later a vice-president. In 1863 he embarked upon private practice at Okehampton, where he was appointed Poor-law officer and public vaccinator. In 1880 he became clinical assistant at the Throat Hospital, Golden-square, casualty surgeon on the L. & N.W.R., and surgeon-in-charge of the men engaged in boring the Primrose Hill tunnel.

During the early years of his career Dr. Gambier lost a brother and sister from tuberculosis, and it was this domestic sorrow which caused him to devote most of his life to the study of this disease. In 1882, after moving to St. Leonards, he opened at No. 6, Trinity-street, Hastings, a small dispensary for diseases of the throat and ear. Patients were numerous and larger premises were soon needed. While negotiating for a larger hospital, Gambier received, through a moribund patient, a letter from Mr. Samuel Morley, M.P., enclosing a cheque for £20, and she asked that a notice of the gift should be sent to the *Hastings Observer* before she died. The immediate outcome was the raising of a sum of money sufficient to buy the large semi-detached house at Maze Hill, St. Leonards, which was opened in 1884 as the Friedenfels Home. The next stage was the offer, by the late Mr. C. G. Eversfield, of a piece of land on an ideal site at St. Leonards, on which, in 1891, the present Eversfield Chest Hospital was opened. Of this hospital Dr. Gambier was honorary physician and resident medical superintendent until the day of his death, his unceasing labours being recognised by his old friends and patients in 1907, when a life-size portrait by Mr. L. Carr Cox was presented to him.

Dr. Gambier was descended from an old Huguenot family, former members of which left Normandy on the revocation of the edict of Nantes, and he was himself a fellow of the Huguenot Society of London. He leaves a widow who, as secretary of the hospital, rendered him every assistance in his work.

WILLIAM HENRY HADEN-HADEN,
M.D. ST. AND., M.A., D.C.L., M.R.C.S.

Dr. Haden-Haden died on Nov. 20th at the age of 90, and according to his oft-repeated injunction to his friends, his body was cremated. He received his medical education at Guy's Hospital, and at Edinburgh, Cambridge, and Vienna, qualifying, in 1857, with the M.R.C.S. Eng. and graduating M.D. at St. Andrews University in the same year. Dr. Haden-Haden held the appointments of clinical assistant and prosector of anatomy at Guy's Hospital, and was subsequently externe at the Hôtel Dieu and Hôpital des Enfants, Paris, and interne at the Hôpital Lourcine. Later he became hon. physician to the South Dispensary, Liverpool. He was a Fellow of the Medical Society of London, an associate of the Société de Biologie and the Société d'Anatomie de Paris, a member of the Psychological Society of Vienna, and of the General Council of the University of St. Andrews. Though Dr. Haden-Haden confined once, without harm to his health or working-power. Another example of the working of prejudice is the fact that even in London one would have great difficulty in finding a grocer's shop where brown rice could be obtained. Rice-polishing owes its rise to the unwarrantable preference of the public for beautiful white rice. The rice-huller, as a good man of business, trades on this preference, the more so as he knows what to do with the bran. In polishing the rice he deprives it of the silverskin or pericarp—he calls this *refining* it—which, as experience in the tropics has taught us, prevents the outbreak of the much-feared beri-beri. Again, the so-called hard spring wheat is, for more than one reason, preferable to the soft variety, but is so hard and brittle that the husk breaks in little particles, which cannot be separated from the flour by sifting. The dark meal produced dark-coloured bread, which was not wanted because of the popular preference for very white bread; the hard wheat apparently had no future in front of it—it did not fetch its price, and the flat market in its turn depreciated the value of land specially fit for culture of hard wheat. This incited technicists to improve the methods of grinding; mills were made with steel rollers, with which it was possible to get pure white flour from hard wheat also; although it was inferior in nutritive quality to the dark flour, it found a ready market. It goes without saying that much advantage is taken of these public preferences. To please the eye of the consumer manufacturers have begun bleaching meal by chemical means which are not above suspicion. Those familiar with the history of popular nutrition know how obstinately the people will resist new articles of food. It has taken the potato a couple of centuries to secure a permanent place on the table of the people; at present they are so much attached to it that, during the war, people—in Holland at least—preferred bad potatoes to good peas and beans. The indigent population of the occupied regions of Belgium refused to eat the maize of the Relief Committee because they considered it an inferior food, fit only for cattle. In Holland, where the price of meat is extremely high, it is exceedingly difficult to persuade the public to eat the much cheaper, and at least equally nourishing, chilled or frozen Argentine meat.

The question of the quality of food has become much more urgent than the question of quantity; it has frequently been pointed out by such men as Liebig, G. J. Mulder, Donders, Voit, Rubner, that nutrition of the people is a Government concern, but it cannot be said that their warning voice has found much response in their Governments. It seems that catastrophes such as famine or war are necessary to open the eyes of those who are set above us. Under the pressure of the world-war, scientific bodies have been formed, as in England the Food Investigation Board, in the United States the National Research Council, in the Netherlands the Committee of People's Welfare and the Netherland Institute of Nutrition, whose task it is to solve, with the assistance of science, the most urgent problems of society, and in the first place that of nutrition. This is a great step forward. Let us hope that the Governments will also make it possible for these bodies to subsist in times of peace.

Propagandist Measures.

In the United States, for many years past, a propaganda has been carried on by the State and by private people which may, in many respects, serve as an example to Europe. Nowhere, except in Germany, are found so many scientific investigators who serve industry; the practical sense of the people is reflected in the work of its scientists upon problems, the solution of which promises direct profit. This explains why such men as Armsby, Francis Benedict, McCollum, Graham Lusk, Lafayette Mendel, and Thomas Osborne have worked in the field of dietetics.

It would be easy to fill a volume with the enumeration and description of the ways in which, in the United States, propaganda is made for rational feeding. It moves in all directions, and uses means which are still too new for us, but which, for their efficiency, deserve our full attention. Popular scientific literature, the means to which we restrict ourselves in Europe, is used in the United States on a very much larger scale than with us for the purposes of propaganda. Government institutions—e.g., the Department of Agriculture, under which fall the Office of Home Economics, the Bureau of Fisheries, and the Bureau of Markets—distribute gratis or for a small sum, quantities of illustrated pamphlets written by experts, on the most important subjects of agriculture. stockbreeding, home economics, markets, trade, and industry. Charitable societies also do much in this way. Large industrial bodies and companies follow suit, their own interests being best served by the enlightenment of the public. The duties of the 11,000 agents of the Metropolitan Life Insurance Company include the distribution of popular hygienic publications, for which the company has started a printing office of its own. But though this work is very useful, it is by no means considered sufficient because it does not reach all the groups of society, but only those who are susceptible to reason and who are more cultured. The majority take more delight in bioscopes and detective stories.

The North American is much freer in the choice of his means of propaganda than we, who are more careful to observe the proprieties from an exaggerated fear of making ourselves ridiculous. A master of advertisement, he is never at a loss to find a catching phrase, a slogan, to rouse enthusiasm. What would be said in Europe of a clown coming to a school to entertain the children with jokes on the drawbacks of eating sweets and the advantage of drinking milk? Or to a fancy-dress procession in the public streets in the manner of the Boys' Loyalty Parade, recently held in New York, in which "Good Old Milk Bottle" drove before him Teapot and Coffee-pot, the two thieves of children's health, and in which marched a group of useful vegetables—Charlie Carrot, Bill Beet, &c. Such a show, however absurd it may seem, makes a deeper impression than many a learned demonstration, to which, for that matter, the man and the woman and child in the street would not come to listen.

A favourite means of propaganda in the United States is the poster, which has come up to a high standard as regards expression and suggestion.

Club Work among Young People.

In the United States many boys and girls between the ages of 10 and 18 wear a badge, representing a four-leaved clover on which are four H's, and indicating membership of a boys' or girls' club and willingness to work with Hand, Head, and Heart for Health. This quite American organisation of boys' and girls' clubs is a proof of public spirit, insight, and education, organising talent, and enthusiasm. The Smith-Lever Law has in view the giving of useful advice and helpful information to the population on agricultural and domestic affairs; the authorities could hardly have found more diligent and willing assistants for their propaganda than among the young, who, still unprejudiced, learn while they play, and like to imitate the work of their elders. This inborn tendency of children the States Relation Service, a subdivision of the Department of Agriculture, has turned to account, of course in concert and collaboration with the school authorities, and has attained results of great importance to the State and to the family. The Extension Service works among the young, through club leaders, home demonstrators, and specialists in various agricultural and domestic industries, who promote the starting of clubs, the members of which apply themselves, under their guidance, to the cultivation of useful plants, the breeding of cattle and fowls, to fruit-preserving, cooking, domestic work, &c., on a small scale and in accordance with local requirements. It is stated in the 1918 report, by the director of the States Relation Service, Mr. A. C. True, that club work has produced 825,000 bushels of maize, 680,000 bushels of potatoes, 2,000,000 quarts of preserved food, 1,922,300 fowls, 908,000 dozen eggs, 824,000 lb. of meat, 1,668,900 lb. of cotton, not to speak of other products, such as jelly, peanuts, sorghum, wheat, and beans. The greater part of this produce has been used for domestic purposes, and has saved much outlay in the first necessaries of life; no small part of it has yielded immediate profit. I shall not tire you with specific instances, but will only say that the gain has enabled many a one to defray his college expenses. Nor should the indirect advantage of club work be rated low, for the profit gained cannot but impress the older people; their attention is drawn to new and improved methods.

I hope you will not suspect me of imagining that American club work is fit for wholesale transplantation to our own continent. The difference in economic circumstances between the Old World and the New is too great for this. Where, for instance, would one find in our densely populated countries so many pieces of fallow land, fit to be made a loan of to boys' and girls' clubs? But though an unconsidered imitation of the North-American institution of boys' and girls' clubs is out of the question, I believe that much good may be done by introducing it on a small scale.

The Transplantable Dietician.

The calling of the dietician might be transplanted to our European society without much alteration, and would greatly benefit the cause of feeding the people. The recent development of work for the improvement of defective social conditions has not hitherto included propaganda for rational feeding—chiefly owing to the fact that there are no experts who could be entrusted with this work. In North America dieticians have existed for years, and anyone who has seen them at work there asks himself how it is possible that, up to now, we in Europe have had to do without their good services. The work of dieticians cannot be described in a single word, for several categories must be distinguished—categories of medical dietetics, domestic economy, poor relief, charity; in short, wherever problems of feeding wait for solution.

I first made the acquaintance of the dietician in Battle Creek Sanitarium, the largest of the kind of the United States and probably of the world, where thousands of more

The Bradshaw Lecture of the Royal College of Surgeons of England will be delivered by Mr. H. J. Waring, on Wednesday, Dec. 14th, at 5 P.M., on the Operative Treatment of Malignant Disease: its Possibilities and Limitations.

Royal Hants County Hospital. — At the quarterly court of governors of the Royal Hants County Hospital, Winchester, it was reported that last year nearly £1000 was raised by the weekly insurance scheme, which was meeting with great success. It was stated that the re-modelling of the X ray department was in hand at a cost of £1000.

West Kent Medico-Chirurgical Society.—A meeting will be held at the Miller Hospital, Greenwich, to-day, Friday, Dec. 9th, at 8.45 P.M., with Dr. C. T. T. Comber, the President, in the chair, when the Purvis Oration will be delivered by Sir James Purves Stewart on Respiratory Disorders of Nervous Origin.

University of Bristol.—Sir Isambard Owen having retired from the Vice-Chancellorship of the University, an office of which he was the first occupant, the Court of the University has conferred on him the title of Honorary Fellow. He is succeeded as Vice-Chancellor by Principal Loveday, of Hartley University College, Southampton.

Pharmaceutical Society of Great Britain.—A meeting of this society will be held at 17, Bloomsbury-square, London, W.C., on Dec. 14th, at 8 P.M., when Prof. H. G. Greenish and Miss C. E. Pearson will present a communication from the Research Laboratory of the Society on Volatile Oils in Pills, and Mr. T. E. Wallis, lecturer in botany, will discuss Moths (Corcyra, Ephestia, and Borkhausenia) as Pests. The meeting will be social as well as scientific in character, and medical friends of members are cordially invited.

Panel Committee for the County of London.—The second annual local medical and panel committee dinner and dance will be held at the Holborn Restaurant on Thursday, Dec. 15th, at 7 P.M. Mr. R. W. Harris, Dr. Smith-Whitaker and Sir Thomas Neill, J.P., will be guests of the evening and will speak. All practitioners whether on the panel or not will be welcomed. Tickets (gentlemen 21s., ladies 15s., exclusive of wine) may be obtained from the Secretary, Mr. Robert J. Farman, Staple House, 51, Chancery-lane, London, W.C. 2.

Bristol Medical School: Annual Dinner.—The annual dinner of the Bristol Medical School was held on Nov. 28th, Mr. W. R. Ackland presiding. The health of Sir Henry Gray, the guest of the evening, was proposed by Dr. R. C. Clarke, who alluded to the value of the services rendered by him to the armies in France. In his reply Sir Henry Gray drew attention to certain similarities between the Aberdeen and Bristol schools of medicine, and paid a tribute to the practical and thorough spirit shown of the Bristol men whose work he had seen in France. The dinner was preceded by the Long Fox lecture on the Repair of Bone Injuries, by Mr. E. W. Hey Groves.

London (R.F.H.) School of Medicine for Women Dinner.—A successful function, at which about 250 past students, students, and guests assembled, was held at the Connaught Rooms, Great Queen-street, London, W.C., on Dec. 2nd. Mr. James Berry presided, and in a speech, which reflected his pride in and affection for a medical school which he had done so much to develop, proposed the toast of the Royal Free Hospital and the London School of Medicine for Women. Mr. Berry congratulated the authorities on the establishment of the first clinical unit in obstetrics and gynæcology. This had been made possible by the generosity of Lady Barrett, who, though unable to spare the time from her consulting practice to undertake the duties of director, had relinquished her beds in the hospital to Prof. Louise McIlroy. He spoke of the examination successes of the past year, two old students having become F.R.C.S., and one having gained the gold medal in the M.B., B.S. Lond.; and urged the resumption of two characteristic features of the Royal Free Hospital teaching which had lapsed during the war—consultation over cases and an annual exhibition of museum specimens. In welcoming the new members recently appointed to the honorary staff of the hospital, Mr. Berry emphasised the importance of research as well as good routine work among the duties owed to a hospital by its staff. The toast of the guests of the evening was proposed by Dr. Haldin Davis, and that of the chairman by Mrs. Lucas Keene, both in happy anecdotal vein. Sir Arthur Keith responded for the guests and Mr. Berry for himself. An excellent feature of this dinner was the limitation in number and length of the speeches in order to leave time after the formal proceedings for old friendships to be renewed.

Civic Education League.—A lecture will be given on Thursday, Dec. 15th, at 8.15 P.M., at Leplay House, 65, Belgrave-road, S.W. 1, by Dr. C. W. Saleeby, entitled Light Against Death. The chair will be taken by Dr. Gladys Miall Smith. Admission will be free.

Dr. C. W. Paget Moffatt has been appointed medical officer of health for Bolton.

Small-pox in Colne Valley.—Five cases of small-pox have been notified to the Marsden Urban Council during November. Altogether about 50 cases have been notified in the Colne Valley recently.

Donations and Bequests.—The Board of Management of the Royal Infirmary, Manchester, has received from Messrs. Peel and Co. £750 for increase of endowment of a bed, from Mr. and Mrs. George Bolton Stott £125 10s. for purchase of an operating table, and over £350 from various commercial firms and other donors.

North-Western Tuberculosis Society.—A meeting of this society will be held at the Public Health Laboratory, York-place, Manchester, on Thursday, Dec. 15th, at 3 P.M., when Dr. Arthur Sellers will read a paper on Complement-Fixation Tests in the Diagnosis of Tuberculous Infections. Any medical practitioner interested in tuberculosis is invited to attend.

Voluntary Hospitals and the Ministry of Health.—In a long letter to the *Times* of Dec. 7th Sir Alfred Mond justifies the policy of the Government in asking voluntary hospitals to coöperate in raising fresh revenue. Unconditional deficiency grants would, he says, have been a sure way of relaxing voluntary effort. He announces a considerable amount of "new money" in sight; at least £100,000 a year is expected from the approved societies, and other schemes for London are being developed by the King's Fund. The Minister of Health states advisedly that what has been done should be adequate, if the community also plays its part, to save the voluntary system.

A Post-graduate Course in London.—The Fellowship of Medicine and Post-Graduate Medical Association, with the coöperation of various special hospitals, is arranging to hold in the metropolis a series of special courses in general and special subjects during the forthcoming year. These will begin with a six weeks' post-graduate course in medicine from Jan. 9th to Feb. 18th, 1922, when both morning and afternoon sessions will be held at various special hospitals. This has already been announced in our columns, and the titles of the subjects to be dealt with by the various lecturers will be published shortly. The fee for the course will be 15 guineas, and as the numbers attending will be limited to 20, early application should be made to the Secretaries of the Fellowship, 1, Wimpole-street, London, W.1.

Paddington Infirmary: Opening of Nurses' Home.—On Dec. 5th Lord Onslow formally opened a new nurses' home and spacious operating theatre at the infirmary in Harrow-road. Before the ceremony, Mr. H. A. Baker, Chairman of the Board of Guardians, outlined the development of the existing infirmary from an old-fashioned Poor-law workhouse and infirmary of ten years ago into a modern well-equipped hospital, wherein 218 serious operations were performed and 1000 X ray examinations made last year. Lord Onslow, in declaring the buildings open, laid particular stress on the value to all concerned of the coöperation between infirmaries and voluntary hospitals, such as existed between this infirmary and St. Mary's Hospital. He congratulated the nursing profession in general on the adoption of shorter hours for nurses, expressing his firm belief in the benefit to patients as well as to nurses resulting from less fatiguing conditions of work for the latter. Mr. L. V. Lester-Garland, Chairman of the Building Committee, gave details of the construction of the new buildings and incidentally described a deputation to the Ministry of Health when the proposals were first considered. He said that this department, like other Government departments, was imbued with much caution and had refused to commit to paper any statements of approval except to promise that the Ministry of Health would "take an intelligent interest" in the scheme. A vote of thanks was proposed to Lord Onslow by Mrs. H. Jones, Chairman of the Infirmary Committee, and seconded by Mr. W. Day, Vice-Chairman of the Finance Committee. The buildings, designed by Mr. Percy Adams, F.R.I.B.A., were open for general inspection, the operating theatre being a special feature of the up-to-date equipment. A large communicating corridor has also been erected connecting the central building to the kitchen and other blocks. The speakers were unanimous in their appreciation of the energetic and untiring action of Dr. A. G. Stewart, the medical superintendent of the infirmary, in promoting the rapid development of these valuable additions to the infirmary.

much lower than was anticipated, and the degree of infection, estimated by the number of worms removed, less. The cases of ankylostomiasis allowed in the Soudan will receive further treatment at their working destination. On the other hand, the percentage of bilharziasis is very much higher, and if all cases were rejected recruiting of Said labour would be an impracticable proposition. For this reason, and taking into consideration that bilharziasis is already very widely distributed throughout the Soudan, it has been decided to reject only severe cases of this disease and to allow others to be employed on the Gezira works until the canal system is much further advanced than at present, when the risk of spreading infection will be increased and the question will have to receive further consideration.

The parts of the country affected by sleeping sickness are Western Mongolla and Southern Bahr-el-Ghazal. In the former the campaign against the sickness has been in progress some ten years. Its general situation can best be described by saying that the disease is under control. During the time the restrictions of quarantine, &c., have been in force a marked improvement has taken place. In the Southern Bahr-el-Ghazal the work has been in progress for not more than about three years. Latterly the death of Captain A. Watson, D.S.O., R.A.M.C., has left the district with only one medical officer. A new camp has been formed near the French equatorial frontier. It seems to be the case that the system of segregation in practice in Western Mongolla is likely to prove the best method of ultimately eradicating the disease from the Soudan.

LICENSED BIOLOGICAL PRODUCTS IN U.S.A.

IN July, 1902, Congress approved "An Act to regulate the sale of viruses, serums, toxins, and analogous products in the District of Columbia, to regulate interstate traffic in said articles, and for other purposes." *Public Health Reports* for Oct. 14th contains a list of the establishments holding licences issued by the Treasury Department in accordance with this Act. The list is as follows:—

Parke, Davis and Co., Detroit, Mich.; H. K. Mulford Co., Philadelphia, Pa.; Sleo Laboratories, Surftwater, Pa.; the Cutter Laboratory, Berkeley, Calif.; Bureau of Laboratories, Department of Health, New York City; Lederle Antitoxin Laboratories, Pearl River, N.Y.; Bacterio-Therapeutic Laboratory, Asheville, N.C.; Dr. G. H. Sherman, East Jefferson-avenue, Detroit, Mich.; Hygienic Laboratory, California State Board of Health, Berkeley, Calif.; the Abbott Laboratories, 4735, East Ravenswood-avenue, Chicago, Ill.; Beebe Laboratories, St. Paul, Minn.; Dr. W. T. McDougall, 640, Minnesota-avenue, Kansas City, Kans.; St. Louis Pasteur Institute, 3514, Lucas-avenue, St. Louis, Mo.; the Upjohn Co., Kalamazoo, Mich.; E. R. Squibb and Sons' Research and Biological Laboratories, New Brunswick, N.J.; Laboratory of Clinical Pathology, 1208, Wyandotte-street, Kansas City, Mo.; Dr. James McI. Phillips, 2057, North High-street, Columbus, Ohio; Eli Lilly and Co., Indianapolis, Ind.; Swan Myers Co., 219, North Senate-avenue, Indianapolis, Ind.; Gilliland Laboratories, Ambler, Pa.; Antitoxin and Vaccine Laboratory, Department of Public Health, Commonwealth of Massachusetts, Forest Hills, Boston 30, Mass.; United States Standard Products Co., Woodworth, Wis.; D. L. Harris Laboratories, Metropolitan Building, St. Louis, Mo.; the Arlington Chemical Co., Yonkers, N.Y.; Dermatological Research Laboratories, Philadelphia, Pa.; H. A. Metz Laboratories, 122, Hudson-street, New York City; Synthetic Drugs and Diarsenol Laboratories, Buffalo, N.Y.; Hynson, Westcott, and Dunning, Baltimore, Md.; Mallinckrodt Chemical Works, St. Louis, Mo.; Empire State Chemical Laboratories, Brooklyn, N.Y.

Seven foreign establishments also appear on this list. In some cases the licence is issued for a single product—e.g., arsphenamine or rabies vaccine; in others, for 50 preparations or more. One of the longer enumerations is the following:—

Diphtheria antitoxin; tetanus antitoxin; perfringens antitoxin; antianthrax serum; antidysenteric serum; antigonococcic serum; antimelitensis serum; antimeningococcic serum; antipneumococcic serum; antistreptococcic serum; normal horse serum; vaccine virus; rabies vaccine; tuberculin old; tuberculin T.R.; tuberculin B.E.; tuberculin B.F.; tuberculin proteose-free (Lyons); bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, dysentery bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, micrococcus melitensis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; sensitised bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, diphtheria toxin-antitoxin mixture; pollen extract.

The licences granted do not imply an indorsement of the claims made by the manufacturers for their preparations. The granting of a licence means that inspections of the establishment concerned and laboratory examinations of samples of its products are made regularly to ensure the observance of safe methods of manufacture, to ascertain freedom from contamination, and to determine the potency of diphtheria antitoxin, tetanus antitoxin, antidysenteric serum, antimeningococcic serum, antipneumococcic serum, bacterial vaccines, prepared from typhoid bacillus, paratyphoid bacillus A, paratyphoid bacillus B, and diphtheria toxin-antitoxin mixture, the only products for which potency standards or tests have been established.

CYNOTHERAPY.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 26th under this heading a correspondent gives a recipe for dog oil copied from Pharmacopœia Londinensis, 1659, containing in its ingredients "sallet oyl, two puppy dogs newly whelped, earth worms washed in white wine, and cypress turpentine and spirit of wine."

It is interesting to compare this with the following copied from "Confessio Medici,"[1] quoting from writings of Ambroise Paré about 1540. "When I was at Turin I found a surgeon famed above all the rest for his treatment of gunshot wounds; into whose favour I found a way to insinuate myself, that I might have the recipe of his balm as he called it, wherewith he dressed these wounds. And he made me pay my court to him for two years, before I could possibly get the recipe out of him. In the end, thanks to my gifts and presents, he gave it to me, which was this, to boil down, in oil of lilies, young whelps just born, and earthworms prepared with Venice turpentine. Then was I joyful and my heart made glad, that I had learned his remedy."

I am, Sir, yours faithfully,

EDGAR J. TYRRELL.

Pope's Head Alley, Cornhill, E.C. 3, Dec. 3rd, 1921.

NEWSPAPER INSURANCE.

FOR some time past various newspapers have offered advantages to their readers in the way of insurance against railway accidents and other sudden and expensive calamities. As far as we remember the practice began with the promise of a sum of money to the representatives of a person found dead after a railway accident with a copy of a particular publication in his pocket. This, however, was obviously not an inducement to subscribe regularly, and there was no certainty that the person who bought the paper and met with an accident would so dispose of it that he could be identified with it, and his dependents enabled to make a claim. The insurance now offered usually takes the form of an order given to the newsvendor (who himself receives a commission when any compensation is paid) combined with the registration of the subscriber's name by the newspaper. The benefits promised have also been largely increased. A single subscription in at least one instance secures advantages to a husband and his wife. The accidents insured against include many varieties besides those encountered when travelling by rail or motor-car. Even accidents in the home or in the football field can be provided against.

We do not criticise or inquire into the soundness of such schemes from the actuary's point of view. The newspaper deliberately adopts an expensive, but no doubt also an effective, means of advertising itself and of increasing its circulation. The subscriber benefits by such perfectly legitimate enterprise. If he has no special preference for a particular journal as "mental pabulum" he no doubt will be careful to choose the one that offers him the greater advantages, taking account of the ordinary risks to which he and his wife are subject. Medical men who are witnesses of the strain put upon the finances of their less wealthy patients when an accident occurs should be first to commend an inexpensive method for meeting it. Medical men themselves encounter not only the ordinary risks of citizens, but others more or less incidental to their calling. They also, and their families, belong to the class to which the reading of a daily newspaper is practically a necessity of life.

There is another class of insurance which newspapers might well offer, either as an alternative to or jointly with other risks. We refer to that which the National Provident Scheme for Hospital and Additional Medical Services is designed to provide for persons whose incomes do not exceed £500 per annum. At a meeting to consider the National Provident Scheme held by the British Medical Association, Marylebone division, Dr. A. Cox expressed a preference for a "straightforward insurance scheme." Such a scheme might well include persons of all classes and incomes who, in the case of serious illness or operation, would receive compensation or contribution based upon the reasonable expenses of their treatment and proportionate to the premiums paid. It would not, of course, in the case of those not treated in voluntary hospitals, have any effect upon hospital finance, but would be the concern of the lay public and the actuaries. The newspapers, having insurance schemes, would be able to take such part as they found to be consistent with their objects and interests.

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[1] Confessio Medici. By the writer of the Young People. Macmillan. 1908.

Greenwich Metropolitan Borough.—M.O. for Maternity and Child Welfare. £650.
Harefield, Middlesex County Sanatorium.—Sen. Asst. Res. M.O. £450.
Herefordshire General Hospital.—H.S. £200.
Hospital for Consumption and Diseases of Chest, Brompton.—Anæsth. £100.
Johannesburg, University College.—Sen. Lect. in Anat. £516.
Leicester Royal Infirmary.—H.S.'s. £200.
Liverpool, Stanley Hospital.—Two H.S.'s. £120 each.
Loughborough and District General Hospital, &c.—Res. H.S. £200.
Macclesfield General Infirmary.—Sen. H.S. £180.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester, Baguley Sanatorium.—Med. Supt. £500.
Manchester City.—M.O. £450.
Manchester Royal Infirmary.—Asst. M.O. £35.
Manchester, St. Mary's Hospital for Women and Children.—Res. Obstet. Surg. £250.
Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square.—Clin. Asst.
Middlesex Hospital, W.—Surg. Path. Reg. £350.
Middlesex Hospital Medical School.—Asst. to Prof. of Exper. Path. £350.
Mildmay Mission Hospital, Bethnal Green.—Non.-Res. Med. Supt. £100. Res. M.O. £120.
Mount Vernon Hospital for Tuberculosis, &c.—Anæsth.
National Hospital for Diseases of Heart, Westmoreland-street.—Res. M.O. £150.
Nottingham City Asylum.—Sec. Asst. M.O. £400.
Nottingham General Hospital.—H.S. £200.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Free Hospital, Gray's Inn-road.—H.P. £50. Obstet. H.S. £50.
Royal Naval Medical Service.—Surg. Lieuts.
Royal Waterloo Hospital for Children and Women, Waterloo-road. Radiographer. £100.
Sheffield Royal Infirmary.—Cas. O. £150.
Southport General Infirmary.—Jun. H.S. £175.
Sunderland Royal Infirmary.—Path. and Bact. £300.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Walthamstow, Hospital for Infectious Diseases, Chingford.—Res. M.O. £325.
Western Ophthalmic Hospital, Marylebone-road.—Two Hon. Asst. Surgs.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.
West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £300.
Willesden Urban District Council.—Obstet. and Gynæcol. 100 guineas.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Chirk, Menai Bridge, and at Chippenham.

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Margate and Ramsgate County Courts in Circuit No. 49. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Dec. 28th.

Births, Marriages, and Deaths.

BIRTHS.

Pridham.—On Nov. 29th, at Hillfield, Broadway, Dorset, the wife of Dr. J. A. Pridham, M.C., of a daughter.

Troup.—On Dec. 2nd, at "Morning Dawn," Cooden, the wife of Dr. W. Annandale Troup, M.C., of a son.

MARRIAGES.

Coats—Hutchinson.—On Dec. 1st, at St. John's Church, Paddington, Captain Douglas Hamilton Coats, R.A.M.C., to Eileen Constance, daughter of Lieut.-Col. F. H. G. Hutchinson, I.M.S.

DEATHS.

Doyle.—On Nov. 28th, at 203, Colcherne-court, Lieut.-Col. Bernard Doyle, late I.M.S., aged 71 years.

Haines.—On Nov. 30th, at his residence, 12, Old Court-mansions, Kensington, W., Charles Henry Haines, M.A., M.D., F.R.C.S.

Hogg.—On 3rd inst., at Ealing, Arthur John Hogg, M.R.C.S., F.R.C.P.E., in his 73rd year.

Hugo.—On Nov. 29th, after a short illness, at his residence, Richard Mandeville Hugo, M.D., F.R.C.S.I., in his 58th year.

MacQueen.—On Dec. 1st, suddenly, at Bolton House, Bolton-road, Eastbourne, Thomas MacQueen, M.B., C.M. Edin., aged 70 years.

Meldrum.—On Nov. 10th, at 23, Montpelier, Hyde Park, Leeds, J. W. Meldrum, M.A., of the Leeds Central High School, dearly beloved husband of May I. T. Meldrum, M.B., D.P.H., Leeds Public Health Department.

Rossiter.—On Nov. 27th, at Cairo Lodge, Weston-super-Mare, George Frederick Rossiter, M.B. Lond., M.R.C.S. Eng., aged 69 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

DIETETICS AND PUBLIC HEALTH.[1]

By Prof. E. C. Van Leersum, M.D.,
DIRECTOR OF THE NETHERLANDS INSTITUTE OF NUTRITION, AMSTERDAM.

The Necessity of Systematic Propaganda in Nutrition of the People.

Rational feeding is made difficult by the complexity of modern life. An actual shortage of food need not be feared in the near future, for although our resources are not inexhaustible, they will no doubt suffice for a very long time to come. If the estimations published by the late Sir William Crookes had been correct, we should now have begun to be aware of the shortage of wheat predicted by him; but, on the contrary, notwithstanding the rapid increase of population, production has proved sufficient to supply the needs of that part of it that is accustomed to eat bread. Moreover, a shortage of wheat would not mean an irremediable disaster; at the worst bread-eaters would have to reduce their ration of palatable white bread, but would then be no worse off than their forefathers who also used to take other materials besides wheat and rye to make their bread and cakes—viz., spelt, millet, barley, buckwheat, oats, rice, and even beans. All that is needed is technical improvements in baking, through which, sooner or later, a means will doubtless be found to render these kinds of flour, which owing to their smaller percentage of gluten are not yet used for the baking of aerated bread, fit for that use.

Without wishing to underrate the value of white bread as food for the Caucasian race, I do not believe that the food problem in general depends on it. Immeasurable stretches of land still lie fallow and wait to be cultivated in order considerably to increase the present production of grain and other foodstuffs, which has not nearly reached its maximum on the land already cultivated. There is no reason to fear that science will fall short of our expectations in the direction of agriculture. But pessimistic prophecies like that of Prof. Crookes have at least this advantage, that they rouse men and set them to work to avert the foretold disaster.

International Trade in Foodstuffs.

The rise in price of many foodstuffs is by some people wrongly regarded as a sign that dearth is coming; this dearness is really attributable to other causes. If in fertile Holland tree-fruit has become so dear that the poorer part of the population have to go without it, it is not because of a shortage of fruit or of orchards, but rather because of the operations of trade—i.e., the finding of more profitable markets elsewhere. Many foreign and overseas foods have become indispensable to us, so that we should have to rack our brains to compose a meal of nothing but home products. Not to speak of tea from Ceylon and Java, coffee from Brazil, and cacao from the West Indies, our breakfast bread is baked of flour from Canada or the United States; our bacon or ham have, I daresay, been supplied by Swift or another of the big five; our beef has probably been imported from the Argentine, our mutton from Australia—or if not, our cattle have most likely been fattened with Argentine linseed meal and North American maize. As for cake, the confectioner is not likely to have made it with expensive home eggs, for China can supply him with much cheaper dried white and yolk. And the artificial butter which he has used finds its origin in the fat of American cattle or in the palm seeds or cocoa-nuts from tropical regions. Now, if we still lived in the primitive state of Nature we might allow instinct to guide us, as it did successfully when dietetics were unknown; but in our present society this instinct has no chance to develop and can no longer serve us. We are bound by social circumstances which do violence to our Nature; the obstacles in the way of rational feeding are partly economic, but are also found in ignorance, false notions, prejudice, intemperance. The war emphasised what we knew partially before through scientific experiments—that we can do with much less food than we thought we could; but that lesson is already forgotten again, and most people eat to their hearts' content, without bothering about economy or health.

Prejudice in Diet.

Meat is the most desirable food in the eyes of the poorer classes, and in many a workman's household more is spent on meat than the income justifies; the North American workman is not satisfied unless he has meat on his table twice or three times a day, though he might very well do with it

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[1] Being a Chadwick lecture given at the Barnes Hall, Royal Society of Medicine, on Nov. 24th.

The Origin
OF THE
ANGINAL SYNDROME.

A Paper read at the Opening of a Discussion of the Harveian Society on Dec. 8th, 1921,

BY SIR CHARLTON BRISCOE, BART.,
M.D., F.R.C.P. LOND.,
PHYSICIAN TO KING'S COLLEGE HOSPITAL.

THERE are probably few subjects in medicine which have given rise to more discussion than the pathology of angina pectoris. In such discussions explanation of the mechanism of the pain has always been to the fore; on this particular point of the syndrome (as it occurs in some cases) I purpose to submit some evidence which I believe has not before been produced. Angina pectoris is generally supposed to spring from some event taking place in the heart or aorta; the pain certainly arises in the neighbourhood of the heart and the fully developed attack is notorious as a cause of sudden death.

DEFICIENCIES OF PRESENT KNOWLEDGE.

Yet in spite of long recognition as a clinical entity, in spite of much skilled investigation, the exact cause of these overwhelming outbursts of pain remains uncertain, and we have come to realise the following deficiencies in our knowledge:—

(1) *In Anatomy and Physiology.*—From anatomy we ask the demonstration of afferent fibres to carry pain sensations from the heart, their course, connexions, and termination; from physiology, the function and method of expression of these fibres. Neither branch of science can fully supply the required information. We know that afferent fibres do come from the heart—most, perhaps, passing up by the depressor fibres of the vagus, some to the stellate ganglion, but of the subsequent course of these to and in the cord nothing certain is known. Physiology is indefinite regarding the sensation of pain arising in internal viscera. The current view is that all visceral pain is due to tension (Hurst); knowledge of its external expression is based mainly upon the researches of Dr. Henry Head and may be briefly expressed as follows: The distribution of pain caused by irritation of an internal viscus corresponds with that of a segment or segments of the spinal cord. The internal viscus itself, in this case the heart, has largely lost the capacity to produce sensations directly appreciated by the individual, but afferent impulses pass up from it to a segment or segments of the spinal cord. There they may be said to jangle their neighbours connected to somatic structures, making them hypersensitive, and so producing sensations appreciated in consciousness in the field of distribution of these somatic nerves. Thus various sensations, of which pain is the most prominent, are appreciated by the individual, not in the viscus actually at fault, but in the skin, muscle, subcutaneous tissue, and bone innervated from the same spinal segment. The somatic representation of the various segments of the cord has been systematised mainly through the work of Head and these distributions are generally accepted. A later part of Head's work consisted in correlating certain somatic areas with hypersensitiveness arising from irritation of certain viscera. Finding that the areas of pain in angina pectoris and certain cardiac conditions occurred in the somatic areas of certain segments, Head deduced that the heart was connected to nerve cells in these segments. They are principally dorsal. This deduction has the disadvantage that it is a physiological conception based upon a clinical condition of doubtful pathology; further, in this connexion it is important to remember a phylogenetic consideration—namely, that the heart was originally developed in spinal segments higher than the dorsal, that it migrated caudalward and therefore that somatic areas of referred pain, to correspond with the heart, should be cervical rather than dorsal.

(2) *In Pathology.*—We cannot yet point with certainty to any lesion which can be indicated as a cause of angina. It is possible to argue both for and against aortitis or coronary sclerosis. Most significant in this respect are the theories of functional spasm, cramp of the heart and the like, as indications of a beggared pathology.

(3) *From the Clinical Aspect of Heart Disease.*—Perhaps the most striking fact is the comparative rarity of pain in heart affections, leading to the thought that the heart must be a comparatively insensitive organ. In respect of angina, however, we have a clear-cut picture of the fully developed attack, and we also know a similar condition described as hysterical. More frequent than these, however, are cases fitting neither of them. The true fully developed angina and the so-called false angina are but the extremes of a very large class, the bulk of which in the present state of our knowledge lies intermediately, and causes us great trouble in diagnosis and prognosis.

To sum up our ignorance of angina pectoris, anatomically, we know merely that sensory end-organs do exist in, and afferent fibres do pass from, the heart and aorta; physiologically, we have a conception of heart sensation resting upon a rather insecure foundation; pathologically, we have no certain base to build on; and clinically, we have to deal with a number of ill-defined cases. We lack the knowledge which would enable us to docket the latter.

ANGINA AND STRESS OF SOME RESPIRATORY MUSCLES.

In following up some work concerned with the mechanism of lung expansion, the results of which I brought forward in one of the Arris and Gale Lectures in 1919, I have been constantly testing the action of accessory muscles concerned in respiration. I did not set out to study angina pectoris, but in testing these muscles came upon some facts which compelled my attention in that direction. Briefly put, and before entering into details, what I found was as follows. Some of these accessory muscles varied very much in intensity of action and stress in different positions of the body, and in different circumstances. When under stress these muscles became tender, and—and this is where my thoughts were forced towards angina, —when pressure was made upon these tender muscles the pain produced was not always a mere local sensation, but was referred to wide areas very similar to those concerned in angina. Next I found that in some cases which had suffered from anginal type of pain, pressure on certain of these muscles produced pain like that of the attack, and finally in some cases of angina relief of tension in these muscles was followed by cessation of pain.

Various as are the exciting causes of an attack of angina, they are such as would affect the respiratory apparatus (particularly in the upper part) as much as the cardiovascular. In many cases there are warning sensations referred by the individual to something occurring in the neighbourhood of, and posterior to, the sternum. These warnings generally occur under circumstances of physical strain, and if neglected are followed by an attack, or the attack may come on suddenly during exertion. In both these types there is respiratory stress in which, as in dyspnœa generally, an excessive part is played by elevation of the thorax. An attack may be precipitated by a large meal, when the diaphragm, hindered in action by a distended stomach, throws more work on the upper respiratory muscles, or by emotion, when the same upper thoracic respiratory stress occurs. Finally, attacks frequently come on for no apparent reason when the patient is resting in bed at night. These are difficult to explain on a cardiac basis, but, though not well recognised, it is a fact that the supine posture tends to quiescence of the lower thoracic and abdominal respiratory mechanism at the expense, and consequently with overwork, of the upper thoracic mechanism. An extreme instance of this is seen in the or less serious cases are treated yearly according to physical and dietetic methods. The entire care of the patient's food (complicated in this instance by adherence to vegetarian principles) has there been given into the hands of persons properly instructed in the science of foodstuffs, of digestion and metabolism, and in general and medical dietetics. When I visited Battle Creek I found there no fewer than six dieticians, two of whom were exclusively charged with the supervision of the diabetes kitchen; the latter were—as I had an opportunity of ascertaining—quite equal to this task. At present in most American hospitals of any standing, dieticians are employed, to the great satisfaction of the boards—who make an appreciable financial profit out of this work—of the medical staff, whose task is considerably lightened, and, last but not least, of the patients.

In Europe the problem of feeding in the hospitals has, in spite of its importance, not yet received much attention; the matrons, controllers, administrators, and cooks, to whose care it has been entrusted, are not experts, at best they are amateurs as regards feeding and hospital cooking, while the physician is too much taken up by his professional cares to be always able to supervise the carrying out of his dietetic prescriptions. Why not put an end to this unpractical state of affairs by ensuring the execution of these prescriptions in a way similar to that long since taken with regard to medical prescriptions? That such a course can also be successfully followed in the execution of dietetic prescriptions has been proved by experience in North America. To begin with the scientifically trained and responsible dietician keeps a watchful eye on the quality of the food bought and sees that the preparation of it takes place according to the laws of cookery. In special cases she takes charge herself in kitchens specially designed for the purpose; accompanying the doctor when he visits the patients, she notes down his directions concerning their diet and works out the menus, observing the quantity and quality desired, the proportion of calories, at the same time taking into consideration the particular desires of the patients—for instance, ritual prescriptions, &c. She supervises the preparation and the distribution of the food, finds out how much has been taken, takes note of its effect by means of weighing, examination of excreta, if necessary quantitative test for sugar, and regularly reports the results to the doctor.

"Out-patient Diet."

Outside the hospital, also, sick people can avail themselves of the services of the dietician. Every doctor knows how difficult it is, even where money is no obstacle, to get the more intricate dietetic prescriptions properly carried out. The housewife may do her best, but as a rule a diabetes menu is beyond her powers, partly because she has no idea of the protein, carbohydrates, and fat-content of the ordinary and of the so-called diabetes foodstuffs, partly because the preparation of the food that the patient is permitted to have is too difficult and troublesome.

How far the measures taken by many North-American firms to promote the nourishment of their officials and workmen might be imitated in Europe I dare not decide. In many cases these companies try to accomplish this purpose by giving nourishing and cheap, even free, lunches, to their employees in private lunchrooms and "cafeterias," where they avail themselves of the advice and services of dieticians; but though, in principle, measures of this kind deserve to be applauded, it depends on the financial strength of a business whether there is a possibility of carrying them out.

Training of the Dietician.

This training comprises an extensive curriculum, a prominent place being given to natural sciences, physics, chemistry, botany, and zoology, these being the foundation of the science of foodstuffs, dietetics and metabolism, domestic economy, cookery, and general and special dietetics. The dietician should be not merely a speaking-trumpet, but an expert, who can judge independently, can criticise, and follow the course of dietetics. Intelligence, general education, refinement, and knowledge of men are necessary to ensure for the woman taking up this profession, the necessary moral ascendancy over the less cultured among whom she will have to move; she also requires philanthropy, devotion, and a sense of duty. No more remarkable thing struck me in the United States than the work of the dieticians in the slums. I was allowed to accompany them on their home-visiting, and could admire the tact with which they contrived to win the mothers and to conquer the shyness of the ragged children. There are no better means of convincing the mothers of the utility of milk and other nourishing food and the harmfulness of bad sweets than a rising curve of bodily strength and weight. I have been present at nutrition classes where mothers and children met to have the necessary knowledge inculcated by practical demonstrations. I remember with pleasure such a meeting held in an empty shop in the densely populated Amsterdam Avenue. One of the dieticians began with a chat on some questions of nutrition—giving, for instance, a graphic illustration of the difference in nutritive value of coffee and milk. Then she treated the subject of soup and pointed out the nutritive value of peas and beans; at the end of her pleasant and instructive demonstration we all received a paper mug of bean soup. Then a little poem was written on the blackboard and the audience was asked to sing it. We all sang at the top of our voices to the accompaniment of a guitar:—

> Here's to your good health and mine,
> When short in milk, pea-soup is fine,
> It's hot and good at noon or night,
> Makes muscles strong and faces bright.

Finally the charts were examined on which had been traced the weight-curves of the children and on which some of the children themselves had noted down some hygienic measures. Then the marks of distinction were awarded—coloured paper stars which were pasted on the charts; it was all very simple, even naïve, but all the more effective. To this the faces of the mothers and children bore evidence when the lesson was over.

In conclusion, if I have claimed your attention for a moment for so self-evident and prosaic a thing as nutrition, I have done so for the simple reason that it is the cornerstone of the life and strength of the nation.

> We may live without poetry, music and art,
> We may live without conscience, and live without heart,
> We may live without friends, we may live without books,
> But civilised man cannot live without cooks.
> He may live without books, what is knowledge but grieving?
> He may live without hope, what is hope but deceiving?
> He may live without love, what is passion but pining?
> But where is the man that can live without dining?

EGYPT AND THE SOUDAN:
HEALTH AND SANITATION.

II.—SOUDAN.

THE following completes the summary of the report of Field-Marshal Lord Allenby on the affairs of Egypt and the Soudan for the year 1920.

Soudan Administration.

Turning to the Soudan, the High Commissioner forwards a report from Major-General Sir Lee Stack (Governor-General) on the administration and condition of that country. Under the heading "Public Health," Sir Lee Stack writes that the most important feature has been the severe outbreak of small-pox in the southern provinces — Babr-el-Ghazal, Mongolla, Upper Nile, and Nuba Mountains—during the winter 1919–20. The natives of these provinces are not well vaccinated, and in consequence the disease spread rapidly and the mortality was high. Effective steps were taken to prevent its spread north. A small outbreak occurred also in the Berber province, traced to a man from Omdurman where no cases were known.

An epidemic of influenza occurred in the Kassala province early in 1920, but the type was mild. Cerebro-spinal meningitis broke out in Western Mongolla with a heavy mortality. Diphtheria was more than usually prevalent in Khartoum and Atbara. Malaria was very prevalent owing to the heavy rains.

The Midwives' Training College at Omdurman is completed and work will be commenced there shortly. A site for a leper colony has been found up the Atbara, and it is hoped funds will be available for building there. The cost of administration has been considerably increased, as, apart from the increase of pay granted to all personnel, the price of materials shows little tendency to fall. Drugs, instruments, bedding, &c., are all at least double pre-war price. Such common drugs as quinine and Epsom salts have risen to four times their former price. Doctors have been difficult to obtain, and though the establishment of medical inspectors has been completed, it has not been found possible to fill the establishment of medical officers. The formation from trained native hospital attendants of a staff of assistant medical officers has proved of considerable value and helped to meet the deficiency of doctors.

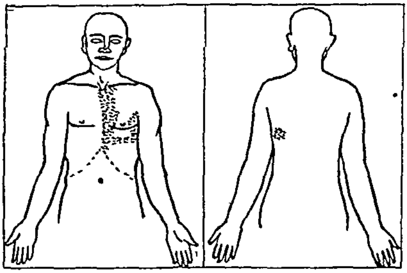
The recorded births in 1919–20 were 23,793 as against 23,033 in 1918–19, and the recorded deaths were 17,835, against 22,255. These figures, so far as they can be accepted as correct, are satisfactory, the births showing an increase of 760 and the deaths a decrease of 4420. 156,378 vaccinations were performed. Out-patient attendances in the civil and military hospital show a net increase of 8890 and in-patient of 1111.

Medical Examination of Labourers.

It has been considered necessary to enforce a more rigid examination of labourers from Upper Egypt before their entry into the Soudan. This is being carried out at Halfa and involves detention in the quarantine camp there for a period of three days; 100 to 150 men daily, or between 600 and 900 a week, are medically examined, shaved, bathed, disinfected, and treated with some vermifuge. The percentage up to date found infected with ankylostomiasis is

Action of the Scalenes.—Ordinarily the anterior scalene alone acts in inspiration, as can be easily demonstrated. In dyspnœa, when the upper thorax is markedly elevated, all the scalenes not only act forcibly in inspiration, but do not relax until the expiratory phase is half completed. In fact, in dyspnœa they work considerably over time. With the thorax becoming rigid the scalenes perform the whole work of elevation of the thoracic cage.

FIG. 1.

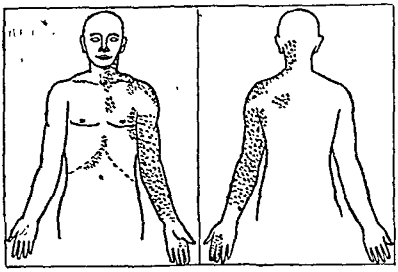


Left triangularis sterni: 14 cases.

Intercostal Muscles.—These muscles frequently contract in both phases of respiration. In the upper spaces the inspiratory contraction is certainly greater than the expiratory.

Triangularis Sterni.—This muscle arises from an inconstant area on the back of the sternum and xiphisternum and is inserted into a varying number of ribs, extending in some cases as high as the first or second rib, and fairly constantly into the third, fourth, fifth, and sixth. The lower fasciculus of this muscle extends horizontally outwards, being inserted into the fifth or sixth rib and cartilage. In such individuals as present a broad epigastric angle, the action of this muscle can be estimated by inserting the tip of the little finger between the xiphisternum and the costal margin. By this means it can be detected that this fasciculus is purely expiratory in those individuals in whom respiration is largely produced by thoracic elevation. The converse is true, it is inspiratory in those who adopt the lower thoracic abdominal type of breathing, and in the average individual it is active both in inspiration and expiration.

FIG. 2.

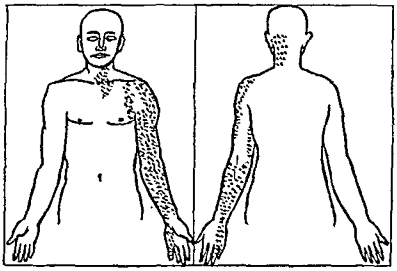


First left intercostal space: 13 cases.

Under various circumstances, these muscles tend to become tender to pressure. It is certain that they may be temporarily overworked under the circumstances mentioned above. When the strain is removed the tenderness disappears and they rapidly recover. Similar tenderness producing local and referred pains not infrequently arises as the result of spasm in cases of pleurisy or pneumonia, but lasts usually not more than 48–72 hours. In some instances, however (more especially where shortness of breath is present on exertion), pain is more persistent, and cases are met where comfort has been absent for many months. In such cases local tenderness and reference of pain are more continuous. Probably general asthenic and toxic conditions predispose in both acute and chronic forms. The important factor in the more persistent ache I believe to be the ossification of ribs and cartilages. This change hinders the rotation of the ribs on their own axis. As a result the thoracic cage is elevated en masse. The scalenes are called on for greater exertion.

When the triangularis sterni is tender and pressed on the patient it indicates that the pain is felt behind the sternum. In marked cases the area indicated in Fig. 1 extends the whole way up the sternum to the lower part of the neck in the middle line, and somewhat over the adjacent costal cartilages and generally to the homolateral side. It is frequently accompanied by a sensation which causes the subject to exclaim "It goes through to my back," "It stops my breathing," "Crushes my heart," or "It is *the* pain," phrases showing that the patient recognises it as previously experienced. It was affected in 19 cases.

FIG. 3.



Left anterior scalene: 19 cases.

AREAS OF PAIN.

An intelligent patient can distinguish that the stab occurs either during inspiration or expiration. The pain of the triangularis sterni evoked when the muscle contracts most forcibly during inspiration—i.e., in lower thoracic abdominal breathing—extends outwards along the fifth or sixth spaces of the same side into and beyond the axilla, and as high as the second rib. This is a common area for pains, in women especially, and is frequently regarded as hysterical. Pressure under the left breast in the fifth space will almost certainly affect the triangularis near its insertion to the rib or cartilage.

Fifth intercostal: These are not frequently affected. In the 9 cases recorded pain was referred to the anterior axillary area in five instances, and to the middle line in four.

Fourth intercostal: These are more frequently tender. Pain was referred to the shoulder in 1; anterior axillary area, 6; occipital, 1; mid-line (sternum), 2; inner arm, 1; outer arm, 2 (11 cases).

Third intercostal (11 cases): Shoulder, 2; anterior axillary, 4; occiput, 2; sternal, 0; inner arm, 1; outer arm, 2.

Second intercostal (13 cases): Shoulder, 2; anterior axillary, 4; scalp, 1; sternal, 5; inner arm, 3; outer arm, 2.

First intercostal (18 cases): Shoulder, 4; anterior axillary, 7; occiput, 1; sternal, 4; inner arm, 5; outer arm, 2. (Fig. 2.)

Post. scalene (11 cases): Shoulder, 6; anterior axillary line, 1; occiput, 4; inner arm, 2; outer arm, 2.

Mid. scalene (5 cases): Anterior axillary, 2; sternal, 2; inner arm, 2; outer arm, 2.

Ant. scalene (21 cases): This is the most prolific muscle in referred pains. Shoulder, 7; anterior axillary, 6; occiput, 1; sternal, 6; inner arm, 6; outer arm, 6. (Fig. 3.)

In the illustrations of these areas I have, as a rule, represented the left side only as being affected in order to avoid duplication. *The right side has been affected in a few cases.*

MILK—NOT FOR ANALYSIS.

ON Nov. 3rd a Brighton dairyman was fined £5 on each of two summonses: (1) for refusing to sell milk to an inspector, and (2) for obstructing the officer in the course of his duties. Rather than supply the inspector with a sample of milk for analysis defendant overturned his cart, and a churn full of milk ran down the gutter. The magistrates refused to believe that this was an accident. The dairyman successfully evaded inquiries from the bench about his alleged remark that the milk was sour and that he was "taking it up the side streets to get rid of it." The district where the inspector met defendant with the milk is the poorest in Brighton, and the result of an examination of its quality would have been of interest.

COLLAPSIBLE DOUCHING APPARATUS.

MANY patients who are taught to irrigate themselves complain of the difficulty of concealing the necessary apparatus, especially in taking it from their bedroom to the bathroom, without disclosing a bulky parcel. Dr. A. Allport has devised a collapsible vessel made of rubber which will fold up and go into the pocket, and which can be extended and made rigid by means of a vulcanite stay or prop. It is graduated inside up to two pints and is worked on the syphon principle, the syphonage being started by a rubber suction bulb. This bulb may be fitted to the Janet's nozzle, together with the rubber shield, and used as a hand syringe if required. The makers are Messrs. W. G. Holman, Beauchamp-place, Brompton-road, S.W. 3.

COLLECTING ANTIQUES.

THE narrative of a 25-years' search for antique furniture, prints, china, paintings, and other works of art cannot fail to find an appreciative public among those who themselves have made collections or who are about to start on this fascinating pursuit. Mr. Felix Gade, in a book entitled Collecting Antiques for Pleasure and Profit,[1] writes with infectious zest of seventeenth-century lacquer and marquetry, of twist-leg furniture and gate tables, Cromwellian chairs, and oak chests; deals briefly but adequately with Queen Anne furniture and the Chippendale, Hepplewhite, and Sheraton periods; and then digresses pleasantly on the miscellaneous extras—old clocks, decorative needlework, rugs, carpets, and engravings. He adds to much valuable advice some amusing gossip, and a list of prices recently paid for works of art in good condition concludes the volume.

LECLANCHÉ CELLS.

WE have received from Messrs. Siemens Bros. a set of catalogues containing illustrations and descriptions of various types of Leclanché cells. This firm has paid much heed to the construction of these cells, and many improvements have been effected in details of design. They have been constructed in many different sizes, both in the wet and dry form, and batteries can be obtained which will yield currents suitable for various purposes. The medical practitioner will be more interested in those which have been designed for the production of current for direct application to the body, as for ionic medication. Dry cells form an important source of current for those who require portable apparatus for the treatment mentioned, and they are extensively used. There is no reason why wet Leclanché cells should not be used by those who have no access to the direct main current. In the absence of a main supply, wet cells are preferable to dry cells when portability is not essential, and a battery of 40 could be permanently installed. If water is added occasionally to replace that lost by evaporation, and some sal ammoniac supplied from time to time, these cells will last for years. The zinc rod which slowly dissolves can be replaced, but this need be done only at long intervals. There is one special advantage which accompanies the use of cells for the production of current for direct application to the body. The current from cells is a true constant current, while that obtained from the direct current dynamo, which provides current on the main, is not absolutely constant, but slightly undulatory. The current from small dynamos is still more undulatory, and when a strong current has to be applied to the body, it is more readily tolerated if it is derived from cells. When the dynamo is used as a source of the current, the fine undulations are quickly perceived by the patient and cause disagreeable sensation when the current is much increased. Indeed, in a recent work on Medical Electricity, by Delherm and Laquerrière, the authors insist on the necessity of the use of the current from cells or accumulators for the treatment of neuralgia. They state that if the direct current from the main is used, the patient's tolerance will be overstepped before a current strong enough to procure relief can be applied. They ascribe failure to obtain relief to the use of currents which are insufficiently strong, and they show that a current of the requisite intensity cannot be tolerated if it is obtained from a dynamo. In the early days of the Electrical Department at St. Bartholomew's Hospital, before a main supply was available, the constant current was derived from wet Leclanché cells. There were three batteries, each containing 50 cells.

Messrs. Siemens's catalogues will be interesting to the practitioner of electro-therapeutics. They are well prepared and copiously illustrated.

A DEFINITION OF FINE CHEMICAL.

THE answer to the question, What is a "Fine Chemical?" is given by Mr. C. A. Hill, B.Sc., F.I.C., in a paper appearing in the *Journal of the Society of Chemical Industry* for Nov. 30th. The term used to be employed loosely, sometimes to signify synthetic organic substances, sometimes analytical reagents or research chemicals, and frequently in a sense more vague than either of these. The Safeguarding of Industries Act has raised the necessity of deciding definitely whether a given chemical product is or is not a fine chemical. In deciding the point, all the attributes of chemicals have to be considered: scale of manufacture; conditions of manufacture; skilled labour; highly skilled supervision; rarity; high cost; high grade of purity; and freedom from impurities. Each of these ideas contributes something to a general understanding of what fine chemicals are. But the real crux is the idea that the chemical is to be put to some specific use and for that purpose must conform to some definite standard of purity. The shortest description of a fine chemical which is in any way adequate is that it is a chemical, not produced as a "heavy" chemical, which is of specified purity for a specific purpose.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—It has just been brought to my notice that my name was mentioned in a Sunday paper last week in regard to the case of a boy who had been seen by Pastor Jeffreys at Notting Hill. I need hardly state that I was quite ignorant of the fact that my name was to be published and I never gave any permission for it to be used in any way. I should be much obliged if you could kindly find room to insert this letter in your journal.

I am, Sir, yours faithfully,
Wimpole-street, W., Dec. 3rd, 1921. GEORGE N. BIGGS.

SUCCESSFUL QUACKERY.

To the Editor of THE LANCET.

SIR,—When I was in Australia some 30 years ago a certain notorious "herbalist" in Sydney, N.S.W., was prosecuted for practising without a diploma and for obtaining money by false pretences. He had an enormous practice and the medical faculty were, very naturally, indignant about it. But when summoned, the man was able to produce incontrovertible evidence that he was a duly qualified medical man. The account he gave of himself was as follows:—

"When I started practice as a doctor, I hardly ever got a patient, but I saw several 'herbalists' and unqualified men doing an enormous and lucrative business. So, in desperation, I determined to follow their methods, with what success you know. The ignorant public here will pay handsomely for quackery and imposture, but are niggardly towards genuine medical work."

I fear that Sydney is by no means the only place where this is so, and until our more ignorant portion of the population is elevated from their present condition of stupidity there will always be an opening for the humbug, the impostor, and the quack.—I am, Sir, yours faithfully,

F. A. PARKER, M.A. Cantab.
Carnforth, Lancs, Dec. 2nd, 1921.

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[1] London: T. Werner Laurie. 1921. Pp. 222. 86 plates. 18s.

part of the chest and extended into either arm. He was a big man. The Wassermann was negative, heart and lungs were normal, there was no albumin. Three pieces of strapping were applied round the chest at the level of the base of the sternum with intense relief; he reported in the following week that he had been at work the whole time. The pain had pulled him up three times but there had been more ease than for two or three years. On this occasion, on taking off the strapping, an anginal attack developed. He stood still, it could not be observed that he was breathing, he could not speak and had intense pain located behind the sternum. He began to sweat and his face became white. He would not move to sit on a chair which was brought; his face expressed extreme pain. The attack was relieved by amyl nitrite. An attempt was made to improve upon the strapping, but, owing to a piece of metal introduced causing cutaneous irritation, the apparatus could not be worn. The following week he reported that the pains had been severe; he had had bad nights, but no acute attacks. On this occasion (June 11th, 1919) he was re-strapped and on July 2nd, he reported again and no local pain was present. Eventually he was fitted up with a mechanical arrangement; he reported again a year later and was still wearing it, but now had a complaint of pain occurring after food with some vomiting and flatus. There had only been a few severe anginal attacks following exertion. The continuous ache had disappeared, the triangularis was hardly tender at all. A bismuth meal showed no evidence of obstruction and his symptoms of dyspepsia were relieved following the extraction of several teeth which showed pyorrhœa.

An Explanation of the Sequence of Events in Angina.

Important to my thesis is the phenomenon observed when pressure is made on the hypersensitive triangularis sterni and sometimes on an intercostal or scalene should they be tender. The chest is elevated and held there with a diminished respiratory excursion. Such elevation is carried on against the action of gravity and is produced by muscular action of the scalenes. The scalenes do not relax to the full, otherwise the chest would resume the original expiratory posture and the tracing would fall to the level upon which it stood, prior and subsequent to the pressure on the triangularis. The triangularis does contract in expiration and it is the scalenes which become tonically contracted and oppose the full action of that muscle. It is thus not difficult to conceive an explanation for the sequence of events usually found in an attack of angina. The area becoming sensitive from the stimulation of the triangularis, will account for the preliminary warnings of pain in the region of the sternum. If neglected, an increased thoracic elevation ensues, resulting in a tonic condition or spasm of the inspiratory muscles of the upper portion of the chest, producing a pain referred to the shoulder, axilla, or arm; the muscle exhibiting tone and not relaxing in expiration will produce these areas, which I believe to be associated with increased action in expiration, to the sternum or anterior triangle.

Referred Pain in Various Diseases.

In collecting the details for this communication I find that referred areas of pain from these accessory muscles of respiration have occurred in various diseases. These observations are drawn from a series of over 50 cases, of which I think seven would be included as angina by a strict definition and a further 10 by those inclining to a wider classification. I have given short details of three cases in the first class of seven. The class including 10 cases consisted chiefly of individuals who were pulled up by pain in the chest on exertion. In most of these, attacks of pain have occurred in the characteristic anginal areas, and they had believed they were dying. Nine cases are included in a separate group, where similar symptoms were noted but where a valvular lesion was present in addition. In a fourth group of 10 cases pleurisy or pleuro-pneumonia was present in eight, and intrathoracic neoplasm in two. Asthma, emphysema, and chronic bronchitis afford another group of five. Eight cases of an anomalous type constitute a further group (and seven cases were selected from patients whose primary symptoms indicated pain arising from conditions other than respiratory stress—e.g., occupation neurosis, &c.). Such different types suggest that we are dealing with a group in which similar pains of varying severity occur. Throughout this group it seems difficult to exclude the element of respiratory stress. In some of the cases it is the essential phenomenon.

Summary.

In conclusion I sumbit that—

(1) Over fatigued muscles give rise to referred pain in distant areas.

(2) The upper thoracic respiratory mechanism is excessively active under the same conditions in which attacks of angina pectoris usually occur, and stress of this nature affords a better explanation for nocturnal attacks than does cardiac strain.

(3) The respiratory muscles of this region, when hypersensitive, are the last structures in the segment to lose local tenderness and the faculty of producing referred pains by pressure.

(4) When these muscles are hypersensitive and subjected to pressure the areas to which pain is referred correspond to those similarly affected in angina pectoris, and are frequently recognised.

(5) I have demonstrated a phenomenon which offers an explanation for the warning and sequence of spread of pain in angina pectoris. This is dependent upon irritation of one of the expiratory muscles involved, and results in marked thoracic elevation.

(6) Treatment by alleviating the stress of these muscles has frequently—not always—been effective in relieving the pain *without* other treatment.

(7) Two attacks of angina pectoris have been observed as the result of irritation of respiratory muscles.

(8) I submit that the phenomena generally which accompany an attack of angina pectoris can equally well be explained on a respiratory hypothesis as on one of vascular origin.

(9) I would further point out that the age incidence of angina pectoris corresponds with that of ossification of the ribs and cartilages—a source of increased difficulty in respiration.

SPASMODIC RESPIRATORY AFFECTIONS.[1]

By Sir JAMES PURVES STEWART, K.C.M.G.,
M.D. Edin., F.R.C.P. Lond.,
SENIOR PHYSICIAN TO THE WESTMINSTER HOSPITAL.

SPASMODIC respiratory affections may be due to disease either of the vegetative or of the cerebrospinal nervous system. With regard to the vegetative nervous system I mention in passing the important spasmodic respiratory affection known as asthma, whose phenomena of laboured breathing consist essentially in spasm of the non-striped bronchial muscles, innervated as we now know by the dorsal motor nucleus of the vagus. In asthma the bronchial nerve centres react with abnormal violence to various blood-borne irritants, whether these be foreign proteins or bacterial toxins, also to peripheral irritants, nasal or otherwise, or even to psychical stimuli. The result is the asthmatic paroxysm, whose features are so familiar that I need not weary you by recapitulating them.

The "Hic" and the "Whoop."

Coughing, yawning, sneezing, and hiccup are all of them reflex phenomena which may be induced in healthy individuals by appropriate stimuli. Of these, hiccup calls for special mention. Hiccup is a spasmodic myoclonic contraction of the diaphragm, occurring so suddenly that the glottis is momentarily closed by suction, producing the characteristic inspiratory noise or "hic." In slight cases of hiccup the affair is transient and produces only trivial discomfort. Sometimes, however, it may become so severe and prolonged as to induce profound and even deflation of the lower lobes of the lung, not infrequently seen in cases compelled to complete recumbency following operations and otherwise.

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[1] Being the concluding portion of the Purvis Oration on Respiratory Phenomena in Nervous Disease, delivered before the West Kent Medico-Chirurgical Society on Dec. 9th, 1921.

In these conditions, and indeed in dyspnœa generally, stress falls in particular upon those muscles which are active when inspiration consists largely in elevation of the thorax.

STRESS OF SKELETAL MUSCLES.

Quite apart from respiratory muscles, skeletal muscles become hypersensitive when over-stressed or chronically fatigued, and further, pain is referred over a wide area. In three cases of occupation-neurosis resulting from over-use of the arm or malposition in the use of the hand, I have found the trapezius muscle to be tender to pressure. The pain arising from this muscle is appreciated either at the back of the occiput as high as the occipital ridge, as far back as the middle line and as far forward as the mastoid process, or in addition as extending upwards in front of the ear, through a narrow area over the cheek as high as the zygoma. Here an area a little smaller than a hemi-section of a tennis-ball is appreciated as being the seat of "neuralgia." In two instances this same area became considerably reddened as the result of vascular dilatation. The pain was recognised as having been appreciated before and was induced by the use of the arm. In two cases the muscles lying between the metacarpal bones of the thumb and index fingers, probably part of the adductor pollicis, were hypersensitive, the pain being referred over an area triangular in shape, its base limited below by the level of the wrist-joint both anteriorly and posteriorly, and ascending to an apex over the middle part of the forearm on its radial border. In cases of acute flat-foot pain may also be produced in the leg. In one instance such a pain was felt over an oval area on the outer part of the thigh extending from a point just above the external condyle of the femur as far as the great trochanter. In other cases the pain has been appreciated either in the inner or outer side of the leg between the knee and the ankle and in well-defined areas. The pains in these cases have been recognised by the individuals as occurring previously. It will be noticed that I am not claiming any specific property on behalf of the respiratory muscles.

The method I have adopted in testing these muscles is first to pick up the skin between the finger and thumb and apply gentle pressure, secondly to take hold of the muscle, or to locate the muscle with the finger, and apply similar pressure; if pain is absent on the first occasion and present on the second I conclude it is due to the muscle itself, though it is not possible definitely to exclude the subjacent tissue. That the muscle is the cause of the pain is most probable when it is remembered that putting that muscle into action by the individual produces similar pain to that which follows pressure.

On producing the pain by pressure, the subject generally indicates the area of pain with a wide movement of one hand. He is then asked to indicate it more exactly, and will usually show an area less than that originally indicated. Various points in the neighbourhood of the margin of the area are then indicated and the question asked, "Do you feel it here?" and by this means the area in which the pain is appreciated can be more or less accurately differentiated. In some cases the method employed by Head has been adopted for testing different areas, and the maximum points of pain are found to correspond to those which he has published. In such cases the pain has usually been of great intensity. Patients cannot always be examined during such paroxysms, nor do they appreciate prolonged handling of a muscle which produces pain of such severity.

DEGREES OF PAIN.

In respect of degrees of pain felt in these muscles, for all practical purposes, the following categories may be differentiated: (1) All structures in the segments are locally tender and produce referred pain; (2) the skin is not tender, but the remaining structures, both bone and muscle, are hypersensitive and refer pain; (3) the skin and bone are not tender to pressure—the muscle is tender and produces the referred pain; (4) the muscle alone is locally tender—i.e., "the pain is under your finger," and either produces no referred pain or such an area is diminished in extent.

The muscle which has been tender either with referred or local pain will lose such sensitiveness in time and pain will not be elicited on pressure such as has been employed previously. It may disappear in a few hours, occasionally in a few minutes, and commonly in less than 12 hours. On the other hand, the sensitiveness may remain for days or even weeks. In the case of a lady who had suffered pain for two years, in whom the trapezius was put at rest by means of a sling, the muscle remained locally tender for three weeks but was not tender at the end of six weeks. The hypersensitiveness re-developed in an hour when the sling was left off and the muscle was again brought into action.

AREAS TO WHICH PAIN IS REFERRED BY MUSCLES ACTIVE IN UPPER THORACIC RESPIRATION.

Returning to the respiratory muscles, I find the following areas, generally on the left side, occasionally on the right, frequently indicated as being the site of pain when pressure is applied to a tender muscle:—

(1) The inner arm, upper and lower, extending over the areas allocated to the first, second, and third dorsal segments.

(2) Other parts of the arm or hand not always corresponding to a segment. The thumb has in my series not been affected. To distinguish from the first area this may be called the outer-arm area.

(3) Anterior axillary area extending from a line somewhat external to the nipple as far as the free margin of the anterior axillary fold. Above, it extends to the level of the first rib, sometimes higher, to a point over the coracoid process. Below, less definitely to the level of the fifth or sixth rib.

(4) An area in the shape of the brim of a cocked hat placed over the apex of the shoulder.

(5) An area extending from the occipital ridge with an indefinite lower border well down the neck. Bounded by the middle line internally its anterior limit is a line dropped from the mastoid process towards the acromion.

(6) A central "sternal" area limited to the homolateral part of the sternum and adjacent costal cartilages. It may extend upwards to include the anterior triangle of the neck and grip the throat.

The extent of these areas varies at different times and in the same or different individuals. Usually, the upper border is more sharply defined than the lower. Other areas are occasionally and irregularly the site of the pain produced.

Time does not permit me to enter fully into the muscular mechanism of respiration. After studying this subject for several years I must confess it is most complicated. It may, however, be safely stated that whenever the influence of effort enters into respiration—be it from exertion, emotion, pain, cardiac defects, or what not—there is an increase in the depth of inspiration, in which elevation of the thorax plays an excessive part. As I mentioned before, the same may happen when the supine posture is adopted.

The muscles principally concerned in this are the scalenes and upper intercostals in inspiration, and the triangularis sterni in expiration. The three scalene muscles which rise from the transverse processes, the anticus and medius being inserted into the first rib, and the posticus into the second rib, form—together with the intercostal muscles of the first space—the motor mechanism of a unit of expansion for the upper part of the thorax. This consists in the manubrium sterni, the vertebræ, the first two ribs, and Sibson's fascia. The third and fourth ribs are much less firmly attached to the sternum than the first and second. With the intercostal muscles attached to them they provide a link between the upper and lower part of the thorax.

jerky movements of the arms; another individual gives an occasional little nervous cough or grunt, and so on. Then again, one variety of stammering, in which the patient sticks in the middle of a vowel (less common than the type where he sticks over a consonant) is simply a respiratory tic affecting the muscles of the false vocal cords. Examples of tics or habit-spasms of this sort might easily be multiplied, and many of you can recall for yourselves friends or patients who perform peculiar respiratory actions of this sort. A tic or habit-spasm, it should be remembered, is a psychomotor affair of cortical origin, consisting in the frequent explosive repetition of the same motor act. It never interferes with voluntary movements. Sometimes the tic takes place automatically and without the patient's conscious attention; in more severe cases the tic absorbs the patient's attention during its performance, and is accompanied by a feeling of irresistible compulsion. The greater the psychical abnormality the more violent does the tic tend to be.

THE

NOSE, THROAT, AND EAR REQUIREMENTS OF AIRMEN.

PROBLEMS PRESENTED BY THE INTERNATIONAL MEDICAL REQUIREMENTS FOR AIR NAVIGATION, WITH SPECIAL REFERENCE TO THE NOSE, THROAT, AND EAR.

BY DAVID RANKEN, M.S. LOND., B.S. DURH., F.R.C.S. ENG.,
SQUADRON LEADER AND NOSE, THROAT, AND EAR SPECIALIST, R.A.F. MEDICAL SERVICE.

THAT the airman should be medically fit is a dictum that none can deny. It stands to reason that anyone subject to rapid changes of atmospheric pressure and with such physical responsibilities as are demanded of a pilot should be organically sound, especially in regard to the nose, throat, and ear. All aviation medical boards, therefore, have laid down standards which, in the early days—when indeed there was often little or no medical examination of flying personnel—were mostly arbitrary, but which became modified from time to time as knowledge was acquired of the physiological attributes essential for successful flying.

The object of this paper is to discuss such physiological attributes in regard to the nose, throat, and ear, and to draw attention to the process by which these standards are being confirmed or refuted. With more than four years' experience *in the examination of* candidates, I know of many instances where the question of acceptance or rejection of an individual has produced sound arguments on both sides; in consequence, it has seemed to me of interest and value to consider some of these cases, *more especially in the* light of the international medical requirements for *civilian pilots*. It is *necessary to pass in review* the experiences upon which such requirements were undoubtedly founded.

The Aviation Candidates Medical Board of the Royal Air Force insists that candidates with no previous experience of flying shall have hearing in either ear equivalent to a forced whisper at a distance of 20 ft.; perforations of the drum, chronic suppurative otitis media, and a radical mastoid operation, successful or otherwise, are causes for rejection. These are excellent safeguards: a fair number of pilots who—either inadvertently or before the Aviation Candidates Medical Board was established—were instructed in flying, were then found to have trouble in the air, and have since been invalided out for one or other of the reasons cited above. They frequently suffered *from dizziness or headaches, sickness or exacerbations* of chronic suppurative otitis media, pain or ringing in the ears, and there was always the chance of labyrinthine involvement through a necrosed inner wall of the middle ear. The experience of the medical *services of other countries has been similar. It is* better, therefore, not to take initially the risk of these complications, but where no trouble has arisen over a period of years it becomes a matter for careful thought as to what decision to make.

The International Medical Requirements.

As stated above, many of the rules laid down by Aviation Candidates Medical Boards were in the first place empirical, but the international medical requirements differ in being succinct, and in virtue of what they definitely contain, or perhaps purposely omit, are capable of wide interpretation according to the views prevailing in any particular country. The following are those laid down for the nose, throat, and ear:—

> "*Ear Examination.*—The middle ear must be healthy. The aeronaut must possess a degree of auditory acuity compatible with the efficient performance of his duties.
>
> *Vestibular Mechanism.*—Must be intact and neither unduly hypersensitive nor hyposensitive.
>
> *Nose and Throat Examination.*—The aeronaut must possess free nasal entry on either side and not suffer from serious acute or chronic affections of the upper respiratory tract.
>
> Each contracting State for the present is to fix its own method of examination and no aeronaut who has given proof of his flying ability shall, so long as he retains such ability, be necessarily disqualified because he fails to fulfil all these requirements."

I wish to call particular attention to this latter clause. Let us now consider these requirements seriatim.

A Healthy Middle Ear.

It was probably felt that external ear and meatal conditions could be left to the discretion of the examiner, but that there could be no dispute as to rejection where pathology is present in the middle ear. I have accordingly taken the records of 450 civilian, or rather would-be civilian, pilots for passengers or goods examined by myself since the armistice; these are the findings in cases where the middle ear was not healthy:—

1. L. Has *flown* 600 hours during the war. Is now deaf in left ear; a dry perforation on that side. Possible initial date of ear trouble, May, 1918. Became troubled *with giddiness in the air in March and April,* 1919. This candidate would, no doubt, be unsafe as a civilian pilot and he was accordingly rejected.
2. C. *1050 hours previous flying. A small posterior* inferior perforation of left drum, and left ear has discharged off and on during last 12 years—i.e., trouble commenced long before he learnt to fly. *Although middle ear was not* healthy, and never likely to be so without operation, absence of symptoms with a good flying record was satisfactory, and he was accordingly accepted.
3. M. 500 hours previous flying. Chronic suppurative otitis media both ears, date of origin unknown. Hearing right ear fair but only 1 ft. for a forced whisper in left ear. Candidate deferred for aural treatment, never previously having had any, but failed to present himself for re-examination.
4. K. 300 hours previous flying. Right ear has discharged off and on since childhood; forced whisper heard at a distance of only 4 ft. on that side; large dry perforation in right tympanic membrane. A view similar to that in Case 2 was taken, and he was accepted.
5. B. Has flown over 2000 hours; airman by profession. Ears have run off and on since childhood; hearing good in either ear, right drum scarred; a large posterior inferior perforation in the left drum. Assessment similar to that made in Case 2.
6. S. Number of hours flown about 1250; a discharge from left ear off and on since age of 12. Hearing on both sides good, but right drum opaque; an anterior perforation *of left drum. Candidate accepted.*
7. T. Has flown more than 1000 hours. In 1911 left ear discharged, and has run off and on since. Hearing good *in either ear, but a posterior superior scar in left drum.* Candidate accepted.

Bearing in mind the frequency of breakdown of pilots suffering from a like condition, the outstanding feature of the above and subsequent cases is, I think, *adequate* illustration of the fact that in certain people the bodily mechanism can, for a time at any rate, rise superior to serious physical defects. A consideration of the above cases shows, moreover, the wisdom of a *saving clause as to previous flying ability. It was felt that five of the seven candidates described*

These pains are not always constant for the same muscle; for instance, the anterior scalene may on one occasion refer pain to the inner side of the arm, and on a second to the shoulder, or the posterior scalene to the shoulder on one occasion and to the occiput on another. Further, in a given individual several muscles may be tender and refer pain at a given interview. The interpretation of the pain which he gives tends to vary, as has been indicated above. It is further noticeable that in the same patient on successive days different muscles may be tender; this is particularly noticeable with the intercostal spaces. For instance, on one occasion the fourth space may be tender and the higher space unaffected, whereas on a different occasion the fourth may not refer pain and be locally tender, whereas one of the higher spaces, such as the first or second, may refer pain.

There is strong evidence to show that the triangularis sterni refers pain to different areas when fatigued in expiration or in inspiration. There is also some support of a similar differentiation in the case of the anterior scalene. Possibly the spinal cord contains groups of cells in different areas which control the muscular actions for the two phases of respiration.

Thus all these muscles which become tender give referred pain in various areas outside themselves, but they share these areas in common and the composite area diagrams of any of these muscles produce a diagram which would be satisfactory for some cases of angina pectoris. These areas are: (1) Inner arm —corresponding to Head's areas 1, 2, 3 dorsal; (2) outer arm—rest of arm; thumb never seen affected; (3) anterior axillary area; (4) shoulder; (5) occiput; (6) sternal.

Two points appear to me to be important—namely: (1) If we add any intercostal or scalene areas together we get a composite area of referred pain which corresponds with that of angina pectoris; (2) that it is common for the patient to recognise the pain produced by muscle pressure as having been experienced before, as being, in fact, his particular breast pang or angina.

A CASE ILLUSTRATING RELIEF BY PRESSURE.

F. S., aged 53, was admitted to the out-patient department with extreme pain in the left arm. It commenced suddenly three weeks ago while walking, has been remittent in character since then, and is brought on by any exertion, especially by use of the left arm. The pains may occur any time during the day, but are most frequent at night. By occupation he is a labourer in regular work. He walked into the out-patient room supporting the left arm with the right, holding it tightly against the chest. His gait was slow and careful, pausing occasionally in between the paces. He sat down carefully, kept quite still, would not move his head on account of increasing the pain, and stated that his most comfortable position was on the back slightly over to the left. Movement of the elbow caused pain in that joint. A slight spasm was seen in the out-patient room during which the face went ashy grey and his eyes were filled with tears. He stood perfectly motionless. Strapping applied below the nipples relieved, but did not completely stop the paroxysm. He was admitted forthwith. The Wassermann reaction was positive. While in hospital he had many attacks and his muscle tendernesses were tested on several occasions. On one occasion, pressure on the anterior scalene precipitated a typical attack, which was relieved to some extent by amyl nitrite. During these attacks the pulse-rate was not altered. If the strapping was left off, injections of morphia had to be given. Spring tapes relieved acute attacks, but did not entirely prevent minor attacks. In particular the gnawing pain in the upper arm tended to continue, without acute exacerbations to prevent him sleeping. He was fitted out with an apparatus on the lines indicated and left the hospital on Dec. 23rd. He has been seen at out-patients' since that date. He declines to give up his apparatus. No acute attacks have occurred and the aches are now passing away. The muscle tenderness has also ceased, and he is now anxious to resume work.

IMPORTANCE AND LIMITATION OF RELIEF BY PRESSURE.

This fact of relief by pressure appears to me of critical importance. Relief to the triangularis sterni may be attained by lateral pressure as by the hands by means of strapping, and in many cases I have carried this out with immediate relief of the pain. A piece of strapping carried round the chest at the level of the lower end of the sternum is all that is necessary. It prevents the full inspiratory action of this part and further diminishes the action of the scalenes by inducing a compensatory action of the lower thoracic respiratory mechanism. Strapping tends to stretch, is unpleasant for the patient, and produces a feeling of uneasiness owing to the inability to take a deep breath. I now employ a broad piece of webbing in which is inserted a spring. This does away with the alarm produced by complete constriction, and is a more desirable method of relief because it assists and does not replace the action of the muscle. It is effective in this condition, and frequently also relieves similar referred pains and many pains in cases where the muscles are locally tender to pressure which arise in the course of pneumonia and pleurisy.

This method of lateral thoracic pressure has its limitations. Where the ribs and cartilages are markedly ossified it may be quite impossible to produce any effect by this means, and where the respiratory apparatus, especially the lower thoracic abdominal portion, is under ordinary circumstances working at its maximum, the individual cannot tolerate any restriction whatever and his instinct will teach him that he must bear the pain rather than make more numerous respiratory efforts. The true vicious circle is therefore established. Lateral pressure produces its effect by promoting lower thoracic abdominal respiration at the expense and to the relief of the upper thoracic expansion. The characteristic attitude, if such there be, of angina pectoris is one in which the left arm is held tightly into the side and it is assumed that this posture is adopted to relieve the pain referred to the elbow. In such a case if pressure is brought to bear upon the inner side of the arm it does not relieve the referred pain. A different explanation may be offered—namely, that it is the effort of the individual, unconscious of the reason, to constrict the chest laterally, and this he can best do by folding the arms tightly across the chest. Imitation of this mechanism does, within limitations, relieve the pains and the attack very rapidly, and it is a most striking demonstration to watch the gradual disappearance of the pinched expression and agonised face which follows the gradual realisation that these pains have disappeared.

TWO OTHER ILLUSTRATIVE CASES.

F. S. J., aged 49, was brought to King's College Hospital by the police in an attack of angina. He was walking up Denmark Hill when he suddenly felt choking pains in the neck, left arm, and chest. He was in King's College Hospital in 1913 with severe anginal pains, intermittent in type and of a similar character to the present. In some of these attacks he thought he was dying. He was a sailor, but denied syphilis. His Wassermann reaction was not tested in 1913. At that time there was no evidence of organic disease. In the interim from 1913 there had been no attacks. He was seen in casualty, leaning back against a couch at an angle of about 80°, hardly breathing at all. The heart was quite steady but a loud systolic murmur was audible all over the præcordium. He had been there about half an hour; pain had ceased in the left arm but was still present in the left side of the throat and the upper sternum, radiating up and down. The face was not pale. The pain in the throat was described as gripping in character. Pressure on the first intercostal space on the left side gave no result; on the second and third spaces pain went to the left side of the neck in the region of the trachea and was identified as *the* pain. The fourth and fifth spaces referred to the axilla; the left triangularis sterni was very painful but did not radiate; the scalenes were not tested. Lateral thoracic pressure was stated to give relief, and he was accordingly strapped tightly below the nipples. This gave immediate relief, and three hours later all pains and soreness had disappeared and patient walked out wearing the strapping.

G. W., aged 46, formerly in the army, complained that for three years he had had an ache in the region of the xiphisternum, constant in nature, but increased by the use of the right arm, and when walking. He could walk three and half miles an hour, but this aggravated the pain and he had at intervals to sit down and rest. The pain diminished in the evening when sitting down, but woke him up in bed. During attacks he had to stand quite still; he sweated. On several occasions had thought he was dying, and on three occasions had fainted. In severe attacks pain was felt in the upper in recommending operation; some had already had operative interference with little amelioration as regards their mouth-breathing, and in some no vestige of a possible cause could be found and the condition was evidently a bad habit, and also, it must be said, not a very marked one.

Mouth-breathing per se is presumably a disability because of the frequently associated parched buccal and pharyngeal mucous membrane, spongy gums, or excitation produced by currents of air on carious or ill-stopped teeth or unhealthy tonsils. These symptoms are much more pronounced in some individuals than in others, and quite a number of mouth-breathers neither have nor complain of any discomfort. One must remember also that mouth-breathing itself is only a symptom, sometimes, but by no means always, associated with other physical or skeletal conditions such as deformed chest or highly arched palate. Again, nearly all pilots above a height of 12,000 ft. begin to breathe through their mouths in order to obtain sufficient oxygen from the rarefied atmosphere. The conclusion to be drawn, therefore, is that there are quite a number of pilots in whom mouth-breathing constitutes apparently no disability at all and that the assessment of any symptoms due to it is the important point.

Deviated Septum.

There is a small but distinct group of cases among these 450 experienced airmen in which nasal examination seemed to leave one no alternative but to say that submucous resection should be performed irrespective of the candidate's history of symptoms as given by himself. In this connexion one must remember that there is a marked tendency on the part of examinees to pooh-pooh any discovered apparent disability as having given rise to no, or at any rate, to only slight, trouble in the past. It must be remembered, on the other hand, however, while giving due weight to such a history, that symptoms apparently trifling in importance on the ground tend to become considerably aggravated in the air. Deviated septum, traumatic in origin, is of fairly frequent occurrence among experienced pilots, sometimes because of their sporting instincts in the way of boxing or the rougher games, but more so because of their liability to crashes with trauma about the face and head. In this class I must place six airmen out of the total number seen, not only because examination at once suggested the need for correction, but more so because of the concomitant symptoms. Frequent colds in the head with mouth-breathing were usual symptoms, obstruction in one or the other nasal passage was practically always present, while two were subject to attacks of hay fever. In spite of these signs and symptoms, however—i.e., acute and chronic affections of the upper respiratory tract and absence of free nasal air-entry on one or the other side—three of these airmen had successfully flown over 1000 hours, and the remaining three 150, 400, and 600 hours respectively. There can be little doubt that submucous resection would add materially to their comfort and well-being, and indirectly therefore to the longevity of their flying life.

Enlarged or Unhealthy Tonsils and Adenoids.

Ten airmen were found in whom signs and symptoms, such as marked hypertrophy, frequent sore-throats or attacks of quinsy, enlarged glands in the neck, and in the case of adenoids repeated colds and occasional attacks of Eustachian tube obstruction, left no doubt that operation would be an advantage. A large number of others with unhealthy tonsils was seen, who, on their own statement, had never had any trouble. These ten airmen, in spite of their symptoms, had flown periods ranging from 140 to 2700 hours. In this connexion I mention a well-known stunt pilot and instructor who, besides having a tendency to mouth-breathing with distinctly unhealthy tonsil remnants present, had a history of occasional migraine attacks, and also possessed visual defects. This pilot had flown 1550 hours, had been up to 23,000 ft. with no discomfort and without oxygen, and apart from a gunshot wound in the left leg in 1915 had never suffered from any disability!

Miscellaneous.

In this group I have placed four airmen. Two suffered from hay fever every year without any flying trouble. Both had flown successfully about 1500 hours. A third was subject to frequent colds and evidently had a very susceptible mucous membrane: when seen, the whole of the upper respiratory tract was in a condition of acute catarrh without any apparent clinical evidence of the cause. In spite of this he had flown 900 hours successfully. A fourth suffered from atrophic rhinitis probably due to too extensive turbinal operation in civil life, but had, nevertheless, flown 150 hours without discomfort or mishap.

Conclusion.

I have considered the above groups of cases because, although various aural or upper respiratory tract potential disabilities were present, the flying efficiency of the airmen concerned has been proved over and over again; I feel, however, as stated above, that it would be both wrong and misleading to quote such cases without again emphasising the point that in my opinion these airmen were successful *in spite of* their defects, and I cannot doubt that their standard of excellence would have been higher had they conformed to the normal. What really does matter, and probably happens in all such cases, is that a power of compensation exists and minimises any potentially troublesome defects. The same remarks might be made with regard to refractive errors in cases of maimed or partially disabled pilots and with respect to other physical conditions diverging from the normal. Such emphasis is perhaps necessary, as medical boards in all parts of the world have laid down stringent standards for untrained would-be aviators; tempered with discretion and discrimination, however, on the part of medical examiners there can be no doubt that this is, and has been, the right and wisest course to pursue.

Should any relaxation of medical standards be made when the demand for pilots exceeds the supply in the case, say, of another great war? If so, in what direction should this relaxation take place? Writing with respect to the nose, throat, and ear it is apparent that apart from a number of candidates who might be temporarily deferred for operative treatment, the debatable cases would be men with chronic suppurative otitis media with or without hearing defects, who were in other respects perfectly healthy. In a recent paper of mine entitled "The Incidence of Nose, Throat and Ear Disease among Aviation Candidates,"[6] I showed that only about 3·6 per cent. of the young men presenting themselves as aviation candidates suffer from aural disease, so that the number of such cases would be small; were it necessary to consider the question of admitting some of these candidates, and, in my opinion, this would only be justified under very extreme conditions, it seems that the presence or absence of symptoms or exacerbations of disease over a preceding lengthy period of years should play an important part in the adjudication; other things being equal, however, it would appear incontrovertible that a candidate sound and healthy in all respects is more likely to be useful and successful over a period of years than one with any physical defects, however unimportant the latter may seem to be at the time of examination.

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fatal exhaustion. The reflex phenomenon of hiccup is sometimes excited by transient gastric or other abdominal irritation. It may also be due to disease of the peritoneum in the region of the diaphragm, the phrenic nerve being sensory as well as motor in function. Other cases of hiccup are due to central disease of the respiratory centres in the medulla. Thus, for example, it may be produced by the toxin of epidemic encephalitis. In encephalitic hiccup the myoclonic spasms may implicate not only the diaphragm and the constrictors of the glottis, but may even extend to the muscles of the abdominal wall and trunk. Hiccup of this encephalitic type may continue for days at a time, at the rate of 12 to 15 hiccups per minute. Most cases clear up in three or four days, but others go on for weeks. Hiccup may also occur as a terminal symptom in tumours of the posterior fossa of the skull. Lastly, we sometimes meet with cases of hysterical hiccup. These are recognised by their history and concomitant phenomena, and the symptom promptly subsides under appropriate suggestive treatment.

Before dismissing the subject of cough we ought to recall whooping-cough or pertussis, an infective disease causing irritation of the coughing centres in the medulla, with its initial and terminal stages of catarrh and its paroxysms of rapidly succeeding expiratory coughs, followed by a single long-drawn inspiratory laryngeal "whoop." These paroxysms of alternate coughs and whoop follow one another in succession until the attack culminates either in temporary apnœa with cyanosis, or in vomiting.

Laryngismus, Tetanus, Rabies.

Laryngismus stridulus, especially occurring in rickety children, consists in laryngeal inspiratory stridor and is often associated with tetany or painful tonic spasms in the hands and feet. Laryngismus itself may be regarded as a tetany of the adductor muscles of the larynx.

In the classical accounts of tetanus the respiratory muscles are described as becoming implicated in the general muscular spasm, so that during a severe tetanic paroxysm not only is there opisthotonos but also tonic spasm of the respiratory and laryngeal muscles, causing asphyxia which may be fatal. I had considerable personal experience of tetanus during the Gallipoli campaign and had the opportunity of watching a number of severe cases of tetanus. Seven of my cases were fatal, but in none of them did death happen to be due to respiratory spasm or to asphyxia; what the patient died of was progressive cardiac feebleness, sometimes several days after the tetanic spasms had subsided completely.

Personally, I have never seen a case of rabies, but the symptoms are described as being of two varieties, sometimes a spasm of the inspiratory muscles, as well as of the pharynx and œsophagus, at other times a paralytic inertia of the whole respiratory apparatus, occurring either primarily or following the spasmodic attacks. The patient may die either from respiratory spasm or from syncope. On the other hand, hysterical pseudo-hydrophobia is not uncommon, and I have seen several instances of this in which the patient erroneously thought that he had been bitten by a rabid dog. Here we observe globus hystericus with rapid breathing and various dramatic movements of the trunk and limbs, sometimes accompanied by a loud hysterical laryngeal noise intended to resemble a dog's bark. But there is neither true respiratory spasm nor paralysis, and to the careful observer the diagnosis presents no difficulties.

Epilepsy, Chorea, Paralysis Agitans.

There are also other nervous diseases in which the respiratory mechanism may be upset. For example, in a major epileptic fit the tonic phase of the fit is often ushered in by a curious laryngeal wail, the so-called epileptic cry, produced by tonic spasm of the expiratory muscles. Throughout the tonic stage of the epileptic fit the respiratory muscles are fixed, respiratory movements cease, and the patient becomes increasingly blue and cyanosed. Then, when the clonic stage sets in, the cyanosis passes off, the respiratory muscles take part in the jerking movements, and saliva may be jerked from between the lips. I once had the opportunity of doing a laryngoscopy during the clonic stage of an epileptic fit and was able to see the glottis alternately opening and shutting, synchronously with the clonic jerks of the trunk and limbs.

Both in athetosis and in chorea the irregular involuntary movements may implicate not only the limbs and face, but also the respiratory muscles, causing the breathing to be irregular and clumsy, so that the diaphragm and intercostals no longer contract synchronously and the smooth rhythm of respiration is interrupted. In consequence, even the patient's articulation may be jerky. In so-called "paralytic" chorea the superadded factor of muscular feebleness may sometimes be so severe that the patient's voice is reduced to a faint whisper.

The fine muscular tremors of the limbs in exophthalmic goitre may sometimes spread to the trunk and to the respiratory muscles. This tremulous respiration, as Minor pointed out, is best marked during a long expiration.

In advanced paralysis agitans, if we examine the patient laryngoscopically, we may observe a rhythmic tremor of his vocal cords, synchronous with the tremor of the limbs. This laryngeal tremor usually ceases during phonation, but not always. The patient's voice becomes thin, monotonous, and feeble. His articulation, like his gait, becomes festinant, so that he begins his sentences slowly but tends to hurry towards the ends of sentences or of long words, pronouncing the final syllables hurriedly.

Hysteria, Habit-Spasms.

Various respiratory phenomena may be met with in hysteria. Of these, hysterical cough is the commonest, but hysterical tachypnœa or rapidity of respiration, hysterical sobbing, also all sorts of curious laryngeal noises, may be met with in different cases. But, whatever their variety, all these hysterical respiratory affections cease spontaneously during sleep. Hysterical cough occurs almost always in bouts or paroxysms, often at the same special time of day, and most frequently when the patient knows herself to be under observation. It may last for hours at a time. Hysterical cough is unaccompanied by true dyspnœa, whilst abnormal physical signs in the respiratory organs are conspicuous by their absence. Hysterical cough often has a peculiar metallic musical sort of noise. Hysterical laughing or sobbing are frequently part of a hysterical paroxysm, whether occurring before, during, or after the hysterical attack. Hysterical tachypnœa is another fairly common manifestation, consisting in paroxysms of extremely rapid breathing (80, 100, or even 150 per minute), but without cyanosis or other respiratory distress. The pulse remains quiet and steady throughout the attack, there are no abnormal physical signs in the chest, and the temperature remains normal throughout. Hysterical aphonia, another common type, is easily recognised, not only by its concurrent phenomena, but by its characteristic laryngoscopic appearances, showing deficiency of adduction of the vocal cords.

Finally, we have the interesting group of respiratory tics or habit-spasms, which occur in highly strung, often highly intelligent individuals of psychasthenic nervous constitution. Such patients are not necessarily mentally subnormal; on the contrary, some of them are far above the average of intelligence. Respiratory tics are of many varieties. I recall one individual—a distinguished university professor—whose habit-spasm consists in an occasional sudden sniffing inspiration accompanied by wrinkling up of the nose; another individual—a surgeon of world-wide reputation—who makes an occasional sudden inspiratory laryngeal noise from time to time when talking. In another highly strung young man the breathing is interrupted at irregular intervals by paroxysms of short little expiratory puffs at the rate of about two per second, associated with grimacing and with

Morbid Conditions Underlying these Infections.

Chronic infections do not arise in the normal alimentary tract. Derangements, often of a very gross nature, were traced in more than 90 per cent. of the present series.

1. Stagnation is almost universal. Three-quarters of the patients had suffered from constipation for many years prior to the onset of the arthritis and in almost one-half of these cases the constipation had been very severe. As measured by means of an opaque meal and X rays, stasis was found as commonly in the small bowel as in the large. In the colon it occurred in 89 per cent. of cases, the average time taken for the evacuation of the greater part of the meal in these cases being more than three days, while in some instances a week was required. In the ileum stasis was found in 90 per cent. of cases. In these the average time required for the ileum to empty, after all the barium had left the stomach, was eight hours, whereas under normal circumstances only three and a half or four hours are needed. Stasis was not so common in the stomach and only occurred in one-third of the cases. The average time taken for the meal to pass through the stomach was eight hours, or twice the normal time. In many of the patients repeated overloading of the colon over a period of years had led to compensatory hypertrophy with elongation. Three-quarters of the patients had long redundant loops of pelvic colon and in two-thirds the transverse colon was doubled in length and hung in a tortuous festoon across the abdomen. Many patients had developed secondary obstructions which aggravated the primary stasis. One half of them had a kink in the last coil of ileum. One-third had a very acute splenic flexure in the erect posture and as many as 90 per cent. had a "last kink" in the pelvic colon. The appendix was examined at all laparotomies and whenever the opaque meal entered and displayed its shadow on the fluorescent screen. It was abnormal in three-quarters of these cases. Sometimes it was the seat of chronic inflammation, but more frequently it was fixed to the posterior abdominal wall and acted mechanically by interfering with the passage of the food through the last coil of ileum.

2. Ptosis had occurred with great frequency to the hindrance of peristalsis and the free flow of blood and lymph. For the purposes of this description only outstanding examples in which the ptosis was so severe as to be beyond all dispute have been noted. In 51 cases the greater curvature of the stomach was within an inch of the symphysis pubis in the erect posture, in 133 cases the cæcum was deep in the pelvis. In an equal number the hepatic flexure was in the right iliac fossa and in about the same proportion of cases the transverse colon fell to the level of the symphysis pubis.

3. Ferment action was commonly defective and digestion slow, so that much unassimilated food found its way into the large bowel where it formed a suitable nidus for bacterial activity. The production of an excess of gas affords the most direct evidence of such activity and 130 of the patients complained of this undue flatus in the colon. A similar proportion complained of gastric symptoms which were of many different kinds and varied in severity from heartburn and nausea to vomiting and acute epigastric pain after meals. As a group these symptoms indicate the great frequency with which errors of digestion in the stomach and duodenum occur in arthritic patients.

4. Apart from bacteriological analyses much direct evidence of infection of the colon was forthcoming. Intermittent looseness of the bowels, short attacks of severe diarrhœa, and the repeated passage of mucus were of common occurrence, whilst in a small minority of cases persistent diarrhœa replaced the more usual constipation. A history of one or other of these varieties of diarrhœa was given by 67 of the patients.

5. In certain cases there were gross defects of other kinds in the alimentary tract. Chronic gastric ulcers were seen in 17 per cent. of those cases upon whom high laparotomies were performed and histories of recent severe hæmatemesis was given by 2 per cent. of the other patients. Gall-stones were found at 11 per cent. of high laparotomies and typical histories of gall-stone colic were given by 3 per cent. of the remaining patients.

Masked Stasis and Hidden Sepsis.

Study of this series has shown again and again that stasis and sepsis can exist in the intestine and yet not be manifest without investigation. The bowels may act every day in spite of serious delay in the colon. The residues from the meals of the preceding 24 hours are not evacuated, but are stored up by such patients and passed out at the forty-eighth or seventy-second hour, as the case may be. The colon always contains the accumulated debris of two or three days' meals. In other cases the latent stasis is in the ileum, where the food may be retained for twice the normal time before it is passed into the cæcum. Such a delay does not of necessity interfere with the regularity of defæcation or give rise to discomfort in the abdomen. Marked stasis of these types is at once brought to light by systematic radiography, but cannot be detected readily in any other way. Sepsis in the bowel is just as frequently masked. Even extensive invasion of the bowel by infective bacteria such as streptococci does not always produce diarrhœa or any other sign of irritation. The true nature of these cases can only be detected by serological tests and the examination of cultures of the stools. Serious streptococcal infection of the ileo-cæcal region sometimes occurs even when the flora of the fæces appears to be normal. Such cases have frequently been investigated at laparotomy when samples of chyme could be obtained from the small intestine. In other cases they can be detected by giving the patient an ounce of lactose, a drachm of magnesium sulphate, and the juice of a lemon in water before breakfast on three consecutive mornings and examining the stools which are passed on the third day. The lactose reaches the colon and promotes the growth of streptococci which are hurried onwards so rapidly by the magnesium sulphate that they can be recovered from the stools.

In brief, it can be stated that stasis often occurs in the colon although there is a daily evacuation; stasis often occurs in the ileum, even when the patient does not refer any symptoms to the alimentary tract; streptococcal infections are often present in the bowel, although there are no symptoms of irritation of the colon, and extensive infection of the ileo-cæcal region does not always lead to the excretion of living streptococci in the fæces.

Results of Treatment.

The condition of the alimentary tract dominates the outlook in rheumatoid and osteo-arthritis. The general scheme employed in the treatment of the present series of cases has been as follows. The entire alimentary tract was surveyed carefully in each case and an estimate formed of the relative degrees of septic absorption occurring at the various levels. The more accessible areas of infection in the jaws, throat, and intestines were treated surgically, and all the disorders of the digestive tract which had encouraged the development of chronic infection were dealt with. Autogenous vaccines proved of great value when used to supplement these measures. They were prepared from infective bacteria of all the principal zones of sepsis. Streptococci obtained from different foci in the same patient usually vary in their cultural characters, and each strain was included in the vaccine. Chronic infection frequently damages the thyroid gland. In the present series minor forms of subthyroidism were very common, whilst well-defined myxœdema or goitres of considerable size were seen in 14 per cent. of cases. There is an intimate association between immunity reactions and the functions of the thyroid gland. The dry extract of the thyroid was given in all such cases with great benefit to the joints. Accurate diagnosis, aided by radiography and bacteriology, makes radical treatment and cure possible. In the present series of cases, which have been followed for varying periods up to nine years, 80 per cent. show very great above had given such proof of flying proficiency that it would be manifestly unfair not to accept them at once in spite of their disabilities, especially in the absence of any present or past complications of their disease. Their middle ears were not healthy, but they had always been serviceable enough for efficiency, and the public would have been losers by the rejection of such men. It should here be added that particular stress is laid during the examination on a concomitant search for any internal ear trouble that may be present, as also on the presence or absence of exacerbations of middle-ear disease at any time in the past history. The regulations also provide an additional safeguard—viz., periodic medical examinations at maximum intervals of six months.

Auditory Acuity.

What is efficient flying auditory acuity? The importance of hearing to airmen lies largely in the fact that they may be able to detect engine defects and to use telephones, but of course hardness of hearing is a serious handicap to success in almost any trade or profession. The following are among those who presented themselves for examination:—

1. P. Had 2300 hours previous flying. Hearing nil in right ear, normal in left. Right ear trouble, dating from age of 10, due to an old chronic catarrh. As a fighting pilot this man would have been at a disadvantage in having imperfect ideas of direction of sounds, such as those made by shells and bullets, but because of his past record he was considered quite trustworthy as a civilian pilot, and was accepted.

2. P. In civil life an airman and engineer, 2000 hours previous flying. Right drum retracted and opaque, but good hearing on that side. Left ear ran in childhood; hearing practically nil on this side, there being an old healed suppurative otitis media with a retracted adherent membrane. Same view taken as in Case 1.

3. S. In civil life an airman, 3000 hours previous flying. Right ear absolutely deaf for last nine years; no reason could be given or cause found. Left ear normal. Similar view taken as in Cases 1 and 2.

4. K. In civil life a test pilot, 3000 hours previous flying. Hard of hearing in both ears from childhood; hears a loud voice in right ear at a distance of only 2 ft., and in left ear at a distance of about 1 ft. Both drums retracted, scarred, and opaque, but no signs of active disease. Vestibular reactions are normal. Particularly alert, a good lip-reader, and has excellent testimonials from his firm. Flown successfully for five years, instructed for a considerable time at a civilian school, acted in the army as instructor, test pilot, and ferry pilot, and since 1917 has tested all experimental machines and numerous others of a well-known firm.

This last-mentioned case of bilateral hardness of hearing is particularly interesting; in spite of his handicap the airman learnt to fly successfully, and confidently asserts that he can at once detect any change in the noise of his engines. He is of exceedingly active mentality and his other senses are extremely acute. He was accepted in view of the previous successful flying history.

Vestibular Mechanism.

If by "intact vestibular mechanism" is meant a vestibule where no pathological process is or has been present, candidates whose vestibular mechanism is or has been so involved should be rejected. The phrase "unduly hypersensitive or hyposensitive" is open, however, to much more dubiety, and in the present state of our knowledge there are diverse opinions as to its correct definition. According to Colonel Isaac Jones, in his book entitled "Equilibrium and Vertigo,"[1] the Americans during the war laid very great stress on the Bárány tests, and actually rejected candidates with a nystagmus period of under 16 seconds or over 36 seconds, after a period of rotation to right or left, consisting of ten turns in 20 seconds. They have apparently modified this arbitrary rule, according to their official publication of February, 1920.[2] In regard to efficient service pilots at the front, Sydney Scott showed that the reactions of the semi-circular canals do not serve to indicate a pilot's flying ability,[3] and Bilancioni says that in normal individuals the nystagmus varies between extremely ide limits.[4]

In a paper of my own on the subject of labyrinthine reactions published last year[5] I showed that some of our most experienced pilots failed to satisfy American rotation standards, and concluded that "in the absence of a discovery of present or past signs or symptoms pointing to an aural affection, routine examination by means of the Bárány tests is superfluous, provided that a thorough medical examination is made." With regard to rotation tests, the Aviation Candidates Medical Board of the Royal Air Force is inclined to lay very much more stress on the ability to perform certain simple acts immediately *after* a period of rotation, as also on a history pointing to hypersensibility to motion in trains, swings, or ships—i.e., to what are apparently excessive labyrinthine symptoms; such hypersensibility is always carefully noted and a thorough labyrinthine examination made, especially of individuals who have trouble while flying or are without previous flying experience. In connexion with the ability to fly with an apparently unsatisfactory condition of the labyrinthine mechanism the following two cases of civilian pilots examined are interesting:—

1. B. Previous flying hours, 900. Never could stand the sensation on swings and merry-go-rounds, and always feels ill at sea. Impossible to carry out Bárány tests on him, because on rotation he immediately felt ill and begged to be stopped. Nose, throat, and ears normal, Eustachian tubes pervious. Had a crash in October, 1916, with slight concussion, and since suffered at times from nervous debility. In 1919 flew successfully as a pilot; the history of concussion places one in doubt as to whether the symptoms were purely cranial, or labyrinthine, or both. Incidentally he was a heavy cigarette-smoker.

2. K. Number of flying hours, 250. In spite of this cannot stand being rotated; very quickly feels ill, and in boyhood never liked swings or roundabouts, being too much upset by the motion. No cause could be found for this hypersensibility which, however, has not interfered with his flying career.

The above two cases could be multiplied, but it must be remembered, and indeed practically every experienced pilot will agree, that the motion and effects of the rotary chair are quite different from those of an aeroplane, and the symptoms produced thereby very much greater and more intense. It is almost impossible to make a fair comparison of the two forms of motion, as the chair, unlike the aeroplane, spins round in a small axis in the horizontal plane, and also because the labyrinthine effects produced thereby arise most markedly just after rotation is stopped, there being, of course, no such deliberate stoppage of an aeroplane.

We now turn our attention to the nose and throat, and consider the regulations, or rather indications, with reference to the state and fitness of the upper respiratory tract. It is here, indeed, that we find in practice most exception to theoretical considerations. "The aeronaut must possess free nasal entry on either side" say the international requirements: "mouth-breathing constitutes a serious flying disability" says the Aviation Candidates Medical Board, R.A.F. My statistics of these 450 experienced pilots tell us, however, that 32 of them were mouth-breathers in all degrees ranging from partial or occasional to permanent, and that only one of these 32 was rejected on medical grounds and then not because of mouth-breathing; the other 31 were good pilots with good records and were deservedly granted licences.

Free Nasal Air-entry and Mouth-breathing.

For the moment it will be convenient to consider the above 32 cases together; later it will be necessary to consider others where mouth-breathing was definitely secondary to a cause obviously present at the time of examination in the nose or throat and almost crying out for remedy. In the cases of these 32 it was rather different; in some there was an associated more or less marked septal deviation, and in others diseased or hypertrophied tonsils or adenoid remains were discovered; but it must be said that not one of them had any other signs or symptoms of nose and throat disease. In these cases one did not feel justified who have done many mastoid operations for chronic middle-ear suppuration know how lengthy the after-treatment of these operations may be—sometimes extending into many months—a discharge even then frequently continuing for years. With a view to shortening this period, I have employed ionisation as part of the after-treatment for some considerable time. Among other advantages of its use are the following: (*a*) it causes a reduction of the inflammation; (*b*) it cleans up the wound; (*c*) it lessens pain, and so makes the dressing less objectionable to the patient.

In this treatment the question arose of its duration after operation. I have treated a fair number of cases in this way; a few statistics given below may be of interest. The shortest time after operation that has elapsed before administration of ionisation in my own cases is two weeks.

Results.

Speaking generally, the results so far indicate that cases ionised soon after operation clear up more rapidly than those ionised later; these again clear up in a shorter time than those which are not ionised at all.

The following statistics show results obtained by me during the past two years.

For the period 1920–21: number of mastoid operation cases ionised, 158; number of successes, 138 (=87·3 per cent.). By "success" is meant the curing of the suppuration and the healing of the wound. Of these cases 119 had 1 ionisation, 28 had 2 ionisations, 5 had 3 ionisations, 3 had 4 ionisations, and 3 had 5 ionisations.

The total length of after-treatment (of a series of 64 of the more recent cases) from the day of operation to the day of successful ionisation, was 700 weeks, which gives an average per case of 10·9 weeks. Of these 22 cases were dry under 10 weeks and of these 22 cases 2 were dry in 5 weeks, 4 in 6 weeks, 5 in 7 weeks, 6 in 8 weeks, and 5 in 9 weeks. All these early cases had one ionisation only with the exception of two cases, which were ionised twice.

For the period 1919–20: Number of mastoid operation cases ionised, 118; number of successes, 80 (=67·7 per cent.).

It is very difficult to obtain exact information of the percentage of successes after mastoid operation from *hospital* cases; but so far as I have been able to ascertain, the percentage generally is very much below that shown in the above results. The lower percentage for the period 1919–20 is probably due to the fact that the cases during this period were not ionised so early as those of the period 1920–21. The above percentage of successes must be considered very satisfactory, especially when it is remembered that the material is some of the worst in London.

The objections, from the patient's point of view, to ionisation are not serious. Many patients feel nothing at all, some complain of a feeling of heat or slight burning in the ear. Others complain of giddiness—generally when the current is being turned on or off, particularly the latter, and more especially if it is done too quickly. Occasionally actual vomiting is produced but this is rare. Practice, however, shows that the disadvantages are hardly worth considering, while the advantages are great. There is a big field for this work, and its extension may be strongly recommended.

GLASGOW WESTERN INFIRMARY.—The report of this infirmary, which was submitted to the annual meeting of subscribers on Dec. 7th, showed that in spite of increased public support, expenditure exceeded ordinary income by £26,307. In order to make up this deficit it was necessary to use the balance of extraordinary income received from legacies, to appropriate the whole sum of £6144 subscribed by special appeal, and also to draw from the stock account £654. This year the ordinary expenditure of £102,716 exceeds last year's, but the downward trend of prices encourages the hope that the maximum expenditure has been passed. The managers have been obliged to obtain an overdraft from the bank which amounts to £16,593, and in view of the seriousness of the position are appealing to all classes to continue and, if possible, to increase their support of the infirmary. The daily average of in-patients treated was 557, and the average cost per patient per day was 9*s.* 11*d.*, as against 9*s.* 3*d.* last year.

THE NORMAL LIMIT OF AGGLUTINATION FOR *B. DYSENTERIÆ* (FLEXNER)

AND THE SENSITIVENESS OF SUSPENSIONS.

BY A. D. GARDNER, M.D. OXON., F.R.C.S. ENG.

(*From the Department of Pathology, University of Oxford, Standards Laboratory under the Medical Research Council.*)

IN an article on the Ætiology of Bacillary Dysentery in Asylums in THE LANCET of July 30th, Dr. W. S. Dawson and Dr. W. Moodie describe the results of a number of agglutination tests of the blood of dysentery cases. These tests they performed with two types of bacillary suspensions, the one a "Standard culture" from the Standards Laboratory (Medical Research Council) at Oxford, the other obtained from Prof. L. S. Dudgeon. They state that:—

> "With the Oxford antigen, the first trace of agglutinins appeared at the end of the sixth week, and the agglutinins had disappeared at the end of the fourteenth week; while with Prof. Dudgeon's antigen agglutination began to appear at about the beginning of the fourth week, and had disappeared at the end of the fourteenth week also. Maximum agglutination was obtained with Oxford antigen between the eighth and tenth week, and with Prof. Dudgeon's antigen in the seventh week."

Comparison of Suspensions.

The authors refrain from expressing an opinion as to the relative merits of the two suspensions, yet an unbiassed reader of their paper could only judge Prof. Dudgeon's antigen to be a more serviceable material than the standard cultures issued from Oxford. It was therefore desirable to discover whether the apparent superiority were real, and, if so, on what it depended. To this end, and by the kindness of Prof. Dudgeon, I secured a sample of antigen made in the same way and with the same culture as that used by Dawson and Moodie. The strain of Flexner bacillus used in its manufacture is known as Flexner Gallipoli, of which a living culture was also sent to me.

The antigen was apparently a saline suspension of the bacillus, with a preservative added, but the details of its making are unknown to me. Its density was much (somewhere about three times) greater than that of "standard" dysentery cultures which vary round about 500 millions per c.cm. Tested with standard dysentery Flexner (V) serum it gave first-rate flocculation up to a dilution between two and three times greater than was given by the standard culture (Flexner V 12) used in comparison. *Prof. Dudgeon's antigen thus proved to be a suspension of great sensitiveness.* At the same time it betrayed no tendency to spontaneous flocculation.

A broth culture had been made a few days previously with the living Flexner Gallipoli (formalised 0·1 per cent.) and diluted to the opacity of standard cultures. This suspension was included in the test last mentioned, and proved to be slightly more sensitive than Dr. Dudgeon's suspension. *In figures, standard* agglutination (marked flocculation without sediment) occurred *with the standard culture at a dilution of* 1 in 625, with Prof. Dudgeon's suspension at 1 in 1500, and with *formalised Flexner Gallipoli suspension at* 1 in 1800. The stock Flexner culture used in the Standards Laboratory never produces suspensions of such great sensitiveness. *Clearly, then, the strain Flexner Gallipoli tends to give rise to suspensions of higher agglutinability than that of the Oxford cultures.*

The next step was to determine the serological characters of Flexner Gallipoli. With this purpose in view the three suspensions mentioned above were all tested at one and the same time with each of the five type serums which are made in the Standards Laboratory—viz., B. Flexner "V," "W," "X," "Y," and "Z."

The results are given in the table which shows the dilutions at which standard agglutination occurred in every case. When in any particular series of standard agglutination did not actually occur in any

ALIMENTARY INFECTIONS IN CHRONIC ARTHRITIS.

BY N. MUTCH, M.D. CANTAB., F.R.C.P. LOND.,
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THIS communication is based upon an analysis of 200 personally investigated cases, of which half were hospital patients and the other half private patients, so that many different walks of life are represented. Gout, venereal or tuberculous disease of the joints, and all cases of monarthritis have been excluded, but no other selection has been exercised, and with these exceptions the cases may be regarded as consecutive. Although uniform infection of the whole alimentary tract is never encountered, multiple areas of infection are often found. They can be divided roughly into an upper zone which includes the mouth and throat, and a lower one which comprises the bowel and its appendages. In the present series, active sepsis was present in the throat and nose in 34 per cent. of the cases, and around the teeth in 52 per cent., whilst infective streptococci were recovered from the fæces of 84 per cent. The great importance of the lower zone has been shown very clearly by Sir Arbuthnot Lane and is well demonstrated by the two following cases:—

CASE 1.—In this instance absolute cure followed the removal of the infected colon, although areas of chronic infection in the tonsils were left untreated. M. H., a woman of 28, had suffered from severe constipation since infancy and from rheumatic arthritis for 15 years. All her joints were affected. Her colon was removed in 1913 and liquid paraffin taken as a routine measure afterwards. No other treatment of any kind was employed. She became free from pain after a few days and has never had any more pain or swelling in her joints up to the present date. She has gained four and a half stones in weight, can bathe in the sea with impunity, and leads a very active life with a normal feeling of vigorous well-being.

CASE 2.—This patient's arthritis was cured by colectomy although he had pyorrhœa alveolaris which was left untreated. H. M., a boy of 13, had been constipated for many years and had had rheumatoid arthritis for 15 months affecting knees, ankles, elbows, and jaw. There were pyorrhœa pockets between the gums and teeth and radiograms showed involvement of the periodontal membrane. Colectomy was performed and the pain left his joints. During the next few months a flexion contracture of the elbow straightened itself without any manipulations, and now, five years later, he is a well-developed young man following a laborious occupation and with no trace of his former joint trouble.

Comparison of Forms of Infection.

Doubtless at times much injurious infection takes place from the tonsils and jaws, but the invasion from the bowel is of a much more serious nature. Numerous instances can be found in which chronic arthritis has commenced many years after the extraction of all the teeth. This had occurred in 15 per cent. of the present cases, the period which had elapsed between the extractions and the onset of arthritis varying from two to 20 years and the average time being 11 years. It is clear that in these patients invasion of the joints must have taken place from some other mucosal focus. Another 16 per cent. had had total extractions done during the course of the arthritis and yet continued to have outbursts of arthritis with the involvement of fresh joints. Almost all the extractions had been done for gross septic conditions. Critical analysis of the throat histories shows a similar state of affairs. Four per cent. of the patients had had their tonsils enucleated many years before the onset of the arthritis, and another 5 per cent. had received no benefit from enucleation carried out during the course of the disease. The remaining 91 per cent. still possessed their tonsils. If this inquiry is taken one step further it is easy to find patients with continued arthritis who are both edentulous and devoid of tonsillar tissue. The explanation of the failure in the treatment of these patients lies in the infection which was taking place from the lower zones in the bowel and which had been neglected during the cleansing of the mouth.

Localised and Diffused Infections.

Anatomically the lower zones of infection can be divided into two groups. In the first group are localised infections. Mechanical agents, such as hard fæces, obstructions, stasis, ptosis, and distension with gas produce loci of depressed resistance through attrition, local poisoning of the mucosa, and interference with the flow of blood and lymph. In these places infective bacteria establish areas of chronic infection in the wall of the bowel. Stercoral ulcers, diverticulitis, ulcerated piles, and chronic appendicitis are common examples of this type of infection. In the second group there is a diffuse infection which sometimes involves the whole intestine from duodenum to rectum, and may or may not be associated with circumscribed zones of special activity such as have been placed in the first group. A further description of this common type of case is given later in the paper.

Most of the infections are streptococcal, but a few are staphylococcal. In the present series the latter were only 4 per cent. of the whole.

Staphylococcal Infections.—The two following cases are typical examples:—

CASE 3.—D. W., a boy aged 5, had suffered from constipation since birth and from Still's disease for two years. His hips, knees, ankles, wrists, and elbows were seriously involved. He had much intermittent pyrexia with rigors. Blood cultures yielded a pure growth of *Staphylococcus citreus*. Cultures taken from his ileum during a laparotomy also gave a growth of the same organism.

CASE 4.—F. P., a woman of 27, had for three years suffered from rheumatoid arthritis of the fingers, wrists, knees, and spine. Stasis occurred in her ileum and colon. At laparotomy her mesenteric glands were seen to be acutely enlarged. Cultures from them gave a pure growth of *Staphylococcus aureus* and similar organisms were obtained from the contents of the ileum.

Streptococcal Infections.—In this widely distributed group are included infections by many different types of streptococcus, and only 6 per cent. of the present series were hæmolytic. In about one-third of the cases abnormal forms of the colon bacillus of the non-lactose-fermenting or late-lactose-fermenting varieties were found in association with the cocci. In the diffuse infections the streptococci are distributed along the alimentary tract in a definite pattern. In the pelvic colon they are much less numerous than the colon bacillus. In the ileo-cæcal region they become more conspicuous and at the higher levels are usually present in pure culture. The table illustrates this distribution. In the second column are given the averages of analyses carried out on 21 patients from each of whom serial cultures were made at several levels at laparotomy. The pattern was the same in each of the 21 cases. In the third column are given the averages of analyses made on a much larger number of patients. In this series many cases are included in which an analysis was made at one level only. Again the same pattern can be seen. Streptococci predominate in the small bowel and the colon bacillus in the large bowel. The precise level at which transition takes place from streptococcal to *B. coli* dominance varies in different patients, probably on account of variations in the chemical nature of the contents of the bowel determined by differences in diet, peristalsis, and ferment efficiency. The point of transition is usually in the ileo-cæcal region, but may be on either side of the ileo-cæcal valve.

Showing Ratio of Streptococcus Longus to B. Coli.

Site.	Averages of 21 serial analyses.	Averages of all analyses.
Duodenum	100·0	100·0
Jejunum	100·0	100·0
Upper ileum	80·20	83·17
Lowest ileum	46·54	41·59
Cæcum	24·76	18·82
Pelvic colon and fæces	3·97	14·86

results seems to be that they made use of a technique of insufficient delicacy.

In conclusion, it may be well to state that the "normal limit" of dysentery agglutination has only been established for the "V" type of Flexner's bacillus (in addition to the Shiga bacillus). It has been assumed that it is approximately the same for the other types. Experimental proof is, nevertheless, clearly desirable, and is being taken in hand at the present time.

Summary.

(1) The different results obtained by Dawson and Moodie in their serological tests with Prof. Dudgeon's "Flexner" antigen and with Oxford standard culture depend on the fact that the strain "Flexner Gallipoli" used by Prof. Dudgeon yields suspensions of much greater sensitiveness than that of the standard cultures.

(2) Flexner Gallipoli is otherwise serologically identical with the Flexner (V) strain used in making the standard cultures.

(3) Just as specific serums give a much higher titre with Flexner Gallipoli suspensions than with Oxford standard cultures, so do normal serums.

(4) Owing to the presence of "Flexner" agglutinins in normal serums, highly sensitive suspensions are, for the purposes of clinical diagnosis, of no greater value than those less sensitive.

(5) The limit of normal agglutination of a suspension or set of suspensions must be determined before they are employed in serodiagnosis. In other words, standardised suspensions and a constant technique are essential for this work.

CASES OF
INFECTED KNEE-JOINT
TREATED BY INCISION, DRAINAGE, AND MOVEMENT.

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DURING 1912 a boy, aged 9, was sent to hospital from the country, with his knee in plaster-of-Paris at almost a right angle, which turned out to be a case of syphilitic chondro-arthritis of the knee-joint. An X ray showed clearly destruction of cartilage and sclerosis of bone in the femur. Other manifestations of the disease in this boy included tibial periostitis, husky voice, bifid uvula (from cicatricial contraction following old ulceration), nasal discharge, with destruction of nasal bridge, blocked nasal duct discharging pus into inner canthus of eye, deafness, and slight iritis. The patient was placed under good hygienic conditions and given nutritious food and tonics—i.e., cod-liver oil with the syrup ferric iodide followed by mercurial and potassium iodide treatment. After a short interval the knee-joint was explored by free incisions on either side of the patella. The diseased cartilage, which was eroded in a serpiginous manner, was scraped and sequestra removed from the lower end of the femur with the least possible interference with the epiphysis; the synovial membrane was diseased, swollen, and œdematous, and some of this granulation tissue was also removed. The joint was irrigated and rubber drainage-tubes inserted into and through the knee-joint. Continuous drainage was then applied by means of wet boric compresses covered with oiled silk, as the best and most convenient form of continuous drainage. The ultimate result of this case, as far as the knee-joint was concerned, was perfect. He was shown before the Medical Society of Halifax in 1912, with a knee-joint normal in every way, excepting for the scars on either side of the patella.

Application of Same Treatment to Septic Knee-joints.

The functional result of the above case led me to try the same kind of treatment upon septic conditions of the knee-joint. The first opportunity (in 1914) was a septic knee-joint, which followed an operation for removal of semilunar cartilage and went septic through faulty technique, with all the symptoms of acute virulent infection—with marked swelling, high temperature, pain, and septic absorption. The joint was treated in the manner already described above. After acute inflammation had subsided, passive movement of the joint was carried out; almost full flexion and extension eventually became possible.

The following two cases, one in April, 1916, the other in September, 1920, were very similar to one another in all respects, the ultimate result being a perfectly functioning joint in each case. One, a boy aged 8, fell upon a needle which pierced the joint, causing it to swell and become painful with a resulting septic knee-joint full of pus, which was opened 21 days after the accident. In the other case infection was more virulent and symptoms were more severe; this case was treated more energetically and boldly than the others, and I think responded more rapidly to treatment. The patient was a child of 4, who was stabbed in the knee-joint with a knife. This immediately resulted in all the symptoms of acute infection in the joint, acute pain, swelling, redness, heat of the part, high fever (104°), quick pulse, and symptoms of septic absorption. The joint, opened on the day following the accident, was full of sticky dark serous fluid with marked redness and injection of the synovial membrane, including cobweb adhesions in the synovial pouch above the patella, with flakes of lymph in the joint. The entrance wound was dirty-looking and sloughy. The time occupied in treatment of these two last cases was about two months; both were shown before the Halifax Medical Society in February, 1921.

Conclusions.

The conclusions I have drawn, from my observation of the above cases and from perusal of recent literature upon the subject of septic knee-joints, are that when the diagnosis is septic knee-joint, the treatment should be at the earliest possible moment a free opening of that joint by lateral incisions four to six inches long, on either side of the patella, followed by thorough irrigation of the joint, breaking down of all adhesions, manipulation by full flexion and extension, introduction of several rubber drainage-tubes about the size of the little or big finger according to the size of the patient, application over the wounds of wet boric lint covered with oiled silk, and creation of continuous drainage of the joint by capillary action. The dressing should be changed once a day with removal of tubes, irrigation, and full flexion and extension. This treatment should be repeated daily until the wounds are healed. Other observations I have made lead me to suppose that failure will occur if any of these details are not observed—i.e., if incisions are not large enough, and if the joint is not fully flexed each day, or if the dressings are not kept wet or are discontinued before the wound has thoroughly healed. The changing of dressings and movement of the joint are comparatively painless. This method of treating septic knee-joints apparently gives the patient the best chance regarding his life and the function of his limb.

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DR. Edward Burdett Pooley and Dr. Leonard Greenham Starr Molloy, D.S.O., have been appointed Knights of Grace of the Order of the Hospital of St. John of Jerusalem in England.

DONATIONS AND BEQUESTS.—Mr. Emmanuel Shackleton, of Littleborough, left £1000 each to Rochdale Royal Infirmary, Manchester Royal Infirmary, and Dr. Barnardo's Home.—The late Sir Frank Bowden has among other bequests left £1000 to the Nottingham General Hospital.—Under the will of the late Mr. James Parkinson the Royal National Pension Fund for Nurses will benefit by a sum of more than £20,000.

improvement or complete arrest. Of the failures one-quarter had received very partial treatment only and could not be inoculated with vaccines. If it were possible to exclude those cases in which circumstances such as age, temperament, and position in life prevented the full use of radical methods the results would have been still more encouraging.

THE PROBLEM OF CHRONIC SUPPURATION OF THE MIDDLE EAR,

WITH SPECIAL REFERENCE TO IONISATION.

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THE disabilities resulting from the chronically discharging ear have recently claimed increasing attention from the profession. During the war, in the British Army alone, some tens of thousands of men were found to be suffering from this disease; among London County Council school-children there are over 12,000 "recognised" cases, and the actual number must be well in advance of this figure.

I wish in this short article to explore certain methods by which the disease may be dealt with and briefly to indicate my own experience in those methods.

Prevention.

For purposes of prevention of chronic middle-ear suppuration three separate and distinct periods must be recognised as preceding the condition, viz.: (*a*) the period before there is any affection of the ear; (*b*) the period when the ear is first acutely inflamed and before the drum-head has ruptured; (*c*) the period of acute middle-ear suppuration after rupture of the drum-head.

(*a*) *The period before there is any affection of the ear.*—Children should be taught to breathe correctly, to keep their noses in a cleanly state, and to live as hygienic a life, in all ways, as possible. A certain proportion of suppurating ears certainly originate in neglect in observing these rules.

(*b*) *The period when the ear is first acutely inflamed and before the drum-head has ruptured.*—If it were possible to treat all ears suitably in this stage of the disease, probably 90 per cent. would never pass into the stages beyond.

Several barriers at present prevent this early treatment. First, the public, ignorant of the importance of the condition, make no endeavour to obtain treatment at all; when the patient is eventually brought under the surgeon's care, the condition has advanced considerably beyond this stage. Secondly, too many practitioners would shrink from undertaking the delicate, though fairly simple and small, operation of incising the drum-head. Comparatively few students to-day, when they leave hospital, are capable of efficiently performing the operation of paracentesis, or, indeed, of recognising a normal drum-head. There should be no great difficulty in educating the practitioner in this respect; it remains to educate the public—a process most easily attained, perhaps, by an intensified campaign through the press.

(*c*) *The period of acute middle-ear suppuration after rupture of the drum-head.*—If ears were correctly treated in this stage, very few would pass on to chronic suppuration.

Treatment by Ionisation.

The routine treatment of discharging ears has long entailed the use of various drops, powders, lotions, &c., often carried on for months and even years without effecting a cure. Some cases after varying lengths of time have got well, possibly as the result of the atment, possibly in spite of it.

Ionisation consists of passing a continuous current through a Leduc's rheostat, the patient being placed in the circuit, and the positive pole (which can conveniently be made in the form of a vulcanite ear-speculum containing a metal band which does not come into contact with the skin) placed in the ear which contains some of the ionising fluid, while the negative pole is placed upon the patient's arm or leg. The exact details of this technique have already been published by A. R. Friel, Salisbury Sharpe, and others, and I will therefore not elaborate this point, but it would be well to emphasise the necessity of thoroughly cleansing the ear and removing all discharge, débris, &c., before attempting to ionise, otherwise failure is certain.

The ionising fluid generally used by myself is:—

$ZnSO_4$	5 g.
Glycerine	57 c.cm.
Water to	1000 c.cm.

Equal parts of the above and hot water are employed. If, however, the ear is sore and painful and the mucous membrane swollen, salicylate of zinc may be used as the ionising fluid, the negative pole being first used to produce the sedative effect of the salicyl ion, and then the positive pole to produce the action of the zinc ion on the tissues.

Ionisation has been established as one of the most valuable and satisfactory means known for treatment of these cases. The method has at present definite limitations, but in the near future some of these may be curtailed. The indications for ionisation in this disease as observed in personal experience of some hundreds of cases permit the following groups to be described as *unsuitable*: (*a*) cases which present large granulations and polypi in the tympanum; (*b*) cases where there is any disease of bone either of tympanum or mastoid; (*c*) cases where the antrum is diseased; (*d*) cases where there is disease of the Eustachian tube; (*e*) cases with any naso-pharyngeal condition favouring re-infection of the ear; (*f*) cases where perforation in the membrane is so small that fluid cannot pass satisfactorily from the meatus into the tympanum. With any qualifications applicable under these headings, it may be generally stated that cases suitable for ionisation are those where the ionising fluid can reach the whole area of suppuration.

It may be urged that most cases, if not all, of chronic middle-ear suppuration are not limited to disease of the tympanum, but that the antrum is also affected, and therefore ionisation is contra-indicated. As a matter of experience, however, the antrum is often so slightly affected that successful treatment of the tympanum by ionisation is not interfered with. My results obtained in various series of cases show a cure of the suppuration in percentages varying between 53 and 67, the whole averaging about 60 per cent. In some cases one ionisation is sufficient; in others two and even three administrations are needed.

Use of Ionisation in Diagnosis.

Besides being a valuable method of treatment, ionisation is also, in many cases, an important aid to diagnosis. It frequently happens that in examining an ear, a little pus can be aspirated from the antrum or aditus; it is hard to say definitely whether the antrum is too far diseased to hope for a cure by ionisation, and whether indeed the proper treatment should not be a mastoid operation. Ionisation frequently clears up this point; failure to effect a cure or any improvement justifies the assumption that disease of the antrum is sufficiently advanced to call for a mastoid operation. I have frequently used this as a deciding factor; the condition found on performing a mastoid operation has always fully justified this procedure.

Ionisation as After-Treatment.

This brings us to another use to which ionisation may be put, and which, so far, I believe, I have been alone in employing—viz., as part of the routine after-treatment of mastoid operations. All surgeons tion occurred, and several pieces of catgut and one of silk were discharged from the wound, but the patient made an excellent recovery. The aneurysm became quite hard. He had also ligatured the right subclavian and common carotid arteries for aorta aneurysm causing pressure on the trachea. The patient was relieved.

The PRESIDENT inquired why Sir Charles Ballance used kangaroo tendon.—Sir CHARLES BALLANCE replied that he had found that kangaroo tendon remained unabsorbed for 80–90 days, a period which could not be obtained by any method of preparing catgut.

Sir G. LENTHAL CHEATLE described

A New Operation for Inguinal Hernia.

Several cases in quick succession presenting difficulties in the efficient excision of the sac had led him to devise a new method by which these and other troubles could be easily and successfully dealt with when they arose. He approached and reached the back of the inguinal canal from a middle-line incision in the lowest part of the abdominal wall. Unless compelled by some complication he did not open the general peritoneal cavity, all the work being done in a space made in the subperitoneal tissue. He had operated in this way upon 41 patients. In the first nine all the incisions were longitudinal; in the remainder he had traversed the abdominal walls by Pfannenstiel's method.

The patient was placed in the Trendelenberg position and the operator stood on the side opposite the hernia. A transverse skin incision 4 or 5 inches long was made 1½ inches above the symphysis pubis, with its centre in the middle line. A similar incision was made in the aponeurosis of the rectus abdominis of both sides, care being taken not to injure either linea semilunaris. The linea alba was undercut upwards and downwards to within one or two inches of the umbilicus and to the symphysis; in doing so the sheath of each pyramidalis muscle would be opened. The opening thus made in the aponeurosis was retracted up and down, and the subperitoneal tissue exposed by separating the abdominal muscles in the middle line. The peritoneum and its contents were then pushed up on both sides, and, if necessary, kept up by packing. Two retractors were inserted on the side of operation. The retractors should have long, separate and blunt prongs. The lower retractor, by far the most important instrument in the operation, should pull the abdominal wall downwards, outwards, and forwards to lift up the abdominal wall. Its prongs should reach the deep epigastric artery and vein. Nobody should proceed with the operation until he was satisfied that this retractor was in its proper position. The upper retractor pulled the structures outwards. After more completely pushing upwards the outer part of the peritoneum and thoroughly exposing the iliac fascia it would be possible to see the neck of the sac entering the inguinal canal. The deep epigastric artery and vein were then delimited and separated from the inner part of the neck of the sac. Cheyne's dissector was a very useful instrument to use for this purpose. The spermatic veins and vas deferens with its vessels were found and separated from the whole length of the exposed sac. These structures were usually on the outer and under surface of the sac. The sac having been cleared it was pulled out of the canal by gentle continuous traction in the direction in which it lay. If there were no indications of the possibility of its easy extraction the sac was cut and the canal portion replaced. (Congenital herniæ would belong to this type.) The neck of the sac, including part of the parietal peritoneum, was then transfixed and removed. Finally the inguinal canal of the opposite side was examined, and if abnormalities existed they were treated on the same lines. He had only once had to ligature a vessel in the subperitoneal space, and that was a small branch of the deep epigastric vein.

Sir G. Lenthal Cheatle then described the complications and structures with which he had met, the herniæ he would avoid, and the herniæ he would select for this operation. He had found and removed unsuspected and potential hernial sacs from the opposite side in three patients. In others he had cleared from the internal opening of the canal firmly attached dimples of the parietal peritoneum. In others he had removed fibrous cords that passed from the parietal peritoneum into the canals. In one patient the urinary bladder occupied the canal and was practically a part of the neck of the sac. The peritoneum was peeled from the bladder and the sac was radically excised. When he met this complication again he would distend the bladder with fluid. This would render the separation of the peritoneum safer and easier. In seven cases he found the urachus which bore the same relation to the sac as the bladder. The urachus was traced to its union with the bladder; it contained a good deal of unstriated muscle, very tortuous patent arteries, and some fat. In a few patients he had traced adhesions between bowel and sac, and omentum and sac into the general peritoneal cavity which he had been compelled to open to clear them satisfactorily away. The herniæ in these instances appeared to be reducible before operation. The obliterated hypogastric artery was recognised in the sac in three cases. In one of these the lumen of the vessel was not obliterated at the point of section. Sir G. Lenthal Cheatle said that from one patient he removed a small sac entering the canal, and missed a much larger one that was plastered against the iliac fascia and outer part of the inguinal opening. It was this mistake that made it so essential to expose the iliac fascia. In another patient he had the following unfortunate experience. He had removed the sac on the left side and found an unsuspected sac entering the internal ring on right side. He congratulated himself on removing these two sacs from the same opening. In six weeks the patient returned with a direct hernia on the right side. Rightly or wrongly, he associated his operation with this new hernia, and determined to take Mr. Victor Bonney's advice and adopt Pfannenstiel's method of traversing the abdominal wall. As an unusual complication Sir G. Lenthal Cheatle mentioned that through the same opening he had removed an appendix from a patient who suffered from appendicitis and inguinal hernia.

The herniæ he would *not* select for this operation were direct hernia, irreducible enteroceles, hernia in male children under 7 or 8 years, and old herniæ in which the opening has been dragged down opposite the external ring. The herniæ he would select were those in females of any age, and all uncomplicated inguinal herniæ in males over 7 or 8. He would not exclude irreducible epiploceles. He had approached femoral herniæ by the same method, but the cases were too recent to be quoted as successes as yet.

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THE ordinary quarterly meeting of this Association was held at the rooms of the Medical Society, London, on Nov. 22nd under the presidency of Dr. C. HUBERT BOND.

Dr. BEDFORD PIERCE, the chairman of the committee who have been revising the Handbook on Mental Nursing, presented to the meeting the revised handbook, setting out the improvements which had been effected. The cordial thanks of the meeting were accorded to the committee for their labours.

Dr. M. HAMBLIN SMITH, medical officer, H.M. Prison, Birmingham, read a paper on

The Medical Examination of Delinquents.

He said that John Howard's book on prisons in the eighteenth century showed that the medical side of prison administration was, at that date, practically type, the correct value is obtained by interpolation, using Dreyer's reduction table, which works accurately for dysentery cultures. The short series of tubes was used, as in the Widal test, and no great accuracy was aimed at.

Standard serums.*	V	W	X	Y	Z
Standard culture "V" 12	625	38	90	50	15
Flex. Gallipoli (Prof. Dudgeon's suspension) ..	1500	85	110	180	41
Flex. Gallipoli (new formolised suspension)	1800	110	150	220	34

* Each = 100 standard units for homologous culture.

It is clear enough from this table that Flexner Gallipoli is of the same group as (in fact is presumably identical with) the stock Flexner "V" of the Standard Laboratories.

The fact being established that "Flexner Gallipoli" is a "V" strain of unusual sensitiveness, but in other respects of normal character, it remained to consider whether the use of this strain for serodiagnostic suspensions (e.g., for the manufacture of standard cultures) would be an improvement on the use of less sensitive strains such as the Oxford stock Flexner V. Prima facie, it might be fancied that great sensitiveness must be an unmixed blessing, but in reality it is not so. For in bacillary dysentery sero-diagnosis depends upon the demonstration in the patient's serum of a degree of agglutination higher than that met with in normal serums. Now it is well known that normal human serums often agglutinate bacilli of the "Flexner" group. And the more sensitive the suspension used, the higher will evidently be the titre shown by such serums.

Determination of Normal Limit of Agglutination.

It is this circumstance that renders absolutely indispensable for the trustworthy use of any bacillary suspension in serodiagnosis the determination of the *normal limit of agglutination with that particular suspension.* This can only be done in one of two ways: (*a*) by testing a large number of normal serums with the suspension itself, or (*b*) by determining the sensitiveness of the suspension in comparison with another suspension which has been thus tested.

Before standardised cultures of Flexner bacilli were issued from the Standards Laboratory, a determination of the normal limit of agglutination for a suspension of the bacillus was carried out by Prof. Dreyer and myself on over a hundred normal men and a number of women in addition. Owing to the stress of war-time the results were never published. Not a single man whose past history was clear of dysentery gave a reading of as much as standard agglutination at a dilution of 1 in 50 with the suspension used. If, then, one should find a reading of this or greater magnitude given by an unknown serum, it could be taken as abnormal, and, in the absence of any other circumstance capable of raising the normal titre, diagnostic of infection.

Now all subsequent suspensions (standardised cultures) of this type of bacillus have been carefully compared with the original suspension or with one or several suspensions successively standardised, each against the previous one. To each has been given a numerical factor by which allowance can be made for its difference in sensitiveness from the original standard suspension. Thus, if a particular suspension chanced to be three times more sensitive than the standard, it would be given a factor three times the magnitude of that of the standard. Now the number of the standard units in any serum is calculated by dividing the denominator of the dilution figure (e.g., 1/25) by the factor of the suspension used; therefore, if that factor be large, the number of units is small, and vice versa. The factor for the original suspension was so chosen that normal male serums should not contain more than 10 units (a conveniently small quantity). This factor was 3·0, and a serum which gave a reading 1/25 (standard agglutination) with it contained 8·3 units. Now if the same serum were tested with the above-mentioned suspension of three times greater agglutinability, standard agglutination would be found at a three times higher dilution—viz., at 1/75. If this suspension had not been standardised it would be impossible to tell whether this reading were or were not above the normal limit. But if the suspension had been standardised and given its proper factor—viz., 9·0—the number of units calculated would be 8·3, which is definitely below the diagnostic limit.

Test of Three Normal Serums.

Three normal human serums were tested with (*a*) Prof. Dudgeon's suspension, and (*b*) a standardised Flexner (V) culture.

Serum A with Dudgeon's suspension gave a trace of agglutination in 4½ hours (55° C.) at 1/10, the strongest concentration tested, and after a further 20 hours at room temperature it showed partial agglutination at 1/10, and traces of flocculation extending up to 1/100. The same serum with the standard culture showed no flocculation at 1/10 in 4½ hours, and in 24 hours gave readings of partial agglutination (Standard plus) at 1/10, and nothing in any higher dilution.

Serum B showed in 4½ hours with Dudgeon's antigen partial agglutination at 1/62 and strong trace at 1/125, whereas the standard culture showed only a strong trace at 1/12. After 24 hours the flocculation of Dudgeon's antigen showed little or no progress; the standard culture now showed nearly total agglutination at 1/12 and a questionable minute trace at 1/25. With both serums the flocculation of Dudgeon's antigen was very irregular, in the sense that only a minority of the organisms present appeared to undergo flocculation. With the standard culture the flocculation was of the usual type seen with specific serums.

Serum C was tested with a fresh formolised broth culture of Flexner Gallipoli and with a standard culture. The serum agglutinated the former definitely up to 1/20, but gave no trace with the latter at 1/10.

Limits of Normal Agglutination with Flexner Gallipoli Suspensions.

We see, then, that the superior sensitiveness of Flexner Gallipoli is equally evident whether specific or normal serums are used for the comparison. Quantitatively, it would seem that the difference of agglutinability is even greater with normal than with specific serums. The limit of normal agglutination with Flexner Gallipoli suspensions is therefore somewhere between twice and ten times higher than with the standard culture. Clearly it is impossible to draw any conclusions as to the diagnostic value of the two types of culture without paying careful consideration to these limits.

There is no mention in Dawson and Moodie's paper of this consideration. The writers give a chart of the "agglutination-titre" at various periods of the disease. It appears to be a composite chart, but the system upon which it was compounded is not very clear to me. They state that the first trace of agglutinins (with Oxford standard culture) appeared at the end of the sixth week, but since the chart shows a curve rising from the first day they must mean something else—e.g., that they failed until the sixth week to find agglutinins above the diagnostic limit (somewhere about 1/50). Adopting the same baseline for the two suspensions, they quite naturally found the first appearance of agglutinins at an earlier date with the culture of higher sensitiveness. It is not in place here to discuss the remarkably late appearance of the agglutinins in this series of tests. Other workers with standard cultures on ordinary bacillary dysentery have reported the regular appearance of diagnostic agglutination within the first week (even on the third day of the disease), and the occurrence of the maximum commonly in the third week. A similar statement is made by Shaw Bolton and Nabarro,[1] as quoted in the paper under discussion. The most probable explanation of Dawson and Moodie's tion occurred, and several pieces of catgut and one of silk were discharged from the wound, but the patient made an excellent recovery. The aneurysm became quite hard. He had also ligatured the right subclavian and common carotid arteries for aorta aneurysm causing pressure on the trachea. The patient was relieved.

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[1] Report of Board of Control, 1919 and 1920, vols. vi. and vii., appendix.

The PRESIDENT inquired why Sir Charles Ballance used kangaroo tendon.—Sir CHARLES BALLANCE replied that he had found that kangaroo tendon remained unabsorbed for 80–90 days, a period which could not be obtained by any method of preparing catgut.

Sir G. LENTHAL CHEATLE described

A New Operation for Inguinal Hernia.

Several cases in quick succession presenting difficulties in the efficient excision of the sac had led him to devise a new method by which these and other troubles could be easily and successfully dealt with when they arose. He approached and reached the back of the inguinal canal from a middle-line incision in the lowest part of the abdominal wall. Unless compelled by some complication he did not open the general peritoneal cavity, all the work being done in a space made in the subperitoneal tissue. He had operated in this way upon 41 patients. In the first nine all the incisions were longitudinal; in the remainder he had traversed the abdominal walls by Pfannenstiel's method.

The patient was placed in the Trendelenberg position and the operator stood on the side opposite the hernia. A transverse skin incision 4 or 5 inches long was made 1¼ inches above the symphysis pubis, with its centre in the middle line. A similar incision was made in the aponeurosis of the rectus abdominis of both sides, care being taken not to injure either *linea semilunaris*. The *linea alba* was undercut upwards and downwards to within one or two inches of the umbilicus and to the symphysis; in doing so the sheath of each pyramidalis muscle would be opened. The opening thus made in the aponeurosis was retracted up and down, and the subperitoneal tissue exposed by separating the abdominal muscles in the middle line. The peritoneum and its contents were then pushed up on both sides, and, if necessary, kept up by packing. Two retractors were inserted on the side of operation. The retractors should have long, separate and blunt prongs. The lower retractor, by far the most important instrument in the operation, should pull the abdominal wall downwards, outwards, and forwards to lift up the abdominal wall. Its prongs should reach the deep epigastric artery and vein. Nobody should proceed with the operation until he was satisfied that this retractor was in its proper position. The upper retractor pulled the structures outwards. After more completely pushing upwards the outer part of the peritoneum and thoroughly exposing the iliac fascia it would be possible to see the neck of the sac entering the inguinal canal. The deep epigastric artery and vein were then delimited and separated from the inner part of the neck of the sac. Cheyne's dissector was a very useful instrument to use for this purpose. The spermatic veins and vas deferens with its vessels were found and separated from the whole length of the exposed sac. These structures were usually on the outer and under surface of the sac. The sac having been cleared it was pulled out of the canal by gentle continuous traction in the direction in which it lay. If there were no indications of the possibility of its easy extraction the sac was cut and the canal portion replaced. (Congenital herniæ would belong to this type.) The neck of the sac, including part of the parietal peritoneum, was then transfixed and removed. Finally the inguinal canal of the opposite side was examined, and if abnormalities existed they were treated on the same lines. He had only once had to ligature a vessel in the subperitoneal space, and that was a small branch of the deep epigastric vein.

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He said that John Howard's book on prisons in the eighteenth century showed that the medical side of prison administration was, at that date, practically observers who concentrated their attention on local lesions. Of much more interest is *the unlooked-for* amelioration in all the symptoms and the long period of time over which the improvement has been maintained. Remissions for a dozen years or longer have been reported, but I have failed to trace any instance in which a case so apparently desperate achieved what may at present pass for almost complete recovery and natural arrest of the disease.

West Ayton, Yorks.

PARA-URETHRAL GONORRHŒA.

BY F. CHAMBERLAIN, M.R.C.S., L.R.C.P. LOND.,
HOUSE SURGEON TO THE LONDON LOCK HOSPITAL.

A para- or accessory urethra is a small blind canal lying somewhere between the meatus urinarius and the penile-scrotal junction in the long axis of the penis. The canal opens at the distal end but is closed at the proximal end and does not communicate with the urethra proper. The lining is of epithelial cells supported by connective tissue, indistinguishable in form and arrangement from those lining the urethra, a small bore urethra in effect. In most cases the urethra is of narrow calibre and one gains the impression that the condition is due to a developmental error whereby a portion of the urethral track is cut *off from the main urethra.*

In certain cases these canals may become infected with gonococci, the urethra proper escaping. I hazard the theory that the cause is largely mechanical. In Case 1 the extreme phimosis must to some extent have protected the meatus urinarius, while the opening of the canal on the under surface of the prepuce *would bear the brunt of the onslaught* during coitus. In Case 2 the three openings were close together, but the meatus was very narrow, hardly admitting an 11 F. bougie, and the lips were indrawn, presenting the resistant skin surface of the penis instead of the delicate lining of the urethra. Distension of the glans during erection rendered the para-urethral openings more prominent.

CASE 1.—Aged 23, no previous venereal disease. Marked phimosis; had never been able to retract foreskin. Narrow meatus; an ovoid swelling, 12 by 6 mm., on the under surface of the penis with pus exuding from four openings. A fine probe passed through the distal opening demonstrated a canal 3 cm. in length lying superficially in the raphé. Pus contained gonococci. Urine was limpid and contained no flakes.

Treatment.—The canal was dissected out and the edges sutured. Healed by first intention. Three months later a faint scar was discernible; there had been no signs of urethral gonorrhœa.

CASE 2.—Aged 23, no previous venereal disease. Three days after coitus noticed a "boil" on the glans. This was treated with foments and later with various ointments till another boil arose and the end of the penis became impetiginised. On examination a pocket 3 mm. in depth was found, and proximal to this a canal 3½ cm. in length, *starting 6 mm. from the meatus* and passing from the glans, through the frenal fold, and on to the prepuce to the skin-mucus junction.

Treatment.—The septum between the pocket and the canal was perforated and the whole track laid open with a pair of iridectomy scissors and packed with acriflavine gauze; the wound healed, leaving a ribbon-like track. Two months later the track was hardly distinguishable from the rest of the penis. There had been no signs of urethral gonorrhœa; gonococci were found in the original discharge from the canal.

CASE 3.—Mr. J. E. R. McDonagh has given me permission to include a case in which the track extended almost the whole length of the raphé and the pent-up pus had made its way to the surface by several openings. Gonococci were found in the pus; no signs of urethritis then or since. The track was dissected out and the wound sewn up. No trouble since.

It is important to recognise that these ducts can be infected without any signs of "gonorrhœa," as, by the time the patient has maltreated his penis with irritating ointments to cure his "sore," the original lesion will be quite unrecognisable, and there is *no urethral discharge to give one a lead.* Hot dressings and ointments will then be of no avail.

I am indebted to Mr. McDonagh and Mr. Johnston Abraham for permission to publish these cases.

A FATAL CASE OF
DELAYED NEO-SALVARSAN POISONING.

BY D. R. C. SHEPHERD, M.B., M.R.C.P. LOND.,
TEMP. CAPTAIN, R.A.M.C.; MEDICAL SPECIALIST,
ALDERSHOT COMMAND.

DEATH due to the means of cure of syphilis is by no means rare, but in the case here recorded death occurred 111 days after the last of seven injections of neo-salvarsan.

J. G., a soldier, aged 21, commenced treatment on Sept. 9th, 1920, after the *Spirochæta pallida* had been found in his primary sore. The following is an extract from his case sheet showing the dosage employed:—

Connaught Hospital, Aldershot.

10/9/20	914	0·4 g.	Hg. gr. 1.
17/9/20	914	0·4 g.	Hg. gr. 1.
21/9/20	914	0·4 g.	Hg. gr. 1.
1/10/20	—	—	Hg. gr. 1.
8/10/20	914	0·6 g.	Hg. gr. 1.
15/10/20	914	0·6 g.	Hg. gr. 1.

Rochester Row.

29/10/20	914	0·6 g.	Hg. gr. 1.
5/11/20	914	0·6 g.	Hg. gr. 1.

He reported sick with jaundice, but no other symptoms on Feb. 6th, 1921, and was admitted to the Cambridge Hospital, Aldershot, on that day. So-called catarrhal jaundice is common in the command, and his case presented no peculiarity until the 22nd, when he became depressed and refused food; vomiting set in, the jaundice deepened, and he died comatose in 36 hours. The urine on the day of death contained albumin, blood, and bile-stained granular casts. It showed the presence of arsenic by Marsh's test. Leucin and tyrosin were absent. Post mortem, the liver weighed 30¼ oz., *and showed the typical appearance of* acute yellow atrophy both macroscopically and microscopically. The kidneys showed acute diffuse nephritis and there was some venous congestion of the spleen. The other organs were apparently healthy. No spirochætes were found in films of juice from liver and kidney.

Analysis by Major Elliot, B.Sc., F.C.S., gave the following result:—

	Weight in grammes.	As. per 100 g.
Kidneys	391	0·02 mg.
Liver	832	0·1 mg.
Spleen	241	0·2 mg.
Bone	19	0·2 mg.

Mr. A. G. R. Foulerton tells me that the relative amounts (if the liver and kidneys are considered together) agree closely with his findings in experimental As_2O_3 poisoning. A rough estimate shows that probably nearly one-tenth of the total arsenic administered remained in the body at death. The elimination of *arsenic from organic combinations is, I find, a longer* process than is usually believed. Three patients free from symptoms were found recently to have arsenic in the urine in demonstrable quantity 11 weeks after their last injection of neo-salvarsan.

I have not been able to find any other record of analysis of the arsenic concentration in so remote a fatality as the above, for permission to publish the details of which I am indebted to Lieut.-Col. H. C. R. Hine, commanding the Cambridge Hospital.

MEDICAL GOLFING SOCIETY.—This society has been carried on in a more or less informal manner for 23 years, but it has now been decided to put it on a business footing. Two tournament meetings are to be held annually, and team matches and other competitions for four cups, *including two challenge cups, will be arranged.* Membership, without election, is open to any gentleman on the Medical Register, on payment of the annual subscription of 10s. to the hon. secretary and treasurer, Dr. Rolf Creasy, jun., 30, Weymouth-street, London, W. 1.

methods enabled a better adjustment to be made. To achieve this Freud employed the method of free association. Dr. Davies Jones quoted cases to illustrate his thesis.

The paper was discussed by Dr. James Stewart, Dr. C. Stanford Read, Dr. Bedford Pierce, and Dr. A. E. Evans, and Dr. Davies Jones replied.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held at the West London Hospital on Dec. 2nd, Sir G. Lenthal Cheatle, the President, being in the chair, when a discussion on

The Treatment of Puerperal Infection

was opened by Dr. Frederic J. McCann. He compared the nature of puerperal infection with that of ordinary septic wounds. The normal sequence of events in a healthy puerperium was attained chiefly by the increased vascular and lymphatic supply of the involuting uterus. Dr. McCann emphasised the importance of wounds of the cervix, vagina, and vulva as sources of infection, and criticised the orthodox teaching that infection usually originated within the uterus. After alluding to the modes of spread and the general course of the infection, he proceeded to discuss the importance of prophylactic measures. He deplored that our hospital system provided such scanty accommodation for puerperal cases. The teaching of obstetrics also should be improved. Medical officers of health should be empowered to admit to hospital women whose domestic surroundings were unsuitable for a confinement. The application of forceps and the introduction of the hand into the uterus should be regarded as major operations. Rectal examination should be avoided; its disadvantages were obvious. Vaginal and perineal wounds and deep cervical tears should be carefully cleansed and sutured. With regard to the treatment of infected cases, in the first place extra-genital sources of infection must be excluded. Exploration of the uterus was only permissible in the severer types of cases or after any likely source of infection in the lower genital tract had been excluded. The curette should be used as a probe only or for gently removing any loose fragments, and never as a scraper. Puerperal peritonitis and localised abscesses must be dealt with on ordinary surgical lines. Subcutaneous salines, free purgation, and the judicious use of quinine were all valuable. Serum and vaccine were, on the whole, disappointing.

Discussion.

The President warned practitioners against placing too much reliance on the alleged antiseptic properties of many gauzes on the market.—Dr. Remington Hobbs was strongly in favour of uterine drainage, as, in his opinion, the rise of temperature was due to mechanical blocking of the uterine outlet by malpositions of the uterus, œdema of the cervix, and overloading of the rectum. For this purpose he used a small rubber catheter. After cleansing the genital passages the catheter was introduced into the uterus by means of a special forceps made to his design. 10 c.cm. of a glycerine and iodine mixture (in the proportions of 7 to 1) were then injected into the uterus. It might be necessary to repeat this injection on several consecutive days according to the course the temperature took. He showed a series of temperature charts which appeared to bear out the efficacy of this line of treatment.—Dr. H. J. F. Simson referred to the importance of prophylaxis, and wondered to what extent the glycerine was responsible for the success of Dr. Hobbs's treatment.—Dr. Knyvett Gordon stated that an experience of 250 cases had led him to believe that the best line of treatment was curettage, saline infusions, and the use of anti-sera (according to the bacteriology) in large doses combined with saline. Laparotomy and even hysterectomy were indicated in the severer cases.—Dr. Bernard Spilsbury referred to the severe type of case usually seen by him; in some of these cases death occurred as early as 24 hours after infection. There was in these cases little macroscopic evidence to account for the infection.—Dr. J. Burnford laid stress on the importance of bacilluria as a cause of fever during the puerperium. Bacteriological examination of the urine should be a routine procedure in puerperal cases associated with pyrexia.

Other speakers included Mr. Malcolm Donaldson, Dr. Lapthorn Smith, Dr. Vaughan Pendred, Dr. Sanguinetti, and Dr. F. G. Lloyd.—Dr. McCann replied.

PATHOLOGICAL SOCIETY OF MANCHESTER.

A meeting of this Society was held on Nov. 9th, with Mr. J. Howson Ray, the President, in the chair.

Dr. C. P. Lapage opened a discussion on

Tuberculosis in Children.

He pointed out the frequency of tuberculous infection in children, as shown by: (1) Post-mortems at the Children's Hospital, Pendlebury. These showed the great frequency of glandular tuberculosis, in many cases without disease of the organs. They also showed that cavitation of the lungs in babies is not uncommon. (2) X ray examinations to demonstrate thoracic tuberculosis. (3) The results of the Von Pirquet skin reaction in 1000 children, as demonstrating the incidence of non-fatal tuberculosis in the age-periods of childhood. (2) and (3) were correlated to the clinical examination and the close correspondence between the three methods of examination pointed to the fact that tuberculosis in its early stages should be recognised by symptoms and history rather than by physical signs. One thousand cases were divided clinically in five categories—i.e., negative, possible, suspicious, probable, and positive. Even the suspicious cases had no physical signs, but only pallor and debility, some loss of flesh and an indefinite cough, in some cases with a history of infection in the home. These were often tuberculous and when tested with the Pirquet test at the different age-periods, gave results as follows: 0–2, 5 per cent.; 2–5, 62 per cent.; 5–10, 67 per cent.; 10–14, 59 per cent. Dr. Lapage discussed the frequency of tuberculosis and its variability in different areas in relation to the milk-supply, and concluded that, though infection from human sources is much the more common and more dangerous, yet the danger from tuberculous milk is a very real one, especially when the likelihood of massive doses is present. The autopsies seemed to show that the tubercle bacillus could pass through the damaged mucous membrane and clinically this seems possible, especially if some illness such as chronic enteritis or bronchitis lowers the health of the child and produces local inflammation and perhaps stagnation. Closed or open disease results. In some cases there is a marked bacillæmia resulting in generalised tuberculosis. In others, tubercle bacilli are disseminated to various parts of the system where they may remain latent; then at some subsequent period of lowered health with perhaps local injury, they may be lighted up and form isolated areas of disease, such as nodules, or joint or bone trouble. The mode of spread is, however, more often by the lymphatic system. Tuberculosis was a very fatal disease, especially in young children, the death-rate falling very rapidly after the second year—i.e., 25 at 0–1 year, rising to 40 at 1–2 years, and falling to 20 at 2–3 years. A great deal of non-fatal tuberculosis occurred, but Dr. Lapage said that every effort should be made to postpone infection as late as possible on account of the very high death-rate at the early age.

Mr. E. D. Telford discussed the subject from the surgical aspect. His figure for bovine infection in Manchester was 50 per cent., the route of infection being as a rule via the digestive tract. The average age of clinical onset in a large series was 3½ years,

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A meeting of this section of the Royal Society of Medicine was held on Dec. 7th, Mr. Raymond Johnson, the President, being in the chair.

Sir Charles Ballance read a paper on

Ligation of the Innominate Artery for Innominate Aneurysm.

Four of his own cases were described.

Case 1.—Female, aged 60 years, who had had syphilis. She had deformed tibia and an old iritis. There was a pulsating expansile tumour rising from the superior mediastinum above the inner extremity of the right clavicle and the suprasternal notch. Radiographic examination showed that the aneurysm was limited to the upper portion of the innominate artery. The pulses in the right arm and right carotid were markedly weakened. As there appeared to be a portion of the innominate artery not implicated in the aneurysm, it was decided to explore the mediastinum, and tie the proximal portion of the artery. This was done on Dec. 31st, 1918. The aneurysm was reached through a median vertical incision, in the lower part of the neck, with a transverse incision across the upper part of the sternum. The muscles were detached from the inner part of the left clavicle and the left portion of the manubrium, and the inner extremity of the left clavicle, together with the left upper portion of the manubrium, were removed. The pleura was pressed away and the upper part of the arch of the aorta found by dissection in the fibro-fatty tissues of the mediastinum. The proximal unexpanded portion of the innominate artery was then easily traced and ligatured with two strands of kangaroo tendon tied in a stay-knot, without rupturing the inner coat. Pulsation in the aneurysm ceased at once. The wound healed by first intention, and in six weeks' time the aneurysm had shrunk much in size and become solid. The right arm was troublesome at first, being cold and painful, but improved slightly, although pulsation could not be detected in any vessel. In January, 1921, the right arm had completely recovered, the two radial pulses being equal. A large vessel felt crossing the right posterior triangle of the neck was thought to be possibly an enlarged transversalis colli artery. In May, 1921, the patient was readmitted to St. Thomas's Hospital with severe albuminuria, ascites, and œdema with cardiac complications. She died on June 6th, 1921. The autopsy revealed a large infarct in the lung, which was the immediate cause of death. The large vessels at the root of the neck were dissected out and distended under pressure. Sir Charles Ballance showed the specimen; the artery was obstructed at the site of ligature, the aneurysm had disappeared, its remains being a mere fibrous mass. The greater part of the right subclavian artery was patent, and circulation had apparently been re-established through the branches of the first part of that vessel. The transversalis colli was not enlarged as had been supposed.

Case 2 was reported fully in The Lancet, 1902, II., p. 1180. Sir Charles Ballance recalled its salient features. The patient was a man, aged 35 years. The aneurysm involved the bifurcation of the innominate artery and extended some distance into the right side of the neck. The patient had previously undergone a course of Valsalvian treatment. The proximal portion of the innominate artery was exposed on this occasion by dividing the manubrium vertically in the middle line, and transversely at the level of the upper border of the second costal cartilage. This portion was tied with four ligatures of goldbeater's skin tied in two stay-knots. The patient died 30 hours later, after exhibiting signs of a left hemiplegia. At the autopsy the great vessels were removed and preserved. The right common carotid, internal carotid, and middle cerebral arteries were found full of clot.

Case 3 (a case previously reported in 1912 to the Clinical Section of the Royal Society of Medicine).—In a clerk, aged 43 years, the aneurysm involved all three parts of the right subclavian artery. Sédillot's operation was attempted, but abandoned on discovering the nature and extent of the aneurysm. The upper portion of the manubrium was then removed and the innominate artery exposed and tied in a stay-knot with kangaroo tendon. Pulsation in the aneurysm ceased at once. The right arm was very little affected and the tumour slowly decreased in size. The patient could, unfortunately, not be traced subsequently.

Case 4.—A man, aged 35 years, who had had syphilis seven years before, seen in 1909 on account of a large and increasing pulsating swelling in the right side of the neck, diagnosed as aneurysm of the bifurcation of the innominate. As the condition was progressing in spite of rest in bed, it was decided to operate. A portion of the manubrium was removed, together with portions of the left first and second costal cartilages, and the proximal portion of the innominate artery exposed. As the ligature was about to be passed the aneurysm, which was being pushed aside by the fingers, ruptured. Sir Charles Ballance controlled the hæmorrhage by passing his fingers into the aneurysm and plugging the innominate, and the vessel was tied with kangaroo tendon and a stay-knot. The patient died 30 hours later, and the specimen was not obtained.

Surgical Aneurysm of the Innominate.

Sir Charles Ballance showed a specimen (No. 1507) from St. Bartholomew's Museum as typical of surgical aneurysm of the innominate—i.e., one involving the bifurcation of the artery whilst the proximal portion remained unexpanded and available for ligature. Anatomically speaking, ligation of the innominate artery should be a cervical operation, but from a practical point of view it was advisable to remove bone so as to obtain a clear and free exposure of the parts. The amount of bone to be removed varied with different cases. He had found the operation not very difficult, although he would not go so far as the late Sir W. Mitchell Banks in describing it as a "mere surgical amusement." In 1915 Thomson ("Annals of Surgery," vol. lxi.) had collected 52 cases of ligation of the innominate for subclavian aneurysm with 16 recoveries (30·7 per cent.), and five further cases had since been reported, with two deaths, whilst in one of the non-fatal cases pulsation reappeared in the aneurysm in three weeks. Sir Charles Ballance wished particularly to emphasise the following points:—

1. That cases about to be submitted to operation should not be previously treated by the method of Valsalva.
2. That there was a group of cases of aneurysm of the innominate artery (aneurysm of the bifurcation) which were suitable for proximal ligature. Distal ligature caused the aneurysm to become a diverticulum of the aorta and so increased the pressure within it, and should not be done when proximal ligature was possible.
3. That the presence of the aneurysm necessitated removal of a part of the manubrium in order to gain a free and clear exposure of the vessel below the aneurysm.
4. That the ligation of the innominate might be safely and surely accomplished if the ligatures were tied in a stay-knot without rupturing the coats.

Sir Charles Ballance added that the tension in the wall of a vessel varied with the size, thus explaining the prevalence of aneurysm in the aorta and other large vessels. The tension in the large vessels was much greater than could be explained merely on the grounds of the higher blood pressure in them. When a fusiform dilatation occurred the tension in the wall of the vessel was still further increased, thus explaining the tendency of aneurysmal swellings to progress. The same factor occurred in steam pipes, and lack of recognition of the influence of the size of the vessel on the tension within it frequently led to bursting of the larger boilers in the early days of steam power.

Discussion.

Sir Charters Symonds said he also had ligatured the innominate artery. The case had not been published, although a brief account of it could be found in Jacobson's "Operations of Surgery." The case was one of aneurysm of the second and third parts of the subclavian. The first part of the vessel was exposed by a cervical incision and two attempts made to ligature it, both of which caused severe hæmorrhage. He then decided to ligature the innominate artery, which he was able to do from the neck without removal of bone by making gentle traction on the common carotid artery. Mild suppura-

Reviews and Notices of Books.

PULMONARY TUBERCULOSIS.

By Sir JAMES KINGSTON FOWLER, K.C.V.O., C.M.G., M.D., F.R.C.P., Consulting Physician to Middlesex Hospital, Hospital for Consumption and Diseases of the Chest (Brompton), King Edward VII. Sanatorium, Midhurst. London: Macmillan and Co. 1921. With 52 illustrations. Pp. 284. 20*s*.

MANY features distinguish this book from other treatises. For example, Sir James Kingston Fowler breaks away from the beaten track in his historical survey, giving prominence to two British workers—William Stark and William Budd—whose contributions to the advancement of medical science have hitherto been underrated. It is a pity that his appreciation of these and other British scientists should have as a setting a sweeping denunciation of German scientists in a spirit reminiscent of war-time propaganda; though Koch and Walther do exceptionally receive praise. A short but most interesting chapter on the Rôle of Heredity ends with the rather unexpected conclusion that the attempt to state with scientific precision the influence of heredity is doomed to failure. This is not a satisfying verdict, but the author justifies it with many cogent arguments proving the intricacy of the problem. In this, as in practically every chapter, he shows a first-rate and first-hand knowledge of morbid anatomy.

A characteristic and eupeptic feature of this book is the author's tendency to lapse into a conversational style marked by quips and barbed digs at the foibles of faddists, though some of his criticisms are ill-advised. His scepticism as to the very existence of such a morbid entity as "hilum tuberculosis" finds expression in his definition of it as "a 'shadow' first seen in a darkened room and not yet clearly recognised in the daylight of the post-mortem room." To which the sponsors of "hilum tuberculosis" might feel tempted to retort by quoting the author's opinion expressed elsewhere in this volume that one does not find a condition post mortem till one looks for it. Another and most valuable characteristic of the book is the imposing quantity of clinical experience and sound advice it contains. In a few lines Sir James Kingston Fowler tells more about hydrotherapy, the ominous significance of the inverse type of fever, the curability of tuberculous meningitis, the folly of exploring for fluid with a fine needle, than most writers can condense into several pages. Here and there his advice seems hardly up to date; in discussing the treatment of accidental pneumothorax he omits all reference to oxygen or nitrogen replacement. In some cases it may be advisable to exploit an accidental pneumothorax and to maintain it as an artificial pneumothorax by injections of gas. His opinion of modern methods of diagnosis is seldom flattering. Force is given to a depreciatory discussion of X rays by a reference to the author's own experience during the war at a military hospital, where, in collaboration with the late Mr. C. R. Lyster, he was able to check this method with that of ordinary physical examination.

The author is a caustic critic of the use of tuberculin, and he suggests that "a tuberculosis dispensary that has become a 'tuberculin' dispensary has become a very dangerous place." "Artificial pneumothorax," he says, "is the only advance in the treatment of pulmonary tuberculosis since the introduction of sanatorium treatment as carried out at Nordrach." He is a supporter of sanatorium treatment, but is rather difficult to follow in discussing the vexed question of graduated exercise. On page 220 he writes: "No exercise, except walking, for two years, i.e., after the arrest of the disease and disappearance of tubercle bacilli from the sputum"; while on page 232 he speaks with evident enthusiasm of the excavation by Frimley patients of 5000 tons of earth wheeled 300 yards.

The dominant virtues of this book are its sound pathology and ripe clinical experience: they are in evidence on almost every page. Its failing is that of its limits. Instead of giving space to a full account of such an epoch-making advance as, for example, the Pirquet test, the author often digresses to quote earlier writings and to show how views expressed many years ago have now been proved correct. The book, therefore, is hardly suitable for the student actuated by the single-hearted desire to please examiners, but it is a work which both general practitioners and tuberculosis specialists will enjoy reading.

DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES IN GENERAL PRACTICE.

Third edition. By Brev.-Col. L. W. HARRISON, D.S.O., M.B., Ch.B., M.R.C.P.E., Director of Venereal Department, St. Thomas's Hospital. With a chapter on the Medico-Legal Aspects, &c., by F. G. CROOKSHANK, M.B., F.R.C.P. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 525. 25*s*.

THE first edition of this book, published in 1918, rapidly won its place as the authoritative English text-book on the subject, and it is not surprising that a third edition has been called for so soon. It has certain conspicuous merits. It is well arranged, covers the ground adequately, is thoroughly up-to-date; it is remarkably free from redundancies, and while its teaching is dogmatic whenever necessary, on matters as to which there is still considerable divergence of opinion the author preserves balance. Further, he deals with every aspect of the subject so systematically, and in such detail, that it is an invaluable guide for the tyro, while the expert will find much that is stimulating and suggestive in its pages.

One slight shortcoming of the earlier editions has been remedied: the treatment of gonorrhœa in the female is now dealt with in full detail. Further, a valuable section has been added on "proofs of cure" in gonorrhœa. This should be of great help to those who are anxious not to stop treatment too soon, and at the same time should serve to protect patients from over-treatment. Like many other workers in the same field the author has found that success in the treatment of gonorrhœa with vaccines depends on (1) proper dosage, (2) the strain of gonococcus employed, and (3) the method of preparation of the vaccine. His review of vaccine treatment, which includes observations on patients treated with detoxicated vaccines, is concise but valuable, and his conclusion, with which most workers will agree, is that the case of gonorrhœa subjected to a rational vaccine-therapy runs a milder course than that from which vaccines are withheld.

In the section on the treatment of syphilis considerable modifications have been introduced since neo-salvarsan or one of its congeners is now generally used in place of "606." All the arsenical derivatives of use in the treatment of lues are passed under review, including silver-salvarsan, and a useful series of tables, based on the routine courses of treatment in use at St. Thomas's Hospital, is inserted. In these tables the equivalent doses of 914, 606, and silver-salvarsan are tabulated, and any patient treated upon the lines there laid down will not suffer from inadequacy of treatment. Colonel Harrison's experience has led him to doubt the anti-syphilitic powers of mercury, and he emphasises the need of combined administration of arsenic and mercury in the "continuation treatment" of the disease. The chapter on the prevention of venereal diseases gives much food for thought. After reviewing the subject, and giving statistical tables based on the experience of the U.S. Army in France, Colonel Harrison concludes that "the greatest hope lies in the prompt treatment of patients in the earliest stages of the disease, thereby ensuring a maximum of cures and a minimum of infection carriers."

non-existent. Though many of the prisons had a surgeon attached to them, he seemed to have come in only when specially required. For many years past, however, every prison had had a regular M.O. as part of the establishment, and his duties and functions had undergone remarkable developments. Our larger prisons were well built and well equipped, and the nursing staff had altered for the better. The M.O. had opportunities, especially in the case of long-term prisoners, of observing the effects of diet and work, as well as watching the development of various forms of disease. Dr. Smith said that various physical ailments conduced to delinquency, in so far as they affected the mental life. For example, a man suffering from such a physical defect as hernia, tuberculosis, or defective vision, was handicapped in earning his living in the competitive labour market, and hence was more likely to break the law. Those physically defective from cardiac or phthisical disease were unable to work regularly, and thus did not form, early in life, good habits of industry; moreover, the physically weak child was often kept away from school and thus not only formed bad habits early, but received more than the usual sympathy. A boy with defective vision would be a constant trouble to his teachers, who, ignorant of the defect, would punish undeservedly, producing in the child a mental conflict which might result in delinquency. This contingency was now largely prevented by the present system of school inspection. Moreover, the tendency of certain physical disabilities was to make their victims anti-social, owing to the feeling that they were not as others. The duties of the prison doctor soon grew beyond the mere treatment of physical ills; no uniformity could be carried out in the way of diet, work, and disciplinary punishment, and the doctor was constantly being called upon to exercise discretion.

There had been a great development, too, in the mental side of his work. Probably this was originally confined to certification of cases of legal insanity; prisoners were held to be either normal or insane, in a rigid sense. But a man, though not insane, might have a mentality differing from that of the strictly normal person, and these abnormal cases were now placed under the medical officer's direct charge, and could now be certified under the Mental Deficiency Act, 1913. No rigid division between normal and insane prisoners was possible; every offender presented an individual problem. Public opinion was probably not yet ripe for universal investigation of individual cases, though the courts and the public should be educated up to the need thereof. Dr. Smith said he had devoted much time to the selection and application of a scheme of tests. His earlier work was done with the Binet scale, but he became dissatisfied with that scheme, and moreover was not satisfied as to the propriety of the fashion of considering "mental age." He was dealing with the test he now used in a book shortly to be published. Much light had been shed on problems of delinquency by the so-called new psychology. He was not saying that there was always a mental conflict at the root of delinquency, or whether such conflicts were always of a sex character. But he felt certain that such a conflict was present in many cases, and the discovery of this might alter the whole aspect from which the particular offender was regarded. He thought a scheme would need to be devised for the placing of suitable cases under the care of official psycho-analysts. At Birmingham the prison doctor was an integral part of the city's scheme for dealing with its delinquents. Dr. W. A. Potts had been appointed to examine cases which it was not desired to send to the remand part of the prison. The male and female remand departments were arranged and worked, as far as possible, on hospital lines, the idea of prison being kept out of sight. Dr. Smith proceeded to describe the routine followed. It was now very rare to get a mental defective or a psychosis case from the city of Birmingham on conviction. He advocated a division of the country into convenient districts, each having a properly equipped prison with a special M.O. in charge, to which all cases requiring mental examination should be sent. The only alternative plan would be to have travelling mental examiners in each district, who could attend when required. His conclusion was, that uninvestigated offenders were the most expensive luxury that any community could indulge in. He thought there should be a closer union between the prison and asylum services; there might be a unified service, working in each district under a local head, who would be the director and inspirer of the work. Dr. Smith then detailed the requirements which psychiatrists for this work should possess, and referred to the intention of the University of Birmingham to hold, next summer, an intensive course of lecture-demonstrations. He alluded, in conclusion, to the valuable work of the school medical officer.

Discussion.

Dr. W. A. POTTS confirmed Dr. Smith's opinion that every offender was worthy of investigation, and that this would prove in the end an economical procedure. He alluded to the importance, in doubtful cases, of an examination before the supposed offender was sent to prison, in order to preserve his self-respect.

Dr. J. T. DUNSTON (Commissioner of Mentally Disordered and Defective Persons of South Africa) spoke of a recent visit to New York State. There each person sentenced to imprisonment for a year or more went through a thorough medical examination. A beautifully-fitted reception prison was being built, and next to it a large medical institute, under the stimulus of the National Committee for Mental Hygiene. So far, the work had been done, under some difficulty, by Dr. Glueck. After the medical examination each case was examined by a psychologist, who had to decide whether the prisoner was defective, or mal-adjusted, or actually insane. If normal, the man was recommended the right vocational training or treatment. Hence every felon's fate was decided not by the magistrate, but by the examining psychiatrist. In Chicago every juvenile delinquent was examined by a psychiatrist, who sat beside the judge as assessor, and made a rapid diagnosis. In Massachusetts, however, a most detailed personality study was made. In America the prevailing view seemed to be that it was the individual who really mattered, not the crime.

Mr. A. H. TREVOR (Commissioner of the Board of Control) said it was impossible to hear what was being done in Birmingham and in America in keeping defective persons out of prison without sympathising with such efforts to the full.

Sir ROBERT ARMSTRONG-JONES spoke of an effort now being made to found a Magistrates' Association, one object of which would be to secure greater uniformity in the dealing with similar offences in the various districts.

Dr. H. DAVIES JONES read a paper on

Forgetting.

He explained that he was not attempting to deal with the complete amnesias met with in the practice of psycho-analysts. Freud claimed that forgetting, whether for words or deeds, was not a fortuitous occurrence, but that a reason could usually be revealed by psycho-analytic methods. A means of gauging the value of an amnesia was the emotional effect accompanying. Dr. Davies Jones spoke only of cases where a sufficiently deep impress had been made. Forgetting was not a passive but an active process; we forgot, because we did not wish to remember, something unpleasant because it clashed with our innate tendencies. Each time the undesired memory recurred an attempt to repress its expression was made, and eventually the repression would become a part of the unconscious self. Still, it possessed a latent energy which could not be destroyed, and expression would occur by devious routes. Psycho-analytic by past failures; witness the interesting chapters on Female Offenders, Vagrancy, and Inebriety. Perhaps he is at his best in the chapter on the Borstal System, the development of which has evidently been his special care.

A special chapter on the Medical Service describes the numerous demands on the prison doctor. We hope that all prison medical officers have the ability attributed to them by Sir Evelyn Ruggles-Brise, but it is doubtful whether a doctor who has to develop along so many different lines is always qualified, even if he has served a term as officer in an asylum, to give the best opinion on insanity and mental defect. This manual is a valuable one which can be read with interest and profit by any intelligent citizen; for the specialist it is essential. There is an excellent and correct index, and the whole production forms a setting worthy of the subject matter.

A MANUAL OF PHYSICS.

Second edition. By J. A. CROWTHER, Sc.D., F.Inst.P., Sometime Fellow of St. John's College, Cambridge, Demonstrator in Physics in the Cavendish Laboratory, Cambridge. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 537. 16s.

THE appearance of a second edition of Dr. Crowther's Manual of Physics so soon after the first is the surest evidence of the need for a work which gives, not too briefly, the outlines of elementary physics.

The book may well be popular among medical students, for the subject-matter is well arranged, the explanations of some of the more difficult parts of the subject are quite adequate, and the whole of the letterpress is interspersed with diagrams which, on the whole, leave little to be desired. In the section on Photometry we should have liked to see included Joly's elegant and simple method of comparing the illuminating powers of two sources. The reader will have some difficulty in seeing from diagram No. 125 how the observer may directly view the two illuminated surfaces. The diagram showing the minimum deviation (printed duration) is too symmetrical, and might give the reader the impression that the angle of refraction was necessarily just one-half that of the angle of incidence. The diagrams illustrate a well-written and very useful book.

DISEASES OF CHILDREN.

By HERMAN B. SHEFFIELD, M.D., formerly Instructor in Diseases of Children, New York Post-Graduate Medical School and Hospital, &c. London: Henry Kimpton. 1921. Pp. 798. 48s.

Dr. Sheffield's book contains no salient advance on the methods of diagnosis and treatment commonly recommended in this country, and will make no special appeal to English readers. Even with regard to infant feeding, the methods advocated resemble our own system of percentage feeding, with its associated disadvantage of the difficulty experienced by inexpert attendants in the preparation of the milk mixtures ordered. With Dr. Sheffield's prescriptions for diet after seven months, and indeed up to five years, we cannot agree; the diets appear complex, and insufficient in many respects, containing an unnecessary excess of fruit juice and fruit pulp and not the necessary variety of proteins. A section on the Prevention and Control of Disease, however, contains much that is of value; the method of intravenous perfusion via the anterior fontanelle into the superior longitudinal sinus is advocated for infants, and the administration of intraperitoneal saline solution in acute summer diarrhœa—a method first practised in England—is carefully described. The section devoted to the physical examination of children seems elementary and redundant. The difficult study of disease in childhood should surely follow preliminary general instruction in clinical methods, and a recapitulation of physical signs and surface markings is superfluous in a text-book devoted to this special subject.

The description on p. 268 of a case of acute intussusception in a young infant, which remained undetected for three days, reflects but little credit on the physician. It is surprising, too, that the special incidence of intussusception in breast-fed infants should have escaped the author's notice. A more hopeless confusion than exists under the heading Rheumatism and Rheumatic Fever would be difficult to imagine. This all-important disease of childhood receives scanty treatment; the description of the early physical signs of a heart damaged by rheumatic infection and of its treatment is altogether unsatisfactory.

The subject-matter of the book is, on the whole, well arranged, and the plates, mostly from photographs, are excellent, but the cumbersome use of dog-latin equivalents in the nomenclature of disease throughout the book is unfortunate. The book is attractively produced, and the colour plates are excellent.

JOURNALS.

JOURNAL OF PHYSIOLOGY. Edited by J. N. LANGLEY, Sc.D., LL.D., F.R.S. Vol. LV., Nos. 5 and 6. Cambridge University Press. 1921. Pp. 305–428. 11s.—The Regulation of the Excretion of Water by the Kidneys, by J. G. Priestley. The problem discussed is whether the diuresis following the drinking of large amounts of water is related to any changes in the blood comparable to the changes in hydrogen-ion concentration which regulate the breathing. The excretion of urine can be increased by drinking water from about 40 c.cm. per hour up to as much as 1200 c.cm. per hour, the specific gravity falling to less than 1001; the comparative estimations of the amount of hæmoglobin in the blood before and after diuresis showed no appreciable change. After water-drinking, the loss in weight on drying blood; the chlorine content of the blood; the excretion of water and chloride in the urine during water diuresis were estimated. It was proved that there were slight but definite changes in the composition of the blood accompanying the diuresis provoked by drinking water. The excretion of water is largely but not entirely in relation to the excretion of chlorides. Injection of pituitrin (1 c.cm. intramuscularly immediately or shortly after drinking two litres of water) delays the diuresis produced by water-drinking for 4–6 hours. Water diuresis then sets in and is accompanied by an increased excretion of chlorides. These results, it is suggested, are compatible with the regulation of excretion of water by the kidneys of a two-fold nature: (a) a main regulation dependent on the diffusion pressure of water in the blood, and (b) a subsidiary modification of this regulation dependent on the inability of the kidney to hold back water when the diffusion pressure of water in the urine is considerably below that of the blood.—The Identity of Hæmoglobin in Human Beings, by G. S. Adair, J. Barcroft, and A. V. Bock. The different affinities for oxygen of various samples of human blood may be due either (1) to differences in the hæmoglobin itself, or (2) to differences in the conditions affecting it—e.g., the salt and hydrogen-ion concentration. It would seem that if samples of hæmoglobin from different individuals be freed from the corpuscles in which they are held and be subsequently treated in exactly the same way, they give oxygen-dissociation curves which are indistinguishable. On the other hand, preparations prepared by slow dialysis of blood against distilled water may simulate solutions in appearance but still containing intact, though swollen corpuscles, give dissociation curves far different from those of true aqueous solutions of hæmoglobin.—The Direct Measurement of the Partial Pressure of Oxygen in Human Blood, by J. Barcroft and M. Nagahashi. In principle the method used was to withdraw blood from a vessel, artery, or vein by direct puncture. To this blood is exposed a small bubble of alveolar air at 37° C. until an equilibrium is established between the blood and the bubble. The bubble is then analysed in a suitable apparatus. The from which he deduced a fairly long latent period after the original infection. In younger infants tuberculosis tended to be more acute and more generalised. Mr. Telford discussed the sites of surgical tuberculous disease and the influence of injury and pre-existing simple disease in determining the site of tuberculous infection later. The different types of cold abscesses and the results of aspiration were given. The effects of rest were discussed with special reference to the operative fixation of joints as opposed to formal excision. Finally some points were mentioned regarding the prognosis and ultimate fate of the healed cases.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this Institution took place on Dec. 1st, Dr. J. E. GEMMELL, the President, in the chair.

Dr. W. JOHNSON read a short paper on the Diagnostic Value of the Vibration Sense. He pointed out that the work of Dr. J. L. M. Symns and Dr. E. J. Wood, in the Guy's Hospital Neurological Department, by establishing a quantitative method of estimating the sensation, had rendered the investigation of the vibration sensation at the bedside feasible. The tuning fork devised by Dr. Symns for the purpose was demonstrated. By means of it, it is possible to show the presence of a definite diminution in the vibration sense in certain nervous diseases before the cutaneous forms of sensibility show any loss. Thus the observation assumes clinical importance in the early stages of tabes dorsalis, peripheral neuritis, and lesions involving the sensory paths in the spinal cord. The point was emphasised that in cases where cutaneous sensory loss is definite, investigation of the vibration sensation is comparatively unimportant.

Mr. J. H. RAWLINSON read a paper on some Genito-Urinary Cases, drawing attention to frequent errors in diagnosis, and for their avoidance emphasised the importance of thorough investigation of the urine and catheterisation of the ureter. He contrasted the symptomatology of tuberculous pyelitis with septic pyelonephritis, the latter being more often bilateral than the former. He referred to treatment by lavage of the renal pelvis through a urethral catheter and discussed the treatment of bleeding after prostatectomy. He stated that 75 per cent. renal stones passed spontaneously and that *Bacillus coli* occurred in more than 50 per cent. of cases of pyelitis.

ULSTER MEDICAL SOCIETY.

A MEETING of this Society was held on Dec. 1st, Dr. ROBERT HALL, the President, being in the chair. The business of the meeting was

A Discussion upon the Wassermann Reaction.

Dr. J. C. RANKIN introduced the discussion, and Dr. J. A. SMYTH gave a short demonstration of the various methods of doing the test.

Dr. THOMAS HOUSTON read a paper, illustrated by lantern demonstrations, which consisted in the analysis of over 5000 Wassermann tests done by two different methods: (1) that of Colonel L. W. Harrison, and (2) that practised by Dr. Alexander Fleming of St. Mary's Hospital. The work had been done in the laboratory of the Royal Victoria Hospital by Dr. Norman Graham, Dr. George Rea, Dr. Smyth, Dr. Boyd Campbell, and himself. This analysis showed exact agreement in the results of the two tests in the vast majority of the determinations, but in 472 (or 9 per cent.) there was some difference in the readings of the two tests. These differences were further analysed and divided into diagnostic differences and differences occurring in treated cases where the tests were done for the purpose of controlling treatment. 25 per cent. of the differences occurred in cases where diagnosis was required, so that, making allowance for slight differences of degree, in about 1 per cent. of all the determinations a difficulty might arise as to which test gave the correct diagnosis. On further analysis it was shown that Fleming's method was more sensitive both in diagnosis and treatment cases, and had on several occasions given a correct finding where Harrison's method was at fault. The great drawback to Fleming's method was that in 10 per cent. of the bloods no hæmolysis took place in the control tube, and the result could not be read without repeating the test by adding fresh control serum. The reading of this test was often difficult and required considerable experience. It was therefore hardly to be recommended as a single test, but its advantages when done in conjunction with one of the other tests recommended by the Medical Research Council were obvious, and its use in this way tended to prevent mistakes. The differences shown in these analyses are in some instances, no doubt, due to errors in technique, but, as many of these differences had been confirmed by two, three, or four separate determinations, some of them were due to inherent differences in the tests.

Dr. Houston then gave an account of Prof. Dreyer's new flocculation test for the diagnosis of syphilis, and explained that it entailed only one test substance —the antigen which could be made of standard opacity by the dropping method described in Prof. Dreyer's paper. This test presented the enormous advantage of being a quantitative one. It was shown that where the readings by the other tests were different—either due to want of balance in the hæmolytic system or due to inherent differences in the tests—the Dreyer reading was low: thus the differences could be largely eliminated or assessed at their proper value. The + + Wassermann covered a very large range of reaction, from 3 or 4 units to 2000 units. An analysis was given of 300 cases in which the blood was tested by (1) Harrison's method, (2) Fleming's method, and (3) Dreyer's method. Real differences occurred in about 6 per cent. of this series of determinations, and in several instances it was difficult to say which test gave the correct finding, but on the whole the evidence was in favour of Dreyer's method. A decision as to which test gave the more correct finding required the study of a larger series of comparative tests, but it was thought likely that some form of flocculation test would eventually supplant the Wassermann technique with its inconstant hæmolytic system.

Annual Dinner.

The annual dinner of the Society was held in the Medical Institute, Belfast, on Dec. 8th. In the absence through indisposition of Dr. Robert Hall, the President, the chair was occupied by Mr. J. A. Craig, a vice-president. One hundred members and guests were present. Prof. R. J. Johnstone proposed the toast of the Prosperity of the City of Belfast, which was responded to by the Lord Mayor, Sir W. J. Coates. The Chairman gave the toast of the Houses of Parliament of Northern Ireland, which was responded to by the Marquis of Dufferin and Ava and the Hon. H. O'Neill. Prof. J. A. Lindsay gave the toast of the Legal Profession, which was responded to by the Lord Chief Justice, Mr. Justice Andrews, and the Recorder of Belfast. Dr. T. Houston, ex-President of the Society, gave the toast of the President, and coupled with his name that of the Chairman. Mr. Craig replied. The Chairman congratulated Dr. W. W. D. Thomson, the secretary of the Society, on his recovery from his recent serious illness. The dinner was one of the most successful and enjoyable in the history of the Society.

THE LATE DR. JAMES JOHNSTON.—Dr. Johnston, who qualified L.R.C.P. Edin. in 1884 and graduated in the same year M.D., C.M. at the University of Toronto, died on Nov. 25th in Jamaica, where he had been a missionary for 47 years. He was the author of a Central African study entitled "Reality versus Romance," and had written a guide for tourists in Jamaica.

THE LANCET.

LONDON: SATURDAY, DECEMBER 17, 1921.

Municipal Health Services.

As may be seen from a brief report in another column, medical practitioners in Willesden have now met the executive committees of local associations of ratepayers in a discussion of the health policy of the Urban District Council as set forth in the medical officer's forty-fifth annual health report. The memorandum,[1] drawn up by a special committee of the B.M.A., Willesden division, criticising the Council's health policy, was before this meeting on Dec. 7th and formed the basis of discussion. No formal resolution was passed, but the tenor of opinion was in harmony with Resolution 7 passed on Nov. 15th—viz., "The division calls the attention of the Willesden ratepayers to the health policy of their council, which threatens to destroy the freedom not only of the medical profession but of every individual in the community, and urges the ratepayers strenuously to oppose at the next municipal election those who are responsible for a policy which the medical profession of Willesden considers to be a serious and increasing menace to the public health." Then the ratepayers invited the doctors to coöperate in selecting municipal candidates to oppose the existing health policy. Two medical men present at the meeting were willing to become such candidates. It was pointed out by one of the medical speakers that doctors unable to serve on the Council would be ready with their advice if coöpted on the Health Committee. A local advisory medical council was suggested by another speaker as the right agency for putting health matters in the urban district upon right lines. Finally, the ratepayers expressed their appreciation of the opportunity afforded to them of conferring on local health problems with members of the medical profession, and they expressed a wish that such opportunities should be encouraged.

In Willesden it is the municipal hospital around which has centred the hottest part of the controversy. To this hospital the private practitioner has no access, and it would therefore be fair to let the Willesden health service stand or fall by the success of this nearly unique experiment, provided that those who run it have had the materials to hand for making it the success at which they were striving. A speaker at last week's meeting spoke of this hospital as a disgrace. But, as may be seen from the medical superintendent's annual statement, which appears on p. 85 of the health report, he had there to complain, in the same terms as a year ago, of a shortage of beds, of an inadequate nursing staff, and of insufficient medical help. In the year 1920, with 199 available beds, 2608 patients were dealt with by a staff of 51 nurses and two medical officers; the sickness-rate among the nurses was high, and at no time was there a clean bill of health among them; the resident medical officers were on duty seven days a week, with no break from year end to year end save for annual leave. In this hospital during the year 1920 the following fever cases were admitted: Scarlet 445, diphtheria 605, other infections 63, including typhoid 8, infantile diarrhœa 16, and erysipelas 8. Pressure upon the maternity beds was continuous; 470 cases were dealt with, as compared with 239 in the previous year; complications included placenta prævia 6, contracted pelvis 5, eclampsia 2, pelvic inflammation 5, sapræmia and septicæmia 10. Gynæcological cases numbered 81, including incomplete abortion 19, and acute mastitis 8. 524 anæsthetics were administered to operation cases, amongst them tonsillotomy 340, phimosis 44, abscess and appendicectomy each 19, for hernias of various forms 16. This amount of work is claimed to be equal to that ordinarily done at a hospital double the size, and in the view of the medical superintendent it implies an enormous strain on the limited resources. It was alleged at last week's meeting that most of the non-infectious cases might have been treated at home. There are 72 beds at the Willesden Hospital, and 330 occupied beds at the infirmary in Acton-lane. London hospitals, it was said at the meeting, were available for Willesden patients. The matter of hospital accommodation in Willesden is certainly one for the ratepayers to look into.

The health policy of the Willesden Council raises a profound question of principle which demands broad and statesmanlike handling. Preventive and curative medicine are at bottom one and indivisible. There may appear to be one glory of the sun and one glory of the moon, and the larger luminary sometimes has its radiance completely obscured by the dark side of the smaller, but the source of light is the same. It is becoming a truism to insist that the general practitioner is now and always will be the chief agent of preventive medicine. The preventist becomes all too readily a mere cataloguer of morbid conditions in relation to certain lines of civic conduct. The public vaccinator is the embodiment of business in the prevention of small-pox, but what service would he be to the community should the influence of the practitioner in the home so wane that parents lost faith in vaccination and refused to submit their children to it. Inspection of children of school age becomes a weariness to the flesh of medical men and women engaged in it, unless combined with some kind of treatment which allows them to see the fruition of their labours. In this respect, no doubt inevitably, the medical staff of the London County Council is sadly handicapped. The remedy, which is only the concentrated wisdom of the Dawson Report, is to abolish as far as possible the cleavage between preventive and curative work. It is impossible to prevent evils which you do not foresee. A practical knowledge of ill-health is the only way to acquire a real insight into the conditions of health, and the search for the earliest manifestations of disease is the chief stand-by of preventive medicine. Like goodness or purity, health is not an attainable ideal, and the immunity which appears to last is that produced by repeated small contacts with morbid influences. Innocence has little chance in an epidemic. As a nation we are proud of our administrative flexibility, and there is much to be said for each area solving its own public health problems. Willesden and Bradford have both had visions of a municipal health service without the help of the general practitioner; and indeed the branches of practice touched by municipal clinics were almost untouched by clinical medicine. Curative work on an individualistic basis had left out to a remarkable extent any effective supervision of maternity, of the nursling, and of the pre-school child. The gauntlet has now been thrown down. The Willesden division of the B.M.A. has inquired of the parent body how it is that members of the Association can be found to

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[1] THE LANCET, Nov. 26th, p. 1124.

An excellent chapter on the medico-legal aspects of venereal disease is contributed by Dr. F. G. Crookshank. This should be carefully read by all medical officers in charge of V.D. clinics, in order that they may have knowledge of some of the pitfalls that surround them in their work.

Though the volume contains more pages it is less bulky than the first edition. It is clearly printed on good paper and copiously illustrated. Most of the pictures are excellent, but some of the coloured plates are too vivid to be true. Altogether the volume is deserving of high praise. It is the conscientious and sometimes brilliant work of one who has done more than any other in this country, perhaps in this generation, to systematise on a rational basis the treatment of the venereal diseases.

SURGERY.

A Pocket Surgery. By DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D., Ch.M., F.R.C.S. Edin. and Eng. London: Edward Arnold and Co. 1921. Pp. 348. 10*s.* 6*d.*

THE value of a pocket manual on a large subject is always doubtful. It is impossible in a short compass to give a comprehensive description of the whole of surgery. There is hardly a condition in which it is possible to state dogmatically that one disease has one treatment, and in a text-book of this size it is impossible to discuss adequately alternative treatment. The student is therefore very prone to gain erroneous ideas, probably from a misinterpretation of the author's statements. The only possible way to condense such a subject as surgery is to reduce the matter as far as possible to tabular form.

The difficulties of condensation are shown by a few examples taken at random from this text-book. In the treatment of exophthalmic goitre the student is rightly told that surgical treatment is more and more replacing medical treatment; but the impression given—that the correct treatment is to remove both lateral lobes in every case—is surely not intended. In the discussion of the diagnosis of gastric surgery no mention whatever is made of the importance of the clinical history. The methods of examination are briefly given, and percussion and gastroscopy, which might be safely omitted in most cases, stand out with undue importance as diagnostic measures. We are told also that the symptoms of acute and chronic gastric ulcer are much the same, but are more prolonged in the chronic form, and that hæmorrhage in both forms may be excessive, but in the acute form is rarely fatal; as a matter of actual fact, more deaths from hæmatemesis are due to acute than to chronic ulcers. As to the treatment of the chronic variety, the advice is given to perform a gastro-enterostomy, to free adhesions, and to examine the appendix; this form of treatment sounds simple, but will not be satisfactory in all cases. In discussing the symptoms of a perforated gastric ulcer Mr. Fitzwilliams states that it is not always easy to distinguish a ruptured ulcer from a ruptured ectopic pregnancy; no attention is, however, directed to the more difficult diagnosis from a perforated appendix or an acute pancreatitis. The acute ulcer is mentioned among the causes of dilatation of the stomach, and in the paragraph devoted to treatment it is suggested that if daily lavage of the stomach does not bring about a cure a gastro-jejunostomy or gastro-duodenostomy should be performed. Mr. Fitzwilliams states that this treatment has almost entirely superseded pyloroplasty; possibly this is so, but it must be remembered that it is a form of treatment which in the acute variety of dilatation has nearly 100 per cent. mortality. The list of methods of examination for a carcinoma of the stomach is headed by distension of the viscus with gas, surely most dangerous advice.

These faults must be regarded not as peculiar to Mr. Fitzwilliams's text-book, but as likely to exist in any form of pocket text-book. Under certain circumstances the advice which can be given in a small 'pass may be correct, but it may prove very dangerous. It is therefore difficult to see quite what purpose such a book serves. No student can be advised to read it alone: it could only be recommended to one who has no time or inclination to read larger text-books, when it would assist him to take careful notes of his own cases.

Diagnostische und Therapeutische Irrtümer und deren Verhütung. Chirurgie der Wirbelsäule, des Rückenmarks, der Bauchdecken, und des Beckens. Von Geh. Med.-Rat Prof. G. LEDDERHOSE. Leipzig: Georg Thieme. 1921. With 20 diagrams. Pp. 160. M.45.

THIS little book deals with diagnostic and therapeutic mistakes likely to be made in connexion with diseases of the vertebral column, spinal cord, abdominal wall, and pelvis. It is really a small manual of diagnosis and treatment, and forms one volume in a large series of books which have been or are to be issued. The subjects dealt with in this book are a somewhat strange mixture, but the substance appears to be sound surgical doctrine.

In the differential diagnosis of tumours of the abdominal wall we could find no reference to phantom-tumour, which may certainly cause serious mistakes in diagnosis. In the section dealing with pelvic abscess no specific mention is made of diverticulitis, which is worthy of some reference. For the rest the book gives a clear account of the many pitfalls in diagnosis and treatment. The diagrams are not very good.

THE ENGLISH PRISON SYSTEM.

By Sir EVELYN RUGGLES-BRISE, K.C.B., Chairman of the Prison Commission for England and Wales; President of the International Prison Commission. London: Macmillan and Co., Ltd. 1921. Pp. 275. 7*s.* 6*d.*

IN 1910 the International Prison Congress at Washington accepted the invitation of the British Government to hold the next quinquennial congress in London; for the foreign visitors to this 1915 congress Sir Evelyn Ruggles-Brise prepared a manual of the history and leading features of the English prison system. The war prevented the realisation of all the plans, and although the greater part of this volume was prepared in 1915, it was not published till six years later, the statistics being brought up to date in most ways. The manual forms a complete and fascinating account of all the important changes that have taken place in our prison system during the last 100 years and contains interesting references to notable innovations during earlier periods in English history. It is a book which should be in the hands of every student of criminology, while several chapters, such, for example, as that on the History of Penal Servitude would interest a far wider circle.

Sir Evelyn Ruggles-Brise gives not merely a record of drastic changes with far-reaching effects, but a philosophical discussion of each problem involved. Had the manual appeared in 1915, the writer might have been hailed as a great criminologist, as well as a successful, broad-minded, and humane reformer and adminstrator. But the war drove home the lesson that conduct is essentially a reaction of mental life, and can only be understood by exploring the mind of the individual. This work contains no reference to that *magnum opus* of modern criminology, "The Individual Delinquent," by Dr. William Healy, first published in 1914; it does not go beyond the investigations of the late Dr. Charles Goring, and it author, like Goring, belongs to the rationalist school. True the manual does not profess to be a text-book of criminology, and, moreover, we may read between the lines that Sir Evelyn Ruggles-Brise is appreciative of the new ideas. He has obviously such a receptive and sympathetic mind that if the new psychologists had been able to put their case fairly before him he would soon have appraised its essential features. Had this been effected, and had he remained at the post he has now relinquished, he would have become a wise and inspiring leader. He is never deterred unanimity of this report and upon the Act of Parliament which has embodied so promptly the recommendations made. That promptitude, paradoxically, has been due to a certain lack of interest which the main body of the House of Commons showed in the Bill. The Government introduced and supported it, Parliament acquiesced, and it is now for the Dental Board and the dental profession to make the science and profession of dentistry, in Mr. Acland's words, "an effective instrument for promoting the health and efficiency of the nation."

Dental disease is as old as the history of man, but to tell the story of official dentistry in this country necessitates going back but 66 years to find the beginnings of two movements which have now reached a new and interesting stage of development. The stages have been as follows: To obtain from the medical profession recognition of the status of dentists; to secure registration and some element of self-government; to win from the public recognition of the status so granted, and of the fact that those who had attained to it were fully qualified practitioners. The Royal College of Surgeons of England was first moved in August, 1855, to appoint a board of examiners to examine candidates for "such a distinction as might well be called 'Licentiate in Dentistry,'" and in the following year a petition was presented to the same College asking it to institute an examination in the department of dental surgery, "as in midwifery." This petition was signed by 18 gentlemen, who later at a private meeting formed themselves into the Odontological Society. Others at a public meeting on the following day not desiring submission to, or dependence upon, the Royal College of Surgeons, formed the College of Dentists of England. Thus were instituted two bodies which contended together and competed as rivals until 1863, when they eliminated controversy and rivalry by a wise fusion. That there had been a deeply cut line dividing them may best be appreciated from the words of Mr. Tomes, quoted by the chairman of the Dental Board, congratulating both parties on their union and the Odontological Society on the liberal spirit with which they were amalgamating with men who had been in the habit of advertising, inducing them to give up that unprofessional practice, "to the general advantage of the profession." Meanwhile, the Medical Act of 1858 had set up the General Medical Council and had recognised and confirmed the power of the Royal College of Surgeons to confer qualification upon dentists. The charter of the Odontological Society was granted in the following year, and in November, 1871, the Council of the Royal College assigned to the certificate of the society the satisfactory and authoritative form of a diploma bearing the arms of the College and signed by its president. Gradually, however, the membership of the Odontological Society tended towards restriction to those holding diplomas, and the number of those not taking diplomas increased, necessitating a more satisfactory settlement of the anomalies of the dentist's profession which was arrived at in the Dentists Act of 1878. This followed the lines suggested by the Medical Act of 1858, and entrusted the compilation and custody of the Register to the General Medical Council, with duties attendant upon its maintenance to be carried out by a committee of five. Difficulties which then arose were freely ascribed to the fact that, strange as it may seem, the General Medical Council had not been consulted as to the framing of the Bill. Much confusion in the forming and maintaining of the Register indeed arose which appeared to the first Registrar almost insurmountable. Admissions of the undesirable from the point of view of effective dental practice were inevitable, and legal decisions construing the sections of the Act did not make its obscurities clearer for practical purposes. "As a result of these decisions," said Mr. Acland, "evils developed which gradually led to that third, final, and satisfactory solution of the troubles of the profession" which the Dental Board has now been called upon to administer.

The new Board initiates its work, as the medical profession will agree, in favourable circumstances. It is assured the goodwill and coöperation of the General Medical Council. It is composed of members representative of the interests which are to be served, skilled in administration and resolute to carry out a task the importance of which they recognise. Its chairman, a level-headed, experienced, and efficient administrator has defined the task, or the aim to which energies will be directed under his guidance, as twofold—"to guard the public from being practised upon by incompetent persons, and to see to it that there are a sufficient number of persons who will bring the most efficient dental treatment and advice within the reach of all who need it." This will not be an easy task to fulfil. It is not to be expected that ideal conditions of dentistry for crowded urban centres and for sparsely populated rural districts alike will be attainable in the near future or perhaps ever. Ideal conditions of life for all may indicate the final point towards which politicians, economists, medical men, and all others who have the welfare of their fellows at heart strive to shape their course, but, before attainment is arrived at, new ideals arise in a world in which science is in a perpetual state of forward movement. The institution of the Dental Board is a step forward in response to the dictates of science, and the effect will be of very great value in the promotion of the public health.

SIR ARTHUR PEARSON.

Sir Arthur Pearson's death in his 56th year from an unfortunate accident removes a great figure, for his name will go down as one who taught the blind not to consider blindness as an affliction but as a handicap to be wiped out by special training. His book, reissued lately under the title of The Conquest of Blindness, is striking evidence of what this indomitable spirit was able not only to visualise but to achieve. The Blinded Soldiers' and Sailors' Hostel at St. Dunstan's was one of the most successful of all the institutions for the relief of war disability. The Fresh Air Fund, founded in connexion with *Pearson's Weekly*, was the means of giving numberless poor children a recreative country holiday. His only son and heir, Mr. Neville A. Pearson, writes that his father's deepest concern was that the public should regard his work for the blind not merely as a personal effort of his own, but as a national trust placed in his hands by the people of the Empire. Continued support of St. Dunstan's and its associated hostels will be a direct monument to an incredibly busy and useful life, but his family have given a broader direction than this to any efforts that may be made in association with Pearson's honoured name. Their appeal for help for the blind is in no way confined to institutions which had direct origin in Sir Arthur Pearson's personal activities. All that can be done for the blind to lessen their disabilities in the course of life would have had Pearson's support, and any help rendered to the blind, and proffered in his memory, will be an act of appropriate recognition of a splendid career.

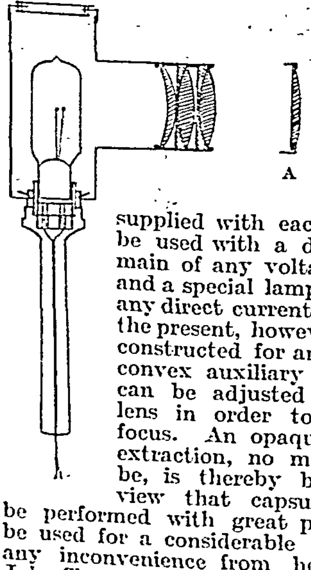
authors set forth their method in detail, and they find that it is possible to measure the oxygen pressure in blood drawn directly from a vessel in man to within about 2 mm. on the average, and they confirm experimentally the dissociation curves for venous blood calculated by Douglas, Haldane, and others, as well as the observations of Meakins and Davies on the great range of unsaturation of blood from the basilar vein when the arm is exposed to widely differing temperatures. The experiments indicate a fifty-fold alteration in the volume of blood traversing the skin of the arm per minute.—The Effects of Adrenalin upon Respiration, by Ff. Roberts. It has long been known that adrenalin, when injected into an animal, induces a profound change in respiration. The author, after noting the results of previous observers—from 1895 onwards—describes his own observations on anæsthetised rabbits and cats. The Parke-Davis 0·1 per cent. solution was used—the dose commonly employed was 1 c.cm. of 0·01 per cent. adrenalin, sometimes 1 c.cm. of 0·005 per cent. or of 0·1 per cent. The tube connecting the artery and manometer for the blood pressure experiments was filled with pure Ringer's solution. Adrenalin in large doses, besides causing diminution and temporary arrest of respiration, causes alteration in rate, and may cause Cheyne-Stokes respiration, and the diminution and arrest occur when there is no change in blood pressure and are mainly central in origin. The respiratory effects are caused by sudden anæmia of the respiratory centre due to vaso-constriction. The author found no evidence that adrenalin causes nervous impulses from the periphery.—Other communications include The Action of Carbon Dioxide on Salt and Water Distribution in Blood, by Genko Mukai; The Measurement of the Oxygen Content of the Mixed Venous Blood, and of the Volume of Blood Circulating per Minute, by J. Barcroft, F. J. W. Roughton, and R. Shoji; Variations in Alveolar Carbon Dioxide Pressure in Relation to Meals, by E. C. Dodds and T. Izod Bennett; Studies on the Physiology of Capillaries, by August Krogh; On the Path of Conduction between Auricle and Ventricle in the Amphibian and Reptilian Heart, by D. T. Barry; The Electrical Response of Denervated Muscle, by E. D. Adrian; The Nature of the Isometric Twitch, by W. Hartree and A. V. Hill; The Relation of Pulse Pressure to the Output of the Heart (as investigated on the heart-lung preparation), by Ruth Skelton; and Exosmosis from Animal Cells, by J. Gray.

IN the AMERICAN JOURNAL OF OPHTHALMOLOGY for October G. F. Garraghan writes of a case of papilloma of the cornea in a man of 70. A tumour grew from the sclero-corneal limbus and attained such size as to overlap more than half the cornea. It was excised and, histologically, showed the structure of a papilloma. It subsequently recurred more than once. These tumours are rare; they occasionally become malignant.—F. Yano describes a typical circinate retinitis in a boy of 13. It is only in old people that this disease is usually observed. The vision was down to 0 in one eye and 0·1 in the other. The ring of white exudation enclosed both macula and disc. At the macula itself in each eye was a white plaque of exudation.—A. C. Macleish describes keratitis caused by excessive sugar ingestion. Over-indulgence in sweets by children is said to be responsible for many cases of conjunctivitis, blepharitis, phlyctenules, and facial eruptions. In the case described there was a distinct interstitial keratitis in a child of 3. There was a negative Wassermann reaction. It was found that the child ate a large quantity of sugar daily; when this was stopped the trouble disappeared, recurring when the interdict against sweets was removed.—Oscar Dodd reports a case of repeated operations for glaucoma. After a recurrence following upon a Lagrange operation, a sclero-corneal trephining operation was performed. This was followed by hypotony, iritis, and cataract. After extraction of the cataract the tension again went up and a second trephining operation was formed. The trephine hole got blocked up with thickened membrane, which was subsequently removed. There was a family history of glaucoma in this case, but the second eye did well after a single operation.—Ellice M. Alger describes three cases of word-blindness. One of these cases was associated with an attack of right-sided hemiplegia in a man of 59 with a positive Wassermann reaction, leaving a right homonymous hemianopsia, with a total disability to read letters or words though visual acuity was good, numbers being read normally. This disability gradually disappeared, although the hemianopsia remained. The other two cases were congenital. Visual memories seem to be stored in the region of the left angular gyrus in right-handed people, and the theory of acquired word-blindness is that the connexion between the visual centre in the occipital lobe and the angular gyrus is somehow interrupted. In the case of congenital word-blindness the defect is probably in the development of the cortical centre itself and may be of varying severity. The importance of recognising the condition lies in being able to disabuse the minds of the parents or teachers who often take the inability to read as stupidity, while all the time the mental condition of the child may be normal in all other respects. Improvement may be effected by special methods of teaching.—Eugene M. Blake in a paper entitled Ocular Changes in Infantile Scurvy states that exophthalmos due to hæmorrhage into the orbit is a not infrequent symptom of the infantile scurvy, and was first described by Sir Thomas Barlow. It may even be the first symptom, and the child may first be brought to see the oculist. When the correct diagnosis was established in this case the diet was changed from artificial foods to fresh cow's milk and orange-juice, and the child quickly recovered under antiscorbutic measures.—The notes in this number include illustrations of a foreign body spud illuminator by W. H. Lowell and a new test-card by J. M. Thorington.

New Inventions.

AN OPERATING HAND-LAMP FOR OPHTHALMIC WORK.

FOR several months I have been using a hand-lamp in which the source of illumination is the "pointolite" electric lamp of the Ediswan Co., and as I have been so satisfied with it in all operations on the eye, I venture to bring it to the notice of ophthalmic surgeons. The lamp is of 30 candle-power and is enclosed in a metal case with an aperture on one side in which a system of achromatic lenses is so fixed that the emergent rays are parallel. By this means the field of operation is evenly illuminated by a disc of light free from all shadows. A resistance is supplied with each lamp, whereby it can be used with a direct current from the main of any voltage between 100 and 250, and a special lamp can be got to work on any direct current down to 32 volts. Up to the present, however, a lamp has not been constructed for an alternating current. A convex auxiliary lens (A) of 3 dioptres can be adjusted in front of the fixed lens in order to bring the light to a focus. An opaque capsule after cataract extraction, no matter how thin it may be, is thereby brought so clearly into view that capsulotomy operations can be performed with great precision. The lamp can be used for a considerable length of time without any inconvenience from heating. It is made by John Trotter, Ltd., Gordon-street, Glasgow.



Glasgow. A. MAITLAND RAMSAY, M.D. Glasg.

its consideration. The particular point which he has investigated is whether the relation of the volume of the trunk to the length of the limbs can be correlated with the intelligence, as ascertained by one of the several systems now in profuse use in America. Those with a relatively small trunk and long limbs are, after Viola's classification, microsplanchnics, while those with a trunk excessively developed in comparison with the arms and legs are macrosplanchnics. Viola held that the microsplanchnic, departing as he does as far as possible from the infantile habit of body, may be regarded as hyperevolute, and for this and other reasons of similar validity the presumption arises that intelligent individuals are more likely to be found in this group than among the macrosplanchnics, which tend to maintain the proportions of infancy. The microsplanchnic is to be looked upon also as having a relatively more active thyroid, owing to the connexion between the thyroid and growth in length. Generally speaking, therefore, Dr. Naccarati concludes that macrosplanchnics excel in instinctive reactions such as eating and sleeping, which satisfy the somatic self, and in capacity for prolonged steady physical and mental work, while microsplanchnics are more intelligent in the ordinary sense, have greater intuition and mental agility, are more easily exhausted, and excel in connexion with the psychic self. Whether the rather meagre data presented by the author adequately confirm these interesting propositions is questionable. On 75 subjects the coefficient of correlation between his "morphologic index" (a measure of microsplanchnicity) and intelligence is only +0·36; on the ground that the correlation of height-weight ratio with morphologic index is +0·7, he uses the two measures alternatively; in 221 subjects the correlation of intelligence with height-weight ratio is +0·23—figures which would hardly justify examinations by anthropometry. We hope, therefore, that it will be possible for some determined macrosplanchnic to verify, as so often happens, the microsplanchnic's intuition. If his intelligence has led him rightly, it suggests that the common criterion of beauty has a more spiritual basis than might be suspected.

THE MENTAL EXPERT IN THE MAGISTRATE'S COURT.

THE need for the modification of certain social demands to meet certain individual cases and the provision of more sympathetic treatment for those who find it difficult to conform to laws made for the common good has been prophesied by Samuel Butler, Brieux, and John Galsworthy. For even where the writings of these idealists are designed to show abuses and anomalies in our system their widespread popularity is at least an indication of the dawn of a wider view. Dr. J. T. Dunston returns from a recent visit to America with the impression that there it is the individual who really matters, not the crime, and gave to the Medico-Psychological Association, at a meeting which we report on p. 1275, a brief account of the part now played by the psychologist in transatlantic law-courts. To the same meeting Dr. M. Hamblin Smith, medical officer at Birmingham prison, offered some pregnant suggestions arising out of his experience of the working of a scheme initiated in Birmingham in 1919. This scheme for dealing with accused persons brought before the magistrates in order to secure, if possible, treatment in accordance with their mental condition was outlined in THE LANCET [1] a year ago. A report on the continuation of this work presented to the justices of Birmingham by their General Purposes Committee, defines the relative functions of Dr. Hamblin Smith and Dr. W. A. Potts, whose lecture on the Relation of Crime and Delinquency to Heredity, Environment, and Disease appeared in our columns recently.[2] According to the report, the detention of the offender on remand for a period, which has been usually of a week's duration, has enabled the medical officer to give helpful information to the court. In cases where it has not been necessary or desirable to remand the offender to prison, the case has been adjourned for medical examination, a procedure with special convenience in the case of children. Dr. Potts expresses regret that more cases should not be referred to him, and suggests that reference should not be confined to occasions where it appears to be necessary. Dr. Hamblin Smith criticises the objection raised by some persons to the remanding of cases which might be admitted to bail. He explains that the examination into the mental condition of offenders is necessary, and can best be made in an institution where they can be under close observation. Those examined by him are treated in the remand department of the prison under what he describes as hospital conditions, the idea of prison being kept out of sight. It is to be hoped that the Birmingham experiment will be tried before long, on a larger scale and in other cities, under the direct authority of the Government.

RELATION OF THE SPECIES OF RAT-FLEAS TO SPREAD OF PLAGUE.

THOSE who are engaged in its study find the epidemiology of plague a most absorbing problem in view of the many variable factors which come into play. An investigation into the conditions commonly needed for an epidemic of human plague was carried out in a very thorough manner by the Plague Commission in the early years of this century. Since then research work, although greatly retarded by the war, has been going on steadily throughout the world wherever plague has manifested itself. We referred recently to the work of Kunhardt and Chitre, and have published an account of the outbreaks in some rural districts of South Africa. Attention is now drawn to the work of Major F. W. Cragg, I.M.S., who has further advanced our knowledge by a careful scrutiny of the species of fleas that live on the rats in various parts of India. In the October number of the *Indian Journal of Medical Research* he has contributed some further preliminary observations in which he discusses the geographical distribution of the Indian rat-fleas as a factor in the epidemiology of plague. The Plague Commission workers recognised that there were several varieties of fleas on rodents in the East and they were aware that *Xenopsylla cheopis* was the most efficient carrier of the virus. Major Cragg goes into the matter much more thoroughly and shows that there are two other species met with—namely, *X. astia* and *X. brasiliensis*, and that the capacity of each of these three species to spread plague is not the same. The two most widely distributed species in India, cheopis and astia, vary greatly in this respect, the former being an efficient carrier of the infection, while the latter has little capacity to act as a vector of plague. Major Cragg, therefore, has made attempts—as yet, it is true, on no very large scale—to ascertain the species of rat-flea that predominates in heavily-infected areas, as also in districts which have escaped the infection or suffered only slightly from it during the present pandemic.

In response to his requests, Major Cragg has received for examination 107 separate collections of local rat-fleas from various provinces, including the Punjab, the Presidencies of Bombay and Madras, Burma, and Central India. These collections comprised 17,358 rat-fleas, of which 9330, or 53·9 per cent., were *X. cheopis*; 6241, or 36 per cent., were *X. astia*; and 1334, or 7·7 per cent., were *X. brasiliensis*. In addition there were 307 specimens of *Ceratophyllus* and 67 *Leptopsylla musculi*. The Punjab contributed 5088 of the rat-fleas, Bombay Presidency 5183, Madras Presidency 4491, Burma 1697, and Central India 280. The majority of the rat-fleas from the Punjab and Bombay were *X. cheopis*; from Madras and Burma *X. astia*, and from Central India *X. brasiliensis*. Roughly, 90 per cent. of the fleas sent for examination belonged to the two species cheopis and astia. Major Cragg frankly admits that his observations so far accept positions in such a health service. The current issue of *Public Health* points out to the Association that if it embarks on a campaign against this service it shows its intention to ally itself with any and every reactionary force in order to oppose the natural development of public medical services. We believe that the solution in Willesden, as in Bradford, must needs come—neither confounding the persons nor dividing the substance—along the lines of a local medical advisory council.

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[1] THE LANCET, Nov. 13th, 1920, p. 1019.
[2] THE LANCET, Nov. 26th, 1921, p. 1095.

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Adenoids.

Chronic hypertrophy of the nasopharyngeal tonsil, the condition commonly known as "adenoids," is to be found all over the surface of the globe, but it is more frequent in damp temperate climates, and is perhaps commoner in England than in any other part of the world. Here it is amongst the commonest diseases of childhood; it produces disabilities of far-reaching importance and, although the hypertrophy usually disappears about puberty, much of the damage it has done remains throughout life, and constitutes a mass of disability of serious import to the State. The mechanical obstruction to nasal breathing produces deformities of the face and chest which permanently impair the normal respiration; infection spreads from the pharynx to neighbouring parts, causes cervical adenitis, and is responsible for a large amount of the catarrhal and suppurative disease of the ears which disables a multitude of our population; infection also reaches the gastro-intestinal tract, and the relationship of adenoids to such diseases as rickets and appendicitis has been the subject of inquiry in various quarters. Adenoid children are often dull and apathetic, though the reason of this peculiar "aprosexia" has not been satisfactorily explained. In addition to all this, various neuroses are related to the presence of adenoids; they form a long list, and include laryngeal spasm, asthma, stammering, habit spasms, enuresis, and even epilepsy.

The enumeration of the ill-effects of adenoids makes such a formidable array that we must guard against the error of supposing that all the affections in the long list are always due to this cause; particularly is this the case among the so-called "reflex" effects, for no one supposes that epilepsy or enuresis, for instance, are only caused by adenoids, or that there is no other factor in their production; not all children with even large adenoids are dull and backward, nor do deformities of the jaws and palate necessarily result. On the other hand, it should be remembered that adenoids in a roomy nasopharynx may cause no nasal obstruction, and yet may produce inflammation of the ears. The effects of adenoids, as well as the final results of treatment, come more constantly under the observation of the general practitioner than of the specialist. A paper by Dr. H. Merrall appeared in The Lancet of Nov. 12th which dealt with some of the results he had observed. Naturally all his conclusions will not find universal acceptance, and some have indeed stimulated discussion. Among these we note his statements that enlargement of the palatine tonsils is always secondary to enlargement of the pharyngeal tonsil, and that flat-foot is an almost invariable accompaniment of adenoids; while the success of the adenoid operation in curing such affections as epilepsy, chorea, and nocturnal enuresis, and the inter-relationship of adenoids and rickets, remain as fields of observation and research. We have been informed by Dr. J. W. Kynaston that a Council has now been formed representing the belief among certain qualified medical practitioners that "operations for nasal obstruction are being altogether overdone." This Council for the Promotion of Oro-Nasal Hygiene has a secretary who may be communicated with at 26, Welbeck-street, London, W. Now the presence of adenoids is one of the principal causes of nasal obstruction. With such a category of possible ills due to the presence of adenoids as that just set out, those who criticise the clinical actions of their colleagues in making a practice of operating will require a good deal of positive evidence before proving good their case. The positive evidence, to be really useful, would mean the records of a very large number of cases where the presence of adenoids has been undoubted at a previous period, and where non-removal has led to no ill consequences.

We publish in another column a paper by Mr. David Ranken, nose, throat, and ear specialist to the R.A.F. Medical Service, in which are set out problems presented by the international medical requirements for air navigation with special reference to nose, throat, and ear. *It is the common opinion* of those who sit upon medical boards for the examination of candidates for aviation that a pilot should be organically sound, especially in regard to the nose, throat, and ear, but the notes of actual examination of candidates given by Mr. Ranken show that the commonly accepted regulation can be set aside in particular cases, and that there is an admirable absence of pedantry in the verdicts upon those who present the results of old nose or throat and ear trouble. Of adenoids it is said that the candidate in whom they have been discovered is not rejected for that alone, nor is operation insisted upon where mouth-breathing constitutes apparently no disability. The assessment of the symptoms determines the results of the examination. Medical boards which examine candidates for aviation have, therefore, before them the material upon which some collective and considered judgment could be given as to the place which operation plays in the treatment of adenoids. From these boards particular information might be obtained in time upon the following points: the number of candidates who, having adenoids, can still rank as practically sound; the number whose remaining disabilities are due to neglected adenoids; the number with adenoids who are rejected for deafness; and the number able to pass the hearing tests, who have been operated upon already. If figures like these could be collected in some mass, the results would be very useful to the medical profession.

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The Dental Board.

On Dec. 7th was opened the first session of the Dental Board of the United Kingdom, a title which in view of current political developments may have to be revised. The Board, which consists of appointed members has as its first duty to construct and assemble the machinery for carrying out the Dentists Act of 1921. The members will hold office for such term not exceeding three years from the commencement of the Act (July 28th, 1921) as the Privy Council may determine, and after the expiration of whatever period may thus be fixed a Board consisting of seven appointed and six elected members will carry on the work so initiated. In opening the session the chairman of the Board, The Right Hon. F. Dyke Acland, M.P., referred to the committee over which he had presided in 1918, a body appointed to report upon the extent and gravity of the evils attending dental practice. He is to be congratulated upon the conditions—appendicitis and peritonitis. But, perhaps, their more especial interest lies in their relationship to public health, as providing evidence of the contamination of water-supplies by fæcal matter. Any study of intestinal bacteria brings to light the varying nature of the flora of the normal intestine, which shows noteworthy changes from day to day and from season to season. Moreover, with the changes in the intestinal juices and variations in the rate of passage of the intestinal contents which are induced by disease, we must expect alterations in the fæcal flora, and probably this is why in dysentery we find organisms closely related to, but not identical with, the causal organism coming to the fore with such frequency. Correlated with other variations in the condition of life we should expect changes in the intestinal organisms, and it must be conceded that standards which apply to the average person in this country may not be accurate under changed conditions, and that it may be necessary to establish the normal by fresh research where new communities come under observation. An investigation of this sort has been undertaken by Dr. H. L. Duke, whose results we published last week, on the fæcal flora of whites and natives in Uganda. The data given are not sufficiently numerous to allow of permanent deductions, but they are sufficient to show that there is apparently a high incidence of the non-pathogenic non-lactose fermenters, whose exact identification is a matter of importance in view of their tendency to cause confusion with the virulent organisms so frequent in this class.

It is an interesting problem to what extent the presence of one property in an organism demands the presence of another, and vice versa. We see how often inability to ferment lactose is associated with the power of invading the human body. It is also a general law, observable not only in the class of organisms which we are now discussing, but also amongst the streptococci, that in a wide way there is an association between pathogenicity and inability to attack and ferment many of the carbohydrates. The idea is a very attractive one, that this represents a fundamental divergence of a common stock into two branches—the one mainly a saprophytic group and existing largely on carbohydrate foodstuffs; the other preferably parasitic, and sacrificing ability to utilise carbohydrates to gain the power of attacking protein substances, which is essential to a life of parasitism.

ESSENTIALS OF MENTAL HYGIENE.

THE Board of (Lunacy) Control has invited the chairmen of visiting committees and the medical superintendents of public mental hospitals to meet the members of the Board in conference at the Ministry of Health on Jan. 10th next, with the object of considering how to improve lunacy administration and the treatment of persons suffering from mental disease. The letter summoning this conference points out that although it is important to reduce expenditure it is essential, and in the end economical, to do everything practicable to prevent mental disease and to cure it when it occurs. The Board desires to exchange views with those engaged in the actual administration of mental disease. If this conference proves worthy of the circumstances which have led up to it, we are on the verge of better things in the field of psychiatry, and it is not without significance that this moment has been chosen for the foundation in France of a League of Mental Hygiene, whose first *Bulletin*[1] has just appeared. This League has set itself to attack the problem from all sides and its first endeavour is to provide treatment for uncertifiable and incipient cases of insanity. The authorities of l'Asile Clinique in Paris have already been persuaded to make provision for voluntary boarders, and several out-patient clinics have been established there and in other parts of France. Meanwhile, 10 commissions have been appointed to investigate and report on other aspects of mental hygiene. Among these, the problem of ætiology figures largely—the relation of toxic states to mental disease, the effects of alcoholism, drugs, and other external toxins, psychopathic predisposition, the effects of different occupations, and the choice of occupation in accordance with mentality. The problem of protecting society against the example and other dangers inherent in the mental perverts who make up the class of habitual criminals is to be considered, and that of the education of defective children. The adequate teaching of psychiatry, and the propagation of research are also aims which the League hopes to further. Finally, it has set out to educate the public. So much insanity is avoidable that a more general understanding of the causes going to produce it may have far-reaching effects. The League aims at affiliation with similar societies in other countries where the needs are very similar. The sufferer from early mental disease is the most neglected type of patient we know. At a general hospital the verdict "functional" is often equivalent to a plain statement that the patient must help himself. Existing staffs have neither the time nor the special ability required for the treatment of neuroses, drug habits, and functional mental disorders of types which are to be met every day. The Medico-Psychological Association of Great Britain and Ireland has done much to stir the public conscience in these matters; the French League of Mental Hygiene is a movement in the same direction whose progress will be followed with keen interest in this country.

THE VALUE OF PERIODIC HEALTH EXAMINATIONS.

AT present the medical practitioner refrains from paying a professional call on a family of patients until a sick member or his relatives regard an attack of illness as serious enough to demand medical care; if these necessary visits were supplemented by periodical medical examinations of each member of the families in the doctor's practice, much ill-health could doubtless be avoided. On this assumption the Life Extension Institute of New York has been organised. For a collective fee or an annual subscription examination of the insured persons is obtained at periodical intervals, the examination being conducted by specialists and a collective report on the patient being made. In a recent annotation we noted that the Metropolitan Life Insurance Company of New York had arranged for skilled nursing of many of their sick clients, and for visits by public health nurses at the expense of the company. The same enterprising company have been carrying through another interesting experiment, the results of which have recently been described by Dr. A. S. Knight, its medical director. This experiment, which has been on trial from the year 1914 onwards, consists in making available for the policy-holders of the company a periodical medical examination, which has been undertaken for the company by the Life Extension Institute. Leaflets were issued with every annual premium notice urging the examinations, telling the policy-holders that the results would be strictly confidential and, particularly, would *not* be revealed to the company, and that the insurance would not be affected in any manner. Under this scheme some 95,000 examinations have been made, or 7·8 per cent. of the estimated number of eligible requests for examination. Of this number over 5987 males were available for statistical study, having been examined during 1914 and 1915, a long enough interval to allow of comparisons. The results of this comparison are to some extent rendered liable to the errors of small numbers by the necessary division into smaller groups. The aggregate result appears to have been that in the year 1915–16 the cases examined by the Institute showed a mortality of 39 per cent. of the American Experience Table,

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[1] Bulletin de la Ligue d'Hygiène Mentale. Nos. 1–2. July to October, 1921. Edited by Dr. Genil-Perrin, 99 av. de la Bourdonnais, Paris VIIe.

Annotations.

"Ne quid nimis."

MEDICAL HISTORY OF THE WAR.

THE first volume of the Official Medical History of the War, which has now been completed by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., will shortly be available to the public. The series, of which Sir William Macpherson is editor-in-chief, is so planned as eventually to comprise 12 volumes: General History of the Medical Services (4 volumes); Diseases of the War and the Medical Aspect of Aviation and Gas Warfare (2 volumes); Surgery of the War (2 volumes); Hygiene of the War (2 volumes); Pathology and Medical Research during the War (1 volume); Medical Statistics and Epidemiology of the War (1 volume). The main object in preparing a consecutive history is to present in an accessible form the material buried in masses of war diaries, administrative files, official reports and other documents, before they have been stored away and their existence forgotten except by a few. The first volume is a record in narrative form of the medical services in the United Kingdom and in garrisons overseas, with an account of the medical services in the operations against the German colonies in West and South-West Africa and in Tsingtau. Including labour units provision had to be made at one time or another for the medical services of forces with a total strength of nearly 3,500,000 operating in every variety of country and climate. A total maximum of 637,746 hospital beds were maintained in the United Kingdom and in theatres of war, and some 770 medical units of all kinds were mobilised and despatched to expeditionary forces. In addition 75 hospital ships or ambulance transports were equipped and administered by medical services in the United Kingdom, and 2,655,025 sick and wounded were brought to its shores for further treatment and disposal between August, 1914, and August, 1920. The personnel for medical services numbered at the time of the Armistice 144.514 officers and other ranks, most of whom joined the Royal Army Medical Corps and were trained in the United Kingdom. The volume will shortly be available through any bookseller at the price of £1 1s.

ALASTRIM.

THE question of the identity of alastrim with small-pox must still be regarded as unsettled. A paper by Drs. W. G. MacCallum and L. M. Moody on an Outbreak of Alastrim in Jamaica during the Autumn of 1920, published in the *American Journal of Hygiene* for July, contains much interesting matter, but offers no definite conclusion on this main problem. The authors state that "there are very few recorded instances of the transportation of this disease to other climates," so that special interest attaches to the fact that, about the time that this outbreak was in progress in Jamaica we referred[1] to an outbreak of alastrim occurring in East Anglia. The Jamaica outbreak was on a much more extensive scale; in September, 1920, the number of cases in Kingston at any one time was variously estimated at 400 to 700, of which about 325 were isolated in a building outside the city. The disease appeared in Kingston in May, 1920, and is believed to have been imported from Cuba or possibly from South America, although the exact mode of introduction was not determined. In all 2333 cases were reported, the majority of them among the native population. The clinical history of the disease given by Drs. MacCallum and Moody corresponds fairly closely with that which came under observation in this country, the main points of divergence from typical small-pox consisting in the fact that although the initial symptoms might be severe, the disease was on the whole of extraordinarily mild character, the mortality-rate hardly exceeding 0·5 per cent. of those attacked. Backache was rarely severe, and the eruption, which in the vesicular stage was not umbilicated, came out in successive crops. On recovery no deep pitting or scarring of the skin remained. The marked odour so characteristic of small-pox was entirely absent.

The relation of vaccination to the disease is of special importance. Dr. Moody, who made a careful study of the question in 206 adults and 80 children, found evidence in the former class that the proportion of severe cases was higher among the non-vaccinated, but adds that since none of these people had been vaccinated more recently than 20 years ago, not much stress can be laid upon his figures. Among children he found a general tendency to a milder type of the disease especially marked in the vaccinated group, among whom not a single severe case occurred. He further states that he vaccinated 20 persons who had been in contact with the disease without one instance of subsequent infection; while in several households that came under observation unvaccinated members of the family contracted the disease while the vaccinated escaped. On the other hand, of 60 cases vaccinated at varying periods during convalescence, 45 "took" to some extent, although in no instance did they give a typical reaction as compared with normal controls. It was not found possible to transmit the disease experimentally to rabbits or calves. Perhaps the most interesting section of the report is concerned with the histological appearances of the skin in alastrim, as studied in sections of pocks excised in various stages of development. From the descriptions given, as well as from the excellent photographs, clinical and microscopical, with which this study is illustrated, it would seem that the stages met with in the evolution of the eruption follow more closely those observed in vaccinia than in small-pox. Comparison of the results of Dr. Moody's investigation with the illustrated monograph on the Histology of Vaccinia by Dr. S. M. Copeman and Dr. Mann, published as an appendix to the Report of the Medical Officer to the Local Government Board for 1902, confirms this impression. Although allied to both small-pox and vaccinia alastrim obviously cannot be regarded merely as a mild form of varioloid in which the eruption is likely to be sparse; a marked characteristic of alastrim is the occurrence of a more or less confluent eruption in a patient who in most instances is never seriously ill.

THE MORPHOLOGICAL ASPECT OF INTELLIGENCE.

IN more than one place in Thomas Hardy will be found a curious reflection on the alteration which has taken place among Western civilisations in the criterion of male facial beauty. We no longer, he has pointed out, adopt the standard of pure perfection of line and surface which satisfied the Greeks, but demand before we call a face beautiful that it should bear the marks of intellectual and emotional virility and action, the scars, perhaps, of mental and spiritual conflict. If it be possible to arrive at some association between bodily form and intellectual character, we may presume that our criterion of bodily beauty might change in the same way and no longer rest as at present, partly on a purely artistic basis, and partly on the idea that a body which can achieve bodily, and mostly athletic, success must be held to be beautiful. No settled opinion has been reached even in this relatively simple field, for Carpentier, who boxes supremely, is beautiful, while Shrubb and Dorando, who run like deer, are not. It is therefore not to be wondered at that the difficult problem of discovering whether there is any connexion between bodily form and intelligence is still far from solution, and an interesting discussion[1] by Dr. Santi Naccarati is a welcome contribution to

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[1] THE LANCET, 1920, ii., 1153.

[1] Archives of Psychology, August, 1921.

Italy: B. Gosic, Chef de Laboratoire de Bactériologie, Direction Générale de Santé, Rome.

Japan: Dr. M. Miyajima, Kitasato Institute, Japan.

Poland: Dr. L. Hirszfeld, Director of the State Serum Control Institute, Warsaw.

Switzerland: Dr. R. Doerr, Professor of Hygiene and Bacteriology at the University of Basle.

Dr. L. Rajchman, Medical Director, League of Nations; and Dr. F. Norman White, C.I.E., Chief Epidemic Commissioner, League of Nations, acted as secretaries, while the following British technical advisers attended the conference:—

Medical Research Council: Sir Walter Fletcher, K.B.E., M.D., F.R.S., Secretary of the Medical Research Council; Prof. G. Dreyer, M.D., F.R.S.; Dr. M. H. Gordon, C.M.G.; Prof. J. C. G. Ledingham, C.M.G., F.R.S.; Dr. P. Fildes; Capt. S. R. Douglas, I.M.S.

Ministry of Health: Col. L. W. Harrison, Specialist Medical Officer for Venereal Diseases; Dr. A. Eastwood (Pathological Laboratory.)

War Office: Sir William Leishman, K.C.M.G., C.B., F.R.S.

The conference came to a conclusion on Wednesday afternoon with the reception in plenary congress of the reports of the six subcommittees appointed to consider the international standardisation of sera in connexion with diphtheria, dysentery, various types of meningococcus and pneumococcus, syphilis, and tetanus.

AMŒBIASIS.

FROM the general survey by acknowledged experts of the significance and treatment of amœbic dysentery, which took place at the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on Dec. 5th, several interesting conclusions emerged. A point emphasised by Prof. L. S. Dudgeon and Sir Leonard Rogers was the present rarity of liver abscess, a complication which in pre-emetine days was computed to affect one in seven cases of amœbic dysentery. Another point generally agreed upon was that, although emetine is almost a specific in the acute stage of amœbic dysentery, it had not proved so efficacious in the more chronic and intractable clinical forms of the disease met with during the war and since the cessation of hostilities in war pensioners. The toxic effects of large doses of emetine have apparently been exaggerated; they occur only in specially susceptible individuals, and take the form of pareses of certain groups of muscles, peripheral neuritis, and a branny desquamation of the skin. Some difference of opinion still exists as to the value of the exhibition of the double iodide of emetine and bismuth; Dr. P. Manson-Bahr contended that where attention is paid to subsidiary methods, such as intravenous injection of neosalvarsan and lavage of the large bowel by eusol and to details of the dietary, these drugs produce good results in 70 per cent. of cases. Red meat and starchy foods should be avoided during convalescence, and a carefully regulated regimen should be drawn up for each patient. The adoption of more uniform standards of treatment and of recording results are obviously desirable if reports from different workers are to be compared. Amœbiasis can remain latent for a much longer period than is generally supposed, and relapses have been recorded after a quiescent period of six years. It would seem that though the mortality of the disease has diminished enormously since the introduction of emetine, an absolute cure can only be hoped for when the diagnosis has been made early and the treatment has been prompt and thorough.

GAS INFLATION OF THE PERITONEUM IN RADIOGRAPHY.

OXYGEN-DISTENSION of the peritoneal cavity for radiographic purposes was introduced in 1913 by E. Weber[1] and has been taken up since in Italy and America. J. E. H. Roberts[2] in this country recently gave some of his results with a plate showing spleen, kidney, uterus, and mesenteric cysts clearly defined by this method. At a meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine held on Dec. 9th, Dr. Carelli of Buenos Aires described the method as elaborated in his hands. He demonstrated a number of skiagrams showing the outlines and position of the liver, spleen, pancreas, uterus, ovaries, and Fallopian tubes. In some of the skiagrams appeared, in addition, the distended gall-bladder and the kidneys. In cases of cirrhosis of the liver the irregular outline of the organ was clearly visible. In cases of hydatid disease cysts in the liver and spleen were to be seen. In cases of cholelithiasis calculi were revealed. The demonstration, in fact, made it clear that it is possible by this relatively new method of radiographic examination to obtain information on the position, size, shape, and relations of the abdominal viscera over and above that given by the methods generally used. For injection Dr. Carelli prefers carbon dioxide to oxygen, and he advises the removal of the gas after the radiographic examination. As the outlines of the kidney are not always shown by the X rays after distension of the peritoneal cavity with gas, Dr. Carelli conceived the idea of injecting gas into the peri-renal fat and producing an artificial emphysema around the kidney. He has performed this operation several times with success, and has been able to demonstrate the kidney with the same clearness as the other abdominal viscera. He has succeeded thus in showing the suprarenal gland, the first time, we believe, that this organ has been rendered visible during X ray examination. Skiagrams were shown at the meeting in which the outlines of kidney and suprarenal, both normal and abnormal, were clearly indicated. The attendance at the meeting was evidence of the keen interest which is being evinced in this addition to the radiographer's diagnostic equipment.

NEW LIGHT ON ANGINA PECTORIS.

THE careful and painstaking work of Sir Charlton Briscoe on the origin of the anginal syndrome, as set out at the Harveian Society in an address which we print this week, throws new light on an attractive subject in which speculation has been rife. In the discussion Sir William Willcox agreed that pain resulting from over-fatigue of certain respiratory muscles might be referred to areas corresponding to those which occur in angina pectoris, but he could not admit muscular fatigue to be a complete explanation of the painful symptoms of angina. Sir James Mackenzie has always stoutly maintained that the gripping pain of angina is due to spasm of the intercostal muscles and therewith an effect and not a cause of angina. If the pain of angina pectoris were due to fatigue of certain respiratory muscles, why, Sir William Willcox asked, did not anginal attacks accompany illnesses such as bronchitis, pneumonia, laryngeal obstruction, in which these muscles were submitted to very great over-exertion? Typical attacks of angina appeared to follow slight exertion where the question of muscular fatigue could hardly arise. However produced, the pain of angina is a condition for which any suggestion of relief would be welcome. In the *Bulletin* of the French Academy of Medicine of Oct. 25th, Prof. T. Jonnesco, of Bucharest, recorded a severe case of angina in a man aged 51, who presented the typical symptoms, and for whom life had become almost insupportable owing to excruciating attacks of pain induced by walking or the least emotion, and intensified by slight changes in the weather. The patient showed dilatation of the aorta, together with chronic bronchitis and emphysema. The Wassermann reaction was positive. Anti-syphilitic and other forms of medical treatment having failed to give relief, he decided to submit to surgical measures. Under dorso-cervical spinal anæsthesia Prof. Jonnesco divided the left cervico-thoracic sympathetic nerve on June 13th, 1921. The relief was immediate, and during the months of July to October are neither sufficiently numerous nor evenly enough distributed to give definite results. The collections of rat-fleas sent to him varied greatly in size, and at best represented only a portion of the country; they were not made in a manner calculated to eliminate the error due to the uneven distribution of the species in the particular locality they represented. Nevertheless, the results are striking. Though the nature of the records is not well adapted for the application of the statistical method by which such a problem should be approached, yet the observations, in Major Cragg's opinion, point very strongly to a close relation between the predominance of X. *cheopis* and a high plague mortality, and that that flea is "the true plague flea" of India; on the other hand, X. *astia* is the predominant rat-flea in those areas which are known to have remained free from plague epidemics, or which have only suffered slightly from the disease. The liability to severe epidemics of plague in those regions in which X. *cheopis* predominates seems fairly clear, as also does the absence of liability to such epidemics in areas where X. *astia* is the predominating rat-flea. In his promised further report we hope that Major Cragg will correlate these facts with other factors known to influence the incidence of infection—e.g., the kind of rat inhabiting the areas, the number of fleas per rat throughout the year, and the climatic conditions of temperature and humidity which influence the breeding activity of the fleas.

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[1] *Fortschr. a. d. Geb. der Röntg. str.*, 1913, xx., 453.

[2] Brit. Med. Jour., 1920, ii., 742.

To justify the full application of statistical methods it will be necessary to make a wider series of observations under definitely chosen conditions. Large batches of fleas collected at the same time of the year, preferably during the plague season, are required and the stations selected should be within fairly narrow geographical limits. When this systematic information has been obtained Major Cragg hopes to make a further and more complete report on the subject. He points out the importance of having these rat-flea areas mapped out where X. *cheopis* or X. *astia* are respectively predominant, just as the tsetse-fly belts have been mapped out in Africa. It would. he says, be unnecessary to take elaborate and expensive measures against plague in a district where the predominant rat-fleas were not a species which acted as vectors of the infection. The significance of an imported case of plague may depend, therefore, in a large measure, on the local species of rat-fleas.

AMMONIA DERMATITIS IN INFANTS.

Dr. C. V. Cooke[1] of the St. Louis Children's Hospital, remarks that the characteristic lesions of the diaper region in infants have long been recognised and described under a variety of names. Their differentiation from syphilitic lesions was first clearly made in 1905 by Jacquet, who divided them into simple erythematous, erythemato-vesicular or erosive, papular or post-erosive and ulcerative forms, all of which are stages of one process and may coexist in the same patient. The features which distinguish these eruptions from those of congenital syphilis were shown by H. G. Adamson[2] in 1908 to be as follows: (1) limitation of the eruption to the convex surfaces of the diaper region and the absence of lesions on the face, palms, and soles, and at the anal margin; (2) absence of the coppery colour of syphilitic eruptions, and absence of other signs of congenital syphilis, such as snuffles, rhagades, and glandular enlargement; (3) variation in the course of the erythematous lesions, which frequently tend to disappear without antisyphilitic treatment. The lesions are generally regarded as identical with those due to ammonia irritation. but opinions differ as to the source of the ammonia. Leopold incriminated the soap alkali remaining in diapers from insufficient rinsing, but the usual explanation is that there is a nutritional disorder with acidosis and increased excretion of ammonia in the urine. A bacteriological study of infants with ammoniacal diapers conducted by Dr. Cooke showed that a urea-splitting organism could be isolated from the stools in a number of cases, and that the formation of the ammonia in the diapers could be prevented in all such cases by the use of an antiseptic such as mercuric chloride, which caused a prompt disappearance of the ammoniacal odour and a rapid regeneration of the skin lesions.

THE IMPORTANCE OF LACTOSE FERMENTATION.

IT is now almost sixty years since Davaine demonstrated the causal relationship of bacteria to disease, and although these years have been filled with the most active and productive research there is yet a great deal about the practice of bacteriology that is empirical. When we study the work of the systematists it is impressed upon us how imperfect the subject is, and what great lacunæ remain in our knowledge which the labours of the future will have to fill. Nowhere is this empiricism more marked, perhaps, than in classification, and where any attempt is made to reduce the multitude of forms now known in human bacteriology to a systematic basis we are confronted by a most disturbing variety of tests directed towards this end, of whose exact mode of action we are generally ignorant. It must come as a shock to a student of the exact sciences to learn that one of the most important criteria upon which the bacteriologist relies to aid him in the identification of micro-organisms is the ability of these to retain a dye after subsequent treatment with iodine and washing in alcohol. This, however, is the case; Gram's method of staining being firmly established in bacteriology as a differential criterion of the first importance. Morphology, oxygen requirements, and various biological activities, all have their place in this vexed subject, and amongst these the fermentation of sugars is of great importance. Nowhere is this more so than in the vast collection of types resumed under the coli-typhoid group, and here it is the action of the organisms upon lactose which demands most consideration. There is, perhaps, no single test in the whole field of bacteriology which gives us so much information as does the fermentation of this sugar by a member of the coli-typhoid group. By what might be almost a divine provision we possess, in lactose, a sugar whose fermentation divides these organisms into two great classes, one of which contains all the important pathogenic agents of infective intestinal diseases, whilst the members of the other group are, in the main, relatively harmless. Thus the non-lactose-fermenting group includes the causal organisms of the typhoid and paratyphoid fevers, bacillary dysentery, and acute bacillary enteritis, to mention the more important, whilst among the less notorious members are the pneumo-bacillus, the psittacosis bacillus, and various rat and mouse viruses.

The other great group, constituted by organisms which ferment this sugar, is that of *Bacillus coli* and its numerous sub-types, all of which, however, are of minor importance by comparison with the highly pathogenic species met with amongst the non-lactose fermenters. Although this line of demarcation does, in a general way, separate the pathogenic species from the non-pathogenic, yet, like most classifications in bacteriology, it is only relatively exact. There are non-lactose fermenters which are saprophytes of no greater importance than the *B. coli*, whilst others occupy a middle position; such as these are Morgan's No. 1 bacillus, which is thought to bear a relationship to enteritis, especially that of infants, but whose exact significance is still in dispute. The proteus bacilli, so active in organic putrefaction, and *B. fæcalis alkaligenes*, often a harmless saprophyte but capable of invading the blood stream and of producing a typhoid-like malady, also belong to this class. On the other side of the dividing line the colon bacilli are to a certain extent pathogenic, and play a not inconsiderable part in many intestinal inflammatory

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[1] American Journal of Diseases of Children, November, 1921.

[2] British Journal of Children's Diseases, 1908, v., 13.

" in words at length and not in marks." The Register of Apothecaries never seems to have been kept, although the Act continued in force until 1756. They took things easily in those days, for in 1784 the Irish College appointed a committee to prepare a Pharmacopœia Dublinensis, and by 1791 the book had got so far that it was ordered to be printed; by 1794 a specimen edition of 100 copies appeared, and finally on March 24th, 1806, the first Dublin Pharmacopœia made its appearance. Revised editions followed, and in 1830 the Irish College of Physicians was asked by the London College to join with it and the Edinburgh College in the formation of a general Pharmacopœia for the United Kingdom, an invitation which was refused. The last edition of the Dublin Pharmacopœia was published in 1850 under the editorship of Dr. James Apjohn; it was entirely printed in English. The imperial gallon was substituted for the wine gallon and the avoirdupois pound for the troy pound. The passing of the Medical Act of 1858 led to the abrogation of local pharmacopœias by empowering the General Medical Council to publish a Pharmacopœia for the United Kingdom, and the first British Pharmacopœia appeared in 1861.

INTERNATIONAL MEDICAL HYDROLOGY.

AN International Society of Medical Hydrology was founded at a meeting held at the Royal Society of Medicine on Dec. 9th, with a preliminary membership of 71 medical men, from 13 countries, engaged or interested in medical hydrology. Delegates from France, Italy, and Holland were present. The following were elected representatives for their respective countries :—

1. Belgium: Dr. R. Wybauw, of Spa and Brussels.
2. Czecho-Slovakia: Dr. Isidore Müller, of Carlsbad.
3. France: Dr. Paul Ferreyrolles, of La Bourboule and Paris.
4. Great Britain: Dr. Wilfrid Edgecombe, of Harrogate.
5. Holland: Prof. J. Van Breemen, of Amsterdam.
6. India: Dr. H. D. Dastur, of Baroda State.
7. Italy: Prof. Luigi Devoto, of Milan.
8. Japan: Dr. Goichi Fujiyam (subject to consent).
9. New Zealand: Dr. Arthur Herbert.
10. Norway: Dr. T. W. Knudtzon, of Larvig Bad and Christiania.
11. Switzerland: Dr. de la Harpe, of Lausanne.
12. United States of America: Dr. Guy Hinsdale, of Hot Springs, Virginia.

These will collate and present to the Society, by means of an International Journal, the clinical and experimental work in each country bearing upon the medical action and uses of waters and baths. Dr. C. W. Buckley, of Buxton, and Dr. Ferreyrolles, of La Bourboule, were elected hon. editorial secretaries, and Dr. R. Fortescue Fox president.

THE house and library of the Royal Society of Medicine will be closed from Friday, Dec. 23rd, until Tuesday, Dec. 27th, both days inclusive.

THE last of the South African soldiers who were wounded in the war will shortly be repatriated; and, in view of this, the High Commissioner for the Union of South Africa, at the request of his Government, has addressed to the Army Council an appreciation of the skill, care, and attention accorded to all such soldiers in auxiliary and other hospitals in the United Kingdom during the war. As most of the hospitals have now been closed and their staffs dispersed the Army Council is making public announcement of this appreciation in the hope that it will be brought to the notice of all concerned. In acknowledging the letter of the High Commissioner, the Army Council has taken occasion to convey to the South African Government, through the High Commissioner, an expression of its gratitude for the care and attention bestowed on sick and wounded British troops while in hospital in South Africa.

Public Health Services.

WILLESDEN MUNICIPAL HEALTH SERVICE: MEETING OF RATEPAYERS WITH LOCAL PRACTITIONERS.

THE executive committees of the three Willesden Ratepayers' Associations (Kilburn, Kensal Rise, and West Willesden) met the Willesden doctors, whom they had invited individually, in the St. Andrew's Church Hall, Willesden Green, on Wednesday, Dec. 7th. Over 70 were present. Mr. Blaxland, of the Willesden Ratepayers' Association, occupied the chair.

The Chairman, after explaining that the occasion was the outcome of the proposed meeting with the B.M.A. division, called attention to the great extension of health services contemplated in the forty-fifth annual health report to the Willesden U.D.C. (Appendix M.), which he characterised as unnecessary seeing that the hospitals of London are still, as always, open to Willesden patients. He called upon Dr. G. W. R. Skene to speak to the memorandum[1] issued by the B.M.A., Willesden division, criticising the health policy of the Council.

Dr. Skene, candidate for the Willesden Council at the next election in April, said that doctors were not opposed to public health, but they wanted it carried out properly, with a good return for the money spent. He emphasised the neglect of medical inspection and preventive work generally by a public health staff which tried to do the work of the general practitioner. The health report was itself a condemnation of the whole service. He gave instances of interference by health visitors in the work of general practitioners. A municipal hospital should, he said, be a model hospital; the Willesden hospital should be used for the purpose for which it was intended, which would give the staff a chance to do their work properly; at present they were most unfairly handicapped. He and his colleagues were willing to assist in every possible way with the health work of the district if they were allowed to do so, as well as to consult and advise the health committee of the Council.

Dr. W. Lock, another prospective candidate, said that the health report condemned the service as inefficient and wasteful, and showed it to be a danger to the community. Preventive work should come first and not be impeded by treatment largely carried out by unqualified persons. He hoped the ratepayers would put a stop to the wholesale giving away of things for nothing, a gift which did not tend to improve the race or to strengthen the character.

A ratepayer suggested a petition to the Ministry of Health for a full inquiry.

Dr. H. J. Macevoy said the way to deal with the matter was to return men at the next election who would take the proper steps. The Ministry of Health had made objections already to the expenditure, and no doubt other objections would follow. The Willesden health department failed, he said, to provide proper preventive measures or to deal with epidemics effectively. The general practitioner was the supporting pillar in treatment; he first saw the case, and he knew the people and the house conditions. But instead of being asked to coöperate he was ignored in the report as a person of no consequence. It was difficult for doctors to serve on the Council, but there was no reason why they should not be coöpted on the health committee for purely consultative purposes, when they would willingly give their advice. Treatment at clinics was, he said, unnecessary, as it could be more cheaply and better carried out by private practitioners in the district.

Dr. W. W. Stocker, who was chairman of the health committee 20 years ago when the hospital was built, said that probably a small extension of the hospital was necessary for infectious diseases. School teachers, he said, were against the clinics as interfering with their work. He thought much of while the total ordinary policies showed a mortality of 70 per cent. During the second year, while the total mortality remained the same, the mortality on the lives examined increased from 39 to 47 per cent. It appears, therefore, safe to conclude that "the benefits of the life extension examinations are pretty well limited to the years immediately following the examinations, and run out at the end of about five years." Dr. Knight's report goes on to show that the company in paying for these examinations has had its principal returned, and has made a 200 per cent. profit on the investment, during a period of approximately five years. This is on the assumption that the subsequent experience on these lives does not exceed the experience expected according to the American Men Table.

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[1] THE LANCET, Nov. 26th, p. 1121.

Dr. Knight points out in conclusion the reservations needed in arriving at even tentative inferences. They are reservations common to nearly all attempts to measure statistically the effect of social measures. The results do not, nor could they, allow for the factor of self-selection. The group of policy-holders reported on elected to be examined, sought out the opportunity to be examined, and returned periodically for examination, even though many of them showed no serious impairment. These facts denote that they were persons taking their health seriously, and who, apart from medical examination, would be likely to adopt measures to protect their health. In these respects there may have been initial bias in the special group which colours the general results, and it is not possible to measure the effect of this fact. But we may agree with Dr. Knight that it probably does not negative the highly favourable results shown. On the whole the experiment has been of great value, and even if the extent to which money has been saved by the examinations and action taken on these cannot be fully demonstrated, the system itself is likely to appeal to the insured person as well as the company, and may be imitated in other countries.

MEDICINE IN ART.

ACCORDING to Sir Berkeley Moynihan, who discoursed on "Medicine in Art" to a social gathering of Fellows of the Royal Society of Medicine and their friends on Dec. 7th, the proverbial hideousness of gargoyles was merely an exaggerated portrayal of abnormal conditions. The celebrated gargoyle of the church of Santa Maria Formosa, at Venice, erroneously described by Ruskin as "leering in bestial degradation" typical of the evil spirit of Venice in the time of her decadence, was immediately recognised by Charcot as the facies of hystero-epilepsy. This was the condition so frequently described and depicted in the Middle Ages as of one "possessed of evil spirits," the exorcism of which was the subject of many pictures by the old masters. The attitude of the victim, characteristic of hystero-epilepsy, was more or less accurately portrayed in many celebrated pictures—for example, Reuben's "Transfiguration," in which the boy "possessed of evil spirits" was drawn with spine arched backwards, forearms flexed and pronated. and hands firmly clenched. Sir Berkeley Moynihan showed pictures in which the artist had exhibited great anatomical knowledge in the portrayal of emotions. Sir Charles Bell, the medical artist, had drawn the face of the father in the Laocoon when he wished to portray "anguish and the sense of impending death." Many diseases only recently recognised had long been recorded in art. The Egyptian god, Ptah, whose images date back to 3000 B.C., was a typical achondroplastic dwarf, and so also was the god Bess, who presided at births. In the Bayeux tapestry Turold, the horse-holder, was an achondroplasiac, and many pictures, such as Velasquez's "Antonio the Englishman," showed achondroplastic dwarfs in charge of animals. Deformities, such as talipes equinovarus and genu recurvatum, were represented in early Egyptian art, while the bust of Æsop showed the angular curvature of Pott's disease. Early Roman bronzes even portrayed the condition of hydrocephalus. One of Holbein's canvases was a faithful reproduction of rhinophyma. The late Sir Spencer Wells had always said that the famous portrait of Mary Tudor depicted the typical facies of a woman with an ovarian cyst. The craft of the surgeon was also represented in art—the operation most frequently portrayed being circumcision. Sir Berkeley Moynihan showed a picture of the removal of a sebaceous cyst by a surgeon whose diploma hung on the wall behind the patient, while he carried another in his hat. A picture in the Sistine Chapel depicted the first woman surgeon performing circumcision, while another, by Moroni, even showed an early appliance for dropped-foot, the result of a wound of the external popliteal nerve.

The address was learned, amusing, and suggestive, and was very highly appreciated by the audience.

HYGIENE BY EXAMPLE.

A SOCIETY, entitled L'Hygiène par l'Example, has been formed in France, with Mr. Léon Bourgeois, former President of the Republic, as its first president, Dr. Marchoux, professor at the Pasteur Institute, as general secretary, and Mme. Léon Mazart as assistant secretary. As its title implies, the object is not to deliver lectures or distribute pamphlets but to preach by example. Therefore, wherever its members can obtain admittance they endeavour to introduce some modification that will tend to improve the health of those concerned. In rural districts especially, and in elementary schools, there is much need of sanitary improvement. Thus, for example, a boys' school was discovered with no water-supply and no washing accommodation. Thereupon a hose and pump was installed at the communal wells, and the boys were drilled in pumping water to the school and in giving themselves a thorough wash every day. Then, again, in Paris there is a school for weakly girls in the rue des Épinettes, a crowded neighbourhood. Thereupon the society arranged for a class-room to be built near, at the fortifications in the Boulevard Bessières, where there is a large expanse of open air hard by. The room was well heated and well ventilated, care being taken to distribute the cold air as it entered and prevent any direct draught. In summer lessons are given in the open air and the pupils exposed as much as possible to the direct rays of sunlight. They are all carefully washed and abundantly fed. Statistics are published setting forth the increased height and chest measurements resulting from all this care, and this is truly termed a practical demonstration of hygiene by example. There may be many occasions in Paris and elsewhere when outside help or advice supplies the final stimulus necessary to action, and thus a long meditated reform is realised.

THE INTERNATIONAL STANDARDISATION OF SERA.

AT the conference which was started by permission of the Government at the Ministry of Health on Monday afternoon last, the President of the Health Committee of the League of Nations, Prof. Madsen of Denmark, presided. The various countries whose leading workers in serological problems had been invited to attend were enumerated in our columns last week, and the following is a list of the corresponding delegates.

Austria: Dr. R. Mueller, Professor of Serology at the University of Vienna.

Belgium: Dr. Renaux, Deputy Director of the Pasteur Institute at Brussels.

France: Dr. Louis Martin, Sous-Directeur de l'Institut Pasteur, Paris; Dr. Dopter, de l'Institut Pasteur, Paris; Dr. Cotoni, de l'Institut Pasteur, Paris.

Germany: Prof. W. Kolle, Geheimrat, Director of the Institute of Experimental Pathology, Frankfort; Prof. H. Sachs, Director of the Cancer Research Institute, Heidelberg.

Great Britain: Sir Frederick Andrewes, M.D., F.R.S.; Dr. H. H. Dale, F.R.S.; Prof. W. Bulloch, M.D., F.R.S.

THE WAR EMERGENCY FUND.

A MEETING of this Fund was held at the rooms of the Medical Society of London on Dec. 7th, under the presidency of Sir A. PEARCE GOULD, the Hon. Chairman. Letters of apology for inability to attend the meeting were announced from Sir THOMAS CLIFFORD ALLBUTT, Sir CHARLES BALLANCE, Dr. A. LYNDON, Sir DONALD MACALISTER, Sir ARTHUR MAYO ROBSON, and Sir JOHN LYNN-THOMAS.

The general report of the work of the War Emergency Fund from 1916 to 1921, which was read by Dr. G. NEWTON PITT, the hon. secretary, stated that the War Emergency Fund was inaugurated by the Royal Medical Benevolent Fund in order to help medical men who, by leaving their practices and taking up commissions in the R.A.M.C., found themselves in temporary difficulties which, it was anticipated, would become more general on demobilisation. Applications for help amounting to about £20,000 were received and grants had been made to 134 medical men. In nine cases these had exceeded £300 and in four of them £400, and had been spread over several years. In 27 cases the grants were between £200 and £300, in 51 between £100 and £200, and 47 were for small amounts. The money had been used also, to enable officers to complete the purchase of practices and equipment, to clear off accumulated debts, and to educate children. Many of the cases were those of men broken down in health through the war. At the present moment 47 boys and girls were being educated. In several cases this education would be continued till the age of 16 or later, and some cases were being helped at medical schools and at universities. The main use of the Fund during the next few years would be to carry on educational work and to assist those medical officers who had returned to civil work with health so impaired that they were unable to earn sufficient income.

The treasurer's report of Sir CHARTERS SYMONDS showed that the receipts, including subscriptions from the profession £22,356 3s. 6d., donations from National Relief Fund £10,000, together with interest on investment and on deposit account, amounted to £35,619 1s. 5d. The expenditure in grants was £20,102 3s. 1d., with working expenses £1937 13s. 1d., amounting to £22,039 16s. 2d. The sum in hand at the present moment was £13,579 5s. 3d. The grants, said Sir Charters Symonds, had taken two forms, the one to relieve immediate necessities, and the other to educate children. The latter would involve an expenditure extending over some years and would probably absorb nearly £10,000. If the children were educated up to the end of the sixteenth year he estimated that the Fund would have something like £4000 left for distribution.

Sir A. PEARCE GOULD, in proposing that these reports should be adopted, referred to the great services which had been rendered to the Fund by the late Dr. Samuel West, who had laid its foundations and to whom by his foresight and energy the success of the Fund had been largely due. He thanked the medical and lay press for the material help which they also had rendered. Results had shown both that the Fund was needed and that great need had been met. He hoped that the children who were being looked after by the Fund would have their education extended beyond the sixteenth year.

Dr. HERBERT SPENCER said that the reports were extremely satisfactory, and he agreed that the education of the children should be prolonged.

Sir D'ARCY POWER suggested that in many cases it might be advisable to apprentice the children, as they might not be in a position to take advantage of extended educational courses.

Sir THOMAS BARLOW said that the Fund had accomplished a very important, onerous, and responsible piece of work. He fully sympathised with the idea of extending the educational facilities, but expressed the wish that the treasurer would supply details of how this could be accomplished.

The reports were then adopted.

DENTAL BOARD OF THE UNITED KINGDOM.

THE first session of the Dental Board was opened on Dec. 7th, at 44, Hallam-street, W., the Rt. Hon. FRANCIS DYKE ACLAND, M.P., being in the chair. The names of the members of the Board are given below; all were present with the exception of Mr. J. Sinclair, who was prevented from attending by illness.

Chairman (appointed by the Privy Council): Rt. Hon. Francis Dyke Acland, M.P.

Three members not being registered medical practitioners or registered dentists: Laurence George Brock, C.B., appointed by the Minister of Health; Dugald M'Coig Cowan, M.P., appointed by the Scottish Board of Health; John Sinclair, D.L., appointed by the Lord Lieutenant of Ireland.

Three members appointed by the General Council: Holburt J. Waring, F.R.C.S., member of the Branch Council for England; Sir James Hodsdon, K.B.E., F.R.C.S.Edin., Member of the Branch Council for Scotland; Sir Arthur Chance, F.R.C.S. Irel., member of the Branch Council for Ireland.

Six members who are engaged in the practice of dentistry: Fred Butterfield, appointed by the Privy Council; Horace Archibald Robertshaw, appointed by the Privy Council; William Henry Dolamore, M.R.C.S., L.D.S., appointed by the Minister of Health; William Henry Gilmour, M.D.S., appointed by the Minister of Health; William Guy, F.R.C.S., L.D.S., appointed by the Scottish Board of Health; Edward Leo Sheridan, F.R.C.S., L.D.S., appointed by the Lord Lieutenant of Ireland.

Mr. Norman King was appointed Registrar of the Board.

Chairman's Address.

The CHAIRMAN in his opening address sketched the history of dental administration from its inception in the middle of last century to the passing of the Dentists Act, 1921.

Standing Orders: Appointment of Committees.

The Board then proceeded to consider its Standing Orders, which have been based upon those of the General Medical Council, and to make such alterations in their details as appeared necessary.

The following committees were then appointed:—

Business.—Mr. Brock, Mr. Dolamore.

Discipline.—Mr. Butterfield, Mr. Sheridan, Mr. Gilmour, Mr. Brock, Mr. Robertshaw, Sir J. Hodsdon, Sir A. Chance.

Registration.—Mr. Butterfield, Mr. Sheridan, Mr. Guy, Mr. Gilmour, Mr. Robertshaw, Mr. Waring, Mr. MacCowan.

Education or Examination.—Mr. Guy, Mr. Sheridan, Mr. Gilmour, Sir J. Hodsdon, Mr. Robertshaw.

Students' Registration.—Mr. Sheridan, Mr. Gilmour, Mr. Dolamore, Sir A. Chance, Sir J. Hodsdon.

Finance.—Mr. Brock, Sir J. Hodsdon, Sir A. Chance, Mr. Dolamore, Mr. Waring.

One of the early functions of the Finance Committee will be the consideration of a site for the Board's future offices.

Appointment of Treasurer and Trustees.

The following were also appointed:—

Treasurers.—Mr. Waring, Mr. Dolamore.

Trustees.—Mr. Waring and the present trustees of the General Fund.

The Board considered that three trustees might prove a better number than two, in view of the possibility of two trustees dying at the same time.

The above appointments having been made, the Board proceeded to frame regulations and to consider the other subjects on the agenda paper in camera.

THE EAST FORTUNE SANATORIUM.—At a meeting of Hawick Town Council a report was submitted of the probable expenditure to be incurred in connexion with the East Fortune Sanatorium. The buildings were found to be in good condition and to require little alteration. The most costly improvement necessary was the installation of a central heating system to conform with the Board of Health regulations. As the buildings stretch for about half a mile this involves heavy expenditure. In order to obtain the Government grant of £180 per bed, the plans must be prepared and submitted to the Board of Health before the end of March.

the patient remained free from pain and was able to live a normal active life. Prof. Jonnesco is to be congratulated on this his second successful operation for angina pectoris. Whether a nerve such as this would be accessible to alcohol injection is a point which might be put to the proof, but the course of the sympathetic may be too near important vessels and ducts to render such a simple procedure feasible.

THE ASSOCIATION OF TYPHUS VIRUS WITH BLOOD PLATELETS.

Starting from Charles Nicolle's statement that the leucocytes are the principal if not the only elements in the blood capable of transmitting the virus of typhus fever, Dr. J. Ségal has recently performed a series of experimental investigations in the bacteriological department of the Lister Institute into the site of the virus. Assuming that Nicolle's statement is true, Dr. Ségal argues that it should be possible to obtain the virus in a concentrated form by producing a leucocytic exudate in infected animals. Guinea-pigs which had been infected with the typhus virus were given intraperitoneal inoculations of sterile broth on different days of the disease, and the peritoneal fluid was withdrawn three to five hours later. In no case did the inoculation of leucocytes from 4–5 c.cm. of the exudate (containing over 50,000 leucocytes per c.mm.) produce infection in guinea-pigs, whereas the blood and the brain from the same animals were shown to be infective. The work of Kusama, who claims to have demonstrated an intimate connexion between the platelets and the typhus virus in the blood stream, suggested experiments on guinea-pigs which, in Dr. Ségal's opinion, have given complete confirmation of these findings.

The plasma obtained cell-free by prolonged centrifugation of citrated blood proved non-infective in doses of 5–6 c.cm., whereas the inoculation of platelets invariably produced infection even with such a small quantity as could be obtained from 1·5 c.cm. of blood. Thus, by the separation of the platelets from virus-containing blood a high concentration of the virus can be achieved. With this virus it has been found possible to infect a guinea-pig by the inoculation of a small quantity into the anterior chamber of the eye, and by intra-testicular injection. It has also facilitated the experimental infection of lice (*Pediculus humanus*) conducted by Dr. Ségal jointly with Mr. A. W. Bacot. The method used was the injection per rectum of the platelet layer of centrifuged blood from typhus-infected guinea-pigs, and subsequently the re-passage of the virus from these lice into other guinea-pigs.

At a recent laboratory meeting of the Pathological Section of the Royal Society of Medicine Mr. Bacot gave a fascinating demonstration of the technique adopted by him, following the method described by Weigl,[1] of feeding lice infected with the virus of typhus fever by rectal injection. The alimentary tract of lice is normally sterile, and experience shows that its contamination with bacteria results in the speedy death of the insect: it is therefore necessary to adopt measures to avoid the contamination of the gut when feeding by the rectal passage. After two to four minutes immersion in 2 per cent. lysol Mr. Bacot transfers the lice to sterile water and thence removes them to filter-paper placed in Petri dishes to recover. To inject the meal of whipped human blood the louse is held under a slip of paper on a glass slide placed on the stage of a binocular dissecting microscope (about 16 diameters magnification) with its anal segments projecting beyond the paper slip. A finely-drawn capillary pipette, the end of which has been smoothed by flaming, is inserted a short distance up the rectal passage and sufficient blood to fill the stomach is forced up by means of a rubber teat. The pipette is washed out after each injection and then sterilised in boiling water before taking up the blood for the next injection. The skin and hairs surrounding the rectal opening of the louse are treated with a minute drop of 85 per cent. alcohol immediately prior to the insertion of the pipette. Two meals per day are necessary if the insects are to be incubated at 32° C. (90° F.). Lice have been successfully fed by this method for 22 days. Following this technique female specimens of *Pediculus humanus* were given an initial meal of the platelet layer of the centrifuged blood of typhus-infected guinea-pigs, and thereafter fed by injecting whipped human blood. Microscopic examination showed slight infection of the cells of the gut with *Rickettsia prowazeki* as early as the fourth day following the infecting meal, and very heavy infection within 8 to 12 days. The insects were kept for the most part at 32° C., two or more days being passed at room temperature (about 18° C.) in each week. Seven out of nine guinea-pigs inoculated with the emulsified guts or ovaries of platelet-infected lice showed temperature curves of the usual typhus character. One of the guinea-pigs which did not react failed to respond to a subsequent heavy injection of the emulsified brain of an infected guinea-pig; the other showed an abnormal temperature curve, and the question of typhus infection in this guinea-pig therefore remains in doubt. The time occupied in development was only slightly more than half of that required for an equivalent development in lice fed upon typhus-infected monkeys or when whole blood from an infected guinea-pig was injected.

THE DUBLIN PHARMACOPŒIAS.

Pharmacopœias are always interesting works, although the early specimens are far more romantic than the modern, which are strictly scientific and business-like. Attempts were made quite early in medical history to secure the purity of drugs and medical preparations. For instance, in the Kingdom of Sicily, under that enlightened monarch Frederick II. (1194–1250), apothecaries were under oath obliged to compound their preparations " secundum predictam formam." How complicated some of these preparations were may be gathered from a perusal of the poem of Gilles de Corbeille (1140–1224), " De Laudibus et vir tutibus compositorum medicaminum." Even as late as the seventeenth century, and onwards up to 1721, the London Pharmacopœia afforded good reading as to its remarkable compound preparations, and not until 1746, when the fifth London Pharmacopœia appeared, was there a break with the old traditions. The first London Pharmacopœia was published in 1618, and the first Edinburgh one in 1699, but, says Dr. Percy Kirkpatrick in his interesting paper on the Dublin Pharmacopœias now before us, " nothing of the kind had been done in Ireland." In 1719 the Fellows of the Irish College of Physicians came to the conclusion that Ireland should have a pharmacopœia of her own, and Dr. Cuming was asked to prepare a rough draft of the medicines " that he thinks proper for a dispensatory." Nothing seems to have come of this proposal, and when the London Pharmacopœia of 1721 appeared the Irish College of Physicians agreed to recommend to the Dublin apothecaries to use this work until their own was perfected. So matters went on until 1727 when a committee was appointed to " prepare the dispensatory." The committee, however, did not produce any report, and did not even resort to that favourite plan of committees, the appointment of a subcommittee, so the next move was made in Parliament. In 1735 an Act was passed for preventing frauds and abuses in the manufacture, preparation, and selling of drugs; visitors to inspect apothecaries' shops were appointed; a register of apothecaries was made compulsory, every physician or surgeon prescribing drugs had to sign his prescription with name or initials, and was also to express the quantities of the drugs prescribed however, on good authority that this case was not cholera. Active precautions are everywhere being taken, and sanitary and municipal authorities are displaying a laudable vigilance. Matters are different in the interior of Russia. From the districts about Moscow have come reports concerning the epidemic—reports of 300 to 500 deaths per day in one province alone, of hospitals full of cholera patients, and of chemists' shops devoid of the most indispensable drugs. Moreover, the population is in a condition of semi-starvation, food being so scarce that families can afford only one meal a day. Infants are dying for lack of milk, and pregnant women are completely unable to feed themselves properly. The medical staff of the hospitals is very deficient in strength and inferior in quality; the former doctors have been expelled as counter-revolutionaries and their successors are graduates of recent qualification at universities where the chief subjects are "socialism and communism," anatomy and physiology being of second importance. Prof. Pavlov, the world-famed physiologist of the University of Petrograd, has been expelled from the University, and is said to be nearly starving. In such conditions it is not to be wondered at that cholera claims thousands of victims; other infectious diseases are also flourishing, threatening the sanitary condition of the whole of Europe.

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[1] Weigl, 1920, Przeglad Epidemjologiczny, tom. 1, zeszyt 1, p. 15 (summary in English).

Nov. 22nd.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Reform of the Medical Curriculum.

THE reform of the medical curriculum has been for some time the subject of discussion, and a commission chosen by the Federal Department for the Interior is still deliberating on this question. One of the chief problems under consideration is the standard of the entrance examination. So far Latin has been compulsory for the "Maturität" (or "Maturité") examination, and Greek optional, being interchangeable with a modern language—preferably English. The majority of our medical men have had a classical training, and there is now a movement tending to replace the classics by a thorough course in the natural sciences. The Executive of the Medical Association thought it wise to test the opinion of the profession on this question, and a questionnaire was sent out with the following results:—Is it advisable to require the same "Maturité" for the medical and technical profesions?—85 Yes, 1542 No. Do you think that the study of Latin is necessary for the prospective medical man?—1583 Yes, 69 No. Is it advisable to make Greek compulsory again?—963 Yes, 651 No. Do you consider a "Maturité" requiring natural sciences, the mother language, and mathematics, sufficient for the prospective medical man?—50 Yes, 1591 No. These figures are interesting, since they show clearly that the great majority of the profession in Switzerland sticks to the ideal of a classical training. Perhaps a few years ago the vote would have been different. To-day it is realised more clearly that the profession can only retain respect when the members have a wide and comprehensive education, and that a purely technical training does not suffice to make a good doctor.

Cocaine.

A sad chapter is the cocaine mania which seems to be in full swing in some of our towns. The cause may be chiefly economic, since most of the cocaine is imported from Germany at very moderate prices owing to the high Swiss exchange. The price paid for one kilo is said to be varying between 700 and 1000 francs, and those who traffic in the drug sell it to their clients for 5 to 20 francs a gramme. Usually it is sold adulterated with boric acid, sugar, and similar compounds. Unfortunately we have no adequate legal means of dealing with this abuse. At the annual meeting of the Société Suisse de Psychiatrie on Nov. 27th a resolution was passed urging the Federal Council to take immediate and energetic steps to stamp out the contraband and illicit traffic of cocaine and to enforce a law under which cocaine maniacs, each of whom is a source of contamination to his environment, can be speedily interned.

Felix Lewandowsky and Albrecht Burckhardt.

The Faculty of Medicine of Basle mourns the loss of two distinguished members. Dr. Felix Lewandowsky, professor of dermatology and director of the Clinic for Skin Diseases, has died at the early age of 43. Prof. Lewandowsky, who came originally from Hamburg, underwent training at the dermatological clinic of Berne under Prof. Jadassohn. His studies on tuberculosis of the skin, which he embodied in a brilliant monograph, brought him into prominence. As a lecturer he was distinguished by clear and precise exposition and vivid diction.

Dr. Albrecht Burckhardt, professor of hygiene for 30 years, was a relative of J. L. Burckhardt, the famous orientalist. He was a fine example of the old school of culture and a true son of his native city of Basle, to which he devoted all his energies. In 1909 he published what may be called his life work: Demography and Epidemiology of the City of Basle from 1601 to 1900. Few continental towns offered better possibilities for such a study. Most Swiss towns, with their large stable populations, have well-kept archives. At Basle, which has had a university since 1460, there exist also records and notes on the state of health and current epidemics by reliable physicians. Burckhardt, who had a strong bias towards historical research, made the best use of all these opportunities, and produced a work which is in some ways unique. He was also the author of a biography of Paracelsus. Dr. Burckhardt was a well-known figure in Basle, and his death is a loss to the whole community.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Notification of Infectious Diseases and Statistics.

AT a recent meeting of the Société de Médecine Publique et de Génie Sanitaire Dr. P. Paquet, chief medical officer of health for the département de l'Oise discussed the results obtained in this county in the course of the last ten years. During this period medical practitioners have notified 19,771 cases of infectious diseases, the population consisting of 387,760 inhabitants. The cases of typhoid fever numbered 1207; though the total yearly number of infectious diseases notified has not varied much. cases of typhoid fever appear to have greatly decreased since 1914; in 1911 there were 271 cases, and in 1920 only 52. Dr. Paquet pointed out that most cases occurred amongst the people living in the valleys, where the water in the wells is rather shallow; in districts where the depth of the water in the wells is 20 metres or more typhoid fever is only exceptionally recorded. It is interesting to note that the progressive diminution of the yearly number of cases of typhoid fever in the département de l'Oise continued to take place during the war, though a great many troops were concentrated in its area and in spite of the fact that refugees crossed the county in great numbers on several occasions. According to Dr. Paquet, this is due to the fact that inoculation against typhoid fever has been practised on a large scale amongst the civilian population of the county; he also points out how the water-supplies have been constantly improved during the last ten years, and mentions the educational influence of the medical officers. During the same period 2041 cases of diphtheria have been notified. The number recorded annually remained approximately the same until 1915, since when there has been a progressive increase. Dr. Paquet pointed out that these unsatisfactory statistics are not peculiar to the département de l'Oise; similar facts have been recorded throughout France. It has been found in the département de l'Oise that the disease is more the work for poor children should be done by the district medical officer of the Guardians; he had been one of these for 20 years.

Mr. Weaver (Kensal Rise Association) said that they had been waiting for years for enlightenment on health methods, and he was glad that they had got it at last. With the help of a sympathetic majority in the Council, an ambitious medical officer of health had gone far beyond his proper sphere. The remedy was in the hands of the ratepayers, who should remove those responsible for the present policy. He hoped doctors would continue to meet and assist them with advice on health matters.

Dr. J. B. Dunning referred to the non-infectious cases in hospital, most of whom could have been treated at home. He thought that no one need suffer even if the hospital was not extended.

Dr. C. F. T. Scott, chairman of the B.M.A. division, proposed a vote of thanks to the chairman. He pointed out that a local advisory council, as suggested in the Dawson report, would go a long way to put health matters on the right lines.

Dr. Skene, in seconding the vote of thanks, informed the meeting that Mr. A. W. Bourne, one of the medical specialists to the Urban Council, had resigned as he did not approve of the Council's policy.

The Chairman, in reply, invited the doctors to appoint three or four of their number to coöperate with the Ratepayers' Associations, the political associations, and other bodies in selecting candidates, in order to avoid overlapping.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

BIRMINGHAM.

Dr. John Robertson, in submitting his report for 1920, says that 1920 was probably the best on record as regards statistics, and that there is every indication that the slow process of spreading knowledge as to how to prevent disease or how to maintain good health is bearing fruit. He considers that the outstanding difficulty in health work at the present time is the inability to provide decent homes for the large number of people who are now sufficiently educated to make proper use of them. Dr. Robertson estimates the population for 1920 at 910,000. The marriage-rate was 16·6, similar to pre-war years. The birth-rate was 27·6, the death-rate 12·6, the infant mortality-rate 83, and the tuberculosis death-rate 1·10. There was great pressure on the hospital accommodation in the matter of isolation wards, and Dr. E. H. R. Harries gives an account of an interesting and successful experiment in "bed isolation" for the purpose of avoiding cross infection, in imitation of the scheme worked out ten years ago by Dr. C. Rundle at one of the Liverpool hospitals. Diphtheria was very prevalent in Birmingham during 1920 and caused 201 deaths; Dr. Robertson is evidently of opinion that antitoxin is not used early enough and also not in sufficiently big doses in severe cases. Both notifications and deaths from pulmonary and non-pulmonary tuberculosis were lower than ever before. The register is carefully kept, and there were at the end of 1920 15,709 names thereon; these are visited by 16 tuberculosis visitors. There were 132 shelters loaned out at the end of the year.

Mr. Brennan De Vine, veterinary superintendent, reports that during the year 21 herds, comprising 596 cows, were being dealt with under the scheme for the eradication of tuberculosis from dairy herds by means of the tuberculin test. The cost of this work during the year was £126, £20 being for tuberculin and the remainder for veterinary fees and expenses. The value of the money spent on child welfare work in Birmingham (£16,586 for 1920) has recently been questioned, and Dr. Robertson in defending the expenditure states that not only has the infant mortality-rate been halved in Birmingham since 1900, but the health of the surviving children has also been "enormously" improved. Birmingham is second only to Bristol among the largest towns in respect of infant mortality-rate. To those who suggest that climate is the cause of the improvement, Dr. Robertson points out that the reduction in mortality from causes other than diarrhœa and enteritis has been almost as great as that in the total infant mortality. The need for the separate cot for the baby is shown by 27 deaths from "overlaying." In all but two cases the parents were said to be respectable and sober persons, but a disproportionate number of the cases occurred on the nights following holidays. The death-rate from this cause is only one-fifth of what it was in 1900–5 and went down with a sudden drop in 1916. Notifications of ophthalmia neonatorum numbered 444; 34 were severe cases, the eyes being permanently damaged in 10 of these, 4 being practically blind in both eyes, while of the remaining 6 had normal vision in one eye.

Birmingham has the same story to tell as other places as regards failure to persevere in treatment for venereal disease. Dr. Robertson gives the figures for two of the hospitals: 1. New cases treated—gonorrhœa, 1327; syphilis, 1077. 2. Ceased to attend before completion of treatment (old and new) gonorrhœa, 602; syphilis, 438. 3. Ceased to attend before final tests—gonorrhœa, 782; syphilis, 720. One in every 11 deaths was due to cancer and the number of deaths from this cause has gone up steadily from 748 in 1911 to 1014 in 1920. The death-rates from bronchitis and pneumonia in Birmingham have fallen and are now nearly as low as the figures for the whole of England and Wales.

BOURNEMOUTH.

Dr. A. D. Edwards reports that Bournemouth has been free from serious epidemics during the year and that the zymotic death-rate has been one of the lowest in the country. The estimated population for 1920 was 85,919. The birth-rate was 16·34, the death-rate 11·10, the infant mortality-rate 45·39, the death-rate from pulmonary tuberculosis 1·02, and from other forms of tuberculosis 0·15. Of the 954 deaths, 127, or about 1 in 7½, were due to cancer and 147 from organic heart disease. The death-rates from these causes are no doubt to some extent swelled by the reputation of Bournemouth as a resort for invalids. The maternity and child welfare work has increased and is aided by voluntary workers. The Boscombe Day Nursery was taken over for a time by the sanitary authority and closed in January, 1921. The sanitary authority use beds at the National Sanatorium, Bournemouth, and other sanatoriums for early cases of pulmonary tuberculosis and beds at the Firs Home, Bournemouth, and the Borough Isolation Hospital for advanced cases. The beds at the Borough Hospital have not been fully utilised. During the year 17 children were sent to the Harpenden Sanatorium, but no provision is made by the sanitary authority for surgical tuberculosis. Dr. Edwards points out that patients after a few months at a sanatorium want to go home and are usually unwilling to go on to a farm colony; nor does he think that consumptives with their families would be willing, as a rule, to move into village settlements if such were available. Sixty-three new cases of syphilis attended the V.D. clinic and 43 patients ceased to attend without completing treatment. The corresponding figures for gonorrhœa were 80 and 52. The figures for milk adulteration are high. Of 157 samples 5 were deficient in milk fat and 12 contained added water, the added water percentage in 3 of the samples being 49·4, 29·7, and 24·4 respectively. Ten out of 31 samples of cream (not sold as preserved cream) contained boric acid and the public analyst comments adversely on this fact.

BRISTOL EYE HOSPITAL.—At a recent meeting of this hospital it was decided to follow the example of the two general hospitals of the city, and to collect payments from both out-patients and in-patients, in the latter case up to £1 1s. per week, as contributions toward the cost of maintenance. Mr. Edmund King, the chairman, said that this scheme was not put forward as a real settlement of the financial difficulties of the hospital, but merely as a temporary and partial relief. He went on to advocate a policy of hospital amalgamation in Bristol as the only alternative to State control. During 1919 and 1920 this policy was discussed at length by representatives of the principal hospitals in the city, but no actual steps were decided upon.

THE WOOD-HILL FUND.

THE following subscriptions and promises have been received to the fund for reimbursing Dr. H. Wood-Hill in the very heavy expenses incurred by him in the case Clayden *v.* Wood-Hill, in addition to those recorded in the list published in our issue of Dec. 3rd (p. 1187). There is ample need for further support.

	£	s.	d.
Amount previously acknowledged	196	19	0
Kent Branch of the British Medical Association (per Dr. Edwin Starling, Tunbridge Wells)	27	16	0
Mr. G. Grey Turner, Newcastle-upon-Tyne; Mr. H. A. T. Fairbank, London; Mr. E. H. Bruce Fox, Yealmpton; Mr. William Wyllys, Great Yarmouth; Sir Hugh M. Rigby, K.C.V.O., London; Mr. Herbert C. Crouch, Ascot .. .. each	10	0	0
"M," London; Mr. Hugh Whitwell, Norwich; Mr. Herbert M. Sylvester, Leiston; Mr. Naughton Dunn, Birmingham; Mr. Charles J. Acton, Wangford; Mr. H. G. K. Young, Braintree; Medical Committee of Durham County Hospital (per Dr. Selby W. Plummer); Dr. Arthur Burton, Cromer; Dr. James Taylor, Oulton Broad .. .. each	5	5	0
Dr. Branford Morgan, Norwich; Mr. C. W. Dean and Dr. F. W. Bury, Lancaster .. .. each	4	4	0
Dr. Arthur Crook, Norwich; Dr. P. L. Giuseppi, Felixstowe; Dr. W. T. Rowe, M.C., Nottingham; Mr. N. Blake Odgers, Northampton; Mr. Hunter F. Tod, London; The Wrekin Medical Club (per Dr. George Mackie, Wellington) .. .. each	3	3	0
Mr. John Shepheard, North Walsham; Dr. C. S. *Pantin, Douglas; Dr. John Uhthoff, Bournemouth*; Mr. Guy B. Nicholson, Hull; Dr. E. J. C. Dicks, M.B.E., Framlingham; Mr. H. N. Baron, Orford; Dr. G. C. Gaynor, Wymondham; Mr. Charles F. Gross, Wickham Market; Mr. Vincent P. Tighe, Dublin; Mr. Mark R. Taylor, Norwich; Mr. Henry Wyllys, Great Yarmouth; Dr. Dora Colebrook, Cambridge; *Mr. C. H. Andrews, Norwich*; Mr. W. E. Wyllys, Belton; Dr. W. F. Addey, Ipswich; Dr. John Attlee, London; Mr. Francis Barwell, Mildenhall; Mr. E. P. Hughes Dudley, Caxton; Dr. Herbert Cook, C.B.E., Cardiff; Mr. C. P. Crouch, Weston-super-Mare; Dr. A. J. Campbell, Duns; Dr. Cyril E. Harrison, North Elmham; Mr. Edward V. Perry, O.B.E., Reepham; Mr. F. A. Martin Flegg, South Woodford; Dr. H. Mallins, Watton; Dr. Batterbury and Partners, Wimborne; Dr. J. S. Hinnell, O.B.E., Bury St. Edmunds; Dr. H. M. Hart-Smith, Southwold; Mr. A. M. Vann, Durham; Dr. Louis Macpherson, Edinburgh .. .. .. each	2	2	0
Mr. J. E. Chalmers, Castleton	2	0	0
Dr. Ian M. Jefferies, London; Mr. Reginald Cock, London; Dr. P. R. Bolus, Upper Norwood; Dr. *G. MacLellan Blair, London*; Dr. Enid Calder, Lowestoft; Dr. Darley Wynne, St. Faiths; Dr. C. A. O. Owens, Long Stratton; Dr. George Master, Bury St. Edmunds; Dr. Bernard Batt, Bury St. Edmunds; Mr. E. H. Worth, Streatham; Dr. W. W. Floyer, Egham; Dr. W. Black Jones, Builth Wells; Dr. J. C. Jones, Pensilva; Mr. *M. C. Moxham, Aldborough; Dr. A. G. Hamilton*, Chester; Dr. J. Delpratt Harris, Exeter; Mr. G. H. Hunter, Haughley; Mr. Alfred E. Sears, Blackheath; Dr. Thomas C. Blackwell, Oxshott; Dr. A. M. Watts, Broadstairs; Dr. William J. Ashby, Aylesbury; Mr. A. E. Ironside, M.C., Ashtead; Mr. William F. Haslam, Birmingham; *Dr. J. S. Manson, Warrington; Dr. Charles* J. Girling, Salisbury; Dr. Dudley G. Greenfield, Rushden; Dr. H. Laird Pearson, Birkenhead; Mr. Philip Talbot, Stalybridge; Mr. H. B. Walker, M.C., Minehead; Mr. R. Loy Wilcox, Hemel Hempstead; Dr. Frank W. Melvin, M.B.E., Oswestry; Dr. Joseph Walker, Bootle; Dr. W. J. Dewar, Arbroath; *Dr. Francis C. Bottomley*, O.B.E., Bournemouth; Dr. J. Alford Andrews, Bovey Tracey; Dr. C. H. Attenborough, Frimley; Dr. John Fletcher, Fulham; Dr. Wortley Quait, Mundesley; Dr. George Black, Tomintoul; Mr. T. Walsh Tetley, Kirby Moorside; Dr. Alfred Cox, O.B.E., London .. .. each	1	1	0
Mr. T. A. Murray, Penketh; M. E. M. C., Kensington; Dr. R. E. Paterson, Methlick .. .. each	1	0	0
Dr. R. W. Rix, Sudbury	0	10	6

EPSOMIAN CLUB: ANNUAL DINNER.—Dr. H. E. Haynes presided at the annual dinner of the Club, held at the Trocadero Restaurant on Dec. 8th, when there was a full attendance of old Epsomians, largely medical, a few clerical, with representatives of other professions. Sir Ernest Pollock, Sir D'Arcy Power, and Sir J. Purves Stewart were among the invited guests. "Floreat Epsomia" was sung with enthusiasm after the headmaster, Rev. W. J. Barton, had chronicled the last year's school activities. Dr. H. F. Ealand, of Farnham, wittily proposed the guests and Sir D'Arcy Power voiced the warm feelings of those present towards the chairman for his many services to the Royal Medical Foundation.

Correspondence.

"Audi alteram partem."

CLINICAL UNITS.

To the Editor of THE LANCET.

SIR,—It has been a great satisfaction to me to find that my reflections[1] on this new development of medical education in England have been well, even *cordially, received; but no doubt*, as time goes on, certain just criticisms will appear. Meanwhile my notions may be on right lines, in the main. One criticism, which has appeared more than once, is that, in urging that the direct function of the director of the unit will be less the *teaching* of the undergraduate and more the study of disease in association with senior and graduate students, I had forgotten the counsels of Huxley and Foster that it is particularly the function of the professor to teach the beginner so that in the first instance he may get his head put straight. May I suggest that in my article I indicated—indirectly perhaps—that the conditions of comparison in this case were not the same. I said plainly that the director of the unit was but one of the teaching staff; that on the honorary staff of a large hospital there were other physicians and surgeons of even greater experience and sagacity who were at least as *well fitted to teach the undergraduate*; *in a sense* perhaps more so. The director I proposed was to be a comparatively young man, on his election, who would devote himself rather to research than to the pragmatics of practice, which in this stage of his education are, rightly enough, more prized by the undergraduate and his father.

I am, Sir, yours faithfully,

Cambridge, Dec. 9th, 1921. CLIFFORD ALLBUTT.

THE ORGANISATION OF MEDICAL EDUCATION.

To the Editor of THE LANCET.

> "It may be that professional preparation will divide into two courses—into a five-years' course on craft lines for the diploma of the colleges, and a university course for those who have the turn and the time for wider and deeper study; a difference which is perhaps coming about, more or less, undesignedly. In any case the universities must not trifle with their standards."—SIR CLIFFORD ALLBUTT, THE LANCET, Nov. 5th, 1921.
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> "Is it not wasteful, archaic, not to say stupid, to insist that each and every student shall pursue precisely the same subjects, presented in the same way?"—Prof. MADISON TAYLOR, *American Medicine*, August, 1921.

SIR,—The innumerable suggestions which, within the last few years, have been made with a view to reorganisation of medical education, leave little doubt as to the existence of widespread dissatisfaction with the *present state of affairs. In every civilised country* efforts have recently been made to counteract the growing complexity of the medical curriculum by the elimination or curtailment of the least important educational subjects. In theory this process may seem comparatively simple; in practice it is reminiscent of an anecdote related by Sir Clifford Allbutt. He sat on a committee to simplify the *British Pharmacopœia by the ejection of the least* valuable of its contents. But which were they? Whenever one member of the committee proposed the ejection of a certain drug, another member would insist that this particular drug had been his chief aid and stay. So the British Pharmacopœia emerged from this ordeal as bulky as ever. As long as the problem is solely in the hands of professors and *specialists, there is little chance of a radical change for* the better in medical education, for the same pitfalls await the reformer as those which Sir Clifford Allbutt

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[1] THE LANCET, Nov. 5th, 1921, p. 937.

AN EAST ANGLIAN HEART CLINIC.

THERE can be little doubt that the war caused a considerable increase in disorders of the heart, both functional and organic, amongst men who have served in the army. To deal with a large number of these cases occurring in the Eastern region, the Ministry of Pensions has recently established a series of cardiovascular clinics, with a central hospital at Norwich, in the district embracing the counties of Norfolk, Essex, Suffolk, Cambridge, Bedford, Herts, Oxford, Bucks, and Berks.

In each area a heart specialist has been appointed, who sits on the special heart boards, and has charge of the local heart clinic to which patients are sent for diagnosis and advice as to treatment. This treatment is carried out by the panel practitioners, acting under the advice and with the coöperation of the heart specialist. Dr. Hubert J. Starling of Norwich, has been appointed consulting cardiologist for the Eastern region. He has charge of the cardiovascular clinic and hospital in Norwich, with supervision of all the cardiovascular work in the other areas of this region. For the purpose of the clinic and hospital, a large house in Thorpe-road, Norwich, a private residence before the war, and formerly used as a limb-fitting centre, was adapted by the Ministry of Pensions in June, 1921. There is accommodation here for 25 in-patients, whose average stay in the institution is six weeks. The cases are sent here from all the areas in the region, either for diagnosis of obscure conditions, or for grading by means of their response to exertion, as ascertained by a graduated series of exercises. By means of these exercises some are rendered fit to resume their pre-war employment, those who are not so fitted are recommended for suitable training in other employments, or if they require treatment for a definite cardiac disability, they are sent for 12 months to a treatment and training centre under the Ministry of Pensions. On the grounds of economy there is no resident medical officer; but in addition to the consulting cardiologist, who visits the hospital daily, the staff consists of an assistant medical officer, Dr. Branford Morgan. There are also a matron, a nursing sister, and a remedial instructor, who is responsible for the carrying out of the remedial exercises. These exercises are arranged in three grades:—

The first grade is designed with a view to restoring normal physiological movements, such as those of the limbs, trunk, and head, with especial attention to thoracic breathing. The D.A.H. case of some standing almost invariably breathes with the diaphragm and abdomen, the upper part of the chest becoming more and more flattened and inert, while the lower half of the abdomen becomes protuberant. So unused are these patients to deep thoracic breathing that a condition of apnœa and giddiness often results, after early efforts to regain it. This grade lasts 20 minutes.

The second grade is somewhat more strenuous than the first and involves actual effort, the deep breathing exercises being continued. The period of this exercise is 30 minutes.

The third grade is the most strenuous and includes hopping, lunging with arms and legs, quick march and doubling, and two games. The value of games is very high. Many patients, on account of the mental reaction associated with exercise in a definite form, show much reaction after ordinary drill. The same men can play vigorous games, such as ball-throwing, bumble puppy, and football, with little if any sign of distress.

The following three cases, observed at a recent visit to the clinic, may be taken as illustrative of the work done:—

1. A man, aged 30, who had served in France. Complains of shortness of breath and a little precordial pain. No history of rheumatic fever. He is found to have early mitral stenosis. There is a presystolic murmur at the apex, hardly perceptible when the patient is examined in the erect posture, but very distinct when lying on his left side. This case is able to do the hardest form of exercise with comparatively slight reaction.

2. A man, aged 28, with shortness of breath and a good deal of precordial pain. A diastolic murmur is heard, best at the third left costal cartilage, in full expiration. There is also a presystolic murmur at the apex. The case is an early one, and there is no suggestion of a Corrigan pulse. His exercise tolerance is very fair, exemplifying the usual rule that cases of early organic disease have less of the effort syndrome than those with functional disorders.

3. A case of paroxysmal tachycardia in a young man of 25 attending the clinic. The same condition had been observed in this case in 1917, and has not altered since. The cardiac rhythm is that of a regular series of irregular beats. There are two normal beats, followed by two to four very rapid beats and then two more normal beats, and so on. Except for some dyspnœa on exertion, and only a moderate exercise tolerance, the pensioner has very little complaint. Another very similar case, an in-patient, shows on the polygraph two to four normal beats, followed by six to eight quick beats of tachycardia, in a regular alternating sequence. This irregularity has been known to exist since early in 1918. This pensioner is able to do the highest grade of exercise, and has been at work as a stock-man since his discharge. He is not able to lift heavy weights or run for any distance.

The cardiovascular clinic is held once a week, on Thursday mornings. Cases are sent here from the Norfolk and neighbouring areas for diagnosis, assessment according to grade, and treatment.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Responsibility of Doctors in Cases of Abortion.

AN illustration of professional difficulty arising in a case of abortion was lately afforded in the coroner's court at Debreczen, Hungary. A medical man was called to attend a woman who, a day or two afterwards, confessed she had taken a large dose of aloes and had procured abortion. He did not tell the husband of the state of affairs for 10 days, nor did he inform the parents to whose house the patient was then removed. Lastly, he did not inform the gynæcologist of the hospital, to which she was finally taken (and where she died) of the cause of her condition, although he stated that she was suffering from peritonitis. He excused himself to the coroner on the grounds that the matter was one of professional confidence, and that he did not regard the woman's condition as serious enough to warrant the taking of depositions. It is remarked in the medical journals that public opinion would doubtless commend the physician for his reticence in so far as the relatives were concerned, but that there was no reason why information, even of this delicate kind, should not have been given to the hospital doctor under whose care the patient subsequently came. Such an act could never be construed as a breach of confidence. Nevertheless, one medical writer held that it was preferable that medical practitioners should err on the side of discretion. But by remaining the sole depository of such a secret the practitioner may incur the risk of passing for an accomplice, besides making himself an accessory after the fact.

Small-pox in Albania.

An epidemic of small-pox has broken out in some parts of Albania; the medical authorities have communicated the facts to the Albanian, Jugo-Slavian, Roumanian, and Italian medical and lay papers, and measures are being taken to prevent the disease spreading. The municipalities have appointed special medical men to perform gratuitous vaccination, and the population is asked not to put any difficulties in their way. It is likely, however, that the vaccinators will be hampered in their work, especially in some quarters where the working classes look with suspicion upon every free measure of the sanitary authorities.

The Threat of Cholera from Russia.

The news of the outbreak of cholera in Russia is causing much anxiety here and in neighbouring states. It is feared that it will be impossible to prevent the scourge from spreading into Bessarabia. A day or two ago a suspicious case occurred at Kisenew; a man was taken suddenly ill and showed a number of symptoms characteristic of cholera, such as violent vomiting, diarrhœa, cyanosis, and collapse. The man died, and the news soon spread through the city that cholera had again appeared. I am informed, when attacked, lest a wrong impression should arise that arguments left unanswered are unanswerable.

I am, Sir, yours faithfully,

London, W., Dec. 10th, 1921. OTTO MAY.

ZINC IONISATION IN OTITIS MEDIA.

To the Editor of THE LANCET.

SIR,—In an annotation on Chronic Aural Suppuration in THE LANCET of Nov. 19th you remark, "It is generally agreed that the large majority of cases of suppurative otitis recover completely if treated from the onset." It has been my experience that a large proportion of these cases recovers completely when the surgeon carries out the treatment himself, or when the cases are taken into hospital and treated there as in-patients; that a smaller proportion recovers when the cases are seen as out-patients, say, once or twice a week, treatment being meantime carried out at home; and that, of course, a still smaller proportion recovers when untreated.

Now, the large majority of acute ear cases falls into the category of those seen occasionally by the surgeon and treated at home with, on the whole, not very satisfactory results. Any method which will substantially improve the results in this class is much to be desired, and such a method I believe that we possess in zinc ionisation. The apparatus required is simple, consisting of a galvanoset or some such source of current in which the ampèreage can be absolutely steadily increased and decreased, a short pencil of zinc as the positive electrode, a basin of water in which the patient's hand can be dipped as the negative electrode, and some weak sulphate of zinc to pour into the ear. Some otologists pass the zinc electrode into the ear through a vulcanite speculum with a special clip to prevent the electrode from slipping out. I find this, however, quite unnecessary; all one has to do is to wrap the zinc pencil in cotton-wool so as to prevent the metal from touching the skin.

The technique is simple: the ear must be cleansed and dried; the patient then lies down with the affected ear uppermost; the ear is filled with warm sulphate of zinc, 2 gr. to the oz.; the zinc electrode, wrapped in cotton-wool, is introduced into it; one hand is put into the basin of water with the negative electrode, and the current very slowly and steadily turned on, from zero up to one, two, or three M.A.'s, according to the tolerance of the patient, and still more slowly turned off after 10 to 15 minutes. The zinc sulphate lotion is then gently mopped out of the ear and a small pledget of cotton-wool put into the meatus.

In a recent case, with a perforation in the tympanic membrane large enough to admit of free access of the lotion to the inflamed area, one ionising is sometimes all that is required. For example:—

CASE 1.—Nurse E. had acute double otitis media following a severe cold, and was under treatment for five weeks. The right ear dried up but the left continued discharging pus. I ionised the left ear with zinc 3 M.A.'s for 10 minutes. Two days later the ear was quite comfortable, almost dry, quite dry after another two days, and since then has given no further trouble.

CASE 2.—Miss T. had acute earache lasting a few hours, relieved by bursting of drum with blood-stained serous discharge. Two days later I began dressing with ribbon gauze moistened with carbol-glycerine: five days later muco-purulent discharge continued. I then ionised the ear with zinc 1 M.A. five minutes. Next day the ear was dry, quite comfortable, and has given no further trouble.

In these cases the perforation was rather large, the discharge was not very profuse, and I had no reason to suppose that there was any involvement of bone.

On the other hand, ionisation cannot be expected to cure cases in which there is a very small perforation, or in which there is a very profuse, persistent discharge, indicating inflammation of the antrum and possibly mastoid cells, e.g.:—

CASE 3.—Mr. B., during convalescence from an attack of pneumonia, developed acute otitis media sinistra. I found a very profuse discharge, a rather small perforation in the membrane, slight mastoid tenderness. Operation was refused. Other treatments had little effect. I ionised the ear three times, but with no result whatever.

CASE 4.—Mr. J., during a cold had some pain in the left ear, which was relieved when a blood-stained serous discharge appeared. In his case the discharge was never profuse, but the perforation was very small; ionisation had no appreciable effect.

When suppurative otitis has become chronic, or when the bone cavity left by a mastoid operation has either refused to heal, or after healing has broken down again, ionisation will often effect a cure.

CASE 5.—Miss B. had a radical mastoid operation performed about 12 years ago. This healed and remained well till she was sent to France on war work. Then the mastoid broke down, and, in spite of treatment very thoroughly and carefully carried on, continued discharging for four years. She then came to me for ionisation. The cavity was healed after six sittings, and has remained dry and given no trouble since.

CASE 6.—Miss L., with a history similar to the last, required 12 sittings before the mastoid was finally dry. When I began treating her ear I ionised twice a week, which is probably too frequently, once a week being enough.

Some chronic cases do not yield to this treatment. Small perforations, the presence of granulation tissue, too profuse discharge are obvious difficulties that need hardly be mentioned; but a few cases that I thought ought to do well have not responded; I do not know why. I cannot claim to speak from a large experience, but my results in suitable cases have been so good that I feel justified in urging more otologists to adopt the treatment. I am, Sir, yours faithfully,

Brighton, Dec. 8th, 1921. ARTHUR J. HUTCHISON.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgn. Lieuts. to be Surgn. Lieut.-Cmdrs.: R. P. Ninnis and J. D. Murphy.

ROYAL ARMY MEDICAL CORPS.

Capt. C. Helm retires, receiving a gratuity, and is granted the rank of Lt.-Col.

Capt. A. W. P. Todd retires, receiving a gratuity.

Capt. W. H. A. D. Sutton is restd. to the estabt.

Temp. Capt. R. O'Connor relinquishes his commn. and retains the rank of Capt.

TERRITORIAL ARMY.

Lt.-Col. D. L. Fisher resigns his commn. and retains the rank of Lt.-Col.

Capts. J. L. Brownridge, J. D. Wells, and R. M. Wilson to be Majs.

Capts. T. Rhind, J. O. Cuthbertson, P. B. Spurgin, and J. F. Molyneux, having attained the age limit, are retired and retain the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. W. G. McKenzie, from R.A.M.C., General List, to be Capt.

ROYAL AIR FORCE.

Flight Lt. R. J. Monahan relinquishes his temporary commission on ceasing to be employed.

THE CALCUTTA CENSUS.—The municipal authorities have from the first doubted the accuracy of the results of the census taken in Calcutta. The increased demand for water, the extraordinary scarcity of housing accommodation and other broad facts all pointed to a large increase of population, and hence, when it was found that growing districts were reported to have lost in population, it seemed clear that someone had blundered. The chairman of the corporation, at the instance of the general committee, asked the census authorities for help in checking the census results in certain wards, and the proposed check has just been accomplished. Its outcome is to show that, as was suspected, the official enumeration was singularly defective. Immediately the census was over, dozens of persons reported that they had not been counted. It is now found that on the figures tested the omissions were between 12 and 15 per cent. Such a departure from the facts must falsify death-rates, birth-rates, and all municipal statistics. It seems inevitable that another census must be taken next March if municipal returns are to be useful as records. The low general death-rate of 31 recorded for the week ending Nov. 12th, the latest of which we have any record, is far below the five-year mean of 39·5, but the apparent diminution may be due in part to just such censal inaccuracy as has been shown.

prevalent in low and damp localities, where it is endemic and where it occasionally breaks out into local epidemics. It has also been recorded that, proportionally to the population, diphtheria is more frequent in villages than in towns. In districts where diphtheria is endemic the forms of the disease are always mild even in the occurrence of a local epidemic; the contrary has been observed in regions where diphtheria occurs only occasionally. Between 1911 and 1920 cases of tuberculosis brought to the notice of the medical officers of health of the county numbered 3069. According to these figures the proportion of cases is 8 per 1000 inhabitants. It appears though that the number of cases of tuberculosis is greater than one would expect from the notification figures, since the *annual number of* deaths due to the disease is approximately 900. According to statistics, tuberculosis is just as prevalent in the country as it is in industrial centres; in 11 towns of 5000 inhabitants and over for which the total population amounts to 92,610 inhabitants, 825 cases have been recorded—that is, 8·90 per 1000; in 49 boroughs of 1000 to 5000 inhabitants and for which the total population is 85,841 inhabitants, the number of cases of tuberculosis is stated to be 766—that is, 8·09 per 1000; in 402 villages of less than 1000 inhabitants 1372 cases of tuberculosis have been detected, the proportion being calculated as 8·54 per 1000. Dealing with these statistics Dr. Paquet emphasised the fact that they were absolutely opposed to the general belief that tuberculosis is more frequent in towns than it is in the country. He thinks that the findings are sufficiently explained by the spread of alcoholism to the rural districts; by work done at home under most unhealthy conditions, such as the making of brushes, and the assembling of parts of boots; and by the return of contaminated workmen to their country homes, where they spread the disease.

Prizes at the Académie des Sciences,

The Members of the Académie des Sciences have awarded various prizes as follows: Prix Bréant (Fr. 5000) to MM. E. Dujardin-Beaumetz and E. Joltrain, bacteriologists to the Pasteur Institute, for their book "History of an Epidemic of Plague in Paris." Fonds Charles Bouchard (Fr. 5000), presented to Mr. M. Ménard, radiologist to the Cochin Hospital (Paris), for his works on radiography. Prix Montyon (Medicine and Surgery), comprising various prizes—three of Fr. 2500, three of Fr. 1500, and one of Fr. 1000, respectively—to Mr. E. Roubaud, pathologist to the Pasteur Institute, for his works on malaria in France; to MM. A. Sieur, médecin inspecteur général de l'Armée, and R. Mercier, professor at the Medical School of Tours, for a series of records, "Le Service de Santé du Groupe d'Armée Fayolle en 1911"; to Mr. E. Bourdelle, professor of anatomy in the Veterinary College (Alfort), for a text-book on Regional Anatomy of Domestic Animals; to Mr. E. Antoine, interne des Hôpitaux de Paris, *for his* work on Severe Forms of Proctitis and Colitis; to Mr. M. Rubinstein for a text-book on Serology and Sero-diagnosis; to Mr. A. Vernes for his work "Atlas de Syphilimétrie"[1]: to Miss A. Forget, directrice de l'Œuvre, for her book on Re-education of Speech. The Prix Montyon (Physiology) (Fr. 700) was awarded to Mr. H. Piéron, director of the laboratory of psychophysiology of the Sorbonne, for his study of reflexes and muscular tone; Prix Barbier (Fr. 2000) to Mr. E. Saquépée, professor at the Val-de-Grâce Hospital, for his work on gas gangrene; Prix Lallemand (Fr. 1800), granted to MM. G. Guillain, professeur agrégé of the Faculté de Médecine de Paris, and A. Barré, professor of the Faculté de Strasbourg, for their work "Travaux Neurologiques de Guerre"; Prix Argut (Fr. 1200) to Mr. F. de Courmelles, for his works on X rays and radium in gynæcology; Prix Godard (Fr. 1000) to MM. A. Chalier, chief of the surgical clinic of the Faculté de Médecine de Lyon, and X. Delore, surgeon of the hospitals at Lyon, for their work on tuberculosis of the genital organs; Prix Philipeaux (Fr. 900) to Mr. E. Grynfeltt, professeur agrégé of the Faculté de Médecine de Montpellier, for his work on the histology and the embryology of the eye of the vertebrates; Prix du Baron Larrey (Fr. 700) to Mr. G. Ferry, assistant at the surgical clinic of the University of Strasbourg, for his works entitled "Aviators' Disease" and "Fitness for Air Service."

Dec. 8th.

MEDICAL AND PHARMACY BILL FOR SOUTH AFRICA.

Among the important measures to be introduced by the South African Government when the Union Parliament meets on Jan. 20th is a Bill "to consolidate and amend the laws in force in the Union relating to medical practitioners, dentists, pharmacists, midwives, trained nurses, and other classes of persons; the keeping and sale of poisons; the importation, sale, and use of habit-forming drugs; and as to other matters connected therewith or relating thereto." The Bill is the outcome, and practically a re-draft, of a similar measure considered originally by a Select Committee in 1917; its provisions are based upon the information then elicited, together with reports since obtained from the various medical councils and pharmacy boards. The chief provisions of the Bill are:—

1. Abolition of the existing four provincial medical councils and four pharmacy boards, and the constitution of a new South African Medical Council and a new South African Pharmacy Board, with extended powers.
2. Registration of medical and dental students studying at any South African university at which a medical and dental faculty is or may become established.
3. Alteration in registration fees.
4. Replacement of the term "chemist and druggist" by "pharmacist."
5. Provision against medical practitioners keeping an open chemist's shop.
6. Provision for the carrying on of a pharmacy by a limited liability company or other plurality of persons.
7. Certain protections for native medicine men.
8. Additions to the poisons laws, including more stringent regulations and limitation of storekeepers' sales.
9. Institution of a poison section.
10. Chapter dealing with opium and habit-forming drugs.

The new Medical Council is to be appointed for five years, and is to consist of 14 medical practitioners and four dentists, some of whom are to be nominated by the Government and the rest by the practitioners. The new Pharmacy Board is also to hold office for five years, and is to comprise eight pharmacists and one medical practitioner, an official of the Public Health Department. Certificated midwives and trained nurses, &c., will be granted permission to elect a registered person to the Council. Provision is also made for nominees to the Council and Board from any university which has established a faculty of medicine, and from any school of pharmacy approved by the Board. The names of all persons at present registered in any of the four provinces will be embodied in the new Register, with the exception of persons whose addresses are outside the Union or are recorded as unknown. The new Register will comprise medical practitioners, dentists, pharmacists, certificated midwives, trained nurses, medical and dental students. The Register will abolish the existing anomaly that, although the Union has been in existence for over 11 years, it is not permissible to-day for a person registered in one province only to practise in any of the other three provinces. No foreign diplomas are to be recognised unless reciprocity exists between the Union and the country issuing such diploma. The new registration fees will be: medical practitioners, £25; dentists, £25; pharmacists, £12 10*s.*; midwives and trained nurses, £2 10*s.*; additional degrees or diplomas, £1.

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[1] See Review, The Lancet, July 23rd, p. 183.

Literary Intelligence.—Mr. Humphrey Milford announces the forthcoming publication of "The Records of the Augustinian Priory of St. Bartholomew, West Smithfield, and of the Church and Parish of St. Bartholomew the Great in the City of London," by E. A. Webb, F.S.A.

Metropolitan Hospital Sunday Fund.—The annual meeting of the constituents of this fund will be held at the Mansion House on Monday, Dec. 19th, at 3 P.M. The business of the meeting is to receive the report of the Council for the year 1921, to elect the Council for the year 1922, and to determine the date of next Hospital Sunday.

Cancer Hospital Dinner.—The Medical Committee of the Cancer Hospital entertained a number of guests to dinner at the Hotel Cecil on Dec. 8th. In proposing the health of the hospital, Sir Charles Ryall, the chairman, alluded to the finances of the hospital; in common with others they had been adversely affected by the war, but the foundations of the charity having been laid on a sound basis they were still able to carry on under the voluntary system. The clinical material at the Cancer Hospital, drawn from the immense population of London and the home counties, had recently attracted medical students from two of the London medical schools, and medical men, as house surgeons, from the Antipodes. Some of their best residents had come from New Zealand, and the hospital would always welcome the colonial who came to London, after graduating, to complete his medical education. The health of the guests was proposed by Sir Thomas Horder. Sir James Allen, High Commissioner for New Zealand, in replying, thanked the hospital for their care of the men from his colony, and alluded to the interest felt in New Zealand in the problems of cancer and tuberculosis. Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, and Sir Percival Horton-Smith-Hartley, chairman of the medical committee of the Brompton Hospital, also spoke. Mr. Cecil Rowntree proposed the health of the chairman, expressing the warm admiration felt for him by his colleagues as a surgeon, counsellor, and friend.

Tuberculosis in Dublin.—Dr. P. J. Murray, the chief tuberculosis officer for Dublin, has recently issued his report for the year 1920. The most noteworthy feature in his report is the record of the regular and steady diminution in the mortality from tuberculosis in the past six years. In 1915 there were in the city 1513 deaths due to the disease, of which number 1193 were due to pulmonary tuberculosis. The numbers decreased every year until in 1920 they have fallen to 820 and 615 respectively. This may be regarded as something of an achievement in view of the fact that the present scheme for dealing with tuberculosis only came into being in 1913. The scheme at present embraces (1) a dispensary, (2) a sanatorium, and (3) a hospital for chronic or advanced cases. There are also arrangements for treating the various forms of surgical tuberculosis in the city hospitals, and subsequently, if necessary, in convalescent homes. Dr. Murray advises the provision of an institution for the treatment of children suffering from pulmonary tuberculosis. He is of opinion that the topographical and climatic conditions of Dublin have little influence on the incidence of the disease, which is much more affected by the conditions under which the poorer inhabitants are obliged to live. He has found domiciliary treatment less useful than institutional because of the deplorable housing conditions of so many of the working people, conditions which render any attempt at isolation nugatory. He notes that more than half of the new cases examined in 1920 were in families living in not more than one room to a family.

Royal Institution.—The following are the lecture arrangements at the Royal Institution before Easter: Prof. J. A. Fleming, six lectures adapted to a juvenile auditory on Electric Waves and Wireless Telephony, beginning on Thursday, Dec. 29th, with a lecture on Surface Waves on Liquids, and followed by lectures on Waves in Air, the Telephone, Electric Oscillations, Electric Waves, and Wireless Telephony. On Tuesday afternoons, commencing on Jan. 17th, 1922, there will be two lectures on Physiology as Applied to Agriculture, by Dr. F. H. A. Marshall; three by Prof. H. H. Turner on Variable Stars; five by Sir Arthur Keith on Anthropological Problems of the British Empire—Series I., Racial Problems in Asia and Australasia; and two by Dr. J. W. Evans on Earth Movements. On Thursday afternoons Mr. Seton Gordon will give two lectures on Mountain Birds of Scotland and Sea-Birds and Seals; Sir Napier Shaw two on Droughts and Floods; Prof. A. G. Perkin two on Dyeing, Ancient and Modern; Prof. H. Maxwell Lefroy two on the Menace of the Insect Pest: The Balance of Life in Relation to Insect Pest Control; Dr. P. Chalmers Mitchell two on the Cinema as a Zoological Method; and Prof. A. M. Hind two on Landscape Etchers: New and Old. On Saturdays there will be two lectures by Dr. L. de Selincourt on Humorists of the Seventeenth Century—I. Sir Thomas Browne, II. Thomas Fuller; two by Prof. E. A. Gardner on Masterpieces of Greek Sculpture; and six by Sir Ernest Rutherford on Radioactivity. The first Friday evening discourse will be given on Jan. 20th by Sir James Dewar on Soap Films and Molecular Forces. Succeeding discourses will probably be given by Viscount Burnham, Sir Francis Younghusband, Prof. W. D. Halliburton, Dr. R. S. Watson, Prof. J. Joly, Dr. C. M. Wenyon, Prof. T. R. Merton, Dr. A. P. Laurie, Prof. F. G. Donnan, Mr. A. B. Walkley, Sir Ernest Rutherford, and other gentlemen.

The late Dr. Matthew Owen Coleman.—The death is recorded of Dr. M. O. Coleman, who had been medical officer of health for Surbiton for 45 years, at the age of 76. Dr. Coleman qualified M.R.C.S. Eng. in 1867 from Guy's Hospital, taking his M.B. Aberdeen in 1868 and M.D. Aberdeen in 1871. He became interested in public health early in his career, and in addition to a large private practice undertook the duties of an M.O.H., taking his D.P.H. in 1893. Dr. Coleman was very popular in the district he had served so long, and his death will bring grief to many colleagues and old friends.

Welsh National School of Medicine.—This school is now making a public appeal for a capital sum of £100,000 for the purposes of endowment and further equipment. This is necessary in order to place the institution in a position to quality for certain Treasury grants which are subject to the conditions being complied with before August, 1922. The promised grant of £5000 per annum will be forthcoming only in the event of the school raising by public subscription an equivalent annual income, or, in the alternative, a capital sum that will yield this revenue. The time is short and the matter is of great urgency. The Prime Minister has signed an appeal in which he sets forth the aims of the school, pointing out that to enable the school to give a complete training in all branches of medicine and surgery on this system will require a yearly expenditure of at least £25,000, to meet which the grants available from public sources and fees will be quite inadequate. A new physiological block and a department of public health are being built, and chairs of preventive medicine and tuberculosis have been founded. Further expenditure on equipment in the shape of laboratories and apparatus is necessary, and an endowment fund is required to provide the full complement of professors, lecturers, and trained staff which the hospital unit system requires. Mr. Lloyd George adds that the King Edward VII. Hospital at Cardiff has placed all its beds at the disposal of the school for tuition purposes, and that nothing except money is now needed to make this one of the foremost schools of medicine in the country. Donations should be sent to the organising secretary, Mr. Gwilym Hughes, at the National School of Medicine, Newport-road, Cardiff.

The late Dr. Thomas MacQueen.—Dr. Thomas MacQueen, who died suddenly at Eastbourne on Dec. 1st, had been in poor health. He underwent a severe operation about ten years ago, but he was able to continue in practice until the end of his life. Dr. MacQueen took the M.B. degree at the University of Edinburgh in 1873 and became M.S. the same year; he held house appointments at the Queen's Hospital, Birmingham, and at the Royal Hospital for Diseases of Children in Edinburgh. During the Russo-Turkish war of 1877–8 he acted as surgeon to the Stafford House Society, and later settled at Eastbourne. Highly respected by everyone with whom he came in contact, he soon had an extensive practice. For many years he was on the medical staff of the Princess Alice Hospital, and as a prominent member of the Hartington Lodge of Freemasons he was Master in 1886 and received Provincial honours in 1893. He was 70 years of age, and leaves a widow, son (Dr. R. C. MacQueen), and daughter to mourn their loss.

Dr. W. Muir Smith, of Eastbourne, writes of Dr. MacQueen: "By his death the local medical profession in Eastbourne has lost one of its oldest and most respected members, and the town one of its most esteemed citizens. In 1879 he settled in Eastbourne, joining the late Dr. G. Mundie and Dr. H. Habgood in an extensive general practice, which was only dissolved in 1917 when Dr. Habgood retired from practice. He took a keen interest in the municipal and social affairs of the town, serving for three years on the town council, when he rendered excellent service on the sanitary committee. After a serious operation in 1910 Dr. MacQueen never recovered his former vigour although he continued, with the assistance of his son, who in 1910 joined him in partnership, to pursue some of his professional activities. His death will be poignantly lamented by many in the humbler walks of life, who had come to regard his assiduous care and ready sympathy with feelings akin to reverence. He leaves nothing but friends behind."

has described. When the time has come for the deliberations of professors and specialists to be leavened by the common-sense views of the general practitioner, the recently qualified, and even the unqualified student, the chances of reforms being both mooted and carried will be increased.

Let us take the attitude of the general practitioner who, after many years of practice, indulges in a retrospect of his training and tries to form an estimate of its value as judged by its influence on his career. He may perhaps find that in his practice about 50 per cent. of his patients suffered only from functional disturbances, that his success or failure in these cases depended on the degree of psychological skill he was blessed with, and that psychology was a subject totally ignored by his teachers throughout his career as a student. In many other matters his retrospect may leave him with a no more respectful opinion of professors than that with which Bismarck was credited. It is a thousand pities that the general practitioner, who knows better than any other class exactly where the shoe pinches, should be so voiceless in the task of bettering matters for the coming generations of medical students. It is well to remember that only a small fraction, say 5 per cent., of medical men become teachers and specialists. Yet this small minority has hitherto enjoyed a monopoly in the control of medical education, and has imposed its will on an unconsulted majority. This minority of nimble-witted examinees knows little of the struggles of the less gifted majority, who flounder through their examinations with much toil and many a reverse. Having passed their examinations with ease and distinction, it is almost inevitable that the prize-snatching minority should feel satisfied that all is well with the medical curriculum, and that they should be tempted to add to its complexity rather than to simplify it. Again, anyone who breathes the air of the students' quarter in hospitals knows how discontent seethes with regard to certain subjects in the medical curriculum. Why should not there be an outlet for this discontent, some of which may be justified? The question is surely pertinent.

The older generations do, no doubt, enjoy a judgment and perspective denied to callow youth; but the student possesses first-hand knowledge and is often more vitally interested in the matter than elderly teachers. Not only does the student often have a shrewd conception of the comparative value of the different subjects he is expected to master, but he also knows much better than his seniors which of his teachers are efficient and which are more or less incompetent. Yet he is allowed little or no choice, and many a misspent hour is the outcome of regulations enforcing attendance at the lectures of a dull and droning "teacher." Some years ago, at a Continental university, a professor of surgery became so notoriously incompetent as a teacher and unfair as an examiner that a deputation of medical students waited on the university authorities, insisting on his early retirement. This took place shortly afterwards. But for every such instance of vindication of the rights of the student, there must be dozens in which the forces of reaction and inertia have prevailed. It is so easy for these forces to invoke the privileges of age and experience.

Thoughts like these were, perhaps, passing through the mind of Prof. J. Madison Taylor when he sat down to compose his thesis[1] on "A New Conception of Medical Education and Medical Practice." With personal experience of general practice, he has brought to his present position as Professor of Physical Therapeutics and Dietetics in Philadelphia an outlook not exclusively academic. The principle of his scheme is the sorting out of medical students for different spheres of usefulness early in their career. He regards as wasteful the old system of passing every student through the same tests, irrespective of his individual abilities, and he visualises a future with three different grades of medical practitioner. The first and lowest grade he quaintly describes as the "drug store type." This "type" is meant to cope with walking cases, to deal practically with minor surgical and medical emergencies, to have experience in dispensary work, and to be qualified to practise after two years of "part-time studies." The second grade or "panel" type is to be qualified for more serious emergencies, to visit homes, to care for the average patient, and when "the problems exceed his training," to call in consultants. The period of training required for this grade of practitioner to become competent and "up to all ordinary practice," is to be three years. For the third and highest grade, a four years' course is suggested, part of the fourth year being devoted to such specialities as obstetrics and major operations. Although the humble-minded student, conscious of his inability to become a shining light in the medical profession, would be able to complete his studies in two years and then begin earning his living, opportunities to rise from one grade to the other would not be lacking, and he might ultimately reach the third or highest grade.

Another suggestion put forward by Prof. Madison Taylor is that there should be preliminary tests of the student's intelligence, gumption, or common-sense. "For the higher class medical adviser greater emphasis should be laid on the more abstract processes of intellectation." This paper conveys a bizarre impression. The conception of a cross between an orderly and a mediæval barber-surgeon—the product of two years' training—is somewhat startling; and, judged by European standards, the notion that a consultant surgeon or physician can be evolved in four years seems a whimsical fantasy. But these considerations should not blind us to the essence of Prof. Madison Taylor's scheme, and if we make due allowances for the very different conditions of medical practice obtaining in the U.S.A., and remember that what may seem startling and unconventional to us may be the acme of common-sense beyond the Atlantic, we may come to the conclusion that the principle for which Prof. Madison Taylor is fighting is sound. Until we are satisfied that our educational system is made sufficiently flexible to meet the needs and qualifications of the individual, and till it is modelled on the requirements of the student in his post-graduate career, it is our obvious duty to provide ventilation for grievances and to leave the door open to reforms. I am, Sir, yours faithfully,

Dec. 10th, 1921. C. L.

SELF-DISINFECTION.

To the Editor of The Lancet.

Sir.—May I be allowed a word of comment on the annotation in your issue of Dec. 10th dealing with the articles contributed by Sir Archdall Reid and myself to the *International Journal of Public Health ?* On receiving the invitation to write the article in question, I suggested to the editor that the controversy on "self-disinfection" was essentially a "domestic" one, and that it was undesirable to parade it in an international journal circulating in other countries in which this question is rightly regarded as of minor importance in the campaign against venereal disease. I added that, if the subject was to be broached at all, it would be better to have a single article, written by someone not specially identified with either side, and free from polemics. I received the reply, however, that Sir Archdall Reid had already accepted the invitation to contribute a paper, and that the *Journal* was thereby committed to its publication. Rather than to allow judgment by default, I agreed, though against my inclination, to write the short article to which you have alluded.

The National Council fully realises the harm done to the anti-venereal campaign by public controversy on "self-disinfection," and has always refrained from initiating such controversy either in the medical or the lay press. The most that can be urged against it is that occasionally it has ventured to defend itself

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[1] American Medicine, August, 1921.

Notes, Short Comments, and Answers to Correspondents.

THE DOCTRINE OF INFECTION THROUGH THE AGES.

THE last Chadwick lecture of the present session was delivered at the Barnes Hall of the Royal Society of Medicine on Dec. 8th, Sir James Crichton Browne presiding, by Dr. Charles Singer, who discussed the history of the doctrine of infection.

In Prehistoric and Classical Times.

In modern times, Dr. Singer said, a mother suspecting her child to be suffering from measles would promptly call in a physician, who might confirm her suspicions, informing her at the same time that the child had contracted the disease from a schoolfellow whom the physician had been attending for some days. Two thousand years ago the family friend and physician would have assured the Roman mother that the atmosphere was in a pestilential state, that in time this pestilential character of the atmosphere would pass away and that in a few days perhaps the patient would recover. In a lake village of, say, 10,000 years ago, modern views might have prevailed; not only would an infection be considered to be conveyed from one person to another, but other things, such as a broken arm, would be attributed to the same cause, the idea of infection having a much wider meaning. Good luck was infectious, virtue and vice every form of happiness and unhappiness.

Why the ancients of classical times did not believe in infection in the wide sense, while the primitive people believed everything to be infectious, had its root-cause, Dr. Singer said, in each case in the group of philosophical ideas formed regarding the nature of the world in which they lived. By a process of sympathetic magic early man considered that moral qualities and powers passed from person to person in the same way as physical attributes were conveyed from object to object. Early sanitary legislation was based on this doctrine of sympathy. Classical writers, on the other hand, held a rationalistic attitude towards phenomena in general and disease in particular. The element of infection was thrown into the background and emphasis was laid rather on the atmospheric element or miasma. Galen regarded most epidemic diseases as due to changes in the only universally acting medium, as he considered, the air; to him, few diseases were conveyed from person to person, among these few, be it noted, was phthisis. Infection from person to person remained mainly the layman's view, beginning with Thucydides and handed on through the dark ages by St. Isidore, who died in 636 A.D. During the scholastic period which in medicine extended from the twelfth to the middle of the sixteenth century, the prevalent medical teaching was derived from works translated from the Arabic, although few, if any, of the writers were Arabs, the doctrines propounded being derived from and essentially similar to those of the classical writers. Arabian medical authors, however, laid more emphasis on the passage of disease from person to person than did the Greek physicians. After this came the fatalistic reaction when the sale of medical books was forbidden, and many of them were destroyed, Galen's works fortunately escaping destruction.

In the Middle Ages.

Western Europe, Dr. Singer continued, between the Black Death of 1347–49 and the middle of the sixteenth century was swept by an appalling series of epidemic outbreaks of plague, typhus, influenza, small-pox, syphilis, and sweating sickness, which gave rise to a considerable literature, at first mainly of Arabian origin. From 1490 to 1550 this literature came under the influence of rationalistic Renaissance philosophy, from which the modern doctrine of infection took its rise. Hieronymo Fracastor might be called the father of epidemiology; he invented the word syphilis and was one of the earliest to describe that disease. His great work "De Contagionibus" was published at Venice in 1543. He regarded infection as the result of small seeds or semina, so minute as to escape the sense of vision, but having the power of multiplication. These seeds were specific for each infectious disease, they could arise de novo as the result of atmospheric disturbance or of corruptions and especially of certain astral influences. It was useless, said the lecturer, to discuss whether Fracastor considered the semina living or not, for he made no distinction between living and non-living matter, belonging as he did to a philosophical school which held all material substance to be pervaded by some sort of living principle. He made, however, a close and pregnant comparison between infection, putrefaction, and fermentation. Fracastor's views were widely accepted in the sixteenth and seventeenth centuries being amplified by such writers as Paracelsus, Jerome Carden, and Gabriel Fallopius, but remaining for the most part the current explanation of the phenomena of infectious and epidemic disease.

CALENDARS AND DIARIES FOR 1922.

THE Anglo-French Drug Co., Ltd., of 238a, Gray's Inn-road, London, W.C., have issued their diary for 1922 made in the handy form of a block calendar with a page 6 by 4½ inches for each day, containing ample space for memoranda. The diary is intended to lie on the desk and is provided with a cover containing a window permitting the date always to remain in sight. It can be obtained free on application.

EPILEPTIC FITS AND ATMOSPHERIC POTENTIAL.

IN a paper presented to the Balneological Section of the Royal Society of Medicine on Dec. 8th Dr. A. G. S. Mahomed compared the published records of atmospheric electrical potential from Kew Observatory with the number of epileptic fits recorded day by day among the inmates of Epsom Colony and Caterham Mental Hospital. The periods chosen for comparison were the first half-years of 1912 and 1919. Dr. Mahomed found potential and fits started high in January, were about at the average level in April, and sank below it in the succeeding months. June did not agree with the rule. The observations are suggestive, although Dr. Mahomed has not worked out mathematically the actual correlation value.

HOSPITALS AND DISPENSARIES IN BENGAL.

IT is well known, as remarked by Major-General W. H. B. Robinson, C.B., K.H.S., I.M.S., Surgeon-General with the Government of Bengal, in his report on Hospitals and Dispensaries for the years 1917–18–19 (Calcutta, 1920) that there is need for more qualified practitioners "of the Licentiate or School Standard" in that province; and in order to meet this demand the sanctioned strength of students in the Campbell and Dacca Medical Schools has been increased to 500 and 400 respectively. Moreover, a new medical school, especially for western Bengal, with accommodation for 200 students, is in course of construction at Burdwan, and is expected to be opened in the present year; also the Carmichael Medical College at Belgachia, together with the Albert Victor Hospital attached to it, are both being enlarged and improved. The School of Tropical Medicine at Calcutta was completed four years ago, but has not yet been opened; the buildings are now being extended to include laboratories, &c., for the teaching of hygiene. The total hospital accommodation in Calcutta at present amounts to 2385 beds in 16 hospitals, as compared with 2323 beds in 14 hospitals at the end of 1916; but all these institutions are more or less overcrowded, a considerable number of beds having to be given up to incurables and permanent cripples. There is urgent need for a suitable refuge for these cases, as well as for a convalescent home to relieve the pressure on the very costly hospital beds. The average number of patients treated per annum in these Calcutta hospitals was 446,209, compared with a similar average of 397,074 in the preceding triennium, the increase being due partly to prevalence of influenza and small-pox; out of this average annual total the in-patients numbered 32,325, with a death-rate of 14·49 per cent. At the Campbell Hospital as many as 11,873 patients were treated, a very large increase on the admissions for 1918 (7250), and 1917 (5575). Great credit is due to the superintendent, Lieut.-Colonel A. Leventon, for his success in meeting the enormous demands on the accommodation at his disposal. This hospital is now "highly popular among the middle and humbler classes," and a much needed enlargement has been taken in hand.

Among the chief diseases prevalent during the three years reported on were influenza in 1918 and 1919, cholera in each year, kala-azar, and tubercle of the lung. Admissions for malaria, pulmonary tubercle, and venereal diseases were less numerous in Calcutta in 1917 and 1918 than in 1916. The death-rates in cholera among in-patients were 22·6, 24·5, and 28·1 per cent. for the three years, 1917–18–19, respectively, "a very high testimonial to the Rogers treatment by intravenous saline, especially when one considers the very critical condition of the cases on admission." In the districts there was an increase in malaria (more than one-third of the total patients attending dispensaries being under treatment for this disease). Injection of quinine salts gave satisfactory results. Surgeon-General Robinson, in his concluding remarks, gives a well-deserved tribute to the excellent work of the medical officers of the Indian Medical Service and of the military and civil assistant surgeons, and draws attention to the inadequacy of pay in the case of the two latter. This matter has been long under consideration, and it is hoped that improvements will be effected without further delay.

Medical News.

Royal College of Surgeons of England.—An ordinary Council meeting was held on Dec. 8th, Sir Anthony Bowlby, President, being in the chair.—A report was read from the Court of Examiners respecting candidates found qualified for the diploma of Fellow. Diplomas of Fellowship were granted to 26 candidates.—A report was read from the Board of Examiners in Dental Surgery respecting candidates found qualified for the Licence in Dental Surgery. Licences in Dental Surgery were granted to 63 candidates.—Sir Anthony Bowlby and Sir John Bland-Sutton were re-elected representatives of the College on the Conjoint Board of Scientific Societies for the year 1922.—The President reported that he attended in the lecture theatre of the College on Thursday, Nov. 17th last, the day appointed for the annual meeting of Fellows and Members, and that, as the required quorum of 30 was not present at the expiration of 15 minutes from 3 P.M., the hour for which the meeting had been summoned, he had announced that the meeting could not be held. The President also referred to certain irregular proceedings which appear to have taken place on this occasion after his withdrawal from the theatre, and suggested that it might be a matter for the future consideration of the Council as to whether, or not, any steps should be taken in view of these irregular proceedings. It was thereupon referred to a committee to consider and report to the Council regarding the irregular proceedings to which the President had called attention.—A letter was read from Mr. H. Waring reporting the proceedings of the General Medical Council at their recent session, and the Council thanked Mr. Waring for his services as the representative of the College on the General Medical Council.

Of the 113 candidates who presented themselves at the recent examination for the Fellowship 26 were approved and 87 were rejected. The following are the names and medical schools of the successful candidates:—

Lyon H. Appleby, London Hosp.; Wilfrid H. Bleaden, Oxford and St. George's; Marian N. Bostock, Royal Free and St. George's; George A. Brookes, Sydney and London; George G. Bruce, Aberdeen and St. Bart.'s; Noel St. John G. Dudley Buxton, Univ. Coll.; Hugh W. B. Cairns, Adelaide and London; Robert C. Davenport, St. Bart.'s; Griffith I. Evans, Oxford and St. George's; Charles M. Finny, Dublin; Lionel B. Goldschmidt, King's Coll.; Ronald B. Green, Univ. Coll.; Alfred H. Heslop, Durham and St. Thomas's; Eric I. Lloyd, Cambridge and St. Bart.'s; Arthur J. McNair, Cambridge and Guy's; Victor E. Negus, King's Coll. and St. Mary's; Donald C. Norris, Paris and London; Eleanor J. Partridge, Royal Free; Robert Y. Paton, Cambridge and St. Mary's; Hugh Reid, Liverpool and London; Gilbert I. Strachan, Glasgow and London; Donald McKay Sutherland, Manchester; Maurice L. Treston, London; Austin D. Wall, St. Bart.'s; Alfred B. K. Watkins, London; and Leslie H. W. Williams, Cardiff and Univ. Coll.

Licences in Dental Surgery were conferred upon the following:—

Dorothy M. Allen, Royal Dental; H. C. Ardouin, Univ. Coll.; H. J. Barrand, T. E. Brevetor, J. H. Broadhead, and I. Broude, Guy's; J. B. Chenoy, Royal Dental; H. C. Churchill, P. N. C. Conway-Jones, F. W. Crook, J. L. de Kock, J. I. do Villiers, and D. I. du Buisson, Guy's; D. M. Edmonds, Royal Dental; F. J. Farmer, W. M. K. Gray, and A. W. Greenwood, Guy's; O. C. M. Haines, Royal Dental; F. J. Hagen, Univ. Coll.; A. W. Hall, Royal Dental; C. Hardwicke and A. Havenga, Guy's; F. Hiam, Royal Dental; F. R. Hogbin, Guy's; E. E. M. Horton, London; W. H. Hume, Royal Dental; Petronel Iago, Univ. Coll.; H. Jackson, Royal Dental; G. K. Jennings, B. J. M. Keyter, O. F. A. Krause, J. A. Krige, J. Lanchester, A. S. Landsler, S. Levinson, and H. J. Luck, Guy's; E. I. Morgan, London; W. J. Olivier, E. C. Packham, O. F. R. Painter, and H. H. Pickett, Guy's; C. L. T. Pocock, Royal Dental; E. M. Power, G. E. Price, and G. P. Pritchard, Guy's; L. Rabinowitz, London; S. H. Rands, H. J. Raubenheimer, and J. H. Reid, Guy's; B. A. Rilot, Royal Dental; P. M. Rohan, Univ. Coll.; F. H. Rowat, Royal Dental; A. F. Searle, London; W. E. Silver and J. S. Smith, Guy's; R. R. Steele, Royal Dental; F. W. van der Hoven, H. van Zyl, and H. P. Ward, Guy's; A. I. Williams, Royal Dental; and G. S. W. Willis, T. E. Withers, and F. Woodford, Guy's.

Royal Faculty of Physicians and Surgeons of Glasgow.—At the monthly meeting of the Faculty held on Dec. 5th the following were admitted, after examination, as Fellows of Faculty:—

Donald McIntyre, M.B., Ch.B., F.R.C.S. Edin.; Osborne Henry Mavor, M.B., Ch.B.; John Ivison Russell, M.B., Ch.B.; David Smith, M.B., Ch.B., M.D.; David Steven, M.D.; William Richard Wiseman, M.A., B.Sc., M.B., Ch.B.

Royal College of Physicians of Edinburgh.—At the annual meeting of the College held on Dec. 1st Sir Robert Philip was elected President for the ensuing year. The other office-bearers for the year were appointed as follows: Vice-President, Dr. Harry Rainy; Councillors, Drs. John W. Ballantyne, John Macpherson, George M. Robertson, Robert Thin, and James Lamond Lackie; Treasurer, Dr. Norman Walker; Secretary, Dr. J. S. Fowler; Hon. Librarian, Dr. John William Ballantyne; Curator of the Research Laboratory, Dr. J. J. Graham Brown.

Sir E. Coey Bigger has been nominated a member for Ireland of the General Medical Council for a further period of five years from Jan. 24th, 1922.

University of Manchester.—Prof. H. B. Dixon, F.R.S., who as successor to Sir Henry E. Roscoe has occupied for 35 years the Sir Samuel Hall Chair of Chemistry in Owens College, and later in the University of Manchester, has intimated to the Council and Senate of the University his intention to retire at the end of the present session. Prof. Dixon's special line of investigation has been the rate of explosion of gases, and for his work in connexion with the inspection of explosives during the war he was awarded the C.B.E. Prof. Dixon intends to continue his researches in the chemical department of the University.

The following appointments to the University of Manchester have been made: Mr. J. P. Buckley, lecturer in regional surgery; Mr. J. M. W. Morison, lecturer in applied anatomy; Dr. T. H. Oliver, lecturer in clinical medicine.

Glasgow Victoria Infirmary.—At the annual general meeting of contributors to the Glasgow Victoria Infirmary on Dec. 1st, Mr. William Gray, the chairman, said that the daily number of cases now averaged 283. This was more than the present building could properly accommodate, but in view of the cost of building and the additional expenditure for maintenance involved, the governors hesitated to proceed with extensions. They had received substantial support from the public during the past year and the large increase in employees' subscriptions was most gratifying; if the scheme drawn up last year was universally adopted, he thought they might rely on a further increase from this source. The thirty-fourth annual report, recently issued, showed that during the year 4348 patients were treated, exclusive of 1917 cases of accidents and minor surgical ailments, and at the electrical department there were 9195 attendances. The cost per patient was £10 9*s.* 3*d.*, as against £10 4*s.* 3*d.* last year, and the cost per bed £160 14*s.* 5*d.*, compared with £159 9*s.* 2*d.* At Bellahouston Dispensary 24,560 patients were treated, and they had had to draw a sum of £1157 from the infirmary to meet expenses; and in the home at Largs, where 498 patients were treated, they had also had to draw on the infirmary funds. Including both legacies and special donations, they had an income of £60,295 this year, leaving a surplus over expenditure of £6356, which had been carried to capital, compared with a deficit of £1511 drawn from capital the previous year.

Maudsley Hospital Course for Diploma of Psychological Medicine.—The first part of the fourth course of lectures and practical courses of instruction for this diploma will begin on Jan. 3rd, 1922, at 2.30 P.M. Sir Frederick Mott, F.R.S., will give the first of eight lectures on the Anatomy of the Nervous System. He will also give practical instruction and demonstrations on methods of staining nervous tissue and preparing it for microscopical examination, on the living nerve cell and the nerve fibre, on degeneration and regeneration of nerves, and will distribute sections, illustrating the principal diseases of the nervous System, for mounting as a permanent collection. On Jan. 6th, at 2.30 P.M., Dr. F. Golla will give the first of eight lectures on the Physiology of the Nervous System, including practical instruction and demonstrations on physiological chemistry and practical physiology. On Jan. 5th, at 2.30 P.M., Dr. Henry Devine will give the first of eight lectures on Psychology, including practical instruction and demonstrations on sensation, psycho-physical methods, statistical methods, reaction times, association, memory, intelligence tests, muscular and mental work. The second part of the course will follow in April, 1922, and will include lectures and demonstrations on (1) The Diagnosis, Prognosis, and Treatment of Mental Diseases; (2) Mental Defect and Crime; (3) The Practical Aspect of Mental Deficiency; (4) Pathology of Mental Diseases, including Brain Syphilis, its Symptomatology and Treatment; (5) The Symptomatology of Mental Diseases; (6) The Psychoneuroses; (7) Demonstrations in Neurology. The fee for the whole course is £15 15*s.*, and for each part separately, £10 10*s.*; for one single series of lectures in Part I., £4 4*s.*; for one single series of lectures in Part II., £2 2*s.* The Fellowship of Medicine, 1 Wimpole-street, London, W., will collect fees from, and issue admission tickets to, medical men intending to take the course who are introduced by the Fellowship. Inquiries as to lectures, &c., should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E.

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An Address
ON THE RELATIONSHIP OF URÆMIA AND HYPERPIESIA.

Delivered at a Meeting of the Bradford Medico-Chirurgical Society on Oct. 5th, 1921,

By H. BATTY SHAW, M.D., F.R.C.P. Lond.,
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL AND TO THE BROMPTON HOSPITAL FOR DISEASES OF THE CHEST.

THERE can be no necessity for apology in venturing to discuss these two conceptions—uræmia, an old and familiar one, and hyperpiesia, so new that it has not yet appeared in books of reference—because it is apparent that there is a relationship between them. They seem to mean the same thing in many particulars, yet not in all.

I. The Conception of Uræmia.

Before the propositions put forward in this address are developed, it is necessary to know the present views on the clinical and pathological significance of the term uræmia. In conditions of health urea is present in the blood to the extent of a quarter to half a gramme in every 1000 g. of blood; in this sense, therefore, uræmia is physiological. There are also numerous clinical conditions in which urea of the blood is increased in amount: in some cases, but not all, there is kidney disease. Moreover, the occurrence of certain well-known symptom-complexes leads us to suspect kidney disease; we speak of these symptom-complexes as manifestations of uræmia—an incorrect designation, inasmuch as it signifies the presence in the blood of urea in excess of the physiological amount, and assumes that this excess is responsible for production of the symptoms called uræmia. It is now admitted that an excess of urea in the blood is not the cause of uræmic symptoms. The wonder is that the expression should still be used by clinicians when our pathological and experimental brethren have shown that uræmia is a misnomer. Clinicians need some special expression to fix the identity of the curious bed-side manifestations described as uræmia; but it is regrettable that so far no more suitable term has been coined to take its place. It is possible now, however, to replace the expression uræmia—a condition hitherto unexplained—by another word which commits no one using it to any particular new theory of causation. Any such proposed change will certainly meet with resistance; indeed, one authority has already said that it would be futile and pedantic to attempt to abolish the word uræmia, although neither urea nor any known element present in the urine, nor urine itself taken as a whole, has been shown to be capable of producing the toxic effects which the term uræmia covers. Before the current definitions of uræmia are studied, it will be found not uninteresting to trace the stages by which the term was introduced.

Growth of Knowledge Concerning Urea.

It is not quite clear whether the discovery of urea was made by Rouelle or by Cruickshank towards the end of the eighteenth century. As early as 1822 Vauquelin and Ségalas D'Etchepare[1] studied the toxic effects of the introduction of urea into the veins of an intact animal. They found no harmful effects; they experimented further on the same animal by injecting 3 oz. of urine into its veins, and it died in a few minutes from widespread clotting of the blood. In 1827 Bostock[2] examined the serums of some of Bright's dropsical albuminuric patients; besides establishing the fact that these serums contained less albumin than those of healthy people, he also found a substance present which resembled urea, and he states that Dr. Prout had found this substance in a dropsical patient six months earlier. Christison[3] in 1829 went a stage further and found that in the serums of patients suffering from dropsy and albuminous urine, dependent upon kidney disease, there was a large quantity of urea. Up to this date investigations had merely shown at the hands of these workers what we know nowadays to be the rule, that urea is present in the blood in health, and may be decreased and increased in health and in disease, but no one had come forward with the idea that the urea present in the blood in cases of dropsy and albuminous urine, dependent upon kidney disease, was the cause of the various toxic symptoms met with in these conditions, until Dr. James Arthur Wilson[4] delivered an address before the Royal College of Physicians in 1833 on "Fits and Sudden Death in connexion with Disease of the Kidneys." He surmised that these manifestations were due to the blood altered by disease of the kidneys. These are his actual words: "The exact change of the blood may require further investigation, but the presence of urea and the deficiency of albumen are those which hitherto chiefly attracted the notice of Dr. Prout and Dr. Bright." Wilson's object was to insist on the "intimate, constant and vital connexion of brain, lungs and heart with the kidneys through the medium of the blood." These remarks uttered by Wilson are generally acknowledged to constitute the first recorded suggestion that urea present in the blood might cause some of the symptoms in Bright's disease. Thus, so long ago, one observer felt that the blood contained toxic principles in cases of Bright's disease. Within a few years of Bright's discovery the poisonous condition of the blood in the cases he described began to be thought of; this is an important point. It is material to this address that to this day it is not known what those poisons are, although urine, urea, and other renal excreta are certainly not the sources of the poison.

Introduction of Term "Uræmia."

Some observers think that the birth of the idea that an accumulation of urea in the blood in cases of Bright's disease is the cause of the toxic symptoms of that disorder is to be found rather in the writings of Robert Willis[5] than in the above remarks of Wilson. Willis said, "All we know would, therefore, lead us to infer, that in the dangerous form of albuminous urine either the formation of urea, wherever this takes place, was suspended, that it was not duly separated from the blood by the kidney, or that," &c. So far, the term uræmia had not been used; according to Marfan[6] we owe the introduction of the word into medical literature to Piorry, who, according to Fournier (De l'urémie: Fournier, Thèse d'agrégat. de Paris, 1863), first used this term in 1847. Frerichs[7] in 1851 discussed "uræmic intoxications." From those times to the present most authorities have continued to use the word uræmia as expressive of the toxic symptoms produced by the blood which has been altered by disease of the kidneys. Observers had before them the clinical records of Richard Bright's 23 cases, and they had before them the coloured plates representing the kidneys met with in those cases. It must be remembered, of course, that in those days there was no microscopic examination of the organs illustrated.

The Three Groups of Bright.

It is now necessary to draw attention to the following quotations from Bright's paper (loc. cit., p. 67). Speaking of the several forms of disease to which the kidney became liable in the foregoing dropsical affections, he thought there were three varieties, if not three completely separate forms of diseased

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[1] Journal de Physiol. Expériment. et Patholog., 1822, p. 354.

[2] Bright's "Medical Reports," 1827, vol. i., p. 83.

[3] Edin. Med. and Surg. Journal, 1829, vol. xxxii., p. 295, and Granular Degeneration of the Kidneys, 1839, p. 61.

[4] Lond. Med. Gazette, 1833, vol. xi., p. 777.

[5] Urinary Diseases and Their Treatment, Lond., 1838, p. 123.

[6] Dict. Encyclopédique des Sc. Méd., 1866, 5 sér., T.1, Article Urémie.

[7] Die Bright'sche Nierenkrankheit, Braunschweig, 1851, S.87.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Dec. 20th.

GENERAL MEETING OF FELLOWS: at 5 P.M. Ballot for Election to the Fellowship. (Names already circulated.)

Wednesday, Dec. 21st.

HISTORY OF MEDICINE: at 5 P.M. *Papers:* Mr. C. J. S. Thompson: The Parturition Chairs, their History and Use. Miss Eileen Power: An English Woman Doctor in the Fifteenth Century.

OBSTETRICS AND GYNÆCOLOGY. Members of this Section are specially invited to attend the Meeting of the History Section announced above.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

Tuesday, Dec. 20th.—4.30 P.M., Pathological Specimens. Cases sent for Consultation. Clinical Cases. 5 P.M., Address by Dr. Harry Campbell: The Disorders of the Cutaneous Circulation. 7 P.M., Fellows' Monthly Dinner. Cavour Restaurant, Leicester-square. Tickets 6s. 6*d.* each. Dr. Mitchell, 33, Weymouth-street, W., should be notified at or before the Society's Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Dec. 19th.—2 P.M., Mr. Addison: Visit to Surgical Wards.

Tuesday.—2 P.M., Dr. Pernet: Skin Department.

Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department.

Thursday.—2 P.M., Mr. Bishop Harman: Eye Department.

Friday.—2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

Saturday.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

Tuesday, Dec. 20th.—4.30 P.M., Mr. J. P. Buckley: Vague Abdominal Symptoms.

Appointments.

Cornelius, J. T., has been appointed Assistant Professor of Hygiene at the Provincial Institute of Hygiene and Sanitation, Lucknow.

Maclean, Ewen J., M.D., C.M. Edin., M.R.C.P. Lond., Professor of Obstetrics and Gynæcology in the University of Wales in connexion with the Welsh National School of Medicine, Cardiff.

Ord, J. W. E., M.D., C.M. McGill, Certifying Surgeon under the Factory and Workshop Acts for Eyam.

Walker, K. M., F.R.C.S. Eng., Surgeon with charge of Out-patients, Great Northern Central Hospital.

Hampstead General Hospital: Semon, H. C., M.D., B.Ch. Oxon., Dermatologist; Booth, L. H., M.B., Ch.B. Dunedin, N.Z., House Surgeon: Fanning, J., M.B., B.S. Lond., House Physician; Warde, Mildred, M.R.C.S., L.R.C.P. Lond., Casualty Medical Officer; Collie, Alison Margaret, M.B., M.R.C.S., L.R.C.P. Lond., Casualty Surgical Officer.

The Queen's Hospital for Children, Hackney-road: Russell, H. B., B.Ch. Camb., F.R.C.S. Eng., and Braithwaite, J. V. C., M.B., B.S. Lond., Assistant Physicians.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—H.S. £200.
Barry Accident and Surgical Hospital.—S. £750.
Bath, Winsley Sanatorium.—Asst. Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham, Ministry of Pensions, Orthopædic Centre.—Res. Surg. O. £300.
Birmingham, Queen's Hospital.—Obst. and Ophth. H.S. and Cas. H.S. Each £90.
Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.
Blackburn County Borough.—Asst. M.O.H. £600.
Brighton, Royal Sussex County Hospital.—Hon. P. and Hon. Asst. P.
Bristol Royal Infirmary.—H.P. and H.S. £120 each.
Bury Infirmary.—Jun. H.S. £150.
Bury St. Edmunds, West Suffolk General Hosp.—Res. H.S. £200.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cape Town University.—Tech. Asst. in Surgery. £350.
Chester, Cheshire County Council.—Dist. Tub. O. £600.
City of London Hospital for Diseases of the Chest, Victoria Park.—Res. M.O. £250.
Derbyshire County Council.—Sanat. Supt. £700.
Dorchester, Dorset County Council.—Asst. M.O. £500.
Dover Borough.—Asst. M.O.H. £750.
Dover Royal Victoria Hospital.—H.S. £180.
East Ham County Borough Education Committee.—Asst. Sch. M.O. £500.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250. Asst. H.S. £150.
Great Northern Central Hospital, Holloway-road, N.—Res. M.O. £250.
Hospital for Diseases of Throat, Golden-square.—Hon. Asst. S.
Hospital for Sick Children, Great Ormond-street.—Cas. O. £400.
Inverness Northern Infirmary.—H.S. £150.
Johannesburg, University College.—Sen. Lect. in Anat. £516.
Leeds Hospital for Infectious Diseases, Seacroft.—Second Asst. M.O. £250.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Lincoln, Bracebridge Mental Hospital.—Med. Supt. £750.
London Homœopathic Hospital, Bloomsbury.—M.O. for X ray Dep.
London Lock Hospital, 91, Dean-street.—Clin. Assts.
Macclesfield General Infirmary.—Sen. H.S. £200.
Manchester, Baguley Sanatorium.—Med. Supt. £500.
Manchester Royal Infirmary.—Asst. M.O. £35.
National Hospital for Diseases of Heart, Westmorland-street.—Res. M.O. £150.
Putney Hospital.—Hon. Surg.
Royal College of Physicians, Pall Mall.—Milroy Lect.
Royal Free Hospital, Gray's Inn-road.—H.P. £50.
Royal Naval Medical Service.—Surg. Lieuts.
Royal Waterloo Hospital for Children and Women, Waterloo-road. Radiographer. £100.
Russian Famine Friends' Relief Committee.—Doctors wanted.
St. Bartholomew's Hospital.—Asst. Aural S.
St. George's Hospital, S.W.—Res. H.P.'s and H.S. Each £50.
St. Pancras Metropolitan Borough.—Tuberc. O. £818 18s.
Sheffield Royal Infirmary.—Cas. O. £150.
Shrewsbury, Royal Salop Infirmary.—H.S. £275.
Southport General Infirmary.—Jun. H.S. £175.
Staffordshire General Infirmary.—H.S. £250.
Ventnor, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
West London Hospital, Hammersmith-road.—Two H.P.'s and one H.S. Each £100.
Winchester, Royal Hampshire County Hospital.—H.S. £150.
Windsor, King Edward VII. Hospital.—Asst. in X ray Dept.

The Secretary of State for the Home Department, S.W., gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 49, attached more particularly to the Margate and Ramsgate County Courts. Applications should reach the Private Secretary, Home Office, S.W., not later than the 28th December.

Births, Marriages, and Deaths.

BIRTHS.

Cripps.—On Dec. 7th, at Lower Seymour-street, W., the wife of W. Lawrence Cripps, F.R.C.S., of a son.

Edwards.—On Dec. 11th, at Camberwell House, the wife of Dr. Francis Edwards, of a son.

Rankin.—On Dec. 9th, at Harley-street, the wife of Nicol M. Rankin, M.C., M.B., Ch.B., of a son.

Vincent.—On Dec. 5th, at Old Court, Ealing, to Dr. and Mrs. L. J. Vincent, 6, Twyford-crescent, Acton—a son.

MARRIAGES.

Driberg—Carter.—On Dec. 2nd, at St. Marylebone Parish Church, James D. Driberg, O.B.E., M.C., F.R.C.S., Queen Anne-street, to Dorothy Unwin Carter, daughter of the Rev. Arthur and Mrs. Carter, of Thrussington, Leicester.

Lindsay—Davis.—On Dec. 3rd, at St. John's Church, Ladbroke-grove, E. Charles Lindsay, C.B.E., F.R.C.S., to Mrs. M. C. Davis, of Undercliff, St. Margaret's Bay.

Rees—Hemingway.—On Dec. 15th, at Regent-square Presbyterian Church, London, by the father of the bridegroom, assisted by Rev. Herbert Gray, John Rawlings Rees, M.D., of 146, Harley-street, third son of Rev. R. M. Rees, M.A., and Mrs. Rees, of Epping, to Mary Isabel Hemingway, M.B., Ch.B., second daughter of Charles R. Hemingway, J.P., C.B.E., of Penrhyn House, The Park, Nottingham.

DEATHS.

Coleman.—On Dec. 11th, at Dunedin, Surbiton, Matthew Owen Coleman, M.D., D.P.H., aged 77 years.

Dilworth.—On Dec. 4th, after a short illness, Timothy Francis Moya Dilworth, M.B., M.Ch., B.A.O. N.U.I., Senior Demonstrator of Anatomy at St. Thomas's Hospital; aged 28 years.

Frost.—On Dec. 10th, Edmund Frost, M.D., of Chesterfield Meads, Eastbourne, aged 64 years.

Palmer.—On Dec. 7th, at Oakley-street, S.W., after a short illness, James Foster Palmer, M.R.C.S., L.R.C.P., aged 73 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

signs and symptoms and the actual diseased condition of the kidneys to altered condition of the blood from some infection, whether chronic or not—e.g., syphilitic toxæmia and various bacterial toxæmias.

4. But just as in syphilis all infected cases do not show kidney disease, albuminuria, dropsy, and other toxic signs and symptoms, so also infections producing *changes in the blood do not show, in all cases*, the complete pictures above sketched; in some dropsy alone occurs, or albuminuria alone occurs, or the other toxic symptoms met with in so-called uræmia alone occur (to the exclusion of albuminuria and of dropsy); in still others, changes occur only in the kidney, to the exclusion of albuminuria or of dropsy or of both, or of the other signs and symptoms of so-called uræmia.

Definition of Uræmia.

At last, after a rather long preparation, the definition of uræmia so-called, may be given thus: It is a clinical expression which seems to indicate a condition in which the blood is so altered by disease, especially —possibly exclusively—by infections; that changes may occur in the kidneys; that plasma proteins may no longer be retained within the capillaries, &c., owing to leakage through the damaged capillary walls (hence albuminuria, anasarca, and œdema of the lung); that irritation or paralysis may affect the cortex cerebri (hence fits and mania, local or general motor palsies, blindness, deafness, coma, &c.), or the respiratory centres (hence renal asthma or periodic breathing), *or may affect the neuro-muscular control* of the heart and blood-vessels (hence alteration in the pulse-rate, asystole, "sudden death," &c.), or may affect the gastro-intestinal tract, producing vomiting and diarrhœa, &c. When the kidneys are seriously damaged, then urea, uric acid, and various other crystalloids may be reduced in amount in the urine, and increased in amount in the serum, depending on the failure of the kidneys to act properly—i.e., if not depending upon less intake of nitrogenous food from nausea or loss of it by vomiting, and if the liver is healthy. If the kidneys are not damaged or not seriously damaged, then such change in the urea of the urine or blood may not be observable. When dropsy is a feature there may be concentration of the plasma owing to loss of water, and if albuminuria is excessive there may be a loss of proteins in the plasma.

It will be seen that this definition accounts for those conditions possibly occurring in Bright's first group already referred to when the kidneys were only, *as it were, on the way to the eventually advanced* state in which dropsy and albuminuria would occur, and met with by Cruickshank, Wells, Graves, and Willis, and by numerous observers since in cases in whom the kidneys were not diseased at all, or if the parenchyma were diseased showed no albuminuria or no dropsy, or showed the latter two phenomena without being diseased, or showed parenchymatous change with or without the other toxic symptoms met with in so-called uræmia.

But how will such a definition apply to those cases in whom so-called uræmia is met with in those who are subject to granular kidneys? It is well known that granular kidneys may be found, even in an advanced stage, in apparently healthy patients who have died from accident or from some disease quite independent of renal disease; *therefore in cases of* granular kidney showing uræmic (?) symptoms and signs these latter are not due to the granular kidney, but still are referable to a toxic blood state, though in such cases the cause of the toxic blood state is not known. It may be also the cause of the degeneration of the kidneys, whether this is apparently due to vascular disease (for even this must be a blood-borne disease—e.g., as a result of bacterial infection or of syphilis) or is due to capsulitis with successive tubular degeneration, which also must be blood-borne. The toxic state of parenchymatous kidney disease is almost identical in features with that of so-called granular kidneys, though it may be more acute and more remediable in the former, and more chronic and irremediable in the latter.

If the kidney is sufficiently damaged, then anuria may be an added feature, death subsequently occurring from a continuation of the toxic effects of the blood-borne poison, as a rule in three or four days, or a week.

But supposing there is no blood-borne poison at work and anuria occurs from obstructive suppression of the urine or from acute thrombosis of the renal arteries, then how does uræmia express itself? As is well known, little or no uræmia develops at all, and death does not occur for 7 to 11 days, or may be a fortnight. It is not known for certain why death should occur in such cases, but it is possible that the ultimate cause is due to the accumulation of retained unexcreted metabolites, which, as has been shown, are quite unable to produce dropsy or any other of the toxic symptoms of so-called uræmia, but which may quite readily produce vascular paralysis and such low blood pressure that the heart becomes defeated; or it is possible that cellular changes occur throughout the body which has suffered from anuria so long, and that as a result histamine-like bodies are liberated and cause death by dilatation of the capillaries of the body.

Contemporary Definitions of Uræmia.

Having developed this definition of so-called uræmia as a state due to pre-renal toxæmia—which seems so readily to explain the pathogenesis not only of the *intrinsic kidney disease, but also of all the attendant* symptoms and signs—it is with feelings of hesitation that I now quote the definitions which we owe to contemporary well-known authorities.

> "Uræmia is a state of toxæmia *dependent* upon insufficiency *of the kidneys which may develop in the course* of nephritis or in conditions associated with anuria."[15] "Uræmia is a name given to a group of symptoms which *occur* in nephritis (and in granular kidneys, see context)."[16] "The name uræmia is used for a group of symptoms *arising* during the course of many renal diseases dependent mainly, *but not entirely, upon derangement of the nervous system.*"[17] "The name uræmia is used to designate a group of symptoms which *usher* in the fatal ending in a large proportion of cases of renal disease."[18] "Uræmia may be related to nephritic hypertension."[19] Richard Stern,[20] writing on diseases of the urinary organs, says that "*if the kidneys do not carry out their work well from actual disease or severe functional disorder*, there will *result* very frequently a symptom-complex *which is spoken of as uræmia.*" Nothnagel[21] says that "uræmia is an auto-intoxication *brought about by the retention* not of one excretion, but by all or several constituents of the urine. The nitrogenous end-products may produce the poisonous effects after decomposition in the body."

A careful examination of these definitions will show that the attitude of the various authorities quoted is not identical—they do not all insist that uræmia is caused by retention of metabolites from grave disease of the kidney; some admit that purely functional disease of the kidney may be the cause, which is another way of saying that kidneys showing no organic disease may be associated with the development of uræmic symptoms; others say that uræmic symptoms are associated with kidney disease, but it is left to the reader to discover what the association is; it may be the one already given—viz., that the kidney change and the toxic symptoms are results of a common cause. Further, no one insists that uræmia does *not occur except in kidney disease, nor* that kidney disease is necessarily followed by or associated with any of the manifestations of uræmia.

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[15] Osler and McCrae: Principles and Practice of Medicine, 1920, 9th edition, p. 688.

[16] Sir Wilmot Herringham, Bain's Text-book of Medical Practice, 1904, p. 433.

[17] Sir John Bradford: Allbutt and Rolleston's System of Medicine, 1915, vol. iv., pt. 1, p. 371.

[18] Sir Archibald Garrod: Osler and McCrae's System of Medicine, 1915, 2nd edition, vol. iii., p. 830.

[19] A. E. Taylor: Osler and McCrae's System of Medicine, 1915, 2nd edition, vol. ii., p. 536.

[20] In Von Mering's Handbuch, 1907.

[21] Handbuch d. spec. Pathol. und Therapie, Die Erkrankungen der Nieren, 1896, 1 Aufl., S. 81.

PLANT RESPONSE TO INJURY.

At a meeting of the Association of Economic Biologists, held on Dec. 9th in the Botanical Lecture Theatre of the Imperial College of Science, South Kensington, Sir David Prain presided over a discussion on the Resistance of Normal and Injured Plant Surfaces to the Entry of Pathogenic Organisms. Prof. J. H. Priestley, of Leeds, who opened the discussion, pointed out the important bearing of certain research work now being carried out in his laboratory. He described the structural features of the normal plant which opposed the entry of pathogenic organisms and the chemical response made by the plant tissue to injury. The surface of a cut potato tuber within a short time of injury became covered by a layer of "suberin" arising from the oxidation and condensation of fatty substances mainly carried to the cut surface by the sap. Similar deposits might be traced in the normal tissues of root, stem, and cuticle. Suberisation took place just below the cut surface, the depth varying with the conditions and the nature of the plant. In the potato the fatty substances appeared to come from the greater part of the tissue and to be carried to the surface by vascular strands. At a later stage a meristem arose beneath the blocked surface and gave rise to cork tissue running across the wounded surface. A study of the conditions under which cork was formed might, Prof. Priestley concluded, throw light upon many problems relating to injury of tissues.

ARMENIAN REFUGEES (LORD MAYOR'S) FUND.

To the Editor of The Lancet.

Sir,—I am anxious to obtain the greatest possible support for the appeal being made this Christmas-time by the Armenian Refugees (Lord Mayor's) Fund, of which I am President. While other nationalities are enjoying opportunities for recovery and reconstruction after the war, the Armenian nation has none. At no time in her history has her need been greater. Owing to Turkish invasion the Armenian Republic of Erivan was unable to sow in time for a harvest and famine is already widespread. It is calculated that 180,000 children, many of them orphans, and 120,000 adults, are already on the verge of starvation, and by the end of January there will be no foodstuffs available except those provided by relief agencies. In addition to this vital emergency work, the Fund is responsible for an orphanage of some 600 children near Constantinople, and has felt obliged a few days ago to offer to undertake the care of 300 more. These are the purposes for which I appeal most earnestly to the public. Donations should be sent to the Hon. Treasurer, Lord Mayor's Fund, 96, Victoria-street, S.W. 1.—I am, Sir, yours faithfully, John Baddeley,

Mansion House, E.C., Dec. 8th. Lord Mayor of London.

YEAR-BOOKS.

The thirtieth edition of the *Annual Charities Register and Digest* (London: Longmans, Green and Co., for the Charity Organisation Society, pp. 599+xx., 7*s.* 6*d.*) is described on the title-page as "a classified register of charities in or available for the metropolis," but presumably this description is only intended to indicate that the information concerning London charities is practically exhaustive, whereas that which concerns provincial, Scots, Irish, colonial, and foreign institutions is less detailed; indeed, it is pointed out at the commencement of the colonial and foreign list that owing to existing circumstances it has been found impossible to revise the Continental list. The financial review of the year, with which the volume opens, bears witness to the magnitude of the task of preparation and the difficulties involved in assembling statistics at once simple and comprehensive; for instance, the impossibility of separating London and provincial charities is evidenced in the case of Dr. Barnado's Homes among other institutions; and there are important establishments—e.g., many of those supervised by the Roman Catholic Church, and some Anglican sisterhoods—to which considerable sums are contributed, but which do not furnish statistics in the same way as do purely secular institutions. The review of the year is divided into eight sections: the first comprises details of the London Charity Organisation Society, a list of societies throughout the United Kingdom which correspond with that society, and the foreign and colonial list already referred to. The sections devoted to Relief in Affliction, in Sickness, in Distress (permanent and temporary), and Reformatory Relief, suggest the contents by their titles; a miscellaneous section includes information concerning social and physical improvement, emigration, &c., and one section is devoted to Spiritual Institutions. Useful appendices deal with benevolent institutions, friendly and trade societies, registry offices attached to charitable institutions, metropolitan labour exchanges, and guilds of help, and provide other information difficult to obtain elsewhere.

The publishers of the *Official Year-Book of the Scientific and Learned Societies* (London: Charles Griffin and Co., 1921, pp. 366) state that this thirty-eighth annual volume retains all the valuable features of previous issues, and that every effort has been made to maintain a high degree of accuracy. The book is a record of the work done in science, literature, and art during the session 1920–21 by numerous societies and Government institutions, and since it is compiled from official sources the information is in the main accurate and comprehensive. We note among minor errors that the name of the president of the Harveian Society is wrongly spelt, and that the list of papers stated to have been read between October, 1920, and March, 1921, at St. Mary's Hospital Medical Society is actually the programme for the current session 1921–22. The volume is well arranged, of small bulk, and has a good index.

The *Girls' School Year-Book* (*Public Schools*) (London: H. F. W. Deane and Sons, The Year-Book Press, Ltd., 1921, pp. 574, 7*s.* 6*d.*) is issued as the official book of reference of the Association of Head Mistresses. The greater part of the book is taken up with a list of the public secondary schools for girls, with details of personnel of governing body and staff, fees, special features, and so forth. Part II. deals mainly with the future careers of girls leaving school. Those contemplating medicine as a career will find condensed into two pages an admirable summary of the points to be considered in the choice of a medical school and of a degree or diploma, of the prospects offered to women entering the medical profession, and other practical suggestions. The list of metropolitan medical schools open to women is incomplete.

TRAVELLING PUBLIC HEALTH INSTITUTES.

In an annotation in our issue of Dec. 10th attention was drawn to the new schools of public health recently endowed at Johns Hopkins and Harvard Universities. One of the most successful activities of the first of these schools during the winter of 1920 was a special six weeks' course of instruction for public health workers and officials, which was largely attended by medical and sanitary officers from many States within the union, as well as by others from Canada and Central and South America. The need for short intensive courses of instruction for public health workers is evidently being more fully realised; and we have before us the preliminary announcement of a series of "Public Health Institutes" which are being organised in 21 cities in various States by the United States Public Health Service. These institutes are one-week schools, at which addresses and demonstrations of special types of public health work are given. The syllabus of these courses is ambitious, embracing some 57 lectures on 15 subjects, though obviously selection will be made in different areas. The New Orleans Institute, which begins on Jan. 9th, will include the following courses: tuberculosis, nutrition in health and disease, general communicable diseases, industrial hygiene, administrative problems, medical social work, protective social work, child hygiene, the management of clinics and health centres, non-communicable diseases, sanitary engineering, mental hygiene, the delinquent, syphilis, and gonorrhœa. Did we not know the marvellous assimilative power of Americans for lectures, the carrying out of such a syllabus might be expected to cause acute mental dyspepsia; but in that country this result need not be feared. The general result of these courses of instruction will be to increase local interest in public health problems, to stimulate the discouraged workers, and to secure valuable interchange of thought and experience between teachers and students and between individual workers. The courses, as is carefully pointed out in the prospectus, cannot take the place of more detailed training for public health work. They will, however, point to the importance of such training, and stimulate attendance at the schools where it is given. The experiment is one to be watched with interest, for its own sake as for its bearing on possibilities of similar courses in this country.

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there was a ready explanation for the increase in the heart weight. But it will be objected that in Case A part of the cardiac increase of weight was due to the presence of kidney disease (a common clinical association), as shown by the microscopic changes present in the kidney and by the occurrence of uræmic attacks. But what slight changes in the kidney were present in this case! They were probably no more than can be found in the kidneys of healthy individuals who have died of some accident, and they were almost identical with those found in Case B, who did die of an accident—a cerebral hæmorrhage and not of uræmia; therefore any increase of the weight of the heart in Case A, which was not due to the mitral disease, was not due to kidney disease, nor were the uræmic attacks due to the kidney disease. In Case B the heart was found to be greatly enlarged from hypertrophy, and the kidneys showed small change, and it may be conceded that if the earlier attacks of coma and convulsions were uræmic, they also were not due to kidney disease. The question now presents itself for solution, what was the cause for the cardiac hypertrophy and the uræmic manifestations present in these two cases? It has been admitted that mitral disease was present in Case A, and accounted for part of the cardiac hypertrophy: an unexplained residuum is left. These phenomena were not due to kidney disease. I will offer an explanation after consideration of the following two cases:—

CASE C (Fig. 3).—A man, aged 79 years, who had not worked for several years. He was admitted to hospital for shortness of breath on the least exertion, for cough, for palpitation and pain over the heart, and for dropsy of the body and legs.

The brachial artery was *tortuous*; *the pulse irregular*; the maximum impulse of the heart was present in the sixth intercostal space, external to the left nipple-line, and was heaving in character; there was an apical systolic murmur; the liver was enlarged; albuminuria was present on three examinations and absent on one; the temperature was normal throughout his stay in the ward. Death was sudden, and the clinical diagnosis of the cause was cardiac failure.

FIG. 2.

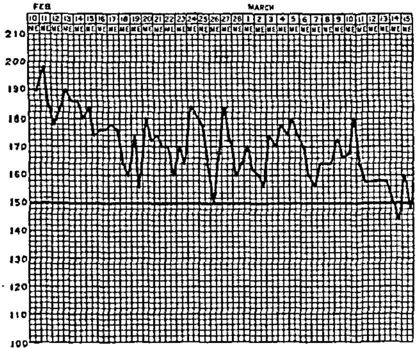
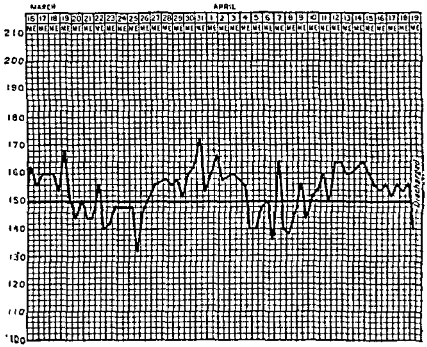


FIG. 2A.



FIGS. 2, 2A, 2B (Case D).—Charts drawn up as results of two separate visits to hospital.

FIG. 2B.

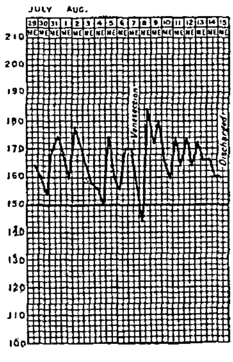
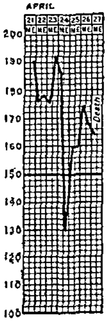


FIG. 3.



CASE C.—Chart of a few days' observations.

CASE D (*Figs.* 2, 2A, 2B).—*A coach-builder (woodwork only)*, aged 42 years. This man had suffered from shortness of breath, from palpitation and "night starts," from *dropsy and from cough, which led to the expectoration of* white, frothy material streaked with blood; he had been in the habit of getting up at night to pass water. He had had syphilis, for which he had been treated with mercury continuously for 15 months. He had been admitted to the hospital on three separate occasions, always with the same symptoms, except that on the last admission he had noticed that he was passing very little water. He was a stout, healthy-looking subject; the maximum impulse was present in the fifth intercostal space in the left anterior axillary line; there was a loud systolic murmur at the maximum impulse; rhonchi were heard over both lungs; there were *dropsy and ascites and the liver was enlarged*; the temperature as a rule was normal, but on a dozen occasions was raised a little over 99°; the urine was frequently examined, and always showed albumin; casts were found in the urine, and hæmaturia occurred on several occasions; dyspnœa and cyanosis became so great that he was venesected with considerable relief; ultimately a presystolic murmur was heard at the maximum impulse. The pulse was irregular, but electro-cardiographic observations favoured the view that this was due merely to functional, not organic, defect of the right branch of the auriculo-ventricular bundle; the brachial arteries were *tortuous*. Death occurred gradually with marked dyspnœa. The blood taken during life gave a positive Wassermann reaction.

In passing comment on Case C, it looks as if this old man had simply died from heart disease, the lesions being leakage of the mitral valve and disease in the conducting fibres of the heart wall. The usual features of cardiac failure developed and the sudden death was explainable on the ground that possibly auricular fibrillation had closed the scene. Case D was another example of illness due to heart disease, and the presence of syphilis suggested that this disorder had damaged the mitral valve, producing a characteristic double murmur and changes in the heart muscle, leading to failure of compensation as shown by dropsy, enlarged liver, albuminuria, &c.,

structure, generally attended by a decidedly albuminous character of the urine.

> "In the first, a state of degeneracy seems to exist, which from its appearance might be regarded as marking little more than simply debility of the organ. . . . I have found it in a case of diarrhœa and phthisis and in a case of ovarian tumour. In the former it was connected with slight and almost doubtful coagulation of the urine by heat; in the latter I had omitted to examine the state of the urine. . . . When this disease has gone to its utmost it has appeared to terminate by producing a more decided alteration in the structure. . . . . In this more advanced stage, if it be the same disease, dropsy has existed and the urine has been coagulable."

On p. 69 (loc. cit.) Bright says :—

> "Although I hazard a conjecture as to the existence of these three different forms, I am by no means confident of the correctness of this view. On the contrary, it may be that the first form of degeneracy to which I refer never goes much beyond the first stage."

The first of Bright's three groups is of special interest. As already observed, the kidneys were not subjected to microscopic examination; Bright admitted that albumin was not demonstrated in the urine of all the cases, and he also admitted that the degeneracy observed might after all be simple debility of the kidney. While still speaking of this first group, he admitted that the kidneys belonging to this group might mean progress to later stages, and finally he says that when the disease had gone to its utmost, dropsy and albuminous urine became features, from which it may be inferred that there need be no surprise if in this first group such signs were not present. To these points reference will be again made later on. At the present day there is scarcely any dissent from the view which followed upon Bright's work that certain cases of dropsy and albuminuria are dependent upon kidney disease, and that the other attendant signs and symptoms of these cases are due to poisons present in the blood; no one, however, can say what is the nature of the poisons present except in the negative sense that they are not renal excretions retained owing to loss of power of the damaged kidneys to excrete them.

To return to the years which followed Bright's discovery, other observers were to be found who seemed to agree with Bright as to the slight change in the kidney which may be found in cases of dropsy and albuminuria. Willis,[8] speaking of cases of albuminous urine who showed symptoms always serious and often irresistibly fatal, said this form

> "of albuminous urine appears to be connected with a positive alteration in the structure of the kidneys, or *with a state the tendency of which is to end in this*, . . . as accompanying the general dropsical condition of the cellular membrane and serous condition, which is characterised as anasarca."

It is apparent from perusal of Willis's book that a group of writers, including himself, kept an open eye upon the possibility that although many cases of albuminuria and dropsy revealed disease of the kidneys as well, it was not disease of the kidney *per se* which, by alteration of the blood, caused the signs and symptoms met with in such cases. The following passage will be found to be full of interest. Willis[9] wrote :—

> "With regard to the pathology of the simple albuminous urine, especially of that which occurs along with general dropsy, opinions are at present very much divided. Whilst some (Bright, Gregory, Christison, Rayer) maintain that the appearance of albumen in the urine of dropsical patients is the never-failing indication of organic mischief going on in the kidney, others (Wells, Cruickshank, Blackall, Graves) have insisted that this circumstance was often indicative of some febrile excitement of the circulating system, of some general or local inflammation, of functional derangement of the kidney at most, and sometimes not even of that, the albuminous impregnation of the urine being the mere effect of a general effusion of a serous fluid into all the cavities and interstices of the body. Mr. Cruickshank[10] in particular held albuminous urine to accompany 'every case of increased action of vessels, more particularly when this was of the inflammatory kind,' and believed that anasarca (which he calls *general dropsy*, and which he obviously considers as a disease dependent on increased vascular action) may be distinguished from the dropsy produced by a morbid condition of one or other viscera, from the circumstance of its always being accompanied by an albuminous state of the urine. Dr. Wells[11] concludes his truly excellent paper, 'On Dropsies that follow Scarlet Fever,' by advocating the practice of blood-letting in such cases, regarding them as connected with a *general inflammatory state of the system*, or, as I prefer to say, with the existence of internal inflammation. Dr. Blackall,[12] too, whose experience and candour deserve and secure our highest consideration, holds the presence of albumen in the urine of dropsical patients to be a certain indication of the existence of a general inflammatory diathesis or of some local inflammation which requires antiphlogistic measures—the abstraction of blood, low diet, &c.—for its subdual."
>
> "It is difficult[13] to resist such high authority; nevertheless, several distinguished practitioners have opposed themselves to the fundamental notion espoused by all the names that have just been mentioned (Bright, Gregory, Christison, Rayer). Dr. Graves,[14] for instance, positively denies that the albuminous state of the urine in dropsies always, or even generally, depends on structural changes in the kidneys. . . . The late Dr. McIntosh, of Edinburgh, and Dr. Elliotson have also expressed themselves against the notion of structural disease as the general cause of serous urine in dropsy of the cellular tissue. Legitimate deduction from my own experience in numerous cases of anasarca succeeding scarlet fever and exposure to cold . . . . would also lead me to conclude that this structural disease of the kidney could not have been the cause of the albuminous state of the urine which I found invariably to accompany the progress of the disease."

My excursions into the medical literature of the days when Richard Bright published his "Medical Reports," and of the years immediately following, have evoked a feeling of wonderment at the acumen and insight of physicians at the beginning of the nineteenth century; it was also interesting to find that there were physicians who were opposed to the deductions Bright had made, so that the heterodox opinions that I am about to offer you have not even the merit of being novelties. With Chaucer I must say :

> "For out of the old fieldes, as man saithe,
> Cometh al this new corn fro yere to yere;
> And out of old bookes, in good faithe,
> Cometh al this new science that men lere."
>
> *The Assembly of Fowles.*

Conclusions Based on Consideration of the Foregoing.

1. Uræmia is a complete misnomer based upon the erroneous opinion that the urine or renal excreta by retention from kidney disease cause uræmia.

2. The attempts to show that the signs and symptoms of Bright's disease are due to uræmia (*stricto sensu*) at least go to prove that the toxic symptoms met with in Bright's disease, in the minds of some workers of these times, *were* due to a poisonous state of the blood. To Bright and others dropsy and albuminuria in cases in whom the kidney was diseased were directly due to the kidney disease, and presumably so were all the numerous other signs and symptoms. To Willis and others quoted by him the source of the albuminuria and of the dropsy was not to be looked for in the kidney, but in the blood-stream—i.e., to some pre-renal source, e.g., in scarlet fever the albuminuria and dropsy were direct results of the changes in the blood produced by the scarlet fever. Presumably all the other toxic symptoms met with in scarlet fever may be looked for in the blood; indeed, there need be no hesitation whatever in believing that any infection can produce dropsy, albuminuria, and other toxic signs and symptoms, including the actual damage to the kidney itself.

3. It is therefore obvious that probably all cases of so-called primary disease of the kidney may owe all

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[8] Loc. cit., p. 121.

[9] Loc. cit., p. 154.

[10] Rollo, on Diabetes, Lond., 1798, 2nd edition, pp. 447 and 448.

[11] Transact. of a Society for the Improvement of Med. and Chirurg. Knowledge, Lond., 1812, vol. iii., p. 185.

[12] Observations on the Nature and Cure of Dropsies, Lond. 1813, pp. 266, 271, 275.

[13] Willis (loc. cit.), p. 156.

[14] Dublin Journal of Medical Sciences, 1835, vol. vi., p. 72.

met with in uræmia. I believe that when a case presents so-called uræmic manifestations, hyperpiesis is present, and if it is absent then at death cardiac hypertrophy will be found, showing that it had been present at one time or another. "Hyperpiesia" and "hyperpiesic," to my mind, are words preferable to "uræmia" and "uræmic": they do not commit us to an exclusive pathology, and as I have shown, I trust, are infinitely more accurately descriptive.

I have but one regret—I cannot describe the poisons circulating in the blood which produce hyperpiesis or any of the other symptoms of hyperpiesia; but I feel sure they are in the blood, and that they are in no way expressive of defective action of the kidneys. I must, in conclusion, add that I think many of the phenomena met with in the later stages of hyperpiesia, when symptoms of a so-called uræmic character develop, are much more likely to be due to toxins present in the blood as the result of some inflammation, somewhere in the body, than to metabolites present in the blood in excess owing to the default of the kidney whose duty it is to extrude such bodies.

SEROLOGICAL AND MORPHOLOGICAL CHARACTERISTICS OF THE PNEUMOCOCCUS:

AN ANALYSIS OF ORGANISMS ISOLATED FROM 77 CASES OF PNEUMOCOCCAL INFECTION.

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IN April, 1920, Sir Frederick Lister forwarded from the South African Institute for Medical Research some of his standard strains of pneumococci, with their homologous antisera, which he had isolated from cases of lobar pneumonia occurring in the mining area, in order that they might be compared with strains of pneumococci present in this country. In this communication comparison has been made with pneumococci isolated from cases of lobar pneumonia, and with those obtained from cases of pneumococcal infection other than lobar pneumonia. These results have also been correlated with those of the Rockefeller and other workers by means of Rockefeller anti-pneumococcal serums, so that it was possible to compare the results obtained with those of Lister and American workers.

The following list gives the relationship between the two nomenclatures:—

Lister's group.		Rockefeller type.
C	=	I.
B	=	II.
E	=	III.
A, D, F, G, H, J, K, X and unclassifiable	=	IV.

In some of the figures quoted below it will be seen that Type II. Rockefeller has been further subdivided, and Types IIa., IIb., and IIx. are noted which agglutinate slowly and incompletely with standard Type II. antiserum.

Isolation of Pneumococci from Pus and Sputum.

Pneumococci were obtained in pure culture from hæmocultures, but when sputum or pus was examined the organism was one of several present in the specimen, and although by looking at stained preparations of such material one could detect the typical capsulated pneumococci in large numbers, it was found to be very difficult in many cases to separate them from the other organisms present. For some time past Dudgeon's method (Wordley, 1921) has been employed, and has given most satisfactory results. Unglazed porcelain tiles 3 inches by 3 inches, sterilised by heat, were spread with the pus or sputum. The excess of moisture was rapidly taken up by the tile, and the resulting sticky mass was transferred to a second tile, spread out and left to dry to a flaky powder (1–3 hours). The powder was scraped from the tile, and a quantity spread on a blood-agar plate which was then incubated. By this means it was possible to get a plate on which the colonies were well separated, even although the original material contained many types of organisms. In specimens in which the types of organism are few, blood-agar slopes have been used in place of plates with satisfactory results. It is necessary to employ a glass screen mentioned by Wordley in his description of the method for the protection of the worker, as the powdered sputum is a dangerous source of infection, and in several instances contained tubercle bacillus.

Morphological and Cultural Characteristics.

The morphological and cultural characters of the pneumococcus noted in this paper have been examined. The typical appearance of the pneumococcus, a Gram-positive capsulated diplococcus pointed toward the free ends, and broader at the opposed surfaces, is best made out in fresh films of pus or sputum. It has been noted by many observers that these typical appearances may rapidly disappear on culture, and—by the loss of capsule formation, and the occurrence of chain formation, such as is frequently seen in cultures in liquid media—the pneumococcus may become indistinguishable from the streptococcus. In fluid cultures the pneumococcus forms a cloud throughout the medium, and on blood-agar the colonies are discoid and slightly granular. After 24 hours the colonies and the blood medium become brownish or greenish-brown, and this colour deepens with the age of the culture. Park and Williams (1905) have noted that this green colour is present in atypical colonies, and may be present in typical strains.

The cultural reactions of 77 strains of pneumococci have been noted on lactose, glucose, mannite, saccharose, starch, inulin, salicin, inosite, and litmus milk, the "sugar" media all containing 0·5 c.cm. of blood serum. The action on mannite, salicin, and inulin was variable, some strains producing acid, some having no action on the "sugars." Inosite was not fermented in any case. The remaining "sugars" and litmus milk were acidified in every instance. These strains of pneumococci were members of different serological groups, but no indication of grouping could be obtained from the fermentation reactions on the above-mentioned substances.

Twenty-eight strains of streptococci obtained from various sources have been tested in the same way, and in many instances similar reactions to those of the pneumococci were recorded. From these observations and those of Cole (1913), Dochez and Gillespie (1913), Logan (1921), and Cooper, Mishulow and Blanc (1921), all of whom have obtained somewhat similar results, one comes to the conclusion that as a means of classification of pneumococci the fermentation tests are of no value.

Results of Blood Culture in Pneumococcal Infections.

Blood cultures have been made in cases of pneumococcal infections during the pyrexial period, nutrient glucose-broth and distilled water being used as culture-media. White (1899), in giving results of blood cultures made in cases of pneumonia, quotes figures given by several workers. Stillman, examining 18 cases of pneumonia, obtained 6 positive cultures; in 2 of these the cocci were seen in blood films only, and did not grow in the culture-media. Of 12 cases in which negative blood cultures were obtained, 2 died; of 6 positive cases, 4 died. Kohn in 32 cases found the pneumococcus in the blood of 9 cases, of which 7 died and 2 recovered. Of 13 negative cases (including 2 cases dying of complications), 8 recovered, At a later date, he found that a considerable majority of the negative cases recover, whilst a similar proportion of the positive cases die. He concludes that the presence of the pneumococcus in the blood gives a very unfavourable prognosis. White found that of 19 cases of lobar pneumonia, all at least moderately severe, 10 were fatal. Thirty-two blood cultures were

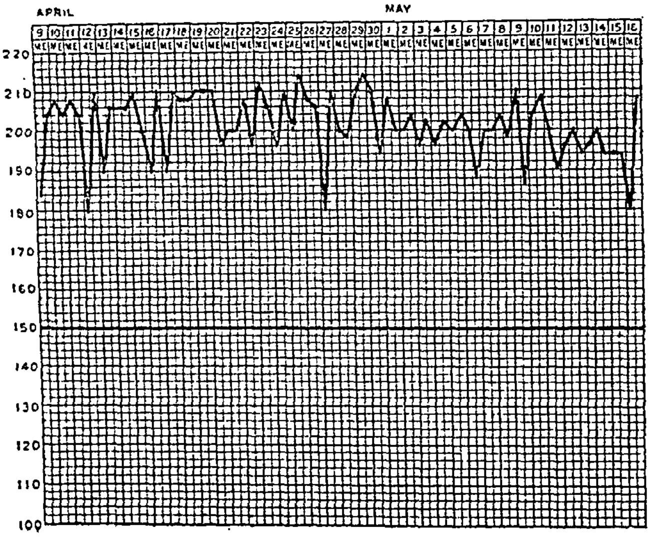
It seems therefore that the view revived by me as to the seat and origin of the poison causing the toxic signs and symptoms met with in so-called uræmia is more satisfactory than that developed immediately after Bright's discovery, and is not negatived by the definitions given by at any rate some contemporary authorities.

II. ILLUSTRATIVE CASES.

I now propose to give a brief account of four cases which have come under close observation, with results of post-mortem examinations, condition of the kidneys in each case, naked-eye and microscopically, as revealed by the post-mortem examination.

CASE A (*Fig.* 1).—*A single woman, aged* 50 years, cook by occupation. Three weeks previous to admission to hospital she had developed cough, shortness of breath, palpitation, and frequent vomiting. Her legs began to swell, and this led to her seeking relief. She had had two similar attacks two years and three months previously, respectively. She had had rheumatic fever. On admission she showed signs of mitral disease and cardiac failure—the pulse was irregular; the brachial artery was tortuous; the maximum impulse was diffuse and not forcible; the cardiac dullness to percussion was increased to the left and right; the aortic and pulmonary second sounds were accentuated; ascites, dropsy, and left pleural effusion were present; albuminuria was established on fourteen occasions, and absent on five other examinations: vomiting persisted, but was less frequent; the urine gradually became scanty. During her stay of 21 weeks in the hospital fever was noted only on four or five days; tachypnœa and paroxysmal tachycardia became very marked, and appeared to be relieved by removal of the pleural effusion, but returned again and were not relieved by a second removal of pleural effusion and drainage of the œdematous legs; shortness of breath was much increased, and cyanosis became a great feature; well-marked fits developed four days before death in one of them. The opinion of the physician in charge of this case was that she died from morbus cordis (mitral disease), associated with granular kidney, as shown by the presence of the mitral murmur, pleural effusion, albuminuria, and uræmia.

FIG. 1.



CASE A.—Part of a very full chart drawn up from five months' daily observations.

For permission to use the blocks from which the charts are printed I am indebted to the courtesy of The Oxford Medical Publications, who are preparing for publication my volume on Hyperpiesia.

CASE B.—A bricklayer, aged 45. While at work this man had fallen unconscious and was admitted to the hospital in this condition. On three former occasions he had had attacks of loss of consciousness and convulsions, 15 years, 4 years, and 5 weeks previously. His wife had had three miscarriages. When seen in the wards he was deeply comatose, although it was some hours since his loss of consciousness; his face was flushed and the breathing stertorous; the left arm and leg were flaccid; the supinator-, biceps-, knee- and ankle-jerks were present and equal; the abdominal reflexes were absent, and the plantar responses were extensor on both sides; he was incontinent of urine, and a catheter specimin showed a very small amount of albumin. The temperature was subnormal, and the pulse slow. There was no dropsy. Gradually the heart and respiration failed, and he died three to four hours after admission. The clinical diagnosis was hemiplegia from cerebral hæmorrhage into the right internal capsule.

You would probably have agreed with the clinical diagnosis made in these two cases, but probably you would have wondered what was the explanation of certain peculiar features in these two cases. There can be no doubt that the development of uræmic fits in the last few days of life of Case A would have excited much attention. You would have ransacked your memory to try and remember whether you had ever seen a case apparently of rheumatic mitral disease with cardiac failure resulting from muscular disease of the heart developing attacks of coma and convulsions. There was no escape from the conclusion that this woman died in a uræmic attack, and you would have been confident that the post-mortem examination would reveal one of the more or less familiar diseases of the kidney, especially if I had told you of a clinical feature which, for the purposes of this address, I have not yet mentioned. With regard to Case B, the diagnosis of cerebral hæmorrhage was comparatively easy, but you would have been in difficulties to find an explanation of the three previous attacks of coma and convulsions. A ready explanation for them would be that they were simply attacks of major epilepsy, and then realising that they had come on in middle life in a man whose wife had had three miscarriages you would have suspected that the cause of the epilepsy was some syphilitic disease of the cortex cerebri; but again I have suppressed a certain clinical feature, which encouraged the view that he had been suffering from kidney disease and the attacks were simply uræmic epilepsy.

Turning to the chief post-mortem discoveries in these two cases, it was found that:—

In Case A the heart weighed 20 oz., its chambers were dilated; the chamber walls were hypertrophied; there was mitral stenosis; the liver showed "nutmeg" change. The right kidney weighed 6 oz., and the left 7 oz.—the capsules stripped leaving a smooth surface, the substance was congested and not tougher than normal. Microscopically 1 per cent. of the Malpighian corpuscles were destroyed from past capsulitis, 96 per cent. of the corpuscles were normal except for congestion, the cortex was not reduced, there were small scattered areas of tubular atrophy and of fibrosis, many of the non-atrophied tubules showed cloudy swelling and epithelial degeneration.

In Case B the heart weighed 17½ oz.; the left ventricular wall was hypertrophied; there was a large hæmorrhage in the right internal capsule and no signs of cortical disease. The kidneys were of normal size and weighed 7½ oz. each; the capsule was not adherent; on stripping the capsule from the kidney the bared surface was smooth; the cortex was a little reduced. Microscopically 95 per cent. of the Malpighian corpuscles were normal, 5 per cent. atrophied, most of the tubules showed cloudy change in the epithelium as well as granular degeneration, a few tubules were atrophied, and there was some fibrosis.

Puzzling as the clinical accounts of these two cases are, the post-mortem findings are even more so. In both cases the weights of the heart were greatly increased; no doubt mitral disease contributed very largely to the increase in the heart weight in Case A, but why was the heart so much increased in weight in Case B? The idea that the heart may be hypertrophied from heavy manual work or athleticism has been abandoned, so that the occupation as a bricklayer cannot be looked upon as the cause of the increased weight of the heart. Again I must tell you that the clinical feature which I have suppressed in each of these two cases encouraged the view that in both of them, partly in Case A, and wholly in Case B,

TABLE I.—*Pneumococcus C. Lister, or Type I. Rockefeller.*

No.	Disease.	Age.	Day of disease.	Source from which pneumococcus was isolated.	Agglutinins in serum.		Hæmo-lysis.	Lysis in bile salt.	Result
					A.C.	P.C.			
124	Lobar pneum.	20	5	Sputum.	−	+	−	+	R
113	,,	19	4	Bl. cult.	−	+	−	+	R
70	,,	40	P.M.	Heart blood.			−	+	D
43	Lobar pneum., empy.	24	12	Sputum, empy. pus.		+	−	+	R
167	,,	31	35	,,		+	−	+	R
166	,,	24	35	,,		+	−	+	R
157	Lobar pneum.	25	5	Sputum.	−		−	+	D
141	Lobar pneum., empy.	6	14	Empy. pus.		+	−	+	R
125	,,	?	21	,,		+	−	+	R
111	,,	5 6/12	4	Bl. cult., empy. pus.	−	+	−	+	R
95	,,	46	10	Sputum, empy. pus.		+	−	+	R
69	,,	7	14	Empy. pus.			−	+	R
173	Lobar pneum., meningitis.	28	7	Bl. cult.	−		−	+	D
169	Lobar pneum.	24	6	Bl. cult., sputum.		+	−	+	R
81	,,	14	4	,,	−		−	+	D
103	Lobar pneum., empy.	28	11	Empy. pus.		+	−	+	R
178	,,	8	12	,,		+	−	+	R
134	Broncho-pneum.	42	5	Sputum.	−	+	−	+	R
164	,,	Adult.	8	,,		−	−	+	R
105	Bronchitis.	,,	5 yrs.	,,	−	−	−	+	N
102	,,	,,	?	,,			−	±	N
152	Broncho-pneum., empy.	21	35	Empy. pus.		+	−	+	R
64	Asthma.	Adult.	?	Sputum.			−	+	N
128	Old empy. Waxy disease.	48	7 yrs.	Sputum, empy. pus.		+	−	+	D
71	Meningitis.	5	4 days.	Bl. cult. C.S. fluid.	−		−	+	D
180	Peritonitis.	41	2	Pus.			−	+	D
182	Lymphatic leukæmia septicæmia.	52	4	Bl. cult.	−	−	−	+	D
139	Cold.	35	2	Throat swab.	−	−	−	+	R
61	,,	21	3	,,			−	+	R
132	Corneal membrane.	5/12	3	Eye.			+	∓	Blind.
	TABLE II.—*Pneumococcus B. Lister, or Type II., U.S.A.*								
80	Lobar pneum.	20	2	Bl. cult., sputum.	−	+	−	+	R
74	,,	17	1	,,	−	+	−	+	R
78	,,	24	11	Sputum.		+	−	+	R
73	,,	47	3	Bl. cult., sputum.	−	−	−	+	D
165	,,	29	4	Sputum.	−	+	−	+	R
149	,,	18	6	Not isolated.		+			R
148	,,	48	2	Bl. cult., sputum.	−		−	+	D
75	,,	18	5	,,	−	+	−	+	R
145	Broncho-pneum.	19	13	Sputum.		+	−	+	R
119	Pleurisy.	38	3	,,			−	±	R
107	Asthma.	34	4	,,			+	+	R
	TABLE IIA.—*Pneumococcus A. Lister, or IV. Rockefeller.*								
89	Lobar pneum., empy.	3	12	Bl. cult., pus, sputum.		+	−	+	D
168	,,	64	35	Sputum, empy., pus.		+	−	+	R
118	Empy., growth of lung.	40	48	Empy. pus.		−	−	+	D
122	Broncho-pneum.	46	10	Sputum.		+	−	+	D
104	,,	36	10	,,		+	−	+	R
	TABLE III.—*Pneumococcus Type IV. Rockefeller. Sub-group Harding.*								
78	Lobar pneum.	51	5	Bl. cult., sputum.	−	+	−	+	R
175	,,	53	3	,,	−		−	+	D
154	Bronchitis.	30	Weeks.	Sputum.			−	+	N
144	Post-anæsth. bronchitis.	24	4	,,			−	+	R
140	Influenza and bronchitis.	32	10	,,			−	+	R
138	Post-anæsth. bronchitis.	Adult.	5	,,		−	−	+	R
84	Meningitis.	23	2	Bl. cult., C.S. fluid.			−	+	D
146	Cold.	18	5	Throat swab.			−	+	R
	Sub-group Hinman.								
130	Tuberc. broncho-pneum.	26	Weeks.	Sputum.	−	−	−	+	N
163	Chronic bronchitis.	Adult.	Years.	,,			−	+	N
174	Post-anæsth. broncho-pneum. and empy.	52	4 days.	,,	−		−	+	D
	Sub-group 5073.								
126	Meningitis.	24	3	C.S. fluid.			−	∓	D
161	Pleurisy, empy.	28	5	Empy. pus.			−	+	R
112	Chronic bronchitis.	Adult.		Sputum.			−	+	N
	TABLE IV.—*Pneumococcus Type IV. Rockefeller Unclassified.*								
155	Lobar pneum.	34	6	Bl. cult., sputum.	−	+	−	+	R
143	Lobar pneum., empy.	6	14	Sputum.		+	−	+	R
179	Lobar pneum.	16	9	,,		+	−	+	R
183	Lobar pneum., empy.	3	12	Empy. pus.			−	+	R
103	Bronchitis.	Adult.	Years.	Sputum.		−	−	+	N
156	,,	28	3 mths.	,,		−	−	+	R
114	,,	Adult.	Months.	,,		−	−	+	N
153	Bronchitis, asthma.	27	7 days.	,,			−	+	N
123	Bronchitis, post-anæsth.	20	3	,,			−	+	R
150	,,	38	Weeks.	,,			−	+	N
121	Broncho-pneum.	32	14 days.	,,		+		+	R
120	Meningitis.	4/12	6	Bl. cult., C.S. fluid.	−		−	+	D
171	Cold.	45	5	Sputum.			−	+	N
147	,,	44	Weeks.	Throat swab.			−	+	R
109	,,	18	3 days.	Sputum.			−	+	N
115	,,	40	Weeks.	,,			−	+	N

A.C. = Pre-critical serum. P.C. = Post-critical serum, or serum taken late in the disease.
− = Negative result. + = Positive result. ± = Indefinite result. R = Recovery. D = Died. N = Unknown.
Empy. = Empyema. Bl. cult. = Blood culture.

In these tables it will be noted :—

(1) That the absence of hæmolytic activity of the pneumococci, when tested in a peptone-water medium containing 0·05 c.cm. of human red cells, has been observed in all but two instances: Table I., No. 132, and Table II., No. 107.

(2) That the lytic action of 2 per cent. sodium taurocholate in distilled water on the pneumococci has been observed in every instance, in two apparent exceptions: Table I., No. 132, and Table III., No. 126; lysis took place after these strains had been sub-cultured several times.

and possibly infarction of the kidneys accounted for the hæmaturia. The presence of casts and, towards the end, great reduction in urine, may suggest that possibly there was some serious disease of the kidneys of the nature of Bright's disease. Again I must tell you that I have suppressed the fact that another clinical sign was present, which I have satisfied myself is not a feature in cases of mitral valvular disease, or of degenerative disease of the heart muscle, both of which features appeared clinically to be present in Cases C and D.

I will now give the post-mortem findings of these two cases:—

In Case C the heart was found to weigh 17½ oz., the ventricular walls were hypertrophied; all the valves were free from disease; the coronary arteries were atheromatous but not occluded: the cardiac muscle was not fibrosed; the liver was "nutmeg," and there was fluid in one pleural cavity and in the peritoneum. The kidneys weighed 5¼ oz. each; the capsules were thick and adherent; the surfaces were finely granular; the cortex was not reduced. Microscopically 3 per cent. of the Malpighian corpuscles were destroyed, 97 per cent. were normal; there were small areas of tubular atrophy and fibrosis; the main bulk of the tubular epithelium was swollen and undergoing degeneration.

In Case D the heart weight was found to be 30 oz.; the ventricular walls were hypertrophied and the chambers dilated; there was no valvular disease; the liver was enlarged and showed a "nutmeg" appearance. Each kidney weighed 10 oz.; the capsule of each organ was thickened and adherent, and the surface laid bare was smooth. Microscopically it was found that about 5 per cent. of the Malpighian corpuscles were destroyed, 95 per cent. were normal; the cortices showed well-marked tracts of atrophy and fibrosis; the bulk of the tubules showed swollen epithelium or granular degeneration.

It is therefore clear that the diagnosis that these cases had died from valvular disease was quite wrong; the murmurs heard must have been simply due to dilatation of the chambers of the heart and of the valvular orifice concerned. As already admitted, defective action of the valves may have been responsible for the increased weight of the hearts in these two cases, but again I may remind you that each case revealed a clinical manifestation which I have not mentioned, which could explain the cardiac hypertrophy, and which some authorities think could explain how it was that the murmurs were heard. As to the kidneys, it will, I think, be agreed that there was little wrong with them, judged by the microscopical findings; and even accepting, for the moment, the prevailing view that uræmia is associated with grave kidney disease, the absence of uræmic symptoms in these cases would cause no surprise when the slight changes in the kidneys are observed.

III. DISCUSSION OF CASES.

The details of Cases A, B, C, and D must be kept in view as clearly as possible. A feature common to all four is the presence of a very large hypertrophied heart; but another feature almost as striking is that, despite the frequent occurrence of albuminuria, the kidneys in all four cases are practically normal. Tortuosity of the brachial artery was present when looked for. Now I disclose to you the fact that in each of these cases the blood pressure was raised, though only two observations were possible in Case B, each being 256 mm. The chart of Case A is part of a very full one, drawn up from five months' daily observations. The chart of Case C represents only a few days' observations, and the charts of Case D were drawn up as the result of two separate visits to the hospital. I think there can be no doubt that hyperpiesis was present in each of these four cases. My opinion is that these four cases represent what Sir Clifford Allbutt has described as hyperpiesia.[22] To use his own words, hyperpiesia "is a malady in which blood pressure rises excessively, a malady having a course of its own and deserving the name of a disease." I may add that it may be fatal, because cases C and D, though appearing to die of valvular and muscular disease of the heart, had no valvular disease, nor any other disease which could have proved fatal. The cause, I think, of their deaths was toxic in origin, and the end was brought about by the "defeat" of the heart, to use Sir Clifford Allbutt's own term, rather than by disease of that organ. I do not think that hyperpiesia is due to the gradual narrowing of the arteries of the body by any of the processes which masquerade under the name of arterio-sclerosis, and for a very simple reason. If you look at the first portion of the pressure chart of Case A you will see that in about a fortnight the pressure had become normal, and that about three weeks later it was higher than it ever had been. There was no discoverable intercurrent severe inflammation which could have caused the fall, and which, being recovered from, could have allowed the pressure to rise again. Nor can we imagine that arterio-sclerosis had departed in a fortnight, and during three weeks had again reached such a pitch as to make the blood pressure higher than before. It seems much simpler, therefore, to hypothecate a pressor toxin (or toxins) which, circulating in the blood, leads to contraction (but not to occlusion) of the arteries, with the result that the heart hypertrophies, and the strain induced by this interplay of heart and arteries causes the blood pressure to rise and the arteries to lengthen and become tortuous. There can be no reason to think that in these four cases the kidneys were in any way capable by chemical agency of causing the rise of blood pressure, because they were so little diseased, and because it has never been established that renin[23]—a pressor substance present in the kidneys—is responsible for physiological normal blood pressure, or for hyperpiesia. I do not know where this hypothetic toxic body (or bodies) originates, but I believe it is distributed by the blood-stream, and I believe it is pre- or extra-renal in origin.

I do not entirely agree with Sir Clifford Allbutt[24] because I believe that hyperpiesia in its later stages *may* reveal symptoms identical with those met with in certain well-known forms of kidney diseases—Case A was felt by the physician in charge to have died partly, if not entirely, from uræmia dependent upon granular kidney; but, as previously stated, the kidney was practically normal. Now I must confess that a large proportion of the cases of hyperpiesia which I have studied reveal granular kidney, or some other coarse form of kidney disease; but a very considerable number, though less, showed no more disease of the kidneys than I have related in the above four cases. Many of these latter cases—i.e., those who did not reveal kidney disease like Case A and Case B—revealed symptoms eminently uræmic, so I am prepared to go much further than Sir Clifford Allbutt, and to say that hyperpiesia may, in its more dangerous phases, exactly simulate the symptoms of various well-recognised forms of kidney disease, without the kidneys being diseased at all. The first part of my lecture aimed at showing that uræmia was due to poison (or poisons) circulating in the blood which was in no way referable to the faulty action of the kidneys, and I quoted Bright's contemporaries, some of whom firmly believed that albuminuria and dropsy, and presumably other symptoms and changes associated with them, even the kidney disease, were due to some general cause operating in the circulatory system.

CONCLUSION.

I have aimed at trying to show that in hyperpiesia we can find all the manifestations familiar to us in the past as uræmic. I have also tried to show you that hyperpiesia and uræmia—so-called—are due to the circulation of a blood poison (or poisons) which are not due to a fault of the kidney. It is common knowledge that the term uræmia is a misnomer, useful clinically, but unsupported by experimental investigation. Then, I maintain, the relationship of uræmia and hyperpiesia is easily settled. Hyperpiesia reveals in its advanced stages each and every manifestation incidence of cases of serious pneumococcal infections as lobar pneumonia, broncho-pneumonia, meningitis, and septicæmia occurring in the A, B, and C infections, 35, or 72 per cent., fall into this category, the remaining infections being of a milder type—bronchitis, cold, asthma, &c. Lister's figures (1917), noted above, place some 70 per cent. of his cases of lobar pneumonia in Types A, B, C, and E, and Cole (1913) places some 70 per cent. of his pneumonia cases in Types I., II., and III. The figures for the three areas would appear therefore to be somewhat similar, Types I. and II. pneumococci being frequently present in serious pneumococcal infections in this country. On an examination of the Type IV. infections, 12, or 40 per cent., are of a serious nature and 60 per cent. more mild. Thus, although over half the cases from which this type of coccus was isolated are mild, these cocci are capable of producing any of the serious forms of infection, meningitis, lobar pneumonia, and broncho-pneumonia—instances having appeared in the list of cases examined above—but do not produce these serious forms of infection in such a high percentage as the Types I. and II. pneumococci.

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[22] Diseases of the Arteries, including Angina Pectoris, London, vol. i., p. 10.

[23] THE LANCET, 1906, i., p. 1295, et seq.

[24] Diseases of Arteries, 1915, vol. i., p. 346.

Conclusions.

1. That from the laboratory methods employed the pneumococcus presents its most typical appearance in fresh body exudates, and that bile solubility and the absence of hæmolytic activity are almost constant characteristics of the pneumococcus.
2. That for the separation of pneumococci in sputum and pus, Dudgeon's method is a convenient and satisfactory one.
3. That the fermentation reactions of the pneumococcus are of no value for the division of the organisms into types.
4. That pneumococcal antibodies corresponding to the type of pneumococcus responsible for the infection, though not present in the early stages of the disease, are usually formed in the post-critical blood serum of cases of lobar pneumonia, and in the later stages of some other pneumococcal infections.
5. That the pneumococci responsible for lobar pneumonia and other serious pneumococcal infections in this country are similar to those found in America and South Africa.
6. That Type IV. pneumococci are capable of producing any of the serious infections due more commonly to Types I. and II. infections.

I have to thank Sir Frederick Lister for his kindness in forwarding the standard strains of pneumococci which formed the basis of this work. I am also greatly indebted to Prof. L. S. Dudgeon for much kindly help and advice, and to the members of the staff of St. Thomas's Hospital for permission to obtain material from their cases, and for the use of their clinical notes.

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THE IMPORTANCE OF THORACIC RESPIRATION.

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MY object in writing this paper is to call attention to the very important part played by thoracic respiration at all periods of life; to the necessity of observing its extent; to the recognition of the factors that affect it prejudicially; and to the consideration of the best mode of dealing with it and with the conditions which impair its efficiency.

When I was working at the changes which the skeleton and soft parts of the labourer undergo in consequence of an arduous occupation my attention *was called to the function of the intercostal muscles*, the share they take in the respiratory process, and the modifications they undergo in the various types of workmen. At that time the mechanics of the respiratory process were, like all the mechanics of the skeleton, described in a most crude and superficial manner. The action of the intercostal muscles was illustrated in the text-books of physiology by a *vertical rigid rod representing the spinal column*, and attached to this rod by hinges were parallel bars representing the ribs, and to these bars pins were fixed at intervals. The supposed action of the internal and external intercostal muscles was demonstrated by attaching to these pins elastic bands having the direction of the fibres of these muscles. As a result of this representation it was stated that the external intercostal muscles raised the ribs, and were consequently inspiratory muscles, while the internal intercostal muscles depressed the ribs and were expiratory in their action.

Free Movement of Vertebral Segments.

The fallacy in this experiment lies in the fact that far from being a rigid body the vertebral segments which make up the dorsal spine move very freely on one another around a transverse axis in an antero-posterior vertical plane. Indeed, on observing an individual passing from extreme inspiration to extreme expiration the alteration in the curve of the spinal column is a more marked feature than the elevation and depression of the costal arches. The vertebræ, instead of forming a rigid rod, are freely mobile in an antero-posterior plane. The sternum affords the fixed bar, while the elasticity of the costal cartilages permits of its depression and elevation. This is demonstrated by a change that takes place in the first costal cartilage of the labourer under the influence of great pressure. In consequence of this strain a process of ossification commences in the periphery of each extremity of the first costal cartilage, and gradually extends till the whole cartilage has been converted into bone. *To meet the flexion* of the spine and the consequent movement of the vertebræ in an antero-posterior plane a new joint develops in the ossifying cartilage. This is at first *purely amphiarthrodial in type, but when fully* developed it forms an arthrodial joint which allows of very free movement between the segments of the ossified cartilage, one of which is continuous with, and inseparable anatomically from, the first rib, and the other forms a part of the manubrium.[1] Figs. 1, 2, 3, and 4 represent several of the stages in the development of this joint.

Curiously enough, the physiologist makes no mention of the very obvious movement of the vertebræ in an antero-posterior plane. I have looked up the mechanics of respiration in an excellent text-book of physiology,[2] and find that the same diagrams are still employed to illustrate them, and that "the made, and in 3 cases the pneumococcus was found in life. In 2 of these positive cases general pneumococcal infection was found post mortem. In 8 cases with negative blood cultures, although the pneumococcus was present in the lungs, no evidence of a general pneumococcal infection was found post mortem.

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[1] Some points in the physiology and pathology of the changes produced by pressure in the bony skeleton of the trunk and shoulder-girdle, Guy's Hospital Reports, 1886.

[2] Starling: Elements of Human Physiology.

Thirty-four blood cultures were made during this work, and of these 19 were positive and 15 negative. The pneumococci have been typed and are distributed as shown in Table A.

TABLE A.

Rockefeller Nomenclature.	Lister's Nomenclature.	Number of blood cultures.	Positive.	Negative.
—	Group A	2	1	1
Type I.	C	20	8	12
,, II.	,, B	7	5	2
,, IV.	Unclassified.	5	5	0

In Lister's Group A 2 patients were examined by blood culture: one, a case of lobar pneumonia with empyema (positive), died; the other, a case of broncho-pneumonia (negative), recovered.

In Type I. the 8 positive results were obtained in 5 cases of lobar pneumonia, 2 of meningitis, and 1 of septicæmia. The negative cultures occurred in 10 cases of lobar pneumonia, 1 of broncho-pneumonia, and 1 of chronic empyema. Of these 8 positive blood-culture cases 5 died, 2 of lobar pneumonia, 2 of meningitis, and 1 of pneumococcal septicæmia. Of the 12 cases in which negative blood cultures resulted 2 died, one of lobar pneumonia, and the other of a chronic empyema associated with advanced waxy disease.

In Type II. the 5 positive blood cultures were all obtained from cases of lobar pneumonia, while 1 lobar and 1 broncho-pneumonia gave negative results. Of the 5 positive cases, 2 died; both negative cases recovered.

In Type IV. 5 positive cultures were obtained, 3 from cases of lobar pneumonia, and 2 from pneumococcal meningitis. Both meningitis cases and 1 of the pneumonia cases died.

In all cases, in which a positive culture was obtained, the examination was made within seven days of the onset of the disease, and it is noted that of the 4 cases of meningitis examined all had positive blood cultures and all died. In the cases where a negative culture resulted, 7 were made during the first week of illness, 4 during the second week, 1 during the third, 2 during the fifth, and 1 from a chronic empyema established for seven years in which a pyrexial condition was present. In those cases of pneumonia with pyrexia during the third and fifth weeks an empyema was present.

From an examination of these results it will be seen that of 19 positive blood cultures death resulted in 11 cases, whereas in 15 cases where a negative blood culture was obtained, 2 died; one a case of lobar pneumonia which died on the eighth day, the other a case of chronic empyema with advanced waxy disease. Although the number of cases examined by blood culture is small, it would appear that in cases of pneumococcal infections a positive blood culture is of grave significance.

Formation of Specific Agglutinins and Opsonins in the Blood Serum of Persons Suffering from Pneumococcal Infections.

Lister (1913) pointed out that the serums of patients recovering from lobar pneumonia usually acquire opsonins and agglutinins for the particular strain of pneumococcus responsible for the infection, and that "virulent" pneumococci—i.e., pneumococci directly derived from a hepatised lung—are readily phagocyted and agglutinated by such serums. These antibodies are not found in the early stages of the infection, but appear at or about the time of the crisis, and continue in the blood for some time after [illegible] period. The blood serums from the pre-critical stage of 18 cases of lobar pneumonia, 2 from early broncho-pneumonia, 5 from pneumococcal meningitis, 1 from bronchitis, 1 from a pneumococcal septicæmia, and 2 from cold in the nose—29 in all—have been tested against type strains or strains obtained from the cases, in no instance was any evidence of agglutination or phagocytosis of the pneumococci noted. Similarly 41 serums taken after the crisis in cases of lobar pneumonia, or at a late stage of other infections, have been examined for the presence of opsonins and agglutinins. Table B shows the results obtained.

TABLE B.

Nature of infection.	Positive.	Negative.
Lobar pneumonia	24	1*
Broncho-pneumonia	6	3
Chronic empyema	2	0
Bronchitis	0	3
Septicæmia (pneumococcal) ..	0	1*
Cold in head	0	1

* Subsequently died.

These findings are in agreement with those of Lister as regards the lobar pneumonia cases, but cases of broncho-pneumonia and chronic empyema also appear to produce antibodies in the serum. These antibodies may be used to determine the type of pneumococcus which has caused the infection and may serve as a useful guide to vaccine therapy. In the following Tables I., II., III., and IV. are noted the cases from which these observations have been made. The technique of the agglutination method used during this work is similar to that used by Sir F. S. Lister (1913), who modified Sir A. Wright's opsonic-index method for this purpose. Thick dehæmoglobinised blood films have been used for the observation of agglutination and phagocytosis of the cocci in preference to the usual blood films, as by this means the clumps of pneumococci are not submitted to the action of the spreader.

Serological Reactions of 77 Strains of Pneumococci Isolated from Various Sources.

In the following tables are set out the chief particulars of the pneumococci isolated during this work in their serological groups. Where agglutinins and opsonins were developed in the blood serum of the cases examined, strains of cocci derived from two separate sources where possible—such as blood culture and empyema pus—were tested with this serum and with standard anti-pneumococcal serum. Thus in Table I., No. 43, strains of cocci, obtained from the sputum and from empyema pus, agglutinated with anti-pneumococcal serum Type I., and with the post-critical serum of the case, phagocytosis of the cocci being present. In Case 71, Table I., a case of meningitis, death took place; the blood serum contained no agglutinins, both strains isolated from the cerebro-spinal fluid and from the blood culture agglutinated with Type I. antiserum. In no case have two "standard" strain pneumococci (and by this I understand Types I., II., and III.) been isolated from any single patient, nor have agglutinins or opsonins for more than one strain of pneumococci been found in the post-critical serum of any case.

Pneumococcus C Lister, or Type I. Rockefeller.

In Table I. are set out the "C" Lister or Type I. group of pneumococci. This group contains 31 members, of which 26 were obtained from cases of lobar or broncho-pneumonia, and it is noted that 11 of these cases were complicated by empyema formation. Of these 31 cases eight died, four of pneumonia, one complicated by a terminal meningitis (No. 173, a chronic empyema of seven years' standing, who was in a state of advanced waxy disease on admission to hospital for operative treatment), one of meningitis, and one of septicæmia (No. 182).

Case No. 182 is of interest, as chronic lymphatic leukæmia had been present for some two years prior to the terminal infection. This patient was infected with what appeared to be an influenzal cold, but his condition became serious. There were fleeting signs of pneumonic consolidation in the lungs, but no definite areas could be located. Positive blood cultures, in which enormous numbers of pneumococci were found after 12 hours' incubation, were obtained on four separate occasions during the 14 days of acute illness. Thus in this case a pneumococcal septicæmia persisted for moreover, all objective evidence of adenoid growth had disappeared. Such an improvement could not have been effected without constant care and attention on the part of the highly trained nurse who carried out the treatment.

—	Inspiration.	Expiration.	Weight.	—	Inspiration.	Expiration.	Weight.
Feb.				Feb.			
1st	30 *in.*	28½ *in.*	7 *st.* 12 lb.	15th	32¾ *in.*	28½ *in.*	8 st. 2¼ lb.
2nd	30½ ,,	,,	—	16th	32¾ ,,	,,	—
3rd	31 ,,	,,	—	17th	33 ,,	,,	—
4th	31¼ ,,	,,	—	18th	33 ,,	,,	—
5th	31½ ,,	,,	—	19th	33 ,,	,,	—
6th	31 ,,	,,	—	20th	33 ,,	,,	—
7th	32 ,,	,,	—	21st	33 ,,	,,	—
8th	32 ,,	,,	7 st. 13 lb.	22nd	33¼ ,,	,,	8 st. 5 lb.
9th	32 ,,	,,	—	23rd	33½ ,,	,,	—
10th	32¼ ,,	,,	—	24th	33¼ ,,	,,	—
11th	32¼ ,,	,,	—	25th	33¾ ,,	,,	—
12th	32¼ ,,	,,	—	26th	33¾ ,,	,,	—
13th	32½ ,,	,,	—	27th	33¾ ,,	,,	—
14th	32¾ ,,	,,	—	28th	34 ,,	,,	8 st. 7½ lb.

In 1896[4] and subsequently I published several papers on the importance of improving the respiratory capacity of feeble children, and particularly those who were the subjects of adenoid hypertrophy with or without operation, and to my surprise my suggestions met with violent opposition. Sir Felix Semon, the then recognised authority on laryngology, devoted three and a half columns of a lecture, which was published in the *British Medical Journal*,[5] to show that my views on the supposed benefits to be derived from respiratory exercises were ridiculous. To give an idea of the antagonism that the employment of breathing exercises aroused, I quote a few lines from the lecture of this distinguished surgeon. "Well, gentlemen, I may be an incurable sceptic, but I have no hesitation in telling you that I do not believe for a moment that a single child which has got well-marked adenoids has been, or ever will be, cured by breathing exercises, all reports to the contrary notwithstanding. I mean no disrespect to Mr. Arbuthnot Lane, but I cannot help saying the whole idea seems to me preposterous"; and again: "If it should be called unscientific to say plainly that the rationale of his treatment was a mystery to them, I, for one, must plead guilty to the soft impeachment. How a genuine lymphoid hypertrophy can ever be expected to be dispersed by breathing exercises completely passes my understanding."

It would be interesting to compare the views Sir Felix Semon then enunciated on the value of respiratory exercises with those now held by laryngologists, by medical men generally, and even by school teachers and the better educated part of the public. It was not till later that I realised the important influence that intestinal auto-intoxication and chronic intestinal stasis exert upon the respiratory and other functions of the body and how far they are responsible for the development of diseases.

In 1902 I opened a discussion[6] on the subject at a meeting of the British Medical Association in Manchester, when there was much difference of opinion, though the ideas which were expressed by the several speakers, notably by Dr. Harry Campbell, showed that a change of view was taking place with regard to the mechanics and affections of the nasopharynx.

Stasis as the Chief Cause of Lowered Vitality.

Intestinal stasis develops at an early period in the lifetime of the child. While the infant wears napkins it passes its motion when the bowel recognises the desire to evacuate it. When the napkin is discarded the child is taught to retain the products of 24 hours' digestion in the large bowel, with the result that the pelvic colon elongates and secondary changes ensue. Sooner or later the contents of the small intestine become infected by organisms and the food-supply is contaminated. This results in a poisoning of all the tissues and organs of the body, rendering them unable to perform their functions in a normal manner and reducing their capacity to resist the inroad of micro-organisms. The observation of a large number of delicate children shows that in them thoracic respiration is in abeyance, and that a tape encircling the chest undergoes no variation whatever during respiration. The tissue in the infant in which the earliest evidence of infection by organisms is observed is the lymphoid tissue in the naso-pharynx. Later in life the evidences of lowered resisting power are shown in an infection of the periodontal membrane to which the name of pyorrhœa has been given. Both these conditions, which are secondary to stasis, are regarded by many as diseases appearing spontaneously and being themselves causes of stasis and its results. As age advances the amount of energy which can be expended in effecting thoracic respiration diminishes, and the chest and dorsal spine assume the curves that one associates with that time of life. Perhaps most of this is due to the fact that stasis increases with age, and that it is the prime factor in producing disease and death. Again, a great deal of defective thoracic respiration is due to habit, the individual neglecting to keep his chest working efficiently. Besides being very deforming it serves to diminish the oxygenation of the blood and to hasten degenerative processes throughout the body.

A recognition of the facts to which I have called attention in this paper must impress the reader with the importance to the individual of keeping the function of thoracic respiration in an efficient condition, even though little consideration is given to the state of the muscular system generally; also that chronic intestinal stasis, that dread accompaniment of civilisation, should be met by every possible means if the tissues of the body are to be kept in the best possible condition.

THE RATIONALE OF THE WASSERMANN REACTION.

An Abridged Account of a Paper Read Before the Dermatological Section of the Royal Society of Medicine on Oct. 20th, 1921,

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THOUGH the Wassermann reaction (W.R.) has been extensively employed since 1907, it cannot be said that much progress has been made in unravelling its *modus operandi*. Some have laid great stress upon the possible interpretations of a positive and negative reaction, but those with a large clinical experience are coming to the conclusion, that a negative reaction signifies nothing, and that a positive reaction means no more than that the patient has had syphilis. It is now being recognised that the reaction can be used, neither as a regulator of treatment nor as a test of cure, and that a positive reaction does not necessarily signify that the disease is active and that the patient requires treatment. Though the experimental work about to be described will form sufficient proof of the statements just enunciated, the main object of this paper is to detail as far as is possible the changes undergone by the protein particles in syphilis, and to throw more light on certain problems which so far have remained unsolved. Before doing this it will be necessary to consider the hæmolytic system, the foundation of all complement-fixation tests, and to point out the relationship it bears to the first part of the W.R.

Hæmolytic System.

An immune serum plus complement will cause red blood corpuscles to give up their hæmoglobin, and

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[4] Some Experiences in the Surgical Out-patients' Room of a Children's Hospital, Clinical Journal, 1896.

[5] Local Treatment of the Upper Air-passages, Brit. Med. Jour., Nov. 2nd, 1901.

[6] Respiratory Exercises in Naso-pharyngeal Lesions, Brit. Med. Jour., Sept. 6th, 1902.

11 days. Five days before death melæna was present, and the last culture, taken two days before death, contained not only the pneumococcus in large numbers, but also streptococci and the paratyphoid "C" bacillus. At no period of the septicæmia were agglutinins or opsonins found in the blood serum. Unfortunately no post-mortem examination could be made.

Case No. 132 was that of a child of 5 months, who was seen suffering from a membranous condition of both conjunctivæ. A Type I. pneumococcus was isolated; the child became blind.

Of the 31 cases of C or Type I. infection it is noted that 26 were isolated from cases of severe illness, and that five were obtained from mild infection, two of common cold, two of bronchitis, and one of asthma.

Pneumococcus B. Lister, or Type II. Rockefeller.

In Table II. are set out the particulars of the 11 cases forming this group. Eight of these cases are lobar pneumonia, 1 broncho-pneumonia, 1 pleurisy, and 1 asthma. Two cases, both of lobar pneumonia, died. None of these cases developed empyemata. The only cases of familial infection by the pneumococcus which have been encountered in the course of these investigations occurred in this group.

Three cases (Nos. 73, 74, and 78, Table II.) were all living in the same house, and all were admitted to hospital within seven days suffering from acute lobar pneumonia. No. 73, the father, aged 47, was admitted on the second day of illness. The left base was consolidated, and later the whole left lung became involved. Blood culture made upon the third day of the illness contained Type II. pneumococci in large numbers. Crisis occurred on the eighth day, but the post-critical serum contained no agglutinins or opsonins. Death took place on the ninth day from cardiac failure. At the post-mortem the left lung was in a state of grey hepatisation. The right lung was very congested, and in parts almost solid. No. 74, son of No. 73, aged 17, was admitted on the first day of illness suffering from hæmoptysis and pain in the left chest. Consolidation of the left base was present. The temperature fell by lysis on the seventh, eighth, and ninth days. Convalescence was normal. Blood culture made on the second day contained numerous pneumococci Type II., and a Type II. pneumococcus was isolated from the sputum. The post-critical serum contained both opsonins and agglutinins for Type II. pneumococcus.

No. 78, a son of No. 73, was admitted to hospital on the first day of illness. The right base was consolidated, the left base congested. The temperature fell by crisis on the seventh day, and convalescence was normal. This patient was not investigated until the eleventh day, when the temperature was normal. From the sputum a Type II. pneumococcus was isolated, and his post-critical serum contained agglutinins and opsonins for the Type II. pneumococcus.

These three cases serve to illustrate the occasional occurrence of a small epidemic of lobar pneumonia. Case No. 119, Table II., presented the clinical signs of pleurisy, and although rusty sputum was expectorated in considerable quantity, no consolidation of the lung was located. A Type II. pneumococcus was isolated from the sputum. A Type II. pneumococcus was isolated from one case of mild infection, No. 107, the remaining 10 cases were severely ill.

Pneumococcus A Lister, Type IV. Rockefeller.

In Table IIa. are set out the five strains of Lister's A pneumococcus, which have been isolated during this work. As noted above, Lister (1917) states that 31 per cent. of the pneumococci isolated by him have belonged to this group, 21·6 per cent. to the C group, or Type I. Rockefeller, and 16·2 per cent. to his B group, or Rockefeller Type II. Strains of this Type A pneumococcus were sent to the Rockefeller Institute, examined by Dochez and Gillespie (Lister 1913), and placed in Type IV. This strain has apparently not been found in America. In examination of the serological characteristics of these Type A pneumococci by the opsonic technique with 15 minutes' incubation, no agglutination or phagocytosis of the cocci occurred, but when the incubation time was increased to one hour some small but definite degree of reaction was noted and these A pneumococci have been placed in this communication as a sub-group of Type II. for this reason. Two cases of lobar pneumonia, both of which were complicated by empyema, and two cases of broncho-pneumonia were infected by this A pneumococcus, and in all four cases agglutinins and opsonins were present in the blood serum. In the fifth case, No. 118, Table IIa., a malignant growth of the lung was present; an empyema developed, from which this A pneumococcus was isolated. This case died, but no antibodies were found in the blood serum.

This Type A pneumococcus, so frequently observed in the natives of South Africa, is therefore present as a pathogenic organism in this country, though it has not yet been definitely identified by workers in America. Of the 5 cases due to this type of infection, 3 died, the causes of death being lobar pneumonia, broncho-pneumonia, and empyema complicating malignant disease of the lung. As far as one can judge from this small series of cases the presence of the Type A pneumococcus is associated with a severe type of infection.

Pneumococcus Unclassified Lister, Type IV. Rockefeller.

Thirty strains of pneumococci have been isolated which do not correspond to Lister's F, G, J, or K strains, and must therefore be placed in his unclassified list—that is, the Rockefeller Type IV. From these 30 strains 4 have been taken and antiserums (designated Harding, Hinman, Eccles, and 5073) prepared. Pneumococci Harding and 5073 were isolated from 2 cases of meningitis; Hinman and Eccles were obtained from the sputum of cases of chronic bronchitis. With these 4 antiserums it was possible to group 14 of the 30 Type IV. pneumococci. In Table III. are set out the particulars of these sub-groups Harding, Hinman, and 5073.

Sub-group Harding: Eight Cases.—No. 84, Table III., was the standard strain of this group, and was obtained from the blood stream and cerebro-spinal fluid of this case of meningitis before death. Seven further strains of this sub-group have been identified, two from cases of lobar pneumonia, four from bronchitic sputums, and one from common cold. Two cases—the original meningitis case, and one case of lobar pneumonia—died.

Sub-group Hinman: Three Cases.—No. 130, Table III., was the standard strain of this small group, and was isolated from the sputum of a case of tuberculous broncho-pneumonia. The sputum contained numerous tubercle bacilli. The remaining two strains were isolated, one from the sputum of a case of chronic bronchitis, the other from a case of post-anæsthetic broncho-pneumonia, who subsequently died. This case, No. 174, developed an empyema.

Sub-group 5073: Two Cases.—The standard strain, No. 126, Table III., was obtained from the cerebro-spinal fluid of a boy who fell from a bicycle, fractured his skull, and developed a pneumococcal meningitis. In this case the pneumococcus failed to lyse in 2 per cent. bile-salt until sub-cultured several times. The second example of this sub-group was isolated from the pus of an empyema.

Sub-group Eccles: One Case.—This organism was isolated from the sputum of a case of chronic bronchitis, and so far no further examples of this sub-group have been isolated.

Unclassified Pneumococci Type IV. Rockefeller.

In Table IV. the remaining 16 strains of pneumococci are set out, which were not grouped by any of the anti-pneumococcal serums used during this work. One case, No. 120, Table IV., a child of 4 months was admitted to hospital with an abscess on the back of the hand which had been present for six days. The child had a high temperature, and had developed signs of meningitis. The cerebro-spinal fluid contained pus and pneumococci, and the blood culture was positive, enormous numbers of cocci being present in a 12-hour culture. A thick blood film contained several groups of pneumococci. The child died 10 days after the abscess of the hand developed, but no antibodies were present in the blood serum. This was the only death amongst the 16 cases in this group. Four cases of lobar pneumonia, 2 of which developed empyema, 1 of broncho-pneumonia, 6 of bronchitis, and 4 of common cold are present in this collection of unclassified pneumococci.

From a survey of these serological groups of pneumococci one finds that of the 77 cases examined 47 are members of Lister's A, B, or C groups—i.e., Types I. and II. Rockefeller, with the addition of the A group; and 30 cases belong to the heterogeneous collection Type IV., none of which were found to be similar to Lister's F, G, J, or K groups. Taking the to which protein belongs, but it is a forced and not a spontaneous process.

On the other hand, a non-metal, acting as a condenser, at first diminishes the electronic activity of the protein particles, no electrons being discharged. When a lethal dose and several small doses are prescribed, the conservation of electrons, with the resulting increase of hydrogen on the surface, cause the particles to increase their "baseness." Such a step leads to an increased avidity for electrons, which the complement added cannot satisfy, consequently a positive C.F.T. is obtained. If my reasoning is correct the injection of a non-metal or condenser should return a positive reaction produced by a metal or conductor to a negative reaction, and cause the serum to give an ultra-microscopic picture indistinguishable from the normal. Not only is this what happens but the converse is also true. Though the reaction may be reduced to negative if previously positive, or to positive if previously negative, when a single injection of a metal is administered after several injections of a non-metal and vice versâ the ultra-microscopic pictures remain unaltered. This is likewise the case in late syphilis, and shows that once the particles have been accustomed, so to speak, to accommodate themselves to the altered conditions, they continue to perpetuate the changes, irrespective of the drugs prescribed. Consequently one cannot surmise from a given reaction in syphilis how the causative organism is behaving.

Effect of Metals and Non-Metals on Syphilitic Serums.

In early syphilis metals first increase the positivity of the C.F.T. because the initial stage of dispersion is accompanied by marked electronic activity. In the late stage of dispersion the reaction becomes negative, and occasionally the injection of a non-metal will re-convert it into a positive. Non-metals alone cause an immediate diminution of the positivity with an aggravation of the clinical signs, but their continued administration leads to a degree of positive reaction, which can be reduced only by the employment of metals. In late syphilis, if the reaction is negative to start with, a non-metal acts as a better provocateur of a positive reaction than a metal. If positive to start with, a non-metal will render the C.F.T. temporarily negative quicker than will a metal.

Changes Undergone by the Serum in Syphilis.

The protein particles undergo three main changes: (1) increase in number; (2) surface change; (3) mass change.

Increase in Number.—This change is most noticeable in early syphilis and can be detected before the C.F.T. is positive, but any manœuvre which sets in motion the spontaneous process of condensation will cause the same to give a positive reaction. This can be achieved by shaking with insoluble substances, such as barium sulphate, tin oxide, bismuth subnitrate, &c. Occasionally in late syphilis an increase in number is to be observed, but in such cases the C.F.T. is always negative and does not change into positive on the administration of a non-metal. These particles are albumin particles which always nullify, if in sufficient quantity, a positive reaction given by globulin particles. They are caused by a conversion of lipoid-globulin into albumin, and all the cases I have investigated had a marked degree of hyperpiesis. Whether the hypertension is due primarily to the increased viscosity of the serum or to the reduction in the surface electrification of the protein particles I cannot at present determine. I am strongly of the opinion that the changes in the vessel walls and kidneys are secondary to those in the serum.

Surface Change.—The protein particles in syphilis contain more electrolytes than normal; they are therefore capable of greater electronic activity. The discharge of electrons—i.e., the oxidising action of the particles—in the form of electricity and heat to overcome the parasites results in a condensation of the particles and in an increase of their "baseness."

As the disease advances and the electronic activity is continued, the particles lose many of their surface electrolytes. This increases their power of adsorption, which in vitro is measured by precipitation; consequently the most positive serums are usually late syphilitic serums. This being the fact at the stage when there are fewer organisms, again supports the view expressed that there is no parallel between the two. When the loss of electrolytes is exactly counterbalanced by the mass change, the lipoid-globulin so formed reaches its iso-electric point. At this point protein is, so to speak, dead and is excreted into the urine and into the general peritoneal cavity. This protein when collected invariably gives a negative C.F.T. Electronic activity resulting in condensation and increase of "baseness" imparts to particles so altered the chemical and physical properties of globulin. A continuation of the same leads to the formation of lipoid-globulin, which in its turn may be converted into albumin. The changes through which protein can pass are likewise cyclical in nature: Albumin —> globulin —> lipoid-globulin —> albumin.

Mass Change.—Apart from changes already observed, the mass exhibits an increase of amino-groups in early syphilis and an increase of lipoid material in late syphilis. The former is proved by Van Slykes's estimation of amino-nitrogen, and the latter is suggested by the behaviour of certain compounds on normal protein particles, by ultra-microscopic examinations, and by the effect produced on serums by the passage of electric currents. Lipoid-globulin can be formed at the negative pole and by shaking a serum with α-naphthylamine. Sometimes ringed particles are formed which in turn, on continued passage of the current, become converted into sheaf-shaped crystalloid bodies, which at present I take to be the glyceryl-esters of the higher fatty acids. Summed up the position is as follows:—

When the increase of electrolytes bears the same ratio to the amino-groups as occurs normally, the C.F.T. is negative. When the electrolytes become dissipated and the protein mass has to undergo changes to compensate for the loss, the C.F.T. is positive, because the adsorptive capacity of the particles is increased with the hope of being able to take from the particles added the electrolytes necessary to restore the balance. When the loss of electrolytes is just balanced by the substantive changes the C.F.T. is negative. When the electrolytes are still further destroyed, the C.F.T. is anti-complementary, because nothing added can restore the balance; in fact, anything added only furthers the precipitation. This stage corresponds to that produced when a normal organ is extracted with alcohol or acetone.

Thus we are now able to visualise the exact action of antigen. In fact, certain protein particles when rendered anti-complementary will serve as the antigen. A W.R. can actually be undertaken with ingredients made from the patient's own blood with the sole addition of some colloidal silicic acid for use as the amboceptor. A serum can be rendered anti-complementary by shaking with naphthalene, α-naphthol, and α-naphthylamine. If the serum is filtered, dried, and dissolved in saline, only the one treated with α-naphthylamine will act as antigen. α-Naphthylamine converts the protein particles into lipoid-globulin, diminishes the surface-tension, and diminishes the viscosity of the liquid medium. Further, it causes marked agglomeration and condensation of the protein particles. In other words, it imparts to the protein particles those characters upon which we have seen the C.F.T. depends. A like degree of agglomeration and condensation occurs normally in the serum of most pregnant women. This explains why at least 10 per cent. of non-syphilitic women when they are pregnant give a positive C.F.T., and why many syphilitic women (except those recently infected) give a negative C.F.T. From the foregoing we can also understand why repeated freezing and thawing, exposure to alterations of atmospheric pressure and to radio-active bodies, and shaking with various non-electrolytic substances, tend to make a normal serum give a positive or anti-complementary reaction. They make a slightly positive serum more positive external intercostal muscles, which shorten and so raise the ribs," are regarded as inspiratory muscles, and that "the internal intercostals depress the ribs and act as expiratory muscles." I would point out that the direction of the fibres of the external intercostals is continuous with that of the external abdominal oblique, a powerful muscle of expiration and a flexor of the thorax, dorsal and lumbar spine, while the reverse is true of the internal abdominal oblique, whose fibres continue the direction of the internal intercostals.

My observations on the anatomy of the labourer showed beyond a shadow of doubt in my mind that the internal intercostal muscles are the most powerful extensors of the dorsal spine, and are the chief muscles of thoracic inspiration. Their function is to extend the bodies of the several vertebræ upon one another, and to raise the ribs and sternum correspondingly. I also demonstrated that the external intercostals are the most powerful flexors of the dorsal spine, flexing the dorsal vertebræ upon one another and depressing the costal arches and sternum correspondingly. In extreme inspiration the dorsal spine is extended to its utmost, while in extreme expiration it occupies a position of extreme flexion. The normal respiratory effort moves within a varying degree between these extreme limits.

Showing Four Stages in Joint Development.

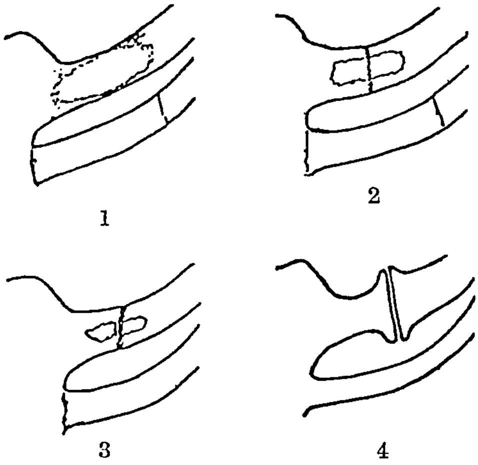

FIG. 1 shows the gradual formation of bone in the periphery of the extremities of the first costal cartilage.

FIG. 2 shows an extension of this process and a transverse marking in the bony sheath and residual core of cartilage, where the cells have arranged themselves at right angles to the long axis of the cartilage, and have elongated and formed fibrous tissue.

FIG. 3 shows a more advanced stage, the fibrillation having extended through the whole breadth of the cartilage, forming an amphiarthrodial joint.

FIG. 4 shows the fully developed arthrodial joint, the opposing surfaces of which exceed in area that of the normal cartilage.

The "Intercostal Ligament."

In such a labourer as the coal-heaver, who carries loads on his back, the constant strain on the internal intercostal muscles in opposing the forward displacement of the upper dorsal vertebræ—more especially the first and second—results in the formation of a very dense layer of ligamentous material which lies internal to the internal intercostals and continues the direction of its fibres. It extends from the posterior three-fourths of the first rib downwards and backwards through the subjacent spaces in a continuous plane to the spine. It is clearly a retrocession of the deeper part of the internal intercostal muscle, and it serves to diminish the expenditure of energy by this muscle. As I had seen no reference to this structure in works on anatomy I called it "the intercostal ligament." It affords an excellent example of labour economy, while at the same time it demonstrates the action of both internal and external intercostal muscles. This ligament and the mode of development of the joint in the ossifying first costal cartilage are fully described in the paper in the Guy's Hospital Reports for 1886. It is quite clear that diaphragmatic—or, as it is commonly called, abdominal—respiration is a more perfect reflex than is thoracic respiration. This is due to the fact that the action of the diaphragm is essential to life and makes no apparent demand upon the energy of the individual. The increase in the capacity of the chest, which is effected chiefly by the action of the internal intercostal muscles and the consequent change of posture of the individual, involve an expenditure of energy which is proportionate to the extent of the effort. Any condition that lowers the vitality of the individual, or which, in other words, reduces the capacity to expend energy, diminishes the degree of thoracic respiration. The factor that most frequently effects this is intestinal auto-intoxication, and this is exceedingly common, if not to some extent almost universal, in civilised communities.

Variation in the Respiratory Act in the Two Sexes.

Following up the question of respiration I studied the differences of the respiratory act in the male and female, and found that while the anatomist had regarded the pelvic bones as alone presenting distinctive characteristics, that the thorax of the female differs from that of the male in an even more obvious manner.[3] The variations presented by the female thorax are due to the fact that the abdomen, and indeed a portion of the thorax, have to accommodate the pregnant uterus for a certain period of time. This by its bulk interferes with the free descent of the diaphragm and impairs the entry of air into the lower segment of the thorax. To meet this temporary condition the respiratory capacity of the upper portion of the thorax must be increased. This is effected in a very simple manner. The sternum of the female is relatively shorter than that of the male. To it are attached seven and often six cartilages; in the male seven, and often eight, articulate with this bone. While this arrangement reduces the strength of the individual it renders the lower segments of the thorax more mobile and facilitates their separation by the pregnant uterus. While the whole sternum of the female is relatively shorter than it is in the male, the manubrium bears a very disproportionate relationship to the gladiolus, the latter being less than twice as long as the manubrium. In the male the manubrium is relatively small, while the gladiolus is always more than twice its length. Here, again, the woman sacrifices strength in order to enable her to perform her reproductive function. On the other hand, the upper costal arches are relatively much larger in the female, and owing to the greater length of the manubrium the first intercostal space is correspondingly deeper than in the male. By this arrangement she is enabled to aerate her blood sufficiently in the upper portion of her thorax when abdominal and lower thoracic respiration are hampered by her pregnancy.

Relation of Respiration to Vitality.

I cannot illustrate the importance of the bearing of the respiratory function on body growth and general vitality better than by giving the results of efficient respiratory exercises extending over a period of four months. The subject was a delicate child, whose respiration normally was entirely abdominal and whose pharynx showed marked adenoid growth. The following table represents measurements of the chest at the nipple level in its inspiratory and expiratory limits. These figures show that in four weeks the measurement on extreme inspiration showed an increase of 4 in., the expiratory limit remaining the same, while the weight had gone up 9½ lb. Three months later the inspiratory limit was 36 in., the expiratory had increased to 29½ in., and the weight was 9 st. 4 lb.;

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[3] What are the chief factors which determine the differences which exist in the form of the male and female pelves? Trans. Obst. Soc., 1888.

TUMOUR OF THE RIGHT PETROUS BONE.

BY THOMAS ANWYL-DAVIES, M.B., B.S.LOND., M.R.C.S.

THE following case of tumour of the right petrous bone is of sufficient interest to merit a detailed description. The case was under the care of Dr. Hector Mackenzie, at St. Thomas's Hospital.

The patient, a baker of 47, was admitted to St. Thomas's Hospital with no family history of cancer, tubercle, or serious illnesses, a negative Wassermann reaction, and a denial of specific disease. Ten months previously all teeth were removed as the patient was run down; the doctor then discovered a lump in the right side of the neck near the angle of the jaw. This lump continued to grow, and the patient had pain below the right ear, which gradually extended upwards to the right side of the scalp and on to the right side of the forehead. About a month before examination he was troubled with diplopia; then the right eyelid began to droop, and three weeks later he was unable to open the eye. For a year he had been losing weight, and had had increasing deafness. When shaving he could not feel the razor on the right side, and when drinking the glass felt broken on that side. The patient had occasional headaches and slept badly owing to the tenderness of the scalp. There had been no vomiting, no noticeable weakness, no paræsthesia of the limbs, and nothing abnormal in his gait.

Examination.—The man appeared thin, not anæmic, and fairly cheerful. Right eye completely closed; obvious swelling in neck; skin smooth on right side of forehead; right angle of mouth drawn up owing to voluntary contraction of facial muscles round right eye. Temperature normal, pulse 72, and respiration 16. Heart and lungs: no signs of organic disease; urine normal. No apparent motor weakness in trunk and limbs, no sensory loss, no alteration of reflexes, no incoördination, astereognosis, dysdiadokokinesis, or ataxia.

Cranial Nerves.—First nerve: On testing with oil of turpentine, peppermint, and asafœtida there was definite loss of sense of smell on right side. Second nerve: Visual acuity with the L. eye V. = $\frac{6}{6}$, and with the R. eye V. = $\frac{6}{6}$. No sign of optic neuritis. Third, fourth, and sixth nerves: On attempting to follow the finger only a slight downward and outward movement remained, with a wheel-like rotation inwards, indicating a slight action of the superior oblique muscle. Right pupil slightly larger than left and inactive to light. Fifth nerve, first division: Slight blunting of sensation on forehead; second and third divisions, patch of complete anæsthesia over lower half of right side of face. The border ran horizontally below right eye, sloped outwards to angle of jaw, and ran along lower margin of jaw to mid-line and upwards over the lips. Chorda tympani division: Loss of taste on right side of tongue to salt, sugar, and quinine. Motor division: Paralysis of masseter and temporal muscles on right side. Seventh nerve: No apparent facial weakness. Eighth nerve: A watch could be heard at distance of 1 ft. from left ear, but not at all with right ear. Bone and air conduction were both affected on right side. Ninth, tenth, and eleventh nerves: Some weakness of tensor palati on right side. Deglutition normal; no aphonia; trapezius muscle weak. Twelfth nerve: Tongue showed slight atrophy and weakness on right side.

Summary of Cranial Nerves.—Complete paralysis of third, fifth, sixth; partial paralysis of first, fourth, eighth, ninth, tenth, and eleventh. There was a hard gland about the size of an egg between angle of jaw and anterior border of sterno-mastoid on right side, and a chain of hard, small glands along anterior border of right trapezius. An enlarged gland could be felt on the left side of the neck, on the anterior border of the sterno-mastoid, about the size of a small gooseberry. Two or three tender spots on right side of scalp, but nothing could be felt underneath them.

Diagnosis.—Here was a man who for the last year had had gradual enlargement of glands in the right side of the neck, and gradual paralysis of most of the cranial nerves on that side—especially the third, fifth, and sixth. The glandular growth was superficial, and from its position could not be affecting the fifth nerve, much less the nerves supplying the eye muscles. Therefore, to account for the paralysis of the cranial nerves, we had to assume either some internal connexion with the external growth or two separate lesions—i.e., a glandular swelling in the neck and an independent affection of the cranial nerves. The fact that the paralysis of the cranial nerves had, like the external growth, been slowly progressive and was synchronous with it, pointed to an intimate relation between the two. Moreover, the external growth and the paralysis were on the same side, the inference being that the paralysis of the cranial nerves was due to a deep-seated growth, which could not be seen or felt.

Situation of Growth.—If intracranial, the growth had to be either in the medulla or at the cerebello-pontine angle, or rising from bone or dura mater. If extracranial, the growth had to consist of at least four parts—the first affecting the third nerve in the orbit or spheno-maxillary fissure; the second affecting the third division of the fifth nerve below the foramen ovale; the third affecting the eighth nerve; and the fourth part affecting the ninth, tenth, and eleventh nerves. This scattered distribution made a single growth much more likely. If the growth were situated inside the skull a comparatively small lesion could affect several nerves arising close together. If medullary, the centre of the growth was evidently near the nucleus of the fifth nerve, because the fifth was the first nerve affected, but for anatomical reasons a medullary growth was extremely improbable, and unsupported by clinical evidence such as interference with the centres controlling the heart, respiration, temperature, or sugar metabolism. Arguments against a tumour at the cerebello-pontine angle were: absence of headache, vomiting, and optic neuritis, and no signs of pressure on the cerebellum, such as nystagmus, ataxia, weakness, or giddiness, or on the pyramidal tracts; the seventh nerve had escaped, and the third nerve, which is not in this region, was affected. The remaining position involved the petrous portion of the temporal bone. The third, fourth, and sixth nerves are in close proximity to the apex of the petrous bone, and the fifth nerve crosses the ridge of the petrous bone just external to the apex. The uncus, which is part of the olfactory path to the brain, is also in this neighbourhood. The posterior surface of this bone is related to the seventh and eighth, and also the ninth, tenth, and eleventh cranial nerves. The hypoglossal nerve is at least one-third below. Hence a growth, at most 1 in. in length, extending backwards from the apex of the petrous bone may affect all the cranial nerves, except the second and twelfth. In this patient, only the second, seventh, and twelfth nerves had entirely escaped; the immunity of the seventh was probably due to its superior powers of resistance, and because it lies on the eighth nerve and is separated by it from the bone. Moreover, the facial nerve on the right side was hyperexcitable, which is a preliminary stage to final paralysis. The indications were that the growth began just posteriorly to the apex of the petrous bone, and involved the fifth nerve; that it first spread backwards, injuring the eighth, and then began its forward expansion, destroying the sixth and third nerves.

Nature of the Disease.—The growth probably started in the bone or the dura mater covering the bone. The commonest new growths arising in these tissues are sarcomata and carcinomata; gummata, enchondromata, fibroid growths, and hydatid cysts are much less common; gliomata and tuberculomata very rare. Hæmorrhage was excluded by the slow progressive course of the disease, and abscess by the absence of pyrexia. In favour of malignant disease were the presence of enlarged glands in the neck and their characteristics, especially those along the anterior border of the trapezius; the steady progressive enlargement of both the glands and the intracranial tumour, coupled with a certain amount of general wasting during the past 12 months. The relatively slow rate of progress favoured carcinoma, while intracranial growths involving a large number of nerves often turn out to be sarcomatous. In the absence of signs in the lungs or viscera the seat of the primary growth was probably in the skull in the position described, the glands in the neck being secondary to it, the onset of the disease being about 18 months before admission. The impairment of the sense of smell may have been due to direct pressure of the growth on the uncus, but more probably to atrophic condition of the mucous membrane of the nose owing to paralysis of the fifth nerve, and the olfactory end-organs may have shared in the general atrophy.

Treatment.—Surgical treatment was impossible owing to the position of the primary growth and the extent of the secondary glandular enlargement. Medicinal treatment offered no more hope of success. The only treatment possible was symptomatic. Aspirin and bromides relieved the headache, while morphia was not needed.

Prognosis.—One can only expect further involvement of nerves, especially of the first division of the fifth and of the seventh. The close proximity of the cavernous sinus to the anterior part of the growth is a grave source of danger, and ulceration into it would lead to thrombosis and rapid extension of the growth, terminating in early death.

I am indebted to Dr. Hector Mackenzie and to Dr. G. T. Hebert, of the tuberculosis department of St. Thomas's Hospital, for permission to publish, and for assistance in this unusual case.

Park-place, St. James's, S.W.

produce what is called hæmolysis. If the serum immunised against the red blood corpuscles, and known as amboceptor, is not inactivated there is no need to employ the fresh serum of another animal, which receives the name of complement. Inactivation causes equal-sized protein particles to agglomerate partially, an action which always leads to a reduction of their Brownian movement, and may lead to a precipitation of some of the clumps formed. In the presence of antigen—that is to say, the substance with which the immunisation is carried out—the immune serum when used fresh and unheated will undergo similar changes, only more slowly, which is likewise the case when the serum is heated and complement is used. While these changes are taking place the surface-tension of the liquid medium is diminished, with the result that the red blood corpuscles give up their hæmoglobin. A specific amboceptor is not essential, because a simple negatively or positively charged colloid will take its place. Either colloidal silicic acid or colloidal aluminium hydroxide will replace the amboceptor. If the two are used together no hæmolysis results, because the iso-electric point is reached. There will also be no hæmolysis if one of the colloids is allowed to interact with the complement some time before the red blood corpuscles are added, because precipitation is the final stage of adsorption, agglomeration, &c., and when precipitation is complete, the normal surface-tension of the liquid medium becomes restored; consequently the added red blood corpuscles simply fall by their own weight to the bottom of the tube. The fresh serum of a guinea-pig is employed for the complement. In such a serum the protein particles are uniform in size and show vigorous Brownian movement. With colloidal silicic acid the particles decrease in number and rapidly form clumps, which finally become precipitated. During the stage of spontaneous condensation brought about by an increased positive charge, which in turn is produced on the surface of the particles by the non-metallic condenser, there occurs a diminution of the surface-tension, which causes hæmolysis of red blood corpuscles, if the latter are added before the surface-tension has rectified itself. Condensation leads to precipitation, which rights the surface-tension. The metallic conductor (aluminium hydroxide) causes the particles to increase in number and size and then to form small agglomerations. Condensation and final precipitation is the result, though the changes are slower in occurring. The metal causes condensation because the protein particles undergo a change to compensate for the dissipation of electrons and for the loss of certain electrolytes, while the non-metal causes condensation because from the start it leads to a conservation of the negative electricity. It is clear that hæmolysis is a surface-tension phenomenon, and that complement represents the normal electrification of the surface of the protein particles. Complex colloidal metals and non-metals will not act as amboceptor, because their action on the surface of the protein particles penetrates to the mass, and when this occurs precipitation is too rapid to register an alteration in surface-tension.

First Part of the Wassermann Reaction.

This is akin to the non-specific hæmolytic system, in which the protein particles constituting the complement, are precipitated before the red blood corpuscles are added. The patient's serum altered by inactivation and by the disease, adsorbs the antigen and tries to regain its normal state of emulsion at the expense of the complement. Failure to do so results in precipitation with consequent destruction of the complement, hence the amboceptor and red blood corpuscles, when they are added, also become precipitated—a positive W.R. A multitude of substances will act as antigen, and all capable of so acting have a common property in that they lower the surface-tension of the liquid medium in which the patient's protein particles are in true emulsion, and cause agglomeration and precipitation of the particles themselves.

Production of a Positive Complement-Fixation Test in Vivo.

If a single sub-lethal dose of an unprotected metal ($Al > Zn > Bi > Hg > Fe > Cu > Ag$) in the colloidal state is injected intravenously into a rabbit it makes the serum give a positive complement-fixation test (C.F.T.). Under the ultra-microscope the particles in such a serum are increased in number and a few are increased in size. The picture given resembles that of an early syphilitic serum, that of a serum to which a trace of alkali has been added, and that obtained at the negative pole when a current is passed through a serum film. If a lethal dose is injected the C.F.T. may be positive, negative, or anti-complementary, the result being largely influenced by the particular metal. There is a diminution in the number of the particles, a marked increase in size and clumping with actual precipitation. A similar picture is given by certain late syphilitic serums. If several injections of small doses are prescribed the serum gives a negative reaction, which usually becomes anti-complementary when too many are made; this is exactly what may happen in an early case of syphilis over-treated with arseno-benzene. Furthermore, the ultra-microscopic pictures obtained in both are identical—namely, marked diminution in the number of the particles, a few giant particles and clumps which evince a ready inclination to become precipitated.

If a single sub-lethal dose of a corresponding non-metal (belonging to the sulphur group of elements S, Se, & Te) is injected, the serum remains negative. If a lethal dose is injected the serum gives a positive C.F.T. and an ultra-microscopic picture similar to that obtained when a serum is treated with an acid, and to the picture witnessed at the positive pole when a current is first passed through a serum film. The particles are diminished in number and many agglomerations are formed, which in some instances are precipitated in masses. If several small doses are injected the serum becomes strongly positive with some preparations and anti-complementary with others, and the ultra-microscopic picture obtained is indistinguishable from that given by certain late syphilitic serums. Furthermore, the ultra-microscopic picture cannot be differentiated from that obtained with a serum changed by a metal, by a serum treated with an alkali, and by a serum at the negative pole during the passage of an electric current. The sequelæ of injecting a metal run, I believe, as follows. When the dose is sub-lethal the conductor effect of the metal causes the protein particles to discharge some of their electrons in the form of both electricity and heat. This would tend to increase the positive charge on their surface, a state of affairs which is incompatible with life. The amphoteric nature of the protein comes to the rescue and the " baseness " of the particles in increased.

This is the phenomenon of spontaneous condensation. Such a change makes the particles adsorb antigen and they readily go for complement with the hope of extracting therefrom the negative electricity they themselves have dissipated. This results in agglomeration and precipitation of all three and consequently a positive C.F.T. When a lethal dose is employed the discharge of negative electricity and increase of " baseness " may so affect the surface and mass as to render the particles incapable of adsorbing other particles, or as to augment their desire to recover their normal state to such a degree, that they are able completely to precipitate the complement particles without the assistance of the antigen, and give what is called an anti-complementary reaction. An anti-complementary reaction is the half-way house between a strong positive reaction and a negative reaction, because the C.F.T., like all colloidal reactions, is of a cyclical nature. When several small doses are injected the particles become dispersed and go into true solution, in which state they no longer act as colloids. Conversion into the molecular-dispersoid state is possible with a liquid-in-liquid colloidal system, After alluding briefly to the primary lesions and showing slides giving the less usual and common situations, Dr. Whitfield devoted himself to the cutaneous manifestations of the secondary and relapsing stages. Of these he showed practically a complete series of pictures, as well as a few microscopical sections, including psoriasiform syphilide and syphilitic lymphangitis of the face. He also discussed the differential diagnosis of the various lesions and some fallacies in former descriptions—e.g., the tuberculous nature of part of the corymbose rash. The last case described was that of a woman with a condition variously diagnosed as syphilis and lupus. It was completely cured by anti-specific remedies, but recurred later, following parturition, and was then cured by the Finsen light.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held on Dec. 13th at the Elizabeth Garrett Anderson Hospital, Dr. LOUISA MARTINDALE, the President, in the chair, when papers on the subject of

Sterility

were read by Dr. CHRISTINE MURRELL and Dr. ELIZABETH BOLTON.

Dr. MURRELL ran briefly and systematically through the possible causes of the condition, emphasising at the outset the importance of considering the condition of the husband as well as of the wife. She said that where active spermatozoa are present in the seminal fluid, sterility may be due to incomplete or too rapid coitus, to mechanical obstruction to the upward passage of spermatozoa—as, for example, in cases of uterine displacement, cervical obstructions, or profuse discharge from or stenosis of the internal os. The uterine lining may be unsuitable for imbedding, or there may be disease of the tubes or of the ovaries. Apart from mechanical causes which could often be treated surgically there was still much work to be done in the study of the endocrine glands as they affect pregnancy. Dr. Murrell discussed at some length the hormone theory of sterility and the effects of administration of preparations of thyroid, posterior pituitary, thymus, and ovarian extracts on menstruation, ovulation and pregnancy, indicating the theoretical grounds on which the different endocrine preparations might be expected to be of value and the particular conditions in which she had found them useful.

Dr. BOLTON then read the following summary of 150 cases of sterility treated by her:—

I have put together the cases I have had in private of persons complaining of sterility after having been married more than two years. I have not attempted to get statistics from hospital patients, partly because of lack of time, partly because one does not get as fair a chance of talking with the patients and of advising examination of the husband as a preliminary measure. In all cases I try to find out what kind of life the patients lead, whether they tend to overwork physically or whether there is marked mental strain, also whether dyspareunia is present. This last condition is treated if present; in some cases dilatation with a stretching speculum is enough. In others I get the patient a graduated vaginal dilator and advise her to use it for half an hour daily for two months. In the extreme cases I examine the patient under an anæsthetic and dilate the vagina at one sitting. If possible, I prefer the more gradual methods. The frequency and time of connexion are then inquired into, especially in relation to the desires of the woman. To those who complain that there is no retention of semen I generally suggest the use of a bolster to raise the hips, and the alteration of position from the dorsal to the semiprone after intercourse.

I have notes of 150 cases examined, 28 of whom were seen once only and not treated. This leaves a total of 122 treated cases, of whom 63 became pregnant. On considering these cases I find they fall into four different groups according to the gynæcological findings, and I have found a gynæcological abnormality in all the 150 cases. 86 had marked anteflexion, the majority of these an elongated cervix pointing forward, 20 had retroversion, 28 fibroids, 16 were tube cases. Of the 86 anteflexion cases 16 were untreated; of the remaining 70, 40 became pregnant; 52 had a dilatation and curetting, 3 after trial of the passage of a sound—of these 27 became pregnant; 10 had a sound passed only and 10 became pregnant; 2 had vaginal septa and became pregnant later; 1 had injection of semen twice, after 2 dilatations, but with no result. One had an exploratory operation, when the ovaries were found to be adherent and freed, and a dilatation was also done, and this patient became pregnant. In all these cases the passage of the sound and dilatation were done, if possible, at such a time as to allow intercourse before the next period. The time of pregnancy in relation to the operation varies greatly—in the majority of cases it occurred within a few months, in a few cases at once, and in a few others after two to three years, but I have not heard of any after a longer period than three years.

Several of the dilatation cases were operated on on account of dysmenorrhœa as well as sterility, and many of these were much better from the point of view of the dysmenorrhœa, though they did not become pregnant. Of the 20 retroversions 2 were untreated, 13 of the 18 became pregnant; 11 were replaced and a Hodge pessary inserted; 4 of these had a dilatation, 2 had a sound passed. Of the 11 cases treated with a Hodge, 7 became pregnant. Two retroversions with adherent tubes had an exploratory laparotomy and both later became pregnant. Five Gilliam operations were done for sterility and 4 of these patients became pregnant. Of the 16 tube cases 3 were untreated, 13 had operative treatment, and 4 became pregnant. All these 4 had the right tube only involved, complicated by the appendix. Of the 28 fibroid cases, 7 were untreated; of the remaining 21, 7 became pregnant, 2 of these had a large polyp removed by the vaginal route, the other 5 had several fibroids removed by abdominal myomectomy. I usually advise myomectomy patients to avoid pregnancy for six months after the operation. I have had one patient from whom I removed two large fibroids by myomectomy who was found at the time to be about two months pregnant. She had had no previous pregnancy, had been married 14 years, and was 42. She went to term satisfactorily.

In considering this small number of cases Dr. Bolton thought it worth noting that all had a gynæcological condition that might account for the sterility; and that over 51 per cent. of the total treated cases became pregnant.

Anteversion Cases.

No. of Cases.	Age.	Time married in years.	No. of Cases.	Age.	Time married in years.
1	21	2½	5	32	*5*, *11½*, *4*, *3*, 8
3	23	2, 3, *3*	8	33	*4*, 4, 10, *9*, 7, 7, *5*, *5*
3	24	*3*, 3, *4*	3	34	5, *2*, 3
3	25	*4*, *3*, 2½	4	35	10, 3½, *9*, 9
8	26	2½, *4*, 2, *4*, 2, 3, *4*, *4*	3	36	13, 10, 3½
4	27	3, 2½, 3, *3*	5	37	7½, 7, *4*, 2, *3*
5	28	*3½*, *7*, *6*, 4½, 2½	4	38	*3*, 7, 7, 13
5	29	*3*, *4*, 3, 5, *3*	1	40	*7*
8	30	*3½*, 8, *9*, *5*, *2½*, 10, 7, 8	1	41	*7*
10	31	10, 3, *3*, *2*, 2, 6, *5½*, 5, *2*, 5	1	42	*15*

Retroversion Cases.

No. of Cases.	Age.	Time married in years.	No. of Cases.	Age.	Time married in years.
2	26	6, *2*	1	33	*6*
1	27	*3½*	2	35	*5*, *7*
3	29	2, *4*, *3*	3	36	*5*, 6, *5*
2	30	*9*, 3	1	38	7
2	31	5, 6½	1	40	*2*
1	32	*7*	1	44	17

Tube Cases.

No. of Cases.	Age.	Time married in years.	No. of Cases.	Age.	Time married in years.
1	24	*3*	2	32	8, 6½
1	25	*4*	1	33	*5*
2	26	3, *3½*	1	35	10
1	27	4	3	36	9, 4, *6*
2	31	7, 8	2	37	14, 10

Fibroid Cases.

No. of Cases.	Age.	Time married in years.	No. of Cases.	Age.	Time married in years.
1	28	4	1	40	12
1	30	3	3	41	5, 5, 7
2	32	7, 8	3	42	18, 12, *9*
2	35	10, 13	1	43	*11*
1	36	*3*	4	44	20, *9*, 14, *14*
2	37	3, 7	1	45	17
1	38	10	1	46	16
1	39	*4*	3	48	20, 4, 12

The above is a scheme of the cases of sterility showing age of patient and length of marriage. Cases italicised became pregnant.

and a strong positive serum either negative or anti-complementary. Practically speaking, any factor which causes the condensation of the protein particles may make a normal serum, and an early and late syphilitic serum behave as just described. It furthermore renders the protein particles more stable, a phenomenon which accounts for the facts, that a late syphilitic serum after the ingestion of alcohol is apt to give a negative C.F.T.; that the addition of sodium citrate fails to check coagulation; and that shock is prevented from following a second and what would ordinarily have been a lethal dose. The whole story is really that of a combat on the part of the protein particles—one of condensation versus dispersion.

Finally, I think we may conclude that a negative C.F.T. does not exclude syphilis, and that a positive C.F.T. means no more than that presumably the patient has had the disease.

THE SACHS-GEORGI REACTION IN SYPHILIS.

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THE very interesting contributions by Dr. A. Neave Kingsbury[1] and Dr. C. C. Okell[2] to the above subject have prompted me to present the following figures based on a comparative study of 500 serums submitted to the Wassermann (W.R.) and Sachs-Georgi (S.G.) reactions.

Method.—The W.R. was performed by Harrison's method, the S.G. in the simplest manner possible. Only one tube was used for each serum tested. The antigen was the same as employed in the W.R.—namely, three parts of a suitably diluted alcoholic extract of human heart muscle reinforced with two parts of a 1 per cent. alcoholic solution of cholesterin. The only difference was in the manner of adding the saline. For the W.R. the addition was made rapidly as recommended by Harrison, for the other the addition was made slowly. The opacity of the resultant emulsions varied accordingly. 0·3 c.cm. patient's serum was added to 1 c.cm. of antigen and the tube agitated to ensure complete mixing. The tubes were put in the ice-chest and readings were taken at 24 and 48-hour intervals. For practical purposes it was not found that the longer period produced any appreciable change in the appearance of the tubes, so that towards the end of the series the second reading was discontinued.

The serums used in the S.G. were quite unselected. During the investigation the number of specimens of blood submitted for the W.R. averaged 80. Considerations of time prevented the performance of both tests upon all each day but, as circumstances allowed, 20 to 40 were taken indiscriminately and tested as indicated above. It will be realised that by this means all circumstances governing the components of each test were exactly comparable. As the question of the use of inactivated as against uninactivated serum appeared to be at issue, 250 were tested with heated and 250 with unheated serum. Analysis of the results obtained in each instance did not provide sufficient data to warrant a definite pronouncement regarding the matter. It was, therefore, decided to combine all the results and present them as a record of a series.

TABLE I.

Total	..	S.G.+ W.R.+	S.G.− W.R.−	S.G.+ W.R.−	S.G.− W.R.+
500	..	206	199	52	43

Total agreement 81 per cent.

For simplicity of reference and for purposes of comparison I have taken the liberty (which I hereby acknowledge) of substituting my figures in the table so simply and effectively made out by Dr. Okell.

Apart from satisfying myself as to the comparative merits of the tests I was further interested to learn something of the respective values of each in varying clinical stages of syphilis. It must be understood that I was not responsible for the diagnoses. I accepted the statement of the practitioners submitting the specimens. In Table II. I have attempted to show how the 95 disagreements in the series were related to the specified stage of the disease. It will be seen that the S.G. gave a greater percentage of positive readings in primary, secondary, tertiary, and central nervous system syphilis; the W.R. in old treated cases and familial syphilis; whilst the results balanced in congenital syphilis and in gonorrhœal cases. Under the conditions of experiment outlined it appeared that, unlike Dr. Okell, with a negative W.R. the S.G. was not so seldom positive as to enable me to confirm his opinion that "where the Sachs-Georgi was used in place of the Wassermann only a small percentage of patients would be unnecessarily submitted to treatment."[2] I had not viewed the S.G. in this light as, judging from most of the clinical histories provided, I came to the conclusion that the S.G. was more delicate, especially in primary and early secondary syphilis. Such a point, however, I would not be inclined to strain as it is based upon a relatively small number of cases. I have no doubt that the more complicated modifications indicated by Dr. Okell were responsible for his excellent percentage agreements, but it appeared of interest to record that satisfactory figures were obtainable in the extremely simple manner indicated. After all, the ideal longed for by every worker in this branch of serology is simplicity, and substitution tests are only attractive the more nearly they approach to that ideal. From a purely practical point of view, one wonders what advantage alternative tests have over the Wassermann reaction. Greater specificity has not yet been proved for them and their introduction into routine work merely serves to cause confusion.

TABLE II.

Symptoms.	Total.		S.G.	H.M.§	S.G. per cent.	H.M.§ per cent.
O.C.T.* ..	31	7	−	+ +	41·9	58·1
		11	−	+		
		13	+	−		
Primary ..	7	1	−	+ +	71·4	28·6
		1	−	+		
		5	+	−		
Secondary ..	8	1	−	+ +	62·5	37·5
		2	−	+		
		5	+	−		
Tertiary ..	13	1	−	+ +	76·9	23·1
		2	−	+		
		10	+	−		
C.N.S.S.† ..	16	2	−	+ +	68·7	31·3
		3	−	+		
		11	+	−		
C.S.‡	4	2	−	+	50	50
		2	+	−		
Gonorrhœa ..	8	1	−	+ +	50	50
		3	−	+		
		4	+	−		
Syphilis in family	8	2	−	+ +	25	75
		4	−	+		
		2	+	−		

* Old case treated. † Central nervous system syphilis.
‡ Congenital syphilis.
§ Wassermann reaction, Harrison's method.

I am indebted to Dr. R. M. Buchanan, city bacteriologist, who afforded me every facility in carrying out the work, and to Miss D. L. Young who assisted me throughout the investigation.

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[1] THE LANCET, Oct. 15th, 1921, p. 799.
[2] Ibid., Nov. 5th, 1921, p. 962.

GENERAL PRACTITIONERS AND MIDWIVES.—The Ministry of Health will shortly hold a conference with the County Councils' Association on points arising out of the scale of fees payable to medical practitioners under Section 14 of the Midwives Act, 1918. The London County Council has been invited to send representatives and has decided that the members of its Midwives Acts Committee shall attend.

Reviews and Notices of Books.

STUDIES IN THE PALÆOPATHOLOGY OF EGYPT.

By Sir MARC ARMAND RUFFER, C.M.G., M.D.Oxon., late President of the Quarantine Council of Egypt. Edited by ROY L. MOODIE, Ph.D., Associate Professor of Anatomy in the University of Illinois. Chicago: University of Chicago Press. 1921. Pp. 372. $7.50.

THIS beautiful volume is designed as a memorial tribute to the big-hearted and cosmopolitan pathologist who lost his life during the war. Born in Lyons of a French father and a German mother, educated at Oxford and University College, London, Ruffer was a pupil of Pasteur and Metchnikoff at the Pasteur Institute, and was first Director of the British Institute of Preventive Medicine in Cairo. Ruffer spent most of his life in Egypt, where his wonderful gift of tongues, his gentleness and urbanity, and his wide sympathies enabled him successfully to carry on the difficult task entrusted to the polyglot body known as the Sanitary, Maritime, and Quarantine Council of Egypt. In this work his gifts of diplomacy and tact and his cosmopolitan culture found scope for their expression.

Visiting the Government Medical School in Cairo in 1908 at a time when the work of investigating the pathology of the ancient human remains from Egypt and Nubia was in progress, Ruffer became smitten with the desire to participate in this task. Before then it had been the practice to submit ancient Egyptian pathological material that called for histological or bacteriological examination to Prof. S. G. Shattock, at the Royal College of Surgeons of England, or to Profs. A. R. Ferguson and A. Looss or Dr. Charles Todd in Cairo, but in 1909 Sir Marc Ruffer seriously tackled the problem of devising a technique for the histological examination of tissues in some cases as much as 60 centuries old. After laborious experimentation he at last achieved success, and it is a striking tribute to his skill and patience that he was able to obtain such remarkable histological preparations of the tissues and organs of mummies and predynastic bodies and demonstrate the presence of bilharziosis in ancient times. But he was so fascinated by this technical achievement that he did not pay sufficient attention to the wider problems opened up by his methods. He does not seem to have formulated any scheme of organised investigation or to have got any sense of historical perspective. As a consequence, his work adds little to our knowledge of the history of pathological conditions. Indeed, the view he gives us of the incidence of disease in ancient Egypt is partial and misleading, and questions of chronology are not given adequate consideration.

Sir Marc Ruffer was one of those gentle diplomatists who was ready to take other people at their own valuation. In this volume many erroneous statements are made on the strength of misleading information supplied to him by others. One instance of this is of sufficient practical importance at the present time to call for special reference. This is the "Study of Abnormalities and Pathology of Ancient Egyptian Teeth," published posthumously in the *American Journal of Physical Anthropology* and reproduced as a chapter in this book. The claim made on p. 207 as to the common occurrence of dental caries in predynastic Egyptians is utterly misleading. This affection was extremely rare in Egypt until the latter part of the Second Dynasty, and it was not really common (and then only in the upper classes) until the time of the Pyramid Age (Fourth Dynasty).

The book has been produced by Lady Ruffer and the work of editing these reports was entrusted to the sympathetic care of Prof. Roy Moodie, of Illinois, who has performed his task as well as one unfamiliar with Egyptian conditions could do it. In a volume of such dimensions there are singularly few misprints. A mistake that was made in the Proceedings of the Royal Society of Medicine (1920) has been repeated in this volume; the portraits of Thutmose I. (*Plate* LXV.) and Thutmose IV. (Plate LXIV.) have been exchanged.

The University of Chicago Press is to be congratulated on the excellence of the printing and illustration of this volume and for undertaking the publication of this memorial of, and tribute to, a fine man.

LABORATORY EXAMINATIONS.

Comment Interpréter en Clinique les Réponses du Laboratoire? Par HUGEL, DELATER, and ZOELLER. Paris: A. Maloine. 1922. Pp. 139. Fr.5.

THIS handy little book sets out to tell the practising medical man how to set about getting laboratory investigations made and how to interpret the answers which he gets. The instructions given are clear, definite, and sufficiently dogmatic; some specimens he can obtain himself, in other cases (e.g., blood counts) he is wisely told to fetch a technical expert to the patient's bedside. Similarly, the deductions he may draw from the results are put shortly and pointedly, and the book concludes with a catalogue of what laboratory examinations may usefully be made in each disease. The ideal which the book serves is not perhaps a very high one—it savours too much of the penny-in-the-slot machine—but making allowances for slight differences between French and English fashions and practice it should be useful in a field which we may hope improvements in medical education will soon make obsolete. There is a good index—not too common a feature in French books. The title page is dated a year in advance—this may be a misprint.

HYGIENE OF WOMEN AND CHILDREN.

By JANET E. LANE-CLAYPON, M.D., D.Sc. Lond., Dean and Lecturer on Hygiene in the Household and Social Department, King's College for Women. London: Henry Frowde and Hodder and Stoughton: 1921. Pp. 351. 15s.

IN the early days of hygienic activity the energy of the workers was directed mainly toward devising and promoting measures for improving the environmental conditions of the people, and it would be difficult to exaggerate the immense advantage to our national health that has resulted from their labours. The provision of pure and wholesome water-supplies, better means of excrement disposal, reform of scavenging arrangements, and improvement in housing conditions were among the first problems to receive attention. The isolation in hospital of the infectious sick, the prevention by means of well-devised schemes of sanitary administration at the ports of the introduction into the country of infectious diseases from abroad, and the supervision of the milk- and food-supplies have all contributed to great improvement in the public health. In later years another phase of hygiene developed, which concerned itself with the care of the individual rather than of his environment, and resulted in the institution of schemes for the medical inspection of school children, the treatment of patients suffering from tuberculosis and venereal diseases, and for maternity and child welfare.

It is with the last-mentioned sphere of public health activity that Dr. Lane-Claypon deals in the book under review. She maintains that of all the time-saving devices known the best and most effective is knowledge coupled with experience. If the proper way of doing a thing is known much less time is taken over it, and, as experience is gained, the nervous system works more quickly and a further reduction in time is brought about. The chapter on fresh air and ventilation is instructive and embodies the results of recent scientific work on this subject. The question of the influence on health of the prevalence of dust and dirt in towns is fully considered. In a table showing the relative amount of soot and dirt deposited per square mile in different towns and areas, that at Malvern is lowest, being only 78 tons per square mile per annum. The

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

An ordinary meeting of this Society was held on Dec. 16th at 1, Upper Montague-street, London, W.C., Dr. Herbert Jones (M.O.H., Herefordshire Combined Districts) being in the chair in the absence of the President, Dr. W. J. Howarth, who was absent through indisposition. Nineteen new members and seven associates were elected.

Surg. Rear-Admiral Sir Percy W. Bassett-Smith delivered an address, as President of the Naval, Military, and Air Force Hygiene Group, on the

Development of Hygiene, Pathology, and Bacteriology in the Naval Medical Service,

in which he first gave a retrospect of the service. In 1602 barber-surgeons were appointed to the Navy, at first as "pressed men," and in 1704 surgeons in ships ranked with pilots and carpenters, being allowed as a favour to mess with warrant officers. In 1808 the senior medical officer alone messed in the wardroom. In those days hygiene was not of much account. Sir James Lind, senior physician of Haslar Hospital, was the pioneer of hygiene in the Navy, and his name would always be famous for his work in the prevention of scurvy, which he stated caused more deaths in the fleets than the French and Spanish arms. He recommended lemon-juice and sauerkraut, and introduced the distillation of sea-water, better ventilation and drying of ships, improved clothing and cleanliness, and fumigation with sulphur and arsenic. Next to Lind as a hygienist reformer came Sir Gilbert Blane, physician to the fleet (d. 1834), who strongly supported vaccination against small-pox. In 1801 80 naval surgeons presented Jenner with a gold medal, but vaccination was not made compulsory in the Navy until 1858. In 1827 Sir Wm. Burdett was medical director-general and instruction for medical officers was instituted. Dr. Scott founded the pathological museum at Haslar, and gave clinical lectures and instruction in the post-mortem room. This ceased in 1840, and the instruction of naval surgeons was not seriously taken in hand until 1871, when they were sent to the Army School at Netley. In 1881 the Naval Medical School was started at Haslar Hospital. In 1900 tropical medicine was added to the course of study, and special encouragement was given by the presentation of medals and the granting of accelerated promotion. Voluntary courses were added for senior men who studied but were not subjected to examinations, and this was a great success. Research work was encouraged by the Admiralty, and Lord Selborne, First Lord, took much interest in the work for the prevention of Mediterranean fever. In 1912 the Medical School was moved to the R.N. College, Greenwich, so as to be in touch with other centres in London. About 1900 medical officers in the fleet were supplied with a bacteriological box, and later with microscopes, water analysis boxes, and facilities for the tuberculin test, the preparation and use of vaccines, the detection of the spirochætes of syphilis, and the use of the Wassermann test.

The speaker referred to the work done with Haldane's apparatus in connexion with the ventilation of ships and submarines, and to the examination of shaving brushes for anthrax, of which a series of cases occurred during the war. Many of these were suspected to be cerebro-spinal fever, but anthrax bacilli were found abundantly in the fluid obtained by lumbar puncture. Not infrequently gastro-intestinal disease attributed to food poisoning had to be investigated epidemiologically and bacteriologically, and the speaker alluded to an outbreak at the Royal Naval School, Greenwich, involving 127 boys, and shown to be due to the *B. suipestifer* (mutton type). Since the war much experimental work had been done at Greenwich to find a substitute for lime-juice which had been found so inefficient an antiscorbutic, and good results had been obtained with lemon-juice concentrated in vacuo without heat, and with tinned tomatoes. The importance of laboratory work was now fully recognised in the Navy, especially in connexion with tropical diseases, and laboratories had been provided not only at the three great naval hospitals and at Greenwich, but also in all foreign hospitals and to a less extent in the smaller sick quarters and infirmaries. A body of sick-berth men had been trained for laboratory work. They had a six months' course and an examination, and were given extra pay; they were enthusiastic in their work. Another development was the greater facility now given to naval officers to take post-graduate diplomas, such as the D.P.H., D.T.M., and the degrees of doctor, &c. The possession of the D.P.H. was now registered in the Navy List as an honourable mention, and was a sine qua non for the appointment of naval health officer at the great ports and certain other posts.

The chief problems in the Navy at the present time were physical training, and the prevention of venereal disease and tuberculosis. Improvement had taken place in recent years in connexion with tuberculosis owing to the better ventilation of ships and better control of the food-supplies, but there were still far too many cases. All infective cases were invalided and the M.O.H. of their home address informed. The speaker advocated an increase in rank and pay for the professors at the Medical College at Greenwich, who should be appointed, respectively, as directors of hygiene and of pathology, responsible to the medical director-general for all naval laboratories throughout the country.

Major-General Sir W. Macpherson, in proposing a vote of thanks, welcomed Sir Percy Bassett-Smith as President of the Group. He spoke of his association with him in the South African War in the equipment of hospital ships, when his enthusiasm and energy were boundless. He had been the chief instrument in the development of preventive medicine in the Navy in recent years.

Col. Commandant W. W. O. Beveridge (Director of Hygiene, War Office), in seconding, said that great progress in naval hygiene had been made since the war. The appointment of naval health officers had been a most important step. He had found that they worked in close coöperation with the War Office.

Surg.-Commander R. St. G. S. Bond (R.N. College, Greenwich) spoke of his association with Sir Percy Bassett-Smith, and alluded to the improvements in the facilities for study which he had brought about.

Dr. P. Caldwell Smith (M.O.H., Wandsworth) referred to an old book by Surg.-General Pringle (1740) on "Diseases of the Army," and said that the conditions in the Army at that time were evidently as bad as in the Navy.

Dr. C. Sanders (M.O.H., West Ham) regretted that there was not a huge audience of students and of the exalted authorities from all countries to hear of the success of the course of practical work and instruction without examination.

The Chairman said that Sir Percy Bassett-Smith's communication had emphasised the success of the new group, and would foster the spirit of coöperation not only between the medical officers of the three forces, but also with civilian medical officers.

SOUTH-WEST LONDON MEDICAL SOCIETY.

Syphilis.

A meeting was held at Bolingbroke Hospital on Dec. 7th, when Dr. A. Whitfield gave a lantern lecture on Syphilis.

sang par les glandes à sécrétion interne ou glandes endocrines." This section contains only three references, to the names of Pende, Lévi, and Bordeu! No less than 83 pages are occupied by the subject of Hydrogeology. It is evident from the list of references at the end of each section, where the names of the authors are almost invariably to be found, that this book contains merely matter in which they are especially interested, and is not a dictionary in any true sense of the term. Had the work been written under a title such as "Gleanings of Biologists in the Domain of Physics," and strung together by some sort of thread, it would possibly have been more interesting, and would certainly have been more welcome.

Some Micro-Chemical Tests for Alkaloids. By CHARLES H. STEPHENSON, Scientific Assistant, Bureau of Chemistry, U.S. Department of Agriculture, Washington, D.C. Including Chemical Tests of the Alkaloids Used, by C. E. PARKER, Assistant Chemist, Bureau of Chemistry. London: Charles Griffin and Co., Ltd. 1921. With 27 plates (162 photomicrographs) and a folding Table of Reactions. Pp. 106. 21*s.*

THE authors have examined various reactions of 51 alkaloids in order to obtain microchemical tests. Some of the reactions are very sensitive and characteristic; in other cases the results are satisfactory though not all that might be desired; only three alkaloids gave no reaction. Photomicrographs of all the more important crystalline precipitates are shown in a series of excellent plates. Most of the work was done between 1907 and 1910, and the results have been published in preliminary communications which are now welded together for the first time. Full acknowledgment is given to other workers who have published data on microchemical tests. The authors' tests were made in concentrations of 1 in 1000 to 1 in 50, except in the case of quinine, which did not yield satisfactory crystals in solutions less concentrated than 1 in 35. A list of reagents is given, followed by an account of methods and a general scheme for identification. The tests of 51 alkaloids with 35 reagents are summarised in a table at the end of the book, which must be regarded as a valuable contribution to the subject, and is sure to be welcomed by those engaged in the work of identifying alkaloids.

TECHNIQUE OF THE TEAT AND CAPILLARY GLASS TUBE.

Second edition. By Sir ALMROTH E. WRIGHT, M.D., F.R.S., Principal of the Institute for Pathology and Research, St. Mary's Hospital, London, with the Collaboration of LEONARD COLEBROOK, M.B., B.S. Lond., Assistant, Bacteriological Department, National Institute for Medical Research. London: Constable and Co. 1921. Pp. 384. 42*s.*

DURING the nine years since the first edition of this work appeared the technique of the teat and capillary glass tube has been pressed into service in the unravelling of many new problems. The second edition is in every way a bigger book, longer by 173 pages, larger in size, wider in its sphere of application, and broader in its conception. It is now described as a handbook for the medical research laboratory and the research ward.

The value of the methods described lies in the fact that they can all be carried out with minimal quantities of reagents, a matter of considerable importance on occasion, as when it is desired to study the blood at frequent intervals. There are many additions and improvements. The fourth chapter, dealing with general principles of the technique, has been elaborated and new methods of considerable interest are described. To Chapter VII. have been added three valuable clinical appendices. The first deals with the clinical significance of increased and diminished blood coagulability and on the method of correcting these conditions. The second deals with the pathology of acidosis, and in particular with the part that this plays in shock, gas gangrene infection, and scurvy. The third treats of the physiological significance of the antitryptic function of the blood, and will appeal, by reason of its suggestions of methods of treatment, to the practising surgeon as well as to the research worker. The original methods described in Chapter X. for the study of the emigration and other biological functions of leucocytes will be of interest and service to biologists, physiologists, and pathologists. The illustrations of this chapter are masterpieces of lucidity and detail.

In Chapter XI. are described techniques for the study of the place of origin and source of the protective substances elaborated in the organism. The introductory remarks that "everything that relates to this department of research is in a quite inchoate condition" prepare us for a rather involved chapter, and we wonder if the coining of such terms as "aipsĕro-epiphylactic response" will prove helpful or otherwise to most readers. Chapter XII. admirably describes the techniques elaborated by the authors during the late war for the study of infected wounds. To this chapter are appended some suggestive remarks on the phenomena of diffusion and osmosis.

The book is lavishly illustrated with admirably executed drawings and coloured plates by Mr. A. Kirkpatrick Maxwell. Altogether the work is a notable production which we confidently commend to all engaged in medical research.

AIDS TO MEDICINE.

Third edition. By BERNARD HUDSON, M.D. Camb., M.R.C.P. Lond., Swiss Federal Diploma, Physician in charge of the English Sanatorium at Montana, Switzerland. London: Baillière, Tindall and Cox. 1921. Pp. 370. 4*s.* 6*d.*

THE third edition of this small book has been enlarged to include a chapter on diseases of the skin. The primary object of the author, the production of a revision book of a convenient size for the student to carry about, has been successfully accomplished, but the real *raison d'être* for a new edition—the rejuvenescence of contents—has not been met. Without increasing the size of the volume the subject matter could have been brought up to date in many respects, when it would have proved of more value to students desiring to effect a rapid revision of their work.

HEREDITY.

Erblichkeitslehre und Rassenhygiene. Band I. *Menschliche Erblichkeitslehre.* By Prof. ERWIN BAUR, Prof. EUGEN FISCHER, and Dr. FRITZ LENZ. Munich: J. F. Lehmanns. 1921. Pp. 305. 11*s.*

This is the first or introductory volume of what is intended to be a fairly complete compilation on the subject of heredity, especially in relation to national health and eugenics. This part deals with the scientific and fundamental aspect of heredity, leaving the national aspect for the second volume. The book is divided into four sections, distributed among the three authors, the first of whom, Prof. E. Baur, describes the principles and laws of variation and heredity. Under the heading of Myxovariation the theory of Mendel is explained, with numerous of the standard examples from crossing experiments on plants and animals. By paravariation is meant difference within the normal range, but with no tendency to transmission to offspring, and by ideovariation the spontaneous evolution of differences capable of transmission—mutation—of which the classical example is the evolution of a new species of evening primrose. The three types of variation are described, without the addition of any new material. In the second section, Prof. E. Fischer describes, somewhat superficially, the differences met with between the existing races of man. The evolution of man from his anthropoid ancestors is also dealt with, and some attempt is made to show the relationships between the existing branches of the human race. This section is unduly condensed into less than 70 pages. In the third and

LIVERPOOL MEDICAL INSTITUTION.

A meeting of the Pathological Section of this Institution was held on Dec. 8th, Dr. J. E. **Gemmell**, the President, being in the chair, when Prof. J. M. **Beattie** read a paper on

Encephalitis Lethargica.

Prof. Beattie dealt mainly with the pathological conditions found in encephalitis lethargica, basing his remarks on the post-mortem examination of three cases. The main pathological changes found were the congestion, both in the membranes and in the cerebral tissues, and the perivascular infiltration with occasional hæmorrhages in the Virchow-Robin space. The nerve cells showed degenerative changes—pigmentation, eccentricity or loss of nucleus, vacuolation, &c. Neurophagia was present, but only in a minor degree. Irregular rounded or oval bodies, sometimes with an apparent central spot, were seen in the nerve cells, but these were thought to be degeneration products and remains of Nissl granules. Very large numbers of " hyaline bodies," described by Boyd and by various Italian observers, were demonstrated, especially in one case (a woman. aged 48 years), but they were present also in the other cases (aged 54 and 19 respectively). The relation of these to corpora amylacea was discussed, and Prof. Beattie concluded that the bodies were produced by degeneration of myelin, that they had no proved ætiological significance in the disease, as stated by some of the Italian workers, but that their presence could not be regarded as accidental or as having no special pathological relation to the virus of encephalitis. It was shown in one case, where the first symptom was ophthalmoplegia, that these bodies were present in considerable numbers in the optic nerve, and especially associated with a perivascular infiltration of the sheath of the nerve. The bacteriological findings, and the experimental production of the disease were discussed. Reference was made to the recent communication of Delaunay suggesting that encephalitis lethargica was a form of rabies, and the similarity between the pathological findings in the two diseases was dealt with. The relationship of the disease to poliomyelitis and to influenza was also discussed.

Prof. Beattie concluded that the disease was a distinct entity, that the naso-pharynx and salivary secretion harbour the virus, and that therefore it was important that throat and nose disinfection should be urged. He made an appeal for a coöperation between the pathologist, the bacteriologist, and the physician in the investigation of this disease, both during life and in the post-mortem room, and especially urged that the post mortems should be undertaken only by thoroughly trained and experienced pathologists.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

A meeting of this Society was held at the General Infirmary, Leeds, on Nov. 25th, in conjunction with the Leeds Branch of the British Dental Association, Sir **Berkeley Moynihan**, the President, in the chair.

Dr. **Bertram Watson** opened a discussion on

Oral Sepsis and Systemic Disease.

After referring to Dr. William Hunter's pioneer work, the speaker said he purposed dealing mainly with chronic apical infection, probably the most important of the focal infections. He briefly alluded to Rosenow's work on selective localisation of bacteria, and described the changes found at the apices of infected teeth, emphasising that these conditions are frequently symptomless, and only discoverable by dental radiography. Dr. Watson enumerated various systemic disorders which may be attributed to oral sepsis, laying stress on malignant endocarditis, nephritis, and the rheumatic group of diseases. He concluded with a plea for closer coöperation between physician, dental surgeon, and radiographer, and for a fuller recognition of the potentialities of dental work.

Mr. H. B. **Scargill** explained the methods used in the X ray examination of the teeth, illustrating his remarks by numerous lantern slides.

Dr. **Sinclair Miller** dealt with the Pathology and Bacteriology of Oral Sepsis. He described the various types of gingivitis and pyorrhœa alveolaris, and expressed the opinion that other factors as well as bacteria were essential for the production of these conditions. In speaking of apical and peri-apical infections of the chronic type, Dr. Miller quoted his bacteriological findings in a large series of teeth condemned by X ray and removed from patients suffering from systemic disease with a view to vaccine therapy. Streptococci, falling chiefly into the viridans group, were obtained from all specimens of the series; other organisms in addition were cultured in a small percentage of the cases. Dr. Miller demonstrated slides of bacteria lying in granulomatous tissue removed from the apices of infected teeth.

Mr. G. A. **Phillips** said that though Dr. Hunter's work had led to a proper appreciation of the damage caused by septic conditions in the mouth, there appeared to be grounds for complaint in some quarters against the increasing sacrifice of teeth in the treatment of certain systemic disorders. After discussing the mode of origin of peri-apical infection and chronic suppurative periodontitis, Mr. Phillips stated that many dentists had doubts as to the results of devitalisation of pulps and of attempts at disinfection or preservation of asepsis in root canals by the use of caustic and antiseptic drugs. He pointed out that the difficulty might be met by the use in an aseptic root of a neutral filling material and, in cases where antiseptics are required, by drainage and redressing at short intervals, removing all traces of drugs before introducing the permanent filling. He expressed doubts as to whether complete confidence should be placed in radiograms; the dentist should require reasonable proof of the need for sacrificing any large number of teeth. Mr. Phillips entered a plea for a wider exercise of caution and thoroughness in diagnosis.

Mr. G. L. **Wilkinson** said that while there was perhaps no positive proof that focal abscesses or granulomata at the apices of the teeth were often the cause of infected hearts and joints, a large quantity of circumstantial evidence had been presented during the last few years. He asked that these cases should be considered without prejudice and with a close coöperation between physician and dentist. He entered a strong plea for a careful conservative treatment, pointing out that areas of rarefaction, as shown by radiology, disappear after infection is removed. He advocated as suitable for front teeth the method of amputation of the necrotic apex through the outer wall of the alveolar process after filling of the canal with some hard and suitable material.

Health Exposition in New York.—A public exposition of the way in which various official departments and charities work together to promote public health was held in New York from Nov. 14th–19th. About 50 social service and charity organisations were represented, and means of combating preventable disease occupied a prominent place.

Association of Infant Welfare and Maternity Centres.—Lady Barrett recently addressed the Workers' Section of this Association on Birth Control, and Miss Margaret French has suggested that the Workers' Section should adopt a definite policy on this matter. This suggestion will be discussed at a special meeting to be held early in January. The next conference of the Workers' Section will take place at the Midwives' Institute on Jan. 27th, at 8 P.M., when Dr. Eardley Holland will lecture on Causes of Neo-natal Death.

THE LANCET.

LONDON: SATURDAY, DECEMBER 24, 1921.

The International Standardisation of Sera.

THE Conference held by the Health Committee of the League of Nations on the standardisation, for international purposes, of sera and serological tests was an extremely satisfactory one. Good work was done, and the foundations were laid for its continuance and extension. A difficult set of agenda was dealt with seriatim, and unanimous conclusions were arrived at by sub-committees of men specially chosen by the countries which they represented because of their personal experience. The recommendations of these sub-committees will be found on p. 1339 of this issue of THE LANCET. In several directions they represent an agreement to undertake definite comparative studies, and the result of these is to be finally submitted to the State Institute for Serotherapy of Copenhagen, of which the director is Prof. MADSEN, the chairman of the Health Committee of the League of Nations. The sittings of the Conference will be resumed in about six months' time, probably at the Institut Pasteur in Paris, when progress will be reported and further understandings can be reached.

The international character of medicine has been widely recognised in connexion with the incidence of certain epidemic diseases; that the progress and spread, for example, of plague, cholera, and yellow fever, throughout the world ought to be made the subject of international control has long been recognised. It is generally assumed that, with regard to these diseases, international notification, at least, is well established and systematically carried out. Certainly agreements have been executed between various countries for their mutual protection against the spread of such epidemics, and such agreements rest on the basis of fraternal notification. We hope, however, that it will fall under the health responsibilities of the League of Nations to keep official sanitary authorities everywhere alive to the necessity of this notification as an essential preliminary to the surrounding and stamping out of these diseases; for unfortunately there is little doubt that in some cases international notifications have not hitherto been conscientiously made, in the matter notoriously of plague and cholera. But there are other diseases whose spread from nation to nation is not so obviously preventable by notification but against which common weapons are none the less required and should be made available by the health organisation of the League of Nations. Such are the six great diseases which are, to a varying extent, amenable to serum treatment, or for which serological tests are essential—namely, diphtheria and tetanus, various types of pneumococcic and meningococcic infection, dysentery, and syphilis. But not only do different nations adopt a different protective technique in the employment of sera or in their serological tests, but sometimes the same nation has difficulty in making up its mind which of two or three methods to adopt. It was a most practical move on the part of the Health Committee of the League of Nations to begin its new duties by making an attempt to arrive at international standards in these matters, and it will be seen by our report of the Conference what excellent progress has been made.

The Dull and Backward Child.

PROMINENT features in the annual report of the Chief Medical Officer of the Board of Education have been dealt with in our columns, but we may well go back to this interesting document to consider that part of the report in which Sir GEORGE NEWMAN deals with the dull and backward child. For the dull and backward child often presents difficult and delicate problems to the practitioner, and the lessons to be learnt from the problems presented by our State-educated children are applicable in principle to children of every social status. The curricula of the senior departments of public elementary schools are so arranged that a child entering at the age of 7 years should progress yearly to such an extent that he deserves promotion to the standard above; thus his last year of elementary school would be spent in the highest standard. It has long been known that this ideal has not been reached, but until recently, as far as we are aware, the extent of deviation from this aim has not been measured. A recent investigation, however, into the educational ability of the entire body of children in a representative London borough has shown that barely one-half (46·4 per cent.) are assigned to a standard assumed as normal for their age. When the ability of a child is only equal to that of a "normal" child two years younger than himself the backwardness becomes of real importance. Unfortunately, at least 10 per cent. of the senior school population, the report informs us, present this degree of backwardness, a figure which accords with that arrived at by the medical members of the Education Reform Council, as shown by their report published in 1917. Expressed in round figures, it means that half a million children attending public elementary schools in England and Wales are definitely backward, and constitute potential waste products of the education system. We do not suggest that the same evidences of failure would be forthcoming from those large private schools, which are always known as "the public schools," but even these schools have their dull boys who have managed to scrape through the entrance examination. Those who fail to pass are dealt with by the smaller private schools or receive more individual teaching from tutors. The State elementary school population represents some six-sevenths of the total school population, and it is more than probable that a considerable number of children educated elsewhere belong to the dull and backward group.

The position has for some years received the attention of school medical officers. The late Dr. A. H. HOGARTH, when school medical officer for Buckinghamshire, and subsequently Dr. C. W. HUTT, when working at Brighton, made some inquiries by which this part of the Chief Medical Officer's report is supported, and the results of three valuable inquiries made last year are also incorporated in the report. A detailed extract is quoted from the annual report of Dr. H. P. NEWSHOLME, county medical officer for the North Riding, which deals with the number of defects present in the large number of backward children examined. A classification was not made of the causes of backwardness, apart from physical and mental, nor does the extract quoted inform us as to the number of children presenting combined physical defects, an omission which leaves vague the practical conclusions to be drawn. Information along these lines may yet, we hope, be made available for general use. The manner in which backward children have been dealt with in Croydon and highest figure is that for Glasgow, where it is estimated as 1330 tons, while in London, at Buckingham Gate, it reached 500 tons. The information given on food and diets is up to date and allots to modern work on vitamins an adequate space. Dr. Lane-Claypon's remarks on the use of alcohol are, as a whole, founded on common sense and experimental results, but she makes certain general statements on the subject, the accuracy of which is at least open to question. On p. 185, for example, the following paassge occurs: "Anyone who will take the trouble to make observations will readily discover that the most alert people, who preserve the elasticity of their mind and body with advancing years, are those who do not take alcohol. Those who early lose their muscular agility, and whose minds get set, will usually be found to take alcohol habitually, although not necessarily in large amounts." She makes some interesting remarks on the "psychological aspect of dress," and attaches more importance to clothes as an expression of personality than is usually accorded to them.

On the whole, Dr. Lane-Claypon has produced an excellent book which can be recommended to health visitors, and indeed to all who are interested in the health of mothers and young children.

PRINCIPLES AND PRACTICE OF SURGERY.

By Dr. A. HERMAN HAUBOLD, Clinical Professor in Surgery, New York University. London and New York: D. Appleton and Company. 1921. In two volumes. With 633 illustrations. Pp. 2482. 81s.

THIS work is a result of the thoughtful consideration and laborious toil of an experienced surgeon. The book contains much detailed information in a small compass. Few recent advances have been left unnoticed, and the judgment of the author in selection is admirable. The whole of surgery, general and special, is included in two volumes, which contain profuse and well-chosen illustrations. The insertion of special chapters on Biology, Anatomy, Physiology, Pathology, and Bacteriology takes up space which might, perhaps, have been better used, but a reminder of these subjects may well be needed by the young surgeon. We applaud the details of surgical practice enunciated by Dr. Haubold; discussion of the principles of surgery, as we understand them, seems less satisfactory. For example, wound repair is considered apart from inflammation, certain resemblances being recognised, but modern views hardly allow of such separation. Again, every form of "itis" is here described as if it were more or less of a special entity, and different forms of inflammation are called catarrhal, suppurative, putrid, phlegmonous, gangrenous, &c. No student should be taught in this manner if confusion of mind and hopelessness of outlook are to be avoided. A student must be impressed with the essential similarity between inflammatory processes throughout the body; that by the careful study of a boil he can unravel the pathological happenings in an inflamed tonsil, appendix, or prostate, and that in an inflamed conjunctiva he can watch the changes which occur in inflamed serous and synovial cavities.

As further examples of the form of teaching adopted in this book, we would draw attention to the absence of general principles in dealing with the hollow muscular viscera and the tubes of the body. From the description of the symptoms and signs of chronic obstruction due to gall-stones the student might easily gather that the gall-bladder and duct follow a special law of their own instead of conforming to the general behaviour of hollow muscular coated viscera and tubes; all of them hypertrophy, thicken their walls, and contract their cavities when opposed to a surmountable obstacle; all of them dilate and become thin-walled when the obstacle they are up against is insurmountable.

It is only fair to say, in comparing this book with standard English works, that many of these equally neglect fundamental principles, but it is so important for teachers to impart and for students to equip themselves with these principles that to point out their significance is an obvious duty. It is for this reason that we would recommend Dr. Haubold's work to surgeons rather than to students, for the former will have grasped the principles underlying their craft and will find in these volumes much suggestive material for their guidance in the solution of difficult problems.

BIOCHEMISTRY.

Practical Physiological Chemistry. Third edition. By J. A. MILROY, M.A., M.D., Lecturer on Biochemistry, Queen's University, Belfast; and T. H. MILROY, M.D., B.Sc., F.R.S.E., Professor of Physiology, Queen's University, Belfast. London and Edinburgh: W. Green and Son, Ltd. 1921. Pp. ix.+449. 21*s*.

THE rapid growth of biochemistry necessitates frequent revision of the text-books dealing with this subject. In the present edition of this work matter suitable for the use of senior students has been added. The more advanced portions and all the practical exercises are set in different type from the rest of the book, part of which is of necessity theoretical. A few references are also given. The instructions for the practical work appear to be clear and adequate, though the general impression given by the work is that it represents the result of successive graftings on to an original and apparently rather ancient stock of class-notes. Rather too little has been cut away at each graft of new material, with the result that there is too great a variety of methods. Thus, two methods for preparing glycogen from liver are given; at least eight methods for the estimation of glucose, and three for the volumetric estimation of chloride in urine may also be mentioned as examples. Among the valuable newer methods are the colorimetric method for determination of hydrogen-ion concentration, the determination of the phosphate ratio of the urine (the method of calculation of which might have been given more clearly), the determination of amino-nitrogen, and various colorimetric methods of quantitative analysis. It is to be regretted that the authors found that space would not allow of a proper treatment of the physiological applications of gas analysis, because no senior student's course is complete without some acquaintance with these methods, on which so much of modern physiological views are based. The addition of tables and schemes for analysis complete a very useful book. The authors would be well advised, in the preparation of a future edition, to provide a critical friend with a copy of the book and a blue pencil, and to give him carte blanche; such a test of friendship would furnish us with one of the best books on the subject of physiological chemistry which any teacher could desire.

Dictionnaire de Biologie Physiciste. By ALBERT and ALEXANDRE MARY. Paris: A. Maloine and Fils. 1921. Pp. xvi.+408. Fr.40.

THE general conception of this work is doubtless excellent; physical and physico-chemical aspects of biological problems figure largely in the programme of modern investigation, and an encyclopædic dictionary dealing with the more important of these questions and giving such references as would enable further inquiry to be pursued, would be valuable to many. On reference to the work before us, expectations, however hopeful, are speedily disappointed, for it is little else than a rag-bag of out-of-the-way information of all sorts, and, since most of the matter is not even up to date, it can fulfil no useful purpose. For example, there is no section on electricity, radium, or fluorescence; the section dealing with osmosis is antiquated both from the biological and physico-chemical standpoints; nothing is said of recent work on luminescence. The general degree of accuracy which prevails can be judged from the following extract: "*Hormones*—Starling a donné le nom d'hormones aux produits colloïdaux versés dans le

Annotations.

"Ne quid nimis."

RUSSIAN FAMINE RELIEF.

Sir Arthur Stanley, as chairman of the British Red Cross, and Lord Emmott, as chairman of the Russian Famine Relief Fund, have written to the press in support of the National Appeal for the starving millions in Russia. "We wish to make it quite clear," they say, "that while, with the support of the British public, we can do something to save life and to mitigate suffering, it will not be possible for us to deal fully with famine on such a colossal scale as that which unfortunately now exists in Russia. If food is to be brought to the starving population as a whole; if worse famine next year is to be avoided by adequate sowing; above all, if the accompanying epidemics are to be combated at their source and not allowed to spread to surrounding countries, a sum of many millions is needed." They go on to express the hope that a special area or objective may be allotted, small at first, but increasing with the available resources, on which British relief efforts may be concentrated to real purpose. With this object in view they have secured the services of Sir Benjamin Robertson, the eminent Indian famine expert, who is proceeding to Russia forthwith as British Commissioner. The Red Cross Societies and other organisations in India and the Dominions have agreed that any assistance they can give shall be sent through the British Red Cross and Famine Relief Fund, acting on the advice of Sir Benjamin Robertson, and in this way it will be ensured that the relief that goes from the British Empire as a whole will be concentrated as far as possible on one specific objective.

BENJAMIN MARTEN, PIONEER.

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Some quotations from his book will speak more eloquently for him than any historian can do.

"The *Original* and *Essential Cause* then, which some content themselves to call a vicious Disposition of the Juices, *others a salt Acrimony, others a strange Ferment*, others a malignant Humour (all which seem to me dark and unintelligible) may possibly be some certain Species of *Animalcula or wonderfully minute living Creatures, that*, by their peculiar Shape, or disagreable Parts, are inimical to our Nature: but, however, capable of subsisting in our Juices and Vessels, and which being drove to the Lungs by the Circulation of the Blood, or else generated therefrom their proper *Ova* or Eggs, with which the Juices may abound, or which possibly being carried about by the Air may be immediately conveyed to the Lungs by that we draw in, and being there deposited as in a proper *Nidus*, or Nest, and being produced *into Life*, coming to *Perfection*, or increasing in Bigness, may by their spontaneous Motion, and *injurious Parts, stimulating and perhaps wounding or* gnawing the tender Vessels of the Lungs, cause all the disorders that have been mentioned, viz., a more than ordinary Afflux of Humours, upon the Part, Obstruction, Inflammation, Exulceration, and all other the *Phenomena* and deplorable Symptoms of this Disease.

"And it is reasonable to suppose that there are various Species of *Animalcula*, so of course they are of various Magnitudes, of different Shapes, and have peculiar Parts . . . so various Diseases, *more or less sudden and pernicious, may* be caused (by them).

"For how can we better account for the regular types the Small-pox, Malignant, and all other Continual and Intermittent Fevers, as well as many other Distempers, keep and the peculiar Attributes and *Crises, etc.*, they have than by concluding they are severally caused by innumerable *Animalcula*, or exceeding minute Animals that variously offend us according as their Species are different, and as their peculiar *Shape and Parts* are more or less *injurious to our* Fluids and Solids. . . .

"*By what has been said*, I think . . . there is possibly no Ulcer or Ulcerated Matter, but what is stock'd with *Animalcula*.

"But I would not be understood to advance that all Distempers are caused by them; I would urge only the possibility and likelihood of their being the Essential Cause of the Plague, Pestilential and other malign Fevers, Small-pox and some other *Diseases as well Chronick as Acute and* particularly of that dreadful one a *Phthisis* which is the *peculiar Subject of these Papers*.

"If the Air we breathe, the Food we eat, or Liquor we drink in common with the rest of Mankind, were full of such minute living Creatures or their seed, then we might *reasonably suppose* that all Persons Breathing, Eating, and Drinking of the same, would in like Manner be more or less liable to the same Distemper, which would in that Case become Epidemical and almost *Universal, this therefore* we may imagine to happen in the Case of Plagues and Pestilential *Distempers, that seize* upon whole Cities, Towns, and Countries, at a Time, but not very likely in the Case of the Disease we now treat of (i.e., Phthisis).

"It seems much more probable that the minute Animals or their Seed, which we have supposed to be the Essential Cause of a *Phthisis* or Consumption of the Lungs, are for the most part either convey'd from Parents to their Offspring *Hereditarily*, or *communicated immediately from distemper'd* Persons to sound Ones who are very conversant *with them*; the *first* way has been already mentioned when we were speaking of the Small-pox . . . the last way, which is properly called Infection, we may conceive to be the more reasonable, if we consider how quickly and easily some other Distempers are communicated from one Person to another, as the Itch, Venereal Disease, etc., which are yet very far from becoming universal.

"It may be therefore *very likely, that by an habitual* lying in the same bed with a Consumptive Patient, *constantly* Eating *and* Drinking with him, or by very frequently *conversing so near*, as to draw in part of the Breath he emits from his Lungs, a Consumption may be caught by a sound Person; for it may be reasonable to suppose that if the Blood and Juices of such distemper'd People, be charged with vast quantities of *Animalculæ* as I have conjectur'd, then their profuse Sweats, and their Breath, may be likewise charged'd with *them, or their Ova or Eggs*, which by that means may possibly be convey'd into the Bodies of those who lie, or are most conversant with them.

"It may here probably be objected, that if the Disease is communicated after this Manner few that come near a Consumptive Person would escape having that Distemper; but *in Answer* to this I imagine that slightly conversing with Consumptive Patients, is seldom or never sufficient to catch the Disease; there being but few if any of those minute *living Creatures or their* Eggs communicated in slender conversations, and which if they are, may not perhaps, be produced into Life, or be nourished or increas'd, in the new Station they happen to be cast; besides, we may imagine that some Persons are of such an happy Constitution, that if any of the *Ova* of the inimicable minute Animals that fourth sections Dr. F. Lenz reviews the collected knowledge on diseases which are in any way transmissible, and though the list is not complete much interesting material has been set forth, illustrated by numerous genealogical tables. The fourth section deals mainly with heredity in mental and psychopathological conditions, with some remarks on the heredity of genius, and the mental attributes of certain races.

The bibliography is considerable, though certain omissions are apparent. The authors have adopted the useful plan of giving with each reference a brief note of the contents of the work consulted. The sections by Dr. Lenz are likely to appeal to those medical men who are only interested in heredity in so far as it is manifested in disease.

PHYSICAL SIGNS IN THE CHEST AND ABDOMEN. By A. J. JEX-BLAKE, M.A., M.D. Oxon., F.R.C.P. Lond., formerly Physician to St. George's Hospital and Assistant Physician to the Hospital for Consumption, Brompton. London: J. & A. Churchill. 1921. 9*s.* 6*d.*

IN this publication Dr. Jex-Blake has kept clearly in view the wants of beginners in that fundamental branch of medicine with which his book deals, yet the medical practitioner and senior student will find many interesting points elucidated in the paragraphs of small type freely scattered through the volume. Several physical signs which are especially puzzling to the student receive explanation; thus it is pointed out that the diminished vocal fremitus which is sometimes met with over a consolidated lower lobe in a case of lobar pneumonia really depends on an accumulation of secretion in the bronchi, and that, after a bout of coughing sufficient to empty the air tubes, the more typical "increased vocal fremitus" will reappear. In like manner many pitfalls are guarded against, and sound advice in carrying out the physical examination of the patient is given. It is a matter for regret that uniformity in the nomenclature of abnormal physical signs is still far to seek, and we are glad to note that Dr. Jex-Blake makes increase in the *clearness* of the transmitted sound the essential criterion of pectoriloquy. He closes with a chapter devoted to a consideration of the more important abdominal swellings.

The book is concerned with ordinary physical examination and intentionally contains no account of the use of the sphygmomanometer, polygraph, electrocardiograph, or Rontgen rays in diagnosis. The illustrations consist of outline diagrams and useful graphic representations of heart-sounds and murmurs, and the whole forms a concise and lucid introduction to an essential branch of medical practice.

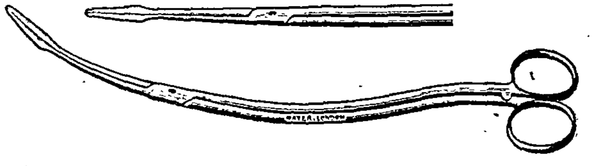
JOURNALS.

ARCHIVIO DI PATOLOGIA E CLINICA MEDICA. Vol. I., No. 1. October, 1921. Pp. 102. Bologna: Casa Editrice, L. Cappelli.—This new periodical has just been issued under the joint editorship of Prof. Luigi Zoja of Pavia, Prof. G. Viola, and Dr. F. Schiassi of Bologna, to whom we wish every success in their enterprise. There are four papers in the opening number, each followed by a résumé in French for the benefit of readers who are not familiar with the Italian language. Prof. Viola contributes an essay on the principles of diagnosis in which he incorporates the views of many other distinguished observers. For him a purely anatomico-pathological doctrine is untenable; the seat of disease cannot be isolated from other changes in the organism, and medical science must hold a just balance between the anatomical and functional elements in diseases. For him, also, a diagnosis must necessarily be differential, whether it is direct or intuitive, automatic or analytical, or rational. He admits three forms of ontrol—i.e., the history, the maxim of Bacon ablata causa tollitur effectus," and quantitative judgment. He asks the question, Is medicine a science or an art? and solves it by answering that it is both—a science in its diagnostic and an art in its therapeutic aspect. His main conclusion is that a mechanical clinical doctrine has had its day and must be replaced by a Hippocratic psychophysical doctrine.—Dr. A. Crosti contributes some original observations on the pathological and clinical aspects of artificial pneumothorax with woodcuts of its macroscopic and microscopic results on the lung tissue. He describes these results in a case of multiple pulmonary abscess and two cases of phthisis, which showed the development of bundles of connective tissue of pleuritic, vascular, bronchial, and interstitial origin.—Dr. R. Grignani discusses the hæmoglobin metabolism in nephritis; his researches point to a frequent oligochromocythæmia, not due to hydræmia alone nor to increased destruction of red cells, but to their inadequate formation. Hence an insufficient diet contributes to the production of anæmia.—Dr. Schiassi describes in a practical article the clinical use of the refractometer. He prefers one of the Pulfrich type and discusses alterations of the refraction index in various diseases and the part it plays in the investigation of the hæmoclasia crisis lately described by Widal and others occurring in disturbed hepatic function. The journal is well printed and is of quarto size and presumably will be issued monthly, but this is not distinctly stated, and we have searched in vain for any indication as to its price.

New Inventions.

TENDON TUNNELLING FORCEPS.

THE forceps shown in the accompanying illustration have been designed for the purpose of making subcutaneous tunnels and pulling tendons through them in the operation of tendon transplantation, the idea being to have an instrument so flattened and tapered as to pass easily through the subcutaneous tissues and, at the same time, act as a forceps. In performing tendon transplantation for musculo-spiral paralysis I use them in conjunction thus: having detached the tendon of the flexor carpi radialis from its insertion and exposed part of its belly and the commencement of its tendon in the upper third of the forearm through a short incision, and the tendons of the extensores ossis metacarpi and brevis pollicis near the wrist through a similar incision, the point of the curved pair of forceps is passed in subcutaneously at the lower angle of the former and pushed obliquely towards the latter where it is brought into view. The forceps is opened and the subcutaneous space widened sufficiently to accommodate the portion of the muscle belly detached from the surrounding intermuscular septa. The straight forceps is then passed from the incision at the wrist alongside the curved pair which is withdrawn. The tendon of the flexor carpi radialis is then pulled from its natural tunnel and its end being grasped in the straight forceps is pulled along the new tunnel. The same procedure is adopted in dealing with the flexor carpi ulnaris. I have found the curved forceps particularly useful in dealing with a case where the elbow is ankylosed at a right-angle.



The instruments have been made by Messrs. Mayer and Phelps, New Cavendish-street, London, W.

Birmingham. F. WILSON STUART, M.Ch. Aberd.

Annotations.

"Ne quid nimis."

RUSSIAN FAMINE RELIEF.

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Manchester merits attention. At Croydon certain backward children were selected and taught in small classes in the hope that they would be able more or less to resume their normal place on the ladder of educational attainments. In Manchester much the same plan has been adopted, but younger children, who were being taught in Standard I. in neighbouring schools, were selected. The making of arrangements of this sort by an education authority might well be considered a practical measure and constitute in a large sense a medical solution of some of the difficulties in the education of the backward child.

A point which should receive consideration is whether, in certain more or less special circumstances, those children of weak general ability who are all round mentally inefficient, but not sufficiently deficient as to be classed as mentally deficient—the very "thickheads"—should not be taught in a special class, associated, it may be, with an ordinary public elementary school rather than in a special class for mental defectives. Children such as these would seem to require tuition of a different character from the mentally deteriorated. It is at present difficult to differentiate between the teaching these children should receive and that given to mentally defective children, but the formation of such a class might help to provide the proper training for the backward child, and also create valuable medico-psychological knowledge. The material for such classes can be found in any thickly populated centres.

Public Health in Egypt.

LIKE many other matters in Egypt, the health organisation of the country is at present undergoing a radical change. Progress must necessarily be slow, but that a beginning has been made is evident from a perusal of Lord ALLENBY's report as High Commissioner for 1920, the medical portions of which have been summarised in two recent issues of THE LANCET.[1] In accordance with the recommendations of the Commission, which sat under the presidency of Dr. ANDREW BALFOUR during the summer of 1918, the director-general of the Department of Public Health has now become an Under Secretary of State for Health, and so enjoys a far more influential position than formerly; the deputy-director has now become director-general; and a new post of inspector-general has been created to which, we learn with satisfaction, an experienced Egyptian has been appointed. These changes in the higher personnel no doubt augur well, but they must be regarded merely as a beginning, for the recommendations of the Balfour Commission cover every aspect of health administration throughout the country, and extend even to the village and the doings of such humble officials as sanitary barbers. When the scheme is complete, there will be a technical adviser and director of medical intelligence to assist the Under Secretary and the director-general; also directors of (1) Sanitary Services, (2) Epidemic Services, (3) Medical Services, (4) Lunacy, (5) Medical Education, (6) Public Health Laboratories, and (7) Sanitary Engineering, and in addition a secretary-general who will control personnel, registration of vital statistics, and similar matters; all these officials to be responsible to the director-general. In this way it is hoped the directorate will be relieved of many trivial matters of detail.

A knowledge of Egypt and a study of Lord ALLENBY's report indicate that many preventable diseases still maintain their firm hold upon the country. It is a matter for congratulation that the reduction in the incidence of small-pox is as great as 60 per cent. when compared with the figures of the previous year, and from the fact that over ten million doses of vaccine lymph were prepared in the Vaccine Institute during 1920 against half that number in the previous 12 months, it is obvious that a systematised attempt is being made to reduce this scourge. There is apparently to be a general campaign against ankylostomiasis and schistosomiasis, and could these two diseases be appreciably reduced, the increased working capacity of the fellahin would amply repay the capital outlay. Pellagra as an equal drain on the energies of the labourer might well receive attention by those engaged in the attack on the two worm infections. These efforts on the part of the authorities, and many similar ones which are dealt with in the report, read excellently on paper, but as long as the success of their execution depends entirely on administrative reforms, very little improvement is likely to result in the health and happiness of the toiler in the fields, upon the value of whose work the prosperity of Egypt rests. What is essential in addition to administrative reforms is an educational campaign and an attempt to convince the people of the country at large that the disabilities from which they suffer are mainly preventable, but only with the coöperation of every member of the community. Are there signs that such a campaign is in progress or contemplated?

A consideration of the health situation in the Soudan is full of interest. As in Egypt, so in the Soudan, small-pox has been of considerable importance of late. Malaria, on the other hand, stands out in far greater prominence than in Egypt, and a comparison of the diseases prevalent in the two countries shows that there are many striking differences in the relative importance of the various infections demanding attention. The desert has proved an effectual barrier between these two populous areas in the past, but improved communications and the migration of labour, necessitated by the present scheme of Soudan development, have resulted in a changed situation; there is likelihood that much disease will be spread from one country to the other unless adequate precautions are taken to prevent this. To meet the needs of the case, labourers passing from Egypt are now detained in a quarantine camp at Halfa, and there are medically examined, shaved, bathed, disinfected, and treated with a vermifuge. This is a step which appears to have been taken only just in time, and it is to be hoped that no slackness will be permitted in the execution of such measures in the future. Should the worm diseases of Egypt be allowed to spread and tak as firm a hold on the population in the cotton-growin areas of the Soudan and exercise an influence a baneful as in Egypt, the authorities will be alone t blame. Another infection which it is essential t control is tuberculosis. The Soudanese show ver little resistance to this disease, and when infect usually succumb; the spreader of infection exis for so short a time that little harm results, a the tubercle rate in the Soudan appears to be lo. Egyptians, on the other hand, show a far higher resistance and, in consequence, chronic centres of the disease may be established in the Soudan should those infected be undetected and rejected at the frontier. Such an introduction of tubercle into the Soudan might prove as great a calamity as did the infection of the negro in the Southern States of America.

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[1] THE LANCET, Dec. 3rd and 10th, pp. 1195 and 1254 respectively.

of these 13 cases showed that the average duration of the disease was only 2–3 years, whereas the average duration of the bilateral cases was as great as 4–6 years. Hence the conclusion that, given time, many, if not all, of these unilateral cases would become bilateral. A third subject to which Prof. Petrén gives prominence is the remarkable success which can be achieved by passive movements under skilled supervision. He does not ignore such well-known remedies as massage, salicylates by the mouth, and heat in various forms, but he regards them as secondary in importance to passive movements. These should be so powerful as often to cause considerable pain, but this matters little provided it passes off quickly. As judged by the X rays, the results he obtained were not very impressive. Very different was the functional improvement often obtained, and it is obvious that patients are more interested in improvement they can themselves gauge, than in the cheerless and rigidly objective evidence of skiagrams. Though it is evident that Prof. Petrén has made extensive use of the X rays, he accepts their showings with a healthy modicum of reserve, and as the records of some of his cases show, he does not abandon all hope of restoring mobility to a joint even when the X rays point to "complete synostosis." In one such case passive movements enabled the limb to be flexed about the hip to 20°–30° without the slightest movement of the pelvis; and the patient, a man aged 77, was able to walk with two sticks on his discharge from hospital. It is probable that the immobilisation effected by arthritis deformans of the hip is not due solely to changes in the bones and articular cartilages, but also to a considerable degree to muscular spasm. And this is the component of the forces limiting the movements of the joints which responds so satisfactorily to skilled, systematic treatment.

VETERINARY HEALTH SERVICE IN FRANCE.

THE diminution of over 50 per cent. in cases of rabies notified in Paris and the Department of the Seine for the year 1920 is encouraging, especially as the figures for the four quarters of the year were 144, 108, 47, 34, showing a constant decrease; the 333 cases recorded included 326 dogs, 6 cats, and 1 bear. The total number of cases in France has also been reduced by 1807, giving a diminution of 39 per cent. on the 1919 figures; 2136 persons were bitten by dogs and other animals in 1919, of whom 6 died; only 1403 were bitten in 1920, with 1 death.

The annual report by Prof. H. Martel on the French Veterinary Service of Paris and the Seine Department shows how vigilantly the public health is protected also from other diseases of animal origin in this district. The incidence of tuberculosis in animals does not decrease, and more efforts should be concentrated on methods of prevention. Prof. Martel states that the intra-dermic method of testing for tuberculosis is the one most favoured by cowkeepers. Tuberculosis has been fairly common in pigs, especially those which have been kept in boarding schools, orphanages, and institutions, and the authorities stress the necessity of cooking scraps of human food in order to check the prevalence of tuberculosis in young pigs. The frequency of tuberculosis in fowls is a matter of some import; of 657 fowls suspected and examined 342, or 52 per cent., were found to be tuberculous. The incidence of glanders has increased slightly, but it is gratifying to know that out of 1165 horses and 119 mules imported not one reacted to the mallein test. Great care is taken to cleanse and disinfect trucks used in animal transport by the use of steam and sodium hypochlorite. Damaged and putrefied carcasses have been the chief causes of seizure and destruction of fowls, geese, ducks, turkeys, lambs, goats, pigeons, and rabbits. One of the most noteworthy points in Prof. Martel's report is the good work done in the inspection of the egg supply. It is probable that in this country real benefit would accrue from a thorough examination of the supply of eggs to be offered for sale. In France over 2½ million eggs were thrown out by the inspectors as unfit for human consumption. The shadow test seems to be the one chiefly relied on to discern the quality of the egg. The October supply of eggs was the most faulty, because at this time the preserved eggs are put on to the market. In April exotic eggs are rare, and the country supply shows good quality. Apparently but little bad food escapes the vigilance of the French Veterinary Service, and this important branch of the Public Health Service seems to be very efficiently managed.

BLOOD TRANSFUSION FOR BURN SHOCK.

SEVERE burns occurring in infants and young children are always apt to terminate fatally from shock. In the *Canadian Medical Association Journal* for October Dr. Bruce Robertson has reported encouraging results obtained at the Hospital for Sick Children, Toronto, from transfusion in the treatment of severe burns in children. The greater number of severe burns admitted occurred in children of 4 years and under. The mortality has been high (35 per cent.), not so much from the primary shock as from secondary toxic shock. Weiskotten found in fatal cases of superficial burns characteristic lesions in the suprarenals, lymphatic tissues, and heart muscle "indicating the presence of a more or less specific poison in the circulating blood" (*Jour. Amer. Med. Assoc.*, Jan. 25th, 1919, p. 259). It seems that a toxin is produced in the burned tissue and is thrown into the blood stream. Its action diminishes after about three days. It is significant that all the patients in the hospital who succumbed to shock did so in about 60 hours. Dr. Robertson thinks that in this period treatment should be directed towards neutralisation or elimination of the toxin. The injection of saline and glucose solutions, with the idea of diluting the toxin and of hastening elimination of the toxin, has been tried, but in the more severe cases it fails.

Treatment by blood transfusion or the more radical "exsanguination-transfusion" was tried at the hospital in seven cases. The latter operation is carried out as follows: Blood is withdrawn from the patient until he shows signs of the loss. In infants it may be withdrawn through the fontanelle from the longitudinal sinus. In older children the external jugular or femoral vein or radial artery may be used. It is impossible to obtain much blood from the superficial veins of a child under 5, particularly if the circulation is sluggish. Transfusion is then commenced through the great saphenous vein over the internal malleolus while further exsanguination is being carried out. In an infant only a small amount of blood (up to 120 c.cm.) can be withdrawn before transfusion is begun. But it seems that sufficient blood can be withdrawn until so much toxin is removed as will turn the scales in the patient's favour. The transfusion is carried out preferably with citrated blood. Out of seven cases of severe toxic shock from cases of superficial burns showing symptoms which used to be considered fatal at the hospital, five terminated in recovery. The following is an example. A boy, aged 2½ years, was admitted. Six days before he had fallen into a tub of scalding water. He had been treated at home for second and third degree burns extending over the back from the lower angles of the scapulæ to the upper part of the thighs and forward to the mid-axillary line on each side. He was desperately ill and the extent and severity of the burn were such that the prognosis seemed hopeless. He was exceedingly restless and toxic. 360 c.cm. of blood were transfused immediately. He showed moderate improvement, but the temperature remained high. The restlessness increased and a severe convulsion occurred. Exsanguination (260 c.cm.) and transfusion (400 c.cm.) were performed. The general condition improved, but there was intermittent twitching of the arms and legs, for which mag. sulph. was given subcutaneously. *Steady improvement followed.* But the toxæmia again increased and the circulation failed. As a last resort blood transfusion (300 c.cm.) was performed. The temperature fell, the general condition improved, and recovery ensued.

Dr. Robertson found that examination of the blood and urine in these cases did not give any signs to indicate transfusion. He had to rely on the clinical

Manchester merits attention. At Croydon certain backward children were selected and taught in small classes in the hope that they would be able more or less to resume their normal place on the ladder of educational attainments. In Manchester much the same plan has been adopted, but younger children, who were being taught in Standard I. in neighbouring schools, were selected. The making of arrangements of this sort by an education authority might well be considered a practical measure and constitute in a large sense a medical solution of some of the difficulties in the education of the backward child.

A point which should receive consideration is whether, in certain more or less special circumstances, those children of weak general ability who are all round mentally inefficient, but not sufficiently deficient as to be classed as mentally deficient—the very "thickheads"—should not be taught in a special class, associated, it may be, with an ordinary public elementary school rather than in a special class for mental defectives. Children such as these would seem to require tuition of a different character from the mentally deteriorated. It is at present difficult to differentiate between the teaching these children should receive and that given to mentally defective children, but the formation of such a class might help to provide the proper training for the backward child, and also create valuable medico-psychological knowledge. The material for such classes can be found in any thickly populated centres.

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Public Health in Egypt.

LIKE many other matters in Egypt, the health organisation of the country is at present undergoing a radical change. Progress must necessarily be slow, but that a beginning has been made is evident from a perusal of Lord ALLENBY's report as High Commissioner for 1920, the medical portions of which have been summarised in two recent issues of THE LANCET.[1] In accordance with the recommendations of the Commission, which sat under the presidency of Dr. ANDREW BALFOUR during the summer of 1918, the director-general of the Department of Public Health has now become an Under Secretary of State for Health, and so enjoys a far more influential position than formerly; the deputy-director has now become director-general; and a new post of inspector-general has been created to which, we learn with satisfaction, an experienced Egyptian has been appointed. These changes in the higher personnel no doubt augur well, but they must be regarded merely as a beginning, for the recommendations of the Balfour Commission cover every aspect of health administration throughout the country, and extend even to the village and the doings of such humble officials as sanitary barbers. When the scheme is complete, there will be a technical adviser and director of medical intelligence to assist the Under Secretary and the director-general; also directors of (1) Sanitary Services, (2) Epidemic Services, (3) Medical Services, (4) Lunacy, (5) Medical Education, (6) Public Health Laboratories, and (7) Sanitary Engineering, and in addition a secretary-general who will control personnel, registration of vital statistics, and similar matters; all these officials to be responsible to the director-general. In this way it is hoped the directorate will be relieved of many trivial matters of detail.

A knowledge of Egypt and a study of Lord ALLENBY's report indicate that many preventable diseases still maintain their firm hold upon the country. It is a matter for congratulation that the reduction in the incidence of small-pox is as great as 60 per cent. when compared with the figures of the previous year, and from the fact that over ten million doses of vaccine lymph were prepared in the Vaccine Institute during 1920 against half that number in the previous 12 months, it is obvious that a systematised attempt is being made to reduce this scourge. There is apparently to be a general campaign against ankylostomiasis and schistosomiasis, and could these two diseases be appreciably reduced, the increased working capacity of the fellahin would amply repay the capital outlay. Pellagra as an equal drain on the energies of the labourer might well receive attention by those engaged in the attack on the two worm infections. These efforts on the part of the authorities, and many similar ones which are dealt with in the report, read excellently on paper, but as long as the success of their execution depends entirely on administrative reforms, very little improvement is likely to result in the health and happiness of the toiler in the fields, upon the value of whose work the prosperity of Egypt rests. What is essential in addition to administrative reforms is an educational campaign and an attempt to convince the people of the country at large that the disabilities from which they suffer are mainly preventable, but only with the coöperation of every member of the community. Are there signs that such a campaign is in progress or contemplated?

A consideration of the health situation in the Soudan is full of interest. As in Egypt, so in the Soudan, small-pox has been of considerable importance of late. Malaria, on the other hand, stands out in far greater prominence than in Egypt, and a comparison of the diseases prevalent in the two countries shows that there are many striking differences in the relative importance of the various infections demanding attention. The desert has proved an effectual barrier between these two populous areas in the past, but improved communications and the migration of labour, necessitated by the present scheme of Soudan development, have resulted in a changed situation; there is likelihood that much disease will be spread from one country to the other unless adequate precautions are taken to prevent this. To meet the needs of the case, labourers passing from Egypt are now detained in a quarantine camp at Halfa, and there are medically examined, shaved, bathed, disinfected, and treated with a vermifuge. This is a step which appears to have been taken only just in time, and it is to be hoped that no slackness will be permitted in the execution of such measures in the future. Should the worm diseases of Egypt be allowed to spread and take as firm a hold on the population in the cotton-growing areas of the Soudan and exercise an influence as baneful as in Egypt, the authorities will be alone to blame. Another infection which it is essential to control is tuberculosis. The Soudanese show very little resistance to this disease, and when infected usually succumb; the spreader of infection exists for so short a time that little harm results, and the tubercle rate in the Soudan appears to be low. Egyptians, on the other hand, show a far higher resistance and, in consequence, chronic centres of the disease may be established in the Soudan should those infected be undetected and rejected at the frontier. Such an introduction of tubercle into the Soudan might prove as great a calamity as did the infection of the negro in the Southern States of America.

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[1] THE LANCET, Dec. 3rd and 10th, pp. 1195 and 1254 respectively.

fennel fruit, chamomile flowers, senna leaves and fruits, and a number of bunion plasters. This moth is well known as a pest of flour and grain, being especially common in rice. In general appearance it resembles a clothes-moth, but it actually belongs to the group Pyralidina, of which the flour-moth, *Ephestia kühniella* Zeller, is also a member. *Corcyra cephalonica* was first described in 1865, having been found in some dried currants by Mr. Hind, of York. The name *Corcyra* was given to the moth because it was thought to have been imported from Corfu, where currants are cultivated. The moth is of Eastern origin, and was brought to Europe by the rice trade. *Ephestia kühniella* is a closely related species of similar general appearance, and was carried to Europe from America as a result of commerce in grain and meal. It was formerly erroneously known as the Mediterranean flour-moth. Its larva is stout in build and has a pinkish tint, while the larva of *Corcyra* is more slender and dull whitish in colour. A third moth, *Borkhausenia pseudospretella* Stt., belonging to the family Tineina, which includes also the common clothes-moth, was found a short time ago in large numbers in a specimen of valerian root, which had been partly reduced to powder by the ravages of its larva. This moth was introduced from America about the year 1840 and is now a common inhabitant of houses, feeding upon parts of plants, skins, seeds, and the like. All these moths show a complete metamorphosis, and in every case it is the larvæ with their strong biting jaws which attack the drugs, while the moths have suctorial mouths and are unable to feed upon hard materials. The most satisfactory method of exterminating these pests is the application of heat. A temperature of 60° C. (140° F.) maintained for 15 minutes will destroy eggs, caterpillars, and moths. When large bags of drug are being dealt with, it is necessary to ensure that the required temperature is reached at the centre of the bags, and this can be readily arranged by heating the store containing the bags by air driven over steam-pipes for a period of two or three days, as suggested by A. W. Knapp for the treatment of cocoa. Fumigation with carbon bisulphide vapour is moderately successful in getting rid of the moths, but does not so effectually destroy the eggs; in a trial experiment made upon a large scale, only 50 per cent. of the larvæ were killed. Other fumigating agents such as formaldehyde, carbon tetrachloride, and trichlorethylene have been tried with indifferent result. A knowledge of these things may save the contents of the doctor's drug store.

ARTIFICIAL PNEUMORACHIS IN MENINGEAL INFECTIONS.

AT a recent meeting of the American Neurological Association Dr. Edward Affleck Sharp,[1] of Buffalo, N.Y., remarked that injection of air or oxygen into the ventricles of the brain had become a recognised procedure in neurological and surgical diagnosis. Injection of air or oxygen into the subarachnoid space by lumbar puncture producing an artificial pneumorachis had also been found of value in the treatment of acute infection of the meninges. During an epidemic of meningococcus meningitis in 1916–1917 a few cases occurred in which the purulent fluid was obtained with difficulty owing to adhesions or blocking of the vertebral canal. Injections of half-strength normal saline diluted the fluid and broke down adhesions, permitting a free flow of the purulent fluid. In some of these cases oxygen was injected and an additional quantity of purulent fluid was evacuated before injection of antimeningococcal serum, the oxygen in such cases probably acting only as a mechanical agent in displacing the fluid and opening up secluded pockets of adhesions and not possessing any germicidal action. The average amount of oxygen introduced was from 10 to 15 c.cm. No bad effects have ever resulted from the oxygen injections. During the last four years Dr. Sharp had treated 64 cases by this method. Of these 30 were cases of meningococcus meningitis, of which 23 recovered and 7 died; 12 were cases of tuberculous meningitis, of whom 3 recovered and 9 died; 10 were cases of lethargic encephalitis, of whom 8 recovered and 2 died; 2 were cases of anterior poliomyelitis, which both recovered, and 10 were cases of pneumococcus, streptococcus, or typhoid meningitis, which were all fatal. Dr. Sharp points out that the mortality of 23 per cent. among the cases of meningococcus meningitis compares very favourably with the statistics of cases of meningococcus infection in which antimeningococcus serum alone was used, especially as the new method was confined to the severe and apparently unfavourable cases. The paper was illustrated by a skiagram showing that oxygen injected by lumbar puncture may reach the ventricles, spread over the cerebral cortex in the subarachnoid space, and fill the cisterna magna.

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[1] Archives of Neurology and Psychiatry, December, 1921.

DENTAL REGISTRATION.

ANY dentist, or person who believes himself entitled to registration under the Dentists Act, 1921, who desires to know his rights and obligations under that statute, cannot do better than acquire Sir Kingsley Wood's small but comprehensive volume.[1] It does not, of course, explain or embody regulations not yet approved and which had not been even discussed by the Dental Board when it was written, but it explains clearly the Act so far as it goes and the effect of its sections. It includes a brief survey of the Dentists Act of 1878, and contains the text of that statute as well as that of the new Act. The explanations given appear to be ample for their purpose at this stage, and should call the attention of those concerned to many points which otherwise might escape their notice. The knowledge of the law which, as British subjects, we are all assumed to possess does not always carry with it the power accurately to interpret the meaning of a Parliamentary draughtsman, or help us to follow his references to preceding legislation.

It has been pointed out to us that in a recent leading article upon the new Dental Board the references to the position of the Royal College of Surgeons of England are not accurate. The evolution of professional dentistry is a long story of which we could only give an abstract. A principal part was played by the Odontological Society when representations brought about the granting of a charter, but the charter was not granted to the Society, but to the Royal College of Surgeons, empowering the College to institute a Department in Dental Surgery.

THE Trustees of the Beit Memorial Fellowships for Medical Research have elected the following candidates to Fellowships of the annual value of £400:—

Mr. Robert Keith Cannan, M.Sc., for research into some chemical aspects of metabolism and digestion, at University College, London.

Mr. Herbert Davenport Kay, B.Sc., for research into the degradation of carbohydrates and allied substances by micro-organisms, at the Lister Institute.

Dr. Mary Kathleen Forsaith Lander, for research on the evolutionary process of development of stereoscopic vision and conjugate movements of the eye, at University College, London.

Dr. Harry Goldblatt, for research on the quantitative relation of fat-soluble A deficiency to the development of experimental rickets, and on the effect of parathyroidectomy on immunity, at the Lister Institute.

Dr. Louis Gross, for research on intestinal stasis, at the Royal College of Surgeons and London Zoological Gardens.

Dr. Ethel Marjorie Luce, for research on accessory food factors, with special reference to the relationship of ductless glands to calcium metabolism, at the Lister Institute.

Prof. T. R. Elliott, F.R.S., has been appointed a member of the Advisory Board.

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[1] Dental Registration, being a Practical Guide to the New Dentists Act, by Sir Kingsley Wood, M.P., a Solicitor of the Supreme Court, Honoursman and John Mackrell Prizeman, Law Society. London: Baillière, Tindall and Cox. 1921. Pp. 136. 5*s.*

cause a Consumption happen to get into their Bodies they may likewise be quickly forc'd out again, through some of the *Emunctories*, before they are produc'd into Life; or else be wholly destroy'd."

A hundred and fifty-seven years later Louis Pasteur laid again the foundation-stone of that castle which his forgotten predecessor had so surely and deftly constructed, if only in the air. Sound as is our principle of "no acceptance without verification," it may yet be permitted to wonder how much suffering might have been prevented in those years, if Benjamin Marten's contemporaries had been willing to accept his theory and wait awhile for the verification which was in their time impossible.

THE ERADICATION OF TUBERCULOSIS IN CATTLE.

AUSTRALIA is the latest convert to a scheme initiated by the Bureau of Animal Industry in U.S.A. and since adopted in Canada for dealing with tuberculosis in cattle. A memorandum from Col. J. A. Gilruth, D.V.Sc., administrator of the northern territory of Australia, explains the accredited herd system, the aim of which is first to get rid of tuberculosis in a pure-bred herd of cattle, and when this has been done to give the owner the advantage of having his herd placed on an official list of tuberculosis-free herds. A herd is declared to be free from tuberculosis when no animal is found to be tuberculous after two annual or three semi-annual tuberculin tests and after thorough physical examination. The subcutaneous test with tuberculin is the one generally practised, but it may be supplemented by the ophthalmic test with tuberculin and the intra-dermal test. There is some evidence to show that the latter method is apparently gaining ground and may in time supersede the subcutaneous test. It is claimed that it relieves the inspector of the drudgery of prolonged observation of temperature. The intra-dermal test causes a reaction in diseased animals, even where repeated subcutaneous injections of tuberculin at short intervals has made them unresponsive to the subcutaneous test; moreover, it can be applied frequently to the same animal without producing immunity to tuberculin. Under this accredited herd system, any animal to be slaughtered is first valued and suitable compensation is awarded. The list of certified tuberculosis-free herds continues to grow in the United States, and from a recent communication from Dr. Frederick Torrance, D.V.Sc., the Veterinary Director-General of Canada, we learn that the system is making good progress also in the Dominion. This country lags behind. The Tuberculosis of Animals Order did good work while it was in operation, but has been suspended since 1914. It is time our authorities gave their attention to its revival or to some alternative scheme such as the one outlined.

SERUM-GLOBULIN AND THE WASSERMANN TEST.

IT has been known for some time that the substances concerned in the various immunity reactions are not found evenly distributed through the sera in which they occur, but that when these sera are split into different fractions the bodies in question are found in conjunction mainly with one or other of them. The same fact applies to antitoxins, and can be utilised in concentrating the total quantity present in a large bulk of serum down to a dose which can be administered without the inconveniences which attach to the making of a large injection. A number of experiments on these lines have been undertaken by various workers in an attempt to throw light upon the Wassermann reaction. Interest in this has been recently revived by the advocacy of the precipitation tests, such as that of Sachs and Georgi, which, it is thought, may give an indication of a syphilitic infection as reliable as the Wassermann reaction and much simpler of performance. Such tests consist in the production of a visible precipitate in the positively reacting sera by various and rather divers agents; a change suggestive of an alteration in the most readily precipitable constituent of serum—the globulins. Kapsenberg,[1] in a recent number of the *Annales* of the Pasteur Institute, has undertaken a reinvestigation of this subject, and confirms the fact that the active substance concerned in the Wassermann test resides in the globulin fraction of the serum. He finds that only when separation of the albumin and globulins is produced by salting-out is the whole of the active substance obtained in the latter fraction; where other methods of separation are employed the substance occurs in both fractions, although chiefly in the globulins. This is probably explicable on the grounds that the process of salting-out produces the most complete separation of these two fractions of the serum, whilst the other methods employed leave considerable traces of globulin in the albumin fraction. These facts being accepted, the further problem arises as to whether the positive reaction in syphilitic sera is due to a mere increase in the quantity of globulin present, or to some alteration in it; closely allied to the last possibility would be the presence of a new and foreign element in the serum, the result of the infective process, which becomes attached, possibly by adsorption, to the globulin at the moment of precipitation, without being an essential part and parcel of it. Noguchi and others claim that there is an actual increase in the amount of globulin present in syphilitic sera, a fact which is not confirmed by Kapsenberg. The treatment of the sera with substances presenting a large and active adsorbing surface has not resulted, in any case, in the diminution of the intensity of the Wassermann reaction, and from this the author inclines to the view that the active substance is an integral part of the globulin molecule; that the latter has suffered a change in the disease, and not that the active body is merely adsorbed by the precipitated globulin; which presumption is supported by the observation already referred to, that anything short of complete precipitation of the globulins fails to remove the active substance from the solution. In the Wassermann test the altered globulins are more readily precipitated from solution than are those of normal sera. In the presence of the lipoid antigens now in use they give rise to precipitates, presenting in the nascent state a surface suitable for the adsorption of complement, which thus disappears from the mixture, and a positive reaction results.

ARTHRITIS DEFORMANS OF THE HIP.

IN a paper calculated to upset several time-honoured conceptions with regard to arthritis deformans of the hip, or malum coxæ senile, Prof. Karl Petrén,[2] of Lund in Sweden, bases his discussion on a study of 103 cases observed at his hospital between 1910 and 1920. A scrutiny of these cases, in which the arthritis was confined to the hip, showed among other things that the title malum coxæ senile is misleading. In 8 per cent. the disease had appeared before the age of 40, and only in 13 per cent. had it appeared after 65—an age which Prof. Petrén refuses to associate with senility. Another conclusion to which he comes is that the disease is seldom, if ever, unilateral provided sufficient time has been allowed for it to develop in the second hip. In 61 cases the bilateral character of the disease was demonstrated both by ordinary physical examination and by the X rays. In several other cases one or other of these methods proved the disease to be bilateral, and only in 13 cases did it appear to be unilateral. Closer study of 10

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[1] Kapsenberg: Recherches sur le rôle de la globuline dans la réaction de Wassermann, avec une contribution à la technique de la dialyse et à l'exécution du Wassermann, Annales de l'Institut Pasteur, October, 1921.

[2] Acta. Med. Scand., 1921, vol. lv., fasc. iii.

Probably it would be extremely remote. Further, long experience of port health work and careful study of the literature of plague outbreaks go to show that the picture drawn above represents what actually occurs on some considerable scale throughout the world.

Wherever there is trade in grain from infected ports plague almost invariably follows sooner or later. In the reign of Justinian the disease was carried from Egypt to Byzantium by grain-ships. The same forces are still at work to-day. The more we know of the epidemiology of plague the easier is it to see how slight may be the chances of detecting its presence. It may be held, therefore, that all ships carrying grain, or those in whose cargo food forms a large part, should be Claytonised whenever the ship is empty. For a grain-ship to carry rats is a danger to the world.

THE INTERNATIONAL STANDARDISATION OF SERA:

AN IMPORTANT CONFERENCE.

A CONFERENCE was opened by permission of the Government at the Ministry of Health on Monday, Dec. 12th, at which the Health Committee of the League of Nations discussed the international standardisation of sera. The Conference, the personnel of which we gave last week, had not arrived at any conclusions in time to allow their publication. The conclusions of the various sub-committees were received in plenary Congress on Wednesday, Dec. 14th, and their reports on the international standardisation of sera in connexion with diphtheria and tetanus, meningococcus and pneumococcus, dysentery, and syphilis are appended.

THE RECOMMENDATIONS OF THE SUB-COMMITTEES.

I.—*Sub-Committee for Anti-Diphtheritic and Anti-Tetanic Serum.*

(Chairman : Dr. Louis Martin.)

The Committee for investigating methods for testing the potency of anti-diphtheritic and anti-tetanic serum considers it both possible and desirable to fix for both these sera an antitoxin unit which could be generally accepted and acknowledged as an International Unit.

Diphtheria Antitoxin.—Two units are used at present :—

(*a*) The German, determined in the Frankfort Institute for Experimental Medicine following the Ehrlich method with standard serum, and

(*b*) The unit determined in the Public Health Bureau at Washington.

Between these two units, according to the experiments carried out to date, there are only very small differences. To determine these differences accurately the standard sera and test-toxins for the necessary researches will be given to the various participating institutes both by the Frankfort Institute for Experimental Medicine and the Washington Public Health Bureau.

The result of the experiments performed with these sera and toxins at the several laboratories represented will be delivered on completion to the Danish State Serum Institute, which for this purpose will act as the central laboratory.

Tetanus.—Four methods at present are employed to describe the potency of anti-tetanic toxin. These four methods start from different points of departure and experiments have not yet determined the exact relation between the units determined by each of these methods.

The Committee consider, however, that it is desirable and possible to establish a common measure by an agreement on a single standard antitoxin, using the principle which has been adopted in connexion with the standardisation of anti-diphtheritic serum.

In the first instance the participating laboratories must fix experimentally the relations which obtain between the four units at present employed.

With this object an exchange of sera and toxins will be made in order to secure the necessary comparative experiments. The details of the experiments made with each method will in all cases be described in precise detail. All the relative documents will be sent to the Danish State Serum Institute which for this purpose will act as the central laboratory and the results will be discussed at a subsequent conference.

II.—*Sub-Committee for Antimeningococcus and Antipneumococcus Serum.*

(Chairman : Dr. Dopter.)

(*a*) *Antimeningococcus Serum.*—The Sub-Committee have unanimouly agreed as follows :—

1. With the object of obtaining full information regarding the various types of meningococci, the several laboratories mutually agree to exchange agglutinating serums and strains of meningococci, the latter being obtained exclusively from the cerebro-spinal fluid of meningitis cases.

2. Macroscopic methods will be employed in agglutination investigations, the bacterial emulsions having been kept for 24 hours at a temperature of 37° C., without prejudice to other methods which may also be employed. Investigations into the saturation of agglutinins may be carried out by any method.

3. In the existing state of our knowledge and without prejudice to the opinions of the several institutes participating in these researches and who are not represented at this conference it appears to be difficult to determine the therapeutic value of antimeningococcus serum by measurement of agglutinins, sensitisers (sensibilisatrices), and opsonins.

4. Fresh experiments will be undertaken in the various laboratories regarding the value to be attached to the determinations of antiendotoxic and bactericidal power.

(*b*) *Antipneumococcus Serum.*—The Sub-Committee have unanimously arrived at the following conclusions :—

1. A mutual exchange of cultures of different strains of pneumococci will be effected in the same manner as agreed upon in the case of meningococci.

2. Researches into the agglutinating power of antipneumococcus serum is of no value in determining its therapeutic power. The best method of titrating the serum is the measurement of the bacteriacidal power in animals, preferably mice.

3. New investigations will be carried out with regard to (*a*), the best method of inoculation—peritoneal or subcutaneous—for the titration of serum ; (*b*) the selection of methods, preventive or simultaneous, for the injection of serums and cultures ; (*c*) the monovalence or polyvalence of the different serums.

III.—*Resolutions Adopted by the Committee on Dysentery Serum.*

(Chairman : Prof. Kolle.)

1. It was agreed that it would be advisable that the different institutes, laboratories, &c., should exchange samples of serum and toxin and that further experiments should be carried out, using for these—
   (*a*) Different methods of titration,
   (*b*) Different species of animals.

2. In testing the potency of sera, there was a general agreement that the antitoxin, especially the antiendotoxin, should be estimated, and there was general agreement that this could be accurately carried out equally well with dead bacilli as with toxin. In reference to the method of testing the dysentery serum on mice, it was recommended that a series of tests should be carried out with the standard serum which the Frankfort Institute would supply, comparing them with methods in use in the various institutes, and that a report on these experiments should be presented at the next Conference. But it was considered that it was advisable also to test the anti-microbic power of serum, employing living bacilli for the test.

3. It was unanimously agreed that in the preparation of experimental anti-Shiga serum, the horses should be inoculated with the *B. dysenteriæ* (Shiga) only.

4. It was agreed that the question of the preparation and the standardisation of sera prepared from various other atoxic dysentery bacilli should not be discussed, as the actual state of our knowledge does not permit us to solve the question in a decisive manner.

IV.—*Sub-Committee on the Sero-diagnosis of Syphilis.*

(Chairman : Prof. Bulloch.)

The recommendations of the Committee appointed to discuss this question are :—

1. In a certain number of institutes the Wassermann reaction as practised in them should be compared with the methods of Sachs-Georgi, Meinicke and Dreyer-Ward (" Sigma ").

2. The number of cases examined in each institute should be 1000 of undoubted syphilis, and 1000 in which syphilis could be excluded as far as possible.

3. It is also recommended that the different methods should be compared on about (one and the same) 50 cases out of the 1000, at different stages of the disease. These repetition tests should be carried out on at least three or four occasions in the course of the disease, and it is recommended that the 50 cases should comprise especially suspected syphilis of the nervous system and of the eye.

points, such as rising temperature and general evidence of increasing toxæmia. A convulsion was a certain indication, but unfortunately a late one. It would be safer not to wait for this. His experience is that if burns are severe enough to cause a convulsion in a child under the age of 2 years it is rare for recovery to take place under any other method of treatment.

SEXUAL REFORM.

THE fact that everyone has, not only sex, but an unequalled knowledge of sexual life in his own person, may account for the sciolism and cocksureness of many popular deliverances upon this topic. Whatever the reason may be for this regrettable tendency, an excellent antidote may be found in the report of the first International Congress for Sexual Reform upon a scientific basis, held recently in Berlin, with an attendance at some sessions of over a thousand. Delegates were present from Italy, Russia, Sweden, Finland, South America, Holland, and other countries, whilst a congratulatory message was read from a French colleague. At this congress the older metaphysical outlook upon sex showed up in contrast with the newer physical outlook, while the conception of original sin gave place to that of congenital defect. The ancient idea—recently emerging from temporary obscuration—that the significance of sexual love does not end with its biological consequence of reproduction, but that it is a pre-condition of mental and physical life harmony, received emphasis. While admitting that permanent monogamous union had been evolved by the constructive force of Western civilisation, it was held by a section of the congress not to be well suited to eugenic ends, and its eventual modification, under safeguards, to a form eugenically more appropriate was discussed. The hindrances in the way of making people moral by Act of Parliament are certainly enhanced by the likelihood that the primitive sex impulse will always find itself in some measure opposed to current legislation. The difficulties besetting birth control were frankly recognised. Limitation of proletarian fertility would be difficult to effect, even by de-penalising abortion; a better means of meeting the disadvantages might be to enact that childless couples should bequeath a part of their property to the State. The desirability of legalising the interruption of pregnancy within the first three months was considered, but the neo-Malthusian method of prevention, rather than interruption, of pregnancy, was recognised as preferable. Sterilisation of degenerate criminals and lunatics was held to be advisable, at all events as a temporary measure.

Other thoughts which were current at the congress may be thus summarised. Sexual pædagogy should entail reform of education, with strict regard to formation of character, moral autonomy, and the sense of responsibility. Extremes are to be avoided. There must be no Thelemite laissez-faire, no blinking of juvenile sexual proclivities, no blind following of Freud. Puberty in boys hindered intellectual development, but in girls furthered it. A worker from the Berlin Institute of Sexual Science described "schizoid" types of human constitution, marked by inconstant sexual characters, verging even on asexuality, and often coinciding with somatic or endocritic stigmata like those found with true sexual inversion. There was in these types some approach to a schizophrenic psychosis, which, as Freud had shown, generally betrayed a conflict for survival between latent sexual desires and the collective psychical personality as moulded by its environment. The report of the congress is valuable as containing recent verdicts on Steinach's well-known work. Objection was taken to attributing the source of sexual hormones to the interstitial cells of the primary reproductive glands, and not to the endocrine system as a whole. It was stated that the amphibia had no interstitial tissue in ovary or testis, and yet showed well-marked secondary sexual characters. Notes were submitted of 37 patients, vasectomised more than a year previously with the object of rejuvenation, all of whom showed improvement in that respect without injury to their general health. On the other hand, castration followed by testicular implantation, in order to remedy inverted sexual desire, had uniformly failed. It seemed as though after puberty sexual aim became fixed in the central nervous system, although an alternative explanation of ill-success might be found in the extreme rarity with which organs implanted into human beings retained their vital activity. The congress, as was to be expected, held widely variant opinions, some of them obviously devoid of balance, and it can hardly be doubted that the atmosphere of public discussion will have exerted a useful check on extreme views. In this connexion it may be mentioned that the monthly journal of the Malthusian League, after appearing for 45 years as the *Malthusian*, is to be widened in scope, and to reappear in the New Year as the *New Generation*. The next congress will be held at Rome.

VINCENT'S DISEASE.

VINCENT'S disease, a comprehensive term including all the localisations of the fuso-spirillar symbiosis, forms the subject of a review in the December number of *Medical Science* by Dr. J. D. Rolleston, who quotes several recent articles showing that the disease has been unusually prevalent in Germany since the war. No satisfactory explanation of this occurrence has yet been offered, for while some writers attribute it to under-nourishment and a general declining of personal cleanliness due to lack of soap and heating material, others note its predilection for vigorous young persons of both sexes, and also point out that it did not become prevalent until 1919, when the supply of food was much more plentiful and richer in vitamins than during the last years of the war. Among the unusual localisations of the fuso-spirillar symbiosis reported by recent writers, reference is made in the review to the cases of infection of the thumb recorded by Hennessy and Fletcher in THE LANCET,[1] auto-inoculation of the skin of the anal region described by Koslowsky, infection of the external auditory meatus and middle ear related by various British otologists, and lastly an example of ulcerative and gangrenous balano-posthitis. The coexistence of Vincent's angina with syphilis or diphtheria is discussed, in reference to a case reported by Souchet in which the clinical and bacteriological appearances were those of Vincent's angina; here it was not until the development of a cutaneous eruption that the suspicion of syphilis arose and was confirmed by the presence of the *Spirochæta pallida* and a positive Wassermann reaction. Dr. Rolleston suggests that such complications as renal disease, myocardial changes, and peripheral palsies, which Reiche describes in his cases of Vincent's angina, were probably due to a coexistent diphtheria having been overlooked. Various topical applications for Vincent's disease, such as trypaflavin in the form of a ½ per cent. spray, a 10 per cent. solution of salicylic acid in equal parts of alcohol and glycerine, or pyoktanin in 1 per cent. solution have recently been recommended, but most writers still favour preparations of salvarsan such as neosalvarsan or silver-salvarsan for local application or intravenous injection.

MOTHS AS PESTS IN THE PHARMACY.

FROM time to time stocks of drugs become infested by animal pests such as mites, beetles, ants, and moths. The harm done by moths in particular was the subject of a paper read on Dec. 14th before the Pharmaceutical Society of Great Britain by Mr. T. E. Wallis, B.Sc., F.I.C., lecturer in botany. Recently the larvæ of the pyralid moth *Corcyra cephalonica* Stt. were found attacking many of the dry goods in a pharmacy at Hastings. The maggots showed themselves catholic in their tastes and had eaten starch, poppy-heads, whole and crushed linseed, ordinary distribution was £190,000, apart from the emergency distribution of £250,000 made by the Fund in July, 1920, out of its accumulated funds, and the special distribution of £250,000, which was generously entrusted to the Fund by the British Red Cross Society and the Order of St. John of Jerusalem for distribution on their behalf in aid of schemes of extension or improvement at hospitals able and willing to treat ex-Service men. The number of hospitals applying was 110, as against 108 in 1920.

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[1] THE LANCET, 192

The report dealt at some length with the findings of Lord Cave's Committee and the duties which fell upon the Distribution Committee when King Edward's Hospital Fund was constituted the Voluntary Hospitals Committee for London. The Distribution Committee held a series of special meetings with the object of making specific recommendations to the Voluntary Hospitals Commission, and, as a result, grants were made to 24 hospitals which were in imminent danger of closing down. The Distribution Committee notified the hospitals that grants in aid of capital expenditure would have to be severely limited, but as a set-off total grants to maintenance were considerably increased.

The committee recommend that the following grants, made in past years in aid of schemes of building expenditure, should be renewed under the two years' rule: City of London Hospital for Diseases of the Chest, £500 to improvements; General Lying-in Hospital, £3000 to rebuilding on new site; Royal Northern Hospital, £2500 to new nurses' home; London Lock Hospital, £4500 to reconstruction of the Harrow-road Hospital, of which £3000 to be available for out-patient department; Queen Charlotte's Lying-in Hospital, £3100 to new out-patient department and other improvements; Queen Mary's Hospital for the East End, £1625 to improvements; Queen's Hospital for Children, £2538 12*s.* 11*d.* to improved out-patient accommodation; St. Mary's Hospital for Women and Children, Plaistow, £5500 to new nurses' home and out-patient department; St. Monica's Hospital, £100 to improvements; St. Peter's Hospital for Stone, £200 to improvements; St. Thomas's Hospital, £2500 to extension of nurses' dining-room; Victoria Hospital, £450 to new heating apparatus, transferred to extension of out-patient department and resident medical officers' quarters; West London Hospital, £4000 to improvements; Woolwich and District War Memorial Hospital Building Fund, £5300 to new general hospital.

The grants recommended by the Distribution Committee were presented by Sir FREDERICK FRY (hon. sec.) as follows:—

List of Awards.[1]

Acton Hospital	£110
Beckenham Cottage Hospital	55
Belgrave Hospital for Children	1200
Blackheath and Charlton Hospital (£25 of the grant to improved kitchen accommodation)	175
Bolingbroke Hospital	500
British Hospital for Mothers and Babies, Woolwich (£1000 of the grant towards the building of the amalgamated hospital, in accordance with the scheme submitted to the Fund)	1150
Canning Town Women's Settlement Hospital (£100 of the grant to reduce debt)	650
Central London Ophthalmic Hospital	400
Central London Throat and Ear Hospital (£250 of the grant to recent improvements in nurses' accommodation)	350
Charing Cross Hospital	4350
Chelsea Hospital for Women	550
Cheyne Hospital for Children	160
City of London Hospital for Diseases of the Chest, Victoria Park	3000
City of London Maternity Hospital	775
Clapham Maternity Hospital	300
Dreadnought Hospital, Seamen's (the amount of the grant this year is being generously given by King George's Fund for Sailors, as a temporary measure, earmarked for the Seamen's Dreadnought Hospital)	5000
East End Mothers' Lying-in Home (£50 of the grant to additional nurses' accommodation)	650
East Ham Hospital	£50
East London Hospital for Children	3000
Elizabeth Garrett Anderson Hospital	1000
Eltham and Mottingham Cottage Hospital	80
Evelina Hospital	1000
Finchley Cottage Hospital (£250 of the grant to extension, in accordance with the scheme submitted to the Fund)	350
Florence Nightingale Hospital for Gentlewomen (£100 of the grant to reduce debt)	325
French Hospital	200
General Lying in Hospital	550
German Hospital	—
Grosvenor Hospital for Women	775
Guy's Hospital (£500 of the grant to improvements in nurses' accommodation, in accordance with the scheme submitted to the Fund)	12,500
Hampstead General and North-West London Hospital	2750
Hendon Cottage Hospital	225
Hornsey Cottage Hospital	100
Hospital for Consumption, Brompton, including Sanatorium at Frimley	2000
Hospital for Diseases of the Throat	150
Hospital for Epilepsy and Paralysis	1750
Hospital for Sick Children (£100 of the grant to additional nurses' accommodation, in accordance with the scheme submitted to the Fund)	4900
Hospital for Women, Soho-square	1000
Hospital of St. John and St. Elizabeth	750
Infants' Hospital (£250 of the grant to reduce debt)	759
Italian Hospital	350
Kensington and Fulham General Hospital	30
Kensington Dispensary and Children's Hospital	30
King Edward Memorial Hospital, Ealing	575
King's College Hospital	7750
London Fever Hospital	250
London Homœopathic Hospital (£250 of the grant to reduce debt)	1500
London Hospital (£1000 of the grant to deficit on new nurses' home, in accordance with the scheme submitted to the Fund)	14,250
London Lock Hospital (£700 of the grant to maintenance of Harrow-road Hospital, and £50 to maintenance of Dean-street Hospital)	750
London Temperance Hospital	2200
Maternity Charity and District Nurses' Home, Plaistow (£500 of the grant to rebuilding and extension, in accordance with the scheme submitted to the Fund)	800
Metropolitan Ear, Nose and Throat Hospital	30
Metropolitan Hospital (£1000 of the grant to reduce debt)	4600
Middlesex Hospital (£250 of the grant to improvements to operating theatre)	7850
Middlesex Hospital Cancer Charity	850
Mildmay Memorial Hospital	525
Mildmay Mission Hospital	975
Miller General Hospital for South-East London	3500
Mothers' Hospital of the Salvation Army	750
National Hospital for Diseases of the Heart	500
National Hospital for the Paralysed and Epileptic (£2000 of the grant to reduce debt)	4750
Nelson Hospital, South Wimbledon (£400 of the grant to extension, in accordance with the scheme submitted to the Fund)	850
Northcourt Hospital and Home for Sick Children, Hampstead (grant given in consideration of the fact that curable cases are admitted)	50
Norwood Cottage Hospital	500
Paddington Green Children's Hospital	850
Passmore Edwards Hospital for Wood Green, &c.	75
Poplar Hospital for Accidents	100
Prince of Wales's General Hospital (£2000 of the grant to reduce general fund debt)	5000
Queen Charlotte's Lying-in Hospital	750
Queen Mary's Hospital for the East End (£750 of the grant to new maternity block, in accordance with the scheme submitted to the Fund)	5250
Queen's Hospital for Children	3500
Roll of Honour Hospital for Children	50
Royal Dental Hospital of London	250
Royal Eye Hospital	700
Royal Free Hospital	4250
Royal Hospital, Richmond	550
Royal London Ophthalmic Hospital (£500 of the grant to reduce debt)	3500
Royal National Orthopædic Hospital (£500 of the grant to reduce debt)	2350
Royal Northern Hospital, with which is amalgamated the Royal Chest Hospital, City-road	6800
Royal Waterloo Hospital for Children and Women	2350
Royal Westminster Ophthalmic Hospital	400
St. Andrew's Hospital, Dollis Hill	200
St. Bartholomew's Hospital	8700
St. Columba's Hospital	300
St. George's Hospital	7000
St. John's Hospital, Lewisham	500
St. John's Hospital for Diseases of the Skin	250
St. Luke's Hospital for Advanced Cases (£350 of the grant to acquisition of new premises, and their adaptation in accordance with scheme to be submitted to the Fund)	525
St. Mark's Hospital	200
St. Mary's Hospital (£500 of the grant to improvements to nurses' accommodation and operating theatre, in accordance with the schemes submitted to the Fund)	5500
St. Mary's Hospital for Women and Children, Plaistow	1350
St. Monica's Home Hospital	150
St. Peter's Hospital for Stone	150
St. Saviour's Hospital for Ladies of Limited Means, Osnaburgh-street	150

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[1] The Distribution Committee draw attention to the fact that it must not be assumed that the reduction or absence of a grant implies dissatisfaction.

PLAGUE ON BOARD SHIP.

BY W. W. CLEMESHA, C.I.E., M.D., D.P.H.,
LIEUTENANT-COLONEL, I.M.S. (RET.)

THERE is no necessity to apologise for bringing this very important subject again before readers. Recent outbreaks of plague in many parts of the world are in all probability re-importations of the disease caused by infected ships' rats. The reason for this re-importation is probably to be found in the general lack of vigilance due to reduced staff, which was a necessary result of the war. Dr. W. M. Willoughby, Port Health Officer of London, has published several papers on the subject of plague epidemics in ships that have come under his cognisance; an exhaustive account of the outbreaks on shipboard that have occurred since the year 1896 appears in a report by Dr. R. J. Reece, of the Ministry of Health. During the years 1917–20 Dr. Willoughby reports that eight plague-infested vessels were seen by him in London; as a result of very careful inquiry he came to the important conclusion that, as a general rule, the earliest case amongst human beings on an infected ship is the storekeeper, whose business it is to issue rations for the ship's company. Out of 1715 persons exposed to infection on eight infected vessels 30 developed plague; no less than eight of these occurred amongst storekeepers and their assistants. Dr. Reece says, "the storekeeper who gets up the food for the native crew and the saloon steward who carries the food from the galley to the saloon are specially liable to infection." The cause for this state of affairs is, as suggested by these writers, that ships' rats require both food and water, and in search of these necessities they invade the store-room, and not infrequently the lavatories of the ship. Early cases amongst lavatory attendants have also been reported.

Eight plague-infected ships in a matter of four years may not seem a great number in so large a Port as London, but the all-important question suggests itself: If eight ships were discovered, how many were actually infected but escaped detection? In endeavouring to reply to this query, recent work on the epidemiology of plague will be of much assistance.

Difficulty Concerning Ships Apparently Healthy.

All who have had any experience of port health work will agree that it is only in regard to ships that have had cases of sickness or deaths amongst the crew that suspicion is at all likely to arise in the mind of ships' officers, who supply information to the visiting health officer. If rat mortality has occurred without human cases it might be noticed and reported, but an odd dead rat on a ship is no very uncommon sight, and very likely would escape notice or be forgotten. If no human cases occurred and no dead rats were found, the ship would be reported, in all good faith, as healthy; being classed as free from infection, unloading would take place at the wharf in the ordinary way. Possibly dead rats would be found on moving the cargo, but by that time the damage might be done and some infected rats have escaped ashore.

The "Plague Season."

Now it is well established that the fulminating epizoötic of plague in a rat-infested town in the tropics only takes place at a time when flea prevalence on the rats is at its height, and when climatic conditions give the maximum period of infectivity for the flea. These conditions constitute what may be called the "plague season"; when they are absent we get an entirely different type of outbreak amongst rats. It has been shown by Kunhardt and Chitre that if plague infection is brought into a rat community in the "off season"—that is, when the flea prevalence per rat is greatly reduced and the temperature is either too high or too low—only dropping cases occur amongst the rats, but the infection may be kept alive in this way months. Applying these facts to outbreaks on board one would expect to find both varieties amongst ships' rats. From Dr. Willoughby's figures it would appear that both types have been recorded; in two out of eight boats (the *Sardinia* and the *Clan Lamont*) no dead rats were found amongst the cargo—this would be very unlikely to occur in the explosive type of outbreak. Again, in Dr. Reece's valuable report we read, "There have been several instances that seem to indicate that the period during which rat plague may exist on board a vessel before its presence is discovered may be a long one." Then follows the details of the outbreaks of the ships *Highland Prince*, *Nankin*, and *Moora*. The complete facts of these outbreaks may well be studied in the report, but of the *Nankin* and *Moora* the author says, "It may be that infected rats concealed in merchandise found their way on board both vessels at Bombay and that the disease for some unexplained reason did not assume epidemic proportions among the rats for two months." Given certain conditions of flea prevalence, low temperature and humidity, a delayed epizoötic would result. This is the correct explanation of the remarkable course of events on these two ships. Unfortunately, there are no figures available showing the average number of fleas per rat in those captured or destroyed on board ship, but it may be held that there is doubt as to whether the flea prevalence on ships' rats is ever as great as it is on land. Obviously fleas must breed in the ship's hold, but it is very doubtful whether the conditions under which they live are as satisfactory as they are ashore. Flea prevalence fluctuates with climatic conditions even on land rats; the same must also apply to ships' rats. Many of the boats pass out of the tropics into colder climates three or four times in the year; this would certainly have a restraining influence. It is fair, therefore, to conclude that plague infection on shipboard does assume much the same phase as is known to exist in Indian villages in the "off season," and that in this state it is very likely to escape detection because the rat mortality is small and the chances of human infection much reduced.

The Small Freighter as a Rat Carrier.

Five out of eight of Dr. Willoughby's ships and at least 60 out of 100 of Dr. Reece's were big passenger vessels with voluminous and well-stocked food store-rooms. Frequently, there would not be much in the cargo that would prove attractive to rats as food, but a reference to the reports shows that occasionally these ships did carry grain. This brings us to the last point. Only a comparatively small proportion of the world's trade is carried in large passenger ships; the small freighter of 5000 to 10,000 tons is much more numerous, and is, therefore, a more important factor in the spreading of disease. Let us try to imagine the conditions on a vessel of this size carrying a cargo of grain. Grain coming from a plague-infected country like India in itself constitutes a grave source of danger. At this point I do not turn aside to discuss the whole question of the grain trade and its influence in the spread of plague; suffice it to say that the most recent work has shown that wherever there is a big grain trade, there plague constantly manifests itself. Broadly speaking, re-importation of the disease follows importation of foodstuff. In a boat of the type described, where the whole cargo provides food for rats, the necessity for them to have recourse to the crews' food-supply is considerably reduced; consequently the chances of infecting members of the crew would be lessened. Assuming that infection was brought on board at an inopportune moment, when the flea prevalence per rat was low and climatic conditions adverse, one might further amplify the picture by adding that the rats were the grey rat and the fleas *Xenopsylla astia* (vide the recent work by Cragg). The result would be a slow creeping outbreak of the endozoötic type, that would very likely pass unnoticed and might not cause any human cases. Under the circumstances described above what would be the chance of detecting the presence of infection on a ship?

On the motion of Lady AMPTHILL, seconded by Sir WILLIAM CHURCH, it was resolved that the cheques for the grants should be posted on Monday, Dec. 19th, except in the case of grants for the reservation of beds at consumption sanatoria during 1922, the cheques for which should be posted on Jan. 2nd.

The chairman of the King's Fund Policy Committee (Lord STUART OF WORTLEY), presented a report of that committee on the action taken by the King's Fund as Voluntary Hospitals Committee for London.

Viscount FINLAY then read letters from the King and from the Prince of Wales, expressing their interest in the efforts which were being made to re-establish voluntary hospital finance, and resolutions were passed with the object of re-organising the Fund on a basis better suited to deal with its new tasks. Among the aims of the Fund under the new organisation will be the establishment of a system of contributions from industrial sources and the raising from the general public of the large amount of fresh money which is required on the pound for pound principle to meet the conditions attached to the treasury grants. The following form the President's Powers Committee :—

General Council.—All the present members and the following new members : Col. Mildmay, Sir Cuthbert Wallace, and Major Wernher.

Management Committee.—Lord Stuart of Wortley, Chairman ; Lord Somerleyton, Vice-Chairman ; and the Chairmen of the other committees.

Finance Committee.—Lord Revelstoke, Chairman, Hon. N. Charles Rothschild, Hon. Algernon H. Mills, Sir John Craggs, Mr. Robert Fleming, Mr. M. C. Norman.

Distribution Committee.—Sir Cooper Perry, Chairman, Lord Somerleyton, Sir Francis H. Champneys, Bt., Sir J. Rose Bradford, Sir Cuthbert Wallace, Sir Frederick M. Fry, Sir Frederick Green, Mr. Yvon R. Eccles.

Revenue Committee.—Sir Alan G. Anderson, Chairman, Viscount Burnham, Lord Marshall, Hon. Sir Arthur Stanley, Col. Rt. Hon. Frank Mildmay, M.P., Sir William H. Bennett, Sir William J. Collins, Sir George Lawson Johnston, Sir Edward Penton, Prof. Winifred C. Cullis, Mr. Stuart de la Rue, Major Harold Wernher.

Hospital Economy Committee.—Mr. Leonard L. Cohen, Chairman, Hon. Oswald Partington, Lady Hall, Sir George Makins, Sir Owen Philipps, M.P., Sir James Kingston Fowler, Sir Basil E. Mayhew, Sir Walter Trower, Mr. John G. Griffiths, Dr. H. Morley Fletcher, Mr. Henry L. Hopkinson, Mr. Kenneth Prescott.

Subsequent to the meeting of the King's Hospital Fund a meeting of the League of Mercy was held at St. James's Palace on Dec. 19th, under the presidency of Princess Alice, Countess of Athlone, when it was stated that the actual amount collected by the League during the year was £34,000.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Sterile Marriages and Examination of Spermal Fluid.

Dr. Achimescu has recently cautioned gynæcologists against the treatment of sterility on the assumption that the condition is always due to the woman. In every case, he believes, the husband should be questioned, and careful examination for spermatozoa should be made several times, at fairly long intervals, between which the subject should abstain from intercourse ; it is well known that a temporary azoöspermia occurs after repeated coitus. Dr. Achimescu has notes of 483 cases of sterility, in 58 of which he found absence of spermatozoa. In 19 of these cases the wives had been under treatment. Furthermore, he found in 37 instances persistent oligospermia, and in 13 instances necrospermia.

Indications for Surgical Sterilisation of Women.

Dr. Panuihescu, surgeon at the Bucharest University clinic, states that the performance of an operation which will render a woman sterile for life is never justifiable except to avoid a dangerous pregnancy, and that a condition that justifies abortion may not justify female castration. A contracted pelvis should not be considered an absolute indication for sterilisation, since with modern technique Cæsarean section has become a comparatively safe operation. Chronic nephritis may be considered an indication ; psychic and nervous conditions are a doubtful indication: insanity may be curable, and if it be severe asylum segregation would render sterilisation needless. In tuberculosis of the lungs abortion should be induced if there is hope for a cure ; in hopeless cases sterilisation is justifiable to avoid the strain of bearing and nursing a child. The most satisfactory method of operation is to remove the entire tube and close the superior angle of the uterus—the procedure advised by Chrobak at Vienna.

Consent to Operation.

Recent legal proceedings involving the question of consent to operation have attracted considerable attention in Roumanian medical and lay papers. One medical writer, in a careful review of the subject, states that the physician finds that he must in all cases either keep within the strict scope of the authority expressly given to him, or must so safeguard himself that he can prove by the testimony of reliable witnesses that he was asked to perform what operation he might find necessary, and that the operation actually performed was, in fact, necessary or desirable. There is some confusion as to the person from whom consent must be obtained ; it is, however, laid down as a general rule that this person is the husband in the case of an operation upon the wife, whilst for operations on children consent must be obtained from the parents, guardians, or other persons legally responsible for the care of the child.

Diarrhœa in Albania.

There is an alarming increase of gastro-intestinal disorders in Albania ; thousands of working men are unemployed, and are compelled to live on a semi-starvation diet. The sanitary conditions of the bakeries are very unsatisfactory ; the bread is bitter and made of inferior flour (maize) in a primitive manner. Another great source of gastro-intestinal disease is the enormous consumption of decayed vegetables, raw or in a half-cooked condition.

Measles Epidemic in Bessarabia.

Since the outbreak of measles three weeks ago the disease has spread rapidly ; its dissemination is held by health officials to be due to negligence on the part of parents in not calling in a physician to see that the affected children are properly isolated. The epidemic is most severe in the Kishinev district ; in that city all school-houses have been disinfected, and in addition the Bureau of Public Sanitation has disinfected the homes of many children. Last week 156 cases were reported to the district medical officer. The cases are all very mild, and recovery takes place almost without complication ; no fatal case has yet been reported.

"Club Rates" for Medical Services.

In a large town, Figulmares, a private sick club has attempted to exploit the medical men by underpaying them and by admitting members without regard to their financial status, so that wealthy families, who could easily pay regular medical fees, availed themselves of this form of cheap medical service. The local medical union has adopted a resolution to the effect that on and after Jan. 1st, 1922, no member of the union shall accept a post under the sick club, or continue to work at a rate less than the regular charges for services to patients not members of that club ; also that no physician shall attend families of the members of this club at a fee lower than the regular rate. Nothing in this resolution is to be construed as preventing any member from attending the worthy poor at a less rate, or giving free service to those who are too poor to pay anything. Any violation of this order will be considered unprofessional conduct, and it will be the duty of the censors to expel such members from the union, if proof of such conduct be presented to them.

Bucharest, Dec. 1st.

4. The worker should be allowed the opportunity of studying the respective authors' own methods in the respective institutes.

5. The places where the tests are to be carried out should be efficiently equipped, and the serologist should be in as close touch with the clinician as possible.

6. For the flocculation tests the serologist should use only those extracts prepared or controlled by their respective authors.

7. The samples of serum to be tested should be known only by numbers, and the serologist should not have access to the clinical or pathological records until the whole series of tests is concluded, but the chief of the laboratory may cause any serum to be retested without making the serologist aware of the fact.

8. A preliminary report to be submitted after the first 500 tests have been concluded.

9. All reports on tests should include information as to—

(a) Reliability of the method,
(b) Complexity of technique,
(c) Relative consumption of time by the method,
(d) Expense,
(e) Ease and accuracy with which the reaction can be observed,
(f) Percentage of dubious results,
(g) The extent to which the method yields quantitative results.

It is recommended that all the results should be finally submitted to the State Institute for Seropathy of Copenhagen.

A LUNCHEON TO THE DELEGATES.

On Wednesday Sir ALFRED MOND, the Minister of Health, presided at a luncheon given by the Government to the delegates to the Conference. The luncheon was held at the Carlton Hotel and the guests were grouped at separate tables, the occasion being a purely social one, at which the great work being done by the Health Committee of the League of Nations could be publicly recognised. There were but two speeches, one by the Minister of Health welcoming the company, and the other a reply by Prof. Madsen, the President of the Health Committee.

Sir ALFRED MOND said that he was particularly glad that the delegates to discuss matters of international health had not been drawn exclusively from the countries within the League of Nations, although the Conference was being held under the auspices of that League. He spoke eloquently of the part which medicine would necessarily play in the great work of reconstruction before the world.

Dr. MADSEN, in reply, disclosed certain of the conclusions which had been arrived at by the sub-committees, and considered that the results of the first conference had been very successful. Unanimous agreements had been arrived at with regard to certain important therapeutic sera, and machinery had been indicated by which comparative results could be obtained for further study. He made special reference to the valuable assistance which had been given by the British Ministry of Health to the work of the Health Committee of the League of Nations in placing at the disposal of the committee the services of the senior medical officer Dr. G. S. Buchanan as adviser, Dr. F. Norman White as chief epidemic commissioner, and Dr. E. J. Steegmann as secretary. Dr. Steegmann's appointment was a temporary one, and he has since been succeeded by Dr. Rajchman. Dr. Madsen also referred to the invaluable aid rendered in reference to the particular work in hand by the Medical Research Council. He spoke in fluent English.

The following guests were present:—

Sir T. Clifford Allbutt, Sir F. Andrewes.
Sir P. W. Bassett-Smith, Surgeon-General Rupert Blue, Sir A. Bowlby, Mr. L. G. Brock, Dr. G. S. Buchanan.
Sir Mackenzie Chalmers, Major-General Sir Havelock Charles, Dr. S. A. M. Copeman, Dr. Cotoni. Dr. F. J. H. Coutts.
Dr. H. H. Dale, Mr. J. Conway Davies, Lord Dawson of Penn, Prof. H. R. Dean, Dr. R. Doerr, Dr. Dopter, Captain S. R. Douglas, Prof. G. Dreyer.
Dr. A. Eastwood, Mr. F. W. Emett.
Sir Walter Fletcher.
Dr. M. H. Gordon, Mr. B. Gosio.
Dr. W. H. Hamer, Colonel L. W. Harrison, Dr. L. Hirszfeld.
Viscount Knutsford, Dr. W. Kolle.
Major-General Sir W. Leishman.
Dr. T. Madsen, Prof. C. J. Martin, Dr. Louis Martin, Dr. M. Miyajima, Sir Norman Moore, Dr. R. Mueller.
Sir George Newman, Colonel Perrin Norris.
Mr. R. A. O'Brien.
Dr. L. Rajchman, Dr. G. Renaux, Sir William A. Robinson.
Mr. H. Sachs, Prof. C. S. Sherrington, Sir Squire Sprigge, Colonel P. G. Stock.
Mr. Douglas Veale.
Dr. F. Norman White, Sir Dawson Williams, Sir G. Sims Woodhead.

It is understood that the Conference will meet again in six months' time, probably at the Pasteur Institute in Paris, to report progress and arrive at further recommendations for the organisation of international health matters. In the meantime the work of the sub-committees goes on.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the General Council of King Edward's Hospital Fund for London for the purpose of awarding grants was held on Dec. 14th, Viscount FINLAY (Member of the President's Powers Committee) being in the chair.

Lord REVELSTOKE, hon. treasurer, said that the amount received for general purposes to Dec. 3rd, 1921, was £221,326. This exceeded the total indicated in the estimate laid before the Council in November, the increase being due to the generous action of King George's Fund for Sailors in again providing the amount of the grant of £5000 to the Seamen's (Dreadnought) Hospital. The legacies received during the last 11 months amounted to £74,000, as against £18,000 in 1920, and the Council had decided to distribute a portion of these additional receipts, and to keep a portion in reserve, thus effecting a reasonable compromise between an endeavour to afford every possible assistance to the hospitals during this year, and an equal desire to maintain a regular distribution as a stabilising influence and element in their finance.

Lord REVELSTOKE then read the following communication from Lady Mount Stephen:—

"I have been allowed to tell you by the executors that my husband has left the residue of his fortune to King Edward's Hospital Fund. It is, I believe, practically nearly the whole of his fortune, for the legacies, &c., in proportion do not amount to anything of importance. Would you, as Treasurer of the King's Fund, make this known to the Council?"

Viscount FINLAY moved a resolution recording the deep regret of the General Council of the Fund at the death of Lord Mount Stephen, to whose benefactions the Fund and the sick poor of London owed so much. His gifts to the capital of the Fund during his lifetime amounted to some £500,000.

The resolution was seconded by the Governor of the Bank of England, put from the chair, and carried unanimously.

Sir WILLIAM COLLINS, in making the annual statement on behalf of the League of Mercy, said that so far as he could say the League would be in a position to make a contribution of £14,000, possibly more, making a total from its foundation of £323,034 to the voluntary hospitals of London through the King Edward's Fund, and, including extra Metropolitan hospitals, £360,429. The new scheme, originally suggested by Lady Hall, for collections from people in domestic service, had already brought in £200 or £300 during the current year, and they hoped great things of it.

Report of the Distribution Committee.

Sir COOPER PERRY (the chairman of the Distribution Committee) presented the report of that committee, which announced that the amount placed at the disposal of the Distribution Committee for allocation amongst hospitals at the present distribution was £210,000. The amount distributed last year at the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING NOVEMBER, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Enumerated population, 1921 (unrevised).	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	*Other continued fevers.*	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,476,238	38	—	—	4730	2221	272	3	12	6	34	7316	17·0	9	—	43	35	40	165	135	427	1·0	6450	15·0
West:																								
Paddington ...	144,273	3	—	—	116	76	10	—	—	1	3	209	15·1	1	—	—	1	1	8	6	17	1·2	196	14·2
Kensington... ...	175,686	7	—	—	114	37	7	—	—	—	—	165	9·8	2	—	—	—	—	—	8	10	0·6	297	17·6
Hammersmith ...	130,287	—	—	—	182	72	8	—	—	—	—	262	21·0	1	—	—	3	—	—	2	6	0·5	181	14·5
Fulham	157,944	1	—	—	147	87	7	—	—	—	—	242	16·0	—	—	1	4	1	5	3	14	0·9	216	14·3
Chelsea	63,700	3	—	—	40	13	2	—	2	—	1	61	10·0	—	—	—	—	—	2	1	3	0·5	105	17·2
City of Westmin'r	138,402	—	—	—	104	26	1	—	1	—	1	133	10·0	—	—	—	2	—	—	1	3	0·2	187	14·1
North:																								
St. Marylebone...	104,222	1	—	—	72	32	4	—	—	—	—	109	10·9	—	—	—	1	—	3	6	10	1·0	152	15·3
Hampstead ...	86,080	1	—	—	50	90	4	—	—	—	—	145	17·6	—	—	—	—	1	7	1	9	1·1	107	13·0
St. Pancras... ...	210,986	3	—	—	287	124	14	1	1	—	2	432	21·4	—	—	9	1	1	9	5	25	1·2	332	16·4
Islington	330,028	2	—	—	450	186	15	—	—	1	—	654	20·7	—	—	1	2	1	11	15	30	0·9	517	16·3
Stoke Newington	52,167	—	—	—	56	31	1	—	—	—	—	88	17·6	—	—	—	—	—	4	1	5	1·0	73	14·6
Hackney	222,159	1	—	—	228	83	10	—	—	—	2	324	15·2	—	—	—	2	1	2	10	15	0·7	318	14·9
Central:																								
Holborn	42,796	—	—	—	36	18	2	—	—	—	1	57	13·9	—	—	—	—	—	—	2	2	0·5	72	17·5
Finsbury	76,019	—	—	—	71	43	12	—	—	—	—	126	17·3	—	—	—	1	—	4	3	8	1·1	140	19·2
City of London...	13,706	—	—	—	11	2	2	—	—	—	—	15	11·4	—	—	—	—	—	—	—	—	—	21	16·0
East:																								
Shoreditch... ...	104,308	—	—	—	92	59	10	—	1	—	1	163	16·3	1	—	—	—	1	4	7	13	1·3	189	18·9
Bethnal Green...	117,238	—	—	—	87	46	12	—	1	—	2	148	13·2	—	—	2	—	1	4	8	15	1·3	174	15·5
Stepney	249,738	1	—	—	127	189	17	—	—	—	4	338	14·1	—	—	4	—	3	23	9	39	1·6	400	16·7
Poplar	162,618	—	—	—	170	73	16	—	—	—	1	250	16·7	—	—	14	2	5	9	2	32	2·1	256	16·4
South:																								
Southwark... ...	184,388	3	—	—	168	73	20	—	3	1	5	273	15·4	—	—	3	3	1	2	4	13	0·7	281	15·9
Bermondsey ...	119,455	1	—	—	102	131	5	—	—	—	—	239	20·9	—	—	1	1	4	8	8	22	1·9	197	17·2
Lambeth	302,960	—	—	—	319	85	22	—	2	—	2	430	14·8	—	—	5	3	5	7	8	28	1·0	413	14·2
Battersea	167,693	1	—	—	286	112	9	1	—	—	2	411	25·6	—	—	—	1	4	8	4	17	1·1	200	12·4
Wandsworth ...	328,656	4	—	—	325	91	13	1	1	—	2	437	13·9	—	—	1	3	2	5	4	15	0·5	406	12·9
Camberwell ...	267,235	2	—	—	300	110	15	—	—	1	2	430	16·8	3	—	—	1	3	9	3	19	0·7	334	13·0
Deptford	112,500	—	—	—	168	33	5	—	—	—	—	206	19·1	—	—	—	—	1	1	—	2	0·2	150	13·9
Greenwich... ...	100,493	3	—	—	199	116	12	—	—	—	1	331	34·4	—	—	1	—	1	9	7	18	1·9	144	14·9
Lewisham	174,194	1	—	—	229	81	8	—	—	1	—	320	19·2	1	—	—	3	1	4	2	11	0·7	198	11·9
Woolwich	136,307	—	—	—	194	102	9	—	—	1	2	308	23·6	—	—	1	1	2	17	5	26	2·0	194	14·8

* Including membranous croup.

Battersea, 12·9 in Wandsworth, and 13·0 in Hampstead and in Camberwell, to 17·2 in Chelsea and in Bermondsey, 17·5 in Holborn, 17·6 in Kensington, 18·9 in Shoreditch, and 19·2 in Finsbury. The 6450 deaths from all causes included 427 which were referred to the principal infectious diseases; of these, 9 deaths resulted from enteric fever, 43 from measles, 35 from scarlet fever, 40 from whooping-cough, 165 from diphtheria, and 135 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Hammersmith, Chelsea, the City of Westminster, Holborn, Wandsworth, and Deptford; and the highest in Stepney, Poplar, Bermondsey, Greenwich, and Woolwich. The 9 fatal cases of enteric fever exceeded the average in the corresponding period of the five preceding years by 3; of these, 3 belonged to Camberwell and 2 to Kensington. The 43 deaths from measles were 22 fewer than the average; of these, 14 belonged to Poplar, 9 to St. Pancras, 5 to Lambeth, 4 to Stepney, and 3 to Southwark. The 35 fatal cases of scarlet fever were 20 in excess of the average; of these, 4 belonged to Fulham, and 3 to each of the boroughs of Hammersmith, Southwark, Lambeth, Wandsworth, and Lewisham. The 40 deaths from whooping-cough were 14 greater than the average; of these, 5 belonged to Poplar, 5 to Lambeth, 4 to Bermondsey, 4 to Battersea, 3 to Stepney, and 3 to Camberwell. The 165 fatal cases of diphtheria exceeded the average by 78; this disease was proportionally most fatal in Hampstead, Stoke Newington, Stepney, Greenwich, and Woolwich. The 135 deaths from infantile diarrhœa were 16 in excess of the average; the greatest proportional mortality from this disease occurred in St. Marylebone, Shoreditch, Bethnal Green, Bermondsey, and Greenwich. The aggregate mortality in London during November from these principal infectious diseases was 31 per cent. above the average.

The deaths from influenza registered in London during the five weeks ended Dec. 3rd numbered 91, against 9, 21, and 40 in the three preceding months, and 90, 31, 8676, 97, and 67 in the corresponding periods of the five preceding years.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgn. Lieut. C. M. Williams has been promoted to the rank of Surgn. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt.-Col. M. H. G. Fell, C.B., C.M.G., is restored to the establishment.

Capt. E. G. S. Cane, D.S.O., relinquishes the temp. rank of Maj.

Temp. Capt. S. P. Snook relinquishes his commn. and retains the rank of Capt.

Temp. Capt. E. C. A. Smith relinquishes his commn. on appt. to the Ind. Med. Service.

TERRITORIAL ARMY.

Lt.-Col. (Bt. Col.) J. R. Kaye, having attained the age limit, is retired and retains his rank.

The undermentioned officers, having attained the age limit, are retired and retain their rank except where otherwise stated: *Lt.-Cols. E. M. Callender and J. Allison (with permission to wear their prescribed uniform), and P. C. Smith.* Majs. A. MacGillivray, J. Wilson, and W. W. Jones (with permission to wear their prescribed uniform), and A. Robertson. Capts. A. Baxter (granted the rank of Lt.-Col.), A. N. S. Carmichael, J. Wood, D. G. Kennard, and A. E. Ridsdale (granted the rank of Maj.), and R. A. Burditt, H. A. Beetham, H. W. Lance, J. S. Clarke, and F. G. Vicars.

Maj. R. C. Highet (Lt.-Col., ret., T.F.) reverts to the retired list and retains his rank, with permission to wear the prescribed uniform.

Officers relinquishing their commissions and retaining their ranks: Capts. P. H. G. Gosse, C. G. Brentnall, A. L. Bodley, J. Graham (granted the rank of Maj.), J. W. M. Jamieson, A. W. Sutherland.

1st Lond. (C. of L.) San. Co.: Lt. E. V. Suckling relinquishes his commission and retains his rank.

4th N. Genl. Hosp.: Maj. D. J. G. Watkins, having attained the age limit, is retired and retains the rank of Maj.

St. Thomas's Hospital (£1000 of the grant to improvements)	£11,000
Samaritan Free Hospital for Women	1650
Santa Claus Home	55
South-Eastern Hospital for Children, Sydenham	325
South London Hospital for Women	1650
Stoke Newington Home Hospital for Women (£250 of the grant to improvements to nurses' accommodation, in accordance with the scheme submitted to the Fund)	300
University College Hospital	6500
Victoria Hospital for Children (£600 of the grant to recent extension of out-patient department and resident medical officers' quarters)	3000
Walthamstow, Wanstead and Leyton Children's and General Hospital	650
West End Hospital for Nervous Diseases (£250 of the grant to improvements to nurses' accommodation)	1200
Western Ophthalmic Hospital	225
West London Hospital	4700
Westminster Hospital (£300 last annual grant to loss on acquisition of new site as agreed, and £1000 to improvement of existing hospital, in accordance with the scheme submitted to the Fund)	6050
Willesden Hospital (£500 of the grant to extension as general hospital, in accordance with scheme to be submitted to the Fund)	1225
Wimbledon Hospital (£250 of the grant to new nurses' home, in accordance with the scheme submitted to the Fund)	425
Winifred House Invalid Children's Convalescent Hospital Home	25
Woolwich and Plumstead Cottage Hospital (see special grant below)	25
	£208,500

Special Grant.—Woolwich and District War Memorial Hospital Building Fund (to provision of general hospital, in accordance with the scheme submitted to the King's Fund) £1500

Summary.

Grants	£208,500
Special Grant	£1,500
Total grants to hospitals for the year 1921	£210,000

Mr. WHITTALL having seconded, the motion was carried unanimously.

Report of Convalescent Homes Committee.

Sir WILLIAM H. BENNETT (Chairman of the Convalescent Homes Committee) presented the report, which stated that the sum available for distribution amongst convalescent homes and consumption sanatoria was £10,000, the same amount as in 1920. The number of applications eligible for consideration amounted to 59 from convalescent homes and 10 from consumption sanatoria, as against 51 and 11 respectively last year.

The committee recommended that part of the amount available should be distributed in the form of grants to consumption sanatoria in consideration of the reservation of beds for the use of patients in London hospitals allocated as follows:—

Chest hospitals: 8 beds to the City of London Hospital for Diseases of the Chest; and 4 beds to the Royal Chest Hospital branch of the Royal Northern Hospital.

General hospitals: 2 beds to Charing Cross Hospital; 5 beds to Guy's Hospital; 2 beds to King's College Hospital; 7 beds to the London Hospital; 3 beds to the Middlesex Hospital; 2 beds to the Royal Free Hospital; 2 beds to St. George's Hospital; 1 bed to St. Mary's Hospital; 5 beds to St. Thomas's Hospital; 2 beds to University College Hospital; and 1 bed to Westminster Hospital.

For several years past the committee have recognised that the treatment of tuberculosis has been more and more regarded as coming within the scope of the public health authorities, either directly or as part of the National Insurance Scheme; and the committee have anticipated that a time would come when the Council might no longer feel justified in devoting part of its annual distribution to the provision of accommodation for London patients out of voluntary funds. The greatly increased needs of the London hospitals for maintenance grants have brought this question to a head rather earlier than the committee would have desired, but they feel that they have no option but to recommend that the practice of making grants to consumption sanatoria in consideration of the reservation of beds for patients in London hospitals should be discontinued after the present distribution.

List of Grants Recommended to Consumption Sanatoria and Convalescent Homes.

Sir ALAN ANDERSON (hon. sec.) proposed the list of awards, which were seconded by Sir JAMES KINGSTON FOWLER and carried, as follows:—

Children's Sanatorium, Holt, Norfolk (in consideration of the reservation of 10 children's beds during 1922 for the use of certain London hospitals)	£780
Daneswood Sanatorium, Jewish, Woburn Sands (in consideration of the reservation of two beds during 1922 for the use of certain London hospitals)	270
Devon and Cornwall Sanatorium, Didworthy, South Brent (£1080 of the grant in consideration of the reservation of eight beds during 1922 for the use of certain London hospitals)	1130
Eversfield Chest Hospital, St. Leonards	25
Fairlight Sanatorium, Hastings	25
Kelling Sanatorium, Holt, Norfolk (£540 of the grant in consideration of the reservation of four beds during 1922 for the use of certain London hospitals)	640
Mount Vernon Hospital, Northwood	100
National Association for the Establishment and Maintenance of Sanatoria for Workers, Benenden, Kent (£150 of the grant to mortgage debt and £1620 in consideration of the reservation of 12 beds during 1922 for the use of certain London hospitals)	1870
Northamptonshire Sanatorium, Creaton, Northants (£1080 of the grant in consideration of the reservation of eight beds during 1922 for the use of certain London hospitals)	1130
Royal National Hospital for Consumption, Ventnor	100

All Saints' Convalescent Home, St. Leonards	25
Beau Site Convalescent Home, Hastings	25
Brentwood Convalescent Home for London Children	25
Brooklands Home (Invalid Children's Aid Association), Worthing	25
Bushey and Bushey Heath Children's Convalescent Home	50
Chelsea Hospital for Women, St. Leonards (with a view to encouraging the admission of patients direct from the hospital)	100
Children's Convalescent Home, Beaconsfield	25
Children's Cottage Hospital, Cold Ash, Newbury*	25
Children's Home Hospital, Barnet*	25
City of London Hosp. for Diseases of Chest, Saunderton	50
Clevedon Sanatorium (Invalid Children's Aid Association), Broadstairs	25
Convalescent Home for Poor Children, St. Leonards	150
Convalescent Police Seaside Home, Hove	75
E. G. Anderson Hospital (Home of Recovery), Barnet	200
East London Hospital for Children, Bognor	50
Florence Emma Home (Invalid Children's Aid Association), Dover	25
Friendly Societies' Convalescent Homes, Dover and Herne Bay	50
Great Northern Central Hospital, Clacton	150
Great Northern Central Hospital, Southgate	250
Highgate Convalescent Home for Children, Highgate	50
Jewish Convalescent Home (Children), Brighton	75
King's College Hospital, Hemel Hempstead (the grant is made on condition that patients are admitted direct from the hospital)	120
London and Ascot Priory Convalescent Home, Bracknell	25
London and Brighton Female Convalescent Home, Brighton	25
London Hospital, Reigate	100
Metropolitan Convalescent Institution, Bexhill	25
Metropolitan Convalescent Institution (Children), Broadstairs	100
Metropolitan Convalescent Institution, Walton	100
Middlesex Hospital, Clacton-on-Sea	350
Miller Hospital, Bexhill	100
National Hospital for the Paralysed and Epileptic, East Finchley	125
Paddington Green Children's Hospital, Slough	100
Poplar Hospital, Walton-on-Naze	50
Prince of Wales's Hospital, Nazeing	25
Queen Charlotte's Lying-in Hospital, Kilburn	50
Queen's Hospital for Children, Bexhill	75
Royal Waterloo Hospital for Children and Women, Whippingham	75
St. Andrew's Convalescent Home, Folkestone	100
St. Andrew's Convalescent Hospital, Clewer	50
St. George's Hospital, Wimbledon	200
St. John's Home, Kemp Town (Brighton)	50
St. Luke's Home (Children), Woodley (Reading)*	25
St. Mary's Convalescent Home, Birchington	50
St. Mary's Home for Children, Broadstairs*	75
St. Michael's Convalescent Home, Westgate	25
St. Peter's Holiday House, St. Leonards	15
Samaritan Free Hospital, Amersham	75
Seaside Convalescent Hospital, Seaford	50
Sunday School Union Convalescent Home, Bournemouth	25
Sunshine Home, Hurstpierpoint	25
Surgical Home for Boys, Banstead*	15
Tilford Convalescent Home for Children, Farnham	15
Victoria Home for Invalid Children, Margate*	15
Victoria Hospital for Children, Broadstairs	200

Summary.

Grants to Consumption Sanatoria	6070
Grants to Convalescent Homes	3930
Total grants for the year 1921	£10,000

* In consideration of convalescent cases.

Correspondence.

"Audi alteram partem."

THE ÆTIOLOGY OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—In his book on Adenoids Dr. Macleod Yearsley says that "adenoids are most prevalent in damp, cold countries," and to emphasise the fact puts this quotation in italics. Similarly, such an authority as Sir StClair Thomson says "there can be no doubt that adenoids are very much more frequent in temperate, cold, damp climates like our own." With the statistics and observations which have led laryngologists to this conclusion I need not deal. My observations simply correspond with them on this point. My special plea with regard to climate and adenoids was merely that we should not deliberately impose a cold and damp atmosphere on children, *by making them sleep in bedrooms with the windows* kept open in cold and damp weather. If we do, and then send them to the warm, germ-laden atmosphere of the schoolroom, we are only asking for trouble. To protect children from adverse climatic influences at night, and send them to something like open-air schools by day, would be acting more in accord with instinct, reason, and the dictates of evolution. Dr. Harry Campbell seems to admit that "damp predisposes to catarrh," but he says, "The climate of our country has been damp for thousands of years, but we have the evidence derived from disinterred skulls that it is only within comparatively recent years that adenoid disease has been common in this country." In this, again, I quite agree with him. Children were consistently protected from adverse climatic conditions, especially at night, until the end of last century and the beginning of this, and the great prevalence of adenoids appears to synchronise exactly with the deliberate abandonment of this precaution. Instead of the three cases recorded by Mr. W. Rushton being exceptional, they but illustrate what was going on all over the country. "The peculiar nature of the British diet" does not seem to account for the facts. Take, for example, the statistics of Gradenigo and Massei in Italy. Gradenigo, in his clinic at Turin (a subalpine climate), found on the *average one case in three*, while Massei, in Naples (a warm and genial climate), found only five cases in 15 years.—I am, Sir, yours faithfully,

Harley-street, W., Dec. 10th, 1921. J. SIM WALLACE.

To the Editor of THE LANCET.

SIR,—I note that Dr. Harry Campbell, whilst ascribing the frequency of adenoids to faulty gastric and intestinal digestion, the result of insufficiently masticated starchy food, admits that the food factor is not the only one in the causation of the disease. My contention is that if food plays any part at all in the ætiology of the disease it is a very slight one indeed and only of secondary nature. Dr. Campbell admits I am right in attributing to oft-repeated colds much of the active causation of adenoids, but when he seeks to attribute these colds to the status catarrhalis I think he is confusing cause with effect.

Against Dr. Campbell's dietetic theory I would like to advance the following:—

1. Adenoids are not peculiar to the British race. They are common in wet and damp localities—e.g., in the north of Italy. Meyer showed the Hebrew race to be especially affected. They occur in the Arctic circle amongst the Esquimaux and in the Malays on the Equator. They constitute no new disease. Meyer and Semon drew attention to the busts of antiquity and pictures of the Renaissance where the "adenoid facies" is frequently seen. And Hippocrates clearly referred to the condition.

2. Like Dr. Stewart Low, I have operated for the removal of adenoids on a large number of breast-fed children. In those cases attended by mouth-breathing it has only been necessary for the patient to wear a chin-strap at night for a fortnight and, if old enough, to carry out daily a graduated exercise for the catarrh to disappear, the tendency to catch cold to be markedly reduced, and for natural nasal breathing to replace the bad habit. It is true that gastric and intestinal catarrh is common in children the subjects of adenoids, but I am strongly of opinion that this is due in the main to direct extension from the naso-pharynx, and, to a lesser degree, to the swallowing of infected mucus. I have repeatedly come across cases of catarrhal jaundice in children with adenoids. And after removing the adenoid vegetations I have not known the jaundice to return.

3. The striking improvement in the general health which follows the curetting of the affected lymphatic surfaces in children with adenoids is also noticeable after local non-operative treatment to the nose and throat. With reference to unhealthy tonsils, I can fully endorse the experience of Mr. F. Stoker, as recounted in this month's issue of the *Practitioner*, with respect to infected tonsils. It is almost an everyday occurrence in my practice to note the great benefit a patient derives from the forcible evacuation of tonsillar crypts by pressure.

The cause of adenoids is repeated cold-catching *and the acquirement in youth of immunity from the* exanthemata. Why colds are of such frequent occurrence is a subject which largely concerns the skin and the subcutaneous vaso-motor reflexes, not digestion.—I am, Sir, yours faithfully,

HARRY MERRALL.

St. Anne's-on-the-Sea, Dec. 13th, 1921.

SOME HEART PROBLEMS.

To the Editor of THE LANCET.

SIR,—*In his address upon this subject*, appearing in your issue of Dec. 10th, Prof. E. H. Starling refers to the importance of the "limits set by the indistensible pericardium." I conclude from this that Prof. Starling considers one function of the pericardium to be that of a guardian of the heart, a protector against over-dilatation.

It does not seem to me that the pericardium possesses this power in the human subject. I have not the details of a few observations made in the post-mortem room at hand, but several years ago, *after tying all the vessels leaving or entering the* heart, outside the unopened pericardium, a glass tube was passed through the vena cava and another through a pulmonary vein, by means of which all the cavities of the heart were distended with water at a pressure of a column of about 3 *feet in height.* After thus filling all the cavities of the heart, it was ascertained how much water could still be held between the distended heart and the pericardium. With one exception there was sufficient room for the pericardium to hold water, although all four cavities of the heart were distended to their full extent. And it must be remembered that in life all four cavities of the heart could not be fully distended at the same time. The pericardium could only exert the power of restraining dilatation of the heart if it were to fit the ventricles closely in diastole, while the auricles were in systole. These observations were made on cases in which death had occurred from various diseases, such as typhoid fever, pneumonia, and also of some cases of cardiac disease.

The theory was once advanced that the remarkably rapid enlargement of the heart, which not uncommonly occurs in rheumatic pericarditis, could be explained by softening of the inflamed pericardium allowing dilatation of the heart. There are, however, two reasons why this theory cannot be accepted. In the first *place, in more severe non-rheumatic forms* of pericarditis—e.g., suppurative—there need be no dilatation of the heart. That is to say, the more severe forms of inflammation of the pericardium do not lead to softening of the pericardium, allowing dilatation of the heart. In the second place, the rapid enlargement

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

BIRKENHEAD.

ESTIMATED population for the year 1920, 153,951; birth-rate, 27·4; death-rate, 13·2; infant mortality rate, 102; death-rate from pulmonary tuberculosis, 0·76; and from other forms of tuberculosis, 0·37. Dr. D. Morley Mathieson gives a valuable table showing separately the death-rates from tuberculosis among males, females, and children under 5, for 10 years back. Such an analysis reveals the nature of the local problem, and should be given in every annual health report. As is usual in the case of seaports, where there is shipbuilding and much outdoor male occupation, the male death-rate is not much higher than the female. Dr. Mathieson tells us that the Birkenhead Corporation have agreed to use the county farm-colony at Wrenbury Hall, and that conferences have been held with neighbouring towns with a view to utilising more extensively the Leasowe Hospital for surgical tuberculosis. Out of 32 cases of ophthalmia neonatorum notified, one child lost an eye, and it has now been decided to supply practising midwives with a non-toxic preparation of silver nitrate. The provision of a municipal maternity hospital is under consideration. In his school report Dr. Mathieson states that a dental clinic has been established, and that a cleansing station, an open-air school, and X ray treatment for ringworm are needed. An interesting statement is given showing the results of inspection and treatment at the girls' secondary school. The percentage of defects found at the primary inspection in January, 74·5, was reduced to 14·5 at the third re-inspection in December.

RICHMOND (SURREY).

Estimated population for 1920, 35,572; birth-rate, 20·7; death-rate, 11·4; infant mortality rate, 57; tuberculosis death-rate, 0·9. Dr. C. W. Hutt (who has since become M.O.H. for Holborn) mentions that, in consequence of a letter from the President of the British Red Cross Society and the Order of St. John, arrangements have been made for the local voluntary aid detachment to take part in the maternity and child welfare scheme, adding that the experiment has been a marked success. The water-supply of Richmond is in part obtained from Petersham Well, which, since 1919, has been purified by chlorination. Pure chlorine gas is used, and is administered and measured by a Wallace-Tiernan plant. It is found with this water that a dose of chlorine as small as 1 part in 4,000,000 to 5,000,000 causes a degree of purification adequate for all practical purposes and superior to that obtained by open sand-filters. Dr. Hutt, in referring to a large camp which was held in the Old Deer Park last summer, recommends that in future the sanction of the Corporation for such camps be only given on condition that sanitary accommodation is provided.

WORCESTER.

Estimated population for 1920, 49,248; birth-rate, 23·2; death-rate, 13·01; tuberculosis death-rate, 1·06; infant mortality rate, 67. Dr. Mabyn Read says the efficiency of the public health service has been greatly increased by the appointment of Dr. Mary R. Mitchell to develop the maternity and child welfare work and to act as assistant tuberculosis officer, adding that Worcester stands sixth from best among the county boroughs for infant mortality rate. The fact that 37 of the 77 infant deaths occurred in the first month of life is evidence of the need for antenatal work. The local authority paid £31 13s. in fees to midwives for attendance on necessitous cases, and also spent £65 19s. on providing home-helps for 55 cases. £175 was spent on dental treatment for expectant and nursing mothers, £17 of which amount was received from the patients. Cases of ophthalmia neonatorum are treated at the ophthalmic hospital for one guinea per case, and collosol argentum has been supplied to midwives since October. The antenatal clinic is making good progress, and Dr. Read thinks the £185 spent on dinners for necessitous expectant and nursing mothers has been of great benefit in enabling the mothers to suckle their babies. Dr. Read expresses his gratitude to the voluntary workers who have helped to make the child welfare clinics successful, and mentions that new premises for the work are badly needed. The general housing conditions in the city, he states in conclusion, have not greatly improved during 1920. As only 16 new houses have been completed and there have been 500 more births than deaths, we should imagine they have become worse.

VITAL STATISTICS OF LONDON DURING NOVEMBER, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. The enumerated population (unrevised) of the last census has been used for calculating the rates in the table, with a deduction of the non-civilian population in the City of Westminster and in the borough of Woolwich. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 17·0 per 1000 of the population, enumerated at 4,476,238 persons; in the three preceding months the rates had been 8·6, 14·1, and 19·5. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Kensington, Chelsea, the City of Westminster, St. Marylebone, the City of London, and Bethnal Green; and the highest in Hammersmith, St. Pancras, Islington, Bermondsey, Battersea, Greenwich, and Woolwich. The prevalence of enteric fever was about equal to that in the preceding month; of the 38 cases notified during the five weeks ended Dec. 3rd, 7 belonged to Kensington, 4 to Wandsworth, and 3 each to Paddington, Chelsea, St. Pancras, Southwark, and Greenwich. There were 20 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 32, 37, and 28 at the end of the three preceding months; the weekly admissions averaged 4, against 5, 7, and 4 in the three preceding months. The prevalence of scarlet fever showed a decline of 18 per cent. from the preceding month, but was higher than in any other month of the present or the preceding three years; this disease was proportionally most prevalent in Hammersmith, St. Pancras, Islington, Battersea, Deptford, Greenwich, and Woolwich. The Metropolitan Asylums Hospitals contained 5870 scarlet fever patients at the end of the month, against 3108, 4847, and 6154 at the end of the three preceding months; the weekly admissions averaged 802, against 407, 840, and 1000 in the three preceding months. Diphtheria showed a very slight fall in prevalence—about 1½ per cent.—from the preceding month, but was still higher than in any other month of the present year or the three preceding years; the greatest proportional prevalence of this disease occurred in Hampstead, Stepney, Bermondsey, Battersea, Greenwich, and Woolwich. The number of diphtheria patients under treatment in the metropolitan hospitals, which had been 1709, 2031, and 2777 at the end of the three preceding months, further rose to 3055 at the end of November; the weekly admissions averaged 416, against 209, 322, and 445 at the end of the three preceding months. Erysipelas was proportionally most prevalent in Finsbury, the City of London, Shoreditch, Bethnal Green, Poplar, Southwark, and Greenwich. The three cases of poliomyelitis belonged respectively to St. Pancras, Battersea, and Wandsworth; in the three preceding months the notified cases numbered 13, 10, and 5. Twelve cases of encephalitis lethargica were notified during November, against 5, 5, and 3 in the three preceding months; of these, 3 belonged to Southwark, 2 to Chelsea, and 2 to Lambeth. The notified cases of cerebro-spinal fever numbered 6, against 9, 5, and 3 in the three preceding months. The 34 cases of puerperal fever included 5 in Southwark, 4 in Stepney, and 3 in Paddington.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended Dec. 3rd, the deaths of 6450 London residents were registered, equal to an annual rate of 15·0 per 1000; in the three preceding months the rates had been 10·8, 11·0, and 11·4 per 1000. The death-rates ranged from 11·9 in Lewisham, 12·4 in

THE CARELLI METHOD OF PERIRENAL INFLATION.

To the Editor of THE LANCET.

SIR,—With regard to Dr. Carelli's visit to London, referred to in your annotation of Dec. 17th on Gas Inflation of the Peritoneum in Radiography, I think it right to say that we owe his coming to Dr. F. G. Crookshank, physician to the French Hospital. Dr. Crookshank attended a demonstration by Dr. Carelli at Delherm's Clinic in Paris, and persuaded him to come to London. Dr. Carelli not only described his methods and skiagrams at the Royal Society of Medicine, but gave a demonstration of his procedure upon the living subject in the X ray department at the French Hospital with his own inflation outfit. This is a simple apparatus, easy to duplicate. Apart from this, only the ordinary resources of the department were employed, and two excellent radiographs were obtained. Oxygen was used, not CO_2, as the latter was not available. This proved rather an advantage under the circumstances, as I was able to repeat the exposures more than an hour later in my own rooms. All the plates—which were exhibited at the Royal Society of Medicine—showed the adrenal body, and in some the vessels could also be seen.

That the patient suffered but little discomfort, and was able to move freely a few minutes after the inflation, can be testified to by several medical men who were present.

I am, Sir, yours faithfully,
F. HERNAMAN-JOHNSON, M.D.,
Director, X Ray and Elect. Service,
London, W., Dec. 17th, 1921. the French Hospital.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

An Irish Session.

PARLIAMENT reassembled on Wednesday, Dec. 14th, for a special session to consider the articles of agreement entered into between the British Cabinet and the Irish delegation of plenipotentiaries with regard to the future government of Southern Ireland as an Irish Free State. The session was opened by His Majesty in State, and the gracious speech from the Throne was exclusively confined to the Irish agreement. After debates in both Houses, which lasted three days, the agreement was ratified in the House of Lords by 166 votes to 47 and in the House of Commons by 401 votes to 58.

The session was prorogued on Monday, Dec. 19th, to Tuesday, Jan. 31st.

HOUSE OF COMMONS.

FRIDAY, DEC. 16TH.

Importation of Menthol.

Mr. NEWBOULD asked the President of the Board of Trade if he was satisfied that the procedure of his department in placing substances, such as menthol, amongst the commodities which were liable as fine chemicals to a duty of 33⅓ per cent., and afterwards attaching the letter R to the names of these substances, thereby exempting them from duty, was not calculated to create considerable confusion; and was he prepared to give an undertaking that no such action would be repeated without public inquiry, of which notices had been previously circulated in the public press, instead of in a weekly journal published by the Board of Trade, of whose existence few traders were aware.—Mr. STANLEY BALDWIN replied: Certain amendments have been made to the lists as originally issued under the Safeguarding of Industries Act, but all the amendments so far made restrict the scope of the original lists. It is obvious that in lists such as those in question it must be necessary to make some corrections, and I see no reason to modify the procedure adopted. I should add that I do not accept the statement at the end of the question as being correct.

Dr. MURRAY asked the President of the Board of Trade where his department obtained the menthol which they stated was purer than the ordinary imported menthol and which was the basis of the addition of the letter R in the Board of Trade list which defined the Key Industries Schedule; whether this menthol so obtained was a commercial article before objection was lodged to the inclusion of menthol in the list; and whether, in fact, it was a commercial article at all.—Mr. STANLEY BALDWIN replied: A re-crystallised menthol of substantially better quality than the Japanese menthol ordinarily imported has been prepared in Germany by a well-known firm and was listed as "Menthol pure in crystals" in their English catalogue as long ago as 1911. I am informed that during recent years at least one English firm has been re-crystallising menthol and selling small quantities.

Importation of Santonin, &c.

Dr. MURRAY asked the President of the Board of Trade whether, in view of the decision given by the Lord Chancellor's referee on Dec. 10th in respect of santonin and of the grounds given for that decision which affected by implication a large number of commodities contained in the list published by the Board of Trade under the Key Industries Schedule of the Safeguarding of Industries Act, he would be prepared to extend beyond Jan. 7th, 1922, the date up to which objections to the list might be lodged, at any rate until he had officially announced the scope of the action which he intended to take as a result of the decision given, especially as regards all those natural substances which were so closely related to santonin as to be governed by exactly the same principles—e.g., salicin, menthol, mannite, lactose, eserine, &c.—Mr. STANLEY BALDWIN replied: No, Sir. I am not prepared at present to undertake to extend the period during which complaints may be lodged which the Board must refer to the referee; but should the principles on which the decision mentioned was based be maintained the list will of course be revised accordingly, and I shall be prepared to consider at any time any representations which may be made to me in that regard.

Indian Opium Statistics.

Mr. GILBERT asked the Secretary for India what was the acreage in India now under cultivation with the opium poppy; how many chests of Indian opium were now exported annually; what were the destinations of this exported opium; and whether any and, if any, how much was converted into prepared opium for smoking.—Colonel GIBBS (Treasurer of the Household) replied: The total area under poppy cultivation in British India amounted to 156,435 acres in the year 1919–20. 9823 chests of opium were exported in that year. The countries which imported this opium were the Straits Settlements, Dutch East Indies, Siam, French Indo-China, Japan, United Kingdom, Hong-Kong, British North Borneo, Ceylon, Mauritius, and the Fiji Islands. I am not in a position to state how much of the raw opium exported from India to other countries is there converted into prepared opium for smoking.—Mr. BARNES: Can the hon. and gallant gentleman say if the Government are working in full harmony with the organisation under the League of Nations for the reduction or suppression of this trade?—Colonel GIBBS: I am not in a position to state that myself, but I will tell my right hon. friend what the right hon. gentleman says.—Mr. BARNES: Will the hon. and gallant gentleman make inquiries on the matter?—Colonel GIBBS: Yes, Sir.

Medical Stores for Russia.

Mr. ANEURIN WILLIAMS asked the Prime Minister whether His Majesty's Government was aware that the number of starving people in the Russian famine area was far beyond the reach of private charity; and whether the Government had decided to recommend the granting of credits to the Russian Government for the purpose of food without which millions of people must starve during this winter.—Mr. CHAMBERLAIN (Lord Privy Seal) replied: The Government are fully alive to the serious nature of the famine in Russia. The answer to the second part of the question is in the negative; the hon. Member is no doubt aware that Parliament has voted a sum of £100,000, representing the present value of Government stores, chiefly medical, to be placed at the disposal of the Red Cross Society for the relief of famine in Russia. The original value of these stores was £250,000; their present day value is £100,000.—Replying to further questions by Mr. WILLIAMS, Viscount CURZON, and Sir C. YATE, Mr. CHAMBERLAIN said: The sum which has been voted by the House was voted to send stores, mainly medical stores, which were to be at the disposal of the Red Cross for use in Russia. I am not aware of any proposal as suggested that with other powers we should collectively vote money from national funds, but it is quite obvious that in dealing with any matters of this kind we must have regard at the present moment to the condition of our own people.

Treatment Allowances.

Mr. JOHN DAVISON asked the Minister of Pensions whether he would inform the House how many men had been struck off treatment allowances in consequence of the circular of the Ministry dealing with the supervision of out-patient treatment; how many of those struck off allowances were certified by the Ministry of Pensions fit for any work; how many were ordered to continue treatment without allowances;

TERRITORIAL ARMY RESERVE.

Maj. A. Greenwood, from Genl. List, R.A.M.C., to be Lt.-Col.

ROYAL AIR FORCE.

Group Capt. David Munro to be Air Commodore.

INDIA AND THE INDIAN MEDICAL SERVICE.

Surg.-Commodore C. W. A. Newport, R.N., is accompanying the Prince of Wales on his tour through India, and Lieut.-Col. F. O'Kinealy, Bengal, has been appointed Chief Medical Officer to His Royal Highness. Maj.-Gen. W. H. B. Robinson, C.S.I. has been appointed President of the Governing Body of the Bengal State Medical Faculty, vice Lieut.-Col. F. O'Kinealy, C.I.E., resigned; and Lieut.-Col. D. C. Kemp Civil Surgeon, Cochin, on return from leave. Maj. K. Cantlie has been granted one year's leave. On transfer from Lahore Lieut.-Col. J. G. G. Swan, C.I.E., has resumed charge as Civil Surgeon, Ferozepore. Maj. D. H. Rai, M.C., has assumed charge of the Civil Surgeon, Ludhiana. Maj. R. B. Seymour Sewell, surgeon naturalist, Marine Survey, has been granted one and a half years' combined leave. On return from military duty Lieut.-Col. A. M. Fleming has been posted to Asugor as Civil Surgeon to the executive and medical charge of the Saugor District Jail. Capt. A. F. W. da Costa, officiating civil surgeon, has reverted to his substantive appointment of Assistant Surgeon and been posted to the main hospital, Asugor. Maj. W. W. Jeudwine has handed over charge of the duties of Superintendent of the District Jail at Rawalpindi to Lieut.-Col. P. St. C. Moore. Maj. C. A. Godson has taken over charge as Police Surgeon, Calcutta, during the deputation of Lieut.-Col. N. P. Sinha to Simla; and Maj. M. S. Irari has been posted to Bombay.

Obituary.

JOHN HARLEY, M.D., F.R.C.P.Lond.,

CONSULTING PHYSICIAN TO ST. THOMAS'S HOSPITAL AND TO THE LONDON FEVER HOSPITAL.

We regret to announce the death of Dr. John Harley, which occurred at Pulborough, Sussex, on Dec. 9th. As a physician and as a teaching member of the staffs of two great general hospitals in London, he was a familiar feature in medical circles for 30 years.

John Harley was born in 1833, being at the time of his death in his eighty-ninth year. He received his medical education at King's College Hospital, where he entered as a senior scholar and where he later became a fellow. He graduated in medicine at the University of London in 1860, and took the M.R.C.P. Lond. in the same year. After holding the junior appointments at the hospital he was appointed assistant physician, a post which he held for eight years, and where his popularity among his pupils was marked upon his leaving them by a spontaneous presentation. In 1872 he was appointed assistant physician at St. Thomas's Hospital, having in the meantime been elected F.R.C.P. His connexion with the Royal College of Physicians of London was always a close one. He was Goulstonian lecturer in 1869 and an examiner at the College for three separate periods between 1875 and 1886, and in 1889 he delivered the Lumleian lectures. He took as his subject enteric fever, and these lectures, which were published in abstract in The Lancet, created considerable sensation. They were fluent and attractive, but they were also directed against modes of thought which were commonly accepted concerning a common disease. Harley had the courage to utter heretical views, and not for the first time, as he had already adopted a singular attitude concerning the relationship between scarlet and enteric fevers, believing both to have a common origin in catarrh. The intention of the Lumleian lectures on enteric fever was to lay stress on the influence of exposure to cold, and to subvert the doctrine of contagiousness, if not that of the specificity of typhoid fever, itself. Undoubtedly his line of thought was cleverly maintained, and undoubtedly also it is a good thing that orthodox beliefs should now and again be challenged and their too servile acceptance be prevented, but Harley made no converts, for his pathological foundations were seen to be unsound. He was elected on the Council of the Royal College of Physicians in 1890, and in 1893 was appointed consultant physician to St. Thomas's Hospital.

Dr. John Harley never attained to the professional position which his wide attainments, energy, and sympathetic nature seemed to fit him for, and the reason for this is indicated in what we have already said and is substantiated by the following note which we have received from one of his distinguished colleagues.

S. J. S. writes:—

John Harley came to St. Thomas's Hospital with a distinguished record from King's College, and later his appointments and writings added to that record. He was a man of ability who displayed a keen interest in medicine and in many other subjects. He had a suave and attractive manner, formed independent opinions, and expressed them with confidence. How, then, it may be asked, was it that he failed to earn greater distinction in his profession? The probable answer is that he so exaggerated and distorted the good points in his character that so far from forwarding his interests they became obstacles to success. Take, for instance, his genial manner. He would meet everyone with a smile, a half bow, and a prolonged and vigorous hand-shake; but the whole thing was so overdone that it became a standing joke. One student would make a bet with another that he would shake hands with Harley so many times before he got from the central hall to his ward, and by running up staircases and appearing suddenly round corners he would probably win his bet. Indeed, this universal hand-shake sometimes gave rise to ludicrous scenes. On one occasion one of the resident staff hurried up to Dr. Harley's ward to see a case he had just admitted, and arriving in the ward about five minutes before Harley was due he was surprised to see the "Sister" standing pensively in front of the fire-place, facing the door, with an inkstand in one hand and blotting paper in the other. On being asked what this meant, she replied that it was to avoid the handshake.

The opinions which Harley formed on different events and different scientific subjects were often quite out of keeping with modern knowledge, and ignored modern methods of investigation; but once having stated them nothing could move him to reconsider them. He apparently never dreamt of the possibility of his being wrong. The result was that no one took Harley seriously, and he lost the influence and respect he might otherwise have gained. There is no doubt that he was a man of ability, but he failed to turn it to good account.

From the same source, and from others of Harley's colleagues, we have received tributes to his goodness and generosity, showing that his genial manner was no assumption but covered great kindness of heart. He would constantly assist his poorer hospital patients from his purse, and befriend his old students in times of need. He was a man of considerable all-round accomplishment rather than a great physician.

GREGORY PAUL JORDAN, M.B., C.M.Edin., LL.D. Hong-Kong.

Dr. G. P. Jordan, who died in London on Dec. 4th at the age of 64 years, was port health officer at Hong-Kong and professor of tropical medicine in the University, where he was for a time acting Vice-Chancellor. Graduating in medicine at the University of Edinburgh in 1880, he studied at St. Thomas's Hospital, London, Cambridge, Vienna, and Paris, taking the M.R.C.S. Eng. in 1884. He went out to Hong-Kong as colonial surgeon, on the abolition of that post became port health officer, and with Manson and Cantlie helped to found what is now known as the old Medical College. He was on the staff of the Alice Memorial Hospital and during the war took on the surgical superintendence of police. Devotion to work was already impairing his health when he accepted the onerous position of acting Vice-Chancellor of the University on Sir Charles Eliot's departure for Japan, but he had the satisfaction of knowing that his brief stewardship left the institution in a sounder financial position. His services were recognised by the bestowal of an honorary LL.D. degree. A Freemason, a noted amateur photographer, and a keen sportsman, Jordan was a popular figure in Hong-Kong, where his presence will be missed by all classes.

Fair, Laurence Phillips, Michael G. J. Powell, Richard Scale, Allen E. Drotske, Donald H. Saayman, Harry C. Dundon, Robert E. Fausset, Gilbert Kirker, Max Sayers, Rupert L. Hill, Henry L. Hanna, George S. Moran, James V. Williams, Robert R. Baker, and James R. Wills.

Surgery.—Gilbert M. Irvine and Theunis de Bruijn (passed *on high marks*), *Cornelis Derksen Dijkman, Daniel Hugo,* Izak G. Sacks, Doris Holland, Leopold Stazunsky, Thomas G. Warham, William A. Murphy, Richard Scale, Charles Theodore de Mornet Villet, Ivan Marais, Leon O. Vercueil, Abraham Agranat, Max Elion, Donald H. Saayman, Cecil de Lisle Shortt, John D. Thompson, Alfred H. N. Todd, Charles E. Ovendale, William B. Briggs, Jacob Hofman, Herbert Hall, George C. B. Robinson, *Beryl Frances E.* Cockle, Rita Dillon-Leetch, Max W. Kaplan, and Richard Lang.

DIPLOMA IN PUBLIC HEALTH.

Part I.—Richard W. Power, Edward G. Campbell, and William L. Young.

Part II.—Frederick W. Godbey, William B. J. Pemberton, Alan G. Wright, Jessie O. Gilbert, and Charles L. McDonogh.

UNIVERSITY OF EDINBURGH.—At the graduation ceremonial held on Dec. 16th the following degrees were conferred :—

DOCTOR OF MEDICINE.

Garth Ap Thomas, John J. Rouse Binnie, Alice Bloomfield, *Cecil C. Brown, Samuel B. B. Campbell, †Vincent T. Carruthers (in absentia), *Alexander G. Coullie (in absentia), *Francis A. E. Crew, *Herbert R. B. Gibson (in absentia), *Robert L. Girdwood (in absentia), George H. Gunn, Gustav Lange (in absentia), David Lennox, John S. Lloyd, *Benzion Morrison, Hubert Patley, Ella F. Pringle, Richard H. Pulipaka, Andrew O. Ross, Joseph H. M. Sandison, Herbert J. Slane (in absentia), and Arthur K. Towers.

* Commended for thesis. † Highly commended for thesis.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Reuben Abramsky, John C. Adam, Cecil S. Appleyard, Elias Arosemena, Charles G. Auld, Charles T. B. Benson, Lionel R. Bergson, Susan A. Binnie, John M. Blair, Roger P. Bliss, John M. Bonar, G. Brewster, Agnes G. Brough, Douglas L. Brown, Charles Brownlee, William S. Burr, Karl F. Caird (second-class honours), Arthur Campbell, Donald Campbell, George G. Campbell, Charles G. Catto, Clarence Henri-François de Chalus, Edwin Clark, Donald R. Clarke, Matilda L. Craig, Douglas R. Cramb (second-class honours), John C. Cruickshank, Alexander H. Deighton, John A. Douglas, Alexander MacGregor Duff, Jeannie P. Dunn, Katrine Dunn, Evelyn B. G. Ewen, Gordon B. Flint, Charlotte E. Forsyth, John A. Fraser, Eileen R. Freeman, Frederic L. A. Gacé, Marjorie Geen, Owen S. Gibbs (second-class honours), Norris Giblin, Doris M. Gibson, Helen E. Gibson, Andrew R. Gilchrist, Ion S. Hall, Thomas Harrison, Isabella M. Hay, William B. E. Hughes, Elspeth J. Hunter, Richard H. R. Innes, Barnett Isaacson, Inez M. Y. M. Jenkins, Charles I. I. Jones, Joseph O. Kelly (first-class honours), Marjorie C. Kerr, Arthur King, Johan Lovius, Patrick J. McDiarmid, Jane W. Macdonald, William S. Macdonald, George S. Mackay, George W. J. Mackay, John C. MacKay, Henry D. McKinna, Herbert McNair, John W. Mason, Donald S. Middleton (second-class honours), Ian C. Middleton, Ann L. Morrison, Quazi Mahammed Musa, Stanley S. Nicholson, George Ogilvie, Montague M. Ostrowick, James W. T. Patterson, Harry R. Potter, Alexander M. W. Rae (second-class honours), Louis Ratnayaké, William B. Reid (second-class honours), Charles A. Robson, Abraham Sanders, Ernest L. Sanders, Gerald G. Sanders, Margaret M. Sands, Manmatha Nath Sanyal (in absentia), Gordon S. Scott (second-class honours), Charles M. Seward, John McDonald S. Slater, Allen T. Sloan, Thomas R. C. Spence, George D. Steven (second-class honours), Francis M. Stewart, Alexander Stuart, Alister Sutherland, Arumana Krishnan Tampi, Marion C. Taylor, Lewis Teitelman, David W. C. Tough, George A. Velluot, Kakumanu Vullakki, George B. Walker, John Walker, Peter K. Walker, Sarah B. H. Walker, Kenneth B. Williamson (second-class honours), Arthur J. Wilson (second-class honours), John T. Wilson, and John H. Wright.

DIPLOMA IN PUBLIC HEALTH.

William P. S. Johnson.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Dec. 16th the following candidates, having passed the requisite examinations, were admitted Fellows :—

Ennis R. Chambers, Cecil B. Clarke, Jacob H. Dove, Ernald D. Smith, Vinayak Balvant Gokhale, John W. Hall, Norman Hodgson, Ernest W. Ingle, Merwan Sorab Irani, Venkatras Manjunath Kaikini, Robert Mailer, Robert B. P. Monson, Kali Sahai Nigam, Arthur L. Sheppard, Phineas A. Smuts, David Steven, Robert L. Stewart, and Thomas J. R. Warren.

Dr. George Mackay and Mr. Charles W. Cathcart, C.B.E., were re-elected representatives on the Board of Management of the Royal Infirmary, Edinburgh for the ensuing year.

ROYAL INSTITUTION.—The first of the Christmas Course of Juvenile Lectures at the Royal Institution on Electric Waves and Wireless Telephony, by Prof. J. A. Fleming, will be delivered next Thursday (Dec. 29th) at 3 P.M. on Surface Waves on Liquids. The succeeding lectures will deal with Waves in Air, the Telephone, Electric Oscillations, Electric Waves, and Wireless Telephony.

UNIVERSITY OF LONDON.—A meeting of the Senate was held on Dec. 13th, Sir Sydney Russell-Wells, the Vice-Chancellor, being in the chair. Mr. R. H. Aders Plimmer, D.Sc. Lond., was appointed as from Jan. 1st, 1922, to the University Chair of Chemistry tenable at St. Thomas's Hospital Medical School. Dr. Plimmer was educated at University College, London, and at the Universities of Geneva and Berlin. From 1902 to 1904 he was Grocers' Company's Research student at the Lister Institute of Preventive Medicine, and in the latter year was appointed assistant for physiological chemistry at University College, where he was later elected to a Fellowship and appointed to teach chemistry to medical students. In 1912 the Senate conferred on him a readership in physiological chemistry. Since 1919 he has been head of the biochemical department of the Rowett Research Institute of Animal Nutrition and North of Scotland College of Agriculture, and research lecturer in applied biochemistry in the University of Aberdeen. He is co-editor with Prof. F. G. Hopkins of "Monographs on Biochemistry," and is the author of numerous publications on chemical and physiological subjects.

The Royal Dental Hospital and London School of Dental Surgery was continued as a School of the University in the Faculty of Medicine (in dentistry only) for a further period of three years. Regulations for the new degree of Bachelor of Dental Surgery were approved for internal students.

Sir Sydney Russell-Wells was reappointed the representative of the University on the General Medical Council for 1922–23, and Prof. A. D. Waller, F.R.S., was appointed to represent the University at the unveiling of a memorial to Pasteur, in commemoration of the 100th anniversary of his birth, to take place at Strasbourg.

HONOUR TO A MEDICAL MAN.—The medal of the "Reconnaissance Française" has been bestowed upon Dr. Alfred S. Gubb, of Algiers, by the President of the French Republic in recognition of his devoted services in the work of the French Red Cross.

LECTURES ON HOSPITAL ADMINISTRATION.—A three months' course of lectures and demonstrations on hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, London, N.W., by Dr. E. W. Goodall, on Mondays and Thursdays at 5.15 P.M., beginning on Monday, Jan. 9th, 1922. Medical men desiring to attend the course of instruction are required before attending at the hospital to pay the fee of £3 3*s.* to the Clerk to the Metropolitan Asylums Board, Embankment, London, E.C. 4, giving their full name and address.

POPLAR HOSPITAL FOR ACCIDENTS.—The annual festival of this hospital was held at the Holborn Restaurant on Dec. 13th. Sir Joseph Broodbank said that whereas before the war the annual cost of the hospital was about £11,000, to-day it was £20,000. During the last seven or eight years they had saved three-quarters of the £50,000 required for new buildings. Working men themselves gave £1700 per annum direct to the funds, in addition to the 2*s.* 6*d.* per day which now had to be charged to in-patients. Every year 50,000 people passed through the hospital, and so frequent were accidents in dockland that 160 cases were treated daily. Viscount Knutsford congratulated the management upon possessing the only hospital in London that was in a prosperous condition.

LONDON PANEL COMMITTEE DINNER—The second annual dinner organised by the Local Medical and Panel Committee of London and held at the Holborn Restaurant on Dec. 15th, was followed by a dance and was altogether a pleasant social affair. Two of the invited guests occupied important positions at the Ministry of Health—viz., Mr. R. W. Harris, and Dr. J. Smith Whitaker, while the third, Sir Thomas Neill, was the newly-elected chairman of the London Insurance Committee. Dr. H. J. Cardale, who presided, and Dr. Lauriston Shaw, who replied to the toast of "The Committee," also spoke, the message of all five speakers being summed up in the sentence: "The eyes of the world are turned on London as an object-lesson in the success *or failure of the insurance principle in medical* practice." Sir Thomas Neill, who spoke with warmth, said that the worse the neighbourhood and the more fragile the community, the higher the class of medical man required there. Dr. Smith Whitaker gave an instructive historical survey of the development of contract practice. He was himself instrumental in 1895 in organising a local medical society in Great Yarmouth, which insisted on three essential points in club practice: free choice on the part of doctor and patient, representation of the medical profession in the management, and a medical committee elected by the practitioners doing the work, to be consulted on conditions of employment. These three principles were, he said, first accepted by the British Medical Association and were then incorporated in the Insurance Act of 1911.

of the heart occurring in rheumatic pericarditis is not simply dilatation, it is a form of hypertrophy. In some way, possibly by interference with the metabolism, the heart may double or even treble its weight in about a week, showing that the enlargement is due to some peculiar effect of the rheumatic toxin, and is not a mere mechanical result of inflammation of the pericardium.

The above-mentioned sample experiments would lead me to believe that the normal pericardium is far too capacious to exert any restraining influence on the heart; and some cases of death from rheumatic pericarditis, seen in the post-mortem room, would indicate that there may be room within the cavity of the pericardium for the heart quickly to increase to three times its usual size.

I am, Sir, yours faithfully,
Norwich, Dec. 17th, 1921. THEODORE FISHER.

THE ORGANISATION OF MEDICAL EDUCATION.

To the Editor of THE LANCET.

SIR,—May I be allowed to support the general principle enunciated by Sir Clifford Allbutt and "C. L." in your columns last week? I found my claims to do so on the fact that I am an ophthalmic surgeon who has had experience of general practice; and further, that I am interested in psychology.

The inefficiency of the present curriculum is vividly exemplified by the inability of many general practitioners to cope with serious ophthalmic conditions, such as ophthalmia neonatorum. It is a deplorable fact that many babies are allowed to become blind through ophthalmia neonatorum in spite of the fact that the mother and child have been under the care of a doctor. The Council of British Ophthalmologists has urged the General Medical Council to insist upon examination in ophthalmology of candidates for the qualifying diplomas. Owing to the overcrowded curriculum students will not, indeed cannot, devote sufficient attention to a subject which they can neglect with impunity so far as the qualifying examination is concerned. The Council of British Ophthalmologists has been rebuffed by the General Medical Council, but it is encouraging for them to learn from your columns (THE LANCET, Dec. 10th, p. 1238) that the Examination Committee of the General Medical Council has passed a resolution supporting in every respect the recommendations of the ophthalmologists.

Yet the carrying out of these recommendations will add another straw to the camel's burden—and it is by no means the only straw. Oto-rhino-laryngology and psychology also demand consideration. With regard to the latter subject, I should like to support "C. L.'s" remarks. The student devotes many years to the study of the human body, yet receives little or no instruction in the working of the human mind. A large proportion of the general practitioner's work is the treatment of nervous disorders which manifest themselves as mental abnormalities. He has to cope with them empirically, unaided by any knowledge of the underlying scientific principles. It cannot be doubted that the course of instruction in physiology should be followed by one on the principles of psychology, and that psycho-pathology should form an integral part of the course in medicine.

Everyone will agree that the present curriculum is overcrowded. The impossible is attempted—viz., that of turning out general practitioners and hospital physicians and surgeons from the same mill. Seeing that the majority of students will become general practitioners, and that all medical men should be equipped with the knowledge which is most necessary for general practitioners, it would appear obvious that the qualifying curriculum and examinations should be designed specially for the requirements of this preponderant class. In other words, it should have a definitely utilitarian aim. Much of the smatterings of scientific knowledge now regarded as essential should be eliminated, leaving room for matters of greater practical importance.

It will be objected that this view is subversive of scientific education. In my opinion, however, the non-utility, "pure" science theory of education has been exaggerated to the detriment of scientific education, and can be shown to be unsound on biological and psychological grounds. I contend that it is not only possible to teach the scientific method while devoting special attention to utilitarian aims, but that for the majority of people it is the only way.

It is becoming increasingly evident that the medical curriculum must be revised, and it is a fortunate occurrence that so distinguished a leader of British medicine as Sir Clifford Allbutt has given such an admirable lead to the movement.

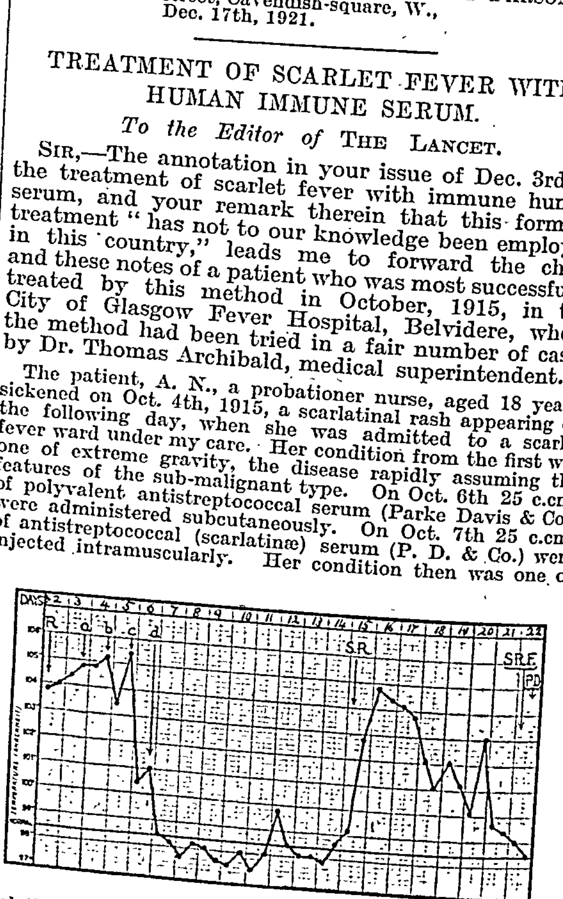
I am, Sir, yours faithfully,
J. HERBERT PARSONS.
Queen Anne-street, Cavendish-square, W.,
Dec. 17th, 1921.

TREATMENT OF SCARLET FEVER WITH HUMAN IMMUNE SERUM.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of Dec. 3rd on the treatment of scarlet fever with immune human serum, and your remark therein that this form of treatment "has not to our knowledge been employed in this country," leads me to forward the chart and these notes of a patient who was most successfully treated by this method in October, 1915, in the City of Glasgow Fever Hospital, Belvidere, where the method had been tried in a fair number of cases by Dr. Thomas Archibald, medical superintendent.

The patient, A. N., a probationer nurse, aged 18 years, sickened on Oct. 4th, 1915, a scarlatinal rash appearing on the following day, when she was admitted to a scarlet fever ward under my care. Her condition from the first was one of extreme gravity, the disease rapidly assuming the features of the sub-malignant type. On Oct. 6th 25 c.cm. of polyvalent antistreptococcal serum (Parke Davis & Co.) were administered subcutaneously. On Oct. 7th 25 c.cm. of antistreptococcal (scarlatinæ) serum (P. D. & Co.) were injected intramuscularly. Her condition then was one of intermittent rambling delirium, the rash being generalised and livid. On that night (7th) Dr. Archibald suggested the employment of a human serum. Blood was obtained from Nurse A., a patient in the ward, who was in her fifth week of convalescence from a sharp uncomplicated attack of scarlatina. On the afternoon of the 8th 34 c.cm. of the separated serum were injected intramuscularly. On the same day blood was obtained from Nurse S., a patient in an adjoining ward, who was in her fourth week of convalescence from simple scarlatina. 33 c.cm. of the separated serum were given intramuscularly on the afternoon of the 9th. The results are evident on the chart.



Scarlatinal rash appeared at R. Antistreptococcal serum was given at *a* and *b*. Convalescent human serum at *c* and *d*. Serum rash appeared at S.R. and faded at S.R.F. At P.D. profuse desquamation set in.

This case brings out the point which you mention—termination by crisis. Beyond serum rash and sickness, which appeared on the 18th, convalescence was uninterrupted.

I am, Sir, yours faithfully,
Glasgow, Dec. 9th, 1921. C. CAMERON.

Notes, Short Comments, and Answers to Correspondents.

THE HEALTH OF INDIA AFTER THE WAR.[1]

DURING the year 1919, although active hostilities with Germany had ceased towards the end of the previous year, various circumstances combined to affect adversely the health statistics of British troops and of the Indian Empire generally. The mass of figures to be dealt with explains the delay in the issue of the Report.

The garrison units, and to some extent the Territorial force, were largely composed during 1919 of elderly men and soldiers who had been found temporarily unfit for active service in Mesopotamia and East Africa; and these were naturally least able to accommodate themselves to the climatic conditions of India. Moreover, the troops arriving from home contained a large proportion of young men under 20 years of age, and in many instances not well suited for tropical service. There was also a general unrest in Northern India, and actual hostilities had to be undertaken along the Afghanistan and North-West Frontiers; large numbers of men had therefore to be retained in the plains during a very trying hot weather, who would, under normal conditions, have been serving in the hills.

The average strength of European troops was 56,561, as compared with 87,982 in 1918, and 69,440 in the pre-war quinquennium, 1910–14. The admissions to hospital were in a ratio of 972·1 per 1000, the deaths 7·74, the invalids sent home 76·40, and the average constantly sick 57·39. These ratios are to be compared with the corresponding ones of 1918, which were 1030·2, 16·19, 22·81, and 60·0 respectively; and with those of the pre-war quinquennium (1910–14), which were 567·2, 4·51, 7·03, and 30·13 per 1000. There was a slight reduction in the admissions and number constantly sick and a great improvement in the mortality compared with the previous year; but the invaliding was more than trebled, and on the whole the conditions were still far removed from the normal for European troops in India. Of the 15 large stations (having over 1000 average strength, and excluding Colaba, where the circumstances are exceptional), Rawal Pindi (with 1360·8 admissions and 85·0 constantly sick per 1000), Delhi, Ferozepore, Lucknow, and Bangalore (790·5 and 53·8), had more sickness than in 1918; but only at Secunderabad and Lucknow were the death-rates (7·03 and 10·12) higher than in the previous year (6·76 and 7·94).

Disease among the Troops.

Influenza, which had been so prevalent and fatal in 1918, died out during the first quarter of 1919, and was generally of a mild type; the admission and death ratios were 25·2 and 0·25, compared with 219·5 and 8·81 in the previous year; at Colaba there were 493 admissions, chiefly in May and June, and 2 deaths (263·2 and 1·07 per 1000); the disease was prevalent in Bombay at the time.

For *malaria* there were 217·8 admissions and 0·74 deaths per 1000, accounting for 22·4 per cent. of the total admissions to hospital and 9·6 per cent. of the total mortality. The admission ratio was less than in 1917 and 1918 (227·9 and 269·2), but much in excess of the quinquennial average (117·2) for 1910–14. The mortality (0·74 per 1000) was also high; in the quinquennium, 1910–14, it had averaged 0·13 per 1000; in the successive years, 1915–18, this ratio had been 0·36, 0·31, 0·48, and 0·65; whether this be due to a real increase in severity of the disease or to increased strictness in diagnosis is doubtful. The list of important stations, having a strength of over 1000 troops, where malaria was prevalent is headed by the new capital of India; at Delhi the actual admissions numbered 615, being in a ratio of 511·6 per 1000; then follow Colaba and Bombay combined (374·3), Rawal Pindi (342·7), Peshawar (333·6), and Lahore (323·4). At Delhi it is stated that "almost every case originated in the Fort. New cantonments and the Kingsway Camp were free from infection. There are no breeding places in the Fort itself, but it harbours innumerable anopheline mosquitos. . . . The chief breeding grounds are in the Civil *Gung* adjacent to the Fort. The civil authorities are gradually (*sic*) proceeding with an extensive anti-mosquito scheme in that area. . . . Prophylactic quinine was issued daily under close supervision and proved [to be] of no avail and rendered laboratory diagnosis more difficult." The qualifying adverb "gradually," as applied to a measure of disease prevention that has been accepted as of paramount necessity for 20 years, appears to be somewhat unsuitable. At Colaba and at Peshawar it is stated that a third of the admissions were relapses; at the latter station "the system of drainage and irrigation in vogue has always been responsible for the high incidence of malaria. The bulk of the water is carried in open earth channels, which are badly graded." At Poona the Bhairoba nullah is the anopheline breeding centre in the station, and until leakage into the nullah from the canal is prevented no marked success can be expected. At 45 hospitals 9604 cases were analysed; of 4151 fresh cases, 66·47 per cent. were of the benign tertian type, 15·68 per cent. malignant tertian, and 0·39 per cent. quartan, the remainder (17·46) being "clinical" cases. Of 5453 relapses the corresponding percentages were 61·36, 8·86, 0·29, and 29·49.

The "*enteric fever group*" caused 257 admissions and 25 deaths, the ratios per 1000 being 4·5 and 0·44 respectively, compared with 7·5 and 0·70 in 1918, and 3·3 and 0·37 in the pre-war quinquennium, 1910–14. Of these total admissions only 56, and of the total deaths only 14, were definitely diagnosed as "*typhoid*"; *paratyphoid A* accounting for 74 cases with one death, and paratyphoid B for one case, not fatal; the remaining 126 cases, with 10 deaths, are returned as belonging to the "enteric group." It is unfortunate, and confusing, that this expression is used for the whole group of fevers, which in previous reports had been called *enterica*, as well as, in a restricted sense, for those cases that are not definitely diagnosed as typhoid or paratyphoid A or B. Nothing approaching epidemic prevalence occurred, except at Poona, where, of 47 cases, 40 were among men attached to the military accounts department; men located over a wide area, chiefly under canvas, and in the cantonment area adjacent to the city. The majority took their meals in hotels and restaurants in Poona, the sanitary arrangements in which were difficult to control. No local source of infection was found, and no carriers were detected. At the half-yearly census of European troops, taken on Dec. 31st, 1918, only 1487 (out of 56,561) were found to be not inoculated against enteric. The admissions for dysentery (14·2 per 1000) were more numerous than in recent years; in 1918 they had been 13·8 and in the pre-war quinquennium 6·5 per 1000. Taking dysentery, colitis, and diarrhœa together, the combined admission rate was 55·5, as compared with 24·4 in 1910–14. Of 703 cases of dysentery examined, 596 were reported as amœbic and 95 as bacillary. Venereal disease, which had caused 67·8 admissions per 1000 in 1909, fell to 55·2 in 1914 and 29·1 in 1915; since then the ratio has risen year by year to 87·6 in 1919. This has occurred "in spite of every local effort on the usual lines to check the incidence of the disease." It is attributed to the long time men of the Territorial Army and garrison battalions were necessarily retained in India, "with a resulting loss of moral restraint"; also, defective lighting and want of electric fans in most barracks lead men to seek more attractive resorts in the bazaar, &c. The provision of proper lighting, with fans and anti-mosquito arrangements in barracks, might be regarded as a "local effort to check the incidence of the disease" which was not carried out by the authorities concerned.

Cholera caused only 24 admissions (0·4 per 1000), with 11 deaths (0·19 per 1000); in 1918 the ratios had been 1·0 and 0·42, and in the quinquennium, 1910–14, 0·3 and 0·14 respectively; 9 of the cases occurred at Colaba, where the disease was prevalent in the neighbourhood. There were 416 admissions to hospital for heat-stroke, with 42 deaths (7·4 and 0·74 per 1000), less than in the previous year, but far more than in the quinquennium (1·9 and 0·15 per 1000); this was partly due to retention of men in the plains during a very trying hot weather. There were 139 admissions at Lucknow (100·5 per 1000), of which 96 (with 6 deaths) were from the 3rd Garrison Battalion Bedfordshire Regiment, "a unit which contained a high proportion of elderly men, and had suffered severely from malaria and influenza in Burma. The outbreak occurred as a sequel to the move of the unit from Burma to Lucknow at the hottest time of the year, necessitated by the outbreak of hostilities on the North-West Frontier."

Pulmonary tuberculosis caused 84 admissions and 10 deaths (1·5 and 0·18 per 1000), compared with ratios of 1·8 and 0·22 in 1918, and 1·1 and 0·16 in 1910–11. For small-pox there were 173 admissions (3·1 per 1000), with 19 deaths (0·34 per 1000); in 1918 these ratios had been 1·3 and 0·2 respectively; the cases were sporadic, except at Peshawar, where there were 17, mostly in November and December. It was reported that units arriving from England were in many instances very imperfectly protected. In 15 of the 19 fatal cases it was ascertained that 4 had never been vaccinated, 9 only in infancy, 1 in infancy and re-vaccinated during the incubation period of the disease, and 1 re-vaccinated in 1915, with modified result.

The number of men invalided home was 4321, giving a ratio of 76·40, compared with 22·81 in 1910 and 7·03 in the pre-war quinquennium; the chief causes were heart disease (690), malaria (580), and debility (408). The very high and whether, in view of the posters issued by the Minister of Pensions in 1919 intimating to disabled men that during treatment, while unable to earn, they would be given adequate allowances for the support of themselves and their families, this practice would be reconsidered ?—Mr. MACPHERSON replied: I regret that the figures for which my hon. friend asks are not available. I would, however, point out that it is not the duty of the medical officers of the Ministry to certify men as fit for work, and that treatment allowances can only be authorised under the terms of the Royal Warrant when, in consequence of the treatment provided, the man is rendered unable to provide for his own support and that of his family. This is not a new principle and I am not prepared to recommend any amendment of the Warrant in this respect.

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[1] Report of the Sanitary Commissioner with the Government of India for 1919. Calcutta: Superintendent of Government Printing. July, 1921.

MONDAY, DEC. 19TH.

Parcels of Anæsthetics Held Up.

Dr. MURRAY asked the Chancellor of the Exchequer whether he could say why it happened that three parcels of beta-eucaine arrived from Germany on the ss. *Oranje Nassau* on Nov. 4th and that the importers of these parcels were not advised of their arrival until Nov. 21st; why, when they paid on Nov. 22nd the duty demanded by His Majesty's Customs under the Safeguarding of Industries Act, they were still unable to obtain delivery of the parcels; whether he was aware that daily application were made to the Customs' parcels post department at Mount Pleasant, who were informed that the material contained in the parcels consisted of important local anæsthetics used in surgical operations and was urgently required by hospitals; why delivery was not obtained from His Majesty's Customs until Dec. 8th; and whether he proposed to take steps to obviate the continuance of such delays.—Mr. HILTON YOUNG replied: The parcels in question reached the Customs on Nov. 15th and the notice on arrival was sent to the addressees on the 18th. Duty was paid on the 22nd, but it is regretted that owing to the transfer of this parcel post work to more commodious premises which was then proceeding, a delay occurred which was unavoidable in the circumstances. This cause of delay will not recur, and the transfer will benefit importers by reason of the possibility of accelerating delivery which it will afford.

Importation of Chemicals.

Dr. MURRAY asked the Chancellor of the Exchequer whether he was aware that, owing to the absence of technical knowledge of chemicals on the part of the Customs officials ordinarily concerned with the examination of goods arriving at the various ports throughout the country, it had become the practice of His Majesty's Customs to detain all parcels of chemicals and to refuse delivery to importers on the ground that inquiries were being made: that the consequent delay, even in the case of goods not dutiable, frequently amounted to weeks; and that it had become the practice of His Majesty's Customs to ignore any interim complaints which might be made by traders as to the great inconvenience that they were put to by the consequent hold-up of business; and whether he could devise some means whereby a decision might be given on the spot in any cases of this kind which involved only an ordinary working technical knowledge of the commodities in question.—Mr. HILTON YOUNG (Financial Secretary to the Treasury) replied: In the case of chemicals entered as not liable to duty, as to which the examining Customs officer is in doubt whether duty is not chargeable under Part I. of the Safeguarding of Industries Act, it is necessary to submit a sample for expert opinion by the Government chemist, and this opinion is obtained with the least possible delay. But if the importer wishes to obtain immediate possession of the goods it is always open to him to do so on deposit of an amount sufficient to cover the duty in the event of the goods being ultimately held to be liable. As decisions are given on various substances the officers at the ports will become more experienced in deciding liability without the necessity of submitting samples, and the inconvenience complained of will diminish. I am not, however, prepared to incur the expense attendant on the appointment of expert advisers at the various ports.

UNIVERSITY OF PARIS: POST-GRADUATE COURSE IN OPHTHALMOLOGY.—Prof. F. de Lapersonne, with the assistance of Prof. F. Terrien and Drs. A. Hautant, E. Velter, P. Prelat, and Monbrun, will hold a post-graduate course in ophthalmology beginning on May 23rd, 1922. The course will include clinical teaching and practical instruction in operative and laboratory work. Lectures and practical work will be held daily in May and June, and a special certificate from the Faculty of Medicine of the University of Paris will be given to medical men who have completed the course. Medical men and students who wish to attend are asked to write to the Secretary of the Faculty of Medicine. The number admitted will be limited to 30 and the fee is Fr.150.

Medical News.

UNIVERSITY OF CAMBRIDGE.—The following degrees have been conferred:—

M.D.—B. K. T. Collins, Trinity; and J. C. Matthews, Downing.

M.B. and B.Ch.—C. H. Whittle, Queens'; W. H. Blackburn, Christ's; C. Suffern and G. D. C. Tracy, Emmanuel; and L. Cunningham, Downing.

M.B.—P. D. H. Chapman and H. A. A. Pargeter, Sidney; and N. D. Dunscombe and J. Whittingdale, Downing.

B.Ch.—G. H. Ward, Caius.

The following candidates have passed both parts of the examination in Psychological Medicine and are entitled to receive the diploma: M. A. Archdale, S. Kelly, G. A. Lilly, R. A. Noble, and W. D. Wilkins.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

DEGREES OF M.B. AND CH.B. (HONOURS).

Class I.—J. L. Armour (distinction in Surgery and Obstetrics) and C. A. Wells (distinction in Medicine and Surgery).

Class II.—C. H. R. Carmichael (distinction in Surgery) and E. N. Chamberlain (distinction in Medicine).

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part III.—O. A. Akjaly, J. R. Bhatia, H. R. Chibber, A. C. Crawford, Helen M. Duvall, I. S. Fox, R. A. Galway, F. G. Latham, J. F. C. McColl, Kathleen M. Platt, Gladys Rutherford, F. C. H. Sergeant, N. S. Taylor, and W. T. de V. Thomson.

Part II.—W. H. A. Dodd, G. T. Krajewski, C. B. Lewis, G. F. G. Prideaux, G. Sanders, E. R. Smith, Enid F. Stowell, A. Weisberg, and D. A. Woodeson.

Part I.—A. R. D. Adams, J. Berkson, R. W. Brookfield, T. L. Bulmer, I. Casdan, W. J. B. Chidlow, R. G. Cooke, R. L. Corlett, I. H. Davies, Hilda M. Davis, F. Earlam. F. S. Fowweather, Susan Gluck, H. Graf, J. R. Griffiths, A. J. Hawe, C. W. Healey, S. Hesselberg, Elizabeth Hunt, L. E. Johnson, F. H. Jones, A. Kefalas, T. J. Kirkpatrick, D. A. Levin, Eileen M. Lloyd, Marion R. Lunt, D. Macfarlane, Mary M. McMillan, P. Madan, P. Malpas, C. H. Owen, Eleanor M. P. Pearson, J. D. O'M. Poole, E. L. Roberts, J. Roberts (with distinction), Dorothea W. Rogers, J. A. Scott, J. F. D. Shrewsbury, E. R. Smith, J. R. A. Tallack, Dorothy A. Taylor, Elizabeth M. Theron, V. T. Thierens, H. A. Thomas, R. W. Thomas, A. Tumarkin (with distinction), E. J. Whymark, H. P. Widdup, A. G. Wilkinson, E. B. Wilkinson, and J. Williams.

DIPLOMA IN TROPICAL MEDICINE.

G. P. F. Allen (recommended for the Alan H. Milne Memorial Medal), C. R. Corfield, A. Hamid, B. W. Longhurst, G. A. Macvea, H. R. Madan, W. P. Mulligan, and S. S. Shri Kent.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Bacteriology and Pathology.—Bernard Gluck, Francis J. O'Meara, Victor O. McCormick. Joseph A. Gaynor, and Marjorie F. Sibthorpe (all of whom passed on high marks), Benjamin W. D. Fayle, John E. McCormick, Norman E. H. P. Williams, Florine Isabel Irwin, Henry O'Donnell Burke-Gaffney, Reuben Lipschitz, Percy Samolsky, Ely G. Copeland, Johannes H. Stals, Wilfrid E. C. Wynne, Eileen Agnes Boyd, Maurice Schwartzberg, Henry M. Martin, Thomas G. Wilson, William E. Callanan, Anne D. Dockrell, Edward Harvey, Jan Hendrik Hodgman, Raymond J. G. Hyde, Lionel S. Levitt, Siegfried D. Gabbe, Asher Asherson, Robert S. McElroy, Robert L. C. Fisher, Bertha H. Lawler, Norah M. Gilcriest, and Julius Kruger.

Pathology only.—Joseph Harte and Jacobus F. van Staden.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene.—David J. Malan, Henry C. Joly, William L. Duncan, and James J. Fitzgerald.

Medical Jurisprudence and Hygiene; Bacteriology and Pathology.—Eric C. Downer.

Part II., Medicine.—Gilbert M. Irvine, Charles Theodore de Mornet Villet, Ninian McIntire Falkiner, William A. Murphy, Cyril J. U. Murphy, Cornelis Derksen Dijkman. Minnie Alper, Joseph C. Gillespie, Theunis de Bruijn, John Lait, Francis Malone-Barrett, Albert S. Bradlaw, John R. Craig, Robert Dormer, Abraham Agranat, Vera G. M. Menary, Max W. Kaplan, Robert N. Perrott, Petrus H. S. Fouche, Margery Bouchier-Hayes, Max Elion, Gilbert Kirker, Robert A. O'Meara, and John D. Watson.

Midwifery.—Seymour G. Rainsford and Abraham Agranat (passed on high marks), Samuel G. Weldon, Petrus H. S. Fouche, Leon O. Vereneil, Hendrik Nicolas Krige, Izidore P. Myers, John C. J. McEntee, John V. Carroll, Ruth Lemon, Albert E. Phillips, Charles E. Brunton, Izak F. A. de Villiers, Leopold Stazunsky, Charlotte A. Stuart, Maurice Bewley, May E. Powell, Max W. Kaplan, James J. P. Kelly, Charles E. Ovendale, Gideon C. Malherbe, Richard Lang, Victor Robinson, George Blackall, Ruth F. Flavelle, Jacob Hofman, Minnie Alper, Dorothy A. Daly, John H. J. Stuart, Olive V.

the total deaths numbering 578,426; the highest mortality occurred in Assam (5·61 per 1000), and Central Provinces (4·46), the greatest number of deaths (121,019, equalling 2·8 per 1000) in Bengal. Contaminated water is the commonest vehicle of infection, but increasing use is made of potassium permanganate and chloride of lime for disinfecting tanks. Migration of cooly labourers and the assemblage of pilgrims, as at the Ganga Sagar *mela* in January, and at Hardwar, are also factors in causing epidemics. In Bombay Presidency 1919 was the worst year for cholera (with two exceptions, 1900 and 1912) for 20 years; famine conditions and scarcity of drinking water were responsible for this result. Small-pox was epidemic in Bengal, Madras, and the Punjab, the death ratios being 0·8, 1·0, and 0·70 per 1000 respectively; in Coorg there were 529 deaths, giving a ratio of 3·02 per 1000, and in the district of Mercara in this province the mortality was 5·90 per 1000, this being much the highest district ratio throughout India. For plague the death-rate was 0·31 per 1000, compared with 1·85 in 1918; rat destruction, attention to the storage of grain, and inoculation have been carried out systematically. The death-rate from fevers fell from 46·60 in 1918 to 22·93 in 1919, this reduction being largely due to diminution of influenza.

In the *Jails* of India, with an average population of 115,499 in 1919 (compared with 102,318 for the decennium) the constantly sick- and death-rates were 31 and 26·97, compared with 39 and 42·15 in the previous year, the corresponding ratios for the decennium having been 28·0 and 21·25. Attention is drawn to the necessity for "coördination in health administration, not, as at present, a separation into more or less water-tight compartments dealing with hospitals, sanitation, health of prisoners, &c."; what is wanted is some means of "bringing the results of research to the notice of those engaged in the application of methods."

In the section of "General Remarks" some interesting details are given as to the introduction of plague infection by shipping; a committee was appointed to deal with the subject. The conclusion arrived at was that the prevention of access of rats to ships is at present impracticable, and that efficient periodic "deratisation" should be carried out, provided that a suitable gas for fumigation is found, and that the efficient ventilation of the holds is secured. Lieut.-Col. Glen Liston, I.M.S., has devised a machine for the use of hydrocyanic gas, which is now under trial.

This report extends to 316 pages and is fully illustrated by diagrams and tables; the accuracy of the printing is almost perfect. We regret the absence of a map, such as generally provided hitherto, especially as there have been numerous changes in provincial areas and designations within recent years. The first two sections, dealing with the European and Indian armies, are contributed by the Director of Medical Services in India; and the remainder of the volume by Lieut.-Col. F. H. G. Hutchinson, I.M.S., the Sanitary Commissioner.

ACOUSTICON AIDS FOR THE DEAF.

THE electrical hearing aids for the deaf supplied by Acousticons, Ltd., of 18, Hanover-street, W., and manufactured, as we understand, in the United States, are well-made and finished. They consist, as do all electrical aids, of a transmitter and a dry cell attached by a flexible cord to a receiver; the latter may be held to the ear by a lorgnette handle, or fastened to the head by a spring-band. Five types were submitted to us; in the first a single transmitter is rigidly attached to the dry cell and intended to be held in the hand, in the second the transmitter is designed to be worn under a man's tie or a lady's blouse, is provided with a clip and is connected by a cord to the battery which is kept in the pocket or any convenient place. The third type is similar, but has two transmitters fixed rigidly together, and so gives a greater volume of sound; in the fourth type the double transmitter may be used in the same way, or may be fixed into the side of a neat black leather box, which also accommodates the battery, so that it may be used as a table instrument. The fifth type is a table instrument and has four transmitters; it is provided with a switch which disconnects two of the transmitters when desired. All the instruments are fitted with a rheostat to regulate the strength of the current, and with a switch in the receiver to shut off the current when not in use; to conserve the batteries it is most important that this should always be done. The batteries give about 40 hours' service and can then be renewed at the cost of a few shillings. The price of the instruments is naturally high; the first two with a single receiver cost 12 guineas each, the third type costs 14 guineas, and the fourth 16 guineas. We have examined these instruments and tested them on several cases of middle-ear deafness. They give a greatly increased volume of sound—those with multiple transmitters being of course the louder; they are to a considerable extent free from the annoying noises associated with telephonic apparatus; and they have a pleasant timbre with little of the disagreeable "tinny" quality sometimes heard, this being especially the case with the multiple transmitter instruments. The type described here as the fourth, which can be worn on the person or used as a table instrument, is particularly well arranged.

Electrical appliances are of small assistance in cases of nerve-deafness, but are of value in severe deafness due to middle-ear affections; patients with a moderate degree of impairment of hearing are apt to find the adventitious sounds and the quality of the timbre disagreeable, and often prefer some form of resonator. It is much to be hoped that the prejudice against all forms of hearing aid among the general public will soon disappear, for a properly fitted modern appliance is inconspicuous and helps both the patient and his friends.

THE DOCTOR IN COUNTRY LIFE.

To the Editor of THE LANCET.

SIR,—I am writing a book on various aspects of life in the country side, and I wish to include some account of the work of the country doctor, who plays such an important part in our rural life. We all know him as a good friend, often heroic, and kind and generous to our poorer neighbours. I should be very grateful if some of your readers will kindly give me references to books and articles, Government reports, &c., wherein the work of the country practitioner is summarised or explained; and if anybody should be moved to send me any personal experiences or illustrative anecdotes, either about their own work or that of men they have known, I should be greatly obliged. Of course, no names would be published except by permission of the writers.—I am, Sir, yours faithfully,

P. H. DITCHFIELD, M.A., F.S.A.,
Author of "The Parish Clerk," "Old-time Parson," &c.

Barkham Rectory, Wokingham, Dec. 18th, 1921.

THE ASSOCIATION OF CERTIFICATED BLIND MASSEURS.

To the Editor of THE LANCET.

SIR,—Will you allow me to state that it was through the untiring efforts of the late Sir Arthur Pearson, whose tragic death has aroused world-wide sympathy, that blinded soldiers and civilians were trained in the profession of massage, and to suggest that there is no way in which the medical profession can better pay lasting tribute to his memory than by helping those who have received this training to become independent. Our members are established in all parts of London and the provinces, they do not undertake the treatment of patients without the consent and advice of a registered medical practitioner, and their names and addresses can be obtained on application to

THE SECRETARY.

221-6-8, Great Portland-street, London, W. 1.
(Tel.: Langham 2542.)

THE FUTURE OF VETERINARY SCIENCE.

IN a recent address delivered at Exeter, Prof. J. Share-Jones, professor of veterinary anatomy at the University of Liverpool, claimed that the progress of veterinary science in this country had been retarded by the popular idea that its sole concern was the doctoring of sick animals. As chairman of a committee which had been addressed a question from the Government concerning the absorptive capacity of the profession, he was able to state, after inquiry, that in peace-time the Ministry of War could absorb nearly four times as many qualified veterinary sugeons as the Ministry of Agriculture, whilst an adequate public health service would require five times as many.

In 1918 Lord Haldane's Royal Commission on University Education had reported that "the modern veterinary surgeon should proceed through an exacting programme of education, a course of training as specialised and as thorough as that of the student of human medicine." The Commission were of the opinion that the future of veterinary science depended upon its adoption of methods of dealing with disease which had been worked out for human pathology; they also referred to the close association of many human and animal diseases, and the consequent necessity of joint research work.

The Ministry of Health, said Prof. Share-Jones, was the department to have principal charge of veterinary science; it was absurd that rabies should be dealt with by the Ministry of Agriculture, whilst hydrophobia was dealt with by the Ministry of Health. The veterinary profession needed men, in adequate numbers and possessing the highest possible qualifications, in order that the host of unqualified and incapable practitioners might be eliminated; veterinary science would then assume its proper position in medical science and preventive medicine.

Medico-Legal Society: Annual Dinner.—The annual dinner was held on Dec. 14th at the Holborn Restaurant, London, Mr. Justice Atkin presiding. Among the invited guests were the Lord Chief Justice, the Attorney-General, Sir William Willcox, Mr. James Berry, and Sir William Collins. The last-named, in proposing the toast of Medicine and the Law, expressed his belief that the voluntary system of hospital management would outlast any form of State control.

The late Dr. W. Keith Welsh.—The death occurred on Dec. 11th at the age of 72, at Waterlooville, where he had lived since his retirement, of W. Keith Welsh, L.R.C.P. Edin., who practised for about 40 years in Portsmouth. He was for nearly the whole of that period one of the parish medical officers, and his conscientious work and kindly manner made him very popular amongst members of friendly societies in the town; and he was esteemed by his colleagues as well as by a wide circle of friends and will be greatly missed.

Eradication of Verminous Conditions in London.—In its new General Powers Bill, which is to be submitted to Parliament in the session of 1922, the London County Council will seek additional powers for dealing with filthy and verminous articles and premises. The intention is to render more effective the powers already possessed by borough councils under the General Powers Act of 1904. Difficulty has been experienced in administering the 1904 Act, under which a sanitary authority cannot deal with verminous articles or premises unless a borough medical officer can certify that he has actually seen vermin therein. Under the Bill it will be possible for a sanitary authority to deal with such articles upon a report from a medical officer that they had been used by a verminous person. The work of cleansing or destruction will be carried out at the expense of the sanitary authority, and provision is made requiring the sanitary authority to compensate an owner who suffers unnecessary damage by reason of the exercise of the powers of the section, and also to compensate him for articles destroyed. A definition of vermin is included, and improved powers of entry are sought. The Council believes it will be more convenient to repeal all the provisions dealing with the subject in the Act of 1904 than to modify them, and the Bill will therfore contain new provisions.

The late Dr. Thomas Algernon Chapman, F.R.S.—On Dec. 17th Dr. T. A. Chapman died at Reigate, where he had lived in retirement, at the age of 79. He qualified M.D. Glasgow with honours in 1863, becoming L.R.C.S. Edin. in the same year. He held the posts of resident physician and surgeon at the Glasgow Royal Infirmary and later became interested in mental diseases. This interest led to his appointment as assistant medical officer to the Joint Counties Hospital at Abergavenny, and eventually he became medical superintendent of the County and City Asylum at Hereford. But Dr. Chapman's real interest and the source of his fame was the study of entomology. He was a distinguished Fellow of the Entomological and of the Zoological Societies, and in 1918 obtained the Fellowship of the Royal Society for his scientific work. His publications include a book on the genus *Acronycta* and its allies and many contributions to the Royal Society, the most recent of which, presented last session, include papers on an undescribed Lycænid butterfly from Cyprus and on the full grown larva of an allied species. The number of medical men who find sufficient leisure to become distinguished in other spheres is rare, and the death of Dr. Chapman removes a useful link between medicine and its sister sciences.

Corrigendum.—In the subscription list to the Wood-Hill Fund, appearing in our issue of Dec. 17th, p. 1299, Mr. G. Grey Turner, Mr. H. A. T. Fairbank, Mr. E. H. Bruce-Fox, Mr. William Wyllys, and Sir Hugh M. Rigby should have been shown as donors of ten guineas each. We regret the error.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

West London Post-Graduate College, West London Hospital, Hammersmith, W.

Wednesday, Dec. 28th.—10 A.M., Mr. MacDonald: Genito-Urinary Department.

Thursday.—2 P.M., Mr. Donald Armour: Operations.

Friday.—2 P.M., Mr. Sinclair: Surgical Out-patients.

Saturday.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children.

Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patients, Out-patient Clinics and Operations.

Vacancies.

For further information refer to the advertisement columns.

Bath, Winsley Sanatorium.—Asst. Res. M.O. £250.

Birmingham General Hospital.—Res. M.O. £155. H.P. and H.S.

Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.

Birmingham University.—Prof. of Anatomy. £1000.

Blackburn County Borough.—Asst. M.O.H. £600.

Bolton County Borough.—Asst. M.O.H. and School M.O. £400.

Bristol, Ministry of Pensions Hospital.—Jun. M.O. £350.

Bury Infirmary.—Jun. H.S. £150.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Canterbury, Kent and Canterbury Hospital.—Hon. Ophth. S. Also Res. M.O. £175.

Cape Town University.—Tech. Asst. in Surgery. £350. Sen. Lect. in Physics. £450.

Central London Throat and Ear Hospital, Gray's Inn-road.—Fifth Asst. S.

Chester, Cheshire County Council.—Dist. Tub. O. £600.

Colchester, Severalls Mental Hospital.—Asst. M.O. £7 7s. weekly.

Derbyshire County Council.—Sanat. Supt. £700.

Doncaster Royal Infirmary and Dispensary.—Jun. H.S. £200.

Dorchester, Dorset County Council.—Asst. M.O. £500.

Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250. Asst. H.S. £150.

Gloucester County Mental Hospital.—Jun. A.M.O. £350.

Hertford County Hospital.—H.S. £200.

Hospital for Sick Children, Great Ormond-street.—Cas. O. £400

Kidderminster Infirmary and Children's Hospital.—H.S. £180.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

Lincoln, Bracebridge Mental Hospital.—Med. Supt. £750.

Lincoln County Hospital.—Jun. H.S. £150.

Lincoln, Lindsey County Council.—Female Asst. M.O. £550.

Macclesfield General Infirmary.—Sen. H.S. £200.

Manchester, Ancoats Hospital.—Radiological Reg. £100. Res. Surg. O. £250.

Manchester Royal Infirmary.—Res. M.O. £200. Asst. M.O. and Second A.M.O. Each £100.

National Hospital for Diseases of Heart, Westmoreland-street.—Res. M.O. £150.

Norwich, Norfolk and Norwich Hospital.—H.S. £200.

Poplar Borough.—M.O. £200.

Putney Hospital.—Hon. Surg.

Royal College of Physicians, Pall Mall.—Milroy Lecturrer.

Royal Naval Medical Service.—Surg. Lieuts.

St. Peter's Hospital, Covent Garden.—Hon. V.D. Officer.

Sheffield Royal Infirmary.—Cas. O. and H.S. £150.

Shrewsbury, Royal Salop Infirmary.—H.S. £275.

Southampton Free Eye Hospital.—H.S. £150.

Southport General Infirmary.—Jun. H.S. £175.

Stoke-on-Trent County Borough.—Asst. Tub. O. £350.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Dorking (Surrey), Winchcomb (Gloucester).

Births, Marriages, and Deaths.

BIRTHS.

Cowell.—On Dec. 10th, at a nursing home, the wife of Lt.-Col. E. M. Cowell, D.S.O., M.D., F.R.C.S. (R.A.M.C., T.A.), of Park-lane, Croydon, of a son.

Edwards.—On Dec. 15th, at "Rosetta," Beckenham, Kent, the wife of Major Harry Rumsey Edwards, R.A.M.C., of a son.

Mitchell.—On Dec. 12th, the wife of E. J. D. Mitchell, M.A., M.B., Weymouth-street, W., of a son.

Unwin.—On Dec. 15th, at Kingston House, Yeovil, the wife of Harold R. Unwin, F.R.C.S., of a daughter.

MARRIAGES.

Wardrop—Sutton.—On Dec. 17th, at St. Anne's Church, Highgate, J. G. Wardrop, M.D., Leamington, to Muriel, daughter of A. Sutton, Brookfield-park, N.W.

DEATHS.

Chapman.—On Dec. 17th, at Betula, Reigate, Thomas A. Chapman, M.D., F.R.S.

Cox.—On Dec. 13th, at The Limes, Cottenham, near Cambridge, Charles Hayden Cox, L.R.C.P.I., L.M., L.R.C.S.I., aged 65.

Elliott.—On Dec. 19th, after a short illness, at 24, Nicholas-street, Chester, John Elliott, M.D.Lond., F.R.C.P. Lond., in his 61st year.

Mason.—On Dec. 17th, of heart failure, at The Limes, Deal, Alfred Mason, O.B.E., M.C., L.R.C.P., aged 44.

Middleton.—On Dec. 8th, at Dorset-road, Bexhill, William Robert Colvin Middleton, M.A., M.D., C.M., D.P.H., late Medical Officer of Health of Singapore, aged 58.

Waller.—On Dec. 16th, at Bedford, Walter A. E. Waller, M.R.C.S., L.R.C.P., aged 73.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

COLLEGE LIBRARY No.

Bradshaw Lecture

ON

SUBTROPICAL ESCULENTS.

Delivered before the Royal College of Physicians of London.

BY MICHAEL C. GRABHAM, M.D. ABERD., F.R.C.P. LOND.

THE purpose of this lecture is to bring before the College knowledge acquired during a long experience of the esculents, both animal and vegetable, produced where winter does not forbid—esculents which increasing communication, rapid transit, and modern methods of preservation have made available for us in their first freshness, when the short cold days of the north have restricted the profusion of our home-grown supplies.

In the limits of one brief lecture I can only hope to touch the fringe of so great a subject, although I also hope to justify a transgression beyond the limits which have hitherto confined the subject-matter of our annual Bradshaw Commemoration.

VEGETABLE FOODS.

I propose first to deal with vegetable esculents, selecting such examples as may best illustrate the growing importance of the food, vital and accessory, with which we can supplement home production.

Custard Apples, Smooth and Reticular.—The common custard apple, *Anona cherimolia,* grows abundantly in Madeira up to 1000 ft. above sea-level, and is exported to England in ever-increasing quantities. It matures in October and is available until April; the fruit is gathered when fully developed and ripens perfectly during the three days' voyage to Europe. There are many varieties; the best are scantily reticulated and bear few seeds. The typical fruit is not met with in perfection south of Madeira, though other species, such as the squamose, are common in the Cape Verde Islands. It will not bear a long journey and the specific delicacy of flavour is completely lost by cold storage. The stony, hard, black seeds of this delicious fruit survive beneath our feet in the Trafalgar-square district of the London clay, and indicate to some extent the nature of the flora of this latitude in Eocene times.

Cruciferæ.

The principal edible species of the cruciferæ abound in all the Atlantic islands, but are not exported.

Water-cress.—Among the cruciferæ *Nasturtium officinale,* the common water-cress, occurs in every mountain stream, and is largely used as an ingredient in Spanish and Portuguese soups. A spinach of water-cress into which fragments of the fungus *Boletus edulis* have been crumbled makes a dainty and agreeable nutriment. It is held in high repute as a remedy in pulmonary disorders and in the treatment of gout and rheumatism, and I have seen marked advantage derived from its use in the latter maladies. I was informed by a Scottish landowner that the cattle feeding in meadows which were traversed by a meandering stream stocked with water-cress were entirely exempt from the rheumatism and swollen joints affecting the rest of his flocks and herds, and that they retained the immunity thus acquired when they had migrated and mixed with other stocks.

The cruciferæ are pre-eminent in the natural orders for their antiscorbutic qualities; *Cochlearia officinalis* must not escape notice in this respect.

The Mango: the Genus Citrus.

Anacardiaceæ: Mangifera Indica.—The mango, though comparatively rare in the Canary and Cape Verde Islands, is very common in Madeira, fruiting abundantly when 10 years old. The oval yellow and pink-flushed fruit, stringy in substance, abounds with a rich nectarine-tasting juice not free from a resinous or carrot-like suggestion. Though distinctly smaller and less luscious than the more highly matured West Indian fruit, the Madeira mangoes carry well and find a ready sale in London during October and November. An attractive variety of the Bombay mango has recently been imported into Madeira, which is beginning to yield abundantly a somewhat larger fruit, free from fibre, but with a flavour slightly inferior to that of the wilder sorts.

The orange, *Citrus aurantium,* is found in all the Atlantic islands, varying in quality with local circumstances and environment. As it bears transport from distant regions and is not hurt by cold storage, there is here never any lack of the orange; the importance now ascribed to its juice in averting deficiency disease and its value in the diet of quite young children have enormously increased the perennial demand and consumption of this important fruit. At one time the Argentine ant, in association with several species of coccus and lecanium, completely destroyed the orange plantations in Madeira; but a means of dealing with this terrible pest has now been established, and once more both *Citrus aurantium* and *Citrus nobiliss* (the tangerine) flourish unrestrained in the valleys of Madeira.

Lemon.—*Citrus limonium* in several varieties, common lemon, matchless in size and flavour, is found in all the Atlantic islands, but the lime is neglected.

Citron.—The Madeira citron, *Citrus medica,* has world-wide commercial importance, and is grown almost exclusively in a deep steamy valley 2000 ft. above the sea-level; it is, perhaps, the only satisfactory fruit of its kind imported into this country.

Plant Lice and Ants.

Many forms of aphis and coccus attack the Aurantiaceæ; they are mostly apterous, the males appearing for a short season; but in one species of lecanium, yearly more and more common, the female is also winged, and thus able to spread her progeny far and wide. They are all singularly dependent on the fostering care of the small Argentine ant, and are no longer formidable when this nursing is withdrawn. *In a British Association paper on the life-history of this ant* last year I showed that 40,500 ants in association with their fostered plant lice were engaged in draining a single lemon tree of its vitality. The female ant of the Argentine species undertakes none of the cares of motherhood, but after impregnation sheds her wings, issues forth with the workers, and in her apterous state continually founds new colonies. There seems to be an ebb and flow in the prevalence and fecundity of many species, both animal and vegetable, and the ebb phase has for some years limited the activity or propagation of the apterous *Aphis phylloxera vastatrix,* which, when first introduced, practically swept the vineyards of Madeira out of existence, but which is now almost negligible. So, also, some of the testacea, *Helix aspersa* and *Stenogyra decollata,* for example, are sometimes swarming and at other times hardly met with. Among plants the useful *Physalis peruviana,* the so-called Cape gooseberry, has its waxing and waning periods, and other solaceous examples are similarly liable to the same oscillation of activity.

The Vine.

The vine—commercially negligible further south in the North Atlantic—is now resuming its proper place in Madeira, being cultivated from the sea-level to 2000 ft. above; the ravages both of the Oidium leaf fungus and of the root-sucking *Phylloxera vastatrix* are well under control. I have no space to describe the methods of Madeira vine cultivation; and I have only a word to say of the wine itself. Before me are two specimens, one to illustrate the keeping qualities of this specific wine and the other carrying interesting associations. The wine of the vintage of 1792 is still in perfect order and is typical of a slowly matured Madeira wine. The second specimen is a wine which, when about 10 years old, was tasted at my table by Sir Wyville Thompson and some other members of the *Challenger* Expedition of 1878. I sent a cask of the wine in that famous ship for the specific development a sea voyage is suppose to impart.

Need for Further Deep-sea Exploration.

But the name of the *Challenger* has other references in this College, and I should be neglecting an opportunity if I failed to emphasise the need of further deep-sea and similar explorations. Another *Challenger* expedition is long overdue; knowledge has increased, methods of investigation have improved, great food-supplying areas await investigation; the fruitful results of the first expedition—for instance, the national value of the Christmas Island phosphates discovery and the disclosing of the now famous fishery near Wyville Thompson Ridge in the Faroe Channel—should suffice to stimulate the Government to permit the insignificant outlay necessary for this aspect of the public welfare. It may not be generally realised that the result of the *Challenger* Expedition of 1878 has been published in 13 huge quarto volumes, composed mainly of new matter, and that the record is yet incomplete; but it is well known that the knowledge acquired merely touches the fringe of the wealth awaiting investigation, and it is impossible to watch the course of the Danish vessel recently sent forth on deep-sea investigation without a sense of disappointment at our national lethargy.

Leguminosæ.

The better sorts of bean and pea degenerate both in size and flavour and require fresh seed after a year or two; and even then there is lacking, as in many subtropical fruits and vegetables, the full flavour of our English productions in their proper seasons after winter rest. There are under cultivation in Madeira alone probably not less than 40 invaliding ratio is ascribed chiefly to (1) the large number of elderly men, due for demobilisation, who were invalided in order to get them home before the onset of the hot weather, especially as ample shipping accommodation was available; and (2) the fact that the battalions arriving in the autumn were found to have a large number of men "suffering from disabilities detrimental to effective service in the tropics"—that is, they had not been adequately examined before leaving England.

Amongst *officers* the admissions to hospital were 1058·8 and the deaths 11·00 per 1000; the corresponding figures for 1918 had been 1344·6 and 15·17, and for the pre-war quinquennium 567·5 and 5·14. The chief diseases causing sickness were malaria (157·0), sandfly fever (69·8), influenza (54·1), and diarrhœa (51·5 per 1000). The admissions and deaths due to enterica were 8·4 and 0·87 among officers, as compared with 4·5 and 0·44 among other ranks. Amongst the *women* the admissions and deaths from all causes were 553·8 and 10·31 per 1000, compared with 603·0 and 24·98 in the previous year, and 501·3 and 7·09 in 1910–14; and amongst *children* 321·6 and 17·45; for whom in 1918 these ratios had been 432·9 and 20·20. The chief causes of illness were debility and malaria in the women, and in the children influenza, malaria, and bronchitis.

The Indian Army.

With regard to the *Indian Army* the Report states that "there has been a satisfactory decrease in the ratio of admissions for all causes as compared with 1918." The ratio was 767·5; this was certainly lower than that of 1918 (856·3), but it was higher than in either of the three previous years (1915–17), and very much above the pre-war quinquennial average (544·6). The continued high ratio was due to influenza (with its resultant debility); return of troops from Mesopotamia, Egypt, and the North-West Frontier; and enlistment of men below the best standard of physical fitness, in order to maintain the strength of troops required. Malaria (145·6), venereal affections (65·1), and respiratory diseases (56·8) were the chief causes of sickness; and pneumonia (2·88), influenza (2·63), respiratory diseases (1·31), and pulmonary tubercle (1·08) the most frequent causes of death; the total mortality being 11·94 per 1000. The large stations showing highest admission and mortality ratios were Bombay (1701·2 and 24·85), and Peshawar (1545·2 and 36·61). There was a very notable reduction in the enteric incidence and mortality (0·40 and 0·06 per 1000), compared with 1918 (0·80 and 0·28) and with the pre-war quinquennium (2·0 and 0·38); nowhere was there any epidemic prevalence. On the other hand, the grouped diseases, dysentery, colitis, and diarrhœa, caused 65·9 admissions per 1000, more than in 1918 (58·4), and nearly double the ratio for 1910–14 (33·5); the mortality was 0·30, compared with 0·45 in 1918 and 0·14 in 1910–14. Cholera was epidemic in the Punjab and affected the troops on active service at Peshawar and in the Khyber; excluding these there were 134 admissions and 77 deaths in the garrison of India (0·60 and 0·31 per 1000). There were no outbreaks of importance except at Kamptee (where 19 cases occurred, traced to contaminated well water), and Agra (21 cases) where a hospital cook spent his spare time at his village nursing a child with cholera. Pneumonia still causes more deaths (661) among Indian troops than any other disease, but was considerably less fatal than in 1918 (2·88 compared with 6·02), though more so than in the quinquennium (1·05). On the other hand, pulmonary tuberculosis caused 219 deaths (1·08 per 1000), compared with 0·65 in 1918 and 0·32 in 1915; for Gurkhas the admissions and deaths were 5·6 and 2·73, and for the rest of the army 3·9 and 0·91 per 1000. Plague caused only 31 admissions and 20 deaths (0·1 and 0·09 per 1000). For relapsing fever there were 141 admissions and 11 deaths, giving ratios of 0·60 and 0·05, as compared with 1·9 and 0·20 in the previous year. In the Report for 1918 attention had been drawn to the fact that Secunderabad did not appear among the ten most malarious stations in India; the fever admission ratio was 141·1 per 1000, compared with 518·1 in the previous year; this was considered to have been the result of drainage work that had been carried out and the substitution of dry for wet cultivation. Although malaria is still the chief cause of admission to hospital in India as a whole, the incidence at this station has declined still further to 56·5 per 1000; this is a striking instance of the true economy that results from expenditure in adopting the necessary preventive measures. At Peshawar, however, there was an increased incidence in spite of vigorous efforts in this direction; the admission ratio was 515·8 per 1000 (compared with 135·2 in 1918). There is a highly infected bazaar population, and the open earth water channels are badly graded. The rainfall was excessive during the malarial season, and there was a lack of mosquito-proof doors and windows in barracks; mosquito nets were provided (but perhaps not used). At 35 hospitals throughout the country attempts were made to distinguish between fresh cases and relapses; out of 11,388 fresh cases, 15·93 per cent. were of the benign tertian type, 18·48 were malignant, 1·83 quartan, 0·53 mixed, and 33·23 "clinical"; among 4082 relapses these percentages were 44·14, 18·0, 0·9, 0·39, and 36·57 respectively. Sandfly fever caused 3081 admissions (13·4 per 1000), with no deaths; all these cases occurred in the Northern Army (except 43), the respective ratios for the Northern and Southern Armies being 23·4 and 0·4; at Peshawar the ratio was 154·5, at Fort Lockhart 200·0, and at Agra 209·9 per 1000. Pyrexia of uncertain origin, for which 34·9 admissions and 0·13 deaths per 1000 had been registered in the quinquennium, 1910–14, has now fallen to 2·3 admissions, with no death; and it is hoped that it will "soon become negligible as a diagnosis in hospital." There were 94 admissions for dengue, 89 of which occurred at Rangoon; in the preceding year there had been 241 admissions, and of these 126 at the same station; no remarks are made as to this obscure, but interesting, disease; there were no deaths. For the enteric group there was a notable reduction both in admissions, which were 101 (0·4 per 1000), and deaths (14, or 0·06 per 1000), the corresponding ratios for 1918 having been 0·8 and 0·28, and for the pre-war quinquennium, 2·0 and 0·38 per 1000. No outbreaks occurred of any importance. On the other hand, for the group of intestinal diseases (dysentery, colitis, and diarrhœa) there were 15,138 admissions (65·9) and 69 deaths (0·30 per 1000), compared with corresponding ratios of 58·4 and 0·45 in 1918, and 33·5 and 0·14 for 1910–14.

A most regrettable feature in the health statistics of the native troops is the enormous increase in *Venereal Diseases* during recent years. In the report of the Sanitary Commissioner for 1899 a table was given of the venereal incidence since 1877, the earliest year for which statistics were available; the admission ratio in that year was 26·7 per 1000; in the decennium 1889–98 it averaged 38·1; in 1897–1906 the average was 30·5; in 1905–14 it was 15·6, having fallen to 12·6 in 1913. Since that year the successive ratios have been 15·6, 34·3, 40·1, 45·0, 53·1, and in 1919, 65·3. The Sanitary Commissioner draws attention to this table as showing "the steady increase in the venereal admission rate which has taken place since the first year of the great war." The epithet "steady" does not appear to be quite the *mot juste* for this (over) 400 per cent. increase on the pre-war prevalence of these affections. Cholera was epidemic in the Punjab during June and July, but did not seriously affect the Indian troops, except those on active service outside India. There were 134 cases and 77 deaths (0·6 and 0·31 per 1000) in the Indian garrison; Agra (21 cases, all in September) and Kamptee (19, all in June) were the stations that suffered most.

Pneumonia, with 12·8 admissions and 2·88 deaths per 1000 (some probably due to influenza) is still the most frequent cause of death in the Indian Army; but shows considerable improvement compared with 1918, when the ratios had been 19·6 and 6·02; in the pre-war period (1910–14) these ratios had been 7·7 and 1·05. Pulmonary tuberculosis, on the other hand, was both more frequent and more fatal than in recent years; the admissions, which for 1915 to 1918 had been in ratios of 2·8, 2·8, 2·9, and 2·5 per 1000, rose to 4·0; and the deaths, which had been 0·32, 0·42, 0·63, and 0·65, rose to 1·08 per 1000. Very high admission rates were recorded at Ahmednagar (18·6) and Benares (12·3). Gurkha troops as usual suffered most, their admission and death ratios being 5·6 and 2·73, compared with 3·9 and 0·91 for the rest of the Native Army.

The weather conditions are summarised in the section dealing with the health of the general population. For the plains of India as a whole the rainfall was 4 in. above the average, the only areas having marked deficiency being the Bay Islands, Assam, Baluchistan, and North Hyderabad.

The Health of the General Population.

Owing to the heavy influenza mortality the birth-rate fell from 37·85 (the quinquennial mean) and 35·35 (in 1918) to 30·21 per 1000; but it is acknowledged that registration is at fault, especially with regard to female births. The death-rate was 35·87, compared with 62·46 in 1918 and 36·81 in the quinquennium, 1914–18; the highest ratios were recorded in Assam (50·09), Central Provinces (43·24), and Delhi (42·00); the lowest in Madras Presidency (27·2), and the Punjab (28·31). The infant mortality varied between 17·6 and 17·7 in the North-West Frontier Province and Punjab and 32·9 in Madras city, 35·8 in Calcutta, and 65·3 in the city of Bombay. Tetanus neonatorum was prevalent in many towns and districts; much is being done, however, in the training of native midwives and the provision of maternity and child welfare centres, as well as in the establishment of coöperative dairies under skilled supervision.

The general population suffered more from cholera, small-pox, and diarrhœal diseases than in the previous year, the death ratios under these three headings being 2·43, 0·57, and 1·22, as compared with 2·35, 0·30, and 1·16 in 1918. The increase in cholera prevailed throughout the country.

come) reports the presence of the tree in abundance and vigorous condition 7000 ft. above sea-level in those scarcely explored regions. To those who do not habitually drink it coffee may prove an effective medicine; it is a valuable adjunct in the treatment of intermittent fevers, it relieves asthma, and it assists in overcoming the effects of alcohol or opium.

Compositæ.

The Jerusalem artichoke, *Helianthus tuberosus*, grows in Madeira with the same weedy profusion as in England and will profitably occupy waste ground with little care or cultivation. Artichokes (originally Brazilian) yield a heavy crop, and the interest just now attaching to the tubers has reference to the presence in their abundant tubercles of 12 or 14 per cent. of inulin, a substance akin to starch, but convertible by appropriate treatment into fructose—the sweetest of all sugars. I learned the nutritive and sustaining value of the artichoke in the second year of the war, when our reserves of food were exhausted and we had to devise or improvise new methods of sustaining life. I soon found out the value of the artichoke, then growing in small plots of waste land in my mountain home. Three or four of the tubercles were boiled into an imperfect purée, to which I added a handful of the succulent roots of *Oxalis purpurea* and a little salt. Meanwhile some strips of pumpkin food were boiled with three or four ounces of fat until the latter was emulsified or saponified; during the process chopped cabbage leaf, water-cress, or a few chestnuts were mixed in. When the cooking was nearly finished I crumbled into the mixture small pieces of half a dozen large boletus fungi. Three famished men were then fed sparingly on this potent food and regaled after two hours more copiously; and on the strength of this meal they worked nearly all day with well-sustained energy. During the stress of threatened starvation we discovered the unsuspected value of many a neglected esculent, and we also became conscious of the excesses of our diet in normal times. I made a point sometimes of interrupting a hungry man in his voracious consumption of a bulky meal to find, after half an hour, that appetite had been completely satisfied and that the remaining portion of his food would merely have taxed his gastric powers for purposes of elimination and rejection.

Convolvulaceæ.

Batatas edulis is cultivated in all the Atlantic islands in great profusion. The sweet potato is the foundation food of the Madeira peasantry and yields crop after crop freely with no restriction of season; but there is no storage or overplus for exportation either in Madeira or the Canaries. The tubers vary in weight from three or four ounces upwards, and their size relates in a great measure to the space allotted to the trailing or climbing growth of the stem, which, when unrestrained, will yield 25 to 30 lb. weight of potatoes. A man will do a heavy day's work on a sufficiency of plain boiled "batatas," but owing to their high percentage of starch the latter require to be supplemented occasionally with food of greater nitrogenous value. In the Azores the sweet potato is grown on a larger scale and is found capable of yielding a high percentage of alcohol; it has been estimated that tubers having 25 per cent. starch will yield 38 gallons of spirit per ton. The spirit thus extracted is largely used in the treatment of the wines of Portugal. A reliable analysis of sweet potatoes shows the main constituents as albumin 8·7, fatty oils 0·7, starch 80·3 per cent. from material dried at 212°F., and it has been found that three tons of starch possessing a high commercial value can be made from 12 tons of sweet potatoes, leaving a rich residue suitable for cattle food. It would thus be difficult in many respects to overrate the esculent value of this interesting convolvulus.

Solanaceæ.

Tomato (Lycopersicum) farming has now become an important industry, and it is difficult to cope with the growing demand of the European markets. Forty years ago the British supply was limited to the summer produce of our own gardens and tomato houses, and no general or perennial demand had developed. Several forms have long been naturalised in all the Atlantic islands and are to be found semi-wild in every district. This is especially the case with the wild tomato, *L. cerasiforme*, an excellent culinary example growing in every waste place perennially. In St. Jajo (Cape Verde Islands) whole mountain tracts are covered for miles with matted beds of this variety laden with its brilliant fruit, a potential wealth yet to be turned to account. Quite recently the Italians have succeeded in extracting from tomato seeds an oil suitable for soap-making. The Portuguese preserve the tomato for months in perfect freshness, entire in brine or coarse salt; preserved in this manner it must have been at my suggestion of priceless benefit as an antiscorbutic to Nares in his long and adventurous southern expedition.

Potato.—The potato, *Solanum tuberosum*, is cultivated at all seasons both in Madeira and the Canaries at all elevations, and forms an important portion of the food of the whole population, besides yielding an overplus to northern markets as new potatoes in the early spring months. The potato, though not a perfect nutrient, is believed to yield a greater bulk of sustenance per acre than any other cultivated vegetable; no other vegetable esculent is considered so essential an accompaniment to our daily meals.

Melon Pear.—The interesting *Solanum guatamelense* was brought to Madeira 30 years ago; it became well established under the fanciful name of melon pear. It bears pallid, yellow, somewhat insipid fruit as large as that of the cyphomandra, and has become the prey of the Argentine ant, in association with the *Coccus hemisphericus* of the Azores.

Cape Gooseberry.—*Physalis peruviana* is found as a weed in every garden from the sea-level to 3000 ft. above. Of the abundant fruit not one-tenth is collected, though there is an unfailing demand abroad for the Cape gooseberry jam yielded by these wholesome berries.

Lauraceæ.

Alligator Pear.—*Persea gratissima*, the avocado or alligator pear, with its thick butyraceous substance (the midshipman's butter of other days) is an excellent fruit, creamy, rich and nutty in flavour, largely eaten also as a vegetable in many forms. The pear softens in ripening four or five days after picking, and thus arrives in perfection for sale in London during the late autumn. I have sent abundant seed of our wild indigenous *Persea indica* far and wide with the view of increasing by grafting the range of the alligator pear in climates with temperature variations greater than those of Madeira. The protein content of the fruit is 2 per cent. and the fat 15 per cent.

Cannaceæ.

The famous Madeira arrowroot is grown chiefly from *Curcuma leucorhiza* and has a high commercial value. The yield is important and the quality of first-rate excellence. There is no other starch comparable in specific gravity or nutrient value to this sort when well cleaned and prepared.

Musaceæ.

Banana.—Of the many varieties of banana the Atlantic islands mainly cultivate *Musa cavendishii* both for export and home use. This fruit is brought to all the European markets, both from Madeira and from the Canary islands, and is greatly superior in taste and quality to the larger, coarser, and more insipid fruit imported from Costa Rica and the West Indies and sold in every London street on costermongers' barrows.

A far superior fruit is yielded by another species, *M. sapientum*, much cultivated in Madeira for home use but taking quite two years to mature, and known elsewhere as the silver banana or, as Sir D. Morris tells me, the apple banana. The tree grows quite 30 ft. high and is liable to destruction by high winds; the fruit requires tender handling in packing if exported. During the war the entire crop was needed locally, and in any case there were no steamers available to convey supplies away, but normally both Madeira and the Canaries yield a heavy overplus, mainly of *M. cavendishii*, which has a well-recognised value in London. Though the banana flowers are apparently perfect and their pollen abundant no seed has been known to develop through dissemination by bees. A recent analysis gives the food value of the average banana as protein 1·3 per cent., fat 0·6 per cent., total carbohydrates 22, and the tremendous importance of the fruit in our national feeding is now fully recognised, the better sorts preserving a very exquisite flavour.

The banana has spread to the masses of our people while retaining its place on the dessert table of the rich. In my early days bananas were only known in London as a curiosity with no suspicion of their great nutrient value; and for some years later they were quite unsaleable while our English summer fruits lasted. Fifty years ago the total value of fruit of all kinds exported from Jamaica was only £720; this small sum was the commencement of a banana trade which to-day is valued at a million and a half pounds sterling and is constantly expanding as the demand grows. The substantial volumes which have been written on the banana have by no means exhausted the description of the attributes and uses of the plant apart from the food value of its fruit.

Bromeliaceæ.

Pineapple.—*Ananassa sativa* will grow wild in most of the Atlantic islands, but needs all the care, selection, and treatment which have brought the fruit to perfection in the western islands; there, sun-ripened with scientific precision and methods of stifling and retarding, its appearance is made to coincide with the season of greatest demand in London and elsewhere.

Liliaceæ.

Onion.—*Allium cepa*, the common onion, is cultivated in all the islands and exported in fabulous quantity. The size and quality obtained in Madeira can hardly be surpassed; I once had a dozen bulbs presented to me, of which one weighed 4 lb., three others more than 3 lb., and the whole

AN IMPROVED VARNISH RAT-TRAP.

THE device of catching rats by putting down stiff boards smeared with lithographic varnish, with bait in the centre and foot-hold round the outer edges, originated, we believe, with Dr. W. J. Howarth, M.O.H. for the City of London. Dr. F. W. Alexander, M.O.H. for the borough of Poplar, informs us that one of his inspectors has improved this device by cutting a hole in the centre of the board with foot-hold round the hole and baits at the outer edge. This method of adapting the boards to surround the rat-holes has the advantage that the rats cannot avoid the boards, nor can they do so when, the rat-hole being against a wall, the hole in the board is made at the side instead of in the middle of the board.

BIRMINGHAM NERVE HOSPITAL: ANNUAL REPORT.

THIS is a self-supporting charity. The accounts show a gain of £180 on the year's work and an accumulated surplus of £126. New patients numbered 3101, against 2601 in the previous year, and the attendances were 26,421, against 23,288. The departments of electricity and massage have been specially successful and are to be extended and developed to meet the increasing demands. In moving the adoption of the report the Lord Mayor (Alderman David Davis) said that the hospital had been faced with exceptional difficulties from its inception. These had not yet been removed, and he would have been glad to be able to congratulate the governors upon the fact that the medical profession had offered their gratuitous services as they did to all the other hospitals. They must hope that the time was not far distant when they would receive from the medical profession that recognition to which he thought their work entitled them. During the past year the hospital had had arduous duties to perform, and enormous success had attended their efforts. The time must be rapidly approaching when a different feeling would exist towards new hospitals. If the Nerve Hospital had been doing work similar to that already carried out by other hospitals, then it might be urged that they were overlapping and there was no necessity for their hospital. But they were doing new work and relieving distress and suffering to an extent other hospitals had not yet recognised. He congratulated the governors on their financial position and wished them all success. Mr. Joseph Ansell said that many difficulties had disappeared. The need for such a hospital had been shown again and again, and he was hopeful that at the forthcoming conference any possible difficulties which at present existed between the medical profession and the hospital would disappear. Sir George Bean was elected president for the ensuing year.

THE GOVERNMENT OF INDIA AND INDIGENOUS MEDICINE.

A STATEMENT has been issued by the Government of India defining the position of indigenous medicine in the United Provinces of Agra and Oudh as regards State aid. The Ayurvedic and Unani systems of medicine are still widely popular in this province, and the policy of the Government is to help in the extension to the poor of all kinds of medical relief, including the indigenous systems of medicine; for the encouragement of the latter they included a sum of Rs.25,000 in the current year's budget. The step was in part experimental and the Government have not yet come to a final decision as to the best methods of affording financial assistance. It is believed, however, that the following methods are likely to be most fruitful: (1) To give grants to local bodies to establish travelling or stationary Ayurvedic or Unani dispensaries; (2) to give grants to existing Ayurvedic or Unani dispensaries provided that they are controlled by influential managing committees; and (3) to give grants to existing institutions for the training of Vaids and Hakins subject to the same proviso. The question of the management of Ayurvedic and Unani dispensaries maintained by local bodies is not free from difficulty. The ordinary medical staff of the district will not be available for the purpose, and the Government are of opinion that the supervision will be best exercised through health committees of the local bodies concerned. As regards grants to private institutions, no definite rule can be laid down, but before a grant is made the Government will require proof that the managing committee is influential and that the control exercised is adequate. The grants to local bodies have been allotted in most cases on the principle of giving three-fourths of the amount required for the maintenance of the dispensaries which the local bodies propose to establish, and will not actually be granted unless the local bodies agree to provide one-fourth of the actual annual expenses. In future years the Government will insist on local bodies bearing a more substantial portion of the burden. In addition to Rs.25,000 distributed to various centres a sum of Rs.30,000 has also been sanctioned for the Ayurvedic College established at Hardwar.

CRIMINAL ABORTION.

AT a recent inquest concerning a woman who died of acute general peritonitis consequent upon abortion and septic infection of the womb, Dr. F. J. Waldo, J.P., coroner for the City of London and Borough of Southwark, stated that criminal abortion had become increasingly common since the war. The dread of large families was great among many women, and habitual abortionists abounded. It behoved the police to be on the watch. Conflicting evidence, he added, had been given in the course of that particular inquest, and he trusted that the police would make good use of the clues provided. The jury deemed the evidence insufficient to show how infection was brought about.

THE HOSPITAL STAFF DISPUTE.

THE Metropolitan District Committee of the National Federation of General Workers has recommended all members of trade unions to cease subscribing to London hospitals until these have granted trade-union rates of wages to their staffs. An agreement arrived at by arbitration in July, 1920, between a group of seven hospitals and the Federation fixed the minimum wage of £3, including food, for a week of 48 hours, and it appears that most of these hospitals have given notice to withdraw from the agreement at the end of the present year. Freedom of action is the reason given for this course, and the denunciation of the award does not necessarily imply the intention on the part of hospital authorities either to increase the hours or to diminish the remuneration of their staff. The matter is obviously one for the British Hospitals' Association and the Workers' Federation to decide by collaboration. Whatever basis of charity may still lie at the root of the voluntary hospital system, there can be no intention on the part of any hospital committees, as employers of labour, to deal with their staffs otherwise than they would do in an ordinary commercial undertaking.

CHESS AND PROGNOSIS.

CAPABLANCA'S admirable treatise on "Chess Fundamentals" (London: G. Bell and Sons, Ltd., 1921, pp. 246, 10*s.* 6*d.*) will appeal to numbers of medical men and women who find their pastime in chess and who will welcome a companion volume to "My Chess Career." The manual may have a deeper interest to the student of medicine for, in setting out the best way of arriving at an end-result, it helps to throw light on that difficult game of prognosis which resembles in so many particulars a hard-fought game of chess. In medicine as in chess prognosis depends on many factors, some of them under the player's control, some not. Nature and the other fellow are both apt to find out the player's weak points. Capablanca's method of teaching is to take the end-game play when only a few pieces remain on the board, and to show the inevitable or what may be called the classical endings, when, for instance, knight and bishop can only mate the widowed king in one corner of the board just as a chronic renal or heart case may *carry on indefinitely* until cornered by a *final attack* of pneumonia or influenza. From simple end-games the strategist works back to the tactics of the middle-game with more pieces on the board and many complicating factors at issue, and leads up to the general theory of direct attack en masse or for the cutting off of particular pieces from the scene of action. The whole is a pretty analysis of a complicated game, which holds the reader as only an expert completely conversant with his subject can do.

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the chief town of Madeira, is named from the prevalence in the neighbourhood of this potent herb.

Many other species of Scombridæ also abound in East Atlantic waters. Among them is *Lepidopus caudatus*, now classed among the Trichiuridæ—a truly subtropical fish of wide distribution—known occasionally even as far north as our own southern coasts, and here called the scabbard-fish. In New Zealand it is known and esteemed as the frost-fish. The lepidopus has a band-like body, black, without scales; taken at Madeira at all seasons, it is with the tunny the mainstay of our market supplies. It grows to a length of about 6 ft. and rarely exceeds 7 or 8 lb. in weight. Though found at all depths, the lepidopus in the slender structure of its bones and other respects must be considered a deep-sea fish; its rapacious character is indicated by its formidable dentition. The flesh of no other fish is so serviceable for the table as regards variety of cooking.

Sherny.—I select the *Polyprion cernium* as typical of the highly important food-yielding order of Serranidæ. This *species is known as the wreck fish, from its habit of accompanying* floating wood, attracted thus by the small marine food species generally associated with such objects. Known as the shern or sherny, the fish has a great geographical range, and without following it into the Pacific we find it throughout the Atlantic Ocean, and even also in the Mediterranean at the present day, though there is no trace of the species in that sea in the writings of the ancient Greek and Roman naturalists. It abounds in subtropical waters and in Madeira, where it seems to occupy the place of the familiar Mediterranean *Sciæna aquila*, it is one of the commonest and best known fishes in the market, esteemed for its white flesh and substantial nutriment, though lacking any particular excellence of flavour. Possessing a high degree of muscular irritability, this fish is better for being kept quite 24 hours before boiling. The pulsation of the sherny's heart is maintained for some hours after every other sign of life has ceased—quite six hours, in my experience, when the organ has been laid open to view—and the fishermen affirm that cardiac movements sometimes continue for two days, though you cannot revive them when once they have ceased. Some of the sharks show the same apparent survival of cardiac life or motion, for I have held in my hand the beating heart of *Zygæna malleus* for some minutes after the organ had been severed from a recently captured fish. The sherny of these latitudes is only captured by the hook, and though shoals of small fishes weighing from 5 to 20 lb. are often to be taken near the surface, the proper home of the full-grown adult is in the deep open abyss where, weighing from 30 to 100 lb. or more, it is taken at the enormous depth of 2000 to 2500 ft. or even deeper. Coming up from a depth so stupendous the fish becomes so distended with gas, expanding upon the removal of the vast pressure below, that it rises to the surface, not indeed dead, but wholly powerless, in a sort of rigid cataleptic spasm. The stomach is usually inverted and protruded into or through the mouth, and its eyes forced far out of their sockets. Its life-history, rate of growth, food, and the circumstances which determine its descent from the warm surface water into the cold depths, and the means necessary for securing and utilising this great source of valuable food, are problems awaiting solution. In general character and appearance the sherny is a plain, dull-coloured unshapely fish, with a capacious gape and enormous head, showing a clear generic affinity to Serranus, but its fascinating anatomical details are beside the province of this lecture.

Market Varieties.

Distinguished ichthyologists have wondered at the variety, abundance, and colouring of the southern fish markets. There are no flat fish, and the common members of the cod-fish tribe, which so largely fill our stalls in England, are usually represented only by one subordinate species of the tribe, the Mediterranean phycis. Many of the most useful of the fish esculents are present throughout the year, though more abundant in spring and early summer; among them two species of Clupea, the *Caranx trachurus*, the familiar Zeus or John Dory, and the appreciated red mullet; but the seasons are marked by the prevalence and predominance of successive forms, which month by month vary the perennial supply. The red mullet is taken abundantly at all seasons in shallow water, in traps made of cane or wicker-work without any bait, into which the fish aimlessly wander. I once tried to augment their capture by suspending a few luminously painted shells in the traps to entice them, but these experiments were entirely vitiated by the intrusion of unwelcome visitors—octopus and conger—which, attracted by the unusual phosphorescent glow, entered and devoured the rightful occupants of my cages.

An Unexplored Food Reserve.

The impression left after contemplating our fish markets and noting the patient and primitive methods employed in capture is that we have in these southern waters a reserve and wealth of food which, in the progress of investigation, will eventually be made to minister to the needs of many regions now beyond the narrow limits of its application. And when we remember the great depth of the oceans and that plants may live and function three or four thousand feet below the surface, and moreover that animals are found at every depth, we may truly conclude that the total quantity of living matter in the sea greatly exceeds that on the land surface of the earth. The whole subject of these super-equatorial marine food resources abounds with both economic and biological interest. The surface plankton has yet to be explored; we have in these abundant surface foods a key to the welfare and maintenance of life in the depths; and it is not unusual to meet in their early stages crustacean and other species which, bred and born on the surface, *disappear and are not afterwards known in their* maturity in these waters. The globigerinous ooze on the surface below also bears evidence of the perpetual rain of food descending from above. Much of this surface organic matter is, doubtless, intercepted and consumed in its fall, but far more either reaches the bottom or is actually dissolved in the sea water and becomes thus a tangible source of deep-sea food. Nevertheless, the fat robust condition in which our large deep-sea fish arrive at the surface when captured, and the numbers in which we know them to abound, suggest the nutriment available in these abysses.

With the desire of knowing something more of deep-sea life and nutriment I have recently been sinking some large, closely woven wicker-work traps a couple of miles out at sea S.E. of Madeira in water about 1000 ft. deep. The traps are let down with stout cords buoyed all the way down at intervals with large cork floats which ease the labour of hauling in. Barnacles and other creatures soon attach themselves to the cork floats, and thus show that life is not absent in any stage of this sea depth. The traps are baited with some highly pungent decomposing animal matter, and are drawn up every 6 or 12 hours for examination. If the trap has rested on the smooth Atlantic globigerinous ooze, where—as they would be exposed to the vigilant monsters in search of food—the smaller creatures do not venture, the take is negligible; whereas, if the bottom is rocky or near some stony ledge, there seems to be an unfailing supply of well-nourished and tempting prawns (*Pandalus*) and Amphionidæ. The prawns, like some of the larger deep-sea fish I have been describing, do not survive their transference to the surface, but arrive dazed or dead. Some of them escape from the traps in the process of hauling in, but float to the surface dazed and helpless with the destructive expansion already noticed.

The Sea Bottom.

The condition of the sea bottom is not less mysterious than the life-history and food of its occupants, and occasionally we know it to be subject to change and disruptive commotion. It was my good fortune to observe the occurrence of one such commotion. I was observing at that time the strength and variations of the electrical so-called earth-currents which affect our deep-sea cables, and which, sometimes weak and sometimes active, are never entirely absent. My hope was to establish a definite relation between these submarine indications and the earth tremors registered by seismographic observation, and thus render it possible not merely to record but to predict an earthquake or a threat of earthquake in a given locality. On this occasion an earthquake of moderate intensity actually happened, shaking down great masses of rock and generating a surface wave of sea water of considerable magnitude. But the cable currents were present in great excitement quite three days before any sign of coming commotion could have effected an instrument of vibration. The cable under observation happened to lie in the path of commotion and was destroyed by the submarine disruption. It was the accident of the earthquake locality coinciding with the path of the well-marked varieties of the common French or kidney bean, *Phaseolus vulgaris*. The climbing sorts flourish in the summer season, but the dwarf kinds produce crop after crop perennially and contribute largely to British and continental markets for green vegetable food in the winter months.

The Soya bean was unknown in these regions until, in 1910, I introduced an important variety of *Glycine hispida* from Portugal. The plants have yielded their small almost round bean copiously and can be relied upon for both as a spring and autumn crop; but the species is not fully acclimatised and has suffered from some degree of hybridisation which, in spite of the power of self-fertilisation the plant possesses, the bees of Madeira have managed to effect.

The American estimate of the exceptional position held by the Soya bean is thus stated by Osborne and Mendel: "The Soya bean is probably the only seed yet investigated which contains both the water-soluble, and in a limited quantity, the fat-soluble, unidentified dietetic essentials known as vitamins: and this fact, taken in conjunction with the high physiological value of their protein, lends an unique significance to the use of this esculent as food."

The practical application of the Soya bean in a variety of cooking is very extensive and the sustaining quality is very great, whether the bean is used alone or as an adjunct. At my own table I have used the bean either as a soup purée or as a most agreeable mush to serve with fish or meat of any kind with much satisfaction. The so-called Soya milk has too much of its own specific taste for use in tea, but is excellent and creamy in coffee, and to replace milk in pastry. As human or cattle food, fertiliser, or source of vegetable oil, the Soya bean plant is an esculent of the highest economic value, and I hope to establish it shortly in the rich and extensive lands around Lake Tsana in Abyssinia, where, 7000 ft. above the sea, in true subtropical environment and in the absence of allied species and liability to hybridisation, it will become a food resource of first-rate importance. Records show that the Soya bean was cultivated and esteemed in China 5000 years ago, but only in modern times has exact knowledge of its worth been obtained.

I cannot leave the leguminosæ without a reference to the two aspects of their estimated value met with in accessible literature. Burton, in his fascinating treatise on diet and melancholy, dismisses the entire tribe with one laconic comment, "All pulse are naught." But in the charming legend of the Jewish captives who were to be fed and fattened for presentation to the king, but were allowed 10 days' experience on pulse and water alone, the probationers in that short period appeared "fairer and . . . . fatter in flesh than all the youths which did eat of the king's meat." The pulse and water diet seems to have been continued for three years without, in those primitive times, developing any of the deficiency diseases we now dread from such restrictions. I always thought that the potent pulse of Nebuchadnezzar might have referred to *Ervum lens*—the widely distributed lentil, the favourite pulse of super-equatorial regions—but there is conflict of opinion on the matter; and my learned friend who presides over the Royal Gardens at Kew considers that the prevalent *Phaseolus radiatus*, found everywhere in the East, may with greater probability be regarded as the food of the Jewish captives.

Amygdalaceæ, Rosaceæ, and Pomaceæ.

The peach, *Amygdalus persica*, may be said to flourish too well in Madeira, for its cultivation by the propagation of good sorts and eradication of the self-sown, worthless, hard-fleshed seedlings, is thus sadly neglected. Perennially green, in all cases it is grown in the standard form, coming into flower about Christmas or earlier, and ripening from July to September. The same remarks apply both to the nectarine and apricot, several kinds of which produce enormous crops of hard, poor fruit in the absence of selection or cultivation. The almond flourishes especially well in the island La Palma of the Canaries, where whole deep valleys are devoted to it. The plum, *Prunus domestica*, and the cherry, *Cerasus avium*, provide abundant crops.

The strawberry, *Fragaria vesca*, occurs in every variety, both wild and cultivated, in Madeira, though not further south. It begins to be abundant in April and yields heavily until September, never being entirely absent.

Of the Pomaceæ, *Pyrus communis*, the common pear, is abundant, but the fruit, even of the best sorts, is inferior. *Pyrus malus*, the apple, is grown in many kinds in Madeira and the Canaries, but further south rarely seen. Quince, the common cydonia, thrives in all the islands and is preserved by the Portuguese as an excellent marmalade. *Mespilus germanica*, the common medlar, is found only in Madeira, and yields excellent fruit, which, however, is not greatly esteemed. *Eriobotrya japonica*, the loquat or Japanese medlar, a more important fruit, has become extremely common in Madeira, but not further south; its acidulous amber-coloured fruit, which is produced from February to May in great quantities, should be available as a cheap and agreeable comestible in the fruit-vacant months of the early English spring.

Among the Myrtaceæ, the guava (Psidium) is found principally in Madeira. The fruit is largely used like apples for culinary purposes and for dessert, but does not now exist in sufficient quantity for export on account of the ravages of the Argentine ant. The white fruit is far superior to the red and smaller variety. *P. littorale* and *P. cattleyana* flourish everywhere and yield an agreeable little fruit, sometimes twice a year.

Passifloraceæ.

Among all the gorgeous varieties of passion flower which adorn the Madeira gardens two only need here be mentioned. The abundant *Passiflora edulis* has purple fruit the size of a small hen's egg with orange-coloured pulp and an agreeable raspberry-like flavour; it was hardly known in the Canaries a few years ago. *Passiflora lowei* is the best of all passion fruits, being as large as a duck's egg and of an orange-yellow colour; this species was originally brought to Madeira—probably in transit—from the Canaries, but was unknown a few years ago in any of the islands beyond these. The entrancing beauty of the flower alone would entitle the plant to a conspicuous place in any garden, but the fruit is in request beyond these limits and is hence exported in increasing quantities. I have sent the seed to almost all our dependencies, and have excellent reports of its establishment and appreciated value.

Cucurbitaceæ.

The cucumber, *Cucumis sativus*, uncommon in the Canary and Cape Verde Islands, abounds in Madeira, where a stunted-looking variety grown on the hot rocks in a few inches of soil acquires an excellence of taste and quality hard to equal elsewhere. A cucumber or two, with a little salt and a loaf of bread, makes a satisfying breakfast for many a labourer. Of the gourds, *Cucurbita melanosperma* is a watery constituent of an agreeable Portuguese soup, and is supplied in bulk as a table vegetable to passing ships. This gourd is well known in the Canaries, but no further south. *Cucurbita moschata* is largely cultivated in all the islands, though attaining in no other place the excellence it possesses in Madeira, where for at least six months in the year it provides perhaps one-third of the daily nourishment of the people. The importance of this esculent in the Atlantic islands can hardly be overrated, and its value is quite comparable to the importance of the potato in Ireland; with its large supply of saccharine and farinaceous material and its facility of combination by boiling with fatty substances it makes a most nutritious food, as is shown by the surprising muscular power and endurance of the Portuguese peasantry, who so greatly depend on it. I have sent seeds of this truly desirable food far and wide.

Sechium edule chocho, the pepinella, seems to have come to Madeira about 100 years ago A full description of the species and its attributes would occupy the entire time allotted to this lecture. Besides the charm of its cultivation, its surprising growth, and the peach-like fragrance of its creamy flowers, the plant yields now a copious and unfailing supply of an esculent of the first order in food value. I have sent this wonderful vegetable to many countries—selecting the green and more tasty variety, though Sir Daniel Morris tells me that the white sorts do better in the tropics, and it is now established in many regions formerly devoid of cucurbitaceous produce. The sechium is propagated by planting the one-seeded fruit entire, the whole gourd enlarging into a persistent subperennial rhizome a foot or more in diameter and sending up annually, when well-established, 100 or more shoots to cover a trellis of enormous extent from whence hangs the small fruit in myriads. I know of no other such transmutation of the nutrient surrounding matter of a seed into the permanent tissue growth of the new plant. The pepinella is boiled as a favourite vegetable in the winter months and has an agreeable nutty flavour, together with a greater power of combining with fats than I have observed in any other gourds. It is, moreover, free from fibre and very digestible; I have employed it to great advantage boiled with cream and other fats as a non-irritant food in gastric ulceration, enteric fever, and other intestinal disorders.

Coffee.—Rubiaceæ coffea arabica, the Madeira coffee tree, once cultivated with great success with respect to the excellence of produce, was entirely destroyed before we learned how to restrain the depredations of the Argentine ant; it is now slowly re-appearing. The plant grows freely in the Western Islands, and the principal valleys of the Portuguese Cape Verde Islands are jungles or thickets of coffee growth yielding in great abundance a small berry of excellent quality. Apart from the Liberian species, with which I have not succeeded in Madeira, several new varieties of this important esculent have recently been found in the development of our Central African dependencies. One of these—*Coffea robusta*—is being distributed from Northern Nigeria and yields a fairly large berry of excellent flavour; the leader of the present Grabham Mission to Lake Tsana in Abyssinia (whence the coffee tree is believed to have first nor can we agree with certain premises used in their explanation. Cammidge and his collaborators found: (1) That the effect of a purely protein meal in raising the blood-sugar was little if any less than that of carbohydrate foods; (2) that, in the normal person, a fall in the blood-sugar level occurs during the first half hour after a mixed meal, this fall coinciding with the "alkaline tide" in the urine and the passage of sodium-ions from the stomach into the circulation; (3) that the normal blood-sugar curve after a mixed meal containing carbohydrate included this preliminary fall in the first half hour, then a rise, reaching its maximum in three hours after the meal, followed by a gradual fall until the blood-sugar reached its original level at the fifth or sixth hour. In contrast with these, our results in similar experiments, while confirming those of Jacobsen,[5] Maclean and de Wesselow,[3] Frank and Melhorn,[6] and others, show: (1) That for at least five hours after the ingestion of protein there is no appreciable rise in the blood-sugar; (2) that in a normal person the effect of a mixed meal containing carbohydrate is to produce an immediate rise in the blood-sugar without any preliminary fall; (3) that, after such a meal, this rise is greatest during the first half hour or so and reaches its maximum within 60 minutes, subsiding quickly to regain its original level within two hours. Moreover, their explanation of the factors which promote glycogenolysis through activation of the diastatic ferment of the liver does not take into account that the liver is not richer in diastase than the muscles, lungs, kidneys, and other organs; that it is extremely improbable that the absorption of acid is so great as to overcome the regulating mechanism in the blood, and so produce an actual increase in H-ion concentration; and that, given the presence of a certain minimum of salts for diastatic action, a mere excess of sodium chloride in the liver cells will not increase that action in proportion to the excess. Prior to Cammidge, Forsyth, and Howard, similar ideas were expressed by Langfeldt.[8]

Experiment on Rôle of Acid Secretion in Rise of Blood-Sugar.

The following experiment which we carried out affords more practical evidence that the acid secretions during digestive activity in the stomach play no part in influencing the rise in blood-sugar following the ingestion of food. To a healthy adult 50 g. of glucose dissolved in water were given by the mouth. The blood-sugar rise was determined by estimations of blood taken at intervals of 20, 30, 40, 60, and 100 minutes after. A week later, under similar conditions, an Einhorn's tube was passed into the jejunum (position confirmed by X ray), 50 g. of glucose were then passed into the jejunum and the blood-sugar rise determined at similar intervals. The results were as follow:—

(1) 50 g. glucose absorbed by stomach; (2) by jejunum.

	(1)	(2)
	Blood-sugar per cent.	
20 minutes	0·151	0·136
30 ,, ...	0·153	0·167
40 ,, ...	0·161	0·161
60 ,, ...	0·132	0·117
100 ,, ...	0·102	0·102

These results show the close similarity of the blood-sugar rise which occurs whether the material is first taken into the stomach or passed directly into the small intestine. In the latter case it is difficult to conceive that the result could be influenced in any way by the production of acid in the stomach. Moreover, experiment shows that strongly acid or alkaline solutions of sugar taken by mouth produce the same change in blood-sugar concentration.

Details of Method for Determining Liver Efficiency.

The patient must fast for at least three hours before the test is carried out. In the normal person the influence of the preceding meal on the blood-sugar will have passed off. *It is perhaps better in many cases* to make the interval longer than three hours, and in hospital practice our routine is to instruct the patient to eat a very light breakfast and then attend at the laboratory four or five hours later. The first sample of blood for sugar estimation is taken immediately before the patient drinks the lævulose, further samples being taken at half-hourly intervals for two hours. With a suitable method, estimations of the blood-sugar in these samples can be carried out in the intervals between the taking of the blood. The lævulose is given dissolved in 100 to 200 c.cm. of water. The amount varies with the size and weight of the patient. The following are convenient amounts:—

For a person of		lævulose.
80 kilos	50 g.	
60 ,, ...	40 ,,	
40 ,, ...	30 ,,	

In normal persons these amounts of lævulose will cause no appreciable rise in blood-sugar. But for the purpose of the test they should not be exceeded. In many normal individuals whose blood-sugars show no rise after 50 g. lævulose, a definite rise can be provoked with 100 g., which appears to be beyond the immediate capacity of even a healthy liver. It is for this reason that restriction of the amounts must be made.

For clinical purposes a micro-chemical method of blood-sugar estimation is necessary. Venous puncture is thereby obviated. We have used Maclean's[7] method throughout. In this, capillary blood is taken from a needle prick into a 0·20 c.cm. pipette, with little or no discomfort to the patient. In a series of cases we carried out urinary examinations to determine the degree of glycosuria which resulted. Urine was collected at the same half-hourly intervals at which the blood was taken. For qualitative purposes Fehling's test and Seliwanoff's resorcin test for lævulose were used. Quantitative estimation of urinary sugar was carried out by means of Bertrand's method and the Safranin method.

The Response in the Normal Individual.

In Table I. the result of the test in five apparently healthy cases is given (one, D. J., was a laboratory assistant, the others out-patients of the hospital class). It will be seen how slight an effect doses of 30 to 50 g. of lævulose have on the blood-sugar. In no case was there a definite rise of even 0·02 per cent. The greatest rise was only 12 mg. per 100 c.cm., and this was in the case (M. R.) of a pale anæmic woman in whom syphilis had been suspected and who, therefore, might justifiably have been excluded from the series. We have taken the mean of these curves and plotted them graphically in Fig. 1. This will be taken as the normal expression of the liver function test in the healthy individual, and used as a basis of comparison for the results found in the other cases we have investigated. In one of these cases (H. W.) a comparison of the lævulose and glucose blood-sugar curves was made; 30 g. of glucose were given by the mouth; the initial blood-sugar level was 0·086 per cent., and at half-hourly intervals after the glucose the successive levels were 0·168 per cent., 0·109 per cent., 0·092 per cent. A rise of 82 mg. per 100 c.cm. which, it will be remembered, is a normal result with glucose.

TABLE I.—*Results of Liver Efficiency Test in the Normal Individual.*

—	Age.	Weight in kilogrammes	Amount of lævulose given in grammes	Blood-sugar per cent.			
				Before taking lævulose.	½ hour after.	1 hour after.	1½ hours after.
D. J. . .	24	70	50	0·090	0·089	0·099	0·090
H. W.	33	64	30	0·082	0·091	0·084	0·083
M. R. . .	26	55	30	0·086	0·098	0·095	0·091
F. F. . .	37	—	50	0·102	0·104	0·101	0·100
W. R.	55	—	50	0·102	0·102	0·112	0·109

We have stated that even in the normal individual a definite rise in blood-sugar will follow the ingestion of lævulose if a large enough amount be taken. In *cases we have investigated, 100 g. of lævulose have* provoked such a rise, when 50 g. had no effect on the blood-sugar. A typical example gave the following dozen 40 lb. From Madeira the onion is chiefly exported to Brazil. As an essential in our food and as a condiment, I need say nothing except to point out the delicacy of flavour in these subtropical forms, and the superiority of southern methods of serving. Long before the physiologists began to speak about vitamins the general public had shown an instinctive greediness for the onion which, though poor in caloric value, abounds in accessory food value. Before the war in 1914, imported onions, mainly from Spain, Portugal, and the Atlantic islands into this country, were valued at over one million sterling—a sound investment, providing a distinct mitigation to the people of this country of the poverty of their winter diet. Nelson, 130 years ago, had also learnt the value of the onion at Naples, and I heard in early life from the daughter of the Captain Codrington who fought under him at Trafalgar, that every ship in a blockading squadron had to be copiously supplied with this valuable antiscorbutic.

Sugar.

The sugar cane, *Saccharum officinarum*, is a general object of cultivation in all the islands, and in Madeira covers every available space with a sunny exposure from the sea-level to 1000 ft. above. The juice is devoted partly to the distillation of alcohol, but mainly to the manufacture of excellent sugar. The presence of the sugar cane in Madeira, occupying ground which could be devoted more profitably to the production of the custard apple and a variety of fruits and vegetables which Madeira only can supply in their first freshness to the London markets, is a reproach to the fiscal administration of the Government of Portugal.

Fungi.

All the well-known fungi of the British islands are well represented in the super-equatorial regions of the East Atlantic. Some are very poisonous, and these so nearly approach the edible varieties in appearance that, notwithstanding the admirable coloured charts now published, I have confined my commendation of them to two unmistakable forms—viz., our common agaricus and the *Boletus edulis* which abounds in the pine woods of Madeira in the autumn months. The boletus is a substantial esculent having a tangible protein value, and when properly prepared forms a valuable and agreeable contribution to our dietetics, though Ambroise Paré contemptuously dismisses the entire order as "an excrescence of the earth's superfluity not void of a venomous quality."

Absence of Deficiency Diseases in the East Atlantic.

It will be readily understood in the sketch I have now given of the wealth and variety of our vegetable food-supplies, perennially fresh and plentiful, that the native races in these regions do not suffer from the so-called deficiency diseases associated with the absence of vitamin substances. Open-air life and freedom from excessive changes of temperature must also contribute to this immunity. In the great war we, at Madeira, were taken by surprise; to a great extent we exhausted our local resources before we realised that normal importations of wheat and maize would completely cease. In those days we were insufficiently fed; we lost weight, and you could see among the people the vacancy of expression, apathy, and depression so well known in association with incipient starvation, and it was then that I reaped the full benefit of the botanical knowledge—built on the meagre foundation laid in the remote times of my early medical curriculum—which I have since acquired and which has enabled me as a referee in these regions to minister to the constant requirements of new provinces of the Empire.

Botanical Education.

I remember the dismay at the British Association for the Advancement of Science with which the announcement that botany would probably have to disappear from the overladen curriculum of essential requirements of medical education was received, and the strongly expressed opinions that a place should be allotted to some instruction at least in this science, however elementary. About that time Sir George Nares, whose crews had suffered terribly from scurvy in his then recent Polar expedition, and in whose ships the superior antiscorbutic value of lemon juice over lime juice had been demonstrated, called to confer with me, on his way to Patagonia, as to the material which might be available in Madeira to ferment into the sort of beer which our splendid navigator, Captain Cook, found effective in those days of miserable equipment 140 years before. Cook, doubtless under the guidance of Banks and Solander, seems to have fermented just anything, and the resulting nauseous liquid amply confirms the scathing criticism of Burton on the beer in vogue 100 years before Cook's time: "*Nil spissius illa dum bibitur, nil clarius est dum mingitur, unde constat quod multas fœces in corpore linquat.*"

Nares, with my help, concocted something at least less nauseous, and I also supplied him with a quantity of sprouting sweet potatoes which, kept moist with a fertilising fluid, gave a copious yield of green shoots and for many weeks were very serviceable; further, I gave him that information respecting tomatoes and onions, already spoken of, while we sat under the shadow of a gigantic tulip tree which Cook and Solander had planted on one of my terraces 120 years before. We spoke much that evening—probably after dinner—of the customary excesses of our diet beyond the requirements of energy and repair, and of the waste of effort exerted in eliminating at least half of the protein taken in excess of bodily needs; true physiological economy is the judicious application of scientific truth to the art of living.

ANIMAL FOODS.

The animal foods of the Atlantic islands I can pass over with the general remark that cattle of every well-known breed abound in proportion to their means of sustenance, and that we have at all seasons poultry, eggs, milk, and butter in abundance, both for local use and exportation. Several breeds of goats are met with in all our mountains; some have run wild and subsist in plenty in inaccessible places. We rely, too, on our goats' milk, which is excellent and happily free from the infection which Sir David and Lady Bruce investigated at Malta.

SEA FOODS.

I will now mention very briefly the salient points relating to the latent, almost unexplored sources of food which the surface water and abysmal depths of the seas in these regions invite us to explore. The surface plankton, or floating life, and the condition of the sea bottom with its deposits and deep-sea organisms, present general problems full of economic, biological, and geological interest. I can only hope to illustrate by a few examples the scientific importance and practical utility attaching to the study of these surface and abysmal conditions.

Tunny.—From the economic point of view the thynnus or tunny is our most important fish. Known everywhere, it is never long absent from our island markets, and scattered examples of enormous size appear throughout the year; this fish is gregarious in habit, visiting Madeira in vast numbers in the early spring, driving inshore frightened shoals of its own and other smaller species. In Atlantic regions it is captured with a stout hook baited with a living mackerel or herring, and a full-grown example 10 ft. long generally weighs about 400 lb., reaching in occasional instances the extreme weight of twice this ponderous bulk. The life-history of the tunny is imperfectly known; the rate of growth to maturity, the locality it haunts, and its means of sustenance in early life all need investigation, but its esculent value may be gathered from the fact that when eviscerated and prepared for market quite 85 per cent. of the substantial fish-meat is available for human food. A certain amount of tunny flesh is now canned and exported, but further investigation and improved methods of fishing will presently show what huge reserves of this valuable food at present escape us. The tiny scales entirely surrounding the body give the skin a smooth appearance, and excellent leather is now being manufactured from this and other sea monsters.

The flesh of the tunny fish, like that of many other Scombridæ, seems to carry with it a liability to a mild and evanescent form of urticaria. I was once present at a dinner where 7 out of 12 guests were victims of some noxious substance thus conveyed in eating. The chef had served up an appetising course of "veal" cutlets made of the pallid portion of tunny with a taste suggestive of anything but fish, and two hours later the recipients were comparing notes of their symptoms and highly-coloured countenances. I advised the hostess on future occasions to have her "veal" served up with fennel sauce, which by some beneficent instinct people have learned to eat with mackerel and the like, thereby gaining immunity from nettle-rash. Funchal,

D. In Table II. results of the test in slight cases of salvarsan jaundice are given. In these patients the test was applied in the stage of recovery, when jaundice was the only remaining symptom. In each case there was a definite abnormal rise, greater than could be accounted for by experimental error, which we look upon as evidence of varying slight degrees of liver inefficiency. Generally speaking the evidence suggests that the height and length of the blood-sugar curve are in proportion to the degree of liver damage present. In this group the case which showed the greatest rise (E. H.) was more affected than any of the others; while the case (M. W.) with the least rise had practically recovered from the illness, a slight tinge of jaundice in the conjunctivæ being the only remaining sign of disease.

TABLE II.—*Results of Test Showing Slight Degrees of Liver Inefficiency.*

—	Age.	Amount of lævulose given in grammes.	Blood-sugar per cent.			
			Before taking lævulose.	½ hour after.	1 hour after.	1½ hours. after.
A. W. ..	38	50	0·094	0·117	0·120	0·108
E. H. ..	26	30	0·125	0·151	0·148	0·128
M. W. ..	21	30	0·093	0·098	0·107	0·104
R. W. .	29	50	0·109	0·109	0·134	0·118

Result of the Test in Control Cases.

In order to control these results in normal individuals and in cases of toxic jaundice, we applied the test to various patients from a medical ward. In Table III. the results of the test in eight different cases are given. They afford evidence of the value that the test may have in determining the efficiency of the liver. We used, as standards of comparison, the results obtained in the study of normal individuals and of cases of toxic jaundice, whereby they are classified as (1) normal, (2) slight liver inefficiency, (3) moderate liver inefficiency, (4) severe liver inefficiency, (5) extreme liver inefficiency.

TABLE III.—*Results of Test in Control Cases.*

—	Age.	Disease.	Amount of lævulosegiven in grammes	Blood-sugar per cent. before and at half-hour intervals after lævulose.				Result.
1	37	Lymph.	50	0·098	0·104	0·101	0·100	N.
2	17	Ac. neph.	30	0·102	0·104	0·104	0·100	N.
3	—	Med. tum.	30	0·091	0·100	0·102	0·090	N.
4	57	Tab. dor.	50	0·102	0·109	0·110	0·109	N.
5	53	Ob. jaun.; gall-stones.	50	0·110	0·116	0·133	0·120	S.L.I.
6	54	Tab. dor.	50	0·082	0·118	0·125	0·114	S.L.I.
7	70	Malig. liver.	40	0·106	0·134	0·138	0·134	M.L.I.
8	9	Cat. jaun.	25	0·120	0·164	0·176	0·151	Sev.L.I.

Disease.—Lymph., lymphadenoma. Ac. neph., acute nephritis. Med. tum., mediastinal tumour. Tab. dor., tabes dorsalis. Ob. jaun., obstructive jaundice. Cat. jaun., catarrhal jaundice.

Result.—N., normal. S.L.I., slight liver inefficiency. M.L.I., moderate liver inefficiency. Sev.L.I., severe liver inefficiency.

Normal results were found in four cases—viz., lymphadenoma, acute nephritis, mediastinal tumour, and a tabes dorsalis which had been treated with salvarsan without ill-effects up to within two weeks of the time of examination. In none of these cases was there an appreciable rise in blood-sugar after the ingestion of lævulose. *Slight degrees* of liver inefficiency were found in two cases: (1) A case of obstructive jaundice, which subsequent operation proved to be due to a gall-stone in the common duct; and (2) a case of tabes dorsalis treated with salvarsan up to within three weeks of the time of examination without apparent ill-effects. In these cases lævulose produced blood-sugar rises to 0·125 per cent. and 0·133 per cent., reaching their maximal height in an hour. A *moderate degree* of liver inefficiency was found in one case. This was a case of malignant liver in a man of 70. Here there was a blood-sugar rise to 0·138 per cent. after an hour, which was still up to 0·134 per cent. after an hour and a half. A *severe degree* of liver inefficiency was found in one case. This was a case of catarrhal jaundice in a girl of 9 years. In this there was a rise of 56 mg., reading to 0·176 per cent. after an hour, and to 0·151 per cent. after an hour and a half. This result is of some significance. The girl was not so deeply jaundiced as the man with obstructive jaundice from gall-stone, nor did her urine contain as much bile pigment; yet the test revealed a much greater degree of impairment of liver function. This would suggest that there was much more parenchymatous involvement in the case of catarrhal jaundice than in the case of obstructive jaundice with gall-stone in the common duct.

These results show that the test revealed some diminution in the functional capacity of the liver in four cases, in three of which some damage of the liver could be presumed to be present on clinical evidence. The fourth case had been treated with silver-salvarsan (4·65 g.) up to three weeks before the test was carried out. It is reasonable to assume that the test revealed some latent liver damage which was not apparent on clinical evidence. In four cases the test showed normal liver efficiency to be present. In none of these cases was there clinical evidence of liver disease.

A blood-sugar rise after lævulose would, of course, be obtained in patients suffering from diabetes, but in such cases the history and clinical symptoms should indicate the probable nature of the condition.

The Kidney Threshold for Lævulose.

In certain of the patients investigated we compared the results obtained by estimation of changes in blood-sugar concentration as described above with the results given by the Strauss test for hepatic insufficiency. In the Strauss test[10] lævulose is given by the mouth and the urine is collected for examination at hourly intervals afterwards. If sugar appears in the urine after the ingestion of 100 g. of lævulose it is taken as evidence of decreased liver efficiency. The results of the test appear to be very indefinite. Churchman[11] used it in the Johns Hopkins Hospital and discarded it, coming to the conclusion that it gave no conclusive evidence of the condition of the liver. In our own investigations Strauss's test has given very inconsistent results. Using 50 g. of lævulose, sugar appeared in the urine of some of the normal cases, and did not appear in some of the cases with liver disease. This inconsistency is explained by the fact that the appearance of lævulose in the urine depends more on the "kidney threshold" for lævulose than on the liver's efficiency in storing the sugar. The kidney threshold for lævulose appears to be much lower than the threshold for glucose, and actually varies greatly in different individuals. Graham[12] noted in a case he investigated that the threshold for lævulose was below 0·150 per cent. and for glucose above 0·195 per cent. In six of our cases we found that lævulose (sufficient to reduce Fehling's solution) was excreted in the urine by the time the blood-sugar had reached the following levels:—

	Blood-sugar per cent.
(1) Age 8 years	0·097
(2) „ 57 „	0·131
(3) „ 70 „	0·130
(4) „ 46 „	0·110
(5) „ 23 „	0·126
(6) „ 53 „	0·133

One case with no apparent disease of the liver gave a normal reaction to the liver function test, yet lævulose appeared in the urine. Using 30 g. of lævulose the blood-sugar levels were: before 0·084 per cent., half an hour after 0·093 per cent., one hour after 0·095 per cent., one and a half hours after 0·084 per cent. A specimen of urine collected one hour after ingestion of the lævulose contained sugar. It reduced Fehling's solution and gave Seliwanoff's test for lævulose. In view of the very slight rise in blood-sugar the presence of lævulose in the urine of this patient is remarkable, but it appears to indicate that in certain subjects a cable which revealed the occurrence of a volcanic outbreak in this oceanic depth, and showed what may often happen on the ocean floor with little or no evidence at the surface. The cable itself beneath was destroyed for several miles, and the extent of the disturbance was only revealed when, in laying the cable afresh, it was found necessary to travel 15 miles away before a smooth bed could be found beyond the jagged rocks into which the placid ocean bed had been torn.

CONCLUSION.

I confess to a sense of disappointment in view of the status and repute of this College, and of the pride every Fellow feels in our traditions and equipment, that the coöperation sought by the Government of this country during the recent war as to food, dietetics, hygiene, and cognate matters was not required of us in corporate capacity. The work I am indicating was truly accomplished in association with us; neither could the Royal Society have furnished the advice and information needed by the Government and nation in such matters without the able and disinterested coöperation of our distinguished colleagues. We are largely engaged in meeting the provision of our country's need of competent medical practitioners. We are an examining and licensing body truly, but much more. We are the custodians and exponents of science far beyond the narrow definition of medicine itself, and it will be found that in any committee appointed to report on a matter of collateral science—and what science is not collateral to ours?—the effective output has been largely and perhaps mainly due to some guiding influence issuing from within these walls.

THE USE OF LÆVULOSE AS A TEST FOR HEPATIC INEFFICIENCY.*

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LÆVULOSE as a test for liver function has been extensively used in the past by Strauss and various others, but for reasons which will be fully described later the results obtained were unreliable. All the observers based their conclusions on the absence or presence of glycosuria after the patient had received a large dose of lævulose by the mouth. Recent observations on the increase in blood-sugar concentration, brought about by the ingestion of carbohydrate, point to the conclusion that the degree of hyperglycæmia produced is more important than the presence or absence of glycosuria in indicating liver inefficiency. Hopkins,[1] Hammam,[2] Maclean and de Wesselow[3] and others have shown that if 50 g. of glucose be given to a normal adult individual after he has fasted for three or four hours an immediate rise in the sugar content of the blood can be demonstrated. If blood-sugar estimations be made immediately before and at half hourly intervals after the ingestion of the glucose, it will be found that this rise is from an original basal level near 0·100 per cent. to about 0·170 to 0·180 per cent. at the end of the first half hour. At this point a rapid subsidence takes place, and the sugar content of the blood falls to or below the original level within an hour or an hour and a half. When plotted graphically the result represents the normal "blood-sugar curve" for 50 g. of glucose. Alterations in sugar tolerance will affect the shape of this blood-sugar curve. In conditions of decreased sugar tolerance the rise is abnormally high and prolonged. If the blood-sugar has not returned to its original level within one and a half or two hours, a diminution in the sugar tolerance is considered to be present. All the available evidence suggests that the nature of this curve is chiefly dependent on the power of the liver to store sugar in the form of glycogen. Maclean and de Wesselow[3] pointed out that the only sugar in ordinary use which did not produce a rise in blood-sugar concentration was lævulose. They showed that in the normal healthy adult 50 g. of lævulose could be taken without producing any appreciable increase in the blood-sugar; this observation they made use of in testing for liver efficiency in various cases, on the supposition that a defective liver mechanism would result in the production of lævulose hyperglycæmia.

That lævulose in the amounts used by Maclean and de Wesselow produces no definite increase of blood-sugar we have confirmed. In some cases a very slight rise of from 5 to 10 mgm. per 100 c.cm. was observed, a rise almost within the bounds of experimental error. The normal blood-sugar curve after 50 g. of lævulose can thus be represented by a continuous straight line from the original blood-sugar level, or a line showing slight oscillatory deviations of 5 to 10 mgm. per 100 c.cm. from the original level. A definite rise in the blood-sugar of even 20 mgm. per 100 c.cm. after 50 g. lævulose indicates a diminution of sugar tolerance.

Liver Function and Lævulose and Glucose.

The only explanation of the difference in the blood-sugar curves following the ingestion of these two sugars that can be put forward in the present state of our knowledge is, that in the case of lævulose, the sugar, after absorption from the alimentary tract, is so readily taken up by the liver and stored as glycogen that it does not appear in the systemic circulation. If the functional capacity of the liver be diminished in any way—e.g., in the degeneration of hepatic parenchyma seen in salvarsan poisoning—it will not be able to deal with the 50 g. of lævulose presented to it. The lævulose will then pass to the systemic circulation, where a rise in the blood-sugar content will result. The greater the degree of liver damage the more lævulose will pass through, and the greater will be the rise in the blood-sugar curve.

Glucose is not assimilated and stored as rapidly as lævulose. Even in the healthy individual it passes readily through the liver to circulate for half an hour or more in the systemic circulation, producing there, as we have seen, a definite rise in the blood-sugar. It appears to be abstracted from the blood stream by the intervention of a carbohydrate storage mechanism, which does not, however, come into play effectively until half an hour or more after the ingestion of the sugar. In the presence of an inefficient liver this abstraction and storage of the glucose is delayed. A high and prolonged blood-sugar curve results. But the variation from the normal is not so marked as it is in the case of the altered lævulose curve of liver inefficiency.

A Theory Tracing Rise of Blood-Sugar to Absorption of Salts.

We are aware that Cammidge, Forsyth and Howard[4] have recently advanced a theory which opposes this explanation. They argue that the rise of the blood-sugar following the ingestion of food results from changes in the reaction of the blood produced by absorption of salts formed from the digestive secretions; and that the rise results from the breaking down of preformed glycogen—an increased glycogenolysis—in the liver. Their theory explains this increase in glycogenolysis as being caused by the active stimulation of the diastatic ferment of the liver, which in its turn is brought about by three factors: an actual change in the hydrogen-ion concentration of the blood, an increased permeability of the liver cells to sodium chloride, and a release of the inhibitory action of the pancreas. Their argument is based, however, on experimental work in which certain results were quite different from the results which we, and many other workers, have reached in covering the same ground;

The expenses of this investigation have been borne by the al Research Council.

of the tuberculin. From a theoretical point of view our supposition seemed to be supported by an investigation of Ricker and Goerdeler,[3] who had shown that in rabbits a sensitiveness of the blood-vessels of the omentum to various drugs was greatly increased by experimentally induced local tuberculosis.

These considerations led us to apply the v. Pirquet test to some asthma patients, and we were highly impressed by the very strong reactions given in these cases. Since at that time the results of our treatment of bronchial asthma were, as stated above, not satisfactory, we determined to investigate whether an improvement in asthma cases could be obtained with tuberculin treatment. The results in our first cases were so encouraging that we deemed it necessary to study the matter on a larger scale. We are now in a position to report on 28 cases of bronchial asthma and two cases of hay fever, treated with tuberculin injections.

Number of Patients Showing Positive v. Pirquet Test.

Of 34 cases of bronchial asthma which have come under our care since we started tuberculin treatment, 30 gave a positive v. Pirquet test and four patients were negative. The four negative cases were not treated with tuberculin and will not be considered further in this paper. We had only four cases of hay fever during this period, all of them women—three Dutch and one Hungarian. Two of them had a very strong positive reaction, one a moderate reaction (she refused to be treated with injections), and one (the Hungarian) had a negative reaction and was treated with pollen. So there remained only two cases of hay fever for tuberculin treatment.

Dosage of Tuberculin.

The tuberculin used was Koch's T.O.A. All injections were given subcutaneously. The body temperature of the patient was carefully controlled during the whole course of the treatment. We always began with low doses of tuberculin—mostly 1 c.cm. of a 1 : 100,000 dilution—which gave no general reaction. In our first cases we increased the dose of tuberculin with each injection (providing that the former injection had not produced a temperature reaction) attempting to administer high doses in a relatively short time. During the treatment of these cases, however, we got the decided impression that the latter procedure was wrong, and that it was better to keep to very low doses; this we did in all the later cases. This point will be referred to again.

Additional Measurements.

Although we are quite certain that the tuberculin treatment forms the most important part of our therapy, we took the precaution of making all other conditions as favourable as possible. This was especially necessary, since we wanted a cure to be as short as possible. Moreover, additional measures were indispensable during the first days of the treatment, when the effect of the tuberculin treatment was not yet manifest. The first step was to keep the patient in bed till his asthma was cured. Sometimes external circumstances prevented this, and the patients had then to be given ambulant treatment. We gave a protein-free diet and inhalations of benzylbenzoate, as mentioned above. Those patients who suffered from chronic bronchitis were given codeine and potassium iodide. After entering hospital, the patients were not allowed to take any patent medicine or to smoke asthma cigarettes; during the first days acute attacks of asthma were immediately cut short with an injection of adrenalin; and we consider it important not to allow the patient to have a single attack of asthma from the moment he enters our care. As a rule these adrenalin injections had only to be given during the first days; many patients received only three or four of them and some only during the first day.

Duration of Cure.

Nearly all the patients suffered from acute attacks of asthma on entering into our care. These attacks generally disappeared for good after the first two or three tuberculin injections; sometimes they did not reappear after the first injection. As a rule, patients were kept in bed till three days had elapsed since the last attack. During the next six days they were gradually allowed to get up and go out; the majority were able to leave the hospital 10–14 days after entrance. As we did not know how long the effect of the tuberculin would last, we continued our tuberculin injections for two or three months, during the first weeks giving an injection once a week, and afterwards once a fortnight. In many cases—especially those of long-standing asthma—a chronic bronchitis was present, which had to be treated after the acute attacks of asthma had subsided. This treatment, of course, took a longer time, and autogenous sputum vaccines were sometimes required. Apart from this complicating bronchitis, it can be stated that as a rule the acute attacks of asthma vanished within a few days of the beginning of tuberculin treatment.

Results of Treatment.

Before entering on a discussion of the results, very brief extracts of the clinical histories of 12 patients treated with tuberculin are given.

(1) E., schoolboy, aged 17. Asthmatic attacks from earliest years; tried all sorts of treatment; many recent attacks. Protein sensitisation tests negative; v. Pirquet + +. Tuberculin treatment (ambulatory) started 9/11/21. Tuberculin 1 : 100,000–1 : 10,000; purine-free diet (P.D.); benzyl benzoate (B.B.). Result: Completely cured after some weeks.

(2) K., kinema attendant, aged 25. Acute attacks of asthma from 8 years old. Very heavy attacks, with extreme dyspnœa and often fever, keep him in bed for weeks. Skin reaction: crab +; swine serum +; v. Pirquet + + +. As crab treatment-set was not obtainable, treated with swine serum in increasing doses; reacts very strongly. Result: No improvement; 7/7/20, tuberculin treatment started. 1 c.cm. 1 : 100,000–5 : 10,000, ambulatory treatment. (B.B. and P.D.) On 16/9/20, dose of tuberculin increased from 1 : 10,000 to 2 : 10,000; that night a severe attack of asthma. After that the tuberculin dose was lowered and very gradually increased again. Patient remains free from attacks; then, however, he interrupts treatment and eats meat; *11/5/21 contracts a cold, heavy attack of* asthma; again P.D. and tuberculin. Since then no further attack.

(3) N., chauffeur, aged 30. Heavy attacks of asthma *since age of 20, becoming worse latterly; last seven years* absolutely continuous dyspnœa, very marked bronchitis; patient slept very badly and had to give up profession; v. Pirquet + + +. 18/3/21, taken into hospital and tuberculin treatment started: 1 c.cm. T.O.A., 1 : 100,000; doses gradually increased to 8 : 100,000. During first three days adrenalin injection two or three times a day, then stopped; 3/4/21, tuberculin dose increased to 1 c.cm. 1 : 10,000; patients gets attack of asthma, which is cut short with adrenalin; 20/4/21, tuberculin 1 c.cm., 1 : 1000; temperature rises to 38°C. during two days. Patient very ill and many attacks of asthma. 23/4/21, no attack of asthma, tuberculin injections down to 1 : 100,000; 4/5/21, sent home with chronic bronchitis but free from attacks; 6/5/21, back in hospital with violent attack contracted immediately after coming home. In hospital, tuberculin treatment, 8/6/21. Sent to brother in another town. Completely well, takes up profession again, rides in car whole day. 8/7/21, returns to his own home for one night and gets an attack. Advised to move to other house; remains free from attacks for two months, but visits his home against our advice four or five times and gets attacks there every time. The last attack does not disappear on leaving his home. Has to be taken into hospital again.

(4) G., physician, aged 38. Heavy attacks of asthma since age of 16, latterly every night. Had to give up general practice, only does hospital work. V. Pirquet + + +. Taken into hospital and tuberculin treatment started. 2/5/21, 1 c.cm. 1 : 100,000. First night no attack and since that time attacks have not returned. Is able to walk 20 kilom. without becoming dyspnœic.

(5) H., colonial official, aged 48. Asthma since age of 30. Of late years about five attacks a day; has to smoke asthma cigarettes constantly to reduce them; v. Pirquet +; chronic bronchitis, emphysema; 20/5/21, taken to hospital, tuberculin treatment started. First day three injections of adrenalin, second and third day two injections. Since 30/5/21 no adrenalin injections necessary. Leaves hospital after 13 days with chronic bronchitis, but absolutely free from dyspnœa. 14/6/21, eats large amount of beef-steak, gets asthma attack, which lasts two days. Since then keeps to P.D., and is free from attacks.

result: before the 100 g. of lævulose 0·089 per cent., half an hour after = 0·117 per cent., one hour after = 0·153 per cent., one and a half hours after = 0·118 per cent.

The Result of the Test in Toxic Salvarsan Jaundice.

The condition of toxic jaundice which occurs not infrequently, after the administration of salvarsan, has provided clinical material for the application of the test. Turnbull's[9] very careful histological examinations in fatal cases showed how the liver in particular is affected in this condition. In all cases he found the liver lesion to be more severe than that in any other organ. This is an important point to establish, for thereby we can exclude the possibility of the results we have obtained in the following curves being due to pathological changes in the intestine, pancreas, endocrine glands, and other organs.

We have had an opportunity of applying the test to cases of toxic salvarsan jaundice of varying degrees of intensity. One of these was ultimately fatal, and post-mortem confirmation of the liver damage was obtained. A few were extremely severe with slow recovery; others were moderately or very slightly affected. In every subject the test revealed an impairment of the functional capacity of the liver; but, as might be expected, the most striking result was in the fatal case. In this patient the symptoms and clinical signs were not more marked than in other moderately affected cases who recovered quickly, but the test showed that there was a higher degree of liver damage than was indicated by the clinical picture. The result of the test was confirmed by the subsequent course of events, for the man died a few days later.

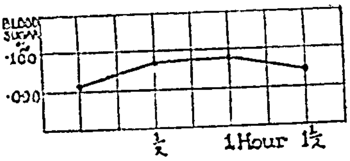

FIG. 1.—Normal blood-sugar curve after 30 to 50 g. of lævulose (see Table I.). This result denotes normal liver efficiency.

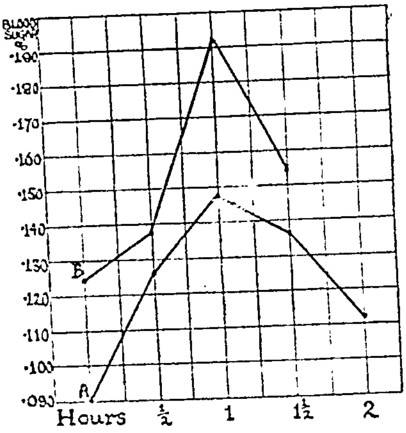

FIG. 2.—Results of lævulose tests in two cases of salvarsan jaundice, showing (A) moderate degree and (B) severe degree of liver inefficiency.

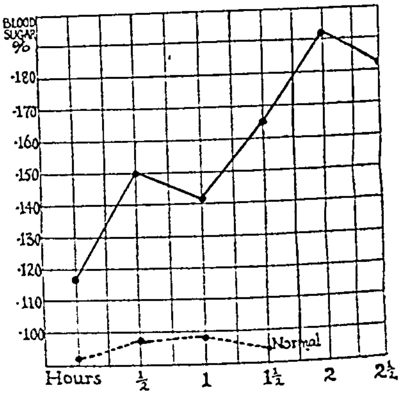

FIG. 3.—Result of lævulose test in a fatal case of salvarsan jaundice with extreme degree of liver inefficiency (see text). Note the high and prolonged rise in blood-sugar compared with the result in a normal individual.

A. The following is an example of a *moderate* degree of liver inefficiency as revealed by the test.

W. C., aged 23, a moderately severe case of toxic salvarsan jaundice with symptoms of anorexia, vomiting, and jaundice appearing after two courses of ten N.A.B. injections and five silver-salvarsan injections. The liver-function test was carried out after the jaundice had existed for four weeks. There was no vomiting at this time, the patient feeling fairly well, but a deep tinge of jaundice persisted. 50 g. of lævulose were given. The levels of the blood-sugar curve (Fig. 2) were:—

		Blood-sugar per cent.
(1) Before	50 g. lævulose	0·090
(2) ½ hour after		0·126
(3) 1 „ „		0·148
(4) 1½ hours „		0·137
(5) 2 „ „		0·112

This shows a very definite rise of 50 mg. per 100 c.cm., reaching its maximum in one hour after the ingestion of the lævulose, and remaining at an abnormally high level for at least two hours.

B. The following is an example of a *severe* degree of liver inefficiency as revealed by the test. In this case the blood-sugar curve is higher and tends to be more prolonged than in the former case.

J. E., aged 46, a severe case of intense jaundice which followed one N.A.B. injection; asthenia and anorexia very marked. On 22/7/21 50 g. lævulose gave the following result (see Fig. 2):—

		Blood-sugar per cent.
(1) Before	50 g. lævulose	0·125
(2) ½ hour after		0·137
(3) 1 „ „		0·192
(4) 1½ hours „		0·154

After four weeks the patient was discharged from hospital, greatly improved. Seen again on 13/9/21 all signs of jaundice had disappeared, the patient was quite well, and had been free from all symptoms for three weeks. The liver-function test was repeated with the following result:—

		Blood-sugar per cent.
(1) Before	50 g. lævulose	0·101
(2) ½ hour after		0·102
(3) 1 „ „		0·110
(4) 1½ hours „		0·106
(5) 2 „ „		0·100

It is interesting to compare these two results, the first denoting a marked degree of liver inefficiency; the second a normal reaction to the test, denoting a restoration of the liver function.

C. The following is an example of an *extreme* degree of liver inefficiency as revealed by the test.

C. L., aged 57. Treated with two courses of silver salvarsan; jaundice appeared ten days after the last injection. Seen on 5/9/21 two weeks after the appearance of symptoms, the patient showed a definite degree of jaundice, with asthenia and anorexia. The symptoms were not so marked as to suggest anything more than moderately severe affection of the liver with a correspondingly good prognosis. On 9/9/21 there was no change in the patient's condition. The liver-function test, using 50 g. lævulose, gave the following result (see Fig. 3):—

		Blood sugar per cent.
(1) Before	50 g. lævulose	0·117
(2) ½ hour after		0·150
(3) 1 „ „		0·141
(4) 1½ hours „		0·164
(5) 2 „ „		0·192
(6) 2½ „ „		0·184

Two days later the patient became extremely ill, and died on 12/9/21. A post-mortem examination was carried out 14 hours after death by Dr. J. F. Taylor, to whom we are indebted for the following report: "The liver shows marked perihepatitis and some diffuse cirrhosis with numerous 'new bile-ducts.' There is general congestion with extensive areas of extreme toxic necrosis with polynuclear infiltration. Free bile-pigment present. Much granular fatty degeneration and crystals of free fatty acid."

As indicated by the figures just given, the result of the test carried out three days before death showed an extreme incapacity on the part of the liver to deal with the lævulose presented to it. The high continued rise, reaching its maximum two hours after the lævulose, and continuing for some time afterwards, presents a more intense picture than we have encountered in any other case.

patients. As has been described above (Cases No. 2 and 3), *we twice induced a severe attack of asthma* in patients by giving too high doses of tuberculin. This mistake now no longer occurs, since we know that only very small doses of tuberculin are necessary, or even advisable. Whether Walker's cure is less dangerous than ours we are not in a position to decide. In the cases where we used it we never saw dangerous or even disagreeable reactions. If, in addition to the tuberculin treatment, injections with autogenous sputum vaccines are given, great care must be taken (as stated by Walker also), since an overdose of vaccine may be dangerous.

Finally, it may be remarked that, in those cases in which the tuberculin test is negative, we still have the chance of finding a sensitiveness to one of Walker's proteins, and such cases can then be treated accordingly. Our number of cases falling into this class is too small to justify a publication of the results, and the same holds for the few cases in which we could not find a sensitiveness with either of the methods. These patients were treated in a different way.

Difficulty of Explaining Effects Produced.

It seems to us that the results obtained with our method are very clear and need little additional discussion. The prominent fact is that, in a very high percentage of cases, the acute attacks of asthma disappear after a few injections. It is far more difficult to give a satisfactory explanation for the effects obtained.

Since we are not able to give a decisive explanation only a few words will be said on this matter. The starting-point of the tuberculin treatment was our supposition that a state of hypersensitiveness to tuberculin might be a factor which raises the susceptibility of patients for allergic or anaphylactic reactions (including asthma and hay fever). This hypothesis is strengthened by the results of the experiments of Ricker and Goerdeler, mentioned above, who found a locally increased sensitiveness to drugs in rabbits with experimentally induced tuberculosis of the omentum. Further support for our hypothesis was obtained, first, from our own observations on increased *serum skin reaction in children suffering from an acute* exacerbation of tuberculosis; secondly, from the fact, revealed during our work, that many patients suffering from asthma or hay fever show exceedingly strong v. Pirquet reaction; and, thirdly, from the fact that in two patients we induced a strong attack of asthma by injecting an overdose of tuberculin. This last observation shows that there certainly exists a relation, whatever its nature may be, between tuberculin reaction and some cases of asthma. This last conclusion is, moreover, strengthened by the result of our treatment.

If it is true that a condition in the human body which gives rise to a strong v. Pirquet reaction also causes an increased susceptibility to allergic reactions, two qualifications must be made. First, the condition which causes a strong v. Pirquet reaction cannot be as a rule an *active* tuberculous process, since in none of our cases was this found, and the sputums of our patients never contained tubercle bacilli. Secondly, tuberculosis (or rather a condition which produces a strong v. Pirquet reaction) cannot be the *only* factor which is able to create a susceptibility to asthma, since 11 per cent. of our asthma patients gave a negative v. Pirquet test.

Conclusion.

If our hypothesis is true, it still remains difficult to explain *why* a state of hypersensitiveness to tuberculin increases the susceptibility for allergic reactions, and why injection of small amounts of tuberculin has a curative effect. We do not want to enter upon further speculation on this point; we only desire to draw attention to the fact that, in our opinion, the tuberculin treatment of asthma has to be carried out with injection of *small* amounts of tuberculin, and that it is unwise in these cases to try to raise the dose very high in order to obtain an immunisation. Research is going on in this institute at the present moment with the aim of proving the correctness of our hypothesis. *The results of this work will be published* later.

We are greatly indebted to the Arlington Chemical Company for their courtesy in placing at our disposal the different proteins used in the sensitisation test.

Note.—After finishing the present paper we read an abstract in the *Journal of the American Medical Association*, Oct. 15th, 1920, p. 1030, of a publication from Pietroforte in *Riforma Medica* (Naples), July 17th, 1920, No. 29, on tuberculin treatment of asthma. Though our work was undertaken independently of Pietroforte, it is only fair to state that the priority of the tuberculin treatment of bronchial asthma belongs to Pietroforte. As far as we are aware he did not extend the treatment to hay fever.

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THE STANDARDISATION OF SUSPENSIONS OF RED BLOOD CELLS FOR WASSERMANN TESTS.

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FROM time to time cases are recorded of a sample of serum having been sent, for a Wassermann reaction (W.R.) test, to different pathologists, some of whom have reported it as positive and some as negative. In bacteriology, as in everything else, mistakes are possible; but apart from these, there remain some cases in which the inconsistencies of the findings are due not to gross error but to differences in technique. Attempts to standardise the W.R. can never be completely successful, as each of the four reagents employed in the test—complement, antigen, amboceptor and red blood cells—is more or less variable. The first three are usually titrated and accurately diluted prior to the test proper, but this is not done in the case of the suspension of red blood cells. Several workers have pointed out the importance of standardising the strength of the suspension used, but up to the present the majority of bacteriologists are content to employ suspensions which contain a known percentage of the deposit of cells obtained by centrifuging, or which are judged, by their appearance, to be of about the usual strength. Neither method is at all accurate, since the volume of deposit obtained from the same volume of blood depends on a number of factors—the type of centrifuge, its rate of revolution, the duration of spinning, &c.—while the judgment of strength by appearance depends on memory, which in such matters is unreliable. The number of cells in each cubic centimetre of the suspensions used by a careful and experienced Wassermann worker in three successive batches of tests was accurately determined and found to be 505 millions, 328 millions, and 484 millions respectively. It is probable that the suspensions used by other workers show variations as great as, or even greater than, these.

In order to determine the effect, on the apparent hæmolytic strength of complement, of variations in the strength of the red cell suspensions, the following experiment was made. A suspension of cells (A) was standardised as described later. Using 0·5 c.cm. of this suspension and 1·0 c.cm. of guinea-pig serum, diluted 1/20, the total volume in each tube being 2·5 c.cm., the minimum hæmolytic dose (M.H.D.) of the amboceptor was determined. The amboceptor was then diluted, so that 0·5 c.cm. of its solution contained 5 M.H.D. Three other suspensions of the red cells were made, B containing 10 per cent., C 50 per cent., and D 100 per cent. more cells than A. The very small amount of lævulose in the blood will produce glycosuria.

With these points in view the advantage of estimating the efficiency of the liver by a method which excludes the interference of the kidney is obvious.

Conclusions.

A valuable indication of the efficiency of the liver can be obtained by estimating the changes in blood-sugar concentration which follow the ingestion of lævulose. In a healthy adult, with a normal liver efficiency, a dose of 50 g. lævulose will produce no appreciable rise in blood-sugar. In a subject with diminished liver efficiency a definite rise in blood-sugar will result from the ingestion of lævulose. The height and length of the "blood-sugar curve" which portrays this rise will be in proportion to the degree of liver inefficiency which is present. The test affords a means of estimating the degree of liver damage in cases of toxic salvarsan hepatitis and other diseases of the liver. The kidney threshold for lævulose is lower than that for glucose and varies in different individuals. The inconstancy of the threshold for lævulose renders the older method of testing liver efficiency by urinary examination inaccurate.

We wish to express out indebtedness to Prof. H. Maclean, Director of the Medical Unit, at whose suggestion this research was undertaken, and to Colonel L. W. Harrison for granting us facilities for investigating certain of his cases.

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ON THE TUBERCULIN TREATMENT OF BRONCHIAL ASTHMA AND HAY FEVER.

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AND

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IN an investigation published three years ago by de Kleijn and Storm van Leeuwen[1] it was found that patients suffering from bronchial asthma have a disordered purine metabolism analogous to the disorder found in cases of gout. If normal individuals are first kept for some days on a purine-free diet, and are then given on one day an excess of a foodstuff rich in purines (250 g. of sweet-bread), they will excrete the surplus of purine (i.e., about 600 mgm.) in one or two days. Our cases of bronchial asthma, however, either took three or four days for this additional excretion or excreted the surplus of uric acid only partially. As a result of this research we treated asthma patients with a purine-free diet, and, in addition, gave them large amounts of calcium chloride (up to 10 g. daily during five successive days). Though in some cases we got good results, this treatment was often unsatisfactory. During a visit to the United States one of the present authors had occasion to study the work of Chandler Walker[2] in Boston on protein sensitisation in asthma cases. After coming back to Holland we took up Walker's method and tested a number of patients for protein sensitisation Walker's intradermal scarification tests. We had at our disposal about 30 different proteins, including all those which give any likelihood of positive reactions. The tests were applied according to the indications given by Walker, and described by him as follows:—

"A number of small cuts, each about one-eighth of an inch long, are made on the flexor surfaces of the forearm. These cuts are made with a sharp scalpel, but are not deep enough to draw blood, although they do penetrate the skin. On each cut is placed a protein and to it is added a drop of tenth-normal sodium hydroxide solution to dissolve the protein and to permit of its rapid absorption. At the end of half an hour the proteins are washed off and the reactions noted, always comparing the inoculated cuts with normal controls on which no protein was placed. A positive reaction consists of a raised white elevation or urticarial wheal surrounding the cut. The smallest reaction that we call positive must measure 0·5 c.cm. in diameter and any smaller reactions are called doubtful."

In 18 asthma patients tested in this way we found positive reactions in only four cases (22 per cent.). This percentage of positive skin tests accords with the findings of Walker and others; Walker found in 400 asthma patients 78 positive reactions to animal hair and 68 to food proteins; in addition to this he found 33 positive reactions to bacterial protein and 92 to pollen. Sanford some time ago made a preliminary report of protein sensitisation tests made on more than 800 patients in the Mayo Clinic in Rochester; 500 gave negative skin reactions and about 100 showed only doubtful reactions, so that roughly 200 patients, or one-fourth of his cases, showed definite skin reactions.

Relationship of v. Pirquet and Allergic Reactions.

Though in some cases giving positive skin reactions we got good results with specific protein treatment, we deemed it necessary to look out for a mode of treatment applicable to a larger number of cases. In the course of a research on the reactions of normal individuals and patients to intracutaneous injections of various diluted serums, carried out by Landsteiner and the present authors, our attention was drawn to the fact that very often persons who show a strong skin reaction after serum injections also give a very marked tuberculin (v. Pirquet) reaction. This pointed to the possibility of a relationship between the intensity of the v. Pirquet tuberculin reaction and the intensity of allergic reactions—a suggestion strengthened by the following observation:—

In a girl of 15, tested with intradermal injection of 1:10 and 1:100 dilutions of horse serum, swine serum, sheep serum, and rabbit serum, all reactions were negative; on the same day 3 c.cm. of sheep serum were injected subcutaneously. Three weeks after the first injection all reactions, including that to sheep serum, were still negative; thus 3 c.cm. of sheep serum did not suffice to produce a specific sensitisation to this serum. After three weeks—i.e., six weeks after the first injection—skin tests were all very *markedly positive*. On examination the girl proved to have an active lung process of tuberculous origin which had not been manifest on the previous occasions. Her temperature was 38·7° C.

In this case, then, skin reactions were negative and became positive after a tuberculous process had developed, or after a latent tuberculosis had become active.

Once our attention was drawn to the fact that there was probably some relation between a condition of increased sensitiveness to tuberculin and the intensity of allergic reactions, and with the knowledge that many cases of bronchial asthma must be considered as caused by allergic reactions, it was only one step further to suppose a similar relationship to exist between bronchial asthma and sensitiveness to tuberculin, as shown by the v. Pirquet test. Other considerations led to the same view: First, we noticed some time ago that certain cases of hay fever, an illness undoubtedly related from an ætiological standpoint with bronchial asthma, showed extremely strong v. Pirquet reactions; secondly, we had seen a case of hay fever where an intradermal tuberculin test gave an enormously strong reaction, and where the condition of the patient was much improved the next day; which improvement, for lack of any other explanation, had to be ascribed to the action the suspension used (4H) is one which has been found suitable for the W.R. method in use. This method is identical with Harrison's (No. 1 in the Medical Research Committee's Report on the Wassermann test),[2] except that two volumes of sensitised cells are used, the tubes containing:—

Patient's serum (1/5)	.. ..	0·5 c.cm.
Extract (or saline, in control tube)	..	0·5 c.cm.
Complement (three or five doses)	..	0·5 c.cm.
Sensitised cells	.. .. ..	1·0 c.cm.

To sensitise the cells, one volume of S.S. is mixed with one volume of a solution of amboceptor containing 5 M.H.D. in 0·5 c.cm. This strength of suspension will be found to be somewhat weaker than that used by many bacteriologists, but it has been found very suitable for W.R. work as it gives sharp results. If *another strength—say pH—be desired, the standardisation* is carried out as before, but the amount of saline necessary to add to 1 c.cm. of N.S. will be $\frac{x-(p-1)}{p}$ c.cm. If Harrison's method is followed exactly one unit (0·5 c.cm.) of sensitised cells is added to each tube. *This contains one-half unit (0·25 c.cm.)* of suspension. A suitable strength to make the S.S. would be 8H.

In order to test the accuracy of this method of standardisation, samples of sheep's blood were obtained from a slaughter-house at intervals of one or more weeks. *The red cells were washed and two* standard suspensions (4H) of each were made. The number of cells in each was counted, three counts, each of at least 1000 cells, being made and averaged. A Thoma (Hawksley) chamber was used for counting. Table III. gives the results of this control.

TABLE III.

Blood No.	Suspension.	Average of 3 counts (millions per c.cm.).	Average of A and B.	Percentage error of A and B as compared with average of A and B.	Percentage error.
1	A	518	512·5	1·1 %	+ 4·0 %
	B	507			+ 1·8 %
2	A	476	468	1·7 %	− 4·4 %
	B	460			− 7·6 %
3	A	511	497	2·8 %	+ 2·6 %
	B	483			− 3·0 %
4	A	489	503	2·8 %	− 1·8 %
	B	517			+ 3·8 %
5	A	501	497·5	0·7 %	+ 0·6 %
	B	494			− 0·8 %
6	A	502	508·5	1·3 %	+ 0·8 %
	B ·	515			− 3·4 %

Average of the 12 suspensions 498

It will be observed that the greatest error of any pair of suspensions as compared with the average of the two is 2·8 per cent., and that in only one standardisation is the error greater than 5 per cent. when compared with the average of the 12. It *is possible that a certain amount of error may be* introduced by differences in the blood of individual sheep. In some the size of the corpuscle or its hæmoglobin content may be different from what is found in others. A consideration of Table III. would lend some support to this view, but there is no reason *to suppose that such variations should be greater* in the case of healthy adult sheep than in the case of normal men. No divergences which would render this method of standardisation unreliable were revealed in the controls dealt with above. It may therefore be claimed that this method is one which can be recommended as sufficiently accurate for use in the W.R. test. It may be noted that the strength of suspension chosen (4H) corresponds very closely to a count of 500 millions of red cells per cubic centimetre.

Summary.

1. *Methods usually adopted for making suspensions* of red blood cells for the W.R. test are very rough, and the resulting suspensions vary greatly in strength.

2. Such variations may introduce considerable error in the results of the test.

3. A simple and rapid method of standardising red blood cell suspensions is described.

4. This method was controlled by counting the number of cells per cubic centimetre in 12 suspensions, and was found to be accurate.

5. It is suggested that the notation here adopted (in terms of Haldane's solution) might be used to record the strength of any suspension of red blood cells since a new suspension of similar strength could be prepared when required.

SEROUS MENINGITIS.

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SEROUS meningitis was first described by Quincke[1] in 1893 and a considerable number of cases have since been reported, but the condition does not appear to have received the more general attention which it deserves. Pathologically, the essential condition is an increase in the intracranial pressure due to an excess of cerebro-spinal fluid. This excess is produced, not so much by mechanical obstruction—though the latter may be a factor in certain cases, as when the foramina in the roof of the fourth ventricle are blocked by exudate or old thickening—but by an inflammation of the meninges and ependymal lining of the ventricles which never passes beyond the serous stage. The ventricles are usually distended with clear fluid, but in some instances the fluid is mainly in the subarachnoid space, and there may be definitely localised collections at the base or elsewhere. A remarkable case has just been published by C. E. Reynolds,[2] in which fits of varying type occurred, the variations being due to alterations in the position of the fluid brought about by changes of posture.

Description of Cases of Serous Effusion.

Excluding grossly obstructive cases, such as those due to tumour or obliteration of the large sinuses, cases due to tubercle and syphilis, and non-inflammatory cases secondary to cardiac and renal disease, there still remains a group of cases, acute and chronic, of which a non-purulent inflammatory effusion is the essential feature. Associated with the serous effusion a variety of conditions have been described. Quincke found the ependyma thickened and in some cases granular. P. Merle[3] described inflammatory changes in the meninges and choroid plexus as well as in the ependyma, but he maintained that the last was the most frequent and the most important. In some cases an encephalitis was found in addition, and other conditions described include obliteration of the aqueduct of Sylvius and of the foramina of Monro, and adhesions isolating some part of the ventricular cavity.

Joel[4] described a case secondary to a fœtid discharge from the left ear, which was at first thought to be an extradural abscess, but the only condition found at operation was œdema of the meninges and brain tissue, which recovered completely. W. B. Warrington[5] found in a case secondary to a left-sided otitis merely increased fluid and congestion of the meninges which cleared up completely. In another case he described thickening of the floor of the fourth ventricle by granulation tissue. Nonne[6] recorded two cases, one following injury in which nothing was found except great dilatation of the ventricles, and the other apparently due to mental shock, in which there was hydrocephalus with fresh granulations in the ependyma. Other writers have described similar conditions and microscopically *perivascular infiltration, and in cases of longer standing* fibrosis has been found in the ependyma and pia-arachnoid. A case published by Parkes Weber[7] in 1902 in a woman of 22 showed, in addition to great distension of the ventricles, thickening of the ependyma

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[2] Medical Research Committee, Special Report Series, No. 14, 1918.

(6) E., typographer, aged 50. Asthma since age of 38; of late years four to five attacks a day, two or three every night. Very dyspnœic; had to give up profession. Has had ambulant treatment with B.B. and P.D., but without tuberculin; afterwards in hospital for three months. In the hospital, condition as before. 26/5/21, tuberculin treatment, ambulatory; 5/6/21, condition improved but not cured; taken into hospital. Tuberculin 1 c.cm. 1 : 100,000, increased to 3 c.cm. 1 : 100,000. During first three days two or three adrenalin injections daily; afterwards free from attacks. 10/6/21, sent home with chronic bronchitis and emphysema (condition much better but not cured); 27/7/21, condition much better. 31/8/21, has had slight attacks. Ordered to fast for two days and after that live mainly on rice and bread with small amounts of protein; condition much better.

(7) G., labourer, aged 40. Has worked in factory with oats for half a year, and since that time has had attacks of asthma which have increased in intensity. Skin reaction with various proteins, *including oat protein*, negative; v. Pirquet + +, ambulatory tuberculin treatment started; 25/5/21, first 1 c.cm. of 1 : 100,000 T.O.A., gradually increased to 3 c.cm. 1 : 100,000. An attack on 10/7/21; no more since that time.

(8) V., commercial traveller, aged 20. Asthma since childhood; last 10 years never free from dyspnœa; very frequent and heavy attacks; severe chronic bronchitis. Skin reaction: dog hair +, v. Pirquet + 30/3/21, admitted to hospital, B.B. and P.D., intramuscular milk injections; condition not much better; 1/5/21, leaves hospital; 8/5/21, treatment with dog hair started; after one month not much success. 8/6/21, tuberculin treatment (ambulatory) started, 1 c.cm. 1 : 100,000, increased till 4 c.cm. 1 : 100,000; no attacks since that time, but chronic bronchitis persists and patient remains dyspnœic; 5/9/21, has had a few severe attacks of asthma. Condition not much bettered since beginning of treatment.

(9) B., married woman, aged 48. Almost daily bronchitis and asthma for 15 years. V. Pirquet +, P.D. and ambulatory tuberculin treatment started. 15/6/21, first dose 1 c.cm. 1 : 100,000 T.O.A., increased to 3 c.cm. 1 : 100,000. After second injection attacks nearly ceased. After third injection no more attacks.

(10) S. I., merchant, aged 28. Asthma from age of one year old, acute attack once a week, lasting two or three days. For a few months B.B. and P.D.; not much bettered. Skin reaction negative, v. Pirquet + +. 29/6/21, admitted to hospital and tuberculin treatment started; first dose 1 c.cm. 1 : 100,000, increased to 3 : 100,000. After first injection one attack. No more since that time. Leaves hospital 10/7/21 cured, with slight chronic bronchitis. Autogenous vaccine. After second injection with 10 million bacteria slight attack of asthma. No further attacks till 30/8/21; one on that day lasting three days, others afterwards. Condition improved after treatment, but not satisfactory.

(11) V., banker, aged 38. Very severe asthma, attacks nearly every day. Not able to sleep in bed for a year. Can only sleep in sitting position; v. Pirquet +. 5/7/21, admitted to hospital and tuberculin treatment started. B.B. and P.D. First dose of tuberculin 1 c.cm. 1 : 100,000 T.O.A., increased to 4 : 100,000. First three days gets one or two adrenalin injections a day, then no more. 8/7/21, completely well; can sleep lying quite flat; 19/7/21, sent home completely cured.

(12) N., schoolboy, aged 13. Asthma since age of 7. about one attack a week lasting one day; v. Pirquet + +; 30/6/21, ambulatory tuberculin treatment started, first dose 0·5 c.cm. 1 : 100,000 T.O.A., increased to 1·5 c.cm. 1 : 100,000. No attacks since beginning of treatment.

Remarks.

From the clinical histories given above it is evident that the most prominent factor of our treatment is the disappearance of the acute attacks of asthma in a very short time. When the acute attacks of dyspnœa disappeared after the first injections of tuberculin one of two conditions remained. Either the patient was completely cured or there was a chronic bronchitis left. It may be stated at once that even in the latter case the improvement was marked. Most of the patients considered themselves to be cured and took the remaining bronchitis very lightly. Our attempts to cure this also were much facilitated by the subsidence of the acute attacks of dyspnœa. It is hardly necessary to mention that in cases of long duration, where emphysema had developed or the heart had become weak, no complete recovery could be obtained.

In tabulating the results of the tuberculin treatment 8 cases, including the 12 detailed above, the ts could be divided into four groups, as follows: Group I. contained 18 patients who are completely cured; Group II. contained four patients whose acute attacks of asthma completely or almost completely disappeared, but where a chronic bronchitis remained, which though very much improved was not completely cured; Group III. contained five patients whose condition was improved by treatment, but who were not cured, some having dyspnœa due to bronchitis or a weak heart, and three having occasional attacks of asthma, acute but never so severe as before treatment; Group IV. contained one case (No. 8 in the above list) where tuberculin treatment failed to improve the patient's condition. Roughly speaking, Groups I. and II. (78 per cent. of all cases) contained cases where tuberculin treatment did all that could be expected. Group III. (18 per cent.) contained cases which were decidedly improved; Group IV. contained the failures (about 4 per cent.).

Late Results.

It is not possible to state whether the cures obtained will be lasting. We have only had one relapse till now, but our first case dates from 15 months ago and the latest case only two months. It is to be expected that some relapses may occur, and if this be the case we shall treat them again. Though our time of observation is short, and though we cannot give any guarantee that all our patients now considered to be cured will remain so, we feel justified in publishing our results; for even if all our patients relapse within a year, we should still consider that they had greatly benefited by the treatment. Most of them were in a deplorable condition on coming under our care, having been dyspnœic for years, some of them for decades. Some had not had one quiet night for a long time; three were in danger of becoming morphinists; others could only do their work by injecting themselves with adrenalin or by smoking asthma cigarettes every two hours; four were in danger of having to give up their professions. All these people were brought to a normal or almost normal life again by a cure of 10–14 days' duration; and certainly their state of health (especially their bronchitis) must be considered as improved, even if relapses occur.

As has been stated above, we only started our tuberculin treatment after having tried Chandler Walker's specific protein therapy, and it is fair to consider how far we were justified in preferring our therapy to his. We must here state that we value Walker's work highly, and we are of the opinion that his treatment may be very beneficial. Walker obtains a relief of asthma in about 80 per cent. of cases, showing a specific skin reaction to proteins; we also record relief in about 80 per cent. of our tuberculin cases, so that, in this respect, there is not much difference between his results and ours. There is, however, one factor which gives a very decided advantage to our method. According to the statistics of Sanford (*vide* above) sensitisation to animal and food proteins is only found in 25 to 30 per cent. of the cases; Walker finds positive tests in 48 per cent. of his cases, but in this figure are included a number of cases with reactions to pollen only, belonging to the type of asthma occurring only in summer. Since nearly all our cases had attacks of asthma during the whole year, only 20 to 30 per cent. could have been expected to be benefited by Walker's treatment. (In reality our number was still lower.) On the other hand, from our entire number of asthma patients (34) the greater part (30)—i.e., 89 per cent.—showed a positive tuberculin reaction, so that all these could be treated according to our method.

A minor advantage of this method is that the necessary material, tuberculin, can everywhere be had in any amount, whereas the specific proteins necessary in the Walker treatment are only manufactured—so far as we know—in the United States; work with Walker's proteins in Europe is therefore handicapped to a certain extent.

It may be regarded as a disadvantage of our method that the administration of tuberculin is not a trivial matter, and requires great care and supervision of the

After the operation the pain completely disappeared for a time and the pulse-rate increased to normal, but otherwise his state remained the same. On the 16th slight paresis of the right external rectus was noticed, and a few days later the optic neuritis had become severe. There were now four dioptres of swelling and some hæmorrhages. The pulse-rate was now more rapid, varying between 80 and 120, and the deep reflexes were absent. The vision was still 6/6. As no improvement occurred, and the sight appeared to be threatened in the patient's only eye, he was trephined on May 17th over the right temporo-sphenoidal lobe by Prof. A. M. Connell. On exposing the dura no pulsation was seen and when the dura was opened the pia-arachnoid was found to be congested and presented a bright red granular appearance. The convolutions were distinctly flattened. On exploration a deep resistance was felt, apparently due to the distended lateral ventricle. This was tapped and considerable amount of fluid withdrawn. The pulsation of the brain immediately became normal, the dura was brought together, and the wound closed.

Following operation recovery was rapid. On June 24th the wound was completely healed, there was no hernia at the site of operation, and the patient felt perfectly well. His vision was normal and the optic neuritis had completely gone. He is now at work, and except for an occasional slight pain similar to the one he had prior to the onset of his acute symptoms he is perfectly well.

In some respects this latter case at first resembled frontal sinus disease, but this was finally excluded at the first operation. With the occurrence of a slow *pulse, optic neuritis, and a sixth nerve palsy it* became evident that some condition causing increased intracranial tension was present, and the nature of the first fit suggested a localisation in the right temporo-sphenoidal lobe irritating the auditory centre. The acute onset was against its being a tumour, and the patient did not present the foul tongue and general toxæmic state of a cerebral abscess. The absence of pyrexia was strongly against suppurative meningitis or sinus thrombosis, and the possibility of its being a serous meningitis was confirmed by the finding of congestion of the meninges at the site of operation and the rapid recovery following decompression and the evacuation of fluid under pressure from the lateral ventricle. The cause of the condition was not clear; it was difficult to associate it with a slight injury 17 years before, and it seemed to be more likely that an infection of low virulence had spread to the interior of the cranium, possibly from the slight old-standing disease in the ethmoid region.

Remarks.

It would appear to be worth emphasising that in cases in which the signs and symptoms of increased intracranial tension develop acutely serous meningitis should be kept in mind and a search made, first for acute or chronic otitis, and if this is not found, for some other cause, such as inflammation in the accessory sinuses of the nose or some more generalised source of infection. The diagnosis from the more grave acute cerebral lesions—abscess, sinus thrombosis, purulent meningitis—may be very difficult. In serous meningitis however, one does not usually find the rigors and high fever of a sinus thrombosis, the foul tongue, the general toxic appearance, and the leucocytosis of a cerebral abscess, and a lumbar puncture will usually distinguish a purulent meningitis. In the more chronic cases in adults (pseudo-tumour) the difficulty is probably greater, because the similarity clinically between a tumour without definite localising signs and a slowly developing serous meningitis may be very close indeed.

The prognosis of the acute cases is much more favourable than that of the other acute conditions which lead to an increased intracranial pressure, and many recorded cases have recovered. The first essential in treatment is to find the primary source of infection and to deal with it in the most appropriate manner. The free drainage of pus from the temporal bone may be all that is needed to bring about the rapid disappearance of all cerebral symptoms. In some cases it is true that serous meningitis has developed after such operative interference, a course of events which recalls *the occasional occurrence* of disseminated tubercle after an operation on a localised focus, but this consideration should never deter the surgeon from operating when the primary condition demands it; it is rather an argument for the freest possible drainage, especially as it is likely enough that such a case would, if left, develop some more serious cerebral complication.

If the intracranial pressure does not quickly subside steps should be taken to relieve it, and in the more acute cases this can most readily be done by lumbar puncture, a procedure which is also of the greatest possible value in the diagnosis. When serous meningitis *is the only intracranial lesion present it is not*, as a rule, necessary to open the dura. In the more chronic cases, however, which may closely simulate a cerebral tumour—a condition in which lumbar puncture is known to be dangerous—greater caution is desirable; until the diagnosis can be placed upon a surer footing it is a wise rule to refrain from lumbar puncture, and to resort to decompression in cases where a tumour cannot with reasonable certainty be excluded, and probably also in those where epileptiform convulsions with unconsciousness have occurred. It was this consideration which led me to refrain from doing a lumbar puncture in the second of the two cases described above.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

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A CASE OF
PARTIAL PYLORIC STENOSIS
(HYPERTROPHIC): FINNEY'S OPERATION.[1]

BY R. P. ROWLANDS, M.S. LOND., F.R.C.S. ENG.

THE case here recorded is a typical instance of partial stenosis due to spasm and hypertrophy of the pyloric sphincter.

The patient, G. W., a male aged 32, has supplied the following details of the early history of the case: "Pain began about nine years ago (1912) on and off, after food, until 1915, when I first started vomiting, having about three attacks in that year lasting a week each time they occurred. In the following year (1916) my service in the army began, and from then onwards I had pain and vomiting after the least exertion. I was admitted to hospital at various times with these attacks as gastritis, and after rest and light diet was much better. After a short time they would recur. Since my discharge in 1919 they became more frequent—about every month—lasting, on an average, 10 days to a fortnight, until my operation was performed. Symptoms: Pain about two hours after food, which would increase until I vomited, when pain became less. This would occur three or four times a day for from 10 to 14 days. Vomit was sour and curdled and in large quantities."

I first saw the patient at the Second London Hospital in June, 1918, when I removed his appendix, having felt the stomach, duodenum, and gall-bladder from the wound and found no abnormality. X ray examination of the stomach was negative. I next saw him in June, 1921, when the frequency of his attacks and the amount of vomiting had increased, and he had wasted considerably. The frequent recurrence of symptoms threatened to spoil his life and lose him his appointment as clerk. He was therefore admitted into Guy's Hospital for further investigation. Chemical analysis showed no abnormality in the gastric function. X ray examination showed a hypotonic, very dilated stomach with delay, but no evidence of gastric or duodenal ulcer or pyloric stenosis. I concluded from this that the patient had

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[1] Shown at a meeting of the Clinical Section of the Royal Society of Medicine on Nov. 11th, 1921.

M.H.D. of the complement was accurately determined for each cell suspension. Each tube contained—

Amboceptor (5 M.H.D.)	0·5 c.cm.
Cell suspension (A, B, C, or D) ..	0·5 c.cm.
Guinea-pig serum	x c.cm.
Saline	(1·5–x) c.cm.

The tubes were heated in a water-bath at 37·5° C. for two hours and examined. The smallest amount of guinea-pig serum which produced total hæmolysis was taken as the M.H.D. of the complement in the case of each cell suspension (Table I.). The results of a similar experiment are recorded in Table II.

TABLE I.

Cell suspension.	Relative number of cells per unit volume.	M.H.D. of complement.	Relative M.H.D.
A	100	0·0105 c.cm.	100
B	110	0·0115 ,,	109
C	150	0·0175 ,,	166
D	200	0·0250 ,,	238

TABLE II.

Cell suspension.	Relative number of cells per unit volume.	M.H.D. of complement.	Relative M.H.D.
A	100	0·009875 c.cm.	100
B	110	0·0102 ,,	103
C	125	0·0135 ,,	137
D	150	0·0155 ,,	157

It is clear from these results that variations in the strength of suspension used exercise a marked effect on the apparent strength of complement. If the M.H.D. of the amboceptor had been found for each cell suspension, the differences in the M.H.D. of the complement would probably have been less, but it must be remembered that it is not usual to titrate amboceptor on every occasion on which a batch of serums is tested. In general the M.H.D. is ascertained when a new amboceptor is brought into use and, on subsequent occasions, dilutions containing three or five times this amount are employed.

Possible Variations of Results.

Now consider two bacteriologists, X and Y, who are performing W.R. tests, using the reagents employed for the experiment recorded in Table I. X uses cell-suspension A, and Y uses cell-suspension C. X finds the M.H.D. of complement to be 0·0105 c.cm., and makes two dilutions, one containing 0·0315 c.cm.—i.e., three doses—and the other 0·0525 c.cm.—i.e., five doses—in 0·5 c.cm. Y finds the M.H.D. to be 0·0175 c.cm., and his three-dose dilution contains 0·0525 c.cm., while his five-dose dilution contains 0·0875 c.cm. of guinea-pig serum in 0·5 c.cm. The results obtained by X and Y in testing a batch of serums are bound to be discordant, since the three-dose dilution of Y contains the same amount of serum as the five-dose dilution of X. Probably the two will agree as to many of the serums which are frankly negative or strongly positive, but some of X's strong positives will be recorded by Y as positives, while Y will find many of X's positives or weak positives to be negative.

It is unnecessary further to labour the point that variations in the strength of the cell suspension may cause errors in the results of the W.R. test. It follows, therefore, that some effort should be made to obtain suspensions of approximately constant strength, especially if this can be done without unduly adding to the labour of the test. Probably the most accurate method of standardising would be by counting the number of cells contained in a known volume of a suspension and then diluting this until it contained a definite number, previously decided upon, in each cubic centimetre. This method would, however, be tedious, and—unless the counts were carefully done, and duplicated or triplicated—liable to considerable error. Lewis[1] has advised a method of weighing a known volume of suspension, contained in a specific-gravity flask, and, by comparing its weight with the weight of equal volumes of saline of a standard suspension, finding the amount the new suspension must be diluted to produce a standard suspension. We do not think that this method will be widely accepted by bacteriologists. It necessitates the bringing of the specific-gravity flask and suspension to a constant temperature of 60° F. in a water-bath, and accurate weighings in a sensitive chemical balance, which is not always available in bacteriological laboratories.

A Colour Method of Comparison.

In the method here proposed, the colour of the carboxyhæmoglobin produced by treating the suspension of red cells with water and passing carbon monoxide gas is compared with that of the standard tube of a clinical hæmoglobinometer. This method was considered by Lewis, but abandoned, "principally owing to the error inevitably introduced in the final colour matching." It is believed, however, that the method is capable of a considerable degree of accuracy, as will be shown later.

The ultimate standard adopted was the carboxyhæmoglobin solution of a Haldane's hæmoglobinometer. The advantages of using such a standard are obvious; it is constant, easily obtainable, and easily renewable. The standard suspension of cells (S.S.) decided upon was such that when one part of it was mixed with three parts of water and CO passed through the mixture, the resulting solution of carboxyhæmoglobin was of exactly the same tint as that in a Haldane's tube when examined in the comparison tube of the hæmoglobinometer set. Since the standard suspension is four times as rich in hæmoglobin as Haldane's solution, its strength can be conveniently described as 4H. It may here be remarked that this system of notation is a convenient one to use in connexion with any work on suspensions of red blood cells. If a particular suspension of cells be tested and its strength recorded as nH, it is possible at any time or in any place to make a fresh suspension of the same strength.

Technique of Standardisation.

The technique of standardisation is as follows:—

1. A suspension of cells (N.S.) is made which is stronger than the one required.

2. 1·0 c.cm. of N.S. is measured accurately with a 1 c.cm. pipette into each of six or eight clean dry test-tubes—(*a*), (*b*), (*c*), (*d*), &c.

3. To (*a*) add 3·0 c.cm. of water, to (*b*) add 4·0 c.cm., to (*c*) add 5·0 c.cm., to (*d*) add 6·0 c.cm.

4. The contents of each tube are mixed and coal-gas bubbled through by means of a fine glass tube, until the carboxyhæmoglobin colour is fully developed. A portion of each is transferred to the comparison tube of a Haldane's hæmoglobinometer set, and its colour compared with that of the standard tube. Some of the dilutions will be found to be too dark in colour and some too light. Suppose (*a*) and (*b*) are too dark and (*c*) too light. (It is not necessary to wash out and dry the comparison tube after each dilution is tested. It is quite sufficient to empty it, shake it out, and rinse with a small quantity of the next dilution to be tested.)

5. To (*e*) add 4·5 c.cm. of water, mix, pass gas, and compare. Suppose (*e*) is too light.

6. To (*f*) add 4·2 c.cm. of water, mix, pass gas, and compare. Suppose (*f*) is just too dark.

7. To (*g*) add 4·3 c.cm. of water, mix, pass gas, and compare. Suppose (*g*) exactly matches the standard tint.

It is then evident that 1 c.cm. of N.S. + 4·3 c.cm. of water gives a solution containing exactly the same amount of hæmoglobin as Haldane's. The amount which the N.S. must be diluted to produce S.S. can now be calculated. In order to save trouble a formula may be used. If x c.cm. is the amount of water necessary to add to 1 c.cm. to give Haldane's tint, $\frac{x-3}{4}$ c.cm. of saline must be added to each 1 c.cm. of N.S. to produce S.S. = 4H. In the example given, x = 4·3 c.cm., so 0·325 c.cm. of saline must be added to each cubic centimetre of N.S., or 13 c.cm. to 40 c.cm.

Since the whole operation of preparing a standard suspension takes about 10 minutes, it does not add unduly to the time necessary to perform a W.R. test. No difficulty was experienced in colour matching, and it was found possible to determine the value of x to the first decimal place with accuracy. An amount of 0·1 c.cm. greater than x was obviously too light in colour and 0·1 c.cm. less too dark. The strength of

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[1] wis, Frederick C.: On the Serum-diagnosis of Syphilis, ANCET, 1920, i., 11.

Medical Societies.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this Society was held on Dec. 6th at the Norfolk and Norwich Hospital, Dr. WILLIAM WYLLYS, the President, being in the chair.

The PRESIDENT showed two cases, the first being that of a woman, aged 43, who had been quite blind from chronic secondary glaucoma for several years. The tension in the affected eye was +2, and she had external strabismus. There was considerable pain and much irritation of the other eye, not amounting, however, to sympathetic ophthalmia. The President said that he had decided to enucleate the eye, and with some diffidence, on account of the rigidity of the tissues, inserted a Mules's globe and an artificial eye. The result was most satisfactory, as after the operation the irritability of the sound eye subsided; he pointed out that the movements of the artificial eye were excellent, and the appearance from a cosmetic point of view most satisfactory.—Mr. A. J. BLAXLAND expressed some doubt as to the permanence of good results from a Mules's globe, but the PRESIDENT said that if the effect appeared to diminish he would not hesitate to insert another Mules's globe, and gave instances of cases where he had done so.

The PRESIDENT brought forward the second case for diagnosis. The patient was a girl, aged 11, in whom oblique illumination of the left eye showed a film with numerous small opaque dots scattered over it, the condition in his opinion being a persistent pupillary membrane. The patient had not noticed the defect herself, but examination by a school medical officer showed the sight in the right eye to be $\frac{6}{6}$, while that in the left was $\frac{6}{60}$. The condition was very well seen with the aid of a Collins's loop, the use of which was demonstrated.—Dr. G. MAXTED expressed the opinion that the condition was inflammatory, probably of intra-uterine origin.—The PRESIDENT said that, after hearing Dr. Maxted's view, he was disposed to agree with him.

Dr. H. J. STARLING showed two cases, the first being a case of disseminated sclerosis with coincident aortic and mitral disease in an ex-soldier about 25 years of age. The disease did not seem to be progressive, as the patient had been in the same condition for some time, but the incoördination of the hands had considerably improved. There were no tremors. Nystagmus was not marked, but increased after exertion. There was no typical scanning speech unless the man got excited. The abdominal reflexes were absent, while there were exaggerated knee-jerks and ankle clonus. Dr. Starling's second case was a man with coarctation of the aorta, who had been discharged from the army with V.D.H., and who now complained of præcordial pain and dyspnœa; he had a systolic blood pressure of 218 and a diastolic pressure of 124. No blood pressure could be obtained from the femoral circulation. The collateral circulation was carried on by various tortuous arteries, which had been outlined on the patient's body. To compare with this case Dr. Starling exhibited a specimen of the aorta, showing the lesion diagnosed in the clinical case. This latter patient had died from hæmorrhage in the brain, and the condition of the aorta was discovered post mortem. The specimen showed clearly a marked stenosis of the posterior part of the artery beyond the origin of the left subclavian, at the site of the ductus arteriosus.

Dr. F. W. BURTON-FANNING brought forward a case of diabetes insipidus in a young boy which had been completely controlled by pituitrin. The patient suffered from thirst, loss of weight, and weakness, and passed an enormous quantity of urine—100 to 150 oz. in the 24 hours, with a specific gravity of 1001–1002. After a hypodermic injection of 1 c.cm. of pituitrin the quantity of urine decreased to about 50 oz. in 24 hours, and the specific gravity rose to 1015. Pituitrin by the mouth had no effect. Altogether ten injections had now been given with the same effect every time. The condition appeared to be due to some defect of the filtering power of the kidneys, resulting in an inability to excrete a concentrated urine. There was also increased carbohydrate tolerance. The injections of pituitrin caused a rise of temperature and an increase in the secretion of urea. The question of treatment of such cases by transplanting of pituitary gland substance had been discussed, but as it would be necessary to use a human pituitary gland Dr. Burton-Fanning feared that a remedy could not be looked for in that direction.

Mr. BLAXLAND showed a case of dislocation of the hip which had occurred in a boy of 14 after a rather mild form of septic infection causing subacute epiphysitis of the upper end of the femur. Mr. Blaxland also showed: (1) a malignant papilloma of the kidney removed from a man of 35, whose only symptom was painless hæmaturia; (2) carcinoma of kidney removed from a man of 45, whose main symptom was painless hæmaturia.

Dr. MAXTED showed an unusual form of congenital syphilitic disease of the eyes in a girl of 6 years.

Mr. T. W. HANCOCK showed a specimen of early carcinoma of the pylorus before ulceration.

Dr. H. MUIR EVANS showed (1) an annular growth of transverse colon, in which resection was followed by lateral anastomosis; (2) a new growth of the ileum near the ileo-cæcal lock. Resection and an end-to-end anastomosis was performed.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Dec. 14th, Mr. C. H. WALKER in the chair, when Prof. I. WALKER HALL gave an account of some work on

The Rôle of Dilute Acids in Infection,

carried out by him in association with Dr. A. D. FRASER. After an explanatory introduction dealing with hydrogen-ion concentration (pH), Prof. Hall proceeded to consider the means whereby the general neutrality of the body was maintained, especially with regard to the local variations of acidity in the alimentary tract, muscles, kidney, &c. He pointed out the necessary changes in pH values in local infections, and that body cells demanded an environment containing between 0·000,001 and 0·000,000,01 g. of hydrogen ions per litre if a satisfactory response to infection was to be made. As, however, this condition might be reached by a mixture of tissue acids such as lactic, phosphoric, sulphuric, and carbonic, Prof. Walker Hall considered in detail the effect of these and other acids possessing a low dissociation constant, especially with regard to the action of the undissociated portions. He showed that not only were red and white corpuscles extremely sensitive to the minute pH changes associated with the very dilute quantities of acid in the blood, but that they had to meet less balanced conditions in the lymph where "buffer" action was less complete. He then related the results of his experiments on the growth of bacteria treated with quantities of acid equivalent to those obtaining in the tissues, and demonstrated the catalytic action of the H ions on the one hand and the retarding influence of the undissociated portions on the other. By the application of these observations Prof. Hall said he had been able to improve materially the technique of blood cultures, and the diagnosis of diphtherial infection. He also alluded to the restraining effect of the monobasic fatty acids on the growth and alkalinity production of diphtheria bacilli, and expressed the hope that his findings would lead to better prophylaxis and decrease in "carriers." The period required for the diagnosis of tubercle and the virulence of micro-organisms had been altered by changing the pH of cellular and round-celled infiltration, mainly perivascular in distribution. The ependyma of the fourth ventricle was mainly involved.

It is evident that such conditions may lead on the one hand to increased production, and on the other to defective absorption of the cerebro-spinal fluid, and in this way bring about an internal hydrocephalus, which is clinically the essential feature of the disease. In an acute form it occurs associated with middle-ear disease in children. J. S. Barr and J. Rowan [8] found optic neuritis in 11 out of 160 cases of suppurative otitis, and in a further 30 there were vascular changes in the fundus, not amounting to optic neuritis, but sufficiently definite to suggest an increased intracranial pressure. It may also follow inflammatory conditions in the nose and accessory sinuses, the acute fevers, and gastro-intestinal infections. The case above referred to described by Parkes Weber followed two attacks of erysipelas of the head, and Quincke has also described a case which presented the same sequence of events. In a certain number of cases the origin has remained obscure, and in one or two instances it has been attributed to mental shock.

This group of cases is thus of very varying ætiology, and consists of cases of serous effusion within the skull, analogous, as Parkes Weber has pointed out, to a serous effusion in the pleura or pericardium. It brings into line cases of infantile hydrocephalus which are probably at the outset inflammatory, cases of chronic internal hydrocephalus in the adult—which often simulate an intracranial tumour—and the more acute cases which may simulate such conditions as purulent meningitis, cerebral abscess, and sinus thrombosis. The most characteristic symptoms are those of cerebral compression, headache, optic neuritis, vomiting, slow pulse, and altered mentality. The onset may be abrupt or gradual, and in the acute cases there is sometimes fever, but it may be difficult to say how far this is due to the serous effusion and how far to the primary disease. Somnolence is frequent and there is sometimes coma. Diplopia, strabismus, and nystagmus are frequently found. Nystagmus is probably due in otitic cases to disease of the labyrinth, and the diplopia to paresis of the external recti. Symptoms referable to more localised interference with cerebral function occur in some cases, such as monoplegia, hemiplegia, and Jacksonian attacks. The knee- and ankle-jerks are often diminished and sometimes absent. Cervical rigidity is also of frequent occurrence; it is usually slight and unaccompanied by retraction of the head. On lumbar puncture the cerebro-spinal fluid is clear, under considerably increased pressure, and usually sterile. On chemical and cytological examination it is often normal, but there may be a lymphocytosis, an increase in protein content, and an absence of the normal reduction of Fehling's solution.

Variability in the severity of symptoms from time to time is frequently observed, a fact of some value in diagnosis, and also of interest in connexion with Barr and Rowan's observation that the optic neuritis is less liable to lead to atrophy and blindness than the optic neuritis of a cerebral tumour. Remissions in severity of pressure would conceivably lessen the tendency to permanent changes in the optic nerve, and such remissions would be more likely to occur when the pressure is due solely to fluid than when it is due to a solid growth. This observation was based entirely upon a study of otitic cases, which are usually acute, but T. R. and E. E. Glynn [9] published a case in which very severe symptoms, including optic neuritis with almost complete blindness and serious mental impairment, lasted for nearly five years, and which recovered completely and regained normal vision after a spontaneous discharge of cerebro-spinal fluid from the nose. On the other hand, total blindness may result quickly. Parkes Weber quotes a case in which total blindness came on within three months of the onset of the illness.

Cases Illustrative of Acute Form.

The following two cases recently under my care illustrate the more acute form of the disease. One was due to acute otitis in a child, the other of uncertain origin.

CASE 1.—A boy, 7 years of age, entered hospital on March 5th, 1921. A month previously he had been suddenly seized with vomiting, earache, and a slight purulent discharge from the left ear. Within a few hours the discharge ceased and the vomiting and earache abated, but he developed a stiff neck. The muscles on the left side of the neck were tender and the head was drawn to that side. This also disappeared in a few days, but he did not return to normal health. He was pale, somnolent, sweated a good deal, and complained of earache and occasional headache. There was occasionally a slight evening rise of temperature. A trivial blow on the head some months before, and measles when four months old, were the only points to note in the previous history.

Examination revealed a slight fulness around and below the left mastoid process and distinct tenderness on pressing the bone. A tender gland could be felt just behind the angle of the jaw. There was no discharge from the ear but the tympanic membrane was congested. Examination of the optic discs showed commencing optic neuritis. There was no head retraction, the stiffness of the neck had gone, and Kernig's sign was absent. The knee- and ankle-jerks were diminished and the plantar reflex was normal. He was pale and listless and looked distinctly ill. There was no diplopia. During the next few days there was a slight irregular pyrexia never exceeding 100 and the pulse varied from 60 to 110. The leucocyte count was 11,000. After five days the temperature subsided and the pulse became slower, keeping steadily between 60 and 70. At the same time the mastoid tenderness and tympanic congestion became appreciably less. There was no improvement, however, in the general condition, and the optic disc in each eye showed a swelling of two dioptres.

On March 17th a lumbar puncture was done; the fluid was under greatly increased pressure and was clear. It was sterile and negative to the Wassermann test. There was no increase of protein, and it reacted normally to Fehling's solution. It contained six lymphocytes per c.mm. Following lumbar puncture the pulse rose and the general condition improved. Five days later the optic neuritis had gone and the patient was discharged on April 1st apparently in normal health. When seen recently he was perfectly well.

CASE 2.—This case, also recently under my observation, presents several features of unusual interest. A man, 24 years of age, a bootmaker by occupation, was admitted to hospital on March 27th, 1921, complaining of intense pain in and around the right eye and to some extent also at the back of the head. He had double pneumonia two years previously and an injury resulting in the loss of the left eye in childhood. He also had a slight scalp wound in the right parietal region 17 years before. He had slight pain behind the right eye occasionally for about a year but it had never interfered with his work. He was taken suddenly ill on March 12th whilst sitting talking in a friend's house. He was noticed to look queer and said he heard some music which seemed to come from a cupboard on his left-hand side. He described it afterwards as being like "a lot of bands playing." He almost immediately lost consciousness and the head and eye deviated to the left. There were slight movements of both legs and he went very pale. In a few moments he recovered and went to see a football match, but on his return he had another attack which was similar to the first one, except that he heard no music. The head and eye deviated to the left as before. Following upon this he had a frontal headache of moderate severity for a fortnight, and then began to have extremely severe pain around the right eye and in the occipital region, and the pulse was noticed to be slow. He vomited once only on the day before admission to hospital.

On examination there was well-marked tenderness over the right frontal sinus as well as over the lower orbital margin, and the eye itself was tender. Transillumination of the right frontal sinus was indefinite, but there were some patches of muco-pus in the region of the right middle turbinal. The pupil was large but reacted normally to light. The optic disc showed no change, the vision was 6/6, and there was no paralysis of any of the cranial nerves; the socket of the left eye was healthy and the ears were normal. The pulse was 50, the temperature normal, and so far as could be ascertained there had not been at any time any pyrexia. The patient was mentally alert, all the deep reflexes were diminished, and there was no rigidity. Kernig's sign was not present. The tongue was clean, the breath was not foul, and he was neither emaciated nor constipated. The urine was normal and the blood gave a negative Wassermann reaction. The condition remained unchanged for several days, the temperature being normal and the pulse varying between 45 and 55. On April 6th commencing optic neuritis was observed, and on April 8th the right frontal sinus was opened by my colleague Mr. W. S. Kerr as the very definite and localised tenderness suggested the possibility of a sinusitis. The sinus, however, was found to be perfectly healthy.

the bacteriological examination of water is dismissed in six pages. Although the isolation of *Bacillus coli* is described, streptococci and *B. welchii* are not mentioned.

Dr. Giltner states that his aim has been to make the book a guide to general microbiology, leaving the particular fields of dairy, soil, water, medical, and other phases of bacteriology to special manuals. It is reliable and, on the whole, up to date; the newer methods for cultivating anaerobes used in this country are, however, omitted. A good account of hydrogen-ion concentration methods is given in the appendix.

Within its self-imposed limits the book is a valuable one. The student who has conscientiously worked through it will be equipped with a knowledge of bacteriological technique and should be well prepared to utilise his training in any special field he may select.

Cardiac Disease.

Original Observations and Theories on Cardiac Disease and the Normal Heart. With a Note on Alcohol. By Michael B. Shipsey, M.B., B.Ch. Birm. Birmingham: Cornish Brothers, Ltd. Pp. 40. 1*s.* 3*d.*

The author of this brochure has attempted the impossible. In the space of 36 small pages, subdivided into 21 sections, he flouts many of the theories and principles accepted by the majority of modern physiologists, physicians, and cardiologists, substituting original and, in some cases, quite ingenious theories of his own. But, doubtless owing to lack of space, he does not attempt to supply proofs of these theories. Dr. Shipsey's views on the mechanical aid rendered by the respiratory system are quite reasonable. It is on the question of the function of the myocardium in health or disease that his views are so unusual, most of them being far from conclusive, especially in the light of recent experimental research. The fact that Dr. Shipsey "believes that he can hear the ventricles contract about a fiftieth part of their full extent" leads one to suppose that either he must have abnormally acute sense of hearing or that he brings a powerful imagination to bear upon his cases during examination. Slight changes in the character of the heart sounds appear to mean more to him than to the average medical man. Dr. Shipsey discusses diagnosis, prognosis, and treatment, including the value of alcohol in heart cases, on broad lines, and rightly emphasises the psychological factor in such cases. But while his book may stimulate free scientific thought, it cannot be considered as likely to be of great value to medical practitioners as a whole.

Les Nouvelles Méthodes d'Examen du Cœur en Clinique. Par R. Lutembacher. Paris: Masson et Cie. 1921. With 138 illustrations. Pp. 186. Fr.20.

In this short but most interesting volume Mr. Lutembacher has demonstrated clearly how much our knowledge of cardiology has been augmented by methods other than those employed in ordinary clinical examination. His book is divided into two parts, in the first of which, after a brief description of different types of polygraphs and of the results attained by their use, he describes and illustrates the various abnormalities which may occur in the myocardium during any period of its intricate cycle. The cardiographic records are so good that for anyone accustomed to reading cardiograms there is hardly a need to refer to the text in this section. The uninitiated will find the descriptions of the different forms of cardiac abnormality so clear that they will find no difficulty in following the argument. The chapter on electrocardiography, owing to its extreme brevity, shows up in rather marked contrast to the sections dealing with the polygraph. We would welcome a further publication by Mr. Lutembacher dealing with the subject more especially from the electrocardiographic standpoint.

In the second part of the book an attempt is made to show what valuable additional knowledge may be provided by radioscopy. In place of the actual radiograms the author substitutes diagrams of the outline of the heart and great vessels, and in each case a photograph of the external appearance of the heart is placed side by side with the radiographic outline. He is careful to emphasise the fact that radioscopy should not take the place of other methods of examination, but he shows how helpful it may sometimes be in certain forms of disease of the heart and the great vessels. Although it is usually impossible for the general medical practitioner to carry out such work himself, he should be acquainted with at least the more common forms of cardiographic and radiographic records, for it is becoming evident that a thorough and exhaustive investigation of the cardiovascular system can be completed only after combined clinical and graphic examinations have been carried out. Mr. Lutembacher in no way belittles the value of clinical examination; in fact he shows how several types of arrhythmia can be diagnosed by clinical methods alone. On the other hand, he is able to prove beyond doubt that some of the abnormalities of excitability or conductivity of the heart muscle, though they give similar clinical signs, produce cardiographic records which are quite dissimilar in character, and which can be interpreted correctly only after careful measurement of the waves, as they appear in the arterial and venous tracings. The book will appeal to all working at diseases and disorders of the heart.

Fasting and Man's Correct Diet.

By R. B. Pearson. Chicago, Illinois: Published by the Author. 1921. Pp. 153.

We do not quarrel with Mr. Pearson's main views on fasting, although fasting is not a panacea, but remarks such as the following should only be made by one who is secure himself from the charge of gross ignorance: "In the writer's opinion it is utterly astonishing that the so-called 'Regular' school of allopathic physicians, as represented by the American Medical Association, should be so profoundly ignorant of the laws of Nature with which they have to deal as they are at present." There is no body of men more profoundly conscious of their own limitations than medical men, and the more skilled and cultivated they are the more they feel how little they know. But it ill becomes a writer who shows such abysmal ignorance as Mr. Pearson often does to carp at other men's ignorance. Mr. Pearson thinks that "germs are scavengers, that they never caused any disease whatever"; he believes that both putrefaction and fermentation are purely chemical actions and not caused by any germ or minute organism; and he makes the following remark after talking about the sterilised culture media used in bacteriology: "Why not try keeping a few 'preparations' at this temperature *without inoculation with bacteria*, and see if they don't decompose just as fast and produce just as much 'toxin' material as the preparations inoculated with bacteria?" If Mr. Pearson had the slightest acquaintance with the subject he would know that this experiment has been tried over and over again, always with the result that the sterile "preparations" do not decompose.

We are not surprised to see that the author is his own publisher.

Pharmacology and Toxicology.

Materia Medica and Therapeutics. An Introduction to the Rational Treatment of Disease. Twelfth edition, revised. By J. Mitchell Bruce, C.V.O., M.D., F.R.C.P., Consulting Physician to Charing Cross Hospital; and Walter J. Dilling, M.B., Lecturer in Pharmacology, Liverpool University. London: Cassell and Co., Ltd. 1921. Pp. 678. 10*s.* 6*d.*

A book which has run through 12 new editions and a still larger number of reprints in 38 years has been judged by a higher criticism than can be given in any review. For such a long life the original material must be good, but so must also be the partial pyloric stenosis of the spasmodic or hypertrophic variety and urged operation.

Operation (June 9th, 1921).—Thorough exploration of the abdomen revealed no abnormality except a greatly dilated and moderately hypertrophied stomach, and a greatly thickened and widened pyloric ring over which the stomach was œdematous. This œdema extended for about two inches into the pyloric antrum. I could feel no ulcer in the duodenum, stomach, or pylorus. I was able to pass my index finger through the pylorus quite easily, after invaginating the anterior wall of the stomach. The second part of the duodenum was adherent to the liver and the adhesions tended to obstruct it. I mobilised the duodenum, separated the adhesions, and performed Finney's operation, enlarging the pylorus to 3 in. in diameter. The pyloric muscle was one-third of an inch thick and over half an inch wide. The mucous membrane showed a marked fold on the lower margin of the ring. Catgut was used throughout the operation.

It is now five months since the operation. The patient has not vomited since and has put on flesh to an amazing extent. He is entirely free from pain and thoroughly enjoys his food.

Remarks.

Partial stenosis due to spasm and hypertrophy of the pyloric sphincter was described many years ago by Mr. Ernest Maylard and others. Mr. Maylard has operated in about 35 instances; I have operated in about a dozen. In many cases, as in this one, there is a marked infolding and thickening of the submucous tissue at the pylorus, partly obstructing the channel, but there is no sign of active or healed ulceration. The diagnosis is difficult, for the patient is usually quite well and the stomach normal in the interval between the attacks, which, however, become more frequent, and ultimately dilatation of the stomach replaces moderate compensatory hypertrophy. Then, or during an attack, an X ray examination reveals dilatation and delay but no sign of ulceration. The clinical history is characteristic, the patient being well while at rest and under observation in hospital, and the attacks coming on after undue exertion or fatigue.

I suggest that some form of gastro-duodenostomy is the ideal treatment of this condition, for, unlike gastro-jejunostomy, this operation carries no risk of vicious circle or jejunal ulceration, and it does not materially change the normal anatomy and physiology of the stomach. I have generally adopted Finney's method of gastro-duodenostomy, by which the pyloric sphincter is divided and the pyloric opening greatly enlarged. My results have been uniformly satisfactory.

It has been suggested that this condition is a congenital abnormality—a persistence into adult life of a congenital hypertrophic stenosis, which is at first of such a moderate degree as to be compensated by hypertrophy of the stomach muscle; later this balance is upset and the stomach gradually fails and dilates. Would Ramstedt's operation, which has been so successful in infants, be suitable for this analogous condition in adults? I think not, for the fibrous changes in the pylorus—especially in advanced cases—call for the more radical operation.

Queen Anne-street, W.

LOSS OF REFLEX TO LIGHT RESTORED IN SLEEP.

BY A. GARVIE, M.D. GLASG.

THE interesting feature of the case here described is the restoration in sleep of a normal reflex after it had been absent during waking hours for over six days.

M. L., female, aged 14 years, was first seen March 21st, 1921. The mother stated that patient had been sick and vomiting on the previous day, and for the past 24 hours had been very sleepy. The child complained of frontal headache; temperature normal, pulse 80. Examination of nervous system revealed no abnormality. Odour of breath was slightly fruity and acetone was found in urine. No sugar or albumin present in urine. The child's previous history was good. She had suffered from scarlet fever the previous year.

On the 23rd a slight narrowing of the left palpebral fissure was noticed and lateral nystagmus. Pulse 67, erature normal. Slight retraction of muscles at back h legs. 24th: A paresis of the external rectus of left eye had developed, and the pupil appeared to be more sluggish to light reaction than the right. 26th: Patient was seen by Dr. G. W. Watson, of Leeds, and the possibilities of encephalitis lethargica or early tuberculous mischief were discussed. There was no evidence of any tuberculous process in any other region of the body, nor was any found up to time of death. 31st: Squint was now marked; there was some retraction of the head, and pupils were sluggish in their reaction to light.

On April 1st the patient was much more comfortable, pulse 70, temperature normal, and no acetone now present in urine. On the 8th the pupils were almost fully dilated with a very doubtful reaction to light. The paralyses of external recti were well marked. There was no headache and patient was very talkative but rational. From the 11th onwards she suffered from incontinence of urine. From the 1st to 23rd the pulse-rate had been gradually increasing to 120 per minute. Temperature had never exceeded 99° F. A little movement of the eyes could be elicited and there was a slight internal squint on right side. Pupils were almost fully dilated; there was no reaction to light and she could not see even a bright light. The frontal suture was slightly prominent and the temporal veins left side were more marked than on right. The fundi were still normal, except that on nasal side of left fundus the outline of the disc appeared to be slightly blurred.

25th: Patient was again seen by Dr. Watson, who made a detailed examination and corroborated these observations. 27th: Eyes were fixed in state of rest with pupils fully dilated. 29th: When seen about 10 P.M. patient was in a quiet sleep, and although one very rarely seeks to disturb a sleeping patient, I raised the eyelids and found that the pupils were contracted almost to the size of a pin-head, and on applying the light test I found that a normal brisk reflex was present in both eyes. As the result of applying the test the patient gradually awoke and one could observe the pupils dilating up in the process. Reaction was present until pupil was fully one-eighth inch diameter; greater than that diameter reflex was not present. As the observation was surprising I waited beside the patient for an hour and repeated the test twice as soon as it became evident that patient was sleeping again, and the same observations were made each time. 30th: There was considerable jerking of left leg. The patient was still partly conscious, but most of her conversation was limited to "Yes" and "No."

May 1st: There appeared to be some slight analgesia in second division of fifth nerve, right side. 2nd: Patient had been wakeful for two days, the mother stating that she had not slept for an hour. There was now analgesia in all areas of the fifth nerve, right side, and slight drooping of angle of mouth. There was some difficulty in swallowing and the child refused to take any solid food. When seen that night she had developed Cheyne-Stokes respiration, and she died early next morning.

During the course of the illness she was considerably troubled with constipation. I never found temperature to exceed 102° and the pulse remained rapid up to the end, being 160 on the evening preceding her death. During the illness there was said to be several slight convulsive attacks. I never saw her in one of these. A post-mortem examination was not obtained.

Remarks.

Since the brain is enclosed in the rigid cranium the volume of the blood in the cerebral vessels cannot alter unless the volume of the other cranial contents alters in the opposite sense. It appears to be a reasonable hypothesis to assume that in this case the blocking of the light reflex was due to a congestive disturbance leading to increased pressure on the third nerve. Halliburton writes:—

"Plethysmographic records from the arm of a sleeping man show a diminution in the volume of the blood every time he is disturbed, even though the disturbance may not be sufficient to awaken him. This is interpreted as meaning a diminution in the blood of the body and a corresponding increase in the blood flow through the brain."

This clinical observation seems to support the explanation placed on the plethysmographic observations: diminished volume relieving pressure when the child was asleep and gradual increase of volume as the child awakened increasing pressure on the nerve, paralysing it as manifested by the dilating pupil, and finally blocking the reflex.

Cases of this type are fortunately very rare in general practice, but it appears to be worth recording, for, if the explanation be physiological rather than pathological, it is likely to occur in the early stages of basal meningeal conditions, and may prove of value in investigating curative influence of sleep.

Halifax.

THE LANCET.

LONDON: SATURDAY, DECEMBER 31, 1921.

1921.

TIME was, and not so long ago, when we attempted in the last issue of the year to summarise its medical events; and long after such an annual résumé could be otherwise than capricious in character, we were informed by our readers that, within its limits, they found it of service. It supplied them with milestones along the road. But even this much can no longer be done by any compendium of medical history treating of the happenings of a year, and within the scope of a weekly newspaper's production. The fact that nothing approaching the old-fashioned "Annus Medicus," however deliberately restricted in circumference, can possibly represent the annual progress of medicine, is a practical testimony to the extent and range of that progress.

But this much can be said of the medical year just closed, and it is of great significance. While 1921 has been marked by no great discovery and by no fundamental change in professional organisation, all the medical activities of the year have revealed a general recognition of the unity of medicine in the largest sense. To insist upon this unity—to point out that the clinician, general and special, the pathologist, in mortuary or laboratory, the practitioner, at home or abroad, and working as individual or public servant, have a common object and interdependent aims—all this has been wont to form the text of introductory addresses and of writers on sociology. That much can now be taken for granted. Steadily, throughout the year just dead, the truth that medicine is one, one and undivided, though its practice be followed under such widely different conditions, has become patent to everyone. The necessity for close coöperation between clinical and laboratory work is seen to entail the necessity that facilities should be provided whereby practitioners should be able to obtain assistance in their common task from those who are able to give special advice. Departments there must be, but they should not be water-tight. On the contrary, the freest communication is required between them in order that the collated knowledge and experience represented by each and all may be at the disposal of a public which is to-day fully aware of the debt owed to our science.

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Renal Function Tests.

THE subject of renal function has assumed considerable importance in recent years, and much of the interest aroused is due to the labours of those biochemists who have devised simple yet accurate methods of blood and urine analysis. Not only have these methods proved of value in experimental investigations on animals, but the use of microchemical methods has enabled practically all of them to be applied to man. The advances made have shed a new light upon the subject of biochemical changes in health and disease. Although at the moment it cannot be said that the tests for renal function have approached the ideal, the fact that they have already been found of great value is proved by the eagerness with which both physician and surgeon seek help from them in diagnosis and prognosis of renal insufficiency. A group of American workers have attacked the problems with remarkable success; and the names of FOLIN, DENIS, VAN SLYKE, MYERS, ROWNTREE, GERAGHTY, FITZ, and FINE stand out prominently in this connexion. Many observations on experimental pathology have been made, especially by SCHLAYER, and his co-workers at Tübingen. From France comes the work of AMBARD crystallised in the laws and coefficient which bear his name. Our own country has also contributed valuable work to this particular branch of applied biochemistry. The potassium-iodide test was first devised by DUCKWORTH as far back as 1867. In more recent times D. CORBETT, MACKENZIE WALLIS, MACLEAN, and DE WESSELOW, among others, have placed certain renal function tests on a fairly firm and satisfactory basis. The simple and excellent urea-concentration test devised by MACLEAN and DE WESSELOW may be mentioned as of particular value.

To enumerate all the various tests which have been devised for determining kidney function would be unprofitable. Many of the tests have now become of historical interest only, whilst others which should be obsolete are employed by certain workers mainly on account of simplicity and perhaps through habit. The chief difficulty which has to be faced by a physician anxious to ascertain the exact nature of the pathological lesion in a kidney is the provision of a far larger amount of renal epithelium than is actually required for every-day needs, and thus renal function tests do not differentiate minute disturbances of function. The tests do, however, enable the physician to define the state of the kidneys in acute and chronic nephritis, functional albuminuria, arterio-sclerosis, uræmia, and myocardial degeneration, and are of particular value in the differentiation of cases of uræmia from cerebral hæmorrhage and other diseases which may simulate the former. In Prof. H. MACLEAN's recently published monograph,[1] intended and admirably adapted for the use of the general practitioner, he emphasises the value especially of the estimation of the blood-urea content, the urea-concentration test in the urine, and the diastase content of the urine, as simple tests which appear to give information of as much value to the physician in most cases as do more complicated ones. Dr. JOHN D. COMRIE has described in our columns[2] experiences with certain renal efficiency tests—viz., the phenol-sulphone-phthalein test, the urea-concentration test in the urine and the urea content of the blood, and concludes that these tests supply reliable information. He is in agreement with many American workers in placing most reliance on the phenol-sulphonephthalein test, both as regards reliability and also for its individual worth in diagnosis. This test has, however, not found general favour in this country. The investigation of "trench nephritis" gave opportunities for much valuable research to Dr. LANGDON BROWN, Dr. MACKENZIE WALLIS, Dr. ABERCROMBIE, and Prof. MACLEAN. The last carried out a most extensive investigation and elaborated a simple scheme of testing the renal efficiency of soldiers who had suffered from this disease. The value of this test is well known, and the collected data based on investigations of over 14,000 cases are sufficient to show its wide range of application. In the monograph previously referred to Prof. MACLEAN deliberately refrains from elaborate theoretical discussions accompanied by extensive surroundings. Prof. Hall referred to recent work on the permeability and penetrability of various organic and mineral acids, which supported his view that much would be gained by the application of pH determinations to body fluids such as gastric, pleuritic, ascitic, and urinary fluids. It seemed probable that delayed alimentary and other functions, as well as defective absorption of exudates, would prove in large part due to an alteration in permeability on the one hand and hydrogen-ion concentration on the other, and that further work might reveal some means whereby this latter could be influenced favourably.

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[1] Modern Methods in the Diagnosis and Treatment of Renal Disease. By Hugh Maclean, M.D., D.Sc., Professor of Medicine, University of London, and Director of the Medical Clinic, St. Thomas's Hospital. London: Constable and Co. 1921. Pp. 102. 8s. 6d.

[2] THE LANCET, Dec. 3rd, p. 1150

Dr. H. H. CARLETON read a paper on a Physiological Conception of Prolonged Hysterical Conditions.

Reviews and Notices of Books.

HEART DISEASE AND PREGNANCY.

By Sir JAMES MACKENZIE, M.D., F.R.C.P., LL.D. Edin. and Aberd., F.R.S. Director of the Institute for Clinical Research, St. Andrews. London: Oxford Medical Publications. 1921. Pp. 138. 8s. 6*d*.

As Sir James Mackenzie rightly but severely remarks, advances in cardiology are not incorporated in books on midwifery, and many obstetric writers have not taken the trouble to familiarise themselves with modern views on this branch of medicine. Thus the text-book teaching of the treatment of pregnant women suffering from heart disease is sketchy and quite unhelpful. Some chapters of this monograph have already appeared in substance in our columns, and the whole gives a clear outline of a difficult subject.

After pointing out the normal sequence of events during pregnancy in the circulating mechanism, Sir James Mackenzie devotes successive chapters to the changes in the diseased heart during pregnancy, the physiology of the heart in relation to its efficiency, the law of heart failure and of heart murmurs, with special reference to prevalent misconceptions regarding the import of these signs. He then proceeds to discuss in detail the various forms of heart disease and their relationship to pregnancy and labour; this section includes also consideration of irregular action of the heart, auricular fibrillation, the neurotic heart, congenital defects, and finally the management of cases of pregnancy complicated with heart disease. Stress is laid upon the need for recognition of the earliest symptoms of heart disease—namely, breathlessness in effort and palpitation. The presence in mitral stenosis of a diastolic as well as of a presystolic murmur, accompanying enlargement of the heart and distress on effort, indicates, in the author's view, damage to the heart muscle, and he lays down the rule that if auricular fibrillation is present pregnancy should be forbidden. In cases of aortic regurgitation, when the heart is normal in size and response to effort is good, pregnancy may be allowed, but if the heart is enlarged and there is a water-hammer pulse, the organ is probably permanently impaired and bearing a child will cripple the patient severely, even if she gets over her confinement.

This book has been written with the definite aim of directing the attention of those who conduct labours to the newer cardiology: it should prove of the utmost value to them and to obstetric teachers.

HEREDITY.

Vorlesungen über allgemeine Konstitutions- und Vererbungslehre, für Studierende und Ärzte. By Dr. JULIUS BAUER. Berlin: Julius Springer. 1921. Pp. 186.

THIS is a series of 12 lectures, of which the first six deal with the principles of heredity and variation, with numerous examples illustrating individual variation, mutation, and Galton and Mendel's theories. These make somewhat laborious reading on account of the statistical and mathematical material introduced. In the seventh lecture is given a list of the diseases and abnormal conditions in man recognised to follow Mendelian heredity. They are arranged according as they appear to be dominants or recessives, and form a lengthy but interesting table. Later lectures are more clinical in character, and deal with such matters as the "individual ductless gland formula," and the types which result from failure in the perfect interaction of the various internal secretions. Thus descriptions of the hypopituitary and hypothyroid dwarfs, and of the hyperpituitary giants are given; also an account of Sigaud's classification of man into the respiratory, digestive, muscular, and cerebral types. Various other clinical classifications of human types are discussed and illustrated by photographs. The concluding lectures treat of racial and sociological matters. This is a compilation of lectures, each of which was probably of interest to those attending, but the book contains little new matter.

SURGERY OF PERIPHERAL NERVE INJURIES OF WARFARE.

By HARRY PLATT, M.S. Lond., F.R.C.S. Eng., Hon. Surgeon, Ancoats Hospital, Manchester. Bristol: John Wright and Sons. 1921. Pp. 49. 4*s*.

THIS little monograph is a reprint of the Hunterian lectures delivered by Mr. Platt at the Royal College of Surgeons of England, and thereafter printed in the *British Journal of Surgery* and abstracted in THE LANCET.[1] Surgeons had long been waiting for an authoritative and judicial review of the various operations designed for the repair of injured nerves, and Mr. Platt has made an excellent contribution to surgical knowledge which will tend to stabilise judgment and technique.

LABORATORY MANUAL IN GENERAL MICROBIOLOGY.

Second edition. Edited by WARD GILTNER. Prepared by the Laboratory of Bacteriology and Hygiene, Michigan Agricultural College. London: Chapman and Hall; New York: John Wiley and Sons. 1921. Pp. 472. 21*s*.

THE dominant notes of the book are its intensely practical character and its comprehensive subject-matter. Its existence illustrates the extent to which bacteriology is studied in a number of American schools as a separate and complete science and not—as is, unfortunately, usual in this country—as a medical subject, a mere branch of pathology. The book aims at covering the whole field of bacteriology, not equally but without undue emphasis on any one branch. The first 149 pages deal in a series of practical exercises with general morphological and cultural methods and include, in addition to the usual practical exercises on sterilisation, media preparation, routine cultivation and staining methods, exercises dealing with the special properties of yeasts, moulds, and the demonstration of bacteria under natural conditions. The second part of the volume deals with the physiology of micro-organisms in 67 pages, and in a series of well-thought-out exercises demonstrates the very numerous physiological properties of bacteria. This part of bacteriology is inadequately dealt with in most laboratory handbooks and constitutes a valuable section of this book. Applied microbiology is given only 125 pages, 74 of these being taken up by the bacteriology of air, water, sewage, soil, and the dairy, 4 by plant microbiology, and 47 by animal diseases and immunity. Much useful information is given in an appendix of 93 pages.

The subject of animal diseases and immunity is inadequately treated and the book would be useless as a manual for the medical student; for example, the bacteria of tuberculosis and diphtheria are not described. The sections on applied microbiology are the weakest in the book. There is no account of the bacteriology of food apart from dairy produce, and

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[1] THE LANCET, 1921, i., 789.

Annotations.

"Ne quid nimis."

THE STUDY OF DEEP X RAY THERAPY.

MORE than a year ago Dr. Reginald Morton related[1] to the Section of Electro-Therapeutics of the Royal Society of Medicine his impressions of deep X ray therapy gained during a visit to the Frauenklinik at Erlangen. After a week's study of the methods there employed he came away with the conviction that the apparatus and technique constituted a real advance in radiology. Admittedly no new principle was involved, but a greater degree of penetration and intensity was attained at Erlangen than elsewhere, and the results already shown in cases of uterine carcinoma, apart from surgical intervention, were, to say the least, very encouraging. A latent period of scepticism was followed by an increasing rush to the scene of action, with the amusing result that the admission thereto has been strictly rationed. The *British Medical Journal* of Dec. 3rd recounted the difficulties of Dr. Nordentoft, of Copenhagen, in getting to Erlangen. The fact is, and we have it from Prof. Wintz himself, that the work of the radio-therapeutic department has been seriously embarrassed by the attention given to it. Prof. Wintz is desirous of restricting the visitation to a post-graduate course to be held in the early part of next year. Those who intend to take part in it should not only possess a competent knowledge of the German language, but they would be wise to master a book[2] written by Dr. F. Voltz when he was head of the experimental laboratory attached to the radio-therapeutic department at Erlangen. It is a complete exposition of our knowledge of the character of X rays, their chemical and physical properties, and of methods for measuring their wave-length, their penetrating power through various substances, and their quantity in arbitrary units. Not only are these matters described in great detail, with a wealth of numerical tables and diagrams, but the secondary phenomena attending the passage of a beam of X rays through matter are also fully dealt with. The scattering of the primary beam, the excitation of secondary radiation, and the selective absorption have each to be taken into account in an attempt at estimating what the intensity of radiation at any particular point may be.

Dr. Voltz states that the main object of his book is to provide data from which the radiologist may estimate dosage. The treatment adopted is rigidly physical; mathematical formulæ are freely distributed throughout its pages and make its study exhilarating if difficult. The experimental plan of the work actually forms the basis from which the quantitative methods of measurement used in the Erlangen clinic have sprung. It has been felt for many years by radiologists that the means at their disposal for the accurate measurement of doses were scanty. The electrical method described here, which is based upon the principle of the first inoto-quantimeter of Szillard, has been much developed by German physicists in the last few years, and it seems likely enough that this instrument, or some variation of it, will become extensively employed by radiologists. Its use alone will not give them all the information they want, but the fundamental principles upon which it is based will necessarily become better known, and medical men will become more familiar with physical quantities and expressions of which at present they are rather shy.

MAURITIUS.

MAURITIUS defaults from the standard of the sanitary reformer, despite the fact that the island has been a Crown colony for over 100 years. Such was the inevitable conclusion to be drawn from the graphic account given by Dr. Andrew Balfour to the Royal Society of Tropical Medicine and Hygiene of a recent visit to the island, undertaken at the instance of the Colonial Office and with the object of reporting on the sanitary conditions which had been seriously complained of by the Governor, Sir Hesketh Bell. Up to the middle of last century Mauritius appears to have been a peculiarly pleasant place to live in. Its scenery affords as much variety as can be hoped for in an island rather smaller than the county of Surrey; its climate is mild and equable, even delightful between May and December, and though periodically prolonged heavy rains and destructive hurricanes occur, the porous volcanic soil dries rapidly. But since 1854, when a visitation of cholera swept away 17,000 of the inhabitants, Mauritius has been under the scourge of disease. In 1865 the chance call of a ship at Port Louis from the malarious African coast introduced the *Anopheles costalis*, and the deforestation then in progress, to make room for the sugar cane, had undoubtedly prepared a way for the outbreak of malaria which decimated the island in 1867 and 1868; 31,800 of the population succumbed to this epidemic. Endemic malaria still claims 3000 to 4000 victims every year. Antimalarial measures on a large scale have been attempted, and in many parts of the island canalisation of streams has been carried out or begun as the result of Major Ronald Ross's survey and classic report in 1908. Unfortunately, however, his recommendations were only imperfectly put into effect, despite subsequent efforts by local health officers.

Dr. Balfour found pools in the streets arising from defects in the water pipes, from overflow wastage or drainage from pools in the vegetable gardens; he found stagnant water collecting in waste tins, graveyard urns, and hollow shells of the large edible snail. From all these sources larvæ of *A. costalis* were obtained. The irrigation of extensive sugar plantations, the overflows from unchannelled streams, the reed-grown banks of streams and rivers, and the marine swamps also afforded sufficient evidence of mosquito-breeding haunts to account for the general prevalence of endemic malaria. On the other hand, certain areas are free from the pest, as the result of proper canalisation and clearing of growth of river margins, and here streams are so shaded that the spread of a water weed inimical to mosquito larvæ is allowed full scope. Apart from malaria, the other principal causes of death in Mauritius are pulmonary tuberculosis, dysentery, bronchitis, and pneumonia. The death-rate of children under the age of 5 years in 1918 was over 300 per 1000 births. For the spread of dysentery and enteric fever the shallow wells, with every chance of contamination from the surface which form the water-supply in many parts of the island, are mainly responsible. Moreover, the insanitary conditions of the towns and the primitive methods used for the carriage and disposal of excreta, call for the most active measures of reform throughout the island. In the market places flies reign supreme; dogs have free run of the garbage and refuse heaps, the most elementary precautions being neglected. In the outskirts, pigs in large numbers roam at will, even wallowing in the open sewage pits through the broken-down barriers. It is not surprising, therefore, that among other intestinal disorders helminthic disease, especially ankylostomiasis, is common. Although the health report for 1918 states that a new leper colony was being erected a few miles out of Port Louis, the old leper hospital, condemned as long ago as 1878, was still in use on the outskirts of the town at the time of Dr. Balfour's recent visit. The sale and distribution of hand brooms made by the lepers is doubtless responsible for the spread of the disease, which, in Dr. Balfour's opinion, is more prevalent than is judgment which absorbs the new and discards the old, not only the old which is proved wrong, but that which has become unimportant. New subjects in this edition are accessory food factors, detoxicated vaccines, delayed chloroform poisoning; new drugs are benzyl benzoate and ethanesal; new sections include natural mineral waters and baths, invalid diet, and a short account of the Dangerous Drugs Act. These last sections are useful in a book which has become a concise encyclopædia of the subjects of pharmacology and therapeutics as they concern the student and the young practitioner.

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[1] THE LANCET, 1921, i., 24, 37.

[2] Die Physikalischen und Technischen Grundlagen der Messung und Dosierung der Röntgenstrahlen. By Dr. Friedrich Voltz, Physikalischer Assistent der Strahlenabteilung der Universitäts-frauenklinik Munchen. Berlin: Urban und Schwarzenberg. 1921. Pp. 300. M.96.

One of the great difficulties in writing a book for the student on materia medica, pharmacology, and therapeutics is the fact that at the time when he learns pharmacology and materia medica he is only just beginning to be initiated into medicine, and since he has no knowledge of disease treatment means nothing to him. The authors provide 52 pages of introductory material, followed by about 400 pages on materia medica, wherein the drugs are described with enough pharmacology and therapeutics to ensure comprehension. In the third part, under the name of general therapeutics, organs and systems of the body are discussed, with the diseases of each and their treatment. A definite scheme runs through each chapter of this section, wherein physiology, pharmacology, pathological relations, spontaneous prevention and recovery, and finally therapeutics are dealt with in turn. This enables the reader either to work straight through each system of the body, or to pick out without difficulty the pharmacology or the therapeutics, ignoring the rest.

The fact that throughout the book the doses of the metric system are given before those of the imperial measures may seem a small point, but it goes some way to help us over the change we must face in the future. In the external preparations percentage is strictly adhered to; it will not be so difficult to introduce the metric system for ointments as for internal remedies, and a beginning may well be made in this section. Simple prescriptions in the metric system, such as that given on p. 51, are useful in this connexion. Altogether the work is excellent; few books contain so much useful information in similar space, and at such a reasonable price.

Taschenbuch der Ökonomischen u. Rationellen Rezeptur. By A. FRÖHLICH and R. WASICKY, of Vienna. Berlin and Vienna: Urban und Schwarzenberg. 1921. Pp. 215. M.30.

THE war has indeed left many scars. This small book for German and Austrian doctors is devoted to pointing out how drugs which are unprocurable or very expensive may be avoided. It is an emergency pharmacopœia, dealing not only with drugs, but even with the prices of pots and glasses. The book is essentially of local and temporary value, but nevertheless contains much useful information.

What to do in Cases of Poisoning. Twelfth edition. By WILLIAM MURRELL, M.D., F.R.C.P. Revised by P. HAMILL, M.D., F.R.C.P., Lecturer on Pharmacology and Therapeutics, St. Bartholomew's Hospital. London: H. K. Lewis and Co., Ltd. 1921. Pp. 273. 4*s.* 6*d.*

WE are glad that Dr. Hamill has not materially changed the type of Murrell's well-known little book. The title so well expresses the scope of the book and the size and contents are so suitable for its purpose that alterations of its general form could only be deplored. The changes which have been made have been chiefly abbreviations and the replacement of any irrelevant matter by an account of a few new poisons and notes on treatment. Dr. Hamill has shortened rather than lengthened the book, and has made it even more practical than it was. In view of the present peace, and in the hope that it may continue, he has not included symptoms and treatment of war poisonings. One might suggest that any proprietary preparations that are worth mentioning in the text are also worth recording in the index. Many of the patent preparations on p. 25 and the following pages may give rise to poisoning, and the fact that their composition is stated would be missed by the practitioner referring to the manual in a case of emergency.

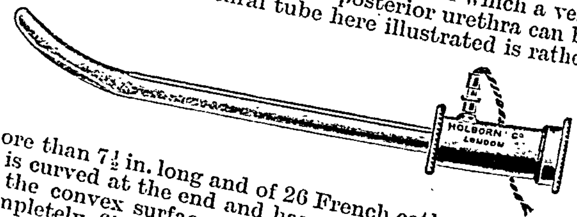
In a future edition it might be worth while to explain how the india-rubber bottle mentioned on p. 34 is used to fill the tube, and how iodide of starch (p. 37) is prepared. Though santonin poisoning may occur mainly in children, the use of the drug as a vermifuge is, we believe, equally common in adults. The obsolete tincture of jaborandi might disappear from p. 83, and the dose of diamorphine given on p. 139 is not strictly pharmacopœial. The symptoms of arsine poisoning are worthy of mention. They are different from symptoms caused by arsenic taken in other ways, while this form of poisoning is found to be commoner than had been previously thought, at any rate in industrial districts. But these are minor matters in a book so sound and practical.

The manual, written primarily for the doctor, is a safe and useful one in the hands of the nurse and of the layman; it may save life by giving the latter some hints how to act in emergencies, while it will not lead him to neglect to send for more skilled aid.

New Inventions.

A NEW URETHROSCOPE TUBE FOR THE POSTERIOR URETHRA.

I HAVE lately had made to fit the "Holborn" urethroscope a special tube by means of which a very clear view of the floor of the posterior urethra can be obtained. The urethral tube here illustrated is rather more than 7½ in. long and of 26 French catheter gauge. It is curved at the end and has an opening 1¼ in. long in the convex surface of the bend. This opening is completely filled by the pilot when introducing the tube, and I find it causes very little bleeding or discomfort to the patient. The tube is made to fit the body of the urethroscope, and lengthening pieces are supplied for the lamp holder and instruments to make up for the extra length of the posterior tube. The lens used is a large single one, ¾ in. in diameter, and does not require any adjusting or focussing, such as is necessary with more complicated and expensive instruments. The tube can also be used with the operating body, thus enabling the surgeon to carry out in the posterior urethra any necessary treatment as easily and with just as good an illumination as in the anterior urethra. It is advisable to give the patient a ¼ gr. belladonna suppository the night before and another an hour before the examination, and to wash out the bladder with oxycyanide of mercury afterwards. A local anæsthetic is rarely necessary. After the patient has passed water the tube is introduced as if it were a sound, and the pilot removed. The mucous membrane is then dried with mounted swabs and the body of the instrument attached. A little care and practice is necessary to prevent the window being pressed on to the mucous membrane. By gently withdrawing the tube and rocking from side to side, the walls and floor of the posterior urethra can be examined.



The instrument has been made for me by the Holborn Surgical Instrument Co., Thavies Inn, E.C.

F. CARMINOW DOBLE,
Temp. Capt., R.A.M.C.
Military Hospital, Rochester Row.

from the medical student. The choice of Dr. R. H. A. Plimmer for the new chair of chemistry, attached to St. Thomas's Hospital in the University of London, is a happy one, and it will bring added strength to a school already well-equipped in the department of chemical pathology. It is still said with some measure of truth that the practitioner derives little benefit from a year at the preliminary sciences, because the materials and time at his disposal are so scanty that he can treat his patients only by the simpler clinical methods. The larger branch of medicine is still that founded on tradition modified by individual experience but untested by critical experiment, while the newer shoots grow only slowly at the expense of the old. Unless the practitioner is thoroughly grounded in the scientific bases of medicine he may fail to realise that biochemical methods do not exclude the older ones, but often serve to explain their action and justify their use. Prof. Plimmer's opportunity is to keep in touch throughout their career with students whom he has taught in their first year, and they will naturally return, even after qualification, to seek his help in the elucidation of problems.

PARATHYROID THERAPY.

MODERN views favour the complete structural and functional differentiation of the thyroid and parathyroid, though previously there was considerable doubt on the matter. Experimental work on the parathyroids has been largely confined to the production of tetany, and clinically this condition and other convulsive states have been studied in relation to these glands. From clinical and experimental work two functions have been assigned to the parathyroids; first, the control of calcium metabolism, and second, a function of rendering toxic substances harmless. In tetany Noel Paton and his co-workers showed that methyl-guanidine was the toxic causal agent of the condition of tetany and that this substance was normally destroyed by the parathyroids. Edmunds demonstrated that calcium in large doses would control the tetanic convulsions following parathyroidectomy. There does not seem to be any evidence that calcium plays a part in the detoxicating process in this condition. Launoy formulated a theory that infantile tetany was due to a preceding toxic state which damaged the parathyroids permanently, so that any subsequent toxic condition was liable to precipitate a tetanic attack.

In a recent communication to the Section of Therapeutics and Pharmacology of the Royal Society of Medicine Dr. H. W. Vines outlined these facts and proceeded to consider the effect of parathyroid therapy in cases where there is a calcium deficiency without any convulsive signs. His investigation was based on the fact that in a variety of conditions a deficiency is found in the ionised calcium of the blood, not necessarily accompanied by a deficiency of the total calcium. Over 100 cases had been studied by him, but in this paper he dealt only with ulcerative cases. These include 10 cases of varicose ulcer, 12 cases of gastric or duodenal ulcer, 2 cases of erosion of the cervix uteri, and 6 cases of inoperable carcinoma. Varicose ulcers were found to improve under intramuscular injection of calcium salts[1] up to a certain point, but did not proceed to complete cure; under parathyroid therapy[2] healing was more rapid in cases kept at rest and in early cases. For these ulcers g. 1/10 of the dried gland was given daily until laboratory tests showed that the ionised calcium had returned to a normal figure; the gland was then continued in reduced doses until healing was complete. According to Dr. Vines after-treatment is important; any irritation or eczema, premonitory of a return of the ulcer, must be met with an increase in parathyroid dosage, and thus the ulcer can be kept healed. Beneficial results were also obtained by parathyroid therapy in the cases of intestinal ulceration. Pain and vomiting were decreased, an improvement in the general condition was noticed, and weight usually increased. The disappearance of symptoms again appears to be consequent on the return of the ionised calcium of the serum to normal. Dr. Vines suggests that the important factors in these ulcerative conditions are a primary toxæmia combined with a secondary deficiency of ionic calcium. The latter may be due to the toxic effect of the former upon the parathyroid glands, disturbing calcium metabolism, the site of development of the ulcers being due to this general cause in conjunction with local causes. In varicose ulceration the latter local condition may be dependent on inadequate blood-supply, and probably some slight trauma in the varicose area where nutrition and cell resistance are least effective. In gastric ulcer there is the same general cause, and Dr. Vines has noted that gastric ulceration is commonly associated with some toxic state.

Friedman has shown that parathyroidectomised rabbits frequently developed acute gastric ulcer which did not heal spontaneously, whereas ulcers produced in healthy animals by mechanical means are said to heal invariably. Dr. Vines suggests, further, that in the former animals the absence of healing is due to a deficiency of ionic calcium following the removal of the parathyroids, but that in the latter animals calcium metabolism is normal and natural healing occurs. Dr. Vines claims that the results obtained by parathyroid therapy in these cases substantiate theories put forward by other workers; that there is evidence of the importance of ionised calcium in the repair of the ulcerated areas; and finally, that the beneficial effects obtained by him suggest that these ulcerative states are partially due to an insufficiency of parathyroid secretion. No marked changes have been observed in the condition of the carcinoma cases beyond a decrease in pain and discomfort during parathyroid treatment. In these cases Dr. Vines considers the ionic calcium deficiency as probably secondary to the malignant ulceration rather than primary. He concludes that the two factors common to all the cases are a chronic toxæmic state and a deficiency in the ionised calcium. He adds a speculative hypothesis that all acute or chronic toxic states may react harmfully to a greater or less extent upon the parathyroid glands, causing a disturbance in calcium metabolism and a decrease in tissue resistance. This is to some extent borne out by Thompson and Leighton's work, where induced and chronic parathyroid deficiency was manifested by loss of weight and greatly decreased resistance to infection. It seems possible that parathyroid therapy may be of use in certain chronic conditions, if not also during the acute attack of the more common infective ailments.

THE TREATMENT OF FRACTURES.

ABOUT five years ago Mr. E. W. Hey Groves presented a modest exposition of the therapeutics of fractures in which special operative methods and novel modes of fixation of bones, founded upon a long series of careful experimental observations on animals, were given the pride of place. For various reasons this monograph did not make a universal appeal; the armamentarium necessary for carrying out the author's original technical manœuvres appeared unduly formidable and complex, not only to the ordinary surgeon, but also to the surgeon possessing the true sense of bodily mechanics—an attribute appertaining to physiology rather than to carpentry. But in a second edition, which is to be regarded essentially as a new work,[1] the author has given the surgical world a monograph of rare judgment and bibliographies; but his assurance that he has included only those tests found after trial on a large scale to be of practical clinical value and to be easily carried out can be accepted without question. Incidentally, his views on the dietetic treatment of nephritis alone, adequately summarised in one chapter, deserve careful study. Practitioners will be interested in the unexplained but decided relief from dropsical symptoms in certain cases of parenchymatous nephritis when placed on a high protein diet, a phenomenon first observed by Epstein, and substantiated by Prof. Maclean; the oral administration of urea has also been found of value in selected cases. On the importance of ascertaining the state of the kidneys in certain surgical conditions Prof. Maclean has also some wise words to say.

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[1] Grove and Vines: Brit. Med. Jour., 1921, ii., 40.

[2] Ibid., 1921, ii., 687.

[1] On Modern Methods of Treating Fractures, including the Jacksonian Prize Essay on Bone Grafting. Second edition. By E. W. Hey Groves, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng., Surgeon to the Bristol General Hospital, Surgical Director of the Ministry of Pensions Hospital, Bath. Bristol: John Wright and Sons, Ltd. 1921. With 296 illustrations. Pp. 135. 30s.

As to the utility of renal function tests in surgical conditions they were originally introduced for the special purpose of helping the surgeon and they are also of importance to the surgeon in assessing operative risks. The latest discussion[3] which took place in the Section of Urology of the Royal Society of Medicine was confined to the surgical aspect of these tests; surgeons and pathologists spoke of the results they had obtained in the application of certain tests to cases of prostatitis, and unilateral and bilateral disease of the kidneys. The general consensus of opinion was that renal function tests were of value in cases of prostatitis, where there was no definite clinical evidence of renal insufficiency, but when the surgeon was doubtful whether prostatectomy should be carried out in one stage or by the two-stage operation. In cases where there was clinical evidence of considerable renal damage, the tests could be used to confirm the findings, and if positive the surgeon would refrain from operative interference. The chief tests used by most of the speakers were the urea content of the blood and the urea-concentration test. For genito-urinary diseases, associated with obstruction in the lower part of the urinary tract, the tests of choice appeared from the discussion to be those advocated by Prof. Maclean—the urea content of the blood, the urea-concentration test of the urine, and the urinary diastase content. In unilateral or bilateral diseases of the kidney ureteral catheterisation was generally advocated, combined with these tests. For convenience and rapidity the indigo-carmine test appeared to be in favour with some surgeons. The discussion clearly emphasised the necessity of careful clinical investigation of every case, and the importance of coöperation between the clinician and the pathologist. Renal function tests by themselves will not answer the question when to operate and when not to operate; neither can they predict the onset of an ascending infection of the kidneys. For the present, at least, the tests should be assessed by one who has had experience in their application and interpretation. But we reiterate here the hope, expressed in reviewing a little French book entitled "Comment interpréter en clinique les réponses du laboratoire?," that improvements in medical education will soon make such limitation obsolete.

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The General Practitioner and Public Health.

THE relationship between the public health services and the general practitioner has of late years become the subject of much consideration. The general practitioner must always be the executive officer in any scheme of medicine; in the first annual medica report of the Chief Medical Officer of the Ministry of Health, Sir George Newman made it clear that the practitioner should be not so much an agent for the treatment of obvious disease as an agent for discovery and arrest of disease in its early stages, and a missionary of personal hygiene in its preventive aspect.

A recent contribution to the subject was made by Dr. C. E. S. Flemming, a member of the Consultative Council of Medical and Allied Services, in an address delivered at Winsley before the West of England Branch of the Society of Medical Officers of Health. Nothing, said Dr. Flemming, has more hindered the development of the medical services than the want of association of the various sections of medicine—a want resulting partly from the individuality of the medical practitioner, but partly also from the prevailing lack of appreciation of the fact that the interest of the individual is also the interest of the community. When public health authorities undertook not only supervision of drainage, water-supply, and housing, but also notification, isolation, and treatment of cases of infectious diseases, their officers came into close contact with the family doctor, and friction sometimes resulted when part-time medical officers combined private practice with official work; but both sides now realise their interdependence. Apart from administration, it is hard to say where separate spheres begin for preventive and curative medicine. If a public health service is to be truly preventive it must consider and possibly control the environment of the people at home and at work, together with their food-supply and all preventable conditions which cause disability, besides participating in constant research. Dr. Flemming pointed out that every doctor in this sense must be a member of the public health service, and no official could ever have the same intimate knowledge of the patient's life-history, the same opportunity of detecting disease in its earliest stage, as the practitioner possesses. A communal clinic would be the place where the general practitioner and the medical officer could meet; at such a clinic the patient would require not only expert special opinion, but expert general opinion, and if the communal clinic were run on practical lines the practitioner's value to the community would be much enhanced. He should be able to follow up those cases with which he could not properly deal in his consulting-room or in the patient's home—follow them through to clinic or hospital. There are general difficulties of organisation, as well as many difficulties of detail, to be surmounted before the alliance of practitioner, specialist, and administrator can be made complete. Every student of the Dawson Report knows this. The practitioner is rightly jealous of his professional independence, and in indiscriminate consultation there lies a danger of loss of individual responsibility, as Dr. Flemming points out; but with his conclusion that the complexity of society renders necessary an intimate and hearty coöperation between all departments of medicine everyone will agree.

No point made by Dr. Flemming calls for more attention than his insistence upon the necessity for the following-up of patients by the medical practitioner who, with a knowledge of the personal and family histories, sends them to clinics or to hospitals, too often to lose sight of them entirely. In this way evidence of late results of treatment is lost—evidence which would, if collected and collated, be of the utmost value in the establishment and regulation of many treatments which now form the subjects of discussion. In several American hospitals, and at the London Hospital, experiments in some such direction as we have outlined have been successful, and it is clear that in following-up lies a development of the work of a practitioner most vital for the advancement of public health.

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[3] THE LANCET, Dec. 3rd, p. 1161.

for the moment the possibility of some of these cases having had concealed tuberculous lesions which responded to the tuberculin, this treatment recalls the attempt to treat the sensitised patient with heterogeneous protein, as in the therapeutic application of tuberculin. Prof. van Leeuwen has not followed out this line of thought as far as he doubtless will in the future if his results should be confirmed by himself and others; but in the meanwhile we record it as another effort to explore protein sensitisation, a condition which looms in the background of many obscure pathological conditions.

HÆMATOPHAGY.

IT is generally agreed that "old" red blood corpuscles are normally taken up in small numbers by phagocytic cells in the spleen and bone-marrow. Under pathological conditions abundant phagocytosis may be found in these situations, in lymphatic glands, and occasionally in the circulating blood, the active cells being endothelial and large mononuclear leucocytes. This view appears to be firmly based on objective facts. The further history of these eaten red cells is not so clear, though a quantity of evidence of various kinds is consistent with the received idea that they are broken up by some process akin to digestion, and the remnants used to form fresh red cells in the bone-marrow, except for that part of the hæmoglobin which is diverted as bile-pigment to the bowel. Dr. H. M. Woodcock, well-known for his varied work in protozoology, has lately[1] proposed that this process of hæmatophagy, as he calls it, is of more frequent occurrence in the body than has been supposed and of far wider significance. His work began with a study of the nature and origin of blood-platelets, and he concludes that these bodies represent certain products of the digestion of red blood corpuscles in the cytoplasm of large mononuclear cells and megacaryocytes, together with a small portion of the cytoplasm itself, separated from the cell. His derivation of platelets from the giant cells of bone-marrow is in accordance with the work of J. H. Wright, and several writers have affirmed a belief in their origin from red corpuscles; Dr. Woodcock combines these apparently divergent views in an original conception. He suggests, further, that the enigmatical round areas found in the cytoplasm of the guinea-pig's leucocytes ("Kurloff bodies"), which have been variously interpreted as parasites, secretory products, and archoplasm, are in reality red corpuscles in process of digestion along somewhat abnormal lines. The same interpretation is then applied to the Negri bodies found in the brain in rabies, and to the Guarnieri corpuscles in the epidermis in small-pox and vaccinia. And finally, the small stainable objects found inside endothelial cells in typhus, and recently identified as the causative parasite *Rickettsia*, are explained as being nothing more than platelet granules, a by-product of the digestion of red corpuscles. It looks indeed almost as if Dr. Woodcock would soon be advocating that a good many of the tissues of the body feed upon the red corpuscles in gross, and out of them make at least a sensible proportion of the curious appearances on which the histologist whets his imagination. Some such extension of the import of hæmatophagy is, in fact, hinted at towards the end of his paper.

New interpretations of old phenomena are always of interest, and the unconventional conclusions of one who comes without prejudice and with a wealth of microscopical experience into well-trodden paths that he has not explored before are sure to be worth consideration. But it seems scarcely probable that Dr. Woodcock will convince on his present evidence. His conclusions are based entirely on the similarities of microscopic appearances, using rather a limited range of methods of preparation. The tracing of sequences and developments in this way is notoriously liable to error, and in his own sequences the early stages of the transformation at which the body under examination is indisputably a red corpuscle, and yet not an unaltered one, seem to be sparsely illustrated. He has, however, the immense advantage over others in that he has been able to ponder over the actual specimens, for which the best drawings must be a poor substitute, though Miss Rhodes's pictures, accompanying Dr. Woodcock's contribution are very good. As in all such cases, one must attach more weight to the author's interpretations than one would readily do were his data capable of complete presentation to the critic. The nature of blood-platelets, of the bodies of Kurloff, Negri, and Guarnieri, and of the admittedly doubtful *Rickettsia*, are not certainly known. There does not appear to be anything in Dr. Woodcock's theses concerning them which is flatly at variance with agreed facts. More cannot yet be said, for experiment is lacking.

EPITROCHLEAR ADENOPATHY IN SYPHILIS.

ACCORDING to Dr. R. H. Rulison,[1] the importance of enlargement of the epitrochlear glands as a diagnostic sign of syphilis was first described by Sigmund and was later emphasised by Fournier, De Amicis, Hochsinger, Heubner, and others. Dr. Rulison's own observations were made on 252 cases of syphilis and 43 non-syphilitic cases at the Department of Syphilology of the Bellevue Hospital, New York, with the following results: (1) Epitrochlear adenopathy was found to be an early, persistent, and common sign of syphilitic infection, being present on one or both sides in 79 per cent. and absent in 21 per cent. (2) It was not pathognomonic, for it was found in 23·25 per cent. of the non-syphilitic cases. (3) It proved to be a valuable aid in diagnosis during a period of the primary stage, when both the dark-field examination and the Wassermann reaction were often negative. (4) It was valuable in treated and latent cases, and when present called for repeated laboratory tests before the possibility of syphilis could be excluded. (5) Since the condition was unilateral in one-tenth of the cases of syphilis, the statement that unilateral adenopathy is non-specific is unwarranted, and cases presenting this condition should be investigated with the same care as those with bilateral adenopathy. (6) Treatment did not cause complete resolution of the adenopathy. (7) Epitrochlear adenopathy was less common in neurosyphilis than in other forms of the disease.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at 429, Strand, on Friday, Dec. 9th, when the Chairman, as a preliminary, introduced to the Committee Mr. L. FERRIS-SCOTT, F.C.A., who has recently succeeded Mr. W. E. Warne as financial secretary and business manager of the British Medical Association. Mr. Ferris-Scott is acting as secretary or general supervisor of the financial side of the Agency.

Chairman's Interim Report.

Dr. G. E. HASLIP, the chairman, made an interim report to the Committee covering nine months ending Sept. 30th, 1921, and was able to show that all the business transacted by the Agency showed steady progress. He said:—

> Life assurances and insurances of motor car risks, which are two of the principal sources of income to the Agency, continue to increase, reflecting the confidence placed by members of the profession in the advice and assistance given by the Agency in the completion of suitable contracts. In life business, the Agency has maintained the high standard set up in 1920 in the number of new policies negotiated. The contracts have been spread over a group of offices of the highest standing, thus continuing the principle of combining security for the assured with complete freedom of action for the Agency.

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[1] Journal of the Royal Army Medical Corps, November and December, 1921.

[1] American Journal of Syphilis, October, 1921.

generally recognised. The want of proper supervision of vessels moored to the quayside of Port Louis readily admits of the transmission and spread of plague by infected rats which are able to land without restraint.

It is evident from Dr. Balfour's disclosures that drastic action is imperative. To meet the situation, a levy on the sugar industry, the staple trade of the island, to the amount of £1,000,000 has been proposed. But more than this is called for. Inadequate medical and sanitary staff with insufficient authority and power of administration would seem to account for much of the delay in carrying out the greatly needed preventive and sanitary measures of reform. Much good work has been and is being done by the Mauritian doctors in the hospitals, bacteriological and public health departments, but their powers are limited and their range of duties overwhelming in the face of such heavy odds. Valuable aid has been rendered by voluntary bodies and by the Rockefeller Foundation. Dr. Balfour is hopeful that the unenviable reputation of the island may yet be removed by the application of modern knowledge on vigorous and sound lines. But the efforts will have to be persistent and strenuous, and, moreover, inevitably expensive. The picture of the insanitary conditions of the island drawn by so impartial an observer as Dr. Balfour does not appear to fix the responsibility therefor on any one race, but would imply that the community as a whole pays but little attention to the counsel of its medical advisers. Dr. C. L. D'Avoine, whose letter we publish in this issue, appears to blame the slackness of the supervision exercised over the coolie class which, in view of Dr. Balfour's exposure of the general attitude, is hardly surprising.

THE GENESIS OF TUBERCULOUS DISEASE.

ONE of the most remarkable tendencies in modern medicine is to refer the genesis of disease in adult life and old age to childhood and even to infancy. Mental disease in the adult is now often traced to psychic trauma in childhood, and the monarticular arthritis of middle and old age to almost forgotten and apparently transient injuries to the same joint several decades earlier. Many similar examples could be given. In the past we have been rather like the child who, seeing a picture of an iceberg, thinks that it is floating on the surface of the water, and does not appreciate the size of the mass of which only a small fraction is visible. The discovery of the tubercle bacillus gave us for many years a myopic view of the duration of that disease. Inoculation of animals with the tubercle bacillus being followed in a few weeks or months by fatal tuberculosis, what was more natural than to assume that some similarly expeditious process was that which usually occurred in man? There was, indeed, much reliable evidence to prove that a rapid sequence of infection, disease, and death is fairly common. For many years Behring's dictum that pulmonary tuberculosis in the adult is the end of the song sung to the baby in his cradle was regarded as more poetic than true. In 1895 Dr. K. F. Andvord, of Christiania, put speculative hypothesis on a much surer footing, and a perusal of his statistical and critically analytical paper[1] leaves even the modern reader impressed by his insight. Many of the criteria by which the hypothesis can now be tested were then lacking; the Pirquet test, for example, had not been devised. Yet Dr. Andvord found enough evidence on which to make out a plausible case, and the mass of papers which have appeared on this subject since 1895 are a bulky testimonial to Dr. Andvord's pioneer work.

In the current number of *Tubercle* Dr. Andvord discusses the relation of tuberculosis in the adult to infection in childhood, and shows how the evidence of post-mortem examinations, of mass clinical examinations in certain areas, of vital statistics, and of many other lines of investigation can be made to converge on this one point. One of the tests to which he puts his theory is the consideration of the influence of a vigorous anti-tuberculosis campaign on a population classed in so many age-groups. If his theory is correct, this campaign should first reduce the incidence of tuberculosis in the youngest age-class, and should for many years have little or no influence on the older classes. For persons over 30, for example, would have received their fatal infection much earlier. The experience of the Finnish National Association for Combating Tuberculosis throws instructive light on this point. In 1909 a certain district in Finland was selected for a large-scale experiment in anti-tuberculosis warfare. A mass clinical examination of practically all its inhabitants was made, and then for 10 years a hustling anti-tuberculosis campaign was conducted, with a network of dispensaries, propaganda centres, and many other weapons. At the end of this period another mass clinical examination was conducted in the same district, and it was found that the cases of pulmonary tuberculosis had dwindled to a third of their total number 10 years ago. But while, in the first decade of life, this morbidity was less than a quarter of what it was, the reduction in the second decade of life was only to a little less than a third, and in the third decade only to a half. Between the ages of 30 and 50 there was little or no change in the morbidity from pulmonary tuberculosis. Another conclusion to which Dr. Andvord comes is that not only is the fatal pulmonary tuberculosis of adult life the result of severe infection in childhood, but that in a large proportion of cases the disease is clinically demonstrable from childhood onwards. Even in childhood it is possible to distinguish between the case showing a mild, benign infection, and that already more or less doomed to develop fatal tuberculosis later in life. Dr. Andvord, indeed, goes so far as to say that the gulf between the two is wide. He admits the possibility of a narrow belt of intermediate cases running between these two extremes, but maintains that it is very narrow.

If, as he argues, 80 to 90 per cent. of fatal cases of pulmonary tuberculosis begin within the first three or four years of life, and if by deferring the first infection till after the fourth year we can force it to assume a permanently benign instead of a slowly virulent character, the task of suppressing tuberculosis is greatly simplified—on paper at any rate. We may, perhaps, come to focus attention on these first four fateful years instead of frittering away our energies and resources in rescuing from exposure to infection adults who are either already more or less immune on account of a benign, accidental inoculation, or whose real danger lies in a series of reauto-infections. This class requires rescuing on quite other principles than the prevention of exogenous infection. The time may not be far distant when almost every potential consumptive will be identified as such in early childhood, and will enjoy systematic supervision and treatment to the end of his days so that he may not end them in the misery of fatal pulmonary tuberculosis. The comprehensiveness and simplicity of Dr. Andvord's conception of tuberculosis are certainly alluringly plausible.

THE THREAD OF BIOCHEMISTRY.

WHETHER the medical student should be taught chemistry, physics, and biology as independent sciences, or go through a specially selected course in consideration of his future needs, is still a moot question. Presumably within a few years a preliminary survey of these subjects will have been made by every student during school years, specialised courses being reserved for the medical curriculum. In any case a considerable extension of biochemical teaching may be forecasted, for the proper interpretation of many of the newer clinical methods of investigation—for example, gastric analysis, determination of basal metabolism, calculation of diabetic diets, and renal function—depends on a knowledge of biological chemistry greater than that now exacted that the average consumer judges his milk-supply. *It is also of the greatest importance to the dealer.* In order that the condition of the milk at all periods of the year, and at varying ages might be known, samples have been studied week by week since November, 1916.

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[1] Norsk Magazin for Lægevidenskaben, 1895, No. 12.

Bacteriological Condition.

From November, 1916, to December, 1918, clean milk was examined when 24 hours old, and during that time it failed to pass the highest standard of bacteriological cleanliness (10,000 colonies in 1 c.cm.) on three occasions only. On two of these occasions the bacteriological counts did not exceed 230,000, and coliform organisms were not found in 1 c.cm. of the milk. On the third the number of colonies of bacteria was uncountable, and coliform organisms were found in 1 c.cm. of the milk. This was the only really unsatisfactory sample which was received among 100 samples examined during a period of more than two years. On ten occasions coliform organisms, as represented by the production of acid and gas in lactose-peptone water, were found in 1 c.cm. or less of the milk.[3]

When these results were compared with those obtained from the samples of average milk, generally not more than nine and never more than 12 hours old at the time of examination, a great difference in bacteriological cleanliness was found. Whereas the clean milk maintained an almost uniform standard, which was well below the 10,000 limit at all seasons of the year, the average milk could not be relied upon to maintain any bacteriological standard from one day to the next. Sometimes two or three consecutive satisfactory counts were found and then they would run up, perhaps into the millions, and remain there throughout a prolonged series of examinations. There was no sort of uniformity in the counts obtained, and 65 of the 96 samples which were examined contained coliform organisms in 1 c.cm. or less.

The difference between the two sets of results was extremely interesting, especially when it is remembered that the clean milk was 24 hours old at the time of its examination, was cooled at the farm, with water from a deep well, to temperatures which varied by as much as 16° F. (46° F. to 62° F.) in the course of a year and travelled by rail in pint bottles without any special provision for keeping it cold, so that it reached the laboratory at temperatures which varied between 37° F. and 76° F. The average milk on the other hand was not more than 12 hours old when examined.

Relative Periods of Sweetness.

When a study was made of the relative periods of time during which the samples from these two sources remained sweet under similar conditions of storage in the laboratory, it was found that there was a marked difference in the keeping qualities of the two types of milk. This is demonstrated by the figures shown in Table II.[3]

TABLE II.

Milk.	Period.	Total no. of samples.	No. sweet for more than 1·75 days at lab. temp.	No. sweet for less than 1·75 days at lab. temp.
Clean ..	31/5/17 to 31/5/18	51	51	0
Average	31/5/17 to 30/5/18	49	24	25

Table I. shows that no sample of clean milk was sour within a day and three-quarters from the time of milking, whereas 25 of the 49 samples of average milk were sour within this period of time. It is difficult to over-estimate the economic importance of this observation since a successful milk trader must be in a position to guarantee sweetness in the consumer's house.

Influence of Worker and Farm Conditions.

The study of the causes which gave rise to these different types of milk naturally followed on these results, and the nature of that study was to some extent influenced by the conditions which existed on the farm which was producing the clean milk which has been described. The milk on that farm[4] was being taken in a special milking-shed, and into covered buckets by clean milkers, who had the advantages of an abundant water-supply and light. After it had been taken from the cows it was carried to a specially constructed dairy in which it was cooled and in which all the apparatus necessary for washing and steaming utensils, &c., was provided. The buildings involved a considerable capital outlay which was hardly possible to many farmers. It was, therefore, necessary to discover by what means and to what extent similar results could be obtained in an ordinary cowshed.

This work was done by Knight and Freear[5] and the results were published in 1920. It was carried out in an ordinary cowshed, and the milking was done at the same time as that of the cows which were not being used for the experiment. The success of the experiment did not depend upon any special advantages in the surroundings in which it was performed. Table III. shows the results which were obtained and demonstrates the possibility of producing clean milk under average farm conditions, provided that the milker understands his business and is provided with light, water, and steam.

TABLE III.

(A) Numbers of samples showing more than 10,000 colonies in 1 c.cm. of milk.

(B) Average of colonies found in 1 c.cm. of milk in remaining samples.

Series.	Date 1918–1919.	—	No. of expmnts.	Buckets.	(A)	(B)
1	Oct. 12th to Nov. 13th.	Buckets washed by farm hands.	12	O.	2	2360
				C.	10	10000
2	Nov. 13th to Dec. 11th.	Buckets washed by clean milker (farm method).	14	O.	1	3200
				C.	2	3991
3	Jan. 11th to Mar. 3rd.	Buckets washed and steamed, cows ungroomed.	30	O.	5	4274
				C.	0	1505
4	Mar. 5th to June 20th.	Buckets washed and steamed. Cows' udders clipped.	51	O.	10	2505
				C.	2	516
5	June 23rd to Sept. 4th.	Buckets washed and steamed. Udders clipped, cows washed and dried.	42	O.	2	900
				C.	2	388

O., open. C., covered.

These experiments were conducted over a limited period of time at a particular farm, and although since repeated with similar results under conditions worse than those existing at this farm, yet it remains to be shown whether it is possible to produce really clean milk in a cowshed with the same certainty as when the milk is taken in a special milking shed. That problem has yet to be investigated. It is, however, quite clear that, given the right person, with comparatively little apparatus very wonderful results can be obtained in an ordinary cowshed. The chief factor in the whole situation is the individual.

Influence of State of Utensils.

While this work was in progress evidence had accumulated which led us to think that the condition of the utensils had an important bearing upon the cleanliness of the milk. Attention was first drawn to this fact by the consideration of the results obtained from the average milk in the first series of experiments which have been described. When the results were set out in a chart it was found that there was an astonishing rise in the bacterial content of the milk during the months of May to September in each year. The milk was being examined at a maximum age of maturity. His enthusiasm for some of the technical procedures which he himself has introduced remains undiminished, although he writes modestly enough of his results. His method of using an encircling suture in fractures of the patella—far more efficient than the conventional operation—should now be established as a routine. Mr. Hey Groves's views on bone grafting are particularly illuminating, especially his exposition of the indications for using the inlay bone graft and the intramedullary bone graft. The influence of his wide experience, derived from a participation in the reconstructive surgery of the war during the past five years, can now be traced in the critical survey which he has made of the whole gamut of fracture therapeutics. Mr. Hey Groves leads us step by step to see that the modern treatment of fractures implies the application of an appropriate procedure to a given type of fracture or at a certain stage in any fracture: there is no real conflict between the schools representing, for instance, the non-operative and the operative methods of treatment. The modern fracture surgeon must be a master of all methods, and must know when and where to apply any particular one. The thesis is developed and maintained in a most lucid and convincing manner, and will serve as a model for sections on fractures in future text-books of surgery.

TREATMENT OF SYPHILIS IN THE NAVY.

THE results of treatment for syphilis are more patent in the Navy than elsewhere, in so far as the patients are continuously under medical control and rarely pass out of sight. Two articles[1] by Surgeon-Commander Laurence Kilroy, on the treatment of syphilis in the Mediterranean Fleet, are the more welcome as the Fleet Medical Officer is not responsible for any single ship, but is advisory to the whole staff of medical officers. Commander Kilroy measures the success of treatment by its effect on the Wassermann reaction, though he hopes that the quicker Sigma test (THE LANCET, 1921, i., 956) may replace that. He finds that intramuscular injections of arsenobenzol once a fortnight produce more effect than intravenous injections at shorter intervals, and that courses of mercury by the mouth increase the effect of arsenobenzol on the W.R. He distinguishes five classes of cases of syphilis, with appropriate treatment for each.

A. Early primary: In the first fortnight after the appearance of the sore, spirochæta pallida seen with dark-ground illumination, W.R.−. *B*. Late primary: Sore, and W.R.+. *C*. Secondary: Usual signs, and W.R.+. *D*. Old cases: W.R.+, and perhaps other signs. *E*. Old cases with nervous symptoms or positive Wassermann in cerebro-spinal fluid.

An *A* case gets a "unit course," that is in four months, eight intramuscular injections of NAB, or sulpharsenol, at fortnightly intervals, and at the same time 4 gr. of grey powder daily. If at the end of the course there are no signs of syphilis and W.R.−, treatment ceases; but the serum is tested every three months for two years, and if on all these eight occasions W.R.− patient is considered cured. If a W.R.+ appears at any time, patient has become a *B* case and is treated accordingly. A *B* case or a *C* case gets a "unit course," then three months' mercury by the mouth or by injection, followed by a second unit course, itself preceded and followed by a W.R. If both tests are negative, treatment ceases and W.R. is tested every three months for two years. If all are negative, patient is considered cured. If the preceding W.R. is positive, but the second negative, repeat the unit course after three months' mercury, with a W.R. before and after. A W.R.+ at any time after the second unit course makes the case a *D* case. All *D* cases should have their cerebro-spinal fluid completely examined in hospital: a W.R.+ makes the case an *E* case. If the cerebro-spinal fluid of a *D* case gives a W.R.−, send patient back to his ship, give him three unit courses, with mercury in the intervals, testing the W.R. before and after the second and third courses. If no, two consecutive W.R.'s are negative, give "half unit" (four injections) every four months, the reaction being tested before and after. As soon as two consecutive W.R.'s are negative stop treatment and merely test the reaction every three months for two years, and if all are negative consider patient cured. A W.R.+ now at any time makes patient an *E* case, to be treated in hospital by a specialist.

Commander Kilroy considers the appointment of consultants in syphilis to be a great advance, but he holds that ordinary cases of syphilis up to *E* may be treated on board; they do not require to be sent to hospitals. In hospital they cost 15*s*. 6*d*. per day (pay 5*s*. 6*d*., hospital charges 10*s*.); in ships they cost 7*s*. 6*d*. per day (pay 5*s*. 6*d*., victualling 2*s*.), and the service avoids the trouble and time spent on transferring them. Appeal is made for a specialist at headquarters to coördinate the work of the specialists in syphilis throughout the service, and to advise what methods have been found most satisfactory. Those concerned with the treatment of syphilis will find it well to study Commander Kilroy's papers. Out of a total number of 46 cases in *Iron Duke*, all *A* and *B* cases recovered, 83 per cent. of *C*, and 64 per cent. of *D*.

ANTI-ANAPHYLAXIS.

THE immunologist is the despair of the average medical reader, for he is constantly devising new terms to explain his discoveries and almost as rapidly discarding them as newer discoveries render the old terms untenable. There is also a further difficulty in the fact that a term devised by a foreign scientist has often to be incorporated into our vocabulary as it stands, because it is not readily translatable; as an example we may quote the terse but valuable term "subintrant," introduced by Besredka to describe his special method of preventing anaphylactic shock. To Besredka also, in conjunction with Steinhardt, we are indebted for the introduction of the term "anti-anaphylaxis," to describe the condition of insensibility to further injections of the anaphylactic antigen. We are doubtful if the term can really be regarded as a satisfactory one, and its wide use to cover a number of different immunological states has weakened its significance not a little. It would strengthen our claim to consistency if we confined this term to the actual state of being insensitive to the anaphylactic antigen, rather than enlarged it to cover the measures—often purely empirical—which the clinical pathologist devises to counteract anaphylactic symptoms in the patient. But the deed is done and the term anti-anaphylaxis now embraces in the minds of most physicians every aspect of desensitisation. In a valuable report[1] on this subject by MM. P. Widal, P. Abrami and P. Vallery-Radot, read before the French Congress of Medicine at Strasbourg in October, after defining anaphylaxis as colloidoclasia or "the rupture of the physical equilibrium of the colloids of the body," the authors proceed to lay down the various methods of desensitisation. As they correctly point out, a patient who has been deliberately sensitised with serum can be watched and protected from ill-effects after the second or anaphylactic injection, because the date of his first inoculation is, or should be, known. But in the case of patients who have become sensitised in some unknown way and at some remote time in their history, by absorption of protein through gastro-intestinal or respiratory mucous membrane, a different problem confronts the physician. He must first discover the protein which is at fault, and then resort to his armoury of protective measures, such as subintrant doses, or vaccination with homologous or heterogeneous proteins, administration of peptone, crystalloids—e.g., sodium chloride—or finally adrenalin. All these measures are fully discussed by the authors, and also by M. Pélin in a subsequent paper. They succeed in making anti-anaphylaxis a live issue whatever view may be taken of the term itself.

Our current number contains an original article by Prof. Storm van Leeuwen of Leiden, in which he records a series of cases of spasmodic bronchial asthma treated with tuberculin. Excluding army and from public bodies, and to-day the Ministry possesses accommodation in its neurological hospitals and wards for 167 officers and nurses and 3450 other ranks.

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[1] Journal of the Royal Naval Medical Service, July and October, 1921.

[1] Presse Médicale, Oct. 1st, 1921, p. 781.

At the beginning much difficulty was experienced in securing the services of medical men specially qualified and experienced in modern methods of treatment of functional nervous diseases—for the war created a mass of neurasthenics quite out of proportion to the number of available experts in functional disorders; but by establishing a training school at Tooting for medical men interested in, and possessing some experience of, functional nervous diseases under the able direction of Dr. R. G. Rows, late c/o of the Military Hospital at Maghull, this difficulty was overcome. At Tooting some 68 men received systematic instruction in modern psycho-therapy. The neurological hospitals are now efficiently equipped and staffed; they possess ample garden space and in many cases farm lands, and there the treatment is directed, firstly, to curing the psycho-neuroses; and, secondly, by occupation selected after consultation between the medical officer, the chief training officer, and the patient himself, to preparing the latter for his return to outside conditions.

The usual occupations, each under expert instruction, include gardening, pig-keeping, poultry-farming, carpentering and cabinet-making, metal work, leather work, and boot-repairing. The proportion of patients usefully and happily employed for part of each day in the workshops and gardens of the neurological hospitals ranges from 30 to 40 per cent. to as much as 60 to 70 per cent. of the total number of patients. Accommodation is generally from 10 to 20 per cent. in excess of the number of beds occupied.

During the three months ended Sept. 30th, 1921, there were 399 discharged as recovered and 1003 discharged as relieved from Ministry neurological hospitals, giving a recovery and relieved rate calculated on the number admitted during the three months (2128) of 65·9 per cent.; or, calculated on the total number treated during the three months (5670), of 24·7 per cent. The out-patients treated at Ministry institutions during the same period gave a recovery and relieved rate of 63·8 per cent. calculated on the number admitted (3890); or, calculated on the total number of out-patients treated (11,576), of 21·5 per cent. The combined recovery and relieved rates for these three months were, therefore, 64·6 per cent. calculated on the admissions; or 22·5 per cent. calculated on the total numbers under treatment.

Borderline Cases.

The cases of officers and men suffering from psychoses attributable to, or aggravated by, war service and in whom the question of certification as insane arises, or may arise in the future, have always been regarded by the Minister with grave anxiety and concern. It has been, therefore, a cardinal principle to concentrate on these cases the medical resources of the Ministry in the hope of restoring health and averting certification, which latter is kept as a last resort. The Minister, as the law stands to-day, has, of course, no authority to treat officers or men properly certifiable as insane in any of his institutions, and the failure must be remembered of all attempts made to permit, with proper safeguards, the detention of mental cases likely to recover within a short time but requiring supervision, detention, and control. Clause 10 of the Miscellaneous Provisions Bill introduced last year by the Minister of Health was defeated.

For some time at the Maudsley Hospital and now at Ewell, in the case of other ranks, and also at Latchmere, in the case of officers, provision is made for the borderline class of case. These institutions are well equipped and staffed, and coupled with the neurological hospitals of the Ministry are ample for present needs. In addition to the in-patient accommodation referred to above, there are 56 neurological clinics, which, together with the out-patient departments of the neurological hospitals, afford treatment at the present time to 7664 out-patients.

Insane Ex-service Men.

Following conferences between the Statutory War Pensions Committee, the Asylum Authorities, the Board of Control, and the Ministry of Pensions, insane ex-service men whose mental disorder is accepted by the Ministry as due to, or aggravated by, war service are admitted to and treated in the ordinary mental institutions of the country—i.e., the county and borough asylums. No other course could have been followed and no other is even now advisable. The service patients, however, are placed on the legal footing of private patients at the cost of the Ministry of Pensions, and they are afforded certain other privileges (clothing of superior quality and 2*s.* 6*d.* a week for extra comforts). Further, by arrangement with the Board of Control the patients are visited by medical inspectors from the Ministry headquarters; and each man is interviewed and reported upon by these inspectors. In all other respects the service patients, other than ex-officers, are treated in exactly the same way as the ordinary inmates of these institutions. From the reports of the inspectors who have now interviewed over 5,438 patients in 120 asylums, the Minister is satisfied that the service patients are well cared for.

Numerous attempts have been made to discredit the conditions in the county and borough asylums, and by frequent reference to the "herding" of service patients with "pauper lunatics" to cast an unmerited stigma both on these excellent institutions and their inmates. It has even been stated that large numbers of men who are bereft of reason by their fighting service are "held in bondage" and their recovery prevented by being immured in asylums in which they should never have been placed. Such statements, whose only result can be to cause needless distress to the unfortunate relatives of service patients, are devoid of truth. The Minister's inspectors report that not one man has been interviewed who has been improperly certified as insane, and that the overwhelming majority is composed of cases of unfavourable character and prognosis, cases of original congenital defect, general paralysis, and dementia. Nevertheless, in a minority recovery, and in a larger number improvement permitting of discharge, is effected, averaging some 26·47 per cent. (recovered 17·41 per cent. plus relieved 9·04 per cent.). Prior to the war every million of male population between the ages of 20 and 44 years in England and Wales furnished 750 insane to institutions each year.

During the war, when so many millions of men were serving in the forces, there was a steady fall in admission to asylums, which immediately after the armistice began again to ascend, as shown by the following figures given by the Lunacy Commissioners:—

Admissions to Asylums in England and Wales.

Year.	Number.	Year.	Number.
1915	53,416	1919	41,727
1916	51,840	1920	42,428
1917	50,382	1921	44,004
1918	46,025		

Notwithstanding the obvious inference from these figures, and notwithstanding the opinions of medical superintendents of asylums, as, for example, that published by Dr. W. Robinson, of the West Riding Asylum,[1] showing that only 44 per cent. of the service patients in that asylum had served overseas in the firing line, and that "the service patients, as a class, would, as regards the majority, have been patients in mental hospitals sooner or later had there been no war," the Minister has extended the provisions of the Royal Warrants to practically every case of insanity arising during service or within a limited period after discharge, thus giving the ex-service man the benefit of any doubt that may exist.

The popular conception that all ex-service men in asylums are the victims of "shell-shock" is quite erroneous. This in no way, however, lessens the

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[1] Service Patients in Mental Hospitals, by William Robinson, M.D., Senior A.M.O., West Riding Asylum, Wakefield. Journal of Mental Science, January, 1921.

In respect of life assurance, he said that the sums assured under new policies represented £85,000, with an annual premium of £2700, 84 policies having been negotiated in the period under review.

In respect of motor-car insurance he said :—

The placing of these risks has engaged the serious attention of the Agency in view of the fact that the premium rates were again advanced in April of this year. Not only have the rates in all the leading offices increased, but in the case of cars of small horse-power, minimum rates have been enforced. For example, a car of 12 h.p. originally costing £400, which by use and age has decreased in value to £250, is assessed in premium at the same rate as a new car of similar horse-power and a value of £400. The Agency realising that such a decision would cause dissatisfaction to many of the insured persons on renewal, took the matter up with the principal company accepting these risks. The explanation given was that for some years offices accepting motor-car risks had steadily lost money, culminating in somewhat serious losses in 1920. An unduly large percentage of the claims arising under motor-car policies were found to be among the smaller horse-power cars, and it was for this reason the minimum rate was introduced. The Agency has received many complaints as to the method of assessment, but in most cases has been able to retain the insured and secure a renewal.

There was reported also by the Chairman a steady increase under the headings of the fire, household, and accident insurances, the advice of the Agency being regularly sought in the choice of suitable contracts. For household purposes the Agency is recommending, said the report, the taking of full comprehensive policies, while by arrangements with Lloyds, medical men can secure through the Agency policies against a form of larceny to which they are special victims—namely, robberies from surgeries and waiting-rooms.

The Chairman commented on the fact that although progress had been so marked only a small number of medical men had as yet taken advantage of the facilities offered, considering the number of practitioners on the Register, and considering also that through the courtesy of the British Medical Association the Agency enjoys the privilege of distributing inquiry cards with all the applications for subscriptions to the Association. In this connexion Dr. Haslip acknowledged the particular indebtedness of the Agency to the medical secretary of the Association for his interest and for his action in appealing to the officers of the organisation of the Association to make the work of the Agency more widely known.

Finally, Dr. Haslip recommended that the Committee should make further grants to medical charities, for which purpose a sum of £1055 was available, being the whole of the surplus in hand.

Grants to Medical Charities.

The report of the Chairman having been received and approved, the following grants to medical charities were approved: Royal Medical Benevolent Fund, £315; Royal Medical Benevolent Fund Guild, £315; Epsom College Benevolent Fund, £315; Royal Medical Benevolent Fund Society of Ireland, £25; Birmingham Medical Benevolent Society, £25; Lincolnshire Medical Benevolent Society, £25. As a result of this distribution the total sums now voted by the Agency to medical charities reaches £8400, while the amount distributed in the past year is exactly £2000.

The Committee of Management.

Having regard to the growth of the work of the Agency and the amount of money which is and will be available for distribution, Sir Dawson Williams raised the question of increasing the number of those serving on the Committee. It was resolved that a suitable list of names from among those already insured through the medium of the Agency should be prepared in order that a certain number of representative practitioners may be invited to join the Committee.

Food Poisoning at Clitheroe.—A compendious report on the recent outbreak of ptomaine poisoning at Clitheroe has been presented to the Borough Health Committee by Dr. W. E. Barker, medical officer of health, who concludes that "a crude working knowledge of the rudiments of bacteriology would appear to be a necessary equipment in the public catering profession."

STUDIES IN MILK.

By R. Stenhouse Williams, B.Sc., M.B., C.M. Edin., D.P.H. Camb.,

RESEARCH BACTERIOLOGIST IN DAIRYING TO THE MINISTRY OF AGRICULTURE AND FISHERIES.

In a recent leading article[1] dealing with a Clean Milk-supply mention was made of the important work now being carried out at the National Institute for Research in Dairying. This Institute was founded in 1913 at University College, Reading, in order to help to improve the milk-supply of the country, in the belief that help coming from within the milk industry itself was likely to prove the surest way of promoting progress.

Losses Found in the Milk Industry.

Work upon this subject began in 1916, as the result of an inquiry[2] concerning the losses and causes of loss which were being incurred by the milk industry. Table I. shows the losses which were found to be incurred in the two districts from which statistics were obtained. In district 2 it was only possible to estimate the losses from souring, but there is no reason to suppose that the other sources of loss differed materially from those found in district 1.

Table I.—*District 1.*

—	Gallons of milk annually.	Value at 1*s.* a gallon.
Total supply	90,000,000	£4,500,000
Losses—		
(1) 1 % sour	900,000	45,000
(2) 3 pints per churn lost by splashing	1,965,441	98,272
(3) 10 % pasteurised at ½*d.* a gallon	8,713,455	18,153
(4) Irregularity of supply and demand necessitating purchase of accommodation milk and sale of surplus at a loss, 1*d.* a gall.	—	375,000
Total losses		£536,425

These losses represent a sum of about one-ninth of the monetary value of this supply.

District 2.

Total supply	75,000,000	£3,750,000
Losses— 1–2 % sour (at 1 %)	750,000	37,500

These losses were estimated at a time when the price of milk was much lower than it is now and the figures would need to be revised for money values at the present time. This inquiry led on to the taking of steps at the Institute to prevent the loss by souring and consequently a great deal of the need for pasteurisation.

Comparative Studies of Clean and Average Commercial Milk.

It may be said by way of preface that at the time these losses were discovered the country was at war, the Institute possessed neither cows nor dairy of its own, and the staff was very limited in number. It was not possible, therefore, to study the subject from all sides at once, and a beginning was made by the study of the cleanest commercial milk which could be found, in comparison with an average milk which was certainly no worse than much of that on the market. It was hoped that in this way knowledge might be gained of the relative states of average commercial milk and of the cleanest commercial milk that was known. In carrying out the work it was necessary to consider, not only the bacteriological content of the two types of milk, but also the periods of time during which each type remained sweet, for it is by the duration of sweetness peutic agencies, the use of which should be regarded as permissible only to doctors of medicine. The substance of the report is as follows.

Public demonstrations of such a nature by non-medical men are always promoted from a financial standpoint, and constitute a nuisance. Permission to hold such demonstrations should not be granted, as they tend to upset the nervous systems of many spectators, and may cause severe harm, especially through the agency of the mediums who volunteer to help the demonstrator. If a lay person is licensed to give public demonstrations of telepathy and occult phenomena, there is always the danger that mercenary considerations may overcome his discretion; and criminal influence is not always beyond question. Occult phenomena have commanded widespread interest since, and perhaps on account of, the war. To be successful experiments always require increased susceptibility and suggestibility of the medium; they tend to cause nervous conditions in many persons, whereas it should be the object of public health officials to restore the nervous equilibrium of the population. Public feeling should therefore be roused against the exploitation of manifestations of nervous conditions not yet scientifically explained and detrimental alike to the individual and the community. This report, together with an order to stop all such exhibitions, has been circulated among municipal officials throughout the country. The actual bad effect upon persons predisposed to nervous instability has been observed in several instances brought to public notice in a couple of forensic cases during the last few weeks. Either crimes were attempted by means of hypnotic influence, or permanent ill-health was caused; in one instance the hypnotist was unable to rouse his medium from the trance, and the victim had to be taken to hospital.

Dec. 14th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Public Health in Toronto.

Dr. Hastings, M.O.H., Toronto, recently announced the city's death-rate to be the lowest for some time, the rate for the last ten months being 11·3. Cancer and heart disease account for the largest number of deaths. The infantile mortality rate continues to be the lowest yet recorded. The principal cause of deaths was premature birth, a cause which will be reduced only by increasingly intelligent care of the mother during pregnancy. An alarming increase in the number of cases of diphtheria is shown in the November report of the Provincial Board of Health. There are 940 cases of this disease throughout the province, as compared with 55 cases for November last year; while the death-rate is 82, as compared with 43 in the corresponding period in 1920. The disease is not so prevalent in Toronto as in outside centres. It is said to commence in a mild form in those it attacks and later to increase in virulency. The Board of Control of the city of Toronto recently voted an additional $7500 to enable the Department of Health to continue its work in social welfare until the end of the year.

University News.

The popularity of the graduate courses held by the Faculty of Medicine of the University of Toronto last December and May has led to arrangements being made to hold similar courses this month. Provision has been made for a course in surgery, one in medicine, and one in gynæcology and obstetrics, to be run concurrently from Dec. 19th to 24th. Under this arrangement it will be possible for a candidate to avail himself of more than one course. The courses will be limited to a registration of 60. It is considered that a week's concentrated work in a large hospital will produce better results than it is possible to obtain in the extension lectures which are now being given throughout the province by the Faculty of Medicine.

Prof. William Bateson, F.R.S., Director of the John Innes Horticultural Society, Merton Park, Surrey, England, will give five lectures on Genetics and Heredity in the medical building of the University of Toronto in the early part of January, 1922. The University of Toronto Memorial Loan Fund applications for funds to enable returned soldier students to continue their courses may total 189, as announced recently by the Alumni Scholarship Board. Already 122 applications have been recommended. The Faculty of Medicine is applying for 55 loans for a total of $10,535.

Results are now coming from the generous gifts made to the University for the furtherance of the study of medicine by Sir John Eaton and the Rockefeller Foundation. Sir John and Lady Eaton have donated $500,000 to the University to be paid in 20 annual instalments. The gift from the Rockefeller Foundation is a million dollars.

The Medical College of the Western University, London, Ont., was formally opened recently by Dr. Grant, Minister of Education for the Province of Ontario. The building was erected and equipped at a cost of over half a million dollars.

Beri-Beri in Labrador.

Dr. Wilfred T. Grenfell, Labrador, Canada, at a recent address before the Empire Club, Toronto, Canada, spoke of the campaign against beri-beri, a form of sleeping sickness prevalent in the isolated districts of Labrador, where the food consumed is chiefly fish diet. Dr. Grenfell is at present in Canada conducting a campaign to raise funds for the hospitals, schools, and orphanages he has established on the Labrador coast.

Prescriptions for Liquor.

Chief Inspector J. N. McLean stated recently that only 10 per cent. of the physicians practising in Manitoba issue their limit of 100 prescriptions for liquor each month. If all the doctors prescribed their allotment, 68,300 orders for liquor would have been filled by drug stores, whereas about 14,000 prescriptions are actually issued.

ROYAL MEDICAL BENEVOLENT FUND.

AT a meeting of the Committee held on Dec. 13th 28 cases were considered, and £378 10*s.* voted to 25 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 63, of L.R.C.P. & S., who practised at Credbury Mortimer, London, was latterly a surgeon on a Union Castle boat and died this year. Applicant is left quite unprovided for, suffers badly from rheumatic gout, and is unable to earn her own living. She receives £5 interest from War Loan and has sold various articles to pay her way. From Dec. 31st, 1921, the steamship company have granted her £50 for two years. At present her rent is 30*s.* per week for two rooms. Voted £10 in two instalments.

M.R.C.S. Eng., aged 59, who practised at Penarth up to 1892. Through paralysis had to give up practice. He now has to pay £2 2*s.* per week for attendance, board, and lodging, and his only income is an annuity of £72 3*s.* per annum and £35 from friends. A son, who used to help, died in 1918, and a brother, who formerly allowed a small sum, is unable to continue help. Voted £26 in 12 instalments.

Daughter, aged 78, of M.R.C.S. who practised at Southsea and died in 1884. Applicant's income is derived from investments amounting to £30 and £50 from nieces and a nephew. Her sister who died recently was in receipt of an annuity from the Fund. Applicant's rent is £41 per annum. Voted £18 in 12 instalments.

Widow, aged 57, of M.B. Aberd. who practised at Regent's Park and died in 1910. Owing to ill-health applicant is unable to earn her own living and at present she is only in receipt of 30*s.* per week from a daughter. Voted £5.

M.B. Edin., aged 56, who practised at Milnathort. Owing to deafness he had to give up his practice and recently has been working as a gardener, but has found the work too heavy. He is now dependent on an unmarried sister whose means are insufficient for two people. Voted £26 in 12 instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

INFLUENZA EPIDEMIC IN ROSSENDALE.—Owing to the prevalence of influenza in the Rossendale Valley the schools in Rawtenstall have been closed. Other parts of the district are also affected.

12 hours, with an average of not more than nine hours, at a time when any serious proliferation of organisms in clean milk does not take place. The cows were out to grass, and cleaner than in the winter-time, and the cowshed was empty except when the cows were being milked. The conditions appeared to be favourable to a cleaner milk production, yet as a fact it was dirtier. The utensils, however, were washed with only moderate care and were not steamed. It appeared probable that, in the warm weather and in their moist condition, they were a serious source of contamination to the milk. Confirmation of this probability was obtained by Cumming and Mattick,[6] who demonstrated the condition in which milk-churns are being returned to the farmer.

TABLE IV.—*Classification of 500 Churns by Inspection. Oct. 9th–Nov. 20th, 1919.*

Clean and sweet.		Milk absent. Evil smell.		Churn not washed. Milk present.	Churn badly washed.
Dry.	Wet.	Dry.	Wet.		
81	110	5	118	81	75
16 %	28 %	1 %	24 %	16 %	15 %

Table IV. gives a summary of the results which they obtained, and the results of the bacteriological examinations of these churns further confirmed the observations they had made since they demonstrated that very few, even of those churns which were clean and sweet and dry, had been efficiently washed and steamed before they were returned to the farmer. This is well brought out in Table V. and is an illustration of the need, not only for greater knowledge of the method necessary to attain the object desired, but also for more coöperation within the industry. If the interests of the producer, the wholesaler, and the retailer were identical, such churns would not be returned to the farmer; since in the first place it is very difficult to wash and steam a churn properly when it has travelled, perhaps for 24 hours, before the washing takes place; and in the second place, there are many dairy-farms in the country on which the water-supplies are inadequate for this work.

TABLE V.—*Bacteriological Examination. Oct. 9th–Nov. 20th, 1919.*

Condition of churn.	Counts.	Acid and gas in litmus-lactose-peptone water.
Unwashed (whole milk present)	∞ in 1/100,000	+1/100,000
	4,000,000	+1/100,000
Badly washed (milky water present)	∞ in 1/10,000	+1/10,000
	18,400,000	+1/1000
Apparently clean but wet	5,300,000	+1/1000
	4,100,000	+1/100
	780,000	+1/10,000
	610,000	+1 c.cm.
Apparently clean and dry	6,200,000	+1/1000
	1,720,000	+1/10,000
	1,600,000	+1/100
	800,000	+1 c.cm.
	400,000	+1/1000
	35,000	+1/10
	15,400	+1 c.cm.
	6,500	—
	5,000	+1/10
	3,000	—
	2,100	—
	2,000	—
	170	—

Throughout this work it became clear that the proper methods of efficient washing and sterilisation were not understood within the milk industry, and the need for further knowledge on these subjects was more obvious still when visits were paid to milk depôts of various kinds, nearly all of which possessed steam but made use of it in an ineffective manner. Investigations were, therefore, carried out in order to establish the minimum times that are required for the sterilisation of milking utensils, especially milk-churns, for commercial purposes. That work has now been one by Hoy[7] and Mattick[8] and the times and conditions necessary for efficient sterilisation, either by current steam or by steam under pressure, have been established.

Conclusions.

Such is some of the work carried out at the Institute during the past five years which has established certain important facts. First, that the best produced commercial milk can maintain a bacteriological standard of less than 10,000 colonies per 1 c.cm. for at least 24 hours after milking, even under the conditions of cooling and transit which exist in this country at the present time. Second, that such milk maintains its sweetness at room temperatures for a period of time which averaged 6·2 days in the winter months and 3·3 in the summer months. Third, that milk of a very high degree of cleanliness can be obtained in an average cowshed if the right worker be employed and be given light, water, steam, and a covered milking bucket. Fourth, that much of the contamination of milk is due to utensils. Fifth, the conditions necessary for the efficient sterilisation of dairy utensils, whether by current steam or by steam under pressure, have been established.

These and similar investigations have been of use to the producers of Grade A (Cert.) and Grade A Milk in their work. They have promoted coöperation within the milk industry and have improved the methods of education in our dairy schools.

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7. Report on a Simple Steam Steriliser, W. A. Hoy and R. Stenhouse Williams, June, 1921, Dairy Supply Co., London.
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MENTAL DISEASE IN EX-SERVICE MEN:

WORK OF THE MINISTRY OF PENSIONS.

THE care of soldiers and sailors who took part in the war and whose minds became affected during their service has been one of the most anxious tasks committed to the Ministry of Pensions, and one that has brought it into a cross-fire of criticism from many directions. We summarised recently (THE LANCET, Dec. 10th, p. 1232) some of the searching questions asked in the House of Commons upon the subject, briefly commenting upon the official answers and what lay behind them, and we are now in a position to state with official authority the provision for these unfortunate cases as it exists at the present moment. Separate provision is made for (*a*) cases of neurasthenia; (*b*) cases of severe neurasthenia, the so-called "borderline" cases; and (*c*) the certified insane.

Cases of Neurasthenia.

In the early days of the Ministry of Pensions, before the re-organisation of the medical services, the victims of war neuroses, so-called shell-shock and kindred ailments, were treated either in the special neurological hospitals of the army and navy or in hospitals managed by Local War Pensions Committees and Joint Disablement Committees acting as agents of the Pensions Minister. A small number of "Homes of Recovery" directly controlled by the Ministry also accommodated a certain number of pensioners suffering from neurasthenia. With the creation of the regional organisation of the Ministry, however, special neurological hospitals and wards of hospitals were established in each region. Hospital after hospital was taken over from the officer of the district. The nurses, too, undertake the whole of the health work in the area allotted to them, including the following up of ailing children. In this they are assisted to a limited extent by the Society for the Prevention of Cruelty to Children and the local committees dealing with infant welfare work. Minor ailments are treated at the school treatment centres, but diseases not coming under this heading are attended to by the school nurse at the instance of the general practitioner in charge of the case. There is one experimental nursery school in the county. A thorough investigation into the school furniture in *use in schools has been held, but unfortunately few* recommendations for its improvement were suggested. Dr. Greenwood believes that even if a fresh start could be made any scheme adopted would still remain imperfect, and to some extent experimental. Analysing the seating accommodation for 24,311 children, he reports that 7000 had seats without backs, and 2000 had chairs and tables. He is not quite satisfied that tables and chairs are the right thing for children, and, as a matter of fact, experience has shown that, wherever tables have been introduced, except for infants, they have been replaced later by more specialised furniture. The modern tendency to revert to tables and chairs for older children is a temporary phase, and sooner or later the desk will reassert its superiority.

Dr. Greenwood admits the great importance of good lighting, but records that his personal view is that bad lighting has not yet produced a case of eye disease. This may be so, but the fixation of the eye required in bad light is an urgent cause of eye-strain. In an eye predisposed to myopia this strain certainly aggravates the diseased condition. Eight per cent. of the school population in Kent suffer from defective vision, and 2 per cent. from squint.

An analysis of the ages of children suffering from diagnosed or suspected tuberculosis showed that, excluding disease of the glands, there was no difference in the numbers at the ages of 8 and 14 respectively.

SWINDON.

Out of 2632 children examined, 213 were found to have defective vision, 279 enlarged tonsils, 61 of these requiring active treatment. Only one case of rickets occurred, and there was no definite pulmonary tuberculosis. Dental examination of 2120 children revealed 17·3 per cent. with carious teeth; 1000 of these children received treatment under the local authority's scheme. Dr. Dunstan Brewer, successor to Dr. W. F. J. Whitley, reports that for years past Swindon has remained comparatively free from acute poliomyelitis, but that, on the other hand, rheumatism is a common disease, and cardiac cripples are numerous. Four cases of organic heart disease were discovered at medical inspections. Dr. Brewer looks upon diphtheria as "the great killing disease among children of school age," and is of the opinion that the school teacher is much more likely to be the carrier than are the children; he suggests that when throats are being swabbed the teacher should *not be forgotten*. Commenting on voluntary help, it is stated that the need has been lessened considerably, and that voluntary workers, forming children's care committees and so forth, were now less essential to success than when school inspection was first inaugurated.

The coöperation between the school medical service and local infant welfare work is so close that it is hoped shortly to have a continuous health record of each child between birth and the age of 16.

DONATIONS AND BEQUESTS.—The Manchester Royal Infirmary has received £1000 from the late Mr. Marcus Morreau for the endowment of a bed, a bequest of £100 from the late Mr. Joseph Milnthorpe, and £250 from the late Mr. Joseph Stanier. Donations from Salford and Glossop and from employees of various firms reached £315, while the Manchester Ship Canal Company have increased their annual subscription from £25 to £100. The subscriptions and donations to the Manchester Children's Hospital during the past month reached £816, including £500 from Messrs. Peel and Co., Ltd.

Correspondence.

"Audi alteram partem."

ORGANISATION OF MEDICAL EDUCATION: OPHTHALMIA NEONATORUM.

To the Editor of THE LANCET.

SIR,—Mr. J. Herbert Parsons, in your columns last week, drew attention to the inefficiency of the present curriculum in teaching the medical student how to cope with ophthalmic conditions, more particularly ophthalmia neonatorum. The Metropolitan Asylums Board have established a special hospital for this disease—namely, St. Margaret's, Leighton-road, Kentish Town. Last year rather less than one-third of the cases which occurred in the London area were received at this institution. A large percentage were blind on admission from corneal ulceration owing to inefficient or want of early treatment. Indeed, the average day on which they were admitted to the hospital was the ninth. One can only put this down to ignorance on the part of the midwife or doctor attending the cases, as if they had been educated in the natural history of the disease during their curriculum *this would not have occurred. In 1020 the Ophthal-*mological Society of the United Kingdom passed the following resolution:—

> "In passing a vote of thanks to the Metropolitan Asylums Board for permission to visit St. Margaret's Hospital, this meeting of the Ophthalmological Society wishes to urge on the Board, now that so large a number of cases of ophthalmia neonatorum are congregated together in one institution, that facilities should be afforded at their hospital for the teaching of medical students, midwives, and district nurses the natural history and treatment of the disease."

As the result of this the Metropolitan Asylums Board gave permission for St. Margaret's Hospital to be used for the purpose of teaching, and all the examining bodies were informed both of the resolution and the permission given by the M.A.B., but so far no advantage has been taken of the facilities so offered.

I am, Sir, yours faithfully,

Harley-street, W., Dec. 26th, 1921. M. S. MAYOU.

INTERPOSITION OPERATION FOR VAGINAL PROLAPSE.

To the Editor of THE LANCET.

SIR,—Last year you published[1] a lecture I had delivered at the Royal Society of Medicine on the surgical treatment of prolapse of the uterus and vagina. In this lecture I made the following statement in regard to the interposition operation:—

> "Schauta, to whom the introduction of this operation is attributed, lost five cases in 89 operations, and in 13 cases there were recurrences. Fothergill, commenting on these figures, justly remarks that 'no results could be much worse than these.' Bissell has reported an almost incredible mortality of 75 per cent., while Vineberg[2] states that 'I abandoned it (interposition operation) myself on account of the extensive suppuration usually accompanying it.'"

I explained in another part of the lecture how sepsis can be entirely prevented. When I was in America this year I met Dr. Bissell, with whom I discussed the matter. He then told me he had not made any such statement as that attributed to him; for, like myself, he had never had a death following the interposition operation. This information was so contrary to what I had quoted in my lecture that I asked him to make some inquiry into the matter. I have just received from him a letter enclosing one from Dr. Vineberg, which explains how the mistake has arisen. I shall be very glad, therefore, if you will publish these letters, which I enclose, as I greatly sympathy with which each service patient is regarded, or diminishes the Minister's anxiety that the patient should receive the utmost care and most skilful treatment. The proposal that special asylums should be created solely for ex-service men has been much discussed. The general public, unversed in such matters, unaware that the first necessity for proper treatment is proper classification and segregation according to behaviour, conduct, and medical category, and that, therefore, treatment can only be properly carried out in institutions of sufficient size to permit separate wards according to classification, naturally fails to appreciate the necessity for institutions of considerable size and accommodation. Of this necessity, however, medical men are well aware. It would, therefore, be necessary, if popular demands are to be met, to create some 12 or more institutions for service patients placed at convenient centres.

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[1] THE LANCET, 1920, i., 993.

[2] Vineberg, H. N., Amer. Journ. Obstet. and Gynecol., 1919, lxxix., 677.

Bearing in mind the indisputable fact that the service patients do not differ in medical category and conduct from the ordinary patients of asylums, and that as regards the great majority the prognosis is no more favourable than in their unfortunate fellow patients, the accommodation provided should be as complete in every detail as that provided for civil patients. The county and borough asylums with their separate wards varying in number from 8 to 20 on the male side; special electrical and X ray plants; isolation rooms and safety appliances; separate exercise courts according to class of case; laundry and workshops; garden and farm lands and buildings would all be required for a class of patient whose numbers should now be at their maximum and will necessarily steadily decline to zero in, say, 30 to 40 years' time. No one even superficially acquainted with the subject would propose temporary accommodation of the camp or hutted type as suitable for such cases. What, however, has been seriously proposed is the setting apart of selected county and borough asylums for service patients only. This proposal is not without its merits, but has the great disadvantage that it would necessarily, in a large proportion, probably the majority, of the patients, remove the patient so far from his relatives and friends that he and they would be deprived of one of their greatest solaces, the frequent and periodic visitation and intercourse.

Intermediate between these two proposals the setting apart of special blocks of existing asylums for service patients who no longer require strict supervision and who may enjoy and benefit by a greater degree of freedom, a more domestic type of surroundings and occupational treatment, and even vocational training, in fact a half-way house between the asylum and ordinary civil life, though remaining within the general asylum administration, has been under consideration for some time following the recommendations of the Departmental Committee of Enquiry into the Ministry of Pensions administration.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Anti-Tuberculosis Work in Austria.

IN order to inform medical practitioners of the available means of combating tuberculosis, the Board of Health has issued a small booklet containing all data concerning welfare institutes, hospitals, and sanatoriums devoted to the treatment of this disease. Three distinct groups of institutions exist for this purpose in Austria. First, there are the 43 so-called welfare centres, situated in the densely populated districts of Vienna and the larger provincial towns, and under the control of fully competent lung specialists, aided by two or more fully trained nurses. Their object is the dissemination of information to patients concerning hygienic modes of living, prevention of infection, assistance in procuring hospital beds n cases of necessity, and control of the convalescents heir homes. In numerous centres regular tuberculin es are given to chronic cases not requiring hospital treatment. The second group consists of the 27 sanatoriums for internal or for surgical tuberculosis, situated in mountainous or hilly country districts esteemed for their equable climate. Altogether they contain a little over 3400 beds, with about 960 beds for children. Quite 50 per cent. of these institutions are owned by the State or the provinces, and are thus open to the poorer classes; the remainder are private, and conducted for profit. The majority are possessed of modern apparatus and appliances for physio- and mechano-therapy, including X ray and quartz-light plant; some of them are situated high up in the Alps, where the therapeutic effect of sunlight is utilised. The third group comprises about 5700 beds in hospitals, for both internal and surgical tuberculosis, for patients of both sexes and of all ages. In Vienna alone 3400 beds are available for this purpose; about 25 per cent. of all these beds can be used for children. The remainder of the beds are divided up between the hospitals in the country districts and provincial towns. Vienna contains about 30 per cent. of the entire population of the republic, but has 60 per cent. of the tuberculosis beds. In the whole country there are 89 public hospitals, with a capacity of 26,776 beds, and 124 private hospitals with 5706 beds, or a total of 32,482 beds, of which figure 18 per cent. are devoted to patients suffering from tuberculosis. This figure—18 per cent.—represents a not quite sufficient proportion of space allotted to tuberculosis.

Prohibition of Yellow Phosphorus.

The Austrian Republic has accepted the Convention of Berne, which prohibits the use of ordinary yellow phosphorus for the purpose of making matches. It is interesting to realise that it took 15 years for the provisions of this convention to be put into force in this country; only by means of the Peace Treaty was it possible to compel interested parties to accept this absolutely necessary public health measure. Only a few of the great factories have hitherto been wise enough to study the social welfare of their employees; now and then the students in the Vienna clinics have had the opportunity of observing a case or two of phosphorus-necrosis, but some 25 years ago the disease was so frequent here that Prof. Albert wrote a monograph on it, and showed cases to his students at every class. Strong feeling also exists here against the proposed prohibition of the use of lead in factories for paints and dyes; and with regard to the disinfection of raw wool imported into Austria the manufacturers of the country are again not quite as advanced as is desirable in matters of modern prophylactic medicine.

Dangerous Dental Fillings.

The attention of the medical profession, and especially of dental surgeons, has been called to the existence of dangerous compositions, widely advertised as a substitute for gold, for filling teeth and bridge and crown work. These alloys, consisting of copper and zinc, are similar in their constitution to tombac, but also contain lead, some even as much as 0·5 per cent. These metals are not as resistant to the action of alkaline or acid liquids as are the copper-gold alloys; they are therefore subject to constant dissolution under the influence of saliva in the mouth. Small quantities of lead are thus being constantly thrown into the system. Toxic conditions may result, and have been observed. The alloys have been widely used owing to the great difference in their prices when compared with those of copper-gold alloys.

Spectacular Hypnosis.

For some time past public demonstrations of "telepathy" and hypnosis have aroused much comment both in the lay press and in medical circles. Certain disagreeable consequences having followed in some cases, the Board of Health has thought it necessary to interfere, and has issued a report to the Ministry of Health with the request to instruct magistrates and other authorities who license public meetings that hypnosis and suggestion are to be considered as thera-

HARRY LITTLEWOOD, C.M.G., F.R.C.S. ENG.,

LATE PROFESSOR OF SURGERY IN THE UNIVERSITY OF LEEDS; LATE LT.-COL., R.A.M.C.

It is with great regret that we record the death in his sixty-first year of Colonel Littlewood, which took place suddenly at Erpingham Lodge, Aylsham, Norfolk. At the age of about 53, Mr. Littlewood found the demands of an extensive consulting surgical practice too much for his strength, and he decided to retire and to settle in his native county of Norfolk, where he had purchased a small estate and where it was hoped that, fond of country life as he was, he would have many years to enjoy his well-earned retirement. This was about 16 months before the outbreak of hostilities and the war saw him back at once at the scene of his former labours, for he had in 1908 accepted a commission as Lieut.-Col. in the R.A.M.C.(T.) on the staff of the Second Northern General Hospital. Acting first as officer-in-charge of the surgical section, and very soon as Administrator in succession to Colonel Dobson, whose serious but happily temporary illness laid him aside for some time, he stuck to his work till, after the peace, the hospital was transferred to the Ministry of Pensions. Then for the second time he left Leeds, having during the strenuous years of the war shown marked powers of organisation, the keystone to a life of great usefulness.

Trained as a student at University College, London, where he was awarded the Atkinson-Morley scholarship in Surgery, he took the Fellowship of the Royal College of Surgeons of England, and was elected resident surgical officer to the General Infirmary at Leeds in 1886. From the beginning of his career in Leeds it was clear that he was destined to make his mark. He at once became popular with the staff, with his resident colleagues, and with the students, to the instruction of whom he devoted much time. Many improvements in dressings and in surgical technique owe their introduction to the Infirmary to his initiative, and the position of resident surgical officer was never more worthily filled than during his tenure of office. Shortly after he left the Infirmary and started as a consultant in surgical work he was elected assistant surgeon to the Infirmary. This was in the year 1890; after six years on the assistant staff he was promoted to the full staff and had charge of beds for 17 years. Though he had not felt able to complete the term of 20 years, which in Leeds is the limit imposed upon the members of the full staff, he was, on the recommendation of the Board, elected a consulting surgeon by the managers of the Infirmary. He received the honorary degree of M.Sc. in the new University of Leeds, and later was appointed Professor of Surgery.

One who knew him well, was one of his resident colleagues, and was closely associated with him throughout the whole of his life in Leeds, writes as follows: "As a teacher Littlewood was eminently successful; his knowledge was extensive and sound, his mind was clear and logical, his sympathies were wide and sincere. It was no wonder that he was popular with the students and that they trusted and respected him. He brought to bear upon his surgical work those gifts of skill, patience, judgment, and humanity which are all essential for true greatness in surgery. I would venture to say that his chief characteristics as a surgeon were indomitable perseverance, reasonable optimism, and imaginative faculties regulated and restrained by wise caution. Trusted by those who called him in consultation, he soon developed a large consulting practice, and he maintained and increased the reputation for surgery which has been enjoyed by Leeds for so many years. As a man he was absolutely straight, loyal to those with whom or under whom he worked, as well as courteous and fair to those who worked under him. His death leaves a blank in the minds of a large circle of friends both in the profession and among the members of the general public. He served the Infirmary and the University with single-minded honesty of effort and placed both institutions under a deep debt of gratitude."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgn. Lieut. H. F. Stephen to be Surgn. Lieut.-Comdr.

The following appointments have been notified:—Surgn. Comdrs.: F. C. B. Gittings to *Repulse*; H. P. Jones to *Victory*, addl., for R.N. Barracks, Portsmouth; A. H. H. Vizard to *Dryad* (Navigation School); S. Roach to *President*, addl., for R.N. College and Hosp. School, Greenwich; R. S. Osborne to *Orion*; P. H. M. Star to *President*, addl., for R.N. Recruiting H.Q.; N. H. Harris to *Crescent*, for Rosyth Dockyard; L. M. Morris to Woolwich (*temp.*); W. E. Gribbell to *Vivid*, for Devonport Dockyard; W. H. Hastings to *Inconstant*; W. H. Pope to *President*, addl., for recruiting duties, Southampton; R. J. Mackeown to *Vernon*; and D. H. C. Given to *Victory*, for R.N. Barracks, Portsmouth, on technical staff of Commander-in-Chief, as Naval Health Officer.

ROYAL ARMY MEDICAL CORPS.

J. O Cuthbertson, late Capt., R.A.M.C., T.F., to be Temp. Capt.

Maj. R. J. Cahill relinquishes the actg. rank of Lt.-Col.

Capt. C. H. Stringer relinquishes the temp. rank of Maj.

Temp. Capts. relinquishing their commns. and retaining the rank of Capt.: H. P. Hodge and H. J. Brink.

TERRITORIAL ARMY.

Capt. P. B. Spurgin to be Maj.

Maj. F. G. Hobson to be Lt., and relinquishes the rank of Maj.

Capt. R. L. Williams, from 5th Bn., Welch R., to be Capt.

Capt. W. A. Robertson, from T.A. Res., to be Capt.

Lt. A. S. L. Malcolm to be Capt.

Lt. J. Bowen-Jones (late R.A.M.C.) to be Lt.

Capt. M. T. G. Clegg resigns his commn. and retains the rank of Capt.

The undermentioned officers, having attained the age limit, are retired and retain their rank except where otherwise stated: *Lt.-Cols. C. A. Goullet, J. W. Nicholson, and* D. Smart (granted the rank of Col.), with permission to wear the prescribed uniforms. Majs. J. Cameron, V. Graham, D. A. Hughes, J. P. Brown, S. F. Barber, H. Stallard, and R. P. Ryan. Majs. (Bt. Lt.-Col.) H. W. Laing and P. B. Spurgin (retain the rank of Maj.). Capts. (Bt. Maj.) A. A. Jubb and A. Ricketts (granted the rank of Maj.). Capts. T. N. Thomas, J. R. Garrood, F. F. C. Jagger, R. L. Wood, H. W. Godfrey, T. R. W. Atkins, G. Higginson, and *J. A. Parsons.*

Capt. J. M. Kirkness relinquishes his commn. and retains his rank.

Supernumerary for Service with O.T.C.—Capt. A. E. Webb-Johnson, from Genl. List, R.A.M.C., T.A., to be Maj. for service with the Med. Unit of the Lond. Univ. Cont., Sen. Div., O.T.C.

ROYAL AIR FORCE.

The undermentioned Flight-Lieuts. are granted permanent commns.: W. F. Wilson, P. A. Hall, H. B. Troup, E. G. O'Gorman, and T. J. X. Canton.

INDIA AND THE INDIAN MEDICAL SERVICE.

Maj. S. S. Broome, professor of surgery, and Maj. J. J. Harper Nelson, professor of materia medica, have each been granted eight months' combined leave. Dr. H. Roberts has been appointed temporarily as Civil Surgeon, Khasi and Jhantia Hills, vice Maj. L. B. Scott, granted leave. Lieut.-Col. H. M. Mackenzie, of the Medical College, Lahore, has been granted one year's leave, and Lieut.-Col. F. A. F. Barnado, of the Medical College, Calcutta, four months' leave. Maj. E. C. Hodgson *officiates as Assistant Director-*General, I.M.S., at Simla.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The *annual Congress will be held at Plymouth from May 31st to* June 5th. Lord Fortescue will preside and the Congress will be conducted in four sections:—Sect. I., State Medicine and Municipal Hygiene. President: Dr. D. Llewelyn-Williams. Sect. II., Naval, Military, and Air. President: Surgeon Rear-Admiral Sir Daniel McNabb. Sect. III., Bacteriology and Biochemistry. President: Prof. J. Martin Beattie. Sect. IV., Women and Public Health. President: Lady Astor. The Harben lectures will be delivered during the meeting by Dr. T. Madsen, Director of the State Serum Institute, Copenhagen. Further information may be obtained from the offices of the Institute, 37, Russell-square, London, W.C. 1.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

BLACKBURN.

Dr. W. Allen Daley submits an interesting report, and mentions as the outstanding features of the year: (1) the lowest general death-rate (12·7) ever recorded in the town; (2) the lowest death-rate from tuberculosis (0·79); (3) extension of maternity and child welfare work; (4) inauguration of work with the object of educating the public on health matters; (5) progress, howbeit slow, with the erection of municipal houses. The Registrar-General's estimate of the population for 1920 is 131,012, but Dr. Daley, from various sources of information, thinks this figure too low, and adopts an estimate of 140,000. The provisional census returns apparently justify Dr. Daley's expectation that the census taken in June will swell the populations of holiday resorts like Blackpool at the expense of industrial towns like Blackburn. The staple industry of Blackburn is cotton spinning and weaving, and a noteworthy social feature is the extensive employment of female labour. At the census of 1911 there were 18,372 female weavers, 9118 of whom were married. There are a very large number of bottle-fed babies, and a high infant mortality rate—viz., 110 in 1920, as compared with 85 in the 96 great towns. Dr. Daley draws attention to the high neo-natal mortality. Thus of 311 infant deaths, 104 took place under one week, and 155 under one month. The maternal mortality from childbirth is also, Dr. Daley tells us, far too high, having been 5·9 and 5·6 per 1000 births for 1919 and 1920 respectively, as compared with 4·12 per 1000 births for England and Wales in 1919. There is a low birth-rate, which rose from 14·0 in 1919 to 20·1 in 1920. Dr. Daley has a good deal to say about the smoke nuisance, and instances Pittsburg, U.S.A., as an example of what can be done. He adds that there are 190 factory chimneys on the register; 92 are provided with smoke-consuming appliances, including five installed in 1920. Smoke observations, each of an hour's duration, were taken on 155 occasions. Twenty-eight chimneys emitted black smoke in excessive quantities. This means that many factories in Blackburn are continually breaking the law as regards the black smoke nuisance. There is no mention of any legal proceedings. We hope Dr. Daley will be successful in inducing his authority to start a really vigorous campaign on this question.

WIGAN.

Dr. Fred E. Wynne states in a farewell report as M.O.H. for Wigan that the estimated population for 1920 was 90,806; the birth-rate 30·61; the corrected death-rate, 15·92; the infant mortality rate, 124; the death-rate from pulmonary tuberculosis, 0·83, and from other tuberculous diseases, 0·19. Dr. Wynne points out that the reduction in the general death-rate still leaves it considerably in excess of that of the 96 great towns, and that the infant mortality rate is "still far from satisfactory." He is glad to report the resumption of the privy-conversion work. There are still over 1500 to be dealt with. There are two infant clinics; and Dr. Wynne points out that a large number of cases are referred to private practitioners, and is convinced that "the clinics, so far from competing with private practitioners, must considerably increase their clients." Dr. Wynne combats the idea that milk has been given away indiscriminately, and points out that in every application for free milk the applicant has to bring a wages statement signed by the employer. An interesting diagram showing the relation between the incidence of tuberculosis and the percentage of insanitary houses in each ward of the borough is given. Dr. Wynne notes that the results will be disconcerting to those who believe that in re-housing alone will be found the solution of the tuberculosis problem. Lindsay ward, with the highest general death-rate and the highest percentage of insanitary houses, has the lowest incidence of tuberculosis, while St. Patrick's ward, with the lowest percentage of insanitary houses, has the highest incidence of tuberculosis. Dr. Wynne explains this anomaly by the large proportion of Irish people resident in St. Patrick's ward, and expresses his belief that the Irish are susceptible to tuberculosis, and that the Western Celts and their descendants born in England do not as a rule adapt themselves readily to urban and industrial conditions. For the rest, the incidence of tuberculosis is highest in the centre of the town, and the moral is to get the people away from this centre. Dr. Wynne approves Miss Octavia Hill's system, and calls also for help in putting a stop to the pollution of the atmosphere by smoke, both domestic and industrial, and a more rigorous isolation of advanced and highly infectious cases of the disease.

As school medical officer, Dr. Wynne records the most important event of the year—the beginning of dental inspection and treatment, and includes in his report an appeal addressed by the school dentist, Mr. Townend, to parents on the importance of the care of their children's teeth. With regard to verminous conditions, Dr. Wynne makes the suggestion that the course of "nature study" given in the schools should include demonstration on the life-history of the louse. No progress has been made with the provision of the new school clinic, for which plans have been completed and which is urgently needed.

SCHOOL MEDICAL SERVICE.

BRISTOL.

THIS university city has an average school attendance of 50,000, half of whom pass annually through the doctor's hands. Of 18,003 who underwent routine examination, 576 were found to be suffering from anæmia, 397 from organic heart disease, 475 from malnutrition, and 4417 from defective vision. There were 59 cases of definite and 151 of suspected pulmonary tuberculosis. Nose and throat defects accounted for 2916, ear disease for 254, and defective hearing for 398. The great majority of these ailing children were treated at the school clinics. An increase of 59 per cent. is reported in the clinic cases which, the report states, would be untreated were it not for the authority's scheme of treatment. These cases consist for the most part of chronic ailments. Only five out of 1452 children failed to get the spectacles prescribed for them. One special school has a clinic on the premises, an especially helpful arrangement in the case of physically defective children who travel with difficulty. The staff of the school medical department has been strengthened by the appointment of specialist officers and work in the secondary school has begun. There are, so far, no nursery schools, but classes for children with defective sight and defective hearing are at work. Yet the stable-door is still unlocked, for the authority has not yet seen its way to arrange for treatment for children below school age, and as Dr. R. A. Askins states in his report, the majority of crippling defects start before this age. Scabies is rapidly on the decline, but impetigo remains high. It would be of interest to correlate this latter disease with nutrition. Infectious diseases ran rathe high, but Bristol is quite up to date in its method o dealing with these; one school only was closed. The statement made in this report that head measurements and mental capacity are not related cannot be definitely determined from the figures set forth here; these might have been influenced by age distribution, and they are, moreover, at variance with the extensive recent investigations of Berry and Porteus.

KENT.

Dr. Alfred Greenwood's report on the school medical work in Kent shows steady effort with corresponding progress. The closest coöperation exists between the public health and the school medical services, the infant welfare centres being under the school medical

Child-Study Society.—A lecture entitled "The Supernormal Child" will be given in the botanical theatre of University College, London, on Wednesday, Jan. 4th, 1922, by Robert Rusk, M.A., Ph.D. Dr. C. W. Kimmins will be in the chair.

Harveian Society.—The annual general meeting of this Society will be held at the Medical Society's Rooms, 11, Chandos-street, London, W., on Thursday, Jan. 12th, 1922, at 8.15 p.m., when the election of officers for 1922 will take place, and Dr. G. de Bec Turtle will deliver the presidential address on "Some Points on Spasm in the Alimentary Tract." A short musical programme has been arranged.

Medical Reciprocity with Belgium.—The Belgian Academy of Medicine, which has been requested by the Minister of the Interior to give its opinion on a proposal by the British Government for an Anglo-Belgian agreement providing for the reciprocal exercise of medical practice, has appointed a special commission to report on the matter. *The Academy itself is stated to be in favour of the scheme.*

Third International Congress of the History of Medicine.—At a general meeting held at the Royal Society of Medicine on Dec. 21st the following were elected officers of the Congress:—President of Honour: Sir Norman Moore. President: Dr. Charles Singer. Treasurer: Mr. W. G. Spencer. General Secretary: Dr. J. D. Rolleston. Vice-Presidents: Sir D'Arcy Power, Dr. Tricot-Reyer, Dr. E. Jeanselme, Dr. E. Ménétrier.

Mr. Frederick Walter Way, M.R.C.S., L.S.A., who died at Portsmouth on Dec. 21st at the age of 87, had retired from practice for many years. He entered St. Thomas's Hospital in 1852, qualified in 1856, and held house appointments at the Northampton General Asylum and at the Stourbridge Dispensary, afterwards becoming surgeon to the Royal Portsmouth Hospital. He married a daughter of the Rev. J. W. Banks, and their son who, like his father, was a student at St. Thomas's Hospital, is in practice at Southsea.

National Association for the Prevention of Infant Mortality.—A course of advanced lectures on infant care, for infant welfare workers, teachers, and mothers, will be held at the Lecture Hall, Carnegie House, 117, Piccadilly, London, on Mondays, at 6 p.m. from Jan. 23rd to April 10th, 1922. The syllabus includes the following lectures: The Normal Development of the Fœtus, by Dr. T. W. Eden; Venereal Disease in relation to Motherhood and Infancy, by Mrs. Scharlieb; Physiology of Pregnancy and Labour, by Lady Barrett; The Scientific Principles underlying Artificial Feeding, by Dr. Eric Pritchard; The Nervous Child, by Dr. David Forsyth; Skin Diseases in Young Children, by Dr. Henry MacCormac; Tuberculosis in Infancy and Childhood; by Dr. T. N. Kelynack; The Prevention of Ear and Throat Troubles, by Mr. Philip Franklin; An Infant Welfare Programme, by Dr. Harold Scurfield; How to Conduct an Infant Consultation, by Dr. Harold Waller; Mental Deficiency in Children under School Age, by Dr. A. F. Tredgold; The Psychology of Early Childhood, by Dr. H. Crichton Miller. Tickets (for the whole course of 12 lectures, 8*s.* 6*d.*, for any one lecture, 1*s.* 3*d.*) may be obtained from Miss Halford, Hon. Secretary, National Association for the Prevention of Infant Mortality, 117, Piccadilly, London, W.1.

Fellowship of Medicine and Post-Graduate Medical Association.—A special post-graduate course in general medicine will be held from Jan. 9th to Feb. 18th, 1922, at the following hospitals: Bethlem Royal Hospital, Cancer Hospital, Chelsea Hospital for Women, Hospital for Consumption and Diseases of the Chest, Hospital for Epilepsy and Paralysis, Middlesex Hospital, National Hospital for Diseases of the Heart, Paddington Green Children's Hospital, W., Royal Westminster Ophthalmic Hospital, St. George's Hospital, St. Mark's Hospital for Diseases of the Rectum, St. Marylebone General Dispensary, St. Peter's Hospital, and Western Hospital. The syllabus for the first week includes five lectures and demonstrations at the Brompton Hospital; a post-mortem demonstration by Dr. R. Donaldson at St. George's Hospital; operations at the Chelsea Hospital by Mr. Victor Bonney, who will also give a demonstration on the Treatment of Prolapse, and by Mr. F. L. Provis, who will also lecture on X Ray Therapy in Gynæcology, and demonstrations at the same hospital by Mr. Aubrey Goodwin and Mr. L. C. Rivett; a lecture by Mr. J. Swift Joly at St. Peter's Hospital on Calculous Disease of the Urinary Organs, and a demonstration of infectious cases under treatment at the Western Hospital by Dr. R. M. Bruce. Further particulars will be found in our Medical Diary. The fee for the course is 15 guineas, and the names of those wishing to attend should be sent as soon as possible to the Secretary at the Fellowship of Medicine, 1, Wimpole-street, London, W. 1, to whom all inquiries should be addressed.

Memorial to a Medical Man.—On Dec. 18th, in Bath Abbey, a tablet was unveiled and dedicated to the memory of Dr. George Hely-Hutchinson Almond, Temporary Captain, R.A.M.C., who was killed in action at Caix, France, on August 9th, 1918. The tablet was erected by members of the medical profession in the city of Bath and the surrounding district; Dr. A. E. Norburn performed the unveiling ceremony in the presence of many of the late Dr. Almond's former colleagues.

General Hospital, Birmingham.—At a meeting of the governors, held on Dec. 23rd, it was decided that from Jan. 1st, 1922, all patients with three exceptions should be required to pay a maintenance charge at a rate not exceeding £2 2*s.* a week, according to their means. The exceptions are: (*a*) Such accident or urgent cases as are unable to pay; (*b*) other patients who provide an in-patient ticket and are unable to pay; and (*c*) employees and their dependents who provide a ticket through their employer or through a Works or Office Benevolent Fund subscribing directly to the hospital. It was further resolved that 1 per cent. of the amount received by the hospital owing to the adoption of the maintenance charge should be set aside to form a "Medical Staff's Equipment Fund," which should be placed at the disposal of the medical staff either for the purchase of special equipment or apparatus, or in any other way which, in the opinion of the staff, would be of benefit to the hospital. A year ago the board of management recommended a similar scheme to the governors which aroused considerable opposition on the part of working-class supporters, who offered, if the maintenance charge was dropped, to make good the sum required through a Hospital League which should collect money from the factories. The Hospital Saturday Fund felt that the League was trespassing on its ground and the other hospitals also opposed it. The League has now abandoned its collections in factories, but branches have been formed in various districts to make house-to-house collections. Already by the exertions of the Handsworth branch enough money has been collected to reopen 12 of the closed beds.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Jan. 4th.

SURGERY: at 5.30 p.m.

Discussion: On "Post-operative Embolism and Infarction," to be opened by Mr. J. P. Lockhart-Mummery.

The following will contribute to the discussion:—Mr. Victor Bonney, Prof. Collingwood, Sir Charles Gordon-Watson, and Dr. Arthur Latham.

Members of other Sections are cordially invited to attend the above meeting.

Thursday, Jan. 5th.

OBSTETRICS AND GYNÆCOLOGY: at 8 p.m.

Specimen:

Mr. Beckwith Whitehouse: Tubal Lithopædion.

Short Communications:

Mr. Beckwith Whitehouse: Salpingotomy versus Salpingectomy in the Treatment of Tubal Gestation.

Mr. John B. Hunter (introduced by Dr. Blacker): Short History and Post-mortem Notes of an Interesting Case of Diffuse Carcinoma following Cancer of Cervix (illustrated).

Paper:

Mr. Aleck W. Bourne: Hyperthyroidism in Functional Menorrhagia.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Jan. 2nd.—2 p.m., Dr. Simson: Diseases of Women.

Tuesday.—2 p.m., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear.

Wednesday.—2 p.m., Mr. Tyrrell Gray: Operations.

Thursday.—2 p.m., Mr. Bishop Harman: Eye Department.

Friday.—2.30 p.m., Dr. Pritchard: Visit to Medical Wards.

Saturday.—2 p.m., Dr. Owen: Medical Out-patients.

Daily:—10 a.m., Visit of Post-graduates to Wards. 2 p.m., In-patient, Out-patient Clinics and Operations.

IMPERIAL COLLEGE OF SCIENCE, South Kensington.

Wednesday and Thursday, Jan. 4th and 5th.—3 to 6 p.m. and 7 to 10 p.m., Physical Society and Optical Society's annual exhibition. Lectures illustrated by experiments will be given.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester Square, W.C.

Thursday, Jan. 5th.—6 p.m., Chesterfield Lecture. Dr. W. Griffith: Parasitic Diseases of the Skin.

regret having given currency in this country to what turns out to be an untrue statement published in the United States regarding the work of a charming and conscientious American colleague.

I am, Sir, yours faithfully,
W. BLAIR BELL.

Liverpool, Dec. 20th, 1921.

ENCLOSURE.

Copy of a letter from Dr. Dougal Bissell, 219, West 79th-street, New York, dated Dec. 1st, 1921.

MY DEAR DR. BELL,—I am sending you a letter received from Dr. Vineberg on the question of my "75 per cent. mortality" in the operation of interposition of the uterus for the cure of procidentia uteri, cystocele, &c. The letter speaks for itself, and I would be greatly obliged if you would have the error in your article, which, as you appreciate, places me in a most uncomfortable position, corrected in THE LANCET. A few words from you would be to a better purpose than any public statement I could make. The simple fact is that I have done comparatively few interposition operations, but I have never had a death, nor do I know of a death following this operation in the hands of any of my friends.

Cordially and sincerely yours,
(Signed) DOUGAL BISSELL.

Copy of a letter from Dr. Hiram N. Vineberg to Dr. Dougal Bissell, dated Nov. 23rd, 1921.

DEAR DR. BISSELL,—In your letter of the 11th instant you draw my attention to a quotation by Dr. Blair Bell, in a paper in THE LANCET from a statement I made, in a discussion of a paper by Dr. George Gray Ward, Junr., on the problem of cystocele in the *American Journal of Obstetrics and Gynecology*, 1919, lxxix., p. 677. I stated you had a mortality of something like 75 per cent. in following the method described by F. F. Simpson of reducing the size of the uterus when it was too large to be adaptable for interposition, and that you had abandoned the method as well as I had myself, on account of the dangerous suppuration that attended it.

I made the statement in good faith, having in mind the paper entitled A Subtotal Hysterectomy, &c., I heard you read at the meeting of the American Gynecology Society held at Pittsburgh, Pa., May 31st, June 1st and 2nd, 1917. My recollection of it was that in seven cases you had five deaths. This was firmly imbedded in my memory, as it was in that of another colleague who heard your paper and to whom I have spoken on the subject recently.

Since receiving your letter I have, for the first time, read your paper as published in the Transactions of the Society for the year 1917. I saw then how I must have gained the erroneous impression. In it you state than in seven cases the indications for the operation were fibroid of the uterus, procidentia, and cystocele. That evidently impressed me as the number of cases in which the uterus was enlarged, and its reduction in size indicated. Further, you state that serious infection occurred in five of the cases.

Through faulty hearing, enhanced by poor acoustics, which most of our meeting rooms have, I must have understood you to state that you had had five deaths in the series in which the uteri were enlarged by fibroid condition, and had to be reduced in size. Of this I am certain, I carried away with me the idea that out of seven cases you had had five deaths. Hence the statement of something like 75 per cent. mortality.

But on a careful reading of your paper I find that the operation had been performed upon 31 cases and that in the series there were five serious infections with only one death. The mortality rate, therefore, for the entire series was only 3 per cent. instead of the "something like 75 per cent."

I am greatly chagrined with myself for the egregious misconception I gained from listening to the reading of your paper. Please accept my most sincere apology for the error and for the injustice unwittingly done you. It shows very forcibly how unsafe it is to rely solely upon conceptions gained from hearing a paper read. As far as I know it is the first time my hearing has played me such an unfortunate trick.

I can only say the incident has taught me a very striking lesson, from which I hope to benefit in the future. I sincerely hope my confessed and deeply regretted error will receive as much publicity as the original statement.

Very sincerely yours,
(Signed) HIRAM N. VINEBERG.

INFECTIOUS DISEASE IN MAURITIUS.

To the Editor of THE LANCET.

SIR,—With reference to the notes on "Influenza in Mauritius" in THE LANCET of Oct. 1st, Mr. A. F. Fokeer is wrong in exonerating the Indians from a share in the insanitary condition of the island. The majority of the Indian population of Mauritius are coolies, with no idea of sanitation whatever. On the sugar estates they live in thatched huts built in crowded "camps." There is no drainage; the water-supply is taken from the nearest polluted stream and conveyed to the estate in open canals, in which soiled linen is washed and in which every one bathes as he pleases. On the estate the water is distributed by means of smaller open canals, which also serve the purpose of open sewers.

This was the state of affairs on sugar estates when I lived in the island many years ago, and I am told that things are still in the same condition. In the smaller towns and villages the same conditions obtain, and even Port Louis, the capital, is notorious for its evil smell, especially in the slums, though of late some efforts have been attempted to improve matters. Port Louis and Curepipe, however, have a good water-supply.

The Board of Health of the island imposes stringent regulations regarding the vessels that visit the island from foreign countries, especially India, but the antiquated measures adopted to deal with infected ships are the talk of the shipping world. Epidemic disease in any port of the world seldom fails to visit the island in its worst form. At present, it appears, there is an epidemic of enteric fever.

I am, Sir, yours faithfully,
C. L. D'AVOINE, M.D. Brux.

Byculla, Bombay, Oct. 21st, 1921.

Obituary.

JOHN ELLIOTT, M.D., B.S., F.R.C.P. LOND., F.R.C.S. ENG., B.SC.,

CONSULTING PHYSICIAN TO THE CHESTER ROYAL INFIRMARY.

LAST week we recorded the untimely death of Dr. John Elliott, who occupied a distinguished position as physician-consultant in Chester and North Wales. Born in 1861, Dr. Elliott was educated at Owens College, Manchester, and St. Bartholomew's Hospital, and graduated in two faculties of the University of London, becoming B.Sc. with honours in 1880 and M.B., also with high honours and a gold medal, in 1885; he also obtained the gold medal in the examination for the B.S. in 1886. Dr. Elliott proceeded further to equip himself with the highest qualifications open to a member of the profession in both of its main branches, being elected to the Fellowship of the Royal College of Physicians of London (1886) and that of the Royal College of Surgeons of England (1908). He held the post of house surgeon at his teaching hospital, and then became resident surgical officer at the Birmingham General Hospital. He was later elected a physician on the staff of the Chester Royal Infirmary, and then settled permanently in consulting practice in Chester. His advice was eagerly sought throughout North Wales, and he was always a source of help to his junior colleagues at the Chester Royal Infirmary. Dr. Elliott's services to the community were not confined to his medical activities. He was a member of the Chester City Council from 1895 to 1898, and from 1913 he was a member of the Commission of the Peace for Chester, while he was an active member of the Chester Agricultural Society. During the war Dr. Elliott rendered valuable services, and for this work he received the O.B.E. His recent protest made in the High Court against the disclosure of confidential information in certain circumstances, as between patient and doctor, will be fresh in the memory of many of our readers. He took a keen interest in the applications of optics to colour photography, in the practice of which he was an adept artist. In him the medical profession has lost an accomplished and all-round exponent of our science and art.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the Third Examination for Medical and Surgical Degrees, held recently, the following candidates were successful:—

Part I., Surgery, Midwifery, and Gynæcology.—L. H. Bartram, W. T. Beswick, T. A. Butcher, S. P. Castell, R. S. Corbett, N. R. Cunningham, E. Donaldson, J. G. Drew, W. F. Eberlie, H. V. Edwards, A. A. Gemmell, L. B. Hartley, C. B. Hawthorne, J. B. Leather, W. B. A. Lewis, A. G. F. McArthur, C. F. McLean, B. Mountain, R. W. Nichol, R. R. Powell, A. A. Prichard, A. E. Roche, J. C. Russell, H. Spibey, and R. R. Traill.

EXAMINATION FOR THE DEGREE OF M.CH.

R. St. L. Brockman.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Laurence Ball (University medal), Birmingham University; Loswel I. Braun, St. Bart.'s Hosp.; Nora A. Crow, London Sch. of Med. for Women; Edward E. Lightwood and Frank Portas, Westminster Hosp.; Walter M. A. Rahman, Univ. Coll. Hosp.; Noel O. Richards, London Hosp.; Ernest W. Wade, Univ. Coll., Bristol; and Charles H. Warner, Middlesex Hosp.

Branch IV., Midwifery and Diseases of Women.—Margaret M. Basden, London Hosp.; Simeon M. Cohen, Univ. Coll., Cardiff, and St. Bart.'s Hosp.; Janet McAllister McGill (University medal), London Sch. of Med. for Women and St. Mary's Hosp.; Percival G. Quinton, Univ. Coll. Hosp.; Elisabeth H. Schwab, London Sch. of Med. for Women; and Raymond Theron, London Hosp.

Branch V., State Medicine.—George W. Shore, King's Coll. Hosp.

Branch VI., Tropical Medicine.—Charles T. Maitland (University medal), St. Bart.'s Hosp. and London Sch. of Trop. Med.

M.S. EXAMINATION.

Branch I., Surgery.—Ranald M. Handfield-Jones, St. Mary's Hosp.; and Walter Salisbury, Bristol University and London Hosp.

A course of six public lectures on the Current Work of the Biometric and Eugenics Laboratories will be held at the University of London on Wednesdays in February and March, 1922, at 8 P.M. On Feb. 15th Prof. Karl Pearson, F.R.S., will lecture on Side-lights on the Evolution of Man: from the Knee-joint; on the 22nd Miss Ethel M. Elderton, Galton Research Fellow, will lecture on the Inheritance of Intelligence; and on March 1st Dr. Percy Stocks will discuss a Scheme of Anthropometric Measurements in the Biometric Laboratory. The Relation of Caries in the Teeth of School Children to Health and Home Conditions will be dealt with by Miss E. C. Rhodes on March 8th; Dr. Julia Bell will speak on the Inheritance of Certain Types of Blindness; and the closing lecture of the series will be delivered on March 22nd by Dr. M. Greenwood on Occupational Mortality. The lectures are open to the public without fee, but as only a limited number of seats are available, admission will be by numbered ticket for each lecture, for which application should be made to the Secretary, Galton Laboratory, University College, London, W.C. 1.

UNIVERSITY OF ABERDEEN.—The following have graduated in medicine as the result of the special examination for ex-Service students:—

C. A. Aymer, Isobel M. G. Bisset, William S. Cochar, Henry B. Cook, Alex J. Curr, Nellie S. Diack, Isabella R. Gordon, J. Grant, W. P. Jordaan, D. F. McGregor, N. M. Maclennan, R. Macleod, J. W. Macrae, D. Meldrum, W. J. Meldrum, J. I. Milne, Victor E. Milne, William G. Murray, J. D. Pole, J. Rannie, C. Reid, H. Ritchie, Charles Shapiro, J. C. Souter, Harriet J. S. Taylor, M. Taylor, V. M. M. Watson, Annie T. West. J. C. Souter graduated with second-class honours, while N. M. Maclennan, W. J. Meldrum, Victor E. Milne, and J. C. Souter passed their final professional with distinction.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

R. S. van Aalten, G. H. Buckley, Vincent Chadwick (second-class honours), N. S. Craig, O. M. Duthie, H. E. Emmett, Caroline M. Edwardes-Evans, William Geraghty, Marguerite F. Johnstone, Jessie Kilrow, W. L. Martland, Margaret Pownall, Harry Rosenthal, J. W. Smith, S. N. Taylor, Nora N. Walker, and James Worthington.

Forensic Medicine.—Reginald Anderton, H. P. Fay, F. W. W. Fox, C. B. Kirkbride, and A. A. Pomfret.

Medicine.—Samuel Adler and Dorothy M. L. Dyson.

Obstetrics.—R. J. Allison and Dorothy M. L. Dyson.

Surgery.—R. J. Allison.

THIRD M.B. AND CH.B. EXAMINATION.

Pathology.—K. V. Bailey, Gwendoline A. G. Edwardes-Evans, and G. B. Lord.

Pharmacology.—Hanna Aziz, Soloman Bernstein, Arnold Brown, Mary S. Davies, Charles Eccleston, Madge E. Edwards, R. A. Ferguson, R. W. Fairbrother, E. St.G. Gilmore, Anne H. Glancy, W. G. Howson, Alun M. Jones, A. C. Kelly, V. F. Lambert, G. F. S. Parker, Miles Parkes, Kate B. Scott, Dorothy Simmons, Marjorie Thompson, and E. J. Warburton.

DIPLOMA IN DENTISTRY.

Final Examination.—M. H. Duxbury, J. L. Halliwell, A. V. Littlewood, H. V. Longson, and G. H. Wood.

Systematic Surgery.—S. J. Gray.

Dental Surgery.—A. N. Place.

Dental Prosthetics.—S. J. Gray and A. N. Place.

UNIVERSITY OF LEEDS.—A congregation of the University was held at the Medical School on Dec. 22nd, presided over by Sir Michael Sadler, the Vice-Chancellor, when the following degrees were conferred:—

DOCTOR OF MEDICINE.

Louis Gordon.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY WITH HONOURS.

First Class: John T. Blackburn and Digby Chamberlain.

Second Class: Donald I. Currie, Henry Duck, William H. Leake, Hilda Thistlethwaite, John L. Wesley-Smith, and Charles H. Wilson.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Alfred L. C. Harron, Ralph Hodgson, Eric E. Holdsworth, Marion Knowles, William A. D. Lawson, Elsie E. McNeice, Horace C. Petch, Osra Muriel Phillips, Phyllis M. Platt, Douglas Robertson, and Harriette A. Wilson.

In examinations held recently the following candidates have been successful:—

FINAL M.B., CH.B. EXAMINATION.

Part I.—J. Atkinson, Marjorie Baxter, W. H. Bean, Aileen M. Claye, F. Clegg, I. H. Cohen, L. Cohen, M. Cohen, R. Crockatt, Dorothy M. Edgcombe, H. Fallows, J. Freeman, H. A. Hellewell, S. Hyman, Marjorie M. Jackson, R. H. Lodge, A. A. Masser, P. Oberman, J. R. Oddie, J. E. Outhwaite, Gwendoline F. Prince, P. Rosenbloom, G. H. Sellers, H. Sheard, D. M. Sutherland, A. L. Taylor, G. M. Wadsworth, A. Walbank, G. F. Walker, J. S. Walker, Gretta M. Wardle, and R. Wood.

Part II.—Edith Ghosh, S. Levy, and Jessie Sheard.

FINAL L.D.S. EXAMINATION.

Part I.—G. C. Channon, A. D. Clubb, J. C. Crossley, A. D. Page, and G. B. Reid.

Part II.—N. L. King, L. Temple, and F. L. Tomlinson.

DIPLOMA IN PUBLIC HEALTH.

H. J. G. Wells.

This year the University has instituted a Diploma in Nursing, the first of its kind in the Empire. The regulations of the diploma have been founded on the curriculum of training in the Leeds General Infirmary. The promoters of this training school for nurses have been fortunate in the coöperation of the matron of the infirmary, Miss E. S. Innes, and have selected her as recipient of the first diploma conferred. Five other nursing diplomas were awarded.

ROYAL COLLEGE OF PHYSICIANS AND ROYAL COLLEGE OF SURGEONS IN IRELAND CONJOINT EXAMINATIONS.—At examinations held recently the following candidates were successful:—

FINAL PROFESSIONAL EXAMINATION.

Edward S. Becker, Eric J. Benson, William H. Browne, John F. J. Cleary, John J. Clune, Ambrose Doran, William C. Dwyer, Jeremiah F. Enright, Mea Williams Frazer, John J. Fitzsimons, John MacFarlane Gray, Michael P. P. Higgins, Charles S. Hills, James H. Lawlor, Matilda G. Neill, Richard H. Nightingale, John O'Leary, Gordon S. Rutherford, and Thomas G. Whitcroft.

DIPLOMA IN PUBLIC HEALTH.

Vincent J. Glover, Harold L. Mooney, and John A. Musgrave.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—At recent examinations the following candidates were successful:—

FINAL FELLOWSHIP EXAMINATION.

William J. Dunlop, Frederick Gill, Sylvester J. Healy, and William Napier.

ROYAL SANITARY INSTITUTE.—Maj.-Gen. J. E. B. Seely has consented to preside at the thirty-third congress of this Institute, to be held at Bournemouth from July 24th to 29th, 1922.

POST-GRADUATE COURSE ON ORTHOPÆDICS.—A course on Orthopædics will be held by Dr. F. Calot, chief surgeon to the Hôpital Rothschild, of the Institut Orthopédique de Berck, at his Paris clinic from Jan. 23rd to 29th, 1922, from 2 P.M. to 7 P.M. daily. The course is designed for medical men and students, native and foreign, and demonstrations in English and Spanish will be given. The fee is Fr.150. A detailed programme and any other information required can be obtained from Dr. Fouchet, Institut-Calot à Berck-Plage, or from Dr. Collew, Clinique-Calot, 69, Quai d'Orsay, Paris.